

APPENDIX B - FIELD DATA SHEETS

An Evaluation of the Effectiveness of Mitigation Banking in Florida: Ecological Success and Compliance with Permit Criteria

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APPENDIX B - FIELD DATA SHEETS

FIELD ASSESSMENT DATA SHEETS FOR UMAM AND WRAP WITH FIELD DATA FROM FWCI AND HGM METHODOLOGIES. OVER VIEW MAPS OF EACH BANK WITH OUTLINES OF ASSESSMENT AREAS AND SITE PHOTOS INCLUDED.

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Appendix B-1. Barberville Mitigation Bank

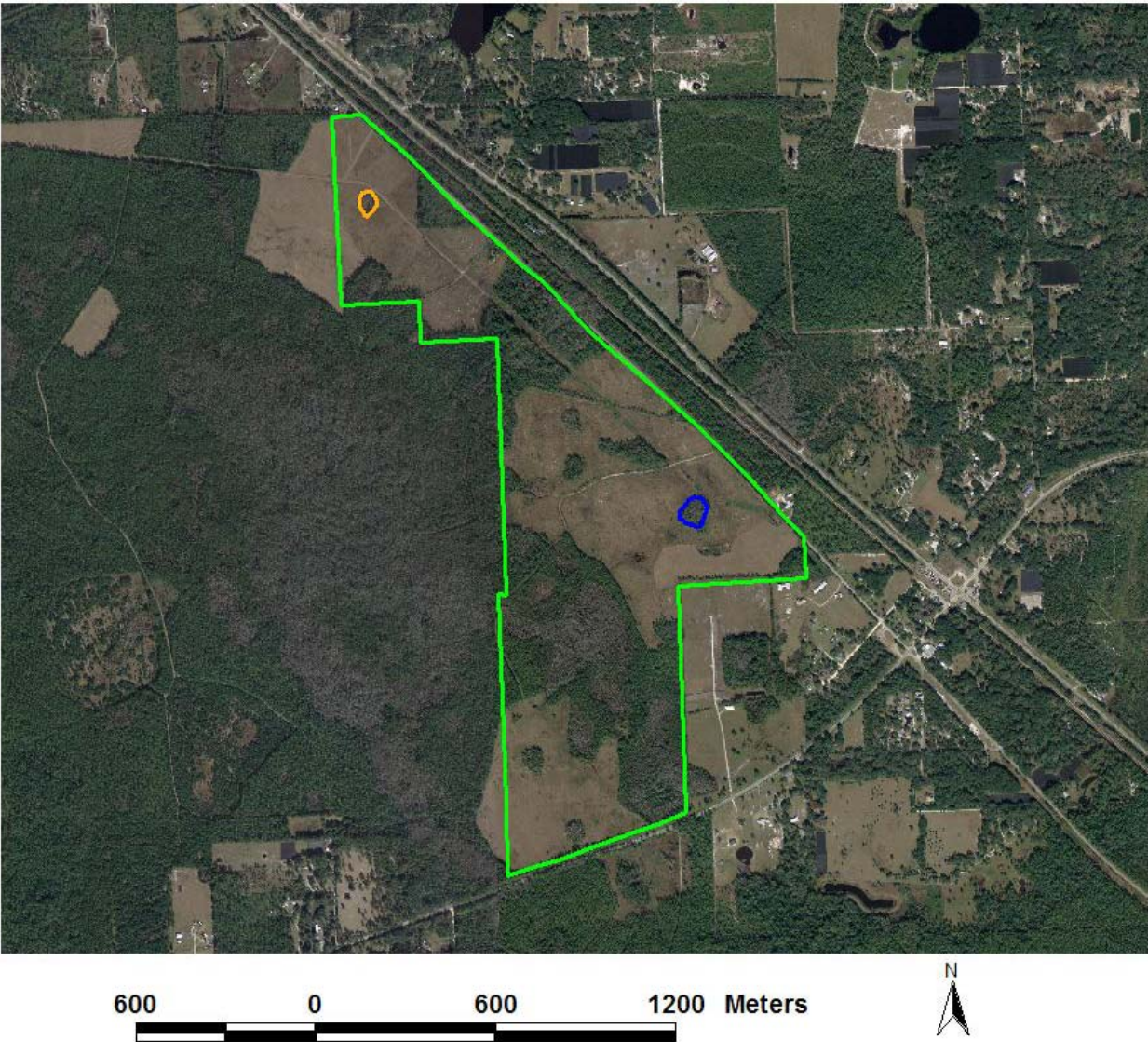


Figure B-1.1. Landscape location of Barberville Mitigation Bank (green line). Boundary of the wetland assessment areas Barb_CYP (blue line) and Barb_MAR (orange line) shown.

(A)



(B)



Figure B-1.2. Site photos of Barberville Mitigation Bank A) interior of Barb_CYP B) Barb_MAR looking west across the marsh.

Barb_CYP Uniform Mitigation Assessment Method, page 1
PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

| | | | |
|---|---|---|--|
| Site/Project Name Barberville Mitigation Bank | | Application Number NA | Assessment Area Name or Number Barb_CYP |
| FLUCCs code 2000 SJRWMD - 6210 Cypress | Further classification (optional) SJRWMD Soil - Basinger | Impact or Mitigation Site? Mitigation | Assessment Area Size 0.6 ha (1.5 ac) |
| Basin/Watershed Name/Number 03080101 Upper St Johns River HUC Middle St Johns | Affected Waterbody (Class) 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 No direct hydrologic connection to Outstanding Florida Waters. Wetland is depressional with no surface outflows, water inflows limited to direct rainfall and run-off from adjacent upland areas. | | | |
| Assessment area description FWCC Priority Wetlands - 1-3 species, upland habitat. FWCC Strategic Habitat Conservation Areas - Priority Habitat. The edge of <i>Pinus elliotii</i> (slash pine) trees around this wetland was left during the recent timbering activity (1999 DOQQs show forested uplands, 2004 DOQQs show open uplands). Very thick and shrubby, highly fire suppressed. | | | |
| Significant nearby features No Outstanding Florida Waters within 1 mile buffer (ERA Tools). Near Lake George State Forest, Nine Mile Point, and Ocala National Forest (within approximately 10 miles). Barberville is in a critical linkage, high priority Ecological Greenway called Ocala National Forest. | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Large conservation tracts in area, not unique considering. Scattered isolated depressional wetlands, but the conservation tracts have intact high quality wetlands based on remote sensing. | |
| Functions Wildlife habitat and refuge, in particular waterfowl, wading birds, and aquatic animals, which may depend on cypress swamps for breeding purposes; provide water storage by holding excess water and slowly releasing it into the water table; enhance water quality by absorbing nutrients from the water. | | Mitigation for previous permit/other historic use The support area has been harvested for timber - it was forested in the 1999 DOQQs. | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) <i>Odocoileus virginianus</i> (white-tailed deer), <i>Procyon lotor</i> (raccoon), many species of frogs, small fish, wading birds, butterflies, aquatic insects. | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Mycteria americana</i> (wood stork)E, <i>Ursus americanus floridanus</i> (Florida black bear)T, <i>Alligator mississippiensis</i> (alligator)T, <i>Aramus guarauna</i> (limpkin)SSC, | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Deer tracks on sand pads for power poles just on eastern wetland/upland fringe. Very little observed wildlife - site visit was immediately preceding a heavy rain storm. | | | |
| Additional relevant factors: Upland areas surrounding wetland had been harvested in last 5 years. Very thick and shrubby wetland. Difficult to walk through and especially difficult to enter wetland through fire suppressed edge. | | | |
| Assessment conducted by: Erica Hernandez & Kelly Chinnners Reiss | | Assessment date(s): 7/18/2005 | |

Barb_CYP Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|---|--|
| Site/Project Name Barberville Mitigation Bank | Application Number NA | Assessment Area Name or Number Barb_CYP |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Erica Hernandez, Kelly Chinners Reiss | Assessment date: 18-Jul-05 |

| | | | | |
|---|---|---|---|--|
| 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 water functions | 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 w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> | Habitat outside assessment area supplies much support for wildlife species but not optimal support. Area is rutted from heavy equipment use. Invasive exotic species not present in the proximity of the assessment area, or at least not obvious invasive exotics - we did not note any as we walked through the wet prairie/flatwood restoration area. Some connection to offsite habitat, but there is a 2-lane paved road to the east of the property approximately 150m of the wetland edge. Also, SR40 a much busier 2-lane paved road is to the south of the property, approximately 750-900m away. Wildlife will be partially limited by these roads and the uneven nature of the upland areas with large ruts. Sufficient quantity and variety of adjacent habitats for some but not all wildlife species. <i>Aristida stricta</i> var. <i>beyrichiana</i> (wiregrass) is missing from the groundcover in the adjacent upland (restored pine lands, though trees are <0.5m tall). |
| | 8 <input type="checkbox"/> <input type="checkbox"/> |
| .500(6)(b) Water Environment (n/a for uplands) w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> | Water levels appear appropriate, we noted moss collars, lichen lines, adventitious roots. We also saw drift line/wrack line well outside of the cypress wetland, so perhaps seasonal highs are higher than expected or more flashy due to changes in upland structure (timbered). Some soil subsidence evidenced by deep ruts around the <i>Taxodium ascendens</i> (pondcypress) trees with some trees positioned high on hummocks. Zonation is somewhat ok, except that the wetland is very shrubby. This is probably the result of past land management practices such as fire suppression. Odd sheen on water surface with black stains left on vegetation, though it appeared orange on the water surface. |
| | 7 <input type="checkbox"/> <input type="checkbox"/> |
| .500(6)(c) Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> | Plant cover by desirable species but the density is not necessarily appropriate because of fire suppression (very dense vegetation). Age and size class appears appropriate for <i>Taxodium ascendens</i> (pondcypress) trees, the dominant canopy species. Plants do appear healthy, but at a high density. When could a fire occur . . . there is nothing in the support habitat that could currently carry a fire to the wetland edge. No invasive exotic species were identified. There is some human induced human impacts as cut stumps were found. Snags, dens, and woody debris was at a much greater density than expected. Land management practices are generally appropriate but fire suppression and alteration in hydrology from surrounding land use changes have resulted in conditions different than expected for a cypress wetland. |
| | 8 <input type="checkbox"/> <input type="checkbox"/> |

| | |
|---|--|
| Score = sum of above scores/30 (if uplands, divide by 20) | current or w/o pres <input type="checkbox"/> with <input type="checkbox"/> |
| 0.77 | |

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|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Barb_CYP Wetland Rapid Assessment Procedure, page 1

Wetland Rapid Assessment Procedure (WRAP)

All Data Sheets for Existing Conditions. Sheets designed for Mitigation Bank Study - K.C.Reiss. 5/2005

Project Name: Barb_CYP, Barberville Mitigation Bank

Date: 7/18/2005

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: Depressional forested wetland - *Taxodium ascendens* (pondcypress) and mixed bays. Surrounded by 5-10m strip of *Pinus elliottii* (slash pine) and *Gordonia lasianthus* (loblolly bay) - serious fire suppressed fringe and wetland.

Wetland Assessment Area: 0.6 ha (1.5 ac)

FLUCCS Code/Description: SJRWMD 2000 - 6210 Cypress

| | |
|------|---------------------------|
| 2.5 | Wildlife Utilization (WU) |
| 2.5 | Wetland Canopy (O/S) |
| 2.5 | Wetland Ground Cover (GC) |
| 2.5 | Habitat Support/Buffer |
| 2.5 | Field Hydrology (HYD) |
| 2.75 | WQ Input & Treatment (WQ) |
| 15.3 | SUM |
| 6 | Count |
| 0.85 | WRAP |

Barb_CYP Wetland Rapid Assessment Procedure, page 2

| | |
|---|----------------------------------|
| 2.5 | Wildlife Utilization (WU) |
| Deer tracks on sand pad of power line pole. Adequate adjacent food source. Some human disturbance - logging ruts throughout "restored" flatwoods, 2-lane road (CR3) within 150m, power lines, fire suppression. Does have areas of offsite habitat support. | |

| | |
|---|-----------------------------|
| 2.5 | Wetland Canopy (O/S) |
| Overstory is primarily <i>Taxodium ascendens</i> (poncypress) - some cut stumps but generally good age and size class distribution and evidence of recruitment and regeneration. Shrub layer is thick with <i>Lyonia lucida</i> (fetterbush) and <i>Gordonia lasianthus</i> (loblolly bay). In need of fire, but a decent fire could scorch the wetland due to the extreme shrub growth and vine cover. No visible invasive exotic species or undesirable species. Some snags and den trees, perhaps much more woody debris than appropriate because of the lack of fire. | |

| | |
|---|----------------------------------|
| 2.5 | Wetland Ground Cover (GC) |
| Less than 10% nuisance species, no exotic species. Not managed for periodic burns. Pretty shaded, so little ground cover throughout, mostly shrubs and vines. | |

| | | | | | |
|---|-------------------------------|-------------|-----------|-------------|-------------|
| 2.5 | Habitat Support/Buffer | | | | |
| Greater than 300 ft all around wetland in restored flatwoods/more like wet prairie. Planted trees are <0.5m tall. Does not provide for all of the needs for all wildlife species. Is connected to offsite wetlands for support (access through the restored flatwoods/wet prairie). | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | Disturbed | 2.5 | 1 | 2.5 |
| | | | | | |
| | | | | | |
| Total = | | | | | 2.5 |

| | |
|---|------------------------------|
| 2.5 | Field Hydrology (HYD) |
| No ditching apparent - could have been plugged, but ditches or plugs were not visible as we walked around the perimeter of the wetland. Hydrology adequate to maintain a viable wetland. Distinct hydrologic indicators such as adventitious rooting, moss collars, and lichen lines noted. Odd orange/black coating on water surface - oily by feel - left dark coating on vegetation (water level was currently lower than it had been recently). | |

2.8 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| Restoration | 2.5 | 1.00 | 2.5 |
| | | | 0.0 |
| LU Total = | | | 2.5 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| Undeveloped | 3.0 | 1.00 | 3.0 |
| | | | 0.0 |
| PT Total = | | | 3.0 |

Barb_MAR Uniform Mitigation Assessment Method, page 1

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

| | | | | | |
|---|---|--|--|--|---|
| Site/Project Name Barberville Mitigation Bank | | Application Number NA | | Assessment Area Name or Number Barb_MAR | |
| FLUCCs code 6410 Freshwater Marsh (1995) | | Further classification (optional) Soils - Smyrna; NWI - Palustrine emergent | | Impact or Mitigation Site? Mitigation | Assessment Area Size 1.4 ha (3.5 ac) |
| Basin/Watershed Name/Number 03080101 Upper St Johns River HUC Middle St Johns | Affected Waterbody (Class) 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 No direct hydrologic connection to Outstanding Florida Waters. Wetland is depressional with no surface outflows, water inflows limited to direct rainfall and run-off from adjacent upland areas. In times of exceptionally high waters, wetland may overflow to the south into a bottomland hardwoods forest approximately 150m away. | | | | | |
| Assessment area description Drastic elevation change (perhaps 1 meter), dug out previously for cattle watering hole. Power line poles in proximity to wetland and running across mitigation bank's Eastern edge with access road with small ditch (<1 m deep) running along north/south direction. Soil is noted as Smyrna, not hydric, though wetland not delineated on soils coverage. Depressional marsh, vegetation zonation not intact. "Deep marsh" habitat with pickerelweed (<i>Pontederia cordata</i>) and spikerush (<i>Eleocharis</i> spp.) Some scattered swamp tupelo (<i>Nyssa sylvatica</i> var. <i>biflora</i>) throughout. Large tree island with slash pine (<i>Pinus elliotii</i>) and saw palmetto (<i>Serenoa repens</i>). | | | | | |
| Significant nearby features No Outstanding Florida Waters within 1 mile buffer (ERA Tools). Near Lake George State Forest, Nine Mile Point, and Ocala National Forest (within approximately 10 miles). Barberville is in a critical linkage, high priority Ecological Greenway called Ocala National Forest. | | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Large conservation tracts in area, not unique considering. Scattered isolated depressional wetlands, but the conservation tracts have intact high quality wetlands based on remote sensing. | | |
| Functions Water storage during droughts and reduction of water flow during floods. Filter system, improving water quality before water enters rivers and lakes. Essential breeding grounds for many species of amphibians. Important wildlife habitat, especially as wintering habitat for wading birds. | | | Mitigation for previous permit/other historic use The support area has been harvested for timber and previously had cattle on it. There were ditches that have since been plugged connected to this wetland. | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Shallow depression marshes void of predatory fish are extremely important for several amphibian species that depend on seasonal wetlands for successful reproduction and provide breeding or foraging habitat for amphibians (including frogs, toads, and salamanders), reptiles (including snakes and alligators), wading birds, rodents, and mammals. | | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Bird use includes forage and nesting: white ibis (<i>Eudocimus albus</i>) SSC, sandhill crane (<i>Grus canadensis</i>) T, wood stork (<i>Mycteria americana</i>). Amphibian use includes cover, food, reproduction: gopher frog (<i>Rana caito</i>) SSC. Reptile use includes food, cover, nesting: American alligator (<i>Alligator mississippiensis</i>) SSC | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Game trails throughout wetland and surrounding wet prairie (hydric pine flatwoods restoration planned). Land manager said sandhill crane pair had nested in wetland last season, did not see this firsthand. Many dragonflies and small fish in wetland. Audible frog calls. Speculation about area in center of marsh where alligator had taken large wading bird (perhaps blue heron), and areas with matted vegetation and what looked like a recent alligator nest. | | | | | |
| Additional relevant factors: Upland areas surrounding wetland had been in agricultural land use (cattle and timber). <i>Pinus elliotii</i> (slash pine) and <i>Pinus palustris</i> (longleaf pine) have been planted for restoration efforts with limited success. Uplands were inundated with water at time of site visit, though elevation was uneven and some areas did not have standing surface water present. | | | | | |
| Assessment conducted by: Erica Hernandez & Kelly Chinnners Reiss | | | Assessment date(s): 7/18/2005 | | |

Barb_MAR Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|--|--|
| Site/Project Name Barberville Mitigation Bank | Application Number NA | Assessment Area Name or Number Barb_MAR |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Erica Hernandez, Kelly Chinnners Reiss | Assessment date: 18-Jul-05 |

| | | | | |
|---|---|--|---|--|
| 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 w/o pres or current <input type="checkbox"/> 8 <input type="checkbox"/> with <input type="checkbox"/> | Land all around the marsh is wet prairie being restored as hydric pine flatwoods, trees are <0.5 m tall. Nearby is a bottomland hardwood forest on the property and the upland restoration is adjacent to an offsite forested wetland. Cover and structure for wildlife is provided by thick and tall (> 1m) ground cover in wet prairie. There is a 2-lane road at the edge of the wet prairie with truck traffic (dump trucks and construction trucks observed). Invasive species are not apparent, though there are some nuisance pasture grasses in the wet prairie. Wildlife access is good, except for the presence of the road, and there is support habitat for larger species in the area. There is no downstream discharge. The powerline structure, grass road, and associated ditch have some influence. Nearby habitat provides support for most species. |
| .500(6)(b)Water Environment (n/a for uplands) w/o pres or current <input type="checkbox"/> 8 <input type="checkbox"/> with <input type="checkbox"/> | Water levels appear appropriate considering seasonality and antecedent weather. Some lenticels apparent on young swamp tupelo (<i>Nyssa sylvatica</i> var. <i>biflora</i>) trees, though no loop roots present. Vegetation zonation not distinct. Water level indicators were apparent such as lichen lines on swamp tupelo and adventitious roots at the water line. Found bladderwort (<i>Utricularia</i> spp.) in bloom with purple flowers, no other water quality species indicators were visible. No pre-existing water quality data available in the field. No visible signs of water quality degradation, no oil sheens, no excess turbidity, etc. Water depth and light penetration appear okay. Very abrupt edge to wetland, except more graded on south edge. |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current <input type="checkbox"/> 7 <input type="checkbox"/> with <input type="checkbox"/> | All or nearly all are desirable species, but question the occurrence and abundance of swamp tupelo (<i>Nyssa sylvatica</i> var. <i>biflora</i>) as recruitment and regeneration are occurring. No exotic species observed in the assessment area. Zonation is not distinct for depressional marsh species. Lots of coarse woody debris in patches, more than anticipated for an herbaceous marsh. Herbaceous plants appear to be in good condition, but swamp tupelo trees appear spindly with many dead branches. Land management is probably optimal for maintenance, because of ditch plugs to restore hydrology and upland restoration improvements. Topographic features in greater quantity than expected (more deeper pools that had been dug out for previous cattle ranching activities, a couple of slash pine (<i>Pinus elliotii</i>) and saw palmetto (<i>Serenoa repens</i>) tree islands in the north, etc.). Along the southern edge there is a tall, thick patch of saw palmetto that would be reduced from fire, which has been suppressed in this area. However, it is unlikely that the transitional support area (to be restored to hydric flatwoods) will carry fire now or in the near future. |

| |
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| Score = sum of above scores/30 (if uplands, divide by 20) |
| current or w/o pres <input type="checkbox"/> 0.77 <input type="checkbox"/> with <input type="checkbox"/> |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Barb_MAR Wetland Rapid Assessment Procedure, page 1

Wetland Rapid Assessment Procedure (WRAP)

All Data Sheets for Existing Conditions. Sheets designed for Mitigation Bank Study - K.C.Reiss. 5/2005

Project Name: Barb_MAR, Barberville Mitigation Bank

Date: 7/18/2005

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: Depressional herbaceous wetland. Vegetation zonation not intact.
Deeper marsh with *Pontederia cordata* (pickerelweed) and large *Eleocharis* sp. (spikerush), some scattered *Nyssa sylvatica* var. *biflora* (tupelo) trees and tree islands, some with *Pinus elliottii* (slash pine) and *Serenoa repens* (saw palmetto).

Wetland Assessment Area: 1.4 ha (3.5 ac)

FLUCCS Code/Description: SJRWMD 2000 - 6410 Freshwater Marshes

| | |
|------|---------------------------|
| 2.5 | Wildlife Utilization (WU) |
| NA | Wetland Canopy (O/S) |
| 2.0 | Wetland Ground Cover (GC) |
| 2.5 | Habitat Support/Buffer |
| 2.5 | Field Hydrology (HYD) |
| 2.5 | WQ Input & Treatment (WQ) |
| 12.0 | SUM |
| 5 | Count |
| 0.80 | WRAP |

Barb_MAR Wetland Rapid Assessment Procedure, page 2

| | |
|-----|---|
| 2.5 | <p>Wildlife Utilization (WU)</p> <p>Connected to off site forested wetland across wet prairie. Power lines and grass road right-of-way with small (<1m deep) ditch running through bank and across area in upland restoration/wet prairie. Game trails throughout wetland and surrounding wet prairie. Abundant wet habitat and cover. Manager said he saw a sandhill crane pair nest in this wetland last year, though we did not see any. Many dragonflies and heard frog calls. 2-lane paved road with dump truck traffic could injure wildlife, so greater than negligible human disturbance is a factor within the adjacent lands. This could include the physical impact of being hit and the noise and pollution associated with such traffic. There is also an airport nearby, as planes were flying often low overhead and were noisy.</p> |
|-----|---|

| | |
|----|--|
| NA | <p>Wetland Canopy (O/S)</p> <p>From the WRAP handbook (Miller and Gunsalus 1999) page 8, "this variable should be used when there is significant overstory/shrub canopy" ~ >20% of overall wetland acreage. The canopy did not fit that criteria. Hosted some <i>Nyssa sylvatica</i> var. <i>biflora</i> (tupelo) trees <6 m tall and mixed throughout the center - they appeared healthy though some of the branches are without leaves and the canopy is thin. Why are they throughout the marsh to begin with? And, why are they so abundant? Fire exclusion? Was it a forested system that had been logged many years ago? Is it becoming a bay head? Some recruitment of the tree species is apparent and there is a seed source from the forested wetland canopy within 150m.</p> |
|----|--|

| | |
|-----|--|
| 2.0 | <p>Wetland Ground Cover (GC)</p> <p>No clear zonation, though there is some distinction between the edge and the deeper marsh areas. The center has a mixed species composition including <i>Panicum hemitomon</i> (maidencane), <i>Eleocharis interstincta</i> (knotted spikerush), <i>Bacopa caroliniana</i> (lemon bacopa; blue waterhyssop), <i>Pontederia cordata</i> (pickerelweed). These are all "good" species, and no invasive or exotic species stick out throughout the marsh. There is a very distinct drop in elevation along most sides (more gentle slope to south) with <i>Serenoa repens</i> (saw palmetto) growing right at the edges. The wetland and upland lands did have cattle on it within the last 10 years, though it was unclear which year the cattle were removed. This wetland may have been dug out in areas to facilitate cattle watering.</p> |
|-----|--|

| 2.5 | <p>Habitat Support/Buffer</p> <p>Greater than 300 ft. vegetated buffer all around the marsh. Some connection to offsite wetlands across the wet prairie. The wet prairie hosts some undesirable species, mainly persistent pasture grasses (ie <i>Paspalum notatum</i>, Bahia grass). Wet prairie has been planted with <i>Pinus palustris</i> (longleaf pine) and <i>Pinus elliottii</i> (slash pine) for restoration to hydric flatwoods. These trees are currently < 0.5m tall. <i>Aristida stricta</i> var. <i>beyrichiana</i> (wiregrass) not apparent throughout upland areas, only one clump was identified on site.</p> | <table border="1"> <thead> <tr> <th>Buffer Type</th> <th>(Score) x</th> <th>(% of Area)</th> <th>= Sub Total</th> </tr> </thead> <tbody> <tr> <td>Disturbed</td> <td>2.5</td> <td>1</td> <td>2.5</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td colspan="3" style="text-align: right;">Total =</td> <td>2.5</td> </tr> </tbody> </table> | Buffer Type | (Score) x | (% of Area) | = Sub Total | Disturbed | 2.5 | 1 | 2.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Total = | | | 2.5 |
|----------------|---|---|-------------|-----------|-------------|-------------|-----------|-----|---|-----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----------------|--|--|------------|
| Buffer Type | (Score) x | (% of Area) | = Sub Total | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Disturbed | 2.5 | 1 | 2.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total = | | | 2.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | |
|-----|--|
| 2.5 | <p>Field Hydrology (HYD)</p> <p>Good water quality suggested by abundant blooms of <i>Utricularia</i> spp. (bladderwort). Plants healthy, no stress apparent in herbaceous species (some stress noted in <i>Nyssa sylvatica</i> var. <i>biflora</i> (tupelo) trees with thinned canopy). Hydroperiod probably altered by adjacent power line access road and ditch. Water depth altered from alterations associated with cattle land use, such as digging out patches of the wetland interior. Otherwise, water inflow from surrounding wet prairie restored as ditches on south side of wetland have been plugged. The catchment is probably close to its historic size. Hydrology is adequate to maintain a viable wetland though there have been some external influences.</p> |
|-----|--|

2.5 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| restoration | 2.5 | 0.75 | 1.9 |
| grass rd. & lines | 2.5 | 0.25 | 0.6 |
| LU Total = | | | 2.5 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| undeveloped | 3.0 | 0.75 | 2.3 |
| grass swales | 1.0 | 0.25 | 0.3 |
| PT Total = | | | 2.5 |

Barb_MAR Hydrogeomorphic Approach, page 1

Variable Subindex and FCI Calculation for Florida Depressions Marsh

Assessment Team: KCR, ECH
Project Name: Barb_MAR
Location: Barberville Mitigation Bank, Volusia County
Date: 7/18/05
Subclass: Depression Marsh

| Function | FCI |
|--------------------------------|------|
| Surface Water Storage | 0.93 |
| Subsurface Water Storage | 0.94 |
| Cycle Nutrients | 0.96 |
| Characteristic Plant Community | 0.85 |
| Wildlife Habitat | 0.87 |

| Variables | Measure | Units | Subindex |
|-----------|----------------|--------|----------|
| V CATCH | 24 | % | 0.75 |
| V UPUSE | 66.45 | % | 1.00 |
| V WETPROX | 3032 | meters | 0.99 |
| V WETVOL | 8 | % | 0.92 |
| V SUROUT | 0 | % | 1.00 |
| V SUBOUT | 0 | % | 1.00 |
| V ZONES | 1 | number | 0.50 |
| V MAC | 90 | % | 0.95 |
| V SURTEX | L.S. and Sandy | 100% | 1.00 |
| V HCOMP | 50 | % | 0.50 |

Barb_MAR Hydrogeomorphic Approach, page 2

Vcatch

Size of original catchment 1.98 ha

Size of current catchment 1.5 ha

Vupuse

cover type O.S. curve # 61 percent 5

cover type O.S. curve #80 percent 5

cover type Native curve # 55 percent 45

cover type Native curve # 77 percent 45

Vwetprox

| | | | |
|----------|----------|----------|----------|
| Sector 1 | Sector 2 | Sector 3 | Sector 4 |
| 500m | 500m | 500m | 206m |

| | | | |
|----------|----------|----------|----------|
| Sector 5 | Sector 6 | Sector 7 | Sector 8 |
| 212m | 500m | 124m | 490m |

Vwetvol loss of 1ft due to excavation

| diameter wetland north-south | diameter wetland east-west | depth of wetland | length of fill material | width of fill material | average thickness of fill material |
|------------------------------------|----------------------------------|---------------------|----------------------------|---------------------------|--|
| 80m | 55m | 3.5m | 80m | 55m | 0.3048m |

Vsurout no ditch

Vsubout no ditch

Vzones

shallow marsh on two of the transects

Vmac

3/30 points had no interception, 90% cover

Vsurtex

sandy loam for for all zones except one sand

Vhcomp

shallow marsh zone 100%

30 *Panicum hemitomom*, 20 *Bacopa caroliniana*

deep marsh 50 %

30 *Eleocharis spp.* 20 *Pontederia cordata*

Barb_MAR Florida Wetland Condition Index, macrophyte field data sheets, page 1

*NOTE: field codes are different than reported codes, Barb_MAR = VOSAND

| Species | 0-5 m | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|--|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Pontederico cordata | | | | | | | | | | | | | | | | |
| Eleocharis interstincta | | | | | | | | | | | | | | | | |
| Bacopa caroliniana | | | | | | | | | | | | | | | | |
| Nyssa biflora | | | | | | | | | | | | | | | | |
| Panicum hemitomon | | | | | | | | | | | | | | | | |
| Rhynchos. sp / microcephala | | | | | | | | | | | | | | | | |
| Ilex cassine | | | | | | | | | | | | | | | | |
| Myrica cerifera | | | | | | | | | | | | | | | | |
| Vaccinium corymbosum | | | | | | | | | | | | | | | | |
| Utricularia purpurea | | | | | | | | | | | | | | | | |
| Woodwardia virginica | | | | | | | | | | | | | | | | |
| Serenan repens | | | | | | | | | | | | | | | | |
| Smilax laurifolia | | | | | | | | | | | | | | | | |
| Eriocaulon decangulare | | | | | | | | | | | | | | | | |
| Sarcocornia minor | | | | | | | | | | | | | | | | |
| Xyris big. sp / jupicai | | | | | | | | | | | | | | | | |
| Rhexia mariana | | | | | | | | | | | | | | | | |
| Rhexia alifanus | | | | | | | | | | | | | | | | |
| Pinus elliotii | | | | | | | | | | | | | | | | |
| Andropogon virginicus | | | | | | | | | | | | | | | | |
| Amphicarpum milledesigum | | | | | | | | | | | | | | | | |
| W. virginicus A. strick? | | | | | | | | | | | | | | | | |
| Proserpinaca pectinata | | | | | | | | | | | | | | | | |
| Ilex glabra | | | | | | | | | | | | | | | | |
| Galactia sp. | | | | | | | | | | | | | | | | |

Site: VOSAND
Date: July 18, 05

Biosurvey Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands
Transect Direction: North T1
Data Recorder: Pam Duvall

no id

Barb_MAR Florida Wetland Condition Index, macrophyte field data sheets, page 2
 *NOTE: field codes are different than reported codes, Barb_MAR = VOSAND

| Species | 0.5 m | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|-----------------------------------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <i>Sagittaria arifolia</i> | | | | | | | | | | | | | | | | |
| <i>Sagittaria arifolia</i> (Palm) | | | | | | | | | | | | | | | | |
| <i>Andropogon virginicus</i> | | | | | | | | | | | | | | | | |
| <i>Rhynchospora microcephala</i> | | | | | | | | | | | | | | | | |
| <i>Distichlis spicata</i> | | | | | | | | | | | | | | | | |
| <i>Sagittaria arifolia</i> (Palm) | | | | | | | | | | | | | | | | |
| <i>Eleocharis acicularis</i> | | | | | | | | | | | | | | | | |
| <i>Bacopa caroliniana</i> | | | | | | | | | | | | | | | | |
| <i>Furcraea scirpoides</i> | | | | | | | | | | | | | | | | |
| <i>Paspalum pectinatum</i> | | | | | | | | | | | | | | | | |
| <i>Sagittaria</i> (SP) | | | | | | | | | | | | | | | | |
| <i>Gratiola pilosa</i> | | | | | | | | | | | | | | | | |
| <i>Utricularia purpurea</i> | | | | | | | | | | | | | | | | |
| <i>Xyris (br.) typica</i> | | | | | | | | | | | | | | | | |
| <i>Ludwigia</i> (SP) | | | | | | | | | | | | | | | | |
| <i>Eleocharis retrofracta</i> | | | | | | | | | | | | | | | | |
| <i>Pontederia cordata</i> | | | | | | | | | | | | | | | | |

Site: Vosand
 Date: July 18, 05
 Blountley Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands
 Transect Direction: East to West
 Data Recorder: Tony Davanzo

Barb_MAR Florida Wetland Condition Index, macrophyte field data sheets, page 3

*NOTE: field codes are different than reported codes, Barb_MAR = VOSAND

| Species | 0-5 m | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|------------------------------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Myrica cerifera | | | | | | | | | | | | | | | | |
| Rhexia mariana | | | | | | | | | | | | | | | | |
| Hydrocotyle sp. | | | | | | | | | | | | | | | | |
| Rhynchospora microcephala | | ✓ | | | | | | | | | | | | | | |
| Cyrtandra minor | | ✓ | | | | | | | | | | | | | | |
| Andropogon virginicus | | | | | | | | | | | | | | | | |
| Pluchea sp. | | | | | | | | | | | | | | | | |
| Xyris twisted ear | | | | | | | | | | | | | | | | |
| Xyris wisey elliptica | | ✓ | | | | | | | | | | | | | | |
| Guzmania pilosa | | | | ✓ | | | | | | | | | | | | |
| Panicum sp. | | | | | | | | | | | | | | | | |
| Oxypholis glififormis | | | | ✓ | | | | | | | | | | | | |
| Amphicarpum minutum | | | | | | | | | | | | | | | | |
| Panicum hemiltonianum | | | | ✓ | | | | | | | | | | | | |
| Coelnanthes caroliniana | | | | | | | | | | | | | | | | |
| Pluchea rosea | | | | ✓ | | | | | | | | | | | | |
| Eriocaulon scirpoides | | | | | | | | | | | | | | | | |
| Xyris big yipicai | | | | | | | | | | | | | | | | |
| Panicum pectinatum | | | | ✓ | | | | | | | | | | | | |
| Rhynchospora #2 microcephala | | | | ✓ | | | | | | | | | | | | |
| Bacopa caroliniana | | | | ✓ | | | | | | | | | | | | |
| Hypericum myrsinoides | | | | | | | | | | | | | | | | |
| Rhynchospora #3 wrightii | | | | | | | | | | | | | | | | |
| Centella asiatica | | | | | | | | | | | | | | | | |
| Rhynchospora #4 tracyi? | | | | ✓ | | | | | | | | | | | | |

Site: Vosand
 Date: July 18, 05
 Biosurvey Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands
 Transect Direction: South - 2 Streets (1)
 Data Recorder: Tony Dawson 2005

Barb_MAR Florida Wetland Condition Index, macrophyte field data sheets, page 4
 *NOTE: field codes are different than reported codes, Barb_MAR = VOSAND

Biosurvey Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands

Site: Vosand
 Date: July 16, 05

Transect Direction: South (2 sheets - 2) T3
 Data Recorder: Tony Danner

| Species | 0-5 m | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|--------------------------------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <i>Sagittaria arifolia</i> | | | | | | | | | | | | | | | | |
| <i>Eleocharis interstincta</i> | | | ✓ | ✓ | ✓ | ✓ | | | | | | | | | | |
| <i>Cudrania</i> (30) | | | | | | | | | | | | | | | | |
| <i>Pontederia cordata</i> | | | | | | ✓ | ✓ | ✓ | | | | | | | | |

Barb_MAR Florida Wetland Condition Index, macrophyte field data sheets, page 5
 *NOTE: field codes are different than reported codes, Barb_MAR = VOSAND

Site: *VOSAND*
 Date: *July 18, 08*
 Biosurvey Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands
 Transect Direction: *West*
 Data Recorder: *Ron Durrant*

| Distance | Species |
|----------|--|
| 0-5 | <input checked="" type="checkbox"/> <i>Pontederia cordata</i> |
| 5-10 | <input checked="" type="checkbox"/> <i>Pontederia cordata</i> |
| 10-15 | <input checked="" type="checkbox"/> <i>Pontederia cordata</i> |
| 15-20 | <input checked="" type="checkbox"/> <i>Pontederia cordata</i> |
| 20-25 | <input checked="" type="checkbox"/> <i>Pontederia cordata</i> |
| 25-30 | <input checked="" type="checkbox"/> <i>Pontederia cordata</i> |
| 30-35 | <input checked="" type="checkbox"/> <i>Pontederia cordata</i> |
| 35-40 | <input checked="" type="checkbox"/> <i>Pontederia cordata</i> |
| 40-45 | <input checked="" type="checkbox"/> <i>Pontederia cordata</i> |
| 45-50 | <input checked="" type="checkbox"/> <i>Pontederia cordata</i> |
| 50-55 | <input checked="" type="checkbox"/> <i>Pontederia cordata</i> |
| 55-60 | <input checked="" type="checkbox"/> <i>Pontederia cordata</i> |
| 60-65 | <input checked="" type="checkbox"/> <i>Pontederia cordata</i> |
| 65-70 | <input checked="" type="checkbox"/> <i>Pontederia cordata</i> |
| 70-75 | <input checked="" type="checkbox"/> <i>Pontederia cordata</i> |
| 75-80 | <input checked="" type="checkbox"/> <i>Pontederia cordata</i> |
| | <input checked="" type="checkbox"/> <i>Eleocharis interstincta</i> |
| | <input checked="" type="checkbox"/> <i>Bacopa caroliniana</i> |
| | <input checked="" type="checkbox"/> <i>Sagittaria</i> (sp) |
| | <input checked="" type="checkbox"/> <i>Panicum hemitomon</i> |
| | <input checked="" type="checkbox"/> <i>Utricularia purpuria</i> |
| | <input checked="" type="checkbox"/> <i>Wolffia virginica</i> |
| | <input checked="" type="checkbox"/> <i>Ludwigia</i> (sp) |
| | <input checked="" type="checkbox"/> <i>Althea rosea</i> |
| | <input checked="" type="checkbox"/> <i>Serengeti repens</i> |
| | <input checked="" type="checkbox"/> <i>Andropogon virginicus</i> |
| | <input checked="" type="checkbox"/> <i>Osmunda cinnamomea</i> |
| | <input checked="" type="checkbox"/> <i>Vaccinium corymbosum</i> |
| | <input checked="" type="checkbox"/> <i>Galactia</i> (sp) |

Barb_MAR Florida Wetland Condition Index, macrophyte field data sheets, page 6

*NOTE: field codes are different than reported codes, Barb_MAR = VOSAND

Debaro
Vosand
Hole in Coast - Dade

Debaro
Cyperus haspays = Rhynchospora sp. ondatoshak
Leptochloa dubia
Ludwigia alata
Polygonum hydropiperoides

Vosand
Ludwigia
Gambusia pilosa
Solidago

? where doesthis belong
 Purple flower - *Buchnera americana*
 Grass - *Sacciolepis*
 → smaller base of seed - not in 5 specimens

- 4 Rhynch. *traxys*
- 2 Rhyn. *microcephala*
- * 3 Rhyn. *wrightiana*
- 1 Rhyn sp. - ? *microcephala*
- Xyris elliptica* (wire)
- Xyris juncea* (big)
- Xyris ~~capitata~~ capitata* (twisted)

Hole in the Coast
Eleocharis sp. (1 flower)
Sagittaria graminea
Rhynch. microcarpa (2 of them)
Eleocharis geniculata - group of flowers

Barb_MAR Florida Wetland Condition Index, macroinvertebrate list

List of macroinvertebrates identified to the genus taxonomic level

Barb_MAR = VOSAND = WTLNDSTORET172

Aeshnidae
Bratislavia
Caenis
Callibaetis
Cambaridae
Chaoborus
Chironomini gen. 3 epler
Chironomus
Coenagrionidae
Dasyhelea
Dero
Endochironomus
Gomphus
Hydrocanthus
Hydrochus
Hydrodroma
Labrundinia
Larsia
Lestes
Libellulidae
Limnesia
Mesovelia
Monopelopia
Neargyrectis
Orthotrichia
Oxyethira
Paratanytarsus
Pristina
Procladius (holotanypus)
Psectrocladius
Sigara
Synclita
Tanypus
Tanytarsus
Unionicola

Appendix B-2. Bear Point Mitigation Bank



Figure B-2.1. Landscape location of Bear Point Mitigation Bank (green line). Boundary of the wetland assessment area Bear_MAN includes the entire wetland mitigation bank (green line).



Figure B-2.2. Site photo of Bear Point Mitigation Bank looking east from the berm at Bear_MAN.

Bear_MAN Uniform Mitigation Assessment Method, page 1
PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

| | | | |
|--|---|---|--|
| Site/Project Name Bear Point Mitigation Bank | | Application Number NA | Assessment Area Name or Number Bear_MAN |
| FLUCCs code 6120 Wetland Hardwoods Forests, Mangrove Swamps | Further classification (optional) Mangrove swamp; Terra ceia complex tidal NWI - Estuary scrub shrub unconsolidated shore | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size 128 ha (317 ac) |
| Basin/Watershed Name/Number Indian River Lagoon Drainage basin/South Indian River HUC id 41 | Affected Waterbody (Class) 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 Adjacent to and connected to Indian River Lagoon, an OFW, by a series of pumps and culverts. Connected lagoon is also a designated Aquatic Preserve Jensen Beach to Jupiter Inlet. | | | |
| Assessment area description Bank consists of a mangrove swamp ecosystem that is diked on the northern, western, and southern edges and connected to Indian River Lagoon (IRL) through a series of culverts and pumps. A small portion of the bank is bordered by a residential area to the north. South end is adjacent to conservation land purchased by the county, about 13 acres. East is privately owned mangrove swamp. West is berm and then the IRL. County hopes to get some of the land closest to the bank through mitigation for future lots built on A1A. Dominated by red mangrove (<i>Rhizophora mangle</i>) and black mangrove (<i>Avicennia germinans</i>) and salt flats. | | | |
| Significant nearby features OFW and Aquatic Preserve - Indian River Lagoon south of Fort Pierce Inlet. A1A to the West. | | Uniqueness (considering the relative rarity in relation to the regional landscape.) There are not many mangrove swamps that have not been converted to other land uses on this coastline. There is not much natural coastline in general. | |
| Functions Mangrove swamps are important in the successional process involved in land formation they also trap sediments and recycle nutrients. Mangrove roots provide important shelter for marine and estuarine fauna. Mangroves are nursery grounds for commercial and recreational fish and shellfish. Breeding areas for birds. Produce 80% of total organic material for food web. Protect inlands from hurricanes. | | Mitigation for previous permit/other historic use Historically mosquito impoundment with only 2 culverts. Extensive exotic species infestation. | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Marsh snail, periwinkle, fiddler crab, salt marsh snake, crabs, wading birds, osprey, marsh wren, fishes, sharks, rays, lady fish, shore birds, shellfish | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Nerodia clarkii taeniata</i> (Atlantic salt marsh snake (T)) - population limited to Volusia, Brevard and Indian River Counties, <i>Egretta caerulea</i> (little blue heron (SSC)), <i>Egretta tricolor</i> (tricolored heron (SSC)), <i>Egretta thula</i> (snowy egret (SSC)) | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Numerous schools of mullet of different ages (sizes). Great blue heron, cattle egret, great egret, little blue heron, <i>Mycteria americana</i> (woodstork (E)), osprey, white ibis, needle fish, crabs, minnows, tarpon, cormorant | | | |
| Additional relevant factors: Site was visited during draw down for mosquito control. Functioning at 80% natural circulation. No mosquitoes detected during visit. | | | |
| Assessment conducted by: Erica Hernandez, Kelly Chinnners Reiss | | Assessment date(s): 7/5/2005 | |

Bear_MAN Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|---|---|
| Site/Project Name <p style="text-align: center;">Bear Point Mitigation Bank</p> | Application Number <p style="text-align: center;">NA</p> | Assessment Area Name or Number <p style="text-align: center;">Bear_MAN</p> |
| Impact or Mitigation <p style="text-align: center;">Mitigation Bank</p> | Assessment conducted by: <p style="text-align: center;">Erica Hernandez, Kelly Chinnners Reiss</p> | Assessment date: <p style="text-align: center;">7/5/2005</p> |

| | | | | |
|---|--|--|---|--|
| 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) Condition is optimal and fully supports wetland/surface water functions | Moderate(7) Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions | Minimal (4) Minimal level of support of wetland/surface water functions | Not Present (0) Condition is insufficient to provide wetland/surface water functions |
|---|--|--|---|--|

| | |
|--|--|
| .500(6)(a) Location and Landscape Support w/o pres or current with <div style="display: flex; justify-content: space-between; width: 100%;"> 8 </div> | Not much mangrove left or protected in this area. Adjacent to other side of dike on west and east edge by OFW Indian River Lagoon. Thirteen acre St. Lucie County natural area purchased by FCT money on south end. North end is residential. East buffer same community type. Privately owned land on east edge, one lot width homes expected to be developed on A1A. County hopes land closest to the bank will be preserved for mitigation. No real upland support, no natural upland buffer, just a dike. There is not a full range of expected associated habitats. Indian River Lagoon has been known to have water quality degradation problems. There is still exotic vegetation east of the bank. It is believed that a more natural hydrologic regime has helped to keep exotic species out. A1A is not optimal for animal dispersal but there is some natural (though with signs of human disturbance) habitat between the bank and A1A. Provides benefit to down stream function, specifically sea grass beds. This system has flow restrictions and is completely controlled by human structures. |
| .500(6)(b)Water Environment (n/a for uplands) w/o pres or current with <div style="display: flex; justify-content: space-between; width: 100%;"> 8 </div> | Hydrology highly managed and is controlled: for eight months out of the year it runs at 90% of normal capacity and for four months at 80% normal capacity. Aerator pumps are located in the middle of the dike and at the south end. Hydrologic indicators include the presence of red mangroves (<i>Rhizophora mangle</i>) and black mangroves (<i>Avicennia germinans</i>) and prop roots. Fish and birds present and associated with wetlands. Pumps and aerators do cause some turbidity. Minor alteration in flow. Water levels and flow slightly higher and lower than a natural system due to management. Vegetation stratum is appropriate. When moving away from pumps and aerators water becomes clear. Some down trees from hurricane damage probably. |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current with <div style="display: flex; justify-content: space-between; width: 100%;"> 9 </div> | Vegetation is appropriate. Evidence of recruitment. Succession appears normal and vegetation is recovering from freeze of 1989 and hurricanes in 2004. Larger trees have good size cavities. Refugia available. There are some old ditches and linear features still visible but probably do not function as ditches anymore, as the vegetation has grown in around them. Highly managed system will have to be pumped and manipulated to maintain its level of function. Within assessment area no exotic species seen. Water control does not appear to have had any shift in expected community type. Vegetation looks healthy. |

| | |
|---|------|
| Score = sum of above scores/30 (if uplands, divide by 20) | |
| current | with |
| 0.83 | |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Bear_MAN Wetland Rapid Assessment Procedure, page 1

Wetland Rapid Assessment Procedure (WRAP)

All Data Sheets for Existing Conditions. Sheets designed for Mitigation Bank Study - K.C.Reiss. 5/2005

Project Name: Bear_MAN - Bear Point Mitigation Bank

Date: 7/5/2005

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: red mangrove forest - surrounded by berms - water flow
approximately 89-90% of historic flow through (exchange)

Wetland Size: 132 ha (326.6 ac)

FLUCCS Code/Description: 612 Mangrove Swamps

| | |
|------|---------------------------|
| 2.5 | Wildlife Utilization (WU) |
| 3.0 | Wetland Canopy (O/S) |
| NA | Wetland Ground Cover (GC) |
| 2.45 | Habitat Support/Buffer |
| 2.0 | Field Hydrology (HYD) |
| 1.30 | WQ Input & Treatment (WQ) |
| 11.3 | SUM |
| 5 | Count |
| 0.75 | WRAP |

Bear_MAN Wetland Rapid Assessment Procedure, page 2

| | |
|--|----------------------------------|
| 2.5 | Wildlife Utilization (WU) |
| Use by small mammals (i.e. raccoon). Managers have seen alligators and snakes. Visually identified <i>Egretta caerulea</i> (little blue heron), <i>Egretta tricolor</i> (tricolored heron), <i>Bubulcus ibis</i> (cattle egret), <i>Mycteria americana</i> (wood stork), <i>Phalacrocorax floridanus</i> (Florida cormorant), mullet, needle fish, small minnows, mullet had full size/age class distribution, many species of crabs. Adjacent area 13ac county owned property, parcel to E under development. No support from (missing) adjacent hammock forest, some fringe species, scored down because lack of inland support. | |

| | |
|--|-----------------------------|
| 3.0 | Wetland Canopy (O/S) |
| Canopy dominated by <i>Rhizophora mangle</i> (red mangrove). Approximately 50-60% cover. Some recruitment and regeneration. Effected by 2004 hurricane season, trees had lost all leaves. Only a few seedlings and seeds of the trees, but higher flower production for the <i>Avicennia germinans</i> (black mangroves) growing along the edge. | |

| | |
|---|----------------------------------|
| NA | Wetland Ground Cover (GC) |
| Berm hosts weedy species (i.e. <i>Catharanthus roseus</i> - Madagascar periwinkle). Did not see any understory growing under the <i>Rhizophora mangle</i> (red mangrove) canopy, however access was limited to the deep interior. Manager plans to create marsh area to NE in future, not part of this assessment area. | |

| | | | | | |
|---|-------------------------------|----------------|-----------|-------------|-------------|
| 2.5 | Habitat Support/Buffer | | | | |
| S&W has Indian River Lagoon (IRL). N has urban development. E some habitat (slated for development), county trying to purchase adjacent lots for conservation. Berms full of culverts allowing species exchange. Water levels controlled for mosquitoes - so these are missing from the food chain, what effect does this have on the food chain, we do not know. | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | N-urban | 1.0 | 0.20 | 0.2 |
| | | S-IRL | 3.0 | 0.20 | 0.6 |
| | | W-IRL | 3.0 | 0.30 | 0.9 |
| | | E-<300ft | 2.5 | 0.3 | 0.8 |
| | | Total = | | | |

| | |
|---|------------------------------|
| 2.0 | Field Hydrology (HYD) |
| Hydrology adequate for mangrove regeneration. Pneumatic roots (prop roots) show flood levels (though level is controlled). Nearly normal hydroperiod - receives 80-90% of historic flow volume. Controlled gradient from N to S - Indian River Lagoon (IRL) water enters in the south, this water body has historic water quality issues. Has 2 aerators that run 24hrs/7days at a cost of 1 gallon of fuel per hour each - runs while water is being controlled during mosquito season, otherwise free exchange allowed with IRL and no pumps running. | |

1.3 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| W-IRL | 1.5 | 0.30 | 0.5 |
| S-IRL | 1.5 | 0.20 | 0.3 |
| E-lots undev. | 2.0 | 0.30 | 0.6 |
| N-housing | 1.5 | 0.20 | 0.3 |
| LU Total = | | | 1.7 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| W-IRL | 0.0 | 0.30 | 0.0 |
| S-IRL | 0.0 | 0.20 | 0.0 |
| E-lots undev. | 2.5 | 0.30 | 0.8 |
| N-veg. buffer | 1.0 | 0.20 | 0.2 |
| PT Total = | | | 1.0 |

W&S - Indian River Lagoon (IRL) given 1.5 score for recreational lands

E given low volume highway because A1A a busy 2-land road is within 2 house lots away - road has swales.

Appendix B-3. Big Cypress Mitigation Bank



Figure B-3.1. Landscape location of Big Cypress Mitigation Bank (green line). Boundary of the wetland assessment areas BigC_FL A (blue line), BigC_MAR_1 (orange line), and BigC_MAR_2 (yellow line) shown. BigC_MAR_1 (orange line) is in Phase II, Phase II boundary not shown.

(A)



(B)



(C)



Figure B-3.2. Site photo of Big Cypress Mitigation Bank: A) BigC_FLA looking west; B) interior of BigC_MAR_1 looking north; C) interior of southern depression of BigC_MAR_2.

BigC_FLA Uniform Mitigation Assessment Method, page 1

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

| | | | |
|---|--|---|--|
| Site/Project Name Big Cypress Mitigation Bank | | Application Number NA | Assessment Area Name or Number BigC_FLA |
| FLUCCs code 4110 pine flatwoods | Further classification (optional) None | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size ~ 18 acres (~7.3 ha) |
| Basin/Watershed Name/Number Everglades West Coast | Affected Waterbody (Class) unaffected | Special Classification (i.e. OFW, AP, other local/state/federal designation of importance) FWCC priority habitat | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands This type of natural community in this part of Florida would normally sheet flow very slowly from the higher to lower elevations. Elevation changes are very slight and the differences between a marsh, swale or hydric flatwood can be a difference of inches. This site grades from flatwoods into the Big Cypress Preserve. There are marshes on the bank that are probably connected during times of high water. | | | |
| Assessment area description This area in Big Cypress Mitigation Bank has had the most time pass since the initial planting phase in 2001. It was the first to be planted. After failed attempts for planted <i>Pinus elliotii</i> (slash pine) survival the decision was made to plant the pines in bedded rows because the site was too wet for pine sapling survival. Some of the beds are estimated at a foot high, some areas are flatter. Low ground cover diversity. | | | |
| Significant nearby features Big Cypress National Preserve, Fakahatchee Strand State Preserve | Uniqueness (considering the relative rarity in relation to the regional landscape.) Most natural communities in this area have been converted to agricultural uses. Although Wet Flatwoods may have been an abundant biological community of the Coastal Plain at one time, examples with an intact overstory and understory, without exotics, and with the potential for future maintenance by fire are rare. One of the most floristically diverse communities in the SE. Big Cypress preserve does have intact flatwoods that support Florida black bears and Florida panthers but it too is impacted by human use with hunting, roads and off-road vehicles. | | |
| Functions Provide habitat for flora and fauna. Surface and subsurface water storage. Nutrient cycling. Provide essential habitat for rare and endangered wildlife especially large and mid-sized carnivores. | Mitigation for previous permit/other historic use Citrus grove | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Oak toad, cricket frog, chorus frog, black racer, yellow rat snake, diamondback rattlesnake, pygmy rattlesnake, red-shouldered hawk, bobwhite, opossum, cottontail rabbit, cotton rat, cotton mouse, raccoon, striped skunk, bobcat, and white-tailed deer. In addition, many birds, butterflies, frogs, snakes, etc. | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Florida black bear T (<i>Ursus americanus floridanus</i>), Florida panther E (<i>Puma (=Felis) concolor coryi</i>), wood stork E (<i>Mycteria americana</i>), red-cockaded woodpecker E (<i>Picoides borealis</i>), Everglade snail kite E (<i>Rostrhamus sociabilis plumbeus</i>), bald eagle E (<i>Haliaeetus leucocephalus</i>), eastern indigo snake T (<i>Drymarchon corais couperi</i>), gopher tortoise SSC (<i>Gopherus polyphemus</i>), Big Cypress fox squirrel T (<i>Sciurus niger avicennia</i>), Sherman's fox squirrel SSC (<i>Sciurus niger shermani</i>), Bachman's sparrow SSC (<i>Aimophila aestivalis</i>), limpkin SSC (<i>Aramus guarauna</i>), southeastern kestrel T (<i>Falco sparverius paulus</i>), Florida sandhill crane T (<i>Grus canadensis pratensis</i>). | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Small mammal burrows in the beds with large sandy aprons. Heard various birds in the area including boat tailed grackle, red-shouldered hawk, Eastern meadowlark, ground dove. Saw green anole, game trails, triangle spider eggs. | | | |
| Additional relevant factors: | | | |
| Assessment conducted by: Erica Hernandez, Tony Davanzo | | Assessment date(s): 3/21/2006 | |

BigC_FL A Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|---|---|
| Site/Project Name Big Cypress | Application Number NA | Assessment Area Name or Number BigC_FL A |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Erica Hernandez, Tony Davanzo | Assessment date: 3/21/2006 |

| | | | | |
|--|---|--|---|--|
| 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 w/o pres or current <input type="text" value="5"/> with <input type="text"/> | Areas outside the wetland assessment area supports Florida panthers but does not provide the full array of expected habitat support that a natural area would provide for wildlife species in listed Part I. It lacks heterogeneity and appropriate species. Big Cypress Preserve is South of the bank and would provide optimal habitat. There are invasive exotic and undesirable species in the area. There are no major barriers to wildlife movement. There are areas in the landscape in citrus production that have an altered hydrology and act to impede sheet flow in this area. Land use North, East, and West include agricultural uses primarily in citrus that are highly altered and can have a negative impact on the site through habitat loss and fragmentation and possibly other uses such as transportation and fertilizing issues. The preserve to the South of the bank may have some human impacts but is being managed for habitat support of native species. |
| .500(6)(b)Water Environment (n/a for uplands) w/o pres or current <input type="text" value="5"/> with <input type="text"/> | Site visit was conducted during the dry season. Hydric pine flatwoods usually have extreme variability in soil moisture and standing water between the wet and dry seasons. The site was not outside of the realm of expectations for a flatwoods at this time of year. The site was bedded to ensure better survival of planted pines. Some beds have an elevation change of about 1 ft (0.3 m) others have a more subtle variation/slope. This effect may not be optimal for species distribution in the landscape and may encourage species more tolerant of moisture in the troughs and species less tolerant of moisture on the beds. Bedding may also interrupt sheet flow. There were some wetland species present that are indicative of early succession and disturbance and also many upland and facultative species present that may also be indicative of early succession and disturbance. Fauna species present were generalist and not indicative of a wetland; however this may not be completely inappropriate for the dry season in a flatwoods community. |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current <input type="text" value="4"/> with <input type="text"/> | Majority of the plant cover is inappropriate and undesirable in the ground cover. The planted pine species that will comprise the canopy are planted in beds at a density that may not be appropriate for a flatwoods community (the density is much higher than anticipated). There are patches of invasive exotic species including <i>Schinus terebinthifolius</i> (Brazilian pepper) and <i>Urena lobata</i> (Caesarweed) and nuisance species including <i>Typha</i> spp. (cattails) and <i>Ludwigia peruviana</i> (Peruvian primrosewillow). Ground cover is indicative of early succession and has very low diversity for this community type. Land management practices are benefiting the planted <i>Pinus elliotii</i> (slash pine) by establishing beds for their growth and survival and not using prescribed fire in the landscape until pines are at a certain height when they will not be as vulnerable to fire. Prescribed fire could perhaps benefit the ground cover by helping to keep down the exotic species and encourage the seed bank if indeed one is still intact. In its current state the plant community may not improve for a very long time without supplemental planting or a different management strategy. Topographic features are not natural or appropriate and are highly homogenous. The expected microtopography and variation of a flatwood does not exist. |

| |
|--|
| Score = sum of above scores/30 (if uplands, divide by 20) current or w/o pres <input type="text" value="0.47"/> with <input type="text"/> |
|--|

| |
|---|
| If preservation as mitigation, Preservation adjustment factor = Adjusted mitigation delta = |
|---|

| |
|---|
| For impact assessment areas FL = delta x acres = |
|---|

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|---|
| If mitigation Time lag (t-factor) = Risk factor = |
|---|

| |
|--|
| For mitigation assessment areas RFG = delta/(t-factor x risk) = |
|--|

BigC_FLA Wetland Rapid Assessment Procedure, page 1

Wetland Rapid Assessment Procedure (WRAP)

All Data Sheets for Existing Conditions. Sheets designed for Mitigation Bank Study - K.C.Reiss. 5/2005

Project Name: BigC_FLA, Big Cypress Mitigation Bank

Date: 21-Mar-06

Evaluator(s): Tony Davanzo & Erica Hernandez

Wetland Type/Description: Hydric flatwoods. *Pinus elliottii* (slash pine) planted in rows on beds. Low ground diversity. Weedy and early successional species dominate.

Wetland Size: ~ 18 acres (~7.3 ha)

FLUCCS Code/Description: Formally citrus groves now hydric pine flatwoods is the desired community type.

| | |
|------|---------------------------|
| 1.5 | Wildlife Utilization (WU) |
| 1.0 | Wetland Canopy (O/S) |
| 0.5 | Wetland Ground Cover (GC) |
| 1.4 | Habitat Support/Buffer |
| 2.0 | Field Hydrology (HYD) |
| 2.5 | WQ Input & Treatment (WQ) |
| 8.9 | SUM |
| 6 | Count |
| 0.49 | WRAP |

BigC_FLA Wetland Rapid Assessment Procedure, page 2

| | | |
|-----|----------------------------------|--|
| 1.5 | Wildlife Utilization (WU) | Hydric pine flatwoods would not have the same type of wetland dependant species that a wetland with a longer or less variable hydroperiod would have. Small herps would be expected in flatwoods though. The existing species in the hydric pine flatwood in its current state would seem to support generalist species. Human impacts are most evident in the planted rows of <i>Pinus elliottii</i> (slash pine). Natural upland resources with native species are not available immediately adjacent to the wetland assessment area because it is on the property line and next to a citrus grove. The areas of the bank adjacent to the wetland assessment area are also composed of early successional species and some exotic species. |
|-----|----------------------------------|--|

| | | |
|-----|-----------------------------|--|
| 1.0 | Wetland Canopy (O/S) | Midstory is comprised of young planted <i>Pinus elliottii</i> (slash pine). <i>Sabal palmetto</i> (cabbage palm) and <i>Salix caroliniana</i> (coastalplain willow) were also present in the canopy layer. Slash pine was planted in rows in raised beds to ensure survival of the young trees. Young pines look healthy but have been impacted by hurricane winds and some of the trees are leaning. Pines appear to have been planted at a high density for a hydric pine flatwood community type. |
|-----|-----------------------------|--|

| | | |
|-----|----------------------------------|--|
| 0.5 | Wetland Ground Cover (GC) | Species composition for hydric pine flatwood is not optimal. There are more woody shrubs than diversity in forbs or graminoids. Some exotic and nuisance species are present. The planted rows are not optimal for species composition and distribution. |
|-----|----------------------------------|--|

| | | | | | | |
|-----|-------------------------------|---|-------------|----------------|-------------|-------------|
| 1.4 | Habitat Support/Buffer | To the North, South and East of the wetland assessment area is the rest of Big Cypress Mitigation Bank, further South of the mitigation bank is the Big Cypress Preserve. The bank has some undesirable species and some exotic species but will provide some food and cover and is utilized by Florida panthers. This area is a buffer in itself to the preserve. To the West is a citrus grove with some wetlands however their quality is unknown. | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | North | | 1.5 | 0.25 | 0.38 | |
| | South | | 1.5 | 0.25 | 0.38 | |
| | East | | 1.5 | 0.25 | 0.38 | |
| | West | | 1 | 0.25 | 0.25 | |
| | | | | Total = | 1.4 | |

| | | |
|-----|------------------------------|---|
| 2.0 | Field Hydrology (HID) | Bank manager reports that the wetland assessment area is very saturated during the rainy season. Site supports obligate species as well as many facultative species that may be more indicative of an early phase of succession. Bedded rows are not optimal for a natural sheet flow. A series of ditches have been back filled on the bank and hydrology is probably adequate to support this wetland but there may be some external factors. |
|-----|------------------------------|---|

2.5 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| citrus | 2.0 | 0.30 | 0.6 |
| undeveloped area | 3.0 | 0.70 | 2.1 |
| | | | |
| LU Total = | | | 2.7 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| dry detention/ditch | 1.0 | 0.20 | 0.2 |
| undeveloped | 3.0 | 0.70 | 2.1 |
| citrus no treatment | 0.0 | 0.10 | 0.0 |
| PT Total = | | | 2.3 |

BigC_MAR_1 Uniform Mitigation Assessment Method, page 1

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

| | | | | | |
|---|--|---|--|--|--|
| Site/Project Name Big Cypress Mitigation Bank | | Application Number NA | | Assessment Area Name or Number BigC_MAR_1 | |
| FLUCCs code Freshwater marsh 6410 and mixed shrub 6172 | | Further classification (optional) None | | Impact or Mitigation Site? Mitigation Bank | |
| Assessment Area Size ~ 6 acres (~2.4 ha) | | | | | |
| Basin/Watershed Name/Number Everglades West Coast | | Affected Waterbody (Class) Unaffected | | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) FWCC priority habitat | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Small marsh on property line. East side natural pine flatwoods, to the West is the bank. Wetland assessment area is probably connected to other wetland feature during times of high water. Historically area was ditched and drained for citrus cultivation. Hydrology has since been restored with canals returned to grade. | | | | | |
| Assessment area description Marsh has an outer edge of <i>Panicum hemitomon</i> (maidencane) on the West side and a large healthy uneven age stand of <i>Fraxinus caroliniana</i> (Carolina pop ash) on the inside of the maidencane. The interior of the wetland is dominated by <i>Thalia geniculata</i> (alligatorflag), <i>Pontederia cordata</i> (pickerelweed), <i>Typha spp.</i> (cattails), and <i>Salix caroliniana</i> (coastalplain willow). There is standing water in the wetland interior. | | | | | |
| Significant nearby features Big Cypress National Preserve shares the South fence line. Another Big Cypress Bank Mitigation Bank parcel is West of this phase separated by a citrus grove. | | Uniqueness (considering the relative rarity in relation to the regional landscape.) This bank is a buffer to Big Cypress Preserve, Florida panthers breed on the bank. This wetland is not indicative of natural communities in the area due to alterations caused by anthropogenic influences. | | | |
| Functions Provides water storage by holding excess water and slowly releasing it into the water table. Enhances water quality by absorbing nutrients from the water. Important breeding and forage habitat. | | Mitigation for previous permit/other historic use Land was converted to a citrus grove in the early 1980s. | | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) flatwoods salamander, mole salamander, tiger salamander, dwarf salamander, striped newt, oak toad, cricket frog, pinewoods treefrog, barking treefrog, squirrel treefrog, little grass frog, southern chorus frog, ornate chorus frog, narrowmouth toad, eastern spadefoot toad, gopher frog, white ibis, wood stork, sandhill crane | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Rana capito</i> (SSC)(gopher frog), <i>Eudocimus albus</i> (SSC)(white ibis), <i>Mycteria americana</i> (E)(wood stork), <i>Grus canadensis pratensis</i> (T)(sandhill crane), <i>Aramus quarauna</i> (SSC)(limpkin) | | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Box turtle, crawfish chimneys, barred owl, minnows, deer tracks, deer scat, spiders, dragon flies, boat tailed grackles, cardinals, bluegray gnatcatcher, red shouldered hawk, black vulture, common yellow throat, apple snail shells, green tree frog, land snail, crickets | | | | | |
| Additional relevant factors: None | | | | | |
| Assessment conducted by: Erica Hernandez & Tony Davanzo | | Assessment date(s): 3/21/2006 | | | |

BigC_MAR_1 Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|---|--|
| Site/Project Name Big Cypress Mitigation Bank | Application Number NA | Assessment Area Name or Number BigC_MAR_1 |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Erica Hernandez, Tony Davanzo | Assessment date: 3/21/2006 |

| | | | | |
|--|---|--|---|--|
| 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 w/o pres or current <input type="checkbox"/> 7 <input type="checkbox"/> with <input type="checkbox"/> | Certain wildlife populations may be limited due to a reduced availability of habitats needed to fulfill their life history requirements because the bank is currently in a state of early succession and does not function like a hydric pine flatwoods. East of the wetland assessment area is an intact flatwoods community. There are exotic species in the landscape, and the bank managers are working to control them on the bank. This area of South Florida will probably always be under a threat of exotic species and will always require monitoring and management. This bank is connected to Big Cypress Preserve, there are no barriers to wildlife access, this bank supports large predators such as <i>Ursus americanus floridanus</i> (Florida black bear) and <i>Puma concolor coryi</i> (Florida panther). There are no hydrologic impediments on this wetland in the landscape. This bank provides a buffer to a piece of the North boundary of Big Cypress Preserve, there are citrus groves in the landscape and these may have localized affects to water quality and lost habitat. |
| .500(6)(b)Water Environment (n/a for uplands) w/o pres or current <input type="checkbox"/> 8 <input type="checkbox"/> with <input type="checkbox"/> | Water levels appear appropriate for seasonality. There is standing water in the deepest interior of the wetland assessment area. Water stain lines and elevated lichen lines appear consistent on the woody vegetation. Soils were mucky and inundated. There is no evidence of soil erosion. There is no indication of atypical fire severity as a result of excessive dryness. Vegetation was more woody then expected but species were appropriate for a wetland. There is no upland species encroachment. No signs of hydrologic stress or soil subsidence. Animal species consistent with a marsh were detected at the wetland assessment area including fish and amphibians. Domination of <i>Salix caroliniana</i> (coastalplain willow) and <i>Typha</i> spp. (cattails) that may indicate anthropogenic influences that have affected water quality or the water regimes. The hydrology for this area was restored in 2001 by back filling ditches associated with the citrus grove. Observed standing water was cool, clear and tannic. |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current <input type="checkbox"/> 6 <input type="checkbox"/> with <input type="checkbox"/> | Wetland has more woody vegetation than expected, which may be an indication of historic anthropogenic influences including altered hydrology and fire suppression. Species in the canopy, mid-story, and ground cover are all wetland dependant species. One mid-sized <i>Schinus terebinthifolius</i> (Brazilian pepper) was found on an open disturbed edge of the wetland assessment area along with some <i>Ludwigia peruviana</i> (Peruvian primrosewillow) and vine species. The exotic species <i>Salvinia minima</i> (water spangles) was found on muck areas where the water had receded. There is evidence of normal regeneration and recruitment. Many of the flora species present were in flower or fruit. Age and size distribution appeared normal. There was no evidence of excessive coarse woody debris. Plants are in good condition. Topographic features are normal for the wetland assessment area. Aquatic plant growth looked healthy. |

| |
|---|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current or w/o pres <input type="checkbox"/> 0.7 <input type="checkbox"/> with <input type="checkbox"/> |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

BigC_MAR_1 Wetland Rapid Assessment Procedure, page 1

Wetland Rapid Assessment Procedure (WRAP)

All Data Sheets for Existing Conditions. Sheets designed for Mitigation Bank Study - K.C.Reiss. 5/2005

Project Name: BigC_MAR_1 Big Cypress Mitigation Bank

Date: 21-Mar-06

Evaluator(s): Tony Davanzo & Erica Hernandez

Wetland Type/Description: Small marsh on property line. East side natural pine flatwoods, to the West is the bank. Wetland assessment area is probably connected to other wetland feature during times of high water. Marsh is very woody probably due to lack of fire and previously altered hydrology.

Wetland Size: ~ 6 acres (~2.4 ha)

FLUCCS Code/Description: Freshwater marsh 6410 and mixed shrub 6172

| | |
|-------|---------------------------|
| 2.0 | Wildlife Utilization (WU) |
| 2.0 | Wetland Canopy (O/S) |
| 2.0 | Wetland Ground Cover (GC) |
| 2.375 | Habitat Support/Buffer |
| 3.0 | Field Hydrology (HYD) |
| 3.0 | WQ Input & Treatment (WQ) |
| 14.4 | SUM |
| 6 | Count |
| 0.80 | WRAP |

BigC_MAR_1 Wetland Rapid Assessment Procedure, page 2

| | | |
|-----|----------------------------------|---|
| 2.0 | Wildlife Utilization (WU) | Evidence of wildlife utilization by small and medium sized reptiles and abundant macroinvertebrates, amphibians, and forage fish. Abundant birds in wetland assessment area. Native hydric flatwoods East of the wetland assessment area are in need of prescribed fire but provide good upland food sources. Upland forested oak and palm hammock on wetland assessment area edge. Some what weedy and overgrown but provides cover and forage areas. Patchy upland hammocks on the bank less than 0.5 miles from wetland assessment area. Immediately adjacent land on bank has been planted in <i>Pinus elliottii</i> (slash pine) to restore to hydric pine flatwoods after historically being converted to citrus groves. Ground cover is mostly early successional species and dominated by <i>Panicum repens</i> (torpedo grass) and <i>Andropogon</i> spp. (bluestem). Swamp buggy tracks into wetland has caused some ground disturbance on the wetland assessment area ecotone. There is abundant cover inside the wetland assessment area but woody vegetation is not characteristic for this type of marsh wetland type in a flatwoods mosaic, if prescribed fire was used in the landscape woody species would probably decrease. This wetland has probably benefited the most from hydrologic restoration on the bank which back filled drainage ditches. |
|-----|----------------------------------|---|

| | | |
|-----|-----------------------------|---|
| 2.0 | Wetland Canopy (O/S) | Healthy live canopy, uneven age distribution ranging from mature to very young saplings. This wetland may be dominated by woody vegetation (<i>Fraxinus caroliniana</i> (Carolina pop ash) and <i>Salix caroliniana</i> (coastalplain willow)) because of historic fire suppression and hydrologic alterations. The overstory is providing good habitat support. There are few snags or den trees. One medium sized <i>Schinus terebinthifolius</i> (Brazilian pepper) was found in an open disturbed area on the edge of the wetland next to the upland oak and palm hammock. There is also some <i>Ludwigia peruviana</i> (Peruvian primrosewillow) growing here. This area was overgrown with vines. May have been disturbed from 2004/2005 hurricane activity. |
|-----|-----------------------------|---|

| | | |
|-----|----------------------------------|--|
| 2.0 | Wetland Ground Cover (GC) | Large stand of <i>Typha</i> spp. (cattails) in the wetland assessment area center. Some <i>Ludwigia peruviana</i> (Peruvian primrosewillow) in a disturbed edge. The exotic species <i>Salvinia minima</i> (water spangles) found on muck under the <i>Fraxinus caroliniana</i> (Carolina pop ash). Native ground cover looks very healthy. Many herbaceous species are flowering or fruiting. Mats of <i>Utricularia</i> spp. (bladderwort) under <i>Fraxinus caroliniana</i> (Carolina pop ash) edge where standing water has drawn down exposing muck. Ground looks undisturbed in the interior but there are the swamp buggy tracks on the wetland assessment area ecotone edge. The hydrologic restoration probably benefited this wetland however prescribed burns are not planned until planted pine on the bank is older and taller. |
|-----|----------------------------------|--|

| | | | | | | |
|-----|-------------------------------|---|------------------------|-----------|----------------|-------------|
| 2.4 | Habitat Support/Buffer | Buffer around wetland assessment area is greater than 300 ft (~100 m) in width. Natural flatwoods with some human disturbance to the East. To the North is a larger marsh within the bank. West and South are areas of the bank that managers are trying to restore back to hydric flatwoods. There are some undesirable species in the landscape, and some exotics including <i>Schinus terebinthifolius</i> (Brazilian pepper), <i>Panicum repens</i> (torpedograss), and <i>Urena lobata</i> (Caesarweed). The area supports wildlife corridors and has no impediments to wildlife movement. This area supports the Florida panther. | | | | |
| | | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | | North large marsh | 2.5 | 0.25 | 0.63 |
| | | | East Natural flatwds | 2.5 | 0.25 | 0.63 |
| | | | West restoration area | 2 | 0.25 | 0.50 |
| | | | South restoration area | 2.5 | 0.25 | 0.63 |
| | | | | | | |
| | | | | | Total = | 2.4 |

| | | |
|-----|------------------------------|---|
| 3.0 | Field Hydrology (HID) | Hydrologic regime is adequate to maintain a viable wetland. Plants look healthy with no stress. There is no encroachment of upland plant species. There are no canals or ditches remaining in the area, all ditches have been restored back to natural grade. Soils are mucky and organic. The wetland appears to exhibit a natural hydroperiod. The bank was in citrus, no baseline or current data exists for water quality of the wetland assessment area pre- or post- restoration. |
|-----|------------------------------|---|

3.0 **WQ Input & Treatment (WQ)***
 *The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

| LANDUSE CATEGORY (LU) | | | |
|-----------------------|-----------|-------------------|-------------|
| Land Use Category | (Score) x | (% of Area) | = Sub Total |
| natural undev. Are | 3.0 | 1.00 | 3.0 |
| | | | |
| | | | |
| | | LU Total = | 3.0 |

| PRETREATMENT CATEGORY (PT) | | | |
|----------------------------|-----------|-------------------|-------------|
| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
| natural undeveloped | 3.0 | 1.00 | 3.0 |
| | | | |
| | | | |
| | | PT Total = | 3.0 |

BigC_MAR_2 Uniform Mitigation Assessment Method, page 1

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

| | | | |
|--|---|--|--|
| Site/Project Name Big Cypress Mitigation Bank | | Application Number NA | Assessment Area Name or Number BigC_MAR_2 |
| FLUCCs code 6410 freshwater marsh, graminoid prairie marsh | Further classification (optional) None | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size ~6.5 acres (~2.6 ha) |
| Basin/Watershed Name/Number Everglades West Coast | Affected Waterbody (Class) unaffected | Special Classification (i.e. OFW, AP, other local/state/federal designation of importance) FWCC priority habitat | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Two shallow depressions connected through a swale and connected to a series of other shallow depressions and basin marshes that drain into Big Cypress Preserve. | | | |
| Assessment area description Two shallow depressions connected through a swale, wetland assessment area is dominated by <i>Cladium jamaicense</i> (sawgrass), <i>Typha</i> spp. (cattails), <i>Salix caroliniana</i> (coastalplain willow), and <i>Thalia geniculata</i> (alligatorflag). Low species diversity but no exotic species. This wetland is benefiting from hydrologic restoration done on the bank. Ditch feature left on wetland assessment area edge probably to provide habitat for wading bird foraging (this has been done in other areas on the bank). Surrounded by early successional restoration areas. | | | |
| Significant nearby features Big Cypress National Preserve | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Much of the land north of Big Cypress Preserve has been converted for agricultural uses. | |
| Functions Provides water storage by holding excess water and slowly releasing it into the water table. Enhances water quality by absorbing nutrients from the water. Important breeding and forage habitat. | | Mitigation for previous permit/other historic use Bank was converted to citrus production in the 1980s. | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) flatwoods salamander, mole salamander, tiger salamander, dwarf salamander, striped newt, oak toad, cricket frog, pinewoods treefrog, barking treefrog, squirrel treefrog, little grass frog, southern chorus frog, ornate chorus frog, narrowmouth toad, eastern spadefoot toad, gopher frog, white ibis, wood stork, sandhill crane | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Rana capito</i> (SSC) (gopher frog), <i>Eudocimus albus</i> (SSC) (white ibis), <i>Mycteria americana</i> (E) (wood stork), <i>Grus canadensis pratensis</i> (T) (sandhill crane), <i>Aramus quarauna</i> (SSC) (limpkin) | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Rabbit tracks, deer tracks and scat, raccoon tracks, possible otter tracks. Game trails, crayfish chimney, dead blue heron, leopard frog, garter snakes, minnows, apple snail shells | | | |
| Additional relevant factors: None | | | |
| Assessment conducted by: Erica Hernandez & Tony Davanzo | | Assessment date(s): 3/21/2006 | |

BigC_MAR_2 Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|---|--|
| Site/Project Name Big Cypress Mitigation Bank | Application Number NA | Assessment Area Name or Number BigC_MAR_2 |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Erica Hernandez, Tony Davanzo | Assessment date: 3/21/2006 |

| |
|---|
| 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 | Certain wildlife populations may be limited due to a reduced availability of habitats needed to fulfill their life history requirements because the bank is currently in a state of early succession and does not function like a hydric pine flatwoods. There are exotic species in the landscape, and the bank managers are working to control them on the bank. This area of South Florida will probably always be under threat of exotic species and will always require monitoring and management. This bank is connected to Big Cypress Preserve, there are no barriers to wildlife access, this bank supports large predators such as <i>Ursus americanus floridanus</i> (Florida black bear) and <i>Puma concolor coryi</i> (Florida panther). There are no hydrologic impediments on this wetland in the bank. This bank provides a buffer to a piece of the north boundary of Big Cypress Preserve, there are citrus groves in the landscape and these may have localized affects to water quality, hydrology, and lost habitat. The wetland assessment area is connected to other depressions and basin marshes that drain into Big Cypress Preserve, there are no impediments to these connections. |
| w/o pres or current 7 | with |
| .500(6)(b)Water Environment (n/a for uplands) | Wetland vegetation consists of obligate (OBL) and facultative wetland (FACW) species. Some herbaceous species are growing out from the wetland and into the ecotone that would have graded into a natural hydric flatwoods. No standing water was expected for the seasonality of the site visit (late March). Soils are mucky in the wetland interior. Other consistent hydrologic indicators include crayfish chimneys and algal mats. No inappropriate fire indicators were noted. Historically the wetland assessment area was impacted by hydrologic alterations which may have allowed <i>Typha</i> spp. (cattails) and <i>Salix caroliniana</i> (coastalplain willow) to dominate the wetland, but these alterations have since been restored to natural hydrologic conditions. |
| w/o pres or current 8 | with |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community | Two of the four dominant species, <i>Typha</i> spp. (cattails) and <i>Salix caroliniana</i> (coastalplain willow), may be a temporary indicator of past disturbances and anthropogenic influences on the wetland assessment area. Other species present, although low in diversity, are expected and desirable for the community type. Regeneration appears normal, open areas in the groundcover are covered in algal mats. This area is probably covered in standing water during the rainy season. Plant growth appears healthy. Topographic features appear normal, impacts from swamp buggy use do not appear to have caused permanent damage. Land management has benefited the area by restoring the hydrology. Prescribed fire would be useful in improving the species composition in the wetland assessment area. |
| w/o pres or current 7 | with |

| | |
|---|------|
| Score = sum of above scores/30 (if uplands, divide by 20) | |
| current or w/o pres 0.73 | with |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Form 62-345.900(2), F.A.C. [effective date 02-04-2004]

BigC_MAR_2 Wetland Rapid Assessment Procedure, page 1

Wetland Rapid Assessment Procedure (WRAP)

All Data Sheets for Existing Conditions. Sheets designed for Mitigation Bank Study - K.C.Reiss. 5/2005

Project Name: BigC_MAR_2, Big Cypress Mitigation Bank

Date: 3/21/2006

Evaluator(s): Tony Davanzo & Erica Hernandez

Wetland Type/Description: Two shallow depressions connected through a swale and connected to a series of other shallow depressions and basin marshes that drain into Big Cypress Preserve.

Wetland Size: ~6.5 acres (~2.6 ha)

FLUCCS Code/Description: 6410 - Freshwater marshes, graminoid prairie marsh

| | |
|-------|---------------------------|
| 2.0 | Wildlife Utilization (WU) |
| 2.5 | Wetland Canopy (O/S) |
| 2.0 | Wetland Ground Cover (GC) |
| 2.125 | Habitat Support/Buffer |
| 2.5 | Field Hydrology (HYD) |
| 3.0 | WQ Input & Treatment (WQ) |
| 14.1 | SUM |
| 6 | Count |
| 0.78 | WRAP |

BigC_MAR_2 Wetland Rapid Assessment Procedure, page 2

| | |
|--|----------------------------------|
| 2.0 | Wildlife Utilization (WU) |
| <p>No standing water in wetland interiors, but puddles standing in ditch had some small fish. Wetland has habitat for medium sized reptiles and birds. Scat and tracks were seen of deer, raccoon, and probably an otter. Florida panthers utilize the bank but may not utilize this community type regularly. Feathers of a great blue heron found in the wetland assessment area, suggesting a large or medium sized mammal or reptile may have preyed upon it. Flatwoods community types are dominate in the bank but in their current state are not optimal for providing habitat. There are hammocks in the landscape. Direct human disturbance evident through swamp buggy tracks into wetland probably present from accessing wetland for <i>Typha</i> spp. (cattails) treatment. Crayfish burrows found.</p> | |

| | |
|--|-----------------------------|
| 2.5 | Wetland Canopy (O/S) |
| <p>The only canopy species present in the wetland are clumps of <i>Salix caroliniana</i> (coastalplain willow). Willows may indicate fire suppression and previous disturbance to the hydrology in the system. The trees are healthy and regenerating. Woody debris was not detected. These trees do provide perches and shelter for roosting birds.</p> | |

| | |
|---|----------------------------------|
| 2.0 | Wetland Ground Cover (GC) |
| <p><i>Typha</i> spp. (cattails) is present but at less then 25% cover. Some human induced impacts caused by swamp buggy usage. Species present are indicative of this community type and desirable.</p> | |

| 2.1 | Habitat Support/Buffer | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|-------------|-------------|-------------|-------------|--------------------------|---|------|------|-------------------------|---|------|------|-------------------------|---|------|------|--------------------------------------|-----|------|------|----------------|--|--|------------|
| <p>The wetland assessment area is nestled in the interior of the bank. There is a greater than a 300 ft (100 m) buffer but vegetation is dominated by early successional and weedy species with some patches of exotic species. Just south of the wetland assessment area is a more intact wetland drainage system that flows into Big Cypress preserve where there are extensive intact natural communities.</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Buffer Type</th> <th style="width: 10%;">(Score) x</th> <th style="width: 10%;">(% of Area)</th> <th style="width: 10%;">= Sub Total</th> </tr> </thead> <tbody> <tr> <td>North - restoration area</td> <td style="text-align: center;">2</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.50</td> </tr> <tr> <td>West - restoration area</td> <td style="text-align: center;">2</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.50</td> </tr> <tr> <td>East - restoration area</td> <td style="text-align: center;">2</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.50</td> </tr> <tr> <td>South- restoration area and preserve</td> <td style="text-align: center;">2.5</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.63</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total =</td> <td style="text-align: center;">2.1</td> </tr> </tbody> </table> | Buffer Type | (Score) x | (% of Area) | = Sub Total | North - restoration area | 2 | 0.25 | 0.50 | West - restoration area | 2 | 0.25 | 0.50 | East - restoration area | 2 | 0.25 | 0.50 | South- restoration area and preserve | 2.5 | 0.25 | 0.63 | Total = | | | 2.1 |
| Buffer Type | (Score) x | (% of Area) | = Sub Total | | | | | | | | | | | | | | | | | | | | | | |
| North - restoration area | 2 | 0.25 | 0.50 | | | | | | | | | | | | | | | | | | | | | | |
| West - restoration area | 2 | 0.25 | 0.50 | | | | | | | | | | | | | | | | | | | | | | |
| East - restoration area | 2 | 0.25 | 0.50 | | | | | | | | | | | | | | | | | | | | | | |
| South- restoration area and preserve | 2.5 | 0.25 | 0.63 | | | | | | | | | | | | | | | | | | | | | | |
| Total = | | | 2.1 | | | | | | | | | | | | | | | | | | | | | | |

| | |
|--|------------------------------|
| 2.5 | Field Hydrology (HID) |
| <p>Flora species present are indicative of consistent wetland hydrology. Other hydrologic indicators include a mucky soil in the wetland interiors and the presence of crayfish chimneys. Algal mats are also consistent with an adequate wetland hydrology. There could be slight impacts in the reduction of sheet flow into this wetland because of the ditch on the wetland edge however the hydrology appears to be more than adequate to maintain this wetland system.</p> | |

| | |
|--|---------------------------------------|
| 3.0 | WQ Input & Treatment (WQ)* |
| <p><i>*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.</i></p> | |

| LANDUSE CATEGORY (LU) | | | |
|-----------------------|-----------|-------------|-------------|
| Land Use Category | (Score) x | (% of Area) | = Sub Total |
| undeveloped | 3.0 | 1.00 | 3.0 |
| LU Total = | | | 3.0 |

| PRETREATMENT CATEGORY (PT) | | | |
|----------------------------|-----------|-------------|-------------|
| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
| undeveloped | 3.0 | 1.00 | 3.0 |
| PT Total = | | | 3.0 |

Appendix B-4. Bluefield Ranch Mitigation Bank



Figure B-4.1. Landscape location of Bluefield Ranch Mitigation Bank (green line). Boundary of the wetland assessment areas Blue_BOT (blue line), Blue_FLA (orange line), and Blue_MAR (yellow line) shown.

(A)



(B)



(C)



Figure B-4.2. Site photo of Bluefield Ranch Mitigation Bank: A) Blue_BOT interior with treated and re-sprouting Japanese climbing fern (*Lygodium japonicum*); B) groundcover in Blue_FLA; C) looking west across Blue_MAR, note there are shrubs in center of marsh.

. Blue_BOT Uniform Mitigation Assessment Method, page 1

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

| | | | |
|---|---|---|--|
| Site/Project Name Bluefield Mitigation Bank | | Application Number NA | Assessment Area Name or Number Blue_BOT |
| FLUCCs code 1995 SFWMD 1650 Wetland Hardwood Forests, Stream and Lake Swamps (Bottomland) | Further classification (optional) NA | Impact or Mitigation Site? Mitigation bank | Assessment Area Size ~64 ac (26 ha) |
| Basin/Watershed Name/Number HUC Taylor Creek | Affected Waterbody (Class) NA | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) FWCC priority habitat and FNAI bird rookery, important cultural resources - Fort from Seminole Indian Wars | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands This wetland assessment area is connected to a series of sloughs, creeks, and bottomland hardwood swamps that drain into the bank from the north. These areas are in rural and agricultural areas. In the bank the surrounding unimproved and improved pastures are being restored back to hydric pine flatwoods, and some of these areas sheet flow into the assessment area. The quad map calls the drainage system Van Sweuringen Creek which connects to waterways that eventually flow into Lake Okeechobee to the west. | | | |
| Assessment area description Linear forested wetland system with a slough like drainage pattern that flows into Lake Okeechobee. Some areas are more open and shrubby than forested because of impacts from the exotic species Japanese climbing fern (<i>Lygodium japonicum</i>) and the resulting treatment to remove the fern as well as impacts from regional hurricanes in 2004 and 2005. The system still has a forested canopy. Some areas are not much wider than 100 meters while others spread out into a larger bottomland hardwood swamp. Species composition across the assessment area was consistent. See notes for species list. | | | |
| Significant nearby features St. Lucie County Bluefield Ranch Natural Area, Orlando Ridge, Allapattah Flats, Dupuis Reserve, Corbett Wildlife Area, Jones/Hungryland W.E.A., within the "Western Corridor" | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Help maintains water quality integrity for Lake Okeechobee. This feature is in a landscape that has been impacted by citrus cultivation, cattle, and other agricultural uses. Although it has experienced some disturbances it is relatively intact and has nice species composition which is rare for this area. | |
| Functions This natural forested area is extremely important for water retention and storage especially because of restoration issues for the greater Everglades ecosystem tied back to water storage in Lake Okeechobee. Nutrient cycling. Provides habitat for native flora and fauna. | | Mitigation for previous permit/other historic use Historically grazed by cattle. Based on the age structure of the trees this area probably was harvested for timber at some time in the past. Many of the bays look to be about the same age although they are now mature. There are indications of older larger trees that were not cut. | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Marbled salamander, mole salamander, three-lined salamander, slimy salamander, five-lined skink, ringneck snake, gray rat snake, eastern king snake, cottonmouth, wood duck, red-tailed hawk, turkey, yellow-billed cuckoo, screech-owl, great-horned owl, ruby-throated hummingbird, acadian flycatcher, pileated woodpecker, hermit thrush, cedar waxwing, yellow-throated warbler, opossum, gray squirrel, flying squirrel, raccoon, mink, gray fox, bobcat, and white-tailed deer. | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Florida black bear T (<i>Ursus americanus floridanus</i>), Florida panther E (<i>Puma (=Felis) concolor coryi</i>), wood stork E (<i>Mycteria americana</i>), Limpkin SSC (<i>Aramus guarauna</i>), little blue heron SSC (<i>Egretta caerulea</i>), snowy egret SSC (<i>Egretta thula</i>), tricolored heron SSC (<i>Egretta tricolor</i>), and white ibis SSC (<i>Eudocimus albus</i>). | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): White eyed vireo, numerous insects including gnats and swarming bees, black vulture, various small and medium sized mammal and bird tracks in muck, small fish, little grass frog, leopard frog, kingfisher, great crested flycatcher, silver spotted skipper, tiger swallowtail, and pileated woodpecker. | | | |
| Additional relevant factors: West side of the assessment area has not burned yet. Presence and resprouting of Japanese climbing fern (<i>Lygodium japonicum</i>) is patchy. | | | |
| Assessment conducted by: Erica Hernandez, Tony Davanzo | | Assessment date(s): 22-Mar-06 | |

Blue_BOT Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|---|--|
| Site/Project Name Bluefield Mitigation Bank | Application Number NA | Assessment Area Name or Number Blue_BOT |
| Impact or Mitigation Mitigation bank | Assessment conducted by: Erica Hernandez, Tony Davanzo | Assessment date: 22-Mar-06 |

| |
|---|
| 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 | Habitats immediately outside the assessment area are in different stages of being restored from improved and unimproved pasture back to hydric pine flatwoods, marshes, scrub, and sandhill communities. There is public land east of the bank and private ranches and agricultural lands outside the bank. These areas will provide habitat for most species, but the area needs more time to reach full functional capacity for providing habitat. There are some exotic species in the vicinity, on the bank they are being monitored and treated. There are no noted barriers to wildlife movement. Downstream benefits are controlled because this drainage area connects to Lake Okeechobee but also probably greatly benefits from this intact wetland systems capacity for water storage. The conversion of land outside the bank to pasture and citrus groves is not optimal habitat support for native wildlife but may not be as intense as other types of development. Downstream habitats derive significant benefits from this assessment area and would suffer greatly if discharges from this system were altered. | |
| | w/o pres or current 7 | with |

| | | |
|---|---|------|
| .500(6)(b)Water Environment (n/a for uplands) | Water levels and flow appear appropriate for the season and weather. Water level indicators including loop roots, adventitious roots, buttressing trunks, the presence of muck and facultative wetland and obligate wetland plants are all consistent with expected hydrologic conditions. Soil moisture was appropriate, there is no evidence of subsidence or desiccation. No problems with soil erosion or inappropriate deposition patterns. No atypical fire history. Vegetation zonation is normal. Fish were present in areas of standing water as were some birds associated with water such as the kingfisher. Some frogs were also seen. There were some patches of cattails (<i>Typha</i> spp.) and Peruvian primrosewillow (<i>Ludwigia peruviana</i>), but they were not dominant and may be more of an indication of disturbance to the wetland canopy and not an altered or disturbed hydrology. Direct standing water did not exhibit characteristics of water quality degradation. There may be some upstream effects to this system in the agricultural areas. This wetland has probably benefited by installation of additional culverts to connect the system under dirt roads on the bank and the installation of a bridge. Other hydrologic work on the bank to remove ditches for other wetlands has probably also benefited this system by providing a more natural hydroperiod in the landscape. Mortality of trees appears to be an indication of problems with the hydrology. | |
| | w/o pres or current 8 | with |

| | | |
|---|---|------|
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community | Majority of the plant cover in the groundcover, mid-story, and canopy is desirable. There are still patches and some resprouting of Japanese climbing fern (<i>Lygodium japonicum</i>), but it is being monitored and managed for removal; cover could not be characterized as minimal, but is greatly reduced from the mass infestation from several years ago. There is evidence of natural regeneration of some tree species especially the bays. Many shrubs, trees, and herbaceous species were in flower or fruit. There is no indication of a permanent deviation from normal succession and mortality patterns even though there have been temporary deviations due to exotic species and hurricanes. Land management practices are appropriate and will continue to benefit and improve the existing conditions of this wetland. There are many examples of refugia in this area including hummocks, creek channels, and ponds. Dens and cavities are optimal in some of the older mature trees, but there is an excess of woody debris due to hurricanes and exotic species disturbances. Groundcover is probably benefiting from the open canopy and looks very healthy. Trees look like they are recovering from the disturbances they have experienced, but it may be some time before the functional capacity of a closed canopy bottomland hardwood returns. | |
| | w/o pres or current 6 | with |

| | |
|---|------|
| Score = sum of above scores/30 (if uplands, divide by 20) | |
| current or w/o pres 0.70 | with |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Blue_BOT Wetland Rapid Assessment Procedure, page 1

Wetland Rapid Assessment Procedure (WRAP)

All Data Sheets for Existing Conditions. Sheets designed for Mitigation Bank Study - K.C.Reiss. 5/2005

Project Name: Blue_BOT, Bluefield Ranch Mitigation Bank

Date: 22-Mar-06

Evaluator(s): Tony Davanzo & Erica Hernandez

Wetland Type/Description: Forested and shrubby open slough like drainage system drains to Lake Okeechobee, has experienced disturbances from hurricanes and exotic species. Was infested with Japanese climbing fern (*Lygodium japonicum*).

Wetland Size: ~ 64 acres (26 ha)

FLUCCS Code/Description: 1995 SFWMD 1650 Wetland Hardwood Forests, Stream and Lake Swamps (Bottomland)

| | |
|------|---------------------------|
| 2.0 | Wildlife Utilization (WU) |
| 1.5 | Wetland Canopy (O/S) |
| 2.0 | Wetland Ground Cover (GC) |
| 2.3 | Habitat Support/Buffer |
| 2.5 | Field Hydrology (HYD) |
| 1.7 | WQ Input & Treatment (WQ) |
| 12.0 | SUM |
| 6 | Count |
| 0.67 | WRAP |

Blue_BOT Wetland Rapid Assessment Procedure, page 2

| | |
|-----|---|
| 2.0 | <p>Wildlife Utilization (WU)</p> <p>Small and medium sized mammal and bird tracks seen in muck. Small fish found where there was standing water, two frogs also seen. Some migrant birds seen and heard. Probably a good stop over for migrants. Lots of insects. Adequate adjacent food sources as the surrounding area is in different phases of restoration. Human disturbance is most evident from the intense effort to remove Japanese climbing fern (<i>Lygodium japonicum</i>) from the wetland system, a process that began in 2001. The treatment is moving into a maintenance phase now. There is abundant cover and habitat. Some areas are overgrown with muscadine (<i>Vitis</i> spp.) and have a lot of woody debris, both from human disturbance and even more so from hurricane activity in 2004 and 2005. Removing the Japanese climbing fern in combination with the hurricanes has probably greatly increased light penetration into this system and is encouraging ground cover and native vine growth.</p> |
|-----|---|

| | |
|-----|---|
| 1.5 | <p>Wetland Canopy (O/S)</p> <p>Japanese climbing fern (<i>Lygodium japonicum</i>) is still present and is being treated (less than 25% cover). Historically this exotic species has caused a lot of damage to this system. Canopy has also suffered damage from hurricane activity. There is a high abundance of snag and den trees. Living trees look healthy, some are mature and very large. There is some evidence of natural recruitment of the bay trees and other flowering shrubs. Red maple (<i>Acer rubrum</i>) seedlings were seen in some areas. Overstory species are desirable tree species. Canopy is very open. The habitat support provided by the canopy should improve with time.</p> |
|-----|---|

| | |
|-----|---|
| 2.0 | <p>Wetland Ground Cover (GC)</p> <p>Less than 25% exotic species present. Japanese climbing fern (<i>Lygodium japonicum</i>), Peruvian primrosewillow (<i>Ludwigia peruviana</i>), and cattail (<i>Typha</i> spp.) are all being monitored and treated. Slight impacts to ground cover from equipment access to system for exotic species treatment. Native species present are desirable wetland species. Ground cover looks very healthy. Increased light penetration to the system has probably diversified the ground cover.</p> |
|-----|---|

| 2.3 | <p>Habitat Support/Buffer</p> <p>North of wetland assessment area is a larger connected drainage system and series of bottomland swamps. These areas are surrounded by rural and agricultural areas. Land immediately north of the assessment area is inside the bank and is in different phases of restoration and is a greater than 300 meter buffer. Various pasture grasses may still exist in some areas but are being restored back to natural areas. East and south of the assessment area are various upland and wetland habitats and some remnant pasture that is under restoration, these areas are greater than 300 meters wide. North and south of the assessment area still has some remnant patches of Japanese climbing fern that are being treated. Upper west side of assessment area is also buffered by the bank and is being restored but will have pasture grasses. The lower west side is adjacent to an improved pasture in private ownership and is also greater than 300 meters wide.</p> | <table border="1" style="width: 100%;"> <thead> <tr> <th>Buffer Type</th> <th>(Score) x</th> <th>(% of Area)</th> <th>= Sub Total</th> </tr> </thead> <tbody> <tr> <td>North</td> <td>2.0</td> <td>0.13</td> <td>0.26</td> </tr> <tr> <td>East</td> <td>2.5</td> <td>0.38</td> <td>0.95</td> </tr> <tr> <td>South</td> <td>2.0</td> <td>0.12</td> <td>0.24</td> </tr> <tr> <td>West upper</td> <td>2.5</td> <td>0.15</td> <td>0.38</td> </tr> <tr> <td>West lower</td> <td>2.0</td> <td>0.22</td> <td>0.44</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total =</td> <td>2.3</td> </tr> </tbody> </table> | Buffer Type | (Score) x | (% of Area) | = Sub Total | North | 2.0 | 0.13 | 0.26 | East | 2.5 | 0.38 | 0.95 | South | 2.0 | 0.12 | 0.24 | West upper | 2.5 | 0.15 | 0.38 | West lower | 2.0 | 0.22 | 0.44 | Total = | | | 2.3 |
|----------------|---|---|-------------|-----------|-------------|-------------|-------|-----|------|------|------|-----|------|------|-------|-----|------|------|------------|-----|------|------|------------|-----|------|------|----------------|--|--|------------|
| Buffer Type | (Score) x | (% of Area) | = Sub Total | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| North | 2.0 | 0.13 | 0.26 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| East | 2.5 | 0.38 | 0.95 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| South | 2.0 | 0.12 | 0.24 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| West upper | 2.5 | 0.15 | 0.38 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| West lower | 2.0 | 0.22 | 0.44 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total = | | | 2.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | |
|-----|---|
| 2.5 | <p>Field Hydrology (HID)</p> <p>Plants look healthy with no stress from improper hydroperiod. Wetland species present, loop roots, adventitious roots, high water lines, and the presence of muck are all consistent with an adequate hydrology. Wetland is not near canals or ditches near the assessment area however upstream there could be restrictions in the agricultural areas outside the bank. There is no evidence of soil subsidence. This area has probably benefited from the hydrologic restoration that has occurred on the bank increasing sheet flow to this area and extending its hydroperiod. Cattails (<i>Typha</i> spp.) were not present in a way that would indicate excessive nutrients. Young red maple (<i>Acer rubrum</i>) were not dominant of the recruited vegetation.</p> |
|-----|---|

| | |
|-----|---|
| 1.7 | <p>WQ Input & Treatment (WQ)*</p> <p><small>*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.</small></p> |
|-----|---|

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|---------------------|-----------|-------------|-------------|
| natural undeveloped | 3.0 | 0.13 | 0.4 |
| rangeland | 2.5 | 0.65 | 1.6 |
| improved pasture | 1.0 | 0.22 | 0.2 |
| LU Total = | | | 2.2 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| natural undeveloped | 3.0 | 0.13 | 0.4 |
| rangeland | 1.0 | 0.65 | 0.7 |
| improved pasture | 1.0 | 0.22 | 0.2 |
| PT Total = | | | 1.3 |

Blue_FLA Uniform Mitigation Assessment Method, page 1

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

| | | | |
|--|--|---|--|
| Site/Project Name Bluefield Mitigation Bank | | Application Number NA | Assessment Area Name or Number Blue_FLA |
| FLUCCs code Being restored from 2120 unimproved pasture to 6250 Hydric pinelands | Further classification (optional) NA | Impact or Mitigation Site? Mitigation bank | Assessment Area Size ~ 13 ac (5.3 ha) |
| Basin/Watershed Name/Number HUC Taylor Creek | Affected Waterbody (Class) NA | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) FWCC priority habitat, FNAI bird rookery | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands This area will sheet flow along a very gradual slope to the Van Sweuringen Creek which connects to waterways that eventually flow into Lake Okeechobee. The other side of the Orlando Ridge running through the property drains into the St. Lucie River and the Indian River Lagoon. | | | |
| Assessment area description Previously unimproved pasture is being restored back to a hydric pine flatwoods community. Site has had one prescribed burn since restoration began and is due to burn again this year. Assessment area is in a matrix of improved and unimproved pastures being restored back to natural communities and is next to a slough system that is undergoing restoration. Private pastures are west of the assessment area. | | | |
| Significant nearby features St. Lucie County Bluefield Ranch Natural Area, Orlando Ridge, Allapattah Flats, Dupuis Reserve, Corbett Wildlife Area, Jones/Hungryland W.E.A., within the "Western Corridor" | Uniqueness (considering the relative rarity in relation to the regional landscape.) Pine flatwoods are declining in the Southeastern United States. Most in this area have been converted to agricultural uses or urban development. | | |
| Functions Provide habitat for flora and fauna. Surface and subsurface water storage. Nutrient cycling. Provide essential habitat for rare and endangered wildlife. | Mitigation for previous permit/other historic use Previously converted from hydric pine flatwoods into unimproved pasture and grazed by cattle. | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Oak toad, cricket frog, chorus frog, black racer, yellow rat snake, diamondback rattlesnake, pygmy rattlesnake, red-shouldered hawk, bobwhite, opossum, cottontail rabbit, cotton rat, cotton mouse, raccoon, striped skunk, bobcat, and white-tailed deer. In addition, many birds, butterflies, frogs, snakes, etc. | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Florida black bear T (<i>Ursus americanus floridanus</i>), Florida panther E (<i>Puma (=Felis) concolor coryi</i>), wood stork E (<i>Mycteria americana</i>), red-cockaded woodpecker E (<i>Picooides borealis</i>), Everglade snail kite E (<i>Rostrhamus sociabilis plumbeus</i>), bald eagle E (<i>Haliaeetus leucocephalus</i>), eastern indigo snake T (<i>Drymarchon corais couperi</i>), gopher tortoise SSC (<i>Gopherus polyphemus</i>), Sherman's fox squirrel SSC (<i>Sciurus niger shermani</i>), Bachman's sparrow SSC (<i>Aimophila aestivalis</i>), limpkin SSC (<i>Aramus guarauna</i>), southeastern kestrel T (<i>Falco sparverius paulus</i>), Florida sandhill crane T (<i>Grus canadensis pratensis</i>). | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Palamedes swallowtail butterfly (<i>Papilio palamedes</i>), Zebra swallowtail (<i>Eurytides marcellus</i>), Red tailed hawk (<i>Buteo lineatus</i>), Sandhill crane in area (<i>Grus canadensis</i>), rabbit or deer scat, possible hog scat, damsel flies, morning dove (<i>Zenaida macroura</i>), dragonflies, spiders. | | | |
| Additional relevant factors: Chuck Olson, the bank land manager, thinks this area of the bank is nearing restoration success, 80% at his estimate. | | | |
| Assessment conducted by: Erica Hernandez, Tony Davanzo | | Assessment date(s): 3/22/2006 | |

Form 62-345.900(1), F.A.C. [effective date 02-04-2004]

Blue_FL A Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|---|---|
| Site/Project Name Bluefield Mitigation Bank | Application Number NA | Assessment Area Name or Number Blue_FL A |
| Impact or Mitigation Mitigation bank | Assessment conducted by: Erica Hernandez, Tony Davanzo | Assessment date: 22-Mar-06 |

| | | | | |
|---|---|--|---|--|
| 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 w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 8 <input type="checkbox"/> | Habitats outside the assessment area are in various stages of restoration or are in private use for raising cattle. There are some natural areas in the landscape as well. There are some exotic species in the landscape, within the bank these species are being treated. Wildlife access to and from habitats is not limited by distance or barriers. There are no limitations to the function provided by this site to downstream fish and wildlife. The conversion of land outside the bank to pasture and citrus groves is not optimal habitat support for native wildlife but may not be as intense as other types of development. |
| .500(6)(b)Water Environment (n/a for uplands) w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 9 <input type="checkbox"/> | Hydrology appears appropriate for the natural pine flatwoods community type. Indicators of hydrology such as obligate wetland plant species appear consistent throughout the site. Soil moisture is appropriate. No atypical fire frequency. Vegetation does not show signs of hydrologic stress. Plant community is indicative of a hydric pine flatwoods community and is not characterized by species tolerant of water quality degradation or alterations. As more time passes and this area continues to be managed with fire, it appears that the number of species present will increase and meet the guidelines for success. |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 8 <input type="checkbox"/> | Nearly all species noted are desirable in the canopy, shrub, and ground stratum. Invasive exotic species were not noted in the wetland assessment area. There is a high diversity of ground cover and shrubs for a site that only began restoration two years prior. This community type will have subtle micro-topographic variations that cause different flora species assemblages, these were present and normal for the area. Trees in the assessment area were planted and are unevenly aged and randomly spaced. These trees are still immature. Over time as the slash pines (<i>Pinus elliotii</i>) become more mature there will be more opportunity for snags and dens and eventually features like hummocks from fallen trees. There are mature pines on the edge of the assessment area. Numerous shrubs and ground cover species were noted to be flowering or fruiting and there was a strong indication of the possibility for natural regeneration. Land management practices include past hydrologic restoration and current prescribed fire. This hydric pine flatwoods community will continue to benefit from prescribed fire. Plants appear healthy and are in good condition. |

| |
|--|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current or w/o pres <input type="checkbox"/> with <input type="checkbox"/> |
| 0.83 <input type="checkbox"/> |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Blue_FLA Wetland Rapid Assessment Procedure, page 1

Wetland Rapid Assessment Procedure (WRAP)

All Data Sheets for Existing Conditions. Sheets designed for Mitigation Bank Study - K.C.Reiss. 5/2005

Project Name: Blue_FLA, Bluefield Ranch Mitigation Bank

Date: 22-Mar-06

Evaluator(s): Tony Davanzo & Erica Hernandez

Wetland Type/Description: Hydric pine flatwood, was unimproved pasture, on bank NW edge. Next to private pastures and drains via sheetflow towards slough that flows into Lake Okeechobee.

Wetland Size: ~ 13 acres (5.3 ha)

FLUCCS Code/Description: This area is being restored to 6250 hydric pine flatwoods.

| | |
|------|---------------------------|
| 2.5 | Wildlife Utilization (WU) |
| 2.5 | Wetland Canopy (O/S) |
| 3.0 | Wetland Ground Cover (GC) |
| 2.4 | Habitat Support/Buffer |
| 3.0 | Field Hydrology (HYD) |
| 1.6 | WQ Input & Treatment (WQ) |
| 14.9 | SUM |
| 6 | Count |
| 0.83 | WRAP |

Blue_FLA Wetland Rapid Assessment Procedure, page 2

| | |
|--|---------------------------|
| 2.5 | Wildlife Utilization (WU) |
| Hydric pine flatwoods seasonally function as both a wetland and upland, this therefore allows for a high diversity of flora and fauna. Species associated with standing water would not be expected in this wetland at this time. Upland food sources are abundant. Human disturbance is minimal in the bank with minor disturbances from the installation of fire breaks. Adjacent land use is pasture and is also relatively low impact. There is abundant cover within the wetland and upland areas in the landscape. Evidence of older hog damage in the Carolina redroot (<i>Lachnanthes caroliana</i>) patches. Hogs are being removed by the land managers. | |

| | |
|--|----------------------|
| 2.5 | Wetland Canopy (O/S) |
| Canopy consists of unevenly aged randomly distributed planted slash pines (<i>Pinus elliottii</i>). Trees are still immature and are not large enough to provide cavity habitat but provide perches and other nesting habitat. Trees are old enough to survive prescribed fire. No evidence of species recruitment yet, but it is unknown whether trees have produced cones yet. There are very young trees planted in the assessment areas with older trees in the immediate area. We do not know if some of the trees in the vicinity have had natural recruitment into the assessment area. No snags or dens were noted in the assessment area, due to restoration activities they would probably have to be purposefully installed because the land was in pasture prior to restoration and probably did not maintain snags. Trees look healthy. No evidence of disease or insect damage. No exotic species. | |

| | |
|--|---------------------------|
| 3.0 | Wetland Ground Cover (GC) |
| No exotic species noted. Minor disturbance to groundcover in the form of hog rooting looks older, young Carolina redroot (<i>Lachnanthes caroliana</i>) is growing into this area and is limited to very small patches. No human disturbances. This area is maintained with prescribed fire. Site exhibits nice species diversity for a newly restored area. | |

| | | | | | |
|--|------------------------|-------------|-----------|----------------|-------------|
| 2.4 | Habitat Support/Buffer | | | | |
| Buffer west of assessment area includes an area of mature slash pines (<i>Pinus elliottii</i>) and then an adjacent property being maintained as pasture. North, east and south of the assessment area is the rest of the bank in various stages of restoration. These areas have some exotic species that are being managed. These areas do provide cover, food, and roosting. These areas have no barriers and are contiguous with offsite wetlands. | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | North | 2.5 | 0.20 | 0.50 |
| | | South | 2.5 | 0.20 | 0.50 |
| | | East | 2.5 | 0.30 | 0.75 |
| | | West | 2 | 0.30 | 0.60 |
| | | | | Total = | 2.4 |

| | |
|---|-----------------------|
| 3.0 | Field Hydrology (HID) |
| Plants appear healthy and not stressed. There are no negative impacts of the assessment areas hydrology in the landscape. Appropriate species are present for a hydric pine flatwoods ecosystem. Wetland indicators like sphagnum moss and other obligate wetland species are present. The hydrology appears appropriate to maintain a hydric pine flatwoods. | |

1.6 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|---------------------|-----------|-------------|-------------|
| improved pasture | 1.0 | 0.33 | 0.33 |
| rangeland | 2.5 | 0.35 | 0.88 |
| natural undeveloped | 3.0 | 0.32 | 0.96 |
| LU Total = | | | 2.2 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| none | 0.0 | 0.33 | 0.0 |
| none | 0.0 | 0.35 | 0.0 |
| natural | 3.0 | 0.32 | 1.0 |
| PT Total = | | | 1.0 |

Blue_MAR Uniform Mitigation Assessment Method, page 1

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

| | | | | | |
|--|----------------------------------|--|---|---|--|
| Site/Project Name Bluefield Ranch Mitigation Bank | | Application Number NA | | Assessment Area Name or Number Blue_MAR | |
| FLUCCs code 6410 freshwater marsh | | Further classification (optional) SSURGO soil: Waveland and Immokalee fine sand | | Impact or Mitigation Site? Mitigation bank | Assessment Area Size ~1.3 ac (0.5 ha) |
| Basin/Watershed Name/Number HUC Taylor Creek and Southeast Florida coast, line is on wetland. | Affected Waterbody (Class) NA | | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) GEOPLAN priority habitat 3 | | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands STPONT is an isolated depression marsh with a small catchment and is surrounded by an upland being restored from pasture to pine flatwoods. There are other isolated depressions, forested slough features, and larger basin marshes in the landscape that serve different functions from small isolated depressions. | | | | | |
| Assessment area description Small isolated depression dominated by pickerelweed (<i>Pontederia cordata</i>). Marsh interior lacks open water and instead has a dense floating mat of <i>Pontederia cordata</i> supporting small wax myrtle (<i>Myrica cerifera</i>), Brazilian pepper (<i>Schinus terebinthifolius</i>), and climbing fern (<i>Lygodium</i> spp.) Wetland vegetation zones from wet meadow to deep marsh are not always well defined. Some areas are distinct but other edges had <i>Pontederia cordata</i> growing up into the wet meadow with out any maidencane (<i>Panicum hemitomon</i>). This could be a result of fire suppression. | | | | | |
| Significant nearby features Larger basin marsh to the east has had documented use by snail kites. This bank is adjacent to protected St Lucie County land to the east. Part of the bank drains into the Taylor Creek watershed which drains into Lake Okeechobee. | | | Uniqueness (considering the relative rarity in relation to the regional landscape.) There many isolated depressions in the landscape. Small depressions have important functions that are different than larger more permanent wetlands. It is difficult to find small marshes that have not been impacted by cattle or pasture activities. | | |
| Functions Important breeding and forage habitat. Provides water storage by holding excess water and slowly releasing it into the water table. Enhances water quality by absorbing nutrients from the water. | | | Mitigation for previous permit/other historic use Historic use for cattle grazing, area converted to pasture. | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) <i>Odocoileus virginianus</i> (white-tailed deer), <i>Procyon lotor</i> (raccoon), <i>Lynx rufus floridanus</i> (bobcat), <i>Sciurus carolinensis</i> (gray squirrel), many species of salamanders, frogs, small fish, wading birds, butterflies, aquatic insects. | | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Mycteria americana</i> (wood stork) ^E , <i>Aramus guarana</i> (limpkin) ^{SSC} , <i>Egretta thula</i> (snowy egret) ^{SSC} , <i>Egretta caerulea</i> (little blue heron) ^{SSC} , <i>Eudocimus alba</i> (white ibis) ^{SSC} , <i>Grus canadensis pratensis</i> (Florida sandhill crane) ^T , <i>Alligator mississippiensis</i> (alligator) ^T | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Heard meadowlark in area, mocking bird, bobwhite, spiders, damselflies, game trails, oak toad, sedge wren, bluebird, common yellow throat, black racer, pileated woodpecker in area, deer or rabbit scat, leopard frog, snipe, red-winged blackbirds, green anole, otter scat and trail banded water snake. Could see movement in the water - might have been small fish, macroinvertebrates or amphibians. | | | | | |
| Additional relevant factors: NA | | | | | |
| Assessment conducted by: Erica Hernandez & Tony Davanzo | | | Assessment date(s): 22-Mar-06 | | |

Blue_MAR Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|--|--|
| Site/Project Name Bluefield Ranch Mitigation Bank | Application Number NA | Assessment Area Name or Number Blue_MAR |
| Impact or Mitigation Mitigation bank | Assessment conducted by: Erica Hernandez & Tony Davanzo | Assessment date: 22-Mar-06 |

| |
|---|
| 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 w/o pres or current <input type="checkbox"/> 8 <input type="checkbox"/> with <input type="checkbox"/> | Habitats outside of the wetland assessment area inside the bank are varied and appropriate and are in different phases of restoration. Outside of the bank is protected land that has been degraded and more ranches, pastures, and citrus groves. There are exotic species in the landscape. Exotic species on the bank are being monitored and treated. There are no limitations or barriers disconnecting the wetland assessment area to the landscape for wildlife or downstream benefits. Immediately adjacent landuses are beneficial to the wetland assessment area as degraded lands are restored back to natural communities. Within the landscape there are some areas that have been converted from natural communities to agricultural lands and these areas are not optimal for wildlife; however, much of the surrounding landuse is rural and passive. |
| .500(6)(b)Water Environment (n/a for uplands) w/o pres or current <input type="checkbox"/> 7 <input type="checkbox"/> with <input type="checkbox"/> | Hydrology in the landscape has been restored by filling in and plugging ditches. Land managers estimate the wetlands in the assessment area have an increased water table by at least 4 inches due to hydrologic restoration. Previously this wetland may have been impacted by cattle. There were no plants indicative of excessive nutrients in the water. Water levels appeared appropriate. Species associated with deep marsh were growing up into the wet meadow, which calls into question water level consistency. Soils were inundated and mucky. No evidence of excessive dryness or soil erosion. Vegetation zonation was not consistent as there was no deep marsh zone and variation of species between wet meadow, shallow marsh, and deep marsh were not always obvious. Vegetation in the wetland looked robust. There was evidence of or direct observation of birds, mammals, reptiles, frogs, and amphibians, all associated with wetlands. There were no species present that are associated with water quality degradation. Standing water looked clear, cool, and dark. No water quality data available. Unexpected inconsistencies may mean this wetland is in a period of transition to a new water availability and management strategy. |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current <input type="checkbox"/> 7 <input type="checkbox"/> with <input type="checkbox"/> | Nearly all of the plant cover is by appropriate and desirable species. Some vaseygrass (<i>Paspalum urvillei</i>) was noted in the wet meadow edge. The wetland interior supported wax myrtle (<i>Myrica cerifera</i>), Brazilian pepper (<i>Schinus terebinthifolius</i>), and climbing fern (<i>Lygodium</i> spp.), which are neither desirable or appropriate in this system. There is evidence of near normal regeneration. Age and size distribution is normal. Native flora look healthy and robust. Although past land management practices may have negatively affected this wetland, current practices are optimal for long-term viability of the community. Algal growth does not appear to be impeding any other plant growth. Topographic features are normal for this wetland, elevation changes represented by a gradual slope. |

| |
|---|
| Score = sum of above scores/30 (if uplands, divide by 20) current or w/o pres <input type="checkbox"/> 0.73 <input type="checkbox"/> with <input type="checkbox"/> |
|---|

| |
|---|
| If preservation as mitigation, Preservation adjustment factor = Adjusted mitigation delta = |
|---|

| |
|---|
| For impact assessment areas FL = delta x acres = |
|---|

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|---|
| If mitigation Time lag (t-factor) = Risk factor = |
|---|

| |
|--|
| For mitigation assessment areas RFG = delta/(t-factor x risk) = |
|--|

Form 62-345.900(2), F.A.C. [effective date 02-04-2004]

Blue_MAR Wetland Rapid Assessment Procedure, page 1

Wetland Rapid Assessment Procedure (WRAP)

All Data Sheets for Existing Conditions. Sheets designed for Mitigation Bank Study - K.C.Reiss. 5/2005

Project Name: Blue_MAR, Bluefield Ranch Mitigation Bank

Date: 22-Mar-06

Evaluator(s): Tony Davanzo & Erica Hernandez

Wetland Type/Description: Small herbaceous marsh in a landscape being converted from pasture back to native flatwoods

Wetland Size: ~ 1.3 acres (0.5 ha)

FLUCCS Code/Description: 6410 freshwater marsh

| | |
|------|---------------------------|
| 2.0 | Wildlife Utilization (WU) |
| N/A | Wetland Canopy (O/S) |
| 2.0 | Wetland Ground Cover (GC) |
| 2.5 | Habitat Support/Buffer |
| 2.5 | Field Hydrology (HYD) |
| 3.0 | WQ Input & Treatment (WQ) |
| 12.0 | SUM |
| 5 | Count |
| 0.80 | WRAP |

Blue_MAR Wetland Rapid Assessment Procedure, page 2

| | | |
|-----|---------------------------|---|
| 2.0 | Wildlife Utilization (WU) | Previous management of this area was not optimal for natural conditions of this marsh. The dense vegetation mats were difficult to walk through, but perhaps are not an issue for some wildlife. The lack of an open water center is probably not optimal for some wetland dependant species that may need that type of habitat. There was recent evidence of this wetland being utilized by an otter. There were also visible game trails throughout the wetland. Many birds were in the marsh as well as a water snake. There were things moving in the water, but there was no absolute identification and they may have been anything from macroinvertebrates to small fish or amphibians. Surrounding upland habitats are in various phases of restoration and will provide some habitat and food resources. |
|-----|---------------------------|---|

| | |
|-----|----------------------|
| N/A | Wetland Canopy (O/S) |
|-----|----------------------|

| | | |
|-----|---------------------------|---|
| 2.0 | Wetland Ground Cover (GC) | Most of the ground cover species in the marsh are appropriate. Some vaseygrass (<i>Paspalum urvillei</i>) was found on the wet meadow edge of the wetland. The area around the marsh was utilized as pasture. The wetland edge had been continuously mowed to increase pasture surface into the wetland. This area is now being restored back to a natural community. Species present in the wetland are desirable but the zonation of the plant species, wet meadow, shallow marsh, and deep marsh is not always distinguishable based on the composition. The interior of the wetland is a dense vegetative mat and has inappropriate and exotic species starting to grow on it including some small climbing fern (<i>Lygodium</i> spp.), Brazilian pepper (<i>Schinus terebinthifolius</i>), and wax myrtle (<i>Myrica cerifera</i>) bushes. Management of this area with fire should help reduce the vegetative build up in this wetland and have a more natural vegetation distribution. |
|-----|---------------------------|---|

| | | | | | | |
|-----|------------------------|--|-------------|-----------|-------------|-------------|
| 2.5 | Habitat Support/Buffer | Surrounding habitats around the wetland assessment area are in various stages of restoration back to natural upland and wetland habitats. There are some exotic species on the landscape that are being monitored and treated as well as some remnant pasture grasses that may still be in the upland restoration areas but are being phased out and converted back to areas of native vegetation. | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | North | | 2.5 | 0.25 | 0.63 | |
| | South | | 2.5 | 0.25 | 0.63 | |
| | East | | 2.5 | 0.25 | 0.63 | |
| | West | | 2.5 | 0.25 | 0.63 | |
| | Total = | | | | 2.5 | |

| | | |
|-----|-----------------------|---|
| 2.5 | Field Hydrology (HID) | Hydrology seems viable for continued support of this wetland. The landscape has had hydrologic restoration in the form of ditch filling and plugging that has increased the water table for this wetland by at least 4 inches according to the land manager. This wetland is not adjacent to negative impacts to hydrology and it does not appear that the wetlands catchment size has changed much. The plant community appears healthy. Algae is present but not impeding plant growth. There is potential that this wetland has been impacted by excessive nutrients from previous cattle use. However, species present are not indicative of excessive nutrients. |
|-----|-----------------------|---|

3.0 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

| LANDUSE CATEGORY (LU) | | | |
|-----------------------|-----------|-------------|-------------|
| Land Use Category | (Score) x | (% of Area) | = Sub Total |
| natural undevel. | 3.0 | 1.00 | 3.0 |
| LU Total = | | | 3.0 |

| PRETREATMENT CATEGORY (PT) | | | |
|----------------------------|-----------|-------------|-------------|
| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
| natural undevel. area | 3.0 | 1.00 | 3.0 |
| PT Total = | | | 3.0 |

** surrounding landuse has been converted from pasture back to native plants and is in the process of being restored back to a natural pine flatwoods community. This area is also being managed as a flatwoods community. Although it is not yet an optimal restored community type and may have remnant pasture grasses, the fact that it is in the process of being restored and no longer has cattle on it and is being managed as flatwoods made it more appropriate to say the landuse category is natural undeveloped instead of rangeland.

Blue_MAR Hydrogeomorphic Approach, page 1

Variable Subindex and FCI Calculation for Florida Depressions Marsh

Assessment Team: TD, ECH
Project Name: Bluefield Mitigation Bank Blue_MAR
Location: N 27 degrees 13' 52.51"/W 80 degrees 38' 35.04"
Date: March 22, 2006
Subclass: herbaceous marsh

| Function | FCI |
|--------------------------------|------|
| Surface Water Storage | 1.00 |
| Subsurface Water Storage | 0.98 |
| Cycle Nutrients | 0.97 |
| Characteristic Plant Community | 0.79 |
| Wildlife Habitat | 0.76 |

| Variables | Measure | Units | Subindex |
|-----------|----------|--------|----------|
| V CATCH | 0 | % | 1.00 |
| V UPUSE | 78.5 | % | 1.00 |
| V WETPROX | 3384 | meters | 0.70 |
| V WETVOL | 0 | % | 1.00 |
| V SUROUT | 0 | % | 1.00 |
| V SUBOUT | 0 | % | 1.00 |
| V ZONES | 2 | number | 0.25 |
| V MAC | 95 | % | 1.00 |
| V SURTEX | 100 muck | % | 0.90 |
| V HCOMP | 33.33 | % | 0.33 |

Blue_MAR Hydrogeomorphic Approach, page 2

Vcatch 0% change in catchment size

Size of original catchment 1.58 ha

Size of current catchment 1.58 ha

Vupuse

pasture cover type curve # 80 percent 50

native range cover type curve # 77 percent 50

| | | | |
|-----------------|----------|----------|----------|
| Vwetprox | 3384m | | |
| Sector 1 | Sector 2 | Sector 3 | Sector 4 |
| 500m | 500m | 500m | 199m |
| Sector 5 | Sector 6 | Sector 7 | Sector 8 |
| 500m | 184m | 500m | 500m |

Vwetvol No change

| diameter wetland north-south | diameter wetland east-west | depth of wetland | length of fill material | width of fill material | average thickness of fill material |
|------------------------------------|----------------------------------|---------------------|----------------------------|---------------------------|---------------------------------------|
|------------------------------------|----------------------------------|---------------------|----------------------------|---------------------------|---------------------------------------|

Vsurout no ditch

Vsubout no ditch

Vzones 2
change in shallow marsh - wet
meadow grades into deep marsh
no open water, dense floating mat

Vmac
57/60 95% cover

Vsurtex 100% muck

Vhcomp
wet meadow zone
0%
shallow marsh zone
Pontederia cordata 0%
deep marsh
Pontederia cordata 100%

Blue_MAR Florida Wetland Condition Index, macrophyte field data sheets, page 1

*NOTE: field codes are different than reported codes, Blue_MAR = STPONT

Site name: STPONT
 Date: 3/7/04
 Description: herb marsh
 Transect: North - T1
 Stream:
 County: Seminole

| Species | 0-5m | 5-10m | 10-15m | 15-20m | 20-25m | 25-30m | 30-35m | 35-40m | 40-45m | 45-50m |
|-------------------------------------|------|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| <i>Najas</i> sp. <i>Mirccephala</i> | ✓ | | | | | | | | | |
| <i>Utricularia</i> sp. | ✓ | ✓ | | | | | | | | |
| <i>Utricularia</i> sp. | ✓ | | | | | | | | | |
| <i>Hydrocotyle</i> sp. | ✓ | ✓ | | | | | | | | |
| <i>Paspalum</i> sp. | ✓ | | | | | | | | | |
| <i>Elephantopus</i> sp. | | ✓ | | | | | | | | |
| <i>Panicum</i> sp. | | ✓ | | | | | | | | |
| <i>Panicum</i> sp. | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| <i>Panicum</i> sp. | | ✓ | | ✓ | | | | | | |
| <i>Syntherisma</i> sp. | | | | | | | ✓ | | | |
| <i>Rorippa</i> sp. | | | | | | | ✓ | | | |
| <i>Erechtia</i> sp. | | | | | | | ✓ | ✓ | ✓ | |
| <i>Eupatorium</i> sp. | | | | | | | ✓ | ✓ | ✓ | |
| <i>Andropogon</i> sp. | | | | | | | | ✓ | | |
| <i>Lespedeza</i> sp. | | | | | | | | ✓ | | |
| <i>Nassella</i> sp. | | | | | | | | ✓ | | |
| <i>Muhlenbergia</i> sp. | | | | | | | | ✓ | | |
| <i>Medusa</i> sp. | | | | | | | | | ✓ | |
| <i>Phragmites</i> sp. | | | | | | | | ✓ | ✓ | |

Blue_MAR Florida Wetland Condition Index, macrophyte field data sheets, page 2
 *NOTE: field codes are different than reported codes, Blue_MAR = STPONT

T2

Site name: *ST PONT*
 Description: *Blue field herbaceous*
 Date: *3/22/04*
 Transect: *South - T2*
 Stream:
 County: *S. Dade*

| Species | 0-5m | 5-10m | 10-15m | 15-20m | 20-25m | 25-30m | 30-35m | 35-40m | 40-45m | 45-50m |
|--|------|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| <i>Pontederia cordata</i> | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| <i>Panicum hemitomon</i> | | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | | |
| <i>Baccharis distachya</i> | ✓ | ✓ | ✓ | ✓ | | | | | | |
| <i>Juncus roemerianus</i> | ✓ | ✓ | ✓ | ✓ | | | | | | |
| <i>Sagittaria arifolia</i> | | | ✓ | | | | | | | |
| <i>Hypoxis fasciculata</i> | | | ✓ | | | | | | | |
| <i>Peltandra carolinensis</i> | ✓ | ✓ | ✓ | | | | | | | |
| <i>Andropogon furcatus</i> | | | ✓ | | | | | | | |
| <i>Amphibaccharis multiflora</i> | ✓ | ✓ | ✓ | | | | | | | |
| <i>Utricularia</i> spp. | | ✓ | | | | | | | | |
| <i>Peltandra</i> spp. <i>hollandii</i> | ✓ | ✓ | | | | | | | | |
| <i>Sagittaria arifolia</i> | ✓ | | | | | | | | | |
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Blue_MAR Florida Wetland Condition Index, macrophyte field data sheets, page 3

*NOTE: field codes are different than reported codes, Blue_MAR = STPONT

Site name: *STPONT*
 Description: *STPONT*

Date: *3/22/06*
 Transect: *EAST - T3*

Stream: _____
 County: *St. Johns*

| Species | 0-5m | 5-10m | 10-15m | 15-20m | 20-25m | 25-30m | 30-35m | 35-40m | 40-45m | 45-50m |
|--------------------------------|------|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| ① <i>Eleocharis acicularis</i> | ✓ | | | | | | | | | |
| <i>Eleocharis acicularis</i> | ✓ | | | | | | | | | |
| <i>Eleocharis acicularis</i> | ✓ | | | | | | | | | |
| <i>Eleocharis acicularis</i> | ✓ | | | | | | | | | |
| ② <i>Eleocharis acicularis</i> | ✓ | | | | | | | | | |
| ③ <i>Eleocharis acicularis</i> | ✓ | | | | | | | | | |
| <i>Eleocharis acicularis</i> | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| <i>Eleocharis acicularis</i> | ✓ | ✓ | | | | | | | | |
| ④ <i>Eleocharis acicularis</i> | ✓ | | | | | | | | | |
| <i>Eleocharis acicularis</i> | ✓ | ✓ | | | | | | | | |
| <i>Eleocharis acicularis</i> | | ✓ | | | | | | | | |
| <i>Eleocharis acicularis</i> | | ✓ | | | | | | | | |
| <i>Eleocharis acicularis</i> | | ✓ | ✓ | | | | | | | |
| <i>Eleocharis acicularis</i> | | ✓ | ✓ | ✓ | | | | | | |
| ⑤ <i>Eleocharis acicularis</i> | | | | | | ✓ | | | | |

Blue_MAR Florida Wetland Condition Index, macrophyte field data sheets, page 4
 *NOTE: field codes are different than reported codes, Blue_MAR = STPONT

Site name: STPONT
 Description: herbimarsch depress.
 Date: 3/27/04
 Transect: WEST-T4
 Stream: _____
 County: St. Johns

| Species | 0-5m | 5-10m | 10-15m | 15-20m | 20-25m | 25-30m | 30-35m | 35-40m | 40-45m | 45-50m |
|--|------|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| <i>Panicum virgatum</i> | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| <i>Panicum hemiphanium</i> | ✓ | ✓ | | | | | | | | |
| <i>Amphicarpum mikulobovica</i> | ✓ | ✓ | | | | | | | | |
| <i>Vriesea nana</i> Forst. | ✓ | | | | | | | | | |
| <i>Hydrocotyl laubata</i> | ✓ | | | | | | | | | |
| <i>Polygonum punctatum</i> | ✓ | | | | | | | | | |
| <i>Furcraea schroederi</i> | ✓ | | | | | | | | | |
| <i>Sagittaria arifolia</i> , microphyll. | ✓ | | | | | | | | | |
| <i>Vallisneria spiralis</i> L. | ✓ | | | | | | | | | |
| <i>Utricularia</i> sp. | ✓ | | | | | | | | | |
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Appendix B-5. Boran Ranch, Phase I



Figure B-5.1. Landscape location of Boran Ranch Mitigation Bank, only the outline of Phase one is shown. Phase two is to the east.

(A)



(B)



Figure B-5.2. Site photos of Boran Ranch Mitigation Bank Phase I (A) Looking north from eastern edge of Bora_MAR_1 (B) Looking southwest across Bora_MAR_2 towards willow head with a wading bird rookery.

Bora_MAR_1 Uniform Mitigation Assessment Method, page 1

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

| | | | |
|---|---|---|--|
| Site/Project Name Boran Ranch Mitigation Bank | | Application Number NA | Assessment Area Name or Number BORA_MAR_1 |
| FLUCCs code SWFWMD 2000 - 6410 Freshwater Marshes | Further classification (optional) NWI - palustrine emergent semi permanently flooded | Impact or Mitigation Site? mitigation | Assessment Area Size 1.1 ha (2.7 ac) |
| Basin/Watershed Name/Number HUC - Peace River 03100101 | Affected Waterbody (Class) 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 WAA is an isolated depressional herbaceous wetland. There are old ditches that have been plugged on the N and S sides. This wetland had been artificially flooded through an artesian well for duck hunting/habitat purposes. The well has been plugged, and now this wetland acts as an isolated depression, except in times of high water, when water could flow in or out over the ditch plugs, depending on the water levels in the surrounding marshes and flatwoods ecosystems. | | | |
| Assessment area description WAA is kidney shaped, elongated along the NW/SE line. The vegetation zonation was somewhat in tact, with 3 primary zones, including the shallow water maidencane (<i>Panicum hemitomom</i>), spikerush (<i>Eleocharis</i> spp.), arrowhead (<i>Sagittaria</i> spp.) zone; the deeper waterhyssops (<i>Bacopa</i> spp.), pickerelweed (<i>Pontederia cordata</i>), bladderwort (<i>Utricularia</i> spp.) zone; and a zone of open water. | | | |
| Significant nearby features Phase II of the Boran Ranch Mitigation Bank will be restored wetlands and hydric flatwoods and is immediately adjacent to the east. L. Longino Pr and RV Griffin Resv (GDC) state lands to SW. | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Much of the surrounding landscape is in pasture and row crops (as this area had been until restoration work was done). The housing demands are increasing in this area, and much of the agricultural lands are expected to become urban lands, leaving little room for preservation and protected lands. | |
| Functions Important breeding and foraging habitat. Isolated and small in size wetlands support different assemblage of species than larger more permanent wetlands. Flood storage, aquifer recharge, and nutrient cycling. | | Mitigation for previous permit/other historic use Support area had been drained. This particular marsh had been flooded with an artesian well. | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Mole salamander, tiger salamander, dwarf salamander, oak toad, cricket frog, pinewoods tree frog, barking frog, squirrel frog, southern chorus frog, narrow mouth toad, eastern spade foot toad, wading birds, deer, raccoon, bobcat | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Sandhill crane (T), Woodstork (E), Gopher Frog (SSC), White Ibis (SSC) | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): osprey, towhee, cricket frog, common yellow throat, ibis, fish, grasshoppers, dragonflies. | | | |
| Additional relevant factors: FNAI Bird Aggregation Areas - Bird Rookery and FWCC Biodiversity Hotspot with 5-6 Focal Species Overlap - with 1 mile boundary. Storm came up and all around during sampling, which shortened wildlife observations in good weather. | | | |
| Assessment conducted by: Erica Hernandez, Kelly C. Reiss | | Assessment date(s): 14-Jul-05 | |

Bora_MAR_1 Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|-------------------------------------|--|
| Site/Project Name Boran Ranch Mitigation Bank | Application Number NA | Assessment Area Name or Number BORA_MAR_1 |
| Impact or Mitigation mitigation bank | Assessment conducted by: EH, KCR | Assessment date: 7/14/2005 |

| |
|--|
| 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 water functions | Minimal level of support of wetland/surface water functions | Condition is insufficient to provide wetland/surface water functions |

| | |
|---|--|
| <p>.500(6)(a) Location and Landscape Support</p> <p>w/o pres or current with</p> <p>9 </p> | <p>Wildlife habitats adjacent to wetland are optimal. Agricultural farm to the south past another isolated depressional wetland, but lots of corridors to high quality uplands and wetlands exist. No identified landscape barriers. No downstream barriers, as this wetland has been restored to a hydrologically isolated wetland. Some areas on adjacent area (Phase II, not yet restored) has exotic species, though should provide a great deal of food and cover.</p> |
| <p>.500(6)(b)Water Environment (n/a for uplands)</p> <p>w/o pres or current with</p> <p>10 </p> | <p>Water levels and flows appear appropriate. Hydrologic indicators appear appropriate. Soil indicators not useful because of inundation (no signs of soil erosion or deposition). Ditch plugs look intact and solid (wetland hydrology restored, so ditches were plugged at NW and SE sides of wetland). Saw evidence of marsh rat nests in the herbaceous vegetation. Also observed fish, osprey, frogs, and dragonflies as indicators of appropriate species with hydrologic requirements. No indicators of hydrologic stress visible. No species indicative of water quality degradation. <i>Utricularia</i> sp. (bladderwort) with yellow flower throughout wetland. Also, floating dried mats of algae that have been hydrated and are now floating on the surface of the water throughout. Water quality appears appropriate, water is clear, no turbidity.</p> |
| <p>.500(6)(c)Community structure</p> <p>1. Vegetation and/or 2. Benthic Community</p> <p>w/o pres or current with</p> <p>9 </p> | <p>All groundcover appears appropriate. Edge area in marsh ecotone had a little <i>Ludwigia peruviana</i> (primrose willow), a nuisance species. Woody debris appears appropriate. Plants are in good condition. Land management practices are optimal for long term, support uplands burned on a 3 yr. cycle. Refugia and open water pool appropriate for a depressional herbaceous wetland. Zonation appears slightly off, as the marsh equilibrates to the current water regime, versus the historically artificially flooded condition. In some areas topography off, as <i>Pontederia cordata</i> (pickerelweed) and <i>Sagittaria</i> spp. (arrowhead) growing into <i>Serenoa repens</i> (saw palmetto) edge.</p> |

| |
|---|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current |
| or w/o pres with |
| 0.93 |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Bora_MAR_1 Wetland Rapid Assessment Procedure, page 1

Wetland Rapid Assessment Procedure (WRAP)

All Data Sheets for Existing Conditions. Sheets designed for Mitigation Bank Study - K.C.Reiss. 5/2005

Project Name: BOR_MAR_1, Boran Ranch Mitigation Bank

Date: 7/14/2005

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: Depressional herbaceous wetland. WAA is kidney shaped, elongated along the NW/SE line. The vegetation zonation was somewhat in tact, with 3 primary zones, shallow marsh with predominantly grasses and sedges, deeper marsh with arrowhead and pickerelweed, and a small open water pool.

Wetland Assessment Area: 1.1 ha (2.7 ac)

FLUCCS Code/Description: SWFWMD 2000 - 6410 Freshwater Marshes

| | |
|------|---------------------------|
| 3.0 | Wildlife Utilization (WU) |
| NA | Wetland Canopy (O/S) |
| 3.0 | Wetland Ground Cover (GC) |
| 3.0 | Habitat Support/Buffer |
| 3.0 | Field Hydrology (HYD) |
| 2.9 | WQ Input & Treatment (WQ) |
| 14.9 | SUM |
| 5 | Count |
| 0.99 | WRAP |

Bora_MAR_1 Wetland Rapid Assessment Procedure, page 2

| | |
|---|----------------------------------|
| 3.0 | Wildlife Utilization (WU) |
| Osprey, towhee, cricket frog, common yellow throat, ibis overhead, fish, grasshoppers, dragonflies. Nice upland buffer and zonation. To the E and S are areas slated for restoration (previous agricultural fields). To the S the area is within approximately 300ft, or just over. Marsh is surrounded by Phase I of the bank, which has upland restoration. To the SE is wet prairie. There is some transitional land in the proximity, though these areas are providing an abundant upland food source and adequate and appropriate cover. | |

| | |
|--------------------------------|-----------------------------|
| NA | Wetland Canopy (O/S) |
| Depressional herbaceous marsh. | |

| | |
|--|----------------------------------|
| 3.0 | Wetland Ground Cover (GC) |
| <i>Panicum hemitomom</i> (maidencane), <i>Utricularia</i> spp. (bladderworts - both yellow and purple flowering species), <i>Sagittaria</i> spp. (arrowheads), <i>Eleocharis</i> spp. (spikerushes), <i>Bacopa</i> spp. (waterhyssops), <i>Rhynchospora</i> spp. (beakrushes), <i>Hydrochloa carolinensis</i> (southern watergrass), <i>Pontederia cordata</i> (pickerelweed). Desirable groundcover throughout marsh. Managed environment. No human induced impacts. No exotics within wetland assessment area. After we completed the assessment, and only upon completing the more intense biological sampling <i>Typha</i> spp. (cattails) was found growing throughout the deeper areas, considered a nuisance species. | |

| | | | | | | |
|---|-------------------------------|----------------|-----------|-------------|-------------|------------|
| 3.0 | Habitat Support/Buffer | | | | | |
| Greater than 300 ft of buffer with predominantly desirable species. Less than 10% undesirable or nuisance species in this buffer area. Wildlife corridors are connected to off-site wetlands. | | Buffer Type | (Score) x | (% of Area) | = Sub Total | |
| | | All | 3.0 | 1 | 3.0 | |
| | | Total = | | | | 3.0 |

| | |
|--|------------------------------|
| 3.0 | Field Hydrology (HYD) |
| Not adjacent to negative impacts. Plants appear healthy and in good condition. Natural hydroperiod expected. | |

2.9 WQ Input & Treatment (WQ)*

**The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.*

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| Restoration | 2.5 | 0.3 | 0.8 |
| Pine Flatwoods | 3.0 | 0.7 | 2.0 |
| LU Total = | | | 2.8 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| undeveloped | 3.0 | 1.0 | 3.0 |
| PT Total = | | | 3.0 |

Once this wetland had been artificially flooded from an artesian well and had an overflow ditch connected to another wetland downstream. The ditch is now blocked, and the well has been plugged. The marsh had been dominated by *Typha* spp. (cattails) prior to restoration, and now has a more diverse and appropriate groundcover composition.

Bora_MAR_1 Hydrogeomorphic Approach, page 1

Variable Subindex and FCI Calculation for Florida Depressions Marsh

Assessment Team: KCR, ECH
Project Name: DEBORA
Location: 27 degrees 8m 40s / -82 degrees 2m 1.33s
Date: 7/14/05
Subclass: Depression Marsh

| Function | FCI |
|--------------------------------|------|
| Surface Water Storage | 0.99 |
| Subsurface Water Storage | 0.98 |
| Cycle Nutrients | 0.98 |
| Characteristic Plant Community | 0.85 |
| Wildlife Habitat | 0.87 |

| Variables | Measure | Units | Subindex |
|-----------|------------|--------|----------|
| V CATCH | 7 | % | 0.93 |
| V UPUSE | 100 | % | 1.00 |
| V WETPROX | 3008 | meters | 1.00 |
| V WETVOL | 0 | % | 1.00 |
| V SUROUT | 0 | % | 1.00 |
| V SUBOUT | 0 | % | 1.00 |
| V ZONES | 1 | number | 0.50 |
| V MAC | 90 | % | 0.95 |
| V SURTEX | loamy sand | 100% | 1.00 |
| V HCOMP | 50 | % | 0.50 |

- FCI 1 Surface Water Storage** $FCI = \{V_{wetvol} * [(V_{catch} + V_{upuse}/2) + V_{surout}/2]\}^{1/2}$
- FCI 2 Subsurface Water Storage** $FCI = [(V_{catch} + V_{upuse}/2) + (V_{subout} + V_{surtex}/2)]/2$
- FCI 3 Cycle Nutrients** $FCI = [V_{surtex} + V_{mac} + (V_{catch} + V_{upuse} + V_{surout}/3)]/3$
- FCI 4 Characteristic Plant Community** $FCI = \{[(V_{mac} + V_{hcomp}/2) * (V_{surtex} + V_{subout}/2)]\}^{1/2}$
- FCI 5 Provide Wildlife Habitat** $FCI = \{[(V_{subout} + V_{zones}/2) + (V_{upuse} + V_{wetprox}/2)]/2 * [(V_{mac} + V_{hcomp}/2) + V_{surtex}/2]\}^{1/2}$

Bora_MAR_1 Hydrogeomorphic Approach, page 2

Vcatch

Size of original catchment 2.3 ha

Size of current catchment 2.14 ha

Vupuse 100%

forest cover type curve # 55 percent 50

native range cover type curve # 75 percent 50

Vwetprox

| | | | |
|----------|----------|----------|----------|
| Sector 1 | Sector 2 | Sector 3 | Sector 4 |
|----------|----------|----------|----------|

| | | | |
|------|------|------|-----|
| 500m | 500m | 500m | 30m |
|------|------|------|-----|

| | | | |
|----------|----------|----------|----------|
| Sector 5 | Sector 6 | Sector 7 | Sector 8 |
|----------|----------|----------|----------|

| | | | |
|------|------|------|------|
| 100m | 498m | 380m | 500m |
|------|------|------|------|

Vwetvol

| diameter wetland north-south | diameter wetland east-west | depth of wetland | length of fill material | width of fill material | average thickness of fill material |
|------------------------------------|----------------------------------|---------------------|----------------------------|---------------------------|--|
| 127m | 93m | 0.61m | none | none | none |

Vsurout no ditch

Vsubout no ditch

Vzones 1

deep marsh species growing up to edge where wet meadow species would be expected.

Vmac

18/20 90%

Vsurtex

100 % loamy sand

Vhcomp 50%

wet meadow

shallow marsh zone

deep marsh

30 *Eleocharis cellulosa*

20 *Sagittaria spp.*

15 *Pontederia cordata*

Bora_MAR_1 Florida Wetland Condition Index, macrophyte field data sheets, page 1

*NOTE: field codes are different than reported codes, Bora_MAR_1 = DEBORA

| Dist | 75-80 | 70-75 | 65-70 | 60-65 | 55-60 | 50-55 | 45-50 | 40-45 | 35-40 | 30-35 | 25-30 | 20-25 | 15-20 | 10-15 | 5-10 | 0-5 m | Species |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|--|
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | Sagittaria lanceolata |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | Potamogeton cordatum |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | Utricularia sp. |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | Ceratophyllum ? demersum |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | Eleocharis cellulosa |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | Leptochloa - Utr dubia |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | Proserpinaca palustris |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | Panicum hemistamum |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | Bacopa caroliniana |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | Screener repens |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | Mikania scandens |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | Leersia hexandra |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | Ludwigia repens |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | Myrica caribaea |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | Ludwigia sp. - sp. Ludwigia alata |

Site: DEBORA
Date: July 14, 05

Transect Direction: North
Data Recorder: Tom Dwanas

Biosurvey Field Data Sheet - Transects: Vegetation Presence - UF Center for Wetlands

Bora_MAR_1 Florida Wetland Condition Index, macrophyte field data sheets, page 2

*NOTE: field codes are different than reported codes, Bora_MAR_1 = DEBORA

| Species | 0-5 m | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|---------------------------------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| ✓ <i>Ceremon sepiens</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Angelica alba</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Cyperus carthagenensis</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Hydrocotyle</i> sp. | | | | | | | | | | | | | | | | |
| ✓ <i>Bacopa caroliniana</i> | | ✓ | | | | | | | | | | | | | | |
| ✓ <i>Mikania scandens</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Ludwigia pepens?</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Diodia virginiana</i> | | ✓ | | | | | | | | | | | | | | |
| ✓ <i>Polygonum punctatum</i> | | ✓ | | | | | | | | | | | | | | |
| ✓ <i>Bacopa moneri</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Pontederia cordata</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Eleocharis cellulosa</i> | | | | | | | | | ✓ | | | | | | | |
| ✓ <i>Leersia hexandra</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Panicum polystachyon</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Ceratophyllum demersum</i> | | | | | | | | | ✓ | | | | | | | |
| ✓ <i>Leptochloa?</i> link | | | | | | | | | | | | | | | | |
| ✓ <i>Syntherisma lanceolata</i> | | | | | | | | | ✓ | | | | | | | |

Date: July 14, 05
 Site: Robinsons DEBORA
 Biosurvey Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands
 Transsect Direction: East
 Data Recorder: Tony D. Davenport
 hydropericarpes
 Leptochloa dubia

Bora_MAR_1 Florida Wetland Condition Index, macrophyte field data sheets, page 3

*NOTE: field codes are different than reported codes, Bora_MAR_1 = DEBORA

| Species | 0-5 m | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|---------------------------------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| ✓ <i>Ceremon sepiens</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Angelica alba</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Cyperus carthagenensis</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Hydrocotyle</i> sp. | | | | | | | | | | | | | | | | |
| ✓ <i>Bacopa caroliniana</i> | | ✓ | | | | | | | | | | | | | | |
| ✓ <i>Mikania scandens</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Ludwigia pepens?</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Diodia virginiana</i> | | ✓ | | | | | | | | | | | | | | |
| ✓ <i>Polygonum punctatum</i> | | ✓ | | | | | | | | | | | | | | |
| ✓ <i>Bacopa monnina</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Pontederia cordata</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Eleocharis cellulosa</i> | | | | | | | | | ✓ | | | | | | | |
| ✓ <i>Leersia hexandra</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Panicum polystachyon</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Ceratophyllum demersum</i> | | | | | | | | | ✓ | | | | | | | |
| ✓ <i>Leptochloa?</i> link | | | | | | | | | | | | | | | | |
| ✓ <i>Syntherisma lanceolata</i> | | | | | | | | | ✓ | | | | | | | |

Date: July 14, 05
 Site: *Rosarium DEBORA*
 Biosurvey Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands
 Transsect Direction: East
 Data Recorder: Tony D. *Dunbar*
hydrocotyles
Leptochloa dubia

Bora_MAR_1 Florida Wetland Condition Index, macrophyte field data sheets, page 4

*NOTE: field codes are different than reported codes, Bora_MAR_1 = DEBORA

| Species | 0-5 m | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|---------------------------------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| ✓ <i>Ceremon sepiens</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Angelica alba</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Cyperus carthagenensis</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Hydrocotyle</i> sp. | | | | | | | | | | | | | | | | |
| ✓ <i>Bacopa caroliniana</i> | | ✓ | | | | | | | | | | | | | | |
| ✓ <i>Mikania scandens</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Ludwigia pepens?</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Diadia virginiana</i> | | ✓ | | | | | | | | | | | | | | |
| ✓ <i>Polygonum punctatum</i> | | ✓ | | | | | | | | | | | | | | |
| ✓ <i>Bacopa moneri</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Pontederia cordata</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Eleocharis cellulosa</i> | | | | | | | | | ✓ | | | | | | | |
| ✓ <i>Leersia hexandra</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Panicum polystachyon</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Ceratophyllum demersum</i> | | | | | | | | | ✓ | | | | | | | |
| ✓ <i>Leptochloa?</i> link | | | | | | | | | | | | | | | | |
| ✓ <i>Syntherisma lanceolata</i> | | | | | | | | | ✓ | | | | | | | |

Date: July 14, 05
 Site: Robinsons DEBORA
 Biosurvey Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands
 Transsect Direction: East
 Data Recorder: Tony D. Davenport
 hydroperacae
 Leptochloa dubia

Bora_MAR_1 Florida Wetland Condition Index, macrophyte field data sheets, page 5

*NOTE: field codes are different than reported codes, Bora_MAR_1 = DEBORA

Deborra
Vosland
Hole in Donut - Dade

Deborra
Cyperus haspays = Rhynchospora sp. ondatashat
Leplochla dubia
Ludwigia alata
Polygonum hydropiperifolius

Vosland
Ludwigia
Gnaphalium pilosa
 Salt Marsh

?

Purple flower - *Buchnera americana*
 Grass - *Sacciolepis*
 → smaller base of seed, not in transition

- ≈ 4 Rhynch. *tracyi*
- ≈ 2 Rhyn. *microcephala*
- * 3 Rhyn. *wrightiana*
- * 1 Rhyn. sp. - ? *microcephala*
- Xyris elliptica* (wire)
- Xyris juncea* (big)
- Xyris ~~capitata~~ oblonga*
(twisted)

Hole in the Donut
Eleocharis sp. (1 flower)
Sagittaria graminea
Rhynch. microcarpa (2 of them)
Eleocharis geniculata group
 flowers

Bora_MAR_1 Florida Wetland Condition Index, macroinvertebrate list

List of macroinvertebrates identified to the genus taxonomic level

Bora_MAR_1 = DEBORA = WTLNDSTORET171

Ablabesmyia
Berosus
Bratislavia
Caenis
Chironomus
Cladotanytarsus
Corixidae
Dasyhelea
Dero
Enchytraeidae
Haemonais
Hyaella
Larsia
Palpomyia/bezzia
grp.
Parachironomus
Parakiefferiella
Polypedilum
Pristina
Tanypus
Tanytarsus
Tyrrellia

Bora_MAR_2 Uniform Mitigation Assessment Method, page 1
PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

| | | | | | |
|--|---|-----------------------------------|---|---|---------------------------------------|
| Site/Project Name Boran Ranch Mitigation Bank | | Application Number NA | | Assessment Area Name or Number BORA_MAR_2 | |
| FLUCCs code SWFWMD 2000 - 6410 Freshwater Marshes | | Further classification (optional) | | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size 21 ha (52 ac) |
| Basin/Watershed Name/Number HUC - Peace River 03100101 | Affected Waterbody (Class) 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 WAA is a large basin marsh which has been hydrologically restored. The exit ditches were plugged with passive control features. This area of wetland has been restored from pasture. There were no plantings, as all species present are recruits. | | | | | |
| Assessment area description WAA is a large basin marsh elongated along the north/south axis. Three-quarters of the surrounding area is restored uplands for the mitigation bank. Approximately one-fourth of the marsh occurs off-site and is surrounded by cattle land use activities through an adjacent landowner. This marsh has been receiving channelized flow from other wetlands, however there has been hydrologic restoration that has closed off these unnatural inflows of water. | | | | | |
| Significant nearby features Phase II of the Boran Ranch Mitigation Bank will be restored wetlands and hydric flatwoods and is immediately adjacent to the east. L. Longino Pr and RV Griffin Resv (GDC) state lands to SW. | | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Much of the surrounding landscape is in pasture and row crops (as this area had been until restoration work was done). The housing demands are increasing in this area, and much of the agricultural lands are expected to become urban lands, leaving little room for preservation and protected lands. | | |
| Functions Important breeding and foraging habitat. Flood storage, aquifer recharge, and nutrient cycling. | | | Mitigation for previous permit/other historic use Support area had been drained. This marsh had been receiving channelized water inflows from other marsh wetlands. | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Mole salamander, tiger salamander, dwarf salamander, oak toad, cricket frog, pinewoods tree frog, barking frog, squirrel frog, southern chorus frog, narrow mouth toad, eastern spade foot toad, wading birds, deer, raccoon, bobcat | | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Mycteria americana</i> (wood stork - E), <i>Aramus guarauna</i> (limpkin - SSC), <i>Egretta thula</i> (snowy egret - SSC), <i>Egretta caerulea</i> (little blue heron - SSC), <i>Alligator mississippiensis</i> (alligator - SSC), <i>Grus canadensis</i> (sandhill crane - T), <i>Eudocimus alba</i> (white ibis - SSC) | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): woodpecker, cormorant, black swallowtail butterfly, grasshoppers, egg sacks on vegetation (unidentified), dragonflies, damselflies, red winged blackbirds, great egret, fly by of Florida mottled duck, cattle egret, meadowlark calling nearby, cricket frogs calling, small fish in water. Wading birds, fish, and habitat structure for small mammals were observed. In SW a <i>Salix caroliniana</i> (Carolina willow) head creates a bird rookery. | | | | | |
| Additional relevant factors: FNAI Bird Aggregation Areas - Bird Rookery and FWCC Biodiversity Hotspot with 5-6 Focal Species Overlap - with 1 mile boundary. | | | | | |
| Assessment conducted by: Erica Hernandez, Kelly Chinnners Reiss | | | Assessment date(s): 14-Jul-05 | | |

Bora_MAR_2 Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|---|--|
| Site/Project Name Boran Ranch Mitigation Bank | Application Number NA | Assessment Area Name or Number BORA_MAR_2 |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Erica Hernandez, Kelly Chinners Reiss | Assessment date: 7/14/2005 |

| 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 water functions | Minimal level of support of wetland/surface water functions | Condition is insufficient to provide wetland/surface water functions |

| | |
|---|--|
| <p>.500(6)(a) Location and Landscape Support</p> <p>w/o pres or current with</p> <p>9 </p> | <p>The location is great. There is some agriculture (row crops and cattle) within 1km but not within 300 ft (because there is part of this wetland that does not belong to the mitigation bank, this area is approximately 300 ft wide). There are no apparent barriers for wildlife. The W edge is supported by continuous wetlands. The S edge is surrounded by the mitigation bank with restored lands. The N and E have nice habitat support nearby but less ideal habitat support further away (off the bank is agricultural land uses). Most wetland dependent species are probably well supported. Some exotics species were found in the wetland and adjacent upland, but cover was minimal. Provides support for wildlife by providing water, food, and cover. This wetland is not limited by downstream discharges. The wetland systems perhaps acts as a buffer/filter for agricultural waters running in from the W. Some plant community composition in the area does include exotic species.</p> |
| <p>.500(6)(b)Water Environment (n/a for uplands)</p> <p>w/o pres or current with</p> <p>10 </p> | <p>Water levels and flows appear appropriate. Obligate plant species were abundant, adventitious rooting was found on <i>Sesbania</i> sp. No abnormal evidence of vegetation wracks, soil erosion, or soil deposition. Soil was inundated, soil moisture appeared appropriate. <i>Utricularia</i> sp. (bladderwort) with a yellow flower was found flowering, perhaps an indicator of nutrient poor water quality. Wading birds, fish, and habitat structure for small mammals were observed. A few tolerant species were found, including <i>Diodia virginiana</i> (Virginia buttonweed) and <i>Cuphea carthagenensis</i> (Columbian waxweed-exotic), but these were minor components of the vegetation community. Water clarity was appropriate. Some epiphytic algal growth visible, not abnormal.</p> |
| <p>.500(6)(c)Community structure</p> <p>1. Vegetation and/or 2. Benthic Community</p> <p>w/o pres or current with</p> <p>9 </p> | <p>Some tolerant species indicative of cattle impacts. Species appropriate, some exotic and invasive species. Many facultative wetland and obligate wetland species present. Regeneration appears adequate, based on the size of <i>Nymphaea</i> sp. (waterlily). No evidence of disease, chlorotic leaves, or spindly growth. Long term management appears appropriate for maintenance. Topographic relief is appropriate, though center ditch remains in tact in very middle of wetland with slight berm, no change in vegetation though slight change in vegetation size and height. Epiphytic algae present, not impeding macrophyte growth.</p> |

| | | | |
|---|---------|-------------|------|
| Score = sum of above scores/30 (if uplands, divide by 20) | current | or w/o pres | with |
| 0.93 | | | |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Bora_MAR_2 Wetland Rapid Assessment Procedure, page 1

Wetland Rapid Assessment Procedure (WRAP)

All Data Sheets for Existing Conditions. Sheets designed for Mitigation Bank Study - K.C.Reiss. 5/2005

Project Name: BORA_MAR_2, Boran Ranch Mitigation Bank

Date: 7/14/2005

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: Large basin herbaceous wetland. WAA is elongated along the N/S line. Hydrologically restored. Exit ditch was plugged with passive control structure. A large area of this wetland has been reclaimed from pasture (had been severely drained). All species are recruits, no planting were done.

Wetland Assessment Area: 21 ha (52 ac)

FLUCCS Code/Description: SWFWMD 2000 - 6410 Freshwater Marshes

| | |
|------|---------------------------|
| 3.0 | Wildlife Utilization (WU) |
| NA | Wetland Canopy (O/S) |
| 2.5 | Wetland Ground Cover (GC) |
| 2.5 | Habitat Support/Buffer |
| 3.0 | Field Hydrology (HYD) |
| 2.9 | WQ Input & Treatment (WQ) |
| 13.9 | SUM |
| 5 | Count |
| 0.93 | WRAP |

Bora_MAR_2 Wetland Rapid Assessment Procedure, page 2

| | |
|---|----------------------------------|
| 3.0 | Wildlife Utilization (WU) |
| Abundant cover within wetland. Matted vegetation nests of small mammals found (?rice rats). Bird rookery on <i>Salix caroliniana</i> (Carolina willow) head to the south. Evidence of woodpeckers, cormorants, black swallowtail butterflies, grasshoppers, egg sacks on vegetation, dragonflies, red winged blackbirds, great egrets, meadowlarks on nearby fence post, cattle egrets, Florida mottled duck fly-by, cricket frog calls, small fish in the water. | |

| | |
|--|-----------------------------|
| NA | Wetland Canopy (O/S) |
| Some <i>Salix caroliniana</i> (Carolina willow) and <i>Cephalanthus occidentalis</i> (buttonbush) but mostly less than 1-2 meters tall and cover less than 20% of the area. No canopy score. | |

| | |
|---|----------------------------------|
| 2.5 | Wetland Ground Cover (GC) |
| Less than 10% nuisance species, some exotic species. Exotic grass growing in the water estimated less than 5% cover. <i>Cuphea carthagenensis</i> (Columbian waxweed), <i>Diodia virginiana</i> (Virginia buttonweed), <i>Paspalum urvillei</i> (vaseygrass), and a few other listed tolerant species according to FWCI for marshes. Prior to 1996 had cattle actively grazing on drained marsh turned pasture. | |

| | | | | | |
|---|-------------------------------|------------------|-----------|-------------|-------------|
| 2.5 | Habitat Support/Buffer | | | | |
| Offsite wetland connections. This wetland is larger than the property boundary. Buffer >300 ft on all sides. Some exotic pasture grass in adjacent uplands. Connection to wildlife corridors. | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | nat. undev. Some | | | |
| | | exotics | 2.5 | 1 | 2.5 |
| | | Total = | | | |

| | |
|---|------------------------------|
| 3.0 | Field Hydrology (HYD) |
| Algae growing in vegetation but not excessive overgrowth. <i>Utricularia</i> sp. (bladderwort) in flower (yellow). Plants healthy. Not adjacent to negative impacts. Surface also has some <i>Azolla caroliniana</i> (Carolina mosquito fern) covering. | |

2.9 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| off site wetland | 2.5 | 0.17 | 0.4 |
| pine flatwoods | 3.0 | 0.67 | 2.0 |
| restored uplands | 2.5 | 0.17 | 0.4 |
| LU Total = | | | 2.8 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| natural undeveloped. | 3.0 | 1.0 | 3.0 |
| | | | 0.0 |
| | | | 0.0 |
| PT Total = | | | 3.0 |

Appendix B-6. CGW Mitigation Bank



Figure B-6.1. Landscape location of CGW Mitigation Bank (green line). Boundary of the wetland assessment area in yellow is CGW_MAN, it includes 19 ha of saltwater marsh and mangroves.



Figure B-6.2. Site photo of CGW Mitigation Bank naturally recruited mangroves and high marsh vegetation in the foreground looking northwest across assessment CGW_MAN.

CGW_MAN Uniform Mitigation Assessment Method, page 1

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

| | | | | | |
|--|--|---|--|---|--|
| Site/Project Name CGW Mitigation Bank | | Application Number NA | | Assessment Area Name or Number CGW_MAN | |
| FLUCCs code 612 Mangrove Swamps & 642 Saltwater Marshes | | Further classification (optional) Small parcels are 6420 Saltwater Marshes | | Impact or Mitigation Site? Mitigation Bank | |
| Assessment Area Size 19 ha | | Basin/Watershed Name/Number Central Indian River Lagoon SJRWMD | | Affected Waterbody (Class) Class III | |
| Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) no | | Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Borders Indian River Lagoon on east which is an Outstanding Florida Water | | | |
| Assessment area description Located in Indian River County. Bordered by the Indian River Lagoon to the east. Land to north and south consist of many exotic species, mainly overgrown patches of vegetation, area to northwest appears to be slated for development. Land to west has been newly developed high density multi-family residential. Appears stormwater is coming from the development into a east/west canal that bisects the bank. | | | | | |
| Significant nearby features Adjacent on east to the Indian River Lagoon, an OFW. Across the Indian River Lagoon is the Indian River-Malabar to Vero Beach Aquatic Reserve | | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Noted as FNAI Bird Rookery; FNAI Manatee Aggregation Site; FWCC Biodiversity Hotspots with 7+ focal species overlap; FWCC Priority Wetlands listed 1-3 species; FWCC Strategic Habitat/Priority Habitat | | |
| Functions trap and cycle organic materials with detrital export to estuaries; provide important food chain resources with high rate of primary production; provide habitat and nursery grounds for many species; offshore protection by buffering wind and wave action including sediment stabilization; provides habitat for many transient and resident fish and wildlife species. | | | Mitigation for previous permit/other historic use previously ditched and drained for mosquito control purposes. | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Odocoileus virginianus (white-tailed deer), Oryzomys palustris (rice rat), Peromyscus gossypinus (cotton mouse), Procyon lotor (raccoon), Sylvilagus palustris (marsh rabbit), Callinectes sapidus (blue crab), Ardea herodias (great-blue heron), Butorides striatus (green-backed heron), Uca spp. (fiddler crabs), Sesarma cinereum (marsh crab), arachnids (spiders), abundant insects. | | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Nerodia clarkii taeniata (Atlantic salt marsh snake) ^T - population limited to Volusia, Brevard, and Indian River Counties. Egretta caerulea (little blue heron) ^{SSC} , Egretta tricolor (tricolored heron) ^{SSC} , Egretta thula (snowy egret) ^{SSC} . | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Pandion haliaetus (osprey) ^{SSC} , Procyon lotor (raccoon), Uca spp. (fiddler crabs), Callinectes sapidus (blue crab), Ardea herodias (great blue heron), Mycteria americana (woodstork) ^E , Eudocimus albus (white ibis) ^{SSC} , Egretta tricolor (tricolored heron) ^{SSC} | | | | | |
| Additional relevant factors: We assessed the central 19 ha area or enhanced mangrove/saltmarsh. This area is described as a combination of salt marsh and mangrove forest, as small patches (<10m wide) of mangrove forests occur throughout the enhanced salt marsh areas. However, there is strong evidence of regeneration by the mangroves, including Rhizophora mangle (red mangrove), Laguncularia racemosa (white mangrove), and Avicennia germans (black mangrove). | | | | | |
| Assessment conducted by: Kelly Chinnners Reiss and Erica Hernandez | | | Assessment date(s): 23-Aug-05 | | |

Form 62-345.900(1), F.A.C. [effective date 02-04-2004]

CGW_MAN Uniform Mitigation Assessment Method, page 2
PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

| | | |
|--|---|---|
| Site/Project Name CGW Mitigation Bank | Application Number NA | Assessment Area Name or Number CGW_MAN |
| Impact or Mitigation Mitigation Bank Assessment | Assessment conducted by: Kelly Chinnners Reiss & Erica Hernandez | Assessment date: 8/23/2005 |

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 | Exotics occur near the assessment area to the including <i>Schinus terebinthifolius</i> (Brazilian pepper), <i>Typha</i> spp. (cattails), and <i>Cassarina</i> spp. (Australian pine). Bordered to E by Indian River Lagoon, an OFW. Canals around 3 sides of property (N,W,S). Habitats provide support for wildlife within wetland, but lack of habitats outside assessment area. Habitats outside assessment area are fair but fail to provide support for some species (no gradient into upland habitat on any boundary). Wildlife access partially limited by distance and barriers to N,S,W - designed to allow natural flushing for water and species exchange to the E. Some flow restrictions to E because of berms, some constructed or enhanced breaches for exchange, however to flow exchange to N or S because of berms and canals. Much of plant community composition outside the assessment area is composed of invasive exotics and nuisance species. Land uses outside the assessment area have impacts on fish and wildlife. Downstream/hydrologically connected habitats derive some benefits from the assessment area (like water quality improvements and flood attenuation), and could suffer due to impacts to the assessment area due to water quality and quantity alterations, however this is a small tract of land considering the size of the IRL, so impacts would perhaps be minimal. |
| w/o pres or current 4 | with |

| | |
|---|---|
| .500(6)(b)Water Environment (n/a for uplands) | Water level indicators distinct - crayfish borrow found, water stain lines on mangrove pneumatophors, mucky soils, adventitious rooting - were distinct but not overly abundant and mostly visible in the lower elevation areas that had not been regraded for restoration. Water levels appear lower than appropriate, as the restored marsh areas are higher in elevation and drier than expected considering seasonal patterns, antecedent rainfall, and tidal cycles. The older patches of mangrove/salt marsh were saturated or inundated likely from tidal exchange, but restored marsh areas were not. Soils drier than expected, though soil oxidation and subsidence was minimal. Vegetation consisted of appropriate species, but zonation did not mimic that of a typical salt marsh. Groundcover vegetation had some dead and dying patches of <i>Salicornia bigelovii</i> (glasswort), an estimated 50% of the population was dead. Some animals with specific hydrologic requirements were found, including wading birds, frogs, fiddler crabs, blue crab. <i>Typha</i> spp. were high in patches of standing water, but could be considered normal for tidally flushed areas. Best evidence for loss of function for water environment included the distinct change in elevation when walking from the filled/restored ditches into the mangrove patches, changes in the water environment did not appear to be due to a lack of rainfall or other climatic reasons. |
| w/o pres or current 7 | with |

| | |
|--|--|
| .500(6)(c)Community structure | Majority of plant cover by appropriate species. Invasive exotics present, but cover is minimal. Strong evidence of natural recruitment and normal regeneration of mangrove species throughout the marsh. Typical age and size class distribution in mangrove patches, including <i>Avicennia germinans</i> (black mangrove), <i>Laguncularia racemosa</i> (white mangrove), and <i>Rhizophora mangle</i> (red mangrove), typically in older patches off of the filled/restored canals. Coarse woody debris seems appropriate, patches of excess debris, perhaps from exotic species control. Plant condition is typically good, however the species <i>Salicornia bigelovii</i> (glasswort) had an estimated 50% mortality. Land management practices generally appropriate with control of exotic species. Some water control features (ditches to N,S,W of property borders, N/S ditch through matsh connection to ponds, and E/W/ bypass canal, berms with some breaches to E) that alter natural hydrologic flow and exchange. Topographic features appear appropriate, constructed steep sloped ponds found associated with N/S flowing ditch - ditch dry, but ponds holding some water, but non-vegetated. |
| 1. Vegetation and/or Benthic Community | 2. |
| w/o pres or current 8 | with |

| | | |
|---|-----------------------------|------|
| Score = sum of above scores/30 (if uplands, divide by 20) | current or w/o pres 0.63 | with |
|---|-----------------------------|------|

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

CGW_MAN Wetland Rapid Assessment Procedure, page 1

Wetland Rapid Assessment Procedure (WRAP)

All Data Sheets for Existing Conditions. Sheets designed for Mitigation Bank Study - K.C.Reiss. 5/2005

Project Name: CGW_MAN, CGW mitigation bank

Date: 8/23/2005

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: salt marsh with mangrove patches

marsh created from restoring the elevation of old mosquito control ditches running E/W from IRL

patches of mangrove include areas not recently graded

Wetland Size: assessment area approximately 19 ha of bank

FLUCCS Code/Description: 1995 SJRWMD - 612 Mangrove Swamp and 642 Saltwater Marshes

| | |
|------|---------------------------|
| 2.0 | Wildlife Utilization (WU) |
| 3.0 | Wetland Canopy (O/S) |
| 3.0 | Wetland Ground Cover (GC) |
| 1.5 | Habitat Support/Buffer |
| 2.0 | Field Hydrology (HYD) |
| 1.5 | WQ Input & Treatment (WQ) |
| 13.0 | SUM |
| 6 | Count |
| 2.2 | WRAP |

CGW MAN Wetland Rapid Assessment Procedure, page 2

2.0 Wildlife Utilization (WU)

Crayfish chimney hard and cemented near *Sabal palmetto* (cabbage palm) tree island. *Pandion haliaetus* (osprey)^{SSC} and wading birds (*Mycteria americana*, woodstork^E; *Eudocimus albus*, white ibis^{SSC}; *Egretta tricolor*, tricolored heron^{SSC}) overhead. *Procyon lotor* (raccoon) tracks and one observed foraging, game trails, *Uca* spp. (fiddler crabs), many crab holes, many other unidentified animal tracks, *Callinectes sapidus* (blue crab) in man-made pond, *Ceryle alcyon* (kingfisher) calls and observed, frogs jumping into pools, eyewitness said alligators and snakes observed from W developed parcel, tadpoles in patches of water and algae, abundant insects in water holes. Lack of abundant adjacent upland food sources, but perhaps adequate support for the specific species needs for those found in the bank. Evidence of human disturbance - remaining E/W oriented canal separating bank, large dirt road just off the property to the west separating the bank from high density multi-family residential apartment units.

3.0 Wetland Canopy (O/S)

patches of small mixed species of mangroves - some patches <1m tall, other patches with trees to 7m tall. Includes *Avicennia germinans* (black mangrove), *Laguncularia racemosa* (white mangrove), and *Rhizophora mangle* (red mangrove). Strong evidence of natural recruitment and regeneration of mangroves. <10% nuisance and exotic speices, much less than that. Some snags and dens.

3.0 Wetland Ground Cover (GC)

Mixed species composition, including *Batis maritima* (saltwort), *Salicornia virginica* (glasswort), *Salicornia bigelovii* (glasswort), *Distichlis spicata* (salt grass), *Borrchia frutescens* (sea oxeye), small *Eleocharis* sp. (spikerush), *Pluchea odorata* (salt marsh fleabane), other unidentified salt marsh adapted species. Small mangroves mixed in regenerating throughout marsh species. Algae covering the surface of the drying down pools. <10% nuisance species, some exotics occurring near upland tree islands like *Schinus terebinthifolius* (Brazilian pepper) or bisecting canals like *Typha* sp. (cattail). Disturbance to area with linear ditch features and pools with algal growth covering water, but not affecting marsh groundcover throughout.

1.5 Habitat Support/Buffer

To the E is the IRL. To the W is newly developed high density multi-family residential complex. Exotic or nuisance species in the area include *Typha* sp. (cattail), *Schinus terebinthifolius* (Brazilian pepper), *Casuarina* sp. (Australian pine). Buffer 30-300 ft wide but dominated by non-desirable species, includes many exotics, invasives, etc. Tidal connection to IRL to E side, land to E is >300 ft away.

| Buffer Type | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| disturbed land | 1.5 | 0.67 | 1.0 |
| high density res. | 0.5 | 0.17 | 0.1 |
| IRL | 2.5 | 0.17 | 0.4 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| Total = | | | 1.5 |

2.0 Field Hydrology (HYD)

Some plants brown and dying, others yellow, others healthy. All E/W ditches not restored - perhaps for mosquito control or stormwater from urban land uses. Ditch crosses bank N/S and connects to man made pools with steep slopes. Berms breached in small areas to reconnect the bank to the IRL tidal flushing. Hydrology adequate to maintain viable wetland with possible external influences.

1.5 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| disturbed lands | 2.5 | 0.67 | 1.7 |
| multi-fam res. | 1.0 | 0.17 | 0.2 |
| undeveloped | 3.0 | 0.17 | 0.5 |
| LU Total = | | | 2.3 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| no treatment | 0.0 | 0.67 | 0.0 |
| veg. strips/buffer | 1.0 | 0.17 | 0.2 |
| undeveloped | 3.0 | 0.17 | 0.5 |
| PT Total = | | | 0.7 |

Appendix B-7. Colbert-Cameron Mitigation Bank

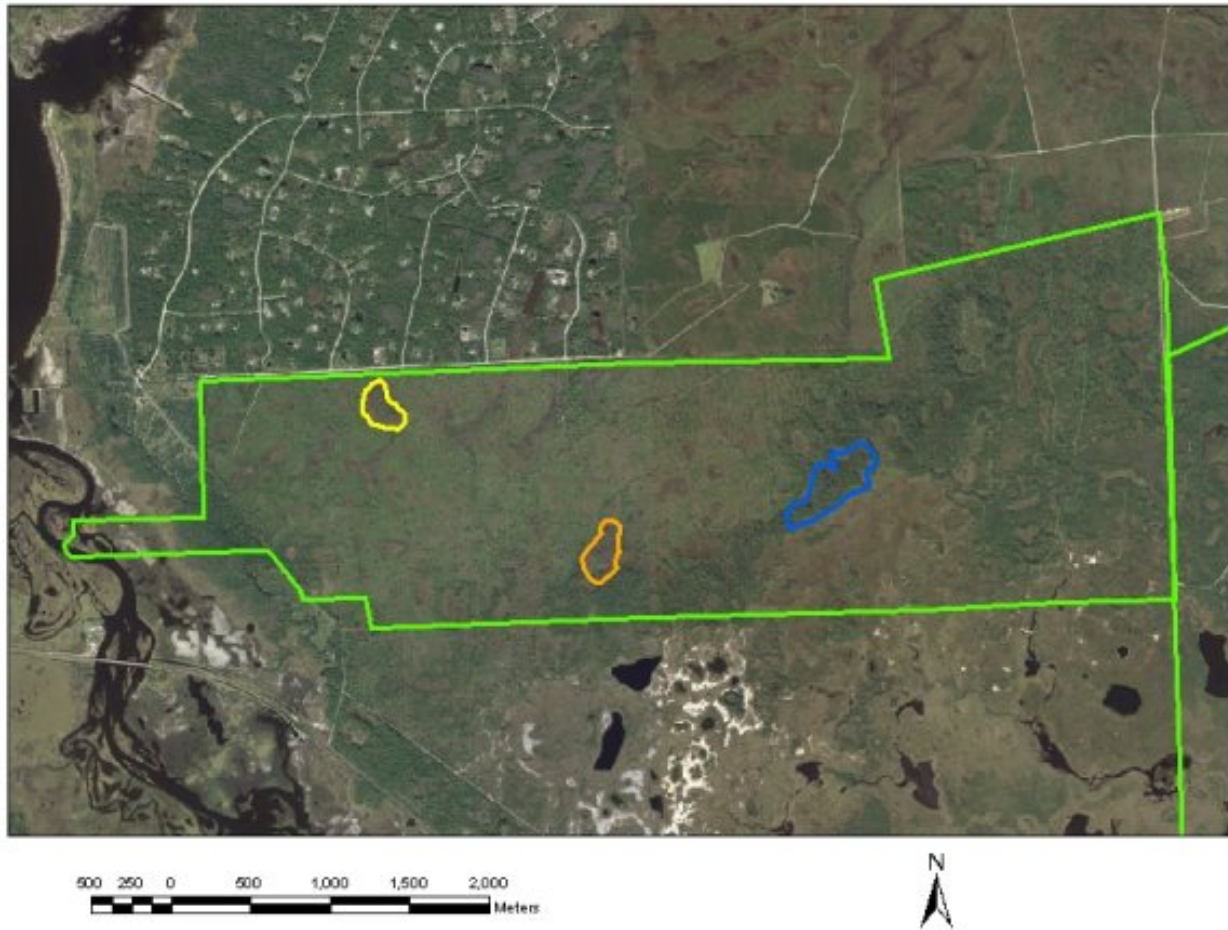


Figure B-7.1. Landscape location of Colbert-Cameron Mitigation Bank (green line). Boundaries of the wetland assessment areas for CoCa_FOR in blue, CoCa_CYP_1 in yellow, CoCa_CYP_2 in orange are shown.

(A)



(B)



(C)



Figure B-7.2. Site photos of A) an opening in the canopy allows for flowering pickerel weed (*Pontederia cordata*) in the ground cover of CoCa_FOR B) shrubby wax myrtle (*Myrica cerifera*) and button bush (*Cephalanthus occidentalis*) dominate the open areas of a cypress dome CoCa_CYP_1 impacted by wildfire and hurricanes C) bandana-of-the-Everglades (*Canna flaccida*) dominates the under story of cypress swamp CoCa_CYP_2

CoCa_FOR Uniform Mitigation Assessment Method, page 1

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

| | | | |
|--|--|--|---|
| Site/Project Name Colbert-Cameron Mitigation Bank | | Application Number NA | Assessment Area Name or Number CoCa_FOR |
| FLUCCs code 6170 mixed wetland hardwoods | Further classification (optional) Malabar hydric soil | Impact or Mitigation Site? Mitigation bank | Assessment Area Size ~ 33 acres (~13 ha) |
| Basin/Watershed Name/Number HUC 32 St. John's River, Upper | Affected Waterbody (Class) NA | Special Classification (i.e. OFW, AP, other local/state/federal designation of importance) FWCC Hotspot and Strategic Habitat Conservation Area | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Wetland drains south/southwest into extensive marsh and towards Cabbage Slough which sheet flows southwesterly into the St. John's River near its confluence with Econlockhatchee River. | | | |
| Assessment area description Large mixed forested wetland (linear on the landscape) grades into oak/palm hammock and then flatwoods to the north. Some areas open up into herbaceous and shrubby marshes. Extensive fire damage and signs of hurricane and tornado activity have caused temporary but significant damage to the canopy and structure of this wetland. Expansive marsh to the south. | | | |
| Significant nearby features Farmton Mitigation Bank to east and northeast. Double Eagle Ranch to the north. Lake Harvey housing development to the north. Lake Harvey to the west. SJRWMD property to the south (Seminole Ranch and South Lake Harney Conservation Area). | | Uniqueness (considering the relative rarity in relation to the regional landscape.) (from SJRWMD technical staff report) Natural communities on bank have experienced minimal degradation compared to other similarly-positioned lands within the St. Johns River valley region. Rare community type inland non-tidal salt marsh. | |
| Functions Flora and fauna habitat and diversity, flood flow alteration, nutrient removal/transformation | | Mitigation for previous permit/other historic use Historical silviculture practices with selective logging in more recent times. Small cattle operation with winter burning on the property for management. Some ditches were installed historically. Cattle removed, but reserve right to selectively harvest timber on 90 year rotation with no removal in wetlands. | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Warblers, green anole, cottonmouth, marbled salamander, mole salamander, three-lined salamander, slimy salamander, five-lined skink, ringneck snake, gray rat snake, eastern king snake, wood duck, red-tailed hawk, turkey, yellow-billed cuckoo, screech-owl, great-horned owl, ruby-throated hummingbird, acadian flycatcher, pileated woodpecker, hermit thrush, cedar waxwing, yellow-throated warbler, opossum, gray squirrel, flying squirrel, raccoon, mink, gray fox, bobcat, and white-tailed deer. | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Gopher tortoise (<i>Gopherus polyphemus</i>) ^T , American alligator (<i>Alligator mississippiensis</i>) ^T , Wading birds ^{SSC} , bald eagle (<i>Haliaeetus leucocephalus</i>) ^T , Florida sandhill crane (<i>Grus canadensis pratensis</i>) ^T , woodstork (<i>Mycteria americana</i>) ^E , Florida black bear (<i>Ursus americanus floridanus</i>) ^T | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Bear tracks, insects eating nectar on flowers, sapsucker holes in trees | | | |
| Additional relevant factors: None | | | |
| Assessment conducted by: Erica Hernandez | | Assessment date(s): 5-Jun-06 | |

CoCa_FOR Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|---|--|
| Site/Project Name Colbert Cameron Mitigation Bank | Application Number NA | Assessment Area Name or Number CoCa_FOR |
| Impact or Mitigation Mitigation bank | Assessment conducted by: Erica Hernandez, Tony Davanzo | Assessment date: 5-Jun-06 |

| | | | | |
|---|---|--|---|--|
| 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 w/o pres or current <input type="checkbox"/> 8 <input type="checkbox"/> with <input type="checkbox"/> | Habitats immediately outside the assessment area are intact and represent the full range of habitats needed to fulfill life history requirements. Outside of the bank there are lands in conservation to the south and west; some land in development to the north; and silviculture to the east and northeast. Although some lands in the landscape are highly altered there is enough quality contiguous habitat in the landscape to support Florida black bear which have a large land use requirement. The SJRWMD land to the south of the bank appears to be a continuous source of Brazilian pepper (<i>Schinus terebinthifolius</i>). Caesar weed (<i>Urena lobata</i>) was also noted in the landscape. Highway 46 is south of the bank but buffered by a SJRWMD conservation area. There are no hydrologic impediments, but traffic may be an impediment to some wildlife. However the presence of bears on the bank seems to indicate it is not a major barrier to top predators. This area of the St. John's River watershed does not seem heavily developed. There are no downstream limitations or barriers. Landuses in the silviculture areas outside the bank are not optimal flows into the St. John's River. |
| .500(6)(b)Water Environment (n/a for uplands) w/o pres or current <input type="checkbox"/> 9 <input type="checkbox"/> with <input type="checkbox"/> | Water levels appear normal considering weather and seasonal variation. Water level indicators such as moss collars and elevated lichen lines are consistent. Although the duff layer is not what it was historically before the wildfire in 1998 there is still considerable muck and no evidence of subsidence. Vegetation zonation may be a little off due to the fire and tornado activity opening up the forest canopy and increasing light penetration. There is no evidence of hydrologic stress. Fauna species with specific hydrologic requirements were not noted during site visit. There were no species present indicative of water quality degradation. No standing water at time of site visit. The openness of areas of the canopy could contribute to changing the microhabitat that would exist in a more closed canopy. |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current <input type="checkbox"/> 7 <input type="checkbox"/> with <input type="checkbox"/> | Majority of the plant cover is appropriate and desirable. There are some early successional species, probably a result of the open canopy. Normal zonation for plant species may be disrupted from disturbance to canopy and midstory. There is strong evidence of natural recruitment and normal regeneration of canopy, mid-story, and ground cover. Numerous snag trees and down woody debris, numerous cavities and hummocks, debris is patchy and excessive in some areas, probably from tornado activity. There is extensive damage to the canopy and it will take years for some areas to recover. Early successional species are in those areas. Ground cover looks robust and healthy. Trees that have not been damaged look healthy. Good topographic features. Land management practices are appropriate. This system just needs time to recover on its own. |

Score = sum of above scores/30 (if uplands, divide by 20)

current or w/o pres 0.8 with

If preservation as mitigation,

Preservation adjustment factor =

Adjusted mitigation delta =

For impact assessment areas

FL = delta x acres =

Delta = [with-current]

If mitigation

Time lag (t-factor) =

Risk factor =

For mitigation assessment areas

RFG = delta/(t-factor x risk) =

CoCa_FOR Wetland Rapid Assessment Procedure, page 1

Wetland Rapid Assessment Procedure (WRAP)

All Data Sheets for Existing Conditions. Sheets designed for Mitigation Bank Study - K.C.Reiss. 5/2005

Project Name: Colbert-Cameron Mitigation Bank, assessment area CoCa_FOR

Date: 5-Jun-06

Evaluator(s): Erica Hernandez

Wetland Type/Description: Large mixed forested wetland (linear on the landscape) grades into oak/palm hammock and then flatwoods to the north. Some areas open up into herbaceous and shrubby marshes. Extensive fire damage and signs of hurricane and tornadoes have caused temporary but significant damage to the canopy and structure of this wetland. Expansive marsh to the south.

Wetland Size: ~ 33 acres (~13 ha)

FLUCCS Code/Description: 6170 mixed wetland hardwoods

| | |
|------|---------------------------|
| 2.5 | Wildlife Utilization (WU) |
| 2.0 | Wetland Canopy (O/S) |
| 2.5 | Wetland Ground Cover (GC) |
| 2.5 | Habitat Support/Buffer |
| 3.0 | Field Hydrology (HYD) |
| 3.0 | WQ Input & Treatment (WQ) |
| 15.5 | SUM |
| 6 | Count |
| 0.86 | WRAP |

CoCa_FOR Wetland Rapid Assessment Procedure, page 2

| | |
|--|----------------------------------|
| 2.5 | Wildlife Utilization (WU) |
| <p>Evidence of utilization by Florida black bear which are generalist species but require lots of habitat support. No standing water to look for fish or aquatic macroinvertebrates. There are many plants in flower and profuse amounts of flying insects eating nectar on these flowers. There is abundant upland support within the bank and in the watershed. Some of the immediately adjacent lands are being utilized for silviculture and have degraded value for wildlife. On the fringes of the assessment areas in the more upland hammock areas there may be some exotic grasses and there were a few Caesar weeds (<i>Urena lobata</i>) seen, which may have been remnants from when cattle grazed in the area. Otherwise there is no other apparent human disturbance. This area probably had some select harvesting of trees historically, but there were no obvious signs visible. There is abundant cover and habitat.</p> | |

| | |
|---|-----------------------------|
| 2.0 | Wetland Canopy (O/S) |
| <p>No exotic or invasive shrub or canopy species. Canopy is comprised of diverse uneven aged trees that would be expected in a hydric hammock or bottomland forest. Parts of the canopy have been heavily impacted, probably by tornadoes based on the chaotic nature of the direction trees have fallen in certain pockets. Strong evidence of natural recruitment of canopy trees. In some areas snags and woody debris are excessive due to natural disturbance. This hammock was probably impacted by fire the most on the south side, which may have opened up this side of the hammock and made it more vulnerable to hurricanes and tornadoes. Trees that are still living look very healthy. Turkeys are known to have roosted in this area. Where the trees grade into the marsh there was a transitional shrubby area where there has traditionally been a bird rookery. This area appears to have been impacted by the 1998 fires and it is unknown whether birds still nest in that</p> | |

| | |
|--|----------------------------------|
| 2.5 | Wetland Ground Cover (GC) |
| <p>Ground cover is very robust. Nice species diversity. Many plants in flower or fruit. There are some unidentified grasses that are not dominate but may have been introduced by cattle? Cattle were removed in 1998, when the property became a bank. Dense ground cover is probably benefiting from increased light penetration due to openness of parts of the canopy. Some early successional species present in the most open areas.</p> | |

| | | | | | |
|--|-------------------------------|----------------|-----------|-------------|-------------|
| 2.5 | Habitat Support/Buffer | | | | |
| <p>Buffers larger than 300 feet on all sides of this wetland system. Wetland is connected to wildlife corridors and is contiguous with offsite wetland systems. Natural ecotones are intact. This wetland supports Florida black bears, which require lots of contiguous habitat. Plants in the associated buffer are predominately desirable. Brazilian pepper (<i>Schinus terebinthifolius</i>) is present in the bank and is being treated as it is encountered. Some Caesar weed (<i>Urena lobata</i>) was seen in the upland portions of the hammock but is not dominant.</p> | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | North | 2.5 | 0.25 | 0.63 |
| | | South | 2.5 | 0.25 | 0.63 |
| | | East | 2.5 | 0.25 | 0.63 |
| | | West | 2.5 | 0.25 | 0.63 |
| | | Total = | | | |

| | |
|---|------------------------------|
| 3.0 | Field Hydrology (HID) |
| <p>Very thin layer of duff over mucky soils that still retain a lot of moisture even though rainfall is below normal for the season. Obligate plant species present. Plants look healthy, dead trees are a result of wildfire and tornadoes. Hydrologic indicators including mucky soils, wetland vegetation, elevated moss collars, indicate that there is a natural hydroperiod. There does not appear to be any negative hydrologic impacts in the adjacent landscape. There are no signs of subsidence. The openness of areas of the canopy could contribute to changing the microhabitat that would exist in a more closed canopy. The hydrologic regime is adequate to maintain a viable wetland.</p> | |

| | |
|--|---------------------------------------|
| 3.0 | WQ Input & Treatment (WQ)* |
| <p><i>*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.</i></p> | |

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|---------------------|-----------|-------------|-------------|
| natural undeveloped | 3.0 | 1.00 | 3.0 |
| LU Total = | | | 3.0 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| natural undeveloped | 3.0 | 1.00 | 3.0 |
| PT Total = | | | 3.0 |

CoCa_CYP_1 Uniform Mitigation Assessment Method, page 1

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

| | | | |
|---|--|---|--|
| Site/Project Name Colbert-Cameron Mitigation Bank | | Application Number NA | Assessment Area Name or Number CoCa_CYP_1 |
| FLUCCs code 6210 Cypress | Further classification (optional) SSURGO soils POMONA | Impact or Mitigation Site? Mitigation bank | Assessment Area Size 12.75 ac (5.16 ha) |
| Basin/Watershed Name/Number HUC 32 St .John's River, Upper | Affected Waterbody (Class) NA | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) FWCC Hotspot and Strategic Habitat Conservation Area | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Cypress depression, drains south through natural swale drainage features. Drainage catchment north of wetland has been severed by low density residential development. Previously existing culverts north of wetland are blocked. Wetlands drain south and west into St. John's River. | | | |
| Assessment area description Oblong cypress dominated forested wetland. Severely impacted from 1998 wildfires. Soils have been burned down to exposed sand in some areas. Very open canopy, lots of large woody debris. This area stays wet longer than other wetlands on the property but was dry at the time of the site visit. Thick ground cover and shrubby vegetation. Surrounded by intact hydric pine flatwoods. | | | |
| Significant nearby features Farmton Mitigation Bank to east and northeast. Double Eagle Ranch to the north. Lake Harvey housing development north. Lake Harvey to the west. SJRWMD property to the south (Seminole Ranch and South Lake Harney Conservation Area). | Uniqueness (considering the relative rarity in relation to the regional landscape.) (from SJRWMD technical staff report) Natural communities on bank have experienced minimal degradation compared to other similarly-positioned lands within the St. John's River valley region. Rare community type (inland non-tidal salt marsh) exists within the mitigation bank. | | |
| Functions Flora and fauna habitat and diversity, flood flow alteration, nutrient removal/transformation | Mitigation for previous permit/other historic use Historical silvicultural practices with selective logging in more recent times. Small cattle operation with winter burning on the property for management. Some ditches were installed historically. Cattle removed but reserve right to select harvest timber on 90 year rotation with no removal in wetlands. | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Flatwoods salamander, mole salamander, oak toad, dwarf salamander, southern cricket frog, pinewoods treefrog, little grass frog, alligator, narrowmouth toad, snapping turtle, mud turtles, eastern mud snake, cottonmouth, wood duck, swallow-tailed kite, barred owl, pileated woodpecker, great-crested flycatcher, prothonotary warbler, and rusty blackbird | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Gopher tortoise (<i>Gopherus polyphemus</i>) ^T , American alligator (<i>Alligator mississippiensis</i>) ^T , wading birds ^{SSC} , bald eagle (<i>Haliaeetus leucocephalus</i>) ^T , Florida sandhill crane (<i>Grus canadensis pratensis</i>) ^T , woodstork (<i>Mycteria americana</i>) ^E , Florida black bear (<i>Ursus americanus floridanus</i>) ^T | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Little grass frog, leopard frog. Song birds flitting around in shrubby vegetation. Towhee, blue gray gnatcatcher, titmouse, could hear Bachman's sparrow call coming from surrounding flatwoods. Zebra butterfly. Otter scat found in a few different places, some looked pretty old and dry crayfish shells found. | | | |
| Additional relevant factors: Although this wetland appears to have suffered a serious impact from the 1998 wildfires and 2004 hurricanes this appears to be a temporary deviation in succession. There is very strong evidence of pond-cypress (<i>Taxodium ascendens</i>) regeneration and although it will take some time for soils and the canopy to recover the wetland appears to be doing so. | | | |
| Assessment conducted by: Erica Hernandez | | Assessment date(s): 5-Jun-06 | |

CoCa_CYP_1 Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|---|--|
| Site/Project Name Colbert Cameron Mitigation Bank | Application Number NA | Assessment Area Name or Number CoCa_CYP_1 |
| Impact or Mitigation Mitigation bank | Assessment conducted by: Erica Hernandez | Assessment date: 6/5/2006 |

| | | | | |
|--|---|--|---|--|
| 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 | Habitats outside the assessment area consist of prescribed fire maintained wet pine flatwoods and wet prairies. Natural areas are cut off to the north by a low density residential development. Some exotic species are in the bank's landscape but are being removed as they are encountered. Surrounding properties are seed source for exotic species. Although some lands in the landscape are highly altered there is enough quality contiguous habitat in the landscape to support Florida black bear (<i>Ursus americanus floridanus</i>), which have a large land use requirement. Highway 46 is south of the bank but buffered by a SJRWMD conservation area. There are no hydrologic impediments downstream of the assessment area, but traffic may be an impediment to some wildlife. There are no downstream impediments to the assessment areas function. Outside landuses are not optimal, primarily silviculture to the north and east of the mitigation bank, but in general the landscape is not heavily developed at this time. There are no downstream hydrologic impediments. | | | |
| | w/o pres or current 8 | with | | |

| | | | | |
|---|---|------|--|--|
| .500(6)(b)Water Environment (n/a for uplands) | Assessment area was dry at time of site visit, this was expected because of the lack of rainfall in the region. Hydrologic indicators included buttressed tree bases, loop roots, wetland plant species, consistent water stain lines, and elevated lichen lines. Soils had some duff and muck in patches, other areas had exposed sand. It was not uncommon to see pond-cypress (<i>Taxodium ascendens</i>) knees with an exposed sand substrate underneath. It is believed that this is a result of the 1998 wildfires and not a symptom of soil subsidence from altered hydrologic conditions. There would be no reason for subsidence in this landscape due to it being mostly intact. These knees also exhibited fire scars. Perhaps due to the muck and duff being burned in the wildfires, this wetland oxidizes more easily at times of drought and it will take a long time for the wetland to build up organic soils and duff. Fire history is not indicative of excessive dryness at the site but a result of a bad wildfire year in the state due to excessive drought. There are no indicators of atypical hydrologic conditions or hydrologic stress. There were a few frogs seen in the wetland and some old crayfish shells and otter scat. There are some patches of cattail (<i>Typha</i> spp.), but they are not dominant and may be a result of nutrients released and full sunlight availability from the wildfires and not indicators of water quality degradation. Historically there was a ditch that drained the wetland to the south but this was filled as part of mitigation activities. | | | |
| | w/o pres or current 7 | with | | |

| | | | | |
|---|--|------|--|--|
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community | Most plant species present are desirable and native wetland plant species. Not all species present would be expected for this type of wetland community, but due to 1998 wildfire and recent 2004 hurricane disturbances, this assessment area is experiencing some changes in succession. The primary catalyst for this alteration is the lack of a closed canopy. There was one small Brazilian pepper (<i>Schinus terebinthifolius</i>) found in the wetland. There is strong evidence of normal regeneration, many uneven aged pond-cypress (<i>Taxodium ascendens</i>) trees were growing up in the wetland. Many plants were in fruit. Mature trees that were not destroyed were uneven aged, none were very large probably because at some point in the past this area was logged but most are a good size. Plants look robust. Land management practices, especially prescribed fire in the pine flatwoods, are appropriate and beneficial to the landscape. The wetland's watershed may be disrupted to the north due to a low density residential development cutting off flow from a natural swale feature. There are no indicators of a shift in the plant community due to this disruption. There are lots of topographic features, woody debris is excessive, this might be optimal refugia for some species and not optimal for others. | | | |
| | w/o pres or current 7 | with | | |

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|---|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current or w/o pres 0.73 |

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|---|
| If preservation as mitigation, Preservation adjustment factor = Adjusted mitigation delta = |
|---|

| |
|---|
| For impact assessment areas FL = delta x acres = |
|---|

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|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|---|
| If mitigation Time lag (t-factor) = Risk factor = |
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| |
|--|
| For mitigation assessment areas RFG = delta/(t-factor x risk) = |
|--|

Form 62-345.900(2), F.A.C. [effective date 02-04-2004]

CoCa_CYP_1 Wetland Rapid Assessment Procedure, page 1

Wetland Rapid Assessment Procedure (WRAP)

All Data Sheets for Existing Conditions. Sheets designed for Mitigation Bank Study - K.C.Reiss. 5/2005

Project Name: CoCa_CYP_1 at Colbert-Cameron Mitigation Bank

Date: 5-Jun-06

Evaluator(s): Erica Hernandez

Wetland Type/Description: Oblong forested cypress swamp, heavily impacted by 1998 wildfires. Very open canopy, thick ground cover and shrubby vegetation.

Wetland Size: 12.75 acres (5.16 ha)

FLUCCS Code/Description: 6210 Cypress

| | |
|------|---------------------------|
| 2.0 | Wildlife Utilization (WU) |
| 2.0 | Wetland Canopy (O/S) |
| 3.0 | Wetland Ground Cover (GC) |
| 2.5 | Habitat Support/Buffer |
| 2.0 | Field Hydrology (HYD) |
| 3.0 | WQ Input & Treatment (WQ) |
| 14.5 | SUM |
| 6 | Count |
| 0.81 | WRAP |

CoCa_CYP_1 Wetland Rapid Assessment Procedure, page 2

| | |
|---|----------------------------------|
| 2.0 | Wildlife Utilization (WU) |
| <p>Evidence that an otter used the wetland, probably when it had been holding water. Song birds seen in wetland. Upland food sources are intact and maintained pine flatwoods. Human disturbance north of the property, a housing development that has decreased the watershed size of this wetland. In the past there was logging in the wetland. There is adequate cover in the wetland, but it is not optimal habitat because it has been heavily impacted by 1998 wildfire and 2004 hurricanes and will take a long time to recover its canopy. Excessive woody debris will provide cover for some species but may not be appropriate for others. Evapotranspiration may be altered because of the diminished canopy and increase in herbaceous vegetation. Historically, according to the land owner, this wetland held water longer than other on site wetlands. There was no standing water at the time of the site visit and therefore no evidence of forage fish but a few small frogs were seen as well as a few old crawfish shells.</p> | |

| | |
|--|-----------------------------|
| 2.0 | Wetland Canopy (O/S) |
| <p>One small Brazilian pepper (<i>Schinus terebinthifolius</i>) was found in the wetland assessment area. The canopy has been largely disturbed due to the 1998 wildfires and 2004 hurricanes and perhaps previously from logging. Many young pond-cypress (<i>Taxodium ascendens</i>) trees were seen growing in the wetland and were of uneven ages. Regeneration appears to be good and the impacts to this wetland are temporary. In its current state, habitat support provided by the canopy is not great.</p> | |

| | |
|---|----------------------------------|
| 3.0 | Wetland Ground Cover (GC) |
| <p>Abundant desirable wetland plants in the groundcover. Plants are healthy and robust. Highbush blueberry (<i>Vaccinium corymbosum</i>) and bandana-of-the-Everglades (<i>Canna flaccida</i>) are in fruit at time of site visit. Ground cover has probably benefited from increased nutrients into the system because of the wildfires.</p> | |

| 2.5 | Habitat Support/Buffer | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-------------------------------|-------------|-------------|-------------|-------------|-------|---|------|------|-------|---|------|------|------|---|------|------|------|---|------|------|----------------|--|--|------------|
| <p>Wetland is surrounded by hydric pine flatwoods maintained by prescribed fire. The southern edge of the assessment area has a considerably thicker shrubby edge which could be the result of a fire shadow. The other edges are more open and have a less distinct gradation into pine flatwoods. The northern side of the assessment area is less than 300 feet to the mitigation bank boundary. This boundary area is being monitored for exotic species and is likely to be a seed source for exotic species. North of the bank boundary is a low density residential neighborhood. The north side cuts off part of the natural drainage way into the wetland assessment area either by sheet flow or swales.</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Buffer Type</th> <th style="width: 10%;">(Score) x</th> <th style="width: 10%;">(% of Area)</th> <th style="width: 10%;">= Sub Total</th> </tr> </thead> <tbody> <tr> <td>North</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.25</td> </tr> <tr> <td>South</td> <td style="text-align: center;">3</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.75</td> </tr> <tr> <td>East</td> <td style="text-align: center;">3</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.75</td> </tr> <tr> <td>West</td> <td style="text-align: center;">3</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.75</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total =</td> <td style="text-align: center;">2.5</td> </tr> </tbody> </table> | | Buffer Type | (Score) x | (% of Area) | = Sub Total | North | 1 | 0.25 | 0.25 | South | 3 | 0.25 | 0.75 | East | 3 | 0.25 | 0.75 | West | 3 | 0.25 | 0.75 | Total = | | | 2.5 |
| Buffer Type | (Score) x | (% of Area) | = Sub Total | | | | | | | | | | | | | | | | | | | | | | |
| North | 1 | 0.25 | 0.25 | | | | | | | | | | | | | | | | | | | | | | |
| South | 3 | 0.25 | 0.75 | | | | | | | | | | | | | | | | | | | | | | |
| East | 3 | 0.25 | 0.75 | | | | | | | | | | | | | | | | | | | | | | |
| West | 3 | 0.25 | 0.75 | | | | | | | | | | | | | | | | | | | | | | |
| Total = | | | 2.5 | | | | | | | | | | | | | | | | | | | | | | |

| | |
|--|------------------------------|
| 2.0 | Field Hydrology (HID) |
| <p>Assessment area connected to other wetlands through wet prairie or swale type wetland features that sheet flow at times of high water. Assessment area watershed consists of wet pine flatwoods and wet prairies that sheet flow into the wetland. An unimproved road acts as a fire break south of wetland and has a culvert connecting the swale on either side. Other unimproved roads are mowed and would allow sheet flow. Watershed area north of the assessment area has been cut off by development and there is no longer connection of flow coming from the north. This reduction of available drainage into the wetland may cause a shift in wetland vegetation but there were no obvious signs at the time of the site visit. The wetland did not have transitional or upland species growing in it. Wetland indicators including wetland species and stain lines were consistent indicators of a normal hydrology.</p> | |

| | |
|-----|---------------------------------------|
| 3.0 | WQ Input & Treatment (WQ)* |
|-----|---------------------------------------|

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|---------------------|-----------|-------------|-------------|
| natural undeveloped | 3.0 | 1.00 | 3.0 |
| LU Total = | | | 3.0 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| natural undeveloped | 3.0 | 1.00 | 3.0 |
| PT Total = | | | 3.0 |

CoCa_CYP_2 Uniform Mitigation Assessment Method, page 1

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

| | | | |
|--|---|---|--|
| Site/Project Name Colbert-Cameron Mitigation Bank | | Application Number NA | Assessment Area Name or Number CoCa_CYP_2 |
| FLUCCs code 6210 Cypress | Further classification (optional) SSURGO soils Bluff and Riviera | Impact or Mitigation Site? Mitigation bank | Assessment Area Size 14 ac (5.7 ha) |
| Basin/Watershed Name/Number HUC 32 St .John's River, Upper | Affected Waterbody (Class) Class III | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) FWCC Hotspot and Strategic Habitat Conservation Area | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Assessment area is surrounded by a mosaic of hydric pine flatwoods, mesic pine flatwoods, wet prairies and marshes to the north and east, and is connected to mixed wetland hardwoods dominated by cabbage palm and oaks to the south. This area drains south towards more extensive marshes that drain into the St. John's River. | | | |
| Assessment area description Pond-cypress (<i>Taxodium ascendens</i>) dominated swamp, fairly open canopy and very open park like midstory. Ground cover is dominated by canna lily (bandana-of-the-Everglades, <i>Canna flaccida</i>), but some typical shade tolerant species are still present but not dominant. Some patches of cattail (<i>Typha</i> spp.) and sawgrass (<i>Cladium jamaicense</i>). Fire scars visible on trunks, but less woody debris than in other wetlands on the bank. Duff and muck still present. Southern end of wetland had more tree diversity with swamp tupelo (<i>Nyssa sylvatica</i> var. <i>biflora</i>) and sweetgum (<i>Liquidambar styraciflua</i>) in the cypress dominated canopy, more exposed mucky ground and fireflag (<i>Thalia geniculata</i>) transitions to canna lily. Lots of epiphytes. | | | |
| Significant nearby features Farmton Mitigation Bank to east and northeast. Double Eagle Ranch to the north. Lake Harney housing development to the north. Lake Harney to the west. SJRWMD property South (Seminole Ranch and South Lake Harney Conservation Area). | | Uniqueness (considering the relative rarity in relation to the regional landscape.) (from SJRWMD technical staff report) Natural communities on bank have experienced minimal degradation compared to other similarly positioned lands within the St. John's River valley region. Rare community type inland non-tidal salt marsh. | |
| Functions Flora and fauna habitat and diversity, floodflow alteration/attenuation, nutrient removal/transformation | | Mitigation for previous permit/other historic use Historical silviculture practices with selective logging in more recent times. Small cattle operation with winter burning of the property for management. Some ditches were installed historically. Cattle removed, but reserve right to select harvest timber on 90 year rotation with no removal in wetlands. | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Southern dusky salamander, cricket frog, little grass frog, chicken turtle, striped mud turtle, ringneck snake, scarlet kingsnake, crayfish snake, cottonmouth, wood duck, hawks, turkey, great horned owl, barred owl, pileated woodpecker, songbirds, gray squirrel, black bear, raccoon, mink, river otter, bobcat, and white-tailed deer | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) American alligator (<i>Alligator mississippiensis</i>) T, Wading birds SSC, bald eagle (<i>Haliaeetus leucocephalus</i>) T, Florida sandhill crane (<i>Grus canadensis pratensis</i>) T, Woodstork (<i>Mycteria americana</i>) E, Florida black bear (<i>Ursus americanus floridanus</i>) T | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Deer and or rabbit scat, barred owls, downy woodpecker, Northern parula, otter scat, raccoon scat, red shouldered hawk, deer tracks, pileated woodpecker | | | |
| Additional relevant factors: None | | | |
| Assessment conducted by: Erica Hernandez | | Assessment date(s): 5-Jun-06 | |

CoCa_CYP_2 Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|---|--|
| Site/Project Name Colbert-Cameron Mitigation Bank | Application Number NA | Assessment Area Name or Number CoCa_CYP_2 |
| Impact or Mitigation Mitigation bank | Assessment conducted by: Erica Hernandez | Assessment date: 5-Jun-06 |

| | | | | |
|--|---|--|---|--|
| 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 w/o pres or current 8 | with | Habitats immediately outside the assessment area are intact and represent the full range of habitats needed to fulfill life history requirements. Outside of the bank there are lands in conservation to the south and west; some land in development to the north; and silviculture to the east and northeast. Although some lands in the landscape are highly altered, there is enough quality contiguous habitat in the landscape to support Florida black bear, which have a large land use requirement. The SJRWMD land to the south of the bank appears to be a continuous source of Brazilian pepper (<i>Schinus terebinthifolius</i>). Caesar weed (<i>Urena lobata</i>) was also noted in the landscape. Highway 46 is south of the bank but buffered by a SJRWMD conservation area. There are no hydrologic impediments, but traffic may be an impediment to some wildlife. However the presence of bears on the bank seems to indicate it is not a major barrier to top predators. This area of the St. John's River watershed does not seem heavily developed. There are no downstream limitations or barriers. Landuses in the silviculture areas outside the bank are not optimal for wildlife. |
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| .500(6)(b)Water Environment (n/a for uplands) w/o pres or current 9 | with | Assessment area had no standing water at time of site visit. Water level indicators such as stain lines, hydric plants, muck soils, and moss collars were consistent. Soils were mucky under a thin layer of duff and in some areas where there was less vegetative cover soils were very saturated and mucky. There was no evidence of soil desiccation, subsidence, or oxidation. There are fire scars on many of the cypress trees, but the 1998 wildfire damage appears to have been less catastrophic here than other areas on the bank. Dominate understory of canna lily (bandana-of-the-Everglades, <i>Canna flaccida</i>) is not the expected zonation, but this is probably not a result of atypical hydrologic conditions. Vegetation does not appear hydrologically stressed. Otter scat was detected, otherwise fauna species detected are not wetland dependant. There were small patches of cattail (<i>Typha sp.</i>) as well as sawgrass (<i>Cladium jamaicense</i>), but they did not dominant. There are no landscape features evident that would change the hydrology of this system. |
| | | |

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|---|------|---|
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current 8 | with | Nearly all of the plant cover in the canopy, shrub, and ground cover are appropriate. The abundance of canna lily (bandana-of-the-Everglades, <i>Canna flaccida</i>) as the dominant ground cover was not expected but it is a native wetland plant. Its presence in such dominance may be a temporary deviation and a result of the openness of the canopy. High waters from the 2004 hurricanes dispersing seed of the canna lily in another theory. Other native shade tolerant species such as ferns and rushes seem overwhelmed by the canna lily. The wetland does not lack diversity but the density of certain species was not expected. There was abundant evidence of regeneration of pond-cypress (<i>Taxodium ascendens</i>). Land management practices including burning the pine flatwoods and removing hogs and exotics are beneficial to this wetland. No exotic species were seen in the assessment area. Age and size distribution is normal. This area was probably logged historically. This area was not as open as other cypress areas on the property, but it still had a lot of light penetration through the canopy. There are snags and den trees present. Woody debris is greater in some patches but not as disruptive as in some other wetlands on the bank. Plants look healthy and appear to be in good condition. Topographic features are normal and present. |
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|---|------|
| Score = sum of above scores/30 (if uplands, divide by 20) current or w/o pres 0.83 | with |
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| If preservation as mitigation, Preservation adjustment factor = Adjusted mitigation delta = |
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| For impact assessment areas FL = delta x acres = |
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| Delta = [with-current] |
|------------------------|

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| If mitigation Time lag (t-factor) = Risk factor = |
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| For mitigation assessment areas RFG = delta/(t-factor x risk) = |
|--|

Form 62-345.900(2), F.A.C. [effective date 02-04-2004]

CoCa_CYP_2 Wetland Rapid Assessment Procedure, page 1

Wetland Rapid Assessment Procedure (WRAP)

All Data Sheets for Existing Conditions. Sheets designed for Mitigation Bank Study - K.C.Reiss. 5/2005

Project Name: Colbert-Cameron Mitigation Bank CoCa_CYP_2

Date: 5-Jun-06

Evaluator(s): Erica Hernandez

Wetland Type/Description: Pond-cypress (*Taxodium ascendens*) dominated swamp,
open midstory dominated by bandana-of-the-Everglades (*Canna flaccida*) in the groundcover.

Wetland Size: 14 ac (5.7 ha)

FLUCCS Code/Description: 6210 Cypress

| | |
|------|---------------------------|
| 2.5 | Wildlife Utilization (WU) |
| 2.5 | Wetland Canopy (O/S) |
| 2.5 | Wetland Ground Cover (GC) |
| 2.5 | Habitat Support/Buffer |
| 3.0 | Field Hydrology (HYD) |
| 3.0 | WQ Input & Treatment (WQ) |
| 16.0 | SUM |
| 6 | Count |
| 0.89 | WRAP |

CoCa_CYP_2 Wetland Rapid Assessment Procedure, page 2

| | |
|---|---------------------------|
| 2.5 | Wildlife Utilization (WU) |
| <p>Otter scat and other non-wetland dependant species such as raccoon and deer tracks and scat. Song birds in canopy as well as numerous barred owls and pileated and downy woodpeckers heard. No standing water to look for forage fish or macroinvertebrates. There are abundant upland food sources in the surrounding intact landscape. There is adequate cover and habitat for wildlife in and around the assessment area. There may have been harvesting of pond-cypress (<i>Taxodium ascendens</i>) trees historically in the wetland, there were no obvious signs of those practices at time of site visit (maybe this could have attributed to why the canopy was not very dense).</p> | |

| | |
|--|----------------------|
| 2.5 | Wetland Canopy (O/S) |
| <p>No exotic species present. Mature trees present in the canopy, good habitat support. Trees and canopy cover not quite what would be expected for this type of wetland. Would expect a less open canopy although this one is more closed than others that were visited within the mitigation bank. More light penetration than would be expected. Wetland did not have much of a midstory in most areas, but some shrub species were present in patches. There were many sapling and young pond-cypress (<i>Taxodium ascendens</i>) trees, regeneration was obvious and abundant. There were some snag. Trees look healthy. This wetland seemed to have the least amount of canopy disturbance compared to other forested wetlands on the mitigation bank. Some areas in the wetland did have what looked more like hurricane damage but this was also patchy.</p> | |

| | |
|--|---------------------------|
| 2.5 | Wetland Ground Cover (GC) |
| <p>Groundcover is overwhelmingly dominated by canna lily (bandana-of-the-Everglades, <i>Canna flaccida</i>). Other native shade tolerant wetland plants are present upon a closer inspection, but they are not dominant. There are patches of sawgrass (<i>Cladium jamaicense</i>) and some cattail (<i>Typha</i> spp.) was also seen. In areas that have a longer hydroperiod, because there is more exposed mucky soils, other species such as fireflag (<i>Thalia geniculata</i>) are present. As the wetland gets closer to the adjacent mixed forested wetland the ground cover becomes more diverse. Although the species present are native and desirable, the domination of the canna lily is unexpected and not typical in such abundance for this type of system. Perhaps the disturbance of the 1998 wildfires and the 2004 hurricanes (which also caused extensive flooding) contributed to the canna lily's distribution.</p> | |

| 2.5 | Habitat Support/Buffer | | | | | | | | | | | | | | | | | | | | | | | | |
|--|------------------------|-------------|-------------|-------------|-------------|-------|-----|------|------|-------|-----|------|------|------|-----|------|------|------|-----|------|------|----------------|--|--|------------|
| <p>Buffer is greater than 300 feet on all sides of the wetland. Some areas do have some exotic species, specifically Brazilian pepper (<i>Schinus terebinthifolius</i>) and Caesar weed (<i>Urena lobata</i>) in the landscape. The adjacent conservation area to the south of the bank owned by the SJRWMD is a constant seed source. Predominately these areas are natural and dominated by desirable plants. This landscape supports Florida black bears, which require a lot of habitat and connectivity through corridors.</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Buffer Type</th> <th style="width: 10%;">(Score) x</th> <th style="width: 10%;">(% of Area)</th> <th style="width: 20%;">= Sub Total</th> </tr> </thead> <tbody> <tr> <td>North</td> <td style="text-align: center;">2.5</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.63</td> </tr> <tr> <td>South</td> <td style="text-align: center;">2.5</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.63</td> </tr> <tr> <td>East</td> <td style="text-align: center;">2.5</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.63</td> </tr> <tr> <td>West</td> <td style="text-align: center;">2.5</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.63</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total =</td> <td style="text-align: center;">2.5</td> </tr> </tbody> </table> | | Buffer Type | (Score) x | (% of Area) | = Sub Total | North | 2.5 | 0.25 | 0.63 | South | 2.5 | 0.25 | 0.63 | East | 2.5 | 0.25 | 0.63 | West | 2.5 | 0.25 | 0.63 | Total = | | | 2.5 |
| Buffer Type | (Score) x | (% of Area) | = Sub Total | | | | | | | | | | | | | | | | | | | | | | |
| North | 2.5 | 0.25 | 0.63 | | | | | | | | | | | | | | | | | | | | | | |
| South | 2.5 | 0.25 | 0.63 | | | | | | | | | | | | | | | | | | | | | | |
| East | 2.5 | 0.25 | 0.63 | | | | | | | | | | | | | | | | | | | | | | |
| West | 2.5 | 0.25 | 0.63 | | | | | | | | | | | | | | | | | | | | | | |
| Total = | | | 2.5 | | | | | | | | | | | | | | | | | | | | | | |

| | |
|---|-----------------------|
| 3.0 | Field Hydrology (HID) |
| <p>Plants look healthy and not stressed from hydrologic changes. Wetland appears to exhibit a natural hydroperiod. There are no known external factors altering this wetland's hydroperiod. Soil substrate has a layer of duff and muck underneath it and shows no signs of subsidence or oxidation. Hydrologic indicators such as moss collars and lichen lines are consistent throughout the wetland.</p> | |

| | |
|--|----------------------------|
| 3.0 | WQ Input & Treatment (WQ)* |
| <p><small>*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.</small></p> | |

| LANDUSE CATEGORY (LU) | | | |
|-----------------------|-----------|-------------|-------------|
| Land Use Category | (Score) x | (% of Area) | = Sub Total |
| natural undevel. | 3.0 | 1.00 | 3.0 |
| LU Total = | | | 3.0 |

| PRETREATMENT CATEGORY (PT) | | | |
|----------------------------|-----------|-------------|-------------|
| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
| natural undevel. | 3.0 | 1.00 | 3.0 |
| PT Total = | | | 3.0 |

Appendix B-8. Corkscrew Regional Mitigation Bank

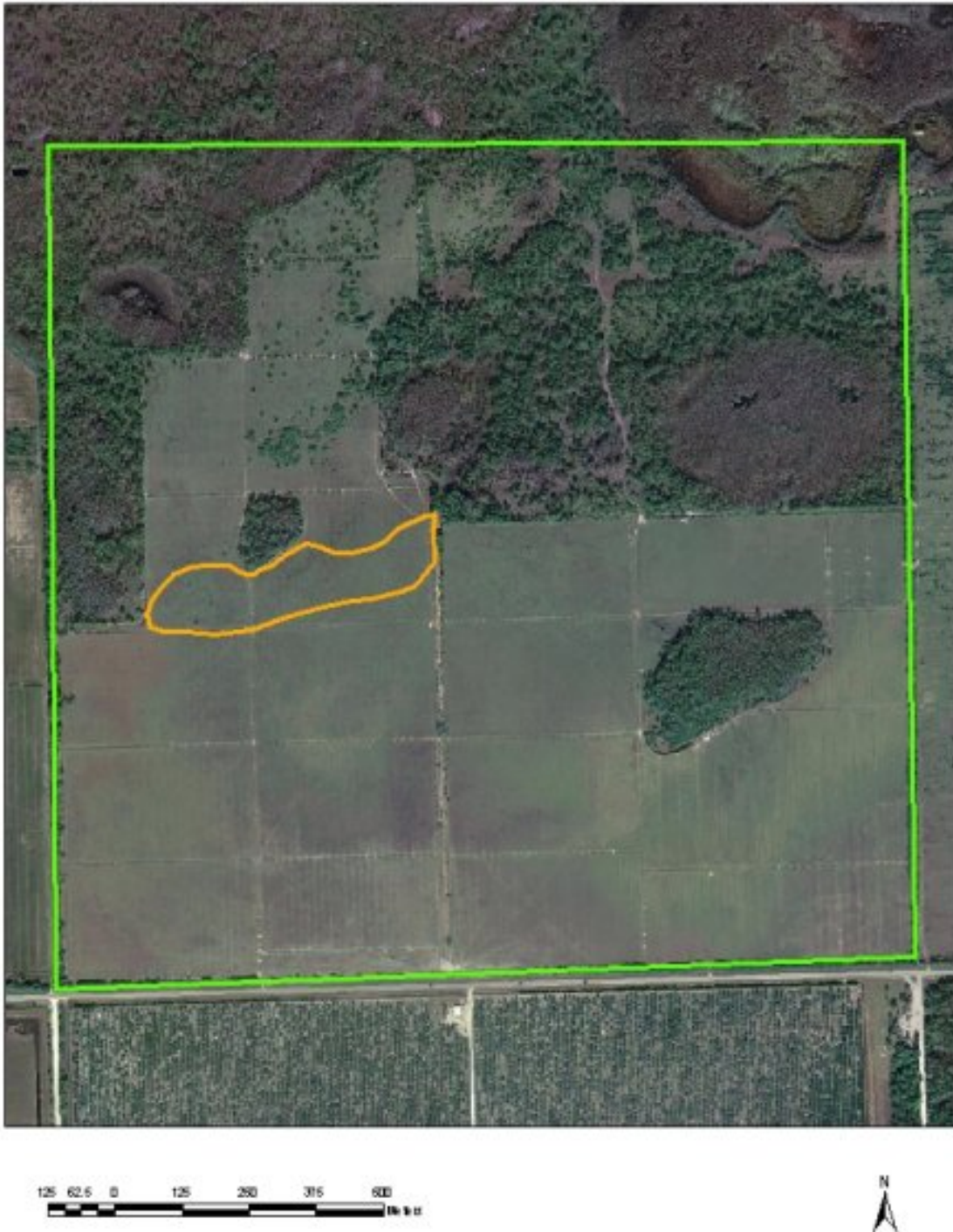


Figure B-8.1. Landscape location of Corkscrew Regional Mitigation Bank (green line). Boundary of the hydric pine flatwoods wetland assessment area Cork_FLA is outlined in orange.



Figure B-8.2. Site photo of recently planted and seeded hydric pine flatwoods assessment area Cork_FLA at Corkscrew Regional Mitigation Bank.

Cork_FLA Uniform Mitigation Assessment Method, page 1
PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

| | | | |
|--|--|--|---|
| Site/Project Name Corkscrew Mitigation Bank | | Application Number NA | Assessment Area Name or Number Cork_FLA |
| FLUCCs code 6250 (desired restored community) Hydric pine flatwoods | Further classification (optional) newly planted site, was pasture | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size approximately 14 acres (~6 ha) |
| Basin/Watershed Name/Number HUC Everglades West Coast | Affected Waterbody (Class) unaffected | Special Classification (i.e. OFW, AP, other local/state/federal designation of importance) FNAI - bird rookery, FWCC priority habitat, 3-4 focal species overlap for biodiversity hotspot | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands The bank is relatively flat with some isolated forested depressions. This type of natural community in this part of Florida would normally sheet flow very slowly from the higher to lower elevations. Elevation changes are very slight and the differences between a marsh, swale or hydric flatwood can be a difference of inches. | | | |
| Assessment area description Prior to beginning restoration this area was utilized as improved pasture for cattle. There were several drainage ditches used to drain the site which are now filled. On LEFLAT the <i>Paspalum notatum</i> (bahiagrass) has been removed through a series of mowing, disking and herbiciding treatments and the ground planted with direct seeding (December 2005) and young <i>Pinus elliotii</i> (slash pines). Currently the site has early successional species, none of the planted seeds have germinated yet. The bank is in various stages of restoration through preparing the ground for restoration or exotic removal or prescribed fire implementation. Some ditches have been left in place to aid with controlling water during rainy and dry seasons to maximize restoration success. Ditches will be removed post restoration. | | | |
| Significant nearby features County land to the East of property may be restored in the future. Mitigation land in preservation to the North. Western property will probably be developed. This area is exploding with high density residential housing. Corkscrew sanctuary and Panther Island Mitigation Bank are a couple of miles to the South. | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Most natural communities in this area have been converted to agricultural uses or more recently to housing developments. Although Wet Flatwoods may have been an abundant biological community of the Coastal Plain at one time, examples with an intact overstory and understory, without exotics, and with the potential for future maintenance by fire are rare. One of the most floristically diverse communities in SE. | |
| Functions Provide habitat for flora and fauna. Surface and subsurface water storage. Nutrient cycling. Provide essential habitat for rare and endangered wildlife especially large and mid-sized carnivores. | | Mitigation for previous permit/other historic use Historically used as improved pasture and grazed by cattle. | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Oak toad, cricket frog, chorus frog, black racer, yellow rat snake, diamondback rattlesnake, pygmy rattlesnake, red-shouldered hawk, bobwhite, opossum, cottontail rabbit, cotton rat, cotton mouse, raccoon, striped skunk, bobcat, and white-tailed deer. | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Florida black bear T (<i>Ursus americanus floridanus</i>), Florida panther E (<i>Puma (=Felis) concolor coryi</i>), wood stork E (<i>Mycteria americana</i>), red-cockaded woodpecker E (<i>Picoides borealis</i>), Everglade snail kite E (<i>Rostrhamus sociabilis plumbeus</i>), bald eagle E (<i>Haliaeetus leucocephalus</i>), eastern indigo snake T (<i>Drymarchon corais couperi</i>), gopher tortoise SSC (<i>Gopherus polyphemus</i>), Big Cypress fox squirrel T (<i>Sciurus niger avicennia</i>), Sherman's fox squirrel SSC (<i>Sciurus niger shermani</i>), Bachman's sparrow SSC (<i>Aimophila aestivalis</i>), limpkin SSC (<i>Aramus guarauna</i>), southeastern kestrel T (<i>Falco sparverius paulus</i>), Florida sandhill crane T (<i>Grus canadensis pratensis</i>). | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Buckeye caterpillars, Polyamides butterflies, White Peacock butterflies, Florida White butterflies, wasps, Cloudless sulfur, dragonflies, Common Buckeyes, Queen or Viceroy, Pearl crescents, Skippers. Birds - Downy woodpecker, Savannah sparrow, swallow-tailed kite, White eyed vireo, Mocking bird, Red shouldered hawk, Eastern meadowlark, Loggerhead shrike, blue-gray gnat catcher, Carolina wren, red-bellied woodpecker, cardinal, great crested flycatcher, wood stork. Opossum, Raccoon, armadillo and squirrel tracks. | | | |
| Additional relevant factors: None | | | |
| Assessment conducted by: Erica Hernandez, Tony Davanzo | | Assessment date(s): 20-Mar-06 | |

Cork_FLA Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|------------------------------------|--|
| Site/Project Name Corkscrew Mitigation Bank | Application Number NA | Assessment Area Name or Number Cork_FLA |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: EH, TD | Assessment date: 3/20/2006 |

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|--|
| 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 |

| | |
|--|--|
| <p>.500(6)(a) Location and Landscape Support</p> <p>w/o pres or current with</p> <p>5 </p> | <p>While there are some lands in conservation on the North and East side of the bank and other conservation lands a couple of miles away, much of the landscape is fragmented by agricultural uses, roads and development, and will not support all species area and habitat requirements. Some of the species in the area are undesirable pasture grasses or natural areas infested with invasive exotic vegetation. Access to the bank is partially limited by barriers (i.e. a busy road). There is a wildlife crossing for panthers West of the bank. Species could utilize an extensive wetland corridor to the South and East of the bank and come around North to the bank while crossing roads that are used less intensely. This area would have naturally sheet flowed across the landscape and this is interrupted by a fragmented landscape and hydrologic alterations. Land uses outside the mitigation bank have significant impact on wildlife. Hydrologically connected habitats would not derive significant benefits from this site.</p> |
| <p>.500(6)(b) Water Environment (n/a for uplands)</p> <p>w/o pres or current with</p> <p>5 </p> | <p>Hydric pine flatwoods are characterized by periods of inundation and drought. This site is newly seeded but none of the species have yet germinated. <i>Hydrocotyle</i> spp.(marshpennywort) is the only FACW species present. Site is characterized by early successional natives. At the time of site visit the area had not experienced rain since before the site was seeded in Jan and Feb of 2006. The soil was sandy but moist when we dug down. The site has been disked several times in the restoration process and probably will not exhibit hydric soil characteristics for some time. The wetland assessment area was hydrologically enhanced by filling ditches that were draining the site. A large ditch is remaining in between cells 2 and 5 and will be used to manipulate water on site during the restoration.</p> |
| <p>.500(6)(c) Community structure</p> <p>1. Vegetation and/or 2. Benthic Community</p> <p>w/o pres or current with</p> <p>5 </p> | <p>Species present are native early successional that were naturally recruited. No exotic species present in the wetland assessment area. Currently the site cannot provide structural habitat because it is a newly planted restoration site. Plants are in good condition and the early successional species present are expected for the current phase of restoration. Land management practices are being regulated to optimize viability of desired species and future community type. Because the seeded species have not germinated it is difficult to evaluate how this site is trending towards a hydric pine flatwoods community. The area is generally very flat but has some slight unevenness due to the disking practices. This unevenness will probably diminish with time.</p> |

| |
|---|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current or w/o pres with |
| 0.5 |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Form 62-345.900(2), F.A.C. [effective date 02-04-2004]

Cork_FLA Wetland Rapid Assessment Procedure, page 1

Wetland Rapid Assessment Procedure (WRAP)

All Data Sheets for Existing Conditions. Sheets designed for Mitigation Bank Study - K.C.Reiss. 5/2005

Project Name: Cork_FLA

Date: 20-Mar-06

Evaluator(s): Tony Davanzo & Erica Hernandez

Wetland Type/Description: early in restoration phase, was bahia pasture, target
natural community is hydric Flatwoods

Wetland Size: approximately 14 acres (~6 ha)

FLUCCS Code/Description: 6250 Hydric Pine flattwood is the target community this area
of the bank is trying to be restored to

| | |
|------|---------------------------|
| 1.5 | Wildlife Utilization (WU) |
| NA | Wetland Canopy (O/S) |
| 0.5 | Wetland Ground Cover (GC) |
| 1.6 | Habitat Support/Buffer |
| 2.0 | Field Hydrology (HYD) |
| 1.5 | WQ Input & Treatment (WQ) |
| 7.1 | SUM |
| 5 | Count |
| 0.48 | WRAP |

Cork_FLA Wetland Rapid Assessment Procedure, page 2

| | | |
|-----|----------------------------------|--|
| 1.5 | Wildlife Utilization (WU) | At this present stage of restoration the hydric pine flatwoods area is supporting grassland birds and insects. Native species <i>Linaria canadensis</i> (Canadian toadflax) and <i>Hydrocotyle</i> sp. (marshpennywort) were the dominant flowers at the time of visit and were supporting several species of butterflies. There were no impediments that would limit small, medium or large mammals or reptiles from traveling through or utilizing this area. In its current state this area does not have the same functional support that a hydric pine flatwoods would. It is also recognized that the natural hydroperiod for a hydric pine flatwoods would not necessarily support numerous wetland dependent species as compared to a wetland that has extended periods of standing water. Surrounding uplands in the area are undergoing enhancement through the removal of exotic species and the introduction of prescribed fire. There is a busy road to the South of the bank with a panther crossing further to the West. There are mitigation lands in conservation to the North and East and South of the bank with other adjacent lands in pasture or agriculture. The mitigation bank is in different phases of restoration and therefore is experiencing several different levels of temporary human disturbance. |
|-----|----------------------------------|--|

| | | |
|----|-----------------------------|------------------------|
| NA | Wetland Canopy (O/S) | No canopy development. |
|----|-----------------------------|------------------------|

| | | |
|-----|----------------------------------|---|
| 0.5 | Wetland Ground Cover (GC) | Site has no exotic vegetation or pasture grasses. Native early successional species are the current cover. A <i>Hydrocotyle spp.</i> is the only dominant FACW species present. The site was seeded with herbaceous hydric pine flatwoods species in January and February of 2006, there is no evidence of germination yet. |
|-----|----------------------------------|---|

| | | | | | | |
|-----|-------------------------------|---|-------------|----------------|-------------|-------------|
| 1.6 | Habitat Support/Buffer | Two miles South of bank is Panther Island Mitigation Bank and Corkscrew Sanctuary. Between these management areas are a busy road and agricultural lands. To the East is a property owned by the county which may be restored and has some remnant hydric pine flatwoods and pasture. To the North is land that is part of mitigation for a local airport and is in preservation - there may be some exotic species but they are probably being treated. There are extensive cypress swamps and flatwoods in this area. To the West is pasture that may be developed in the future. | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | North | | 2.5 | 0.25 | 0.63 | |
| | South | | 0 | 0.25 | 0.00 | |
| | East | | 2 | 0.25 | 0.50 | |
| | West | | 2 | 0.25 | 0.50 | |
| | | | | Total = | 1.6 | |

| | | |
|-----|------------------------------|---|
| 2.0 | Field Hydrology (HID) | Newly planted site does not have desired vegetation yet to indicate field hydrology other than <i>Hydrocotyle sp.</i> (marshpennywort), which is one of the dominant species and is FACW. This area has had hydrologic enhancement due to the removal of ditches that were draining the landscape for agricultural purposes. Currently there is a large ditch being left in place to manipulate the amount of water on site during the restoration phases. At the time of site visit there has been no rain since seeding and this part of Florida is currently headed into a drought phase. Hydrology should be adequate to support hydric flatwoods vegetation as the vegetation begins to germinate. However until the site is fully restored the hydrology will continue to be manipulated by control structures for maximum vegetative response. |
|-----|------------------------------|---|

| | | |
|-----|---------------------------------------|--|
| 1.5 | WQ Input & Treatment (WQ)* | |
|-----|---------------------------------------|--|

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|--------------------|-----------|-------------------|-------------|
| improved pasture | 1.0 | 0.25 | 0.25 |
| unimproved pasture | 2.5 | 0.25 | 1.25 |
| citrus groves | 2.0 | 0.25 | 0.50 |
| natural open space | 3.0 | 0.25 | 0.75 |
| | | LU Total = | 2.8 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------------|-------------|
| no treatment | 0.0 | 0.25 | 0.00 |
| no treatment | 0.0 | 0.25 | 0.00 |
| grass swales | 1.0 | 0.25 | 0.25 |
| no treatment | 0.0 | 0.25 | 0.00 |
| | | PT Total = | 0.3 |

Appendix B-9. East Central FL Regional Mitigation Bank

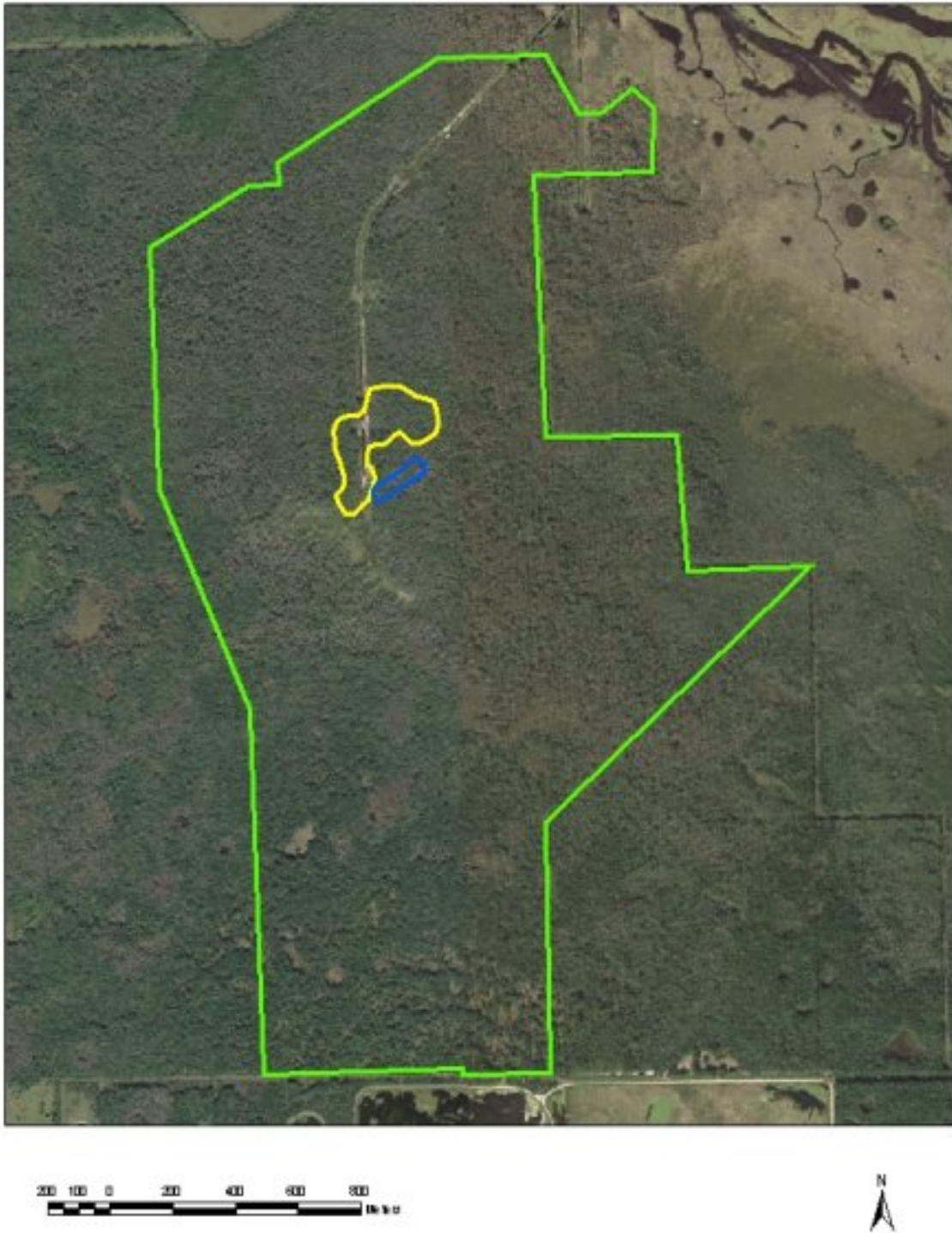


Figure B-9.1. Landscape location of East Central Florida Mitigation Bank (green line). Boundary of the wetland assessment areas ECFI_HAM in yellow and ECFI_FOR in blue are outlined.

(A)



(B)



Figure B-9.2. Site photos of East Central Florida Mitigation Bank site assessment areas A) loop roots and gum tree (*Nyssa biflora*) in cabbage palm hammock ECF1_HAM impacted by restored canal B) looking east from restored canal at Christmas Creek ECF1_FOR

ECFI_HAM Uniform Mitigation Assessment Method, page 1

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

| | | | |
|---|--|--|--|
| Site/Project Name East Central or Hunter Bank | | Application Number NA | Assessment Area Name or Number ECFI_HAM |
| FLUCCs code 6181 cabbage palm hammock | Further classification (optional) NWI Palustrine Forested/ SSURGO Soils SJRWMD Samsula, surface texture Muck, hydric | Impact or Mitigation Site? Mitigation bank | Assessment Area Size 15.92 ac (6.44 ha) |
| Basin/Watershed Name/Number St Johns River Upper/Christmas Creek | Affected Waterbody (Class) Class III | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) Geoplan gweco priority link 2, high priority (not critical) | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Samsula muck is poorly drained soil. This forested wetland sheet flows East into Christmas Creek and the St. John's River through forested and marsh wetland systems. | | | |
| Assessment area description Forested wetland dominated by cabbage palms (<i>Sabal palmetto</i>) and interspersed with wetland hardwoods. Understory is open and park like. This forested wetland was disrupted by the installation of a canal used for transporting logged cypress (<i>Taxodium</i> sp.) out of the region. Logging seems to have a large impact on species composition in the canopy. | | | |
| Significant nearby features Orlando Wetlands water treatment and conservation area (Orlando Wilderness Park) to the south. SJRWMD Seminole Ranch directly adjacent to the east. Other public conservation areas along the St. John's River and several small parcels of public lands in the region. | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Forested wetlands are not that uncommon in this St. John's drainage basin. | |
| Functions Cover and forage habitat for fauna species. Corridor connection for St. John's River basin. Flood water storage and attenuation. Nutrient cycling. | | Mitigation for previous permit/other historic use Historically there were cattle, hunting, and logging practices on the land. | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Green anole, flycatchers, warblers, gray squirrel, wading birds, woodpeckers, deer, raccoon, bobcat, snakes, frogs | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Bald eagle (<i>Haliaeetus leucocephalus</i>), Florida black bear (<i>Ursus americanus floridanus</i>), limpkin (<i>Aramus quarauna</i>), woodstork (<i>Mycteria americana</i>) | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Hog tracks, deer tracks, cow droppings, wading bird tracks, green tree frogs, osprey, little blue heron, great blue heron, Southern toad, red bellied woodpecker, lots of insects, swallow tailed butterfly, pileated woodpecker, woodrat (?) nest, some kind of cavity nest in base of tree, broad head skink, red shouldered hawk, green anole | | | |
| Additional relevant factors: Restored area was vegetated with marsh vegetation for stabilization but will be allowed to revegetate with forest species in the long term. This area is not included in the assessment because it is not a restored community type. The canal impacted the surficial aquifer in the forested region and downstream wetlands within two zones according to the original permit. Primary impacts were within 250 feet and secondary impacts within 500 feet. | | | |
| Assessment conducted by: Erica Hernandez | | Assessment date(s): 6/19/2006 | |

ECFI_HAM Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|---|--|
| Site/Project Name East Central or Hunter Bank | Application Number NA | Assessment Area Name or Number ECFI_HAM |
| Impact or Mitigation Mitigation bank | Assessment conducted by: Erica Hernandez | Assessment date: 6/19/2006 |

| | | | | |
|--|---|--|---|--|
| 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 w/o pres or current with | Although there are alterations in the landscape to the south and east of the assessment area outside the mitigation bank, there is extensive habitat in the bank and around the St. John's River to support wildlife that would exist in the assessment area. There are invasive exotic species present in proximity to the assessment area. There do not appear to be any barriers for wildlife access. Downstream benefits are not limited. Landuses outside the assessment area include some logging and conversion of native range to pasture. There could be long term implications from habitat loss outside the mitigation bank, but at the time of the assessment, there appears to be no pressing landuse impacts. | | | |
| | 9 | | | |
| .500(6)(b)Water Environment (n/a for uplands) w/o pres or current with | Impacts to hydrology and water quality are associated with the large canal on the bank that has been filled and re-graded for the mitigation bank. There are indicators that this wetland experienced stress and has had soil subsidence and erosion as a result of this initial impact, but these impacts are now removed. It will take time for the forested community to recover. There are no obvious reasons why there should be a reduction in function provided by the restored hydrology to this wetland. Soil moisture was appropriate at the time of visit. There was no standing water in the wetland at time of visit which is expected for the weather patterns at that time. There were no species present typical of degraded systems. | | | |
| | 8 | | | |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current with | Majority of plant cover is appropriate for canopy, shrub, and ground cover layers. Canopy is dominated by cabbage palm (<i>Sabal palmetto</i>) instead of hardwoods, probably a result of past logging. Not much evidence of regeneration of desirable hardwoods from canopy, specifically cypress (<i>Taxodium</i> sp.), although did see a few seedlings. Nice groundcover diversity although there was an unknown fern (could be an exotic species) and a patch of Caesar weed (<i>Urena lobata</i>). There is not too much woody debris but there are trees available for dens and cavities of fauna species. Plants appear healthy. Land management practices may not address the Caesar weed and this could possibly get worse. Topographic features are present and normal. The permit requires less than 10% exotic cover. It is unknown whether this area is within that target. | | | |
| | 6 | | | |

| |
|--|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current or w/o pres with |
| 0.77 |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Form 62-345.900(2), F.A.C. [effective date 02-04-2004]

ECFI_HAM Wetland Rapid Assessment Procedure, page 1

Project Name: East Central or Hunter Bank ECFI_HAM assessment area

Date: 19-Jun-06

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: Forested wetland dominated by cabbage palms and interspersed with wetland hardwoods. Understory is open and park like. This forested wetland was disrupted by the installation of a canal used for transporting logged cypress out of the region. Logging seems to have a large impact on species composition in the canopy. Between the East and West sides of the forested wetland is the regraded canal and berm area that now resembles a marsh habitat but will be allowed to grow in with forested species to be a continuous portion of the surrounding wetland.

Wetland Size: 16 acres (6.44 ha)

FLUCCS Code/Description: 6181 cabbage palm hammock
 NWI Palustrine Forested/ SSURGO Soils SJRWMD Samsula, surface texture Muck, hydric

| | |
|------|---------------------------|
| 2.0 | Wildlife Utilization (WU) |
| 2.0 | Wetland Canopy (O/S) |
| 2.5 | Wetland Ground Cover (GC) |
| 2.0 | Habitat Support/Buffer |
| 2.5 | Field Hydrology (HYD) |
| 3.0 | WQ Input & Treatment (WQ) |
| 14.0 | SUM |
| 6 | Count |
| 0.78 | WRAP |

ECFI_HAM Wetland Rapid Assessment Procedure, page 2

| | |
|--|----------------------------------|
| 2.0 | Wildlife Utilization (WU) |
| <p>Most wildlife was noted on restored canal grade. Within forested area woodpeckers and red shouldered hawk (<i>Buteo lineatus</i>) were noted as well as some sort of cavity nest at the base of an oak tree (<i>Quercus</i> sp.). There are abundant upland food sources in the region. Human disturbances are mostly historic. These consist of the logging in the 1940s that has altered the habitat and the installation of the canal which disrupted the hydrology. There were a few places where scars still existed from where logs were dragged out of the forest. There are some exotic species present as well. There is adequate habitat and cover. There were fish in the pools of water on the restored canal grade but this area is not part of the assessment because it does not yet represent a restored community type. There was no standing water in the forested areas. This region is supposed to support Florida black bears (<i>Ursus americanus floridanus</i>) which require large tracts of continuous habitat.</p> | |

| | |
|---|-----------------------------|
| 2.0 | Wetland Canopy (O/S) |
| <p>No exotic species in wetland canopy or shrub layer. Logging has altered species composition and dominance of canopy species. Largest trees were laurel oaks (<i>Quercus laurifolia</i>), which tend to be more early successional and cabbage palms (<i>Sabal palmetto</i>). There were hardwood species present throughout the forested area. Even though the canopy has been damaged by hurricanes and stressed from historic hydrologic alterations, some areas are still closed and offer good habitat support. Natural recruitment was patchy. Very few young cypress (<i>Taxodium</i> sp.) were seen, some American elms (<i>Ulmus americana</i>) were also seen in patches. Some areas seemed dominated by young common persimmon (<i>Diospyros virginiana</i>). There are some good den trees and snags, but there is not excessive woody debris. Abundance of Eastern poison ivy (<i>Toxicodendron radicans</i>) growing on canopy species. There were also many healthy looking airplants (<i>Tillandsia</i> spp).</p> | |

| | |
|--|----------------------------------|
| 2.5 | Wetland Ground Cover (GC) |
| <p>Ground cover is open and park like in most areas. Native vegetation was thicker in some areas where elevation was lower and ground became more saturated. On the west side of the restored grade there were thick patches of ferns that were unidentified and it is unknown whether they are native species or not. No exotic species were noted through the assessment area except for an extensive patch found of Caesar weed (<i>Urena lobata</i>), this species was noted on the access roads leading into the bank. Its presence in the forested area is less than 25% of cover.</p> | |

| | | | | | |
|--|-------------------------------|-------------|-----------|----------------|-------------|
| 2.0 | Habitat Support/Buffer | | | | |
| <p>Exotic species are noted in the region of the bank. Adjacent upland and wetland buffers are larger than 300 feet. This area is connected to continuous habitat along the St. John's River and supports Florida black bears. Plants are predominately desirable, but there are areas disturbed with exotic species, logged, or converted to pasture. Most habitat disturbance is outside the bank to the south and east. The exotic aquatic species in the Christmas Creek area are in the buffer of this assessment area, but because of differences of community type are not likely to impact this forested area.</p> | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | North | 2 | 0.25 | 0.50 |
| | | South | 2 | 0.25 | 0.50 |
| | | East | 2 | 0.25 | 0.50 |
| | | West | 2 | 0.25 | 0.50 |
| | | | | Total = | 2.0 |

| | |
|--|------------------------------|
| 2.5 | Field Hydrology (HID) |
| <p>Forest exhibits indicators of hydrologic stress. This stress is historic from the installation of a canal which has since been restored to natural grade. The canal affected the surficial aquifer in the areas around it. There is some evidence of historic soil subsidence under trees and roots. This wetland should now have a natural hydroperiod and the hydrologic regime should be adequate to maintain a viable wetland system. There are no existing adjacent negative impacts to the wetlands hydrology. Plants appear healthy.</p> | |

| | |
|---|---------------------------------------|
| 3.0 | WQ Input & Treatment (WQ)* |
| <p>*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.</p> | |

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|--------------------|-----------|-------------|-------------|
| natural undevelope | 3.0 | 1.00 | 3.0 |
| LU Total = | | | 3.0 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| natural undeveloped | 3.0 | 1.00 | 3.0 |
| PT Total = | | | 3.0 |

ECFI_FOR Uniform Mitigation Assessment Method, page 1

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

| | | | |
|---|---|--|--|
| Site/Project Name East Central / Hunter Bank | | Application Number NA | Assessment Area Name or Number ECFI_FOR |
| FLUCCs code 6300 wetland forested mixed, SJRWMD 2000, black water stream | Further classification (optional) NWI Palustrine Forested/ SSURGO Soils SJRWMD Samsula, surface texture Muck, hydric, black water stream | Impact or Mitigation Site? Mitigation bank | Assessment Area Size 2.15 ac (0.87 ha) |
| Basin/Watershed Name/Number St Johns River Upper/Christmas Creek | Affected Waterbody (Class) Class III | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) Geoplan gweco priority link 2, high priority (not critical) | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Christmas Creek drains west to northeast towards the St John's River through mixed forested wetlands, cabbage palm hammocks, and areas that have been logged or turned into pasture. Further west the landscape is more altered. Historically a large canal diverted Christmas Creek from reaching the St John's River but flow has been reconnected on the mitigation bank and the canal filled. Water also backs up from the St Johns into the creek. | | | |
| Assessment area description On the mitigation bank, Christmas Creek emerges from an open cypress swamp, crosses an access road (where the old canal was), and drains into a small channelized creek with defined banks. The presence of water hyacinth (<i>Eichhornia crassipes</i>) appears to mark the flow and channel of the creek. Further east the creek channel becomes less distinct and spreads out. | | | |
| Significant nearby features Orlando Wetlands water treatment and conservation area (Orlando Wilderness Park) to the south. SJRWMD Seminole Ranch directly adjacent to the east. Other public conservation areas along the St. John's River and several small parcels of public lands in the region. | Uniqueness (considering the relative rarity in relation to the regional landscape.) There are several creeks in this drainage basin that originate in mixed forested wetlands and flow towards the St Johns. Collectively they would all have important downstream effects. | | |
| Functions Cover and forage habitat for fauna species. Corridor connection for St Johns River basin. Flood water storage and attenuation. Nutrient cycling. | Mitigation for previous permit/other historic use When this region was logged a large canal and berm were installed to transport timber, this canal cut off the historic flow and connection of Christmas Creek to the St John's River. | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Typical animals include river longnose gar, gizzard shad, threadfin shad, redfin pickerel, chain pickerel, ironcolor shiner, Ohooppee shiner, weed shiner, blacktail shiner, chubsucker, channel catfish, banded topminnow, pygmy killifish mosquitofish, mud sunfish, flier, everglades pygmy sunfish, banded sunfish, redbreast sunfish, dollar sunfish, stumpknocker, spotted bass, black crappie, darters, Alabama waterdog, river frog, snapping turtle, alligator snapping turtle, river cooter, Florida cooter, peninsula cooter, stinkpot, spiny softshell, red-belly watersnake, brown watersnake, beaver, and river otter. | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Florida black bear (<i>Ursus americanus floridanus</i>), Limpkin (<i>Aramus quarauna</i>), Woodstork (<i>Mycteria americana</i>), American Alligator (<i>Alligator mississippiensis</i>)T | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Downy woodpecker, Northern parula, possible otter scat, dragonflies, lots of grasshoppers, wolf spider, dragonfly larvae, minnows in standing water that crosses road, red shoulder hawk | | | |
| Additional relevant factors: Due to rain in the area no photos were taken of ORCMAS assessment area past the area where it intersects the main road even though we traveled along the creek for about 200 meters to the northeast. | | | |
| Assessment conducted by: Erica Hernandez, Tony Davanzo | | Assessment date(s): 6/20/2006 | |

Form 62-345.900(1), F.A.C. [effective date 02-04-2004]

ECFI_FOR Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|---|--|
| Site/Project Name East Central/Hunter Bank | Application Number NA | Assessment Area Name or Number ECFI_FOR |
| Impact or Mitigation Mitigation bank | Assessment conducted by: Erica Hernandez | Assessment date: 19-Jun-06 |

| | | | | |
|---|---|--|---|--|
| 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 | Christmas Creek is surrounded by mixed forested wetlands and cabbage palm hammocks. The landscape transitions to the west into more mesic forest conditions and then transitions into pine flatwoods and pasture. Currently this land is somewhat natural and some of it has been altered. There has been logging in the landscape. Habitats outside the assessment area are probably adequate for most life history requirements, but there is some human disturbance in the landscape. There are some patchy invasive exotic species in the landscape Caesar weed (<i>Urena lobata</i>) was noted and some exotic pasture grasses may be present. There appear to be no barriers to wildlife in the landscape. This area does support Florida black bears which require large tracts of continuous land and corridors. Outside land uses may have some effect on the assessment area if there are upstream disturbances such as logging or conversion of natural lands to other uses. Some of these uses are evident on the 2004 aerials. There do not appear to be barriers to downstream effects. The only downstream flow restrictions could be the mass of water hyacinth (<i>Eichhornia crassipes</i>) dominating the aquatic vegetation. | |
| | w/o pres or current 7 | with |
| .500(6)(b)Water Environment (n/a for uplands) | Water level was appropriate for time of site visit. Consistent water level indicators. Soil was mucky and saturated. Historically oxidation may have occurred after the installation of the canal but no evidence of this was noted during site visit. Vegetation does not indicate atypical hydrologic conditions. Flow to this assessment area was cut off historically by a canal that re-routed Christmas Creek. This may have led to some establishment of woody species in the creek instead of the bank edges. Tree species are appropriate wetland species but it is not the expected zonation. Cypress knees had evidence of new growth. There are no signs of hydrologic stress. Animal species present are consistent with hydrologic requirements. There are no species present associated with water quality degradation. The overwhelming dominance of water hyacinth (<i>Eichhornia crassipes</i>) could alter the flow of the creek, the light penetration, and water chemistry. This in turn could disrupt the macroinvertebrate community in the system. Most hydrologic disturbances have been removed from the system (such as leveling the canal), and it will recover in time as it adjusts to a new hydrologic regime but the presence of the exotic aquatic vegetation may be affecting the creek in the ways stated. | |
| | w/o pres or current 7 | with |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community | Plant cover is appropriate in the canopy, shrub, and ground stratum. In some areas invasive exotic water hyacinth (<i>Eichhornia crassipes</i>) is the dominant ground cover. There are still native plants intermixed with the exotic as well as other areas where native species dominant the system. Many plants and trees were in flower or fruit, actual regeneration was noted for woody canopy species. There are many mature trees and there does not appear a reason for any permanent deviation from succession. There is excessive woody debris that may be a result of previous stress from the installation of the canal and a resulting altered hydrology compounded with the more recent hurricanes. Living plants are in good condition. Land management practices will not include removing the water hyacinth from the community. They state that this is because there is a constant source from the St. John's River and therefor it will not be controlled for logistical reasons. Topographic features are present and normal. There is no standing water, and there does not appear to be improper algal growth on the aquatic plants. | |
| | w/o pres or current 7 | with |

| | |
|---|------|
| Score = sum of above scores/30 (if uplands, divide by 20) | |
| current or w/o pres | with |
| 0.7 | |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

ECFI_FOR Wetland Rapid Assessment Procedure, page 1

Project Name: ECFI_FOR at East Central/Hunter Bank

Date: 19-Jun-06

Evaluator(s): Erica Hernandez

Wetland Type/Description: On the mitigation bank, Christmas Creek emerges from an open cypress swamp and crosses an access road (where the old canal was) into a small channelized creek with defined banks. The presence of water hyacinth (*Eichhornia crassipes*) appears to mark the flow and channel. Further East the creek channel becomes less distinct and spreads out.

Wetland Size: 2.15 ac (0.87 ha)

FLUCCS Code/Description: 6300 wetland forested mixed, black water stream

| | |
|------|---------------------------|
| 2.0 | Wildlife Utilization (WU) |
| 2.0 | Wetland Canopy (O/S) |
| 0.5 | Wetland Ground Cover (GC) |
| 2.0 | Habitat Support/Buffer |
| 2.0 | Field Hydrology (HYD) |
| 3.0 | WQ Input & Treatment (WQ) |
| 11.5 | SUM |
| 6 | Count |
| 0.64 | WRAP |

ECFI FOR Wetland Rapid Assessment Procedure, page 2

| | | |
|-----|---------------------------|--|
| 2.0 | Wildlife Utilization (WU) | Evidence of possible otter scat. Insect larvae and numerous grasshoppers and dragonflies present. Wetland vegetation is dominated in patches by invasive exotic vegetation and may not be the most appropriate protective cover for native wildlife. Surrounding habitats have had some historic disturbance but are mostly intact, further away uplands have had more disturbances. |
|-----|---------------------------|--|

| | | |
|-----|----------------------|--|
| 2.0 | Wetland Canopy (O/S) | Many cabbage palms (<i>Sabal palmetto</i>) are growing into the creek channel area. Large sweetgum (<i>Liquidambar styraciflua</i>) trees, but more cypress (<i>Taxodium distichum</i>) trees the further east we walk. Cypress knees do show some new growth and grow larger the deeper the creek appears to get. In open areas (with out defined creek banks) cypress trees are laden with fruit although cypress regeneration was not noted. There were no undesirable trees or shrubs. There are many snags and wood debris. In a black water stream you would expect wetland canopy and shrubs mostly on the streams banks. Perhaps because the flow to the creek was cut off trees grew into the creek bed and became established there. In areas where the creek channel becomes undefined these areas may act more as flow through forested wetlands and not really a defined creek. |
|-----|----------------------|--|

| | | |
|-----|---------------------------|--|
| 0.5 | Wetland Ground Cover (GC) | Exotic water hyacinth (<i>Eichhornia crassipes</i>) is out competing native species. Although at the time of site visit there was no flow due to current weather patterns, the thick water hyacinth will disrupt flow of the stream, negatively affect wildlife, and can alter water chemistry and light penetration. There are small patches of native species and in one area seen, native rosemallow (<i>Hibiscus</i> sp.) is more dominant than the water hyacinth. The water hyacinth is assumed to come into the system from the St John's River, which will remain a constant source. There are no plans to try to control this exotic plant. This exotic may be more concentrated closer to the St John's River and less prevalent further west in the creek. |
|-----|---------------------------|--|

| 2.0 | Habitat Support/Buffer | <p>Buffers around the assessment area are greater than 300 feet. The creek is inside a large mixed forested and cabbage palm hammock dominated mitigation bank along the St. John's River. Most habitat disturbance is outside the bank to the south and east. The assessment area began where the creek crosses the old canal foot print. This area is in transition and is characterized by marsh vegetation and open ground. This area is to the west of the assessment area and still provides habitat support but it is different from the forested areas. There are invasive exotic plants in the landscape. Caesar weed (<i>Urena lobata</i>), pasture grasses, and exotic aquatics are growing in the wetlands connected to the creek. These exotics do not dominate the landscape in the supporting buffer area.</p> | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">Buffer Type</th> <th style="width: 10%;">(Score) x</th> <th style="width: 15%;">(% of Area)</th> <th style="width: 55%;">= Sub Total</th> </tr> </thead> <tbody> <tr> <td>North</td> <td style="text-align: center;">2</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.50</td> </tr> <tr> <td>South</td> <td style="text-align: center;">2</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.50</td> </tr> <tr> <td>East</td> <td style="text-align: center;">2</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.50</td> </tr> <tr> <td>West</td> <td style="text-align: center;">2</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.50</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total =</td> <td style="text-align: center;">2.0</td> </tr> </tbody> </table> | Buffer Type | (Score) x | (% of Area) | = Sub Total | North | 2 | 0.25 | 0.50 | South | 2 | 0.25 | 0.50 | East | 2 | 0.25 | 0.50 | West | 2 | 0.25 | 0.50 | Total = | | | 2.0 |
|----------------|------------------------|---|--|-------------|-----------|-------------|-------------|-------|---|------|------|-------|---|------|------|------|---|------|------|------|---|------|------|----------------|--|--|------------|
| Buffer Type | (Score) x | (% of Area) | = Sub Total | | | | | | | | | | | | | | | | | | | | | | | | |
| North | 2 | 0.25 | 0.50 | | | | | | | | | | | | | | | | | | | | | | | | |
| South | 2 | 0.25 | 0.50 | | | | | | | | | | | | | | | | | | | | | | | | |
| East | 2 | 0.25 | 0.50 | | | | | | | | | | | | | | | | | | | | | | | | |
| West | 2 | 0.25 | 0.50 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total = | | | 2.0 | | | | | | | | | | | | | | | | | | | | | | | | |

| | | |
|-----|-----------------------|--|
| 2.0 | Field Hydrology (HID) | Field indicators of hydrology include cypress knees with evidence of new growth, buttressed roots, aquatic vegetation, high water marks, and the presence of muck soils over sand. The dominance of water hyacinth (<i>Eichhornia crassipes</i>) may interfere with the creeks flow in the rainy season. Water was stagnant in areas, but this was not unexpected due to the seasonality and lack of flow. Due to this area of the creek being cut off by the canal, there may have been some alterations to hydrology that resulted in soil subsidence, but no indicators of this were visible during the site visit. There appears to be no negative impacts to the hydrology such as other canals, ditches, or berms. The road it crosses is unimproved and sand, it may contribute to some sediments but most of this area is vegetated. |
|-----|-----------------------|--|

| | | |
|-----|----------------------------|--|
| 3.0 | WQ Input & Treatment (WQ)* | |
|-----|----------------------------|--|

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|--------------------|-----------|-------------|-------------|
| natural undevelope | 3.0 | 1.00 | 3.0 |
| LU Total = | | | 3.0 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| natural undevelop. | 3.0 | 1.00 | 3.0 |
| PT Total = | | | 3.0 |

Appendix B-10. Everglades Mitigation Bank/Phase I (FPL)

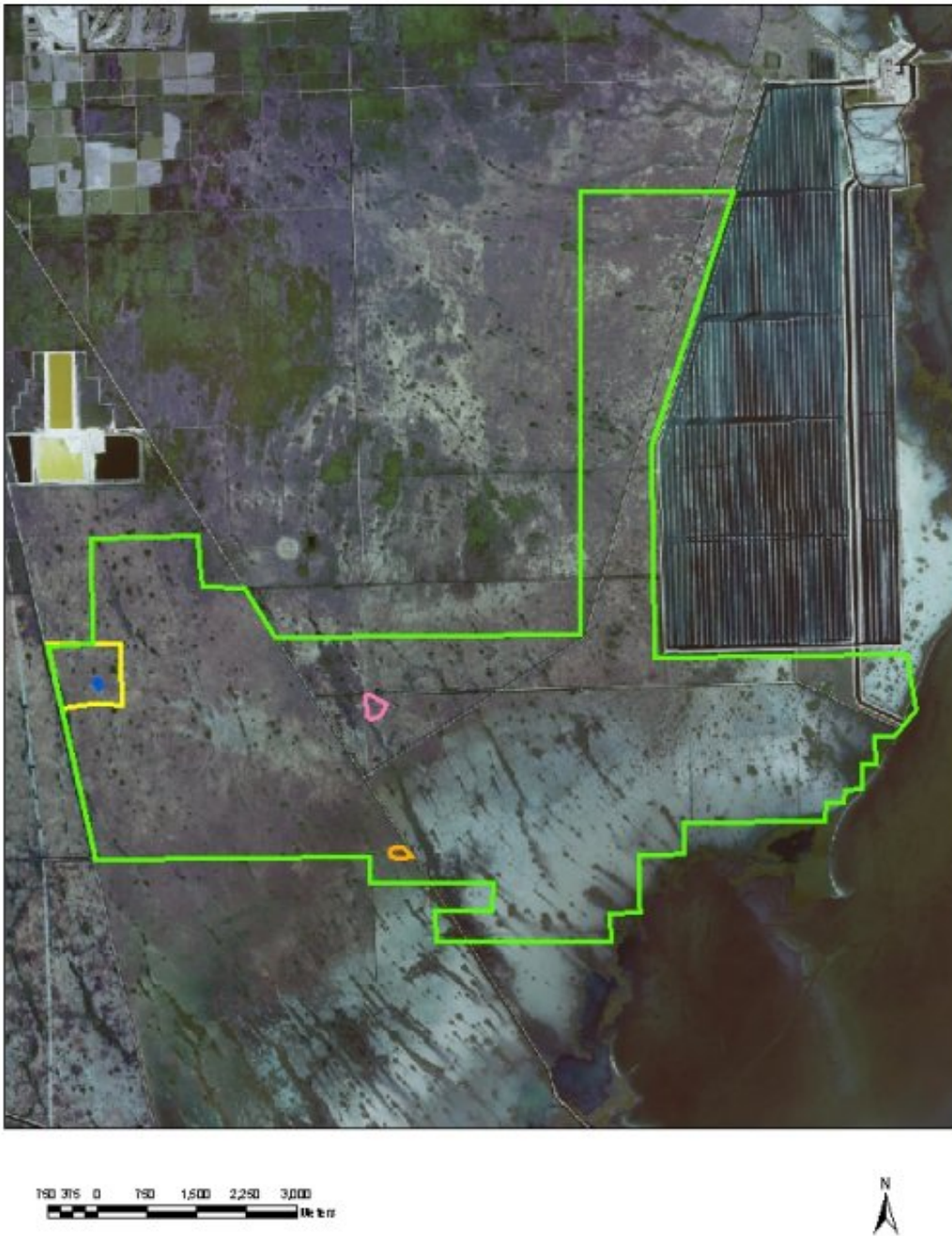


Figure B-10.1. Landscape location of Everglades Mitigation Bank (FPL) (green line). Boundary of the wetland assessment areas Glad_SHR in blue, Glad_MAR_1 in yellow, Glad_MAR_2 in orange and Glad_MAR_3 in pink are outlined. There are no site photos for the assessment areas.

Glad_SHR Uniform Mitigation Assessment Method, page 1
PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

| | | | |
|--|---|---|--|
| Site/Project Name FPL/Everglades Mitigation Bank | | Application Number NA | Assessment Area Name or Number Glad_SHR |
| FLUCCs code SFWMD 1995: 6172 Mixed Wetland Hardwoods - Mixed Shrubs | Further classification (optional) SFWMD Perrine Marl, very poorly drained soils | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size 0.92 ha (2.27 ac) |
| Basin/Watershed Name/Number SE FL Coast HUC 03090202 | Affected Waterbody (Class) 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 Historically part of the continuous Greater Everglades system contributing freshwater sheet flow to downstream environments, particularly important to freshwater pulse in the estuaries. Now partitioned off from larger system by N/S aligned US-1 and Card Sound Rd., Florida Rock Mine to north. Does still contribute sheet flow to the south. | | | |
| Assessment area description Tree island of small woody species, surrounded on all sides by Everglades marsh habitat. Wetland assessment area had hydrologic indicators and appears to flood during high water events. Soils were saturated at site visit. | | | |
| Significant nearby features Close proximity (within 1 mile) to OFW - East Everglades. Across US-1 and Card Sound Rd. from Southern Glades and Model Lands Basin owned by SFWMD. Lack of exotic species control on highway shoulder by FDOT. | Uniqueness (considering the relative rarity in relation to the regional landscape.) The Everglades is an internationally recognized wetland. While there is additional Everglades habitat nearby, this is a unique system for the state and nation. | | |
| Functions Trap and cycle organic materials with downstream detrital export to estuaries; provide important food chain resources with high rate of primary production; provide habitat and nursery grounds for many species; provides habitat for many transient and resident fish and wildlife species. | Mitigation for previous permit/other historic use Canals previously divided and drained area - portions in support area have been backfilled | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) <i>Odocoileus virginianus</i> (white-tailed deer), <i>Oryzomys palustris</i> (rice rat), <i>Peromyscus gossypinus</i> (cotton mouse), <i>Procyon lotor</i> (raccoon), <i>Sylvilagus palustris</i> (marsh rabbit), <i>Callinectes sapidus</i> (blue crab), <i>Ardea herodias</i> (great-blue heron), <i>Butorides striatus</i> (green-backed heron), arachnids (spiders), <i>Columba leucocephala</i> (white crowned pigeon), abundant insects, other small to medium size mammals, variety of birds, snakes, etc. | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Egretta caerulea</i> (little blue heron)SSC, <i>Egretta tricolor</i> (tricolored heron)SSC, <i>Mycteria americana</i> (wood stork)E, <i>Aramus guarauna</i> (limpkin)SSC, <i>Egretta thula</i> (snowy egret)SSC, <i>Alligator mississippiensis</i> (alligator)SSC, <i>Eudocimus alba</i> (white Ibis)SSC, <i>Puma concolor coryi</i> (Florida panther)E. | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Neotropical migrants; black and white warbler; common yellow throat in tree island; green tree frog; American crow; apple snail shell. Evidence of game trails leaving tree island into marsh and connecting adjacent tree islands. | | | |
| Additional relevant factors: FWCC Biodiversity Hotspots: 7+ focal species overlap. FWCC Priority Wetlands: 1-3 species, wetland habitat. FMRI Habitats: mangroves and saltmarshes present within 1 mile buffer. Tree islands offer important nesting opportunities for Everglades species that nest in trees and other species that may need higher ground for nesting like some species of turtles. Also the highly diverse tropical and sub-tropical hardwoods supported on tree islands are an important food source for neo-tropical migrant birds. | | | |
| Assessment conducted by: Kelly Chinnere Reiss, Erica Hernandez | | Assessment date(s): 12-Dec-05 | |

Glad_SHR Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|--|--|
| Site/Project Name FPL/Everglades Mitigation Bank | Application Number NA | Assessment Area Name or Number Glad_SHR |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | Assessment date: 12/12/2005 |

| |
|---|
| 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 water functions | 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 | Habitats outside the wetland assessment area support the full range of necessary habitats for wildlife, although there is some fragmentation of the landscape. The outside landscape is also missing the natural gradient into uplands, so species with larger dispersal needs may be at a loss (negatively affected). There are additional nearby tree islands available. There are some invasive exotic species, particularly Australian pine (<i>Casuarina</i> spp.) and Brazilian pepper (<i>Schinus terebinthifolius</i>) in areas along the perimeter of the mitigation bank. Also, the nuisance species cattail (<i>Typha</i> spp.) was present along the roadside. Wildlife access is limited by landscape barriers - mainly US-1 and Card Sound Rd., plus some ditching associated with these roads. Functions that benefit downstream environments are generally not limited by distance and barriers. However, outside land uses, mainly the highly traveled roads, have negative impacts on the wildlife, plus there are transmission towers and power lines to consider. There are few hydrologic impediments, but Card Sound Rd. | |
| | w/o pres or current 7 | with |
| .500(6)(b) Water Environment (n/a for uplands) | Water levels appear appropriate. Water levels were distinct and consistent: water stain lines of 2-3 feet were visible (approximately less than 1 m), there were wetland appropriate species, buttressing on pond apple (<i>Annona glabra</i>), and adventitious rooting. There was a deeper water zone around the tree island fringe of string-lily (<i>Crinum americanum</i>) and sawgrass (<i>Cladium jamaicense</i>) (that was taller than the sawgrass in the adjacent Everglades marsh), which was appropriate for this habitat. Soil moisture was appropriate with no evidence of soil subsidence, oxidation, erosion, or deposition. The soil was saturated with a thick duff layer over a darker, greasy organic soil. An arson fire burned through the landscape in past five years, but there was no evidence of damage by the fire to this tree island. Vegetation shows no atypical hydrologic condition. Some wax myrtle (<i>Myrica cerifera</i>), which is a facultative (FAC) species, was interspersed, but this species was not a dominant component. There were no signs of hydrologic stress from the vegetation. We did see a tree frog and apple snail shells, but there was limited additional evidence of animal species present with specific hydrological requirements. There were no species present that would be indicative of water quality degradation. No water quality data were available. The impervious surface of nearby roadways and canals do effect the water quality and quantity in a non-natural way, including the inflow of toxins and nutrients. The canals (especially the one on Card Sound Rd.) draws ground water from the surficial aquifer, changing the amount of freshwater sheetflow to this area. | |
| | w/o pres or current 9 | with |
| .500(6)(c) Community structure 1. Vegetation and/or 2. Benthic Community | Nearly all of the vegetation is appropriate species. We found only one Brazilian pepper (<i>Schinus terebinthifolius</i>) in the wetland assessment area, so some invasive species were present, but cover is minimal. We did not notice evidence of regeneration, but we lack detailed notes on this aspect of the assessment. However, the tree and shrub layers exhibited appropriate age and size class distribution. There was an appropriate amount of coarse woody debris and snags. There were few noted cavities and dens, but abundant cover for species was available. The plants appeared to be in good condition (no chlorotic leaves, spindly growth, or insect damage). The land management practices were generally optimal, but there has been difficulty in obtaining a prescribed fire permit for the marsh support area. Management does intend to continue to control exotic species with herbicide treatment. There was appropriate variation in topographic relief features including hummocks and refugia ponds. | |
| | w/o pres or current 9 | with |

| | |
|---|------|
| Score = sum of above scores/30 (if uplands, divide by 20) | |
| current or w/o pres 0.83 | with |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Glad_ SHR Wetland Rapid Assessment Procedure, page 1

Project Name: Glad_SHR

Date: 12/2/2005

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: Hydric tree island in sawgrass marl marsh

Wetland Size: 0.92 ha (2.27 ac)

FLUCCS Code/Description: 6172 mixed shrub

| | |
|------|---------------------------|
| 3.0 | Wildlife Utilization (WU) |
| 2.5 | Wetland Canopy (O/S) |
| 3.0 | Wetland Ground Cover (GC) |
| 2.5 | Habitat Support/Buffer |
| 2.5 | Field Hydrology (HYD) |
| 3.0 | WQ Input & Treatment (WQ) |
| 16.5 | SUM |
| 6 | Count |
| 0.92 | WRAP |

Glad_SHR Wetland Rapid Assessment Procedure, page 2

| | |
|---|----------------------------------|
| 3.0 | Wildlife Utilization (WU) |
| Neotropical migrants; black and white warbler; common yellow throat in tree island; green tree frog; American crow; apple snail shell. Abundant adjacent food sources and food within the tree island. Abundant cover and habitat within tree island and surrounding sawgrass (<i>Cladium jamaicense</i>) marsh. Evidence of game trails leaving tree island into marsh and connecting adjacent tree islands. Available microhabitat and refugia within wetland assessment area. Some human disturbance from treatment of exotic species for restoration purposes (i.e. tracks from vehicles) but no obvious disturbance visible. Inside tree island US-1 is no longer audible. | |

| | |
|--|-----------------------------|
| 2.5 | Wetland Canopy (O/S) |
| One Brazilian pepper (<i>Schinus terebinthifolius</i>) found, had been previously treated and has since resprouted. Good habitat support in canopy and mid-story, many fruit bearing trees and shrubs. Healthy canopy. Few snags. Did not notice recruitment but there was good diversity and species richness and appropriate age class distribution. | |

| | |
|---|----------------------------------|
| 3.0 | Wetland Ground Cover (GC) |
| No exotic, invasive, or nuisance species. No inappropriate species. Minimal ground cover disturbance. Maybe some local disturbance for exotic treatments, but not currently visible. Support area was subject to arson fire, but tree island did not suffer inappropriate fire. | |

| | | | | |
|--|-------------------------------|-----------|-------------|-------------|
| 2.5 | Habitat Support/Buffer | | | |
| Buffer > 300' - contains desirable plant species in sawgrass marsh. Tree islands in the landscape may host some exotic species however none were seen. Contiguous with offsite wetlands, including Everglades marshes with other tree islands in landscape. Almost 2000' west to US-1, no acceptable wildlife crossing or corridor connecting to offsite wetlands. | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | Glades | 2.5 | 1.00 | 2.5 |
| | | | | |
| | Total = | | | 2.5 |

| | |
|---|------------------------------|
| 2.5 | Field Hydrology (HID) |
| Hydrology adequate, plants healthy, no stress. Natural hydroperiod. US-1 is putting water on east side of Phase I. On west side of US-1 is a deep wide canal. Card Sound Road ditch is pulling water off the landscape, as it is deep enough to be hitting the surficial aquifer. May have some effects from these alterations in the landscape but this tree island looked healthy. No sign of subsidence. Clear water level indicators included adventitious roots, water stain lines, and buttressing. | |

| | |
|-----|---------------------------------------|
| 3.0 | WQ Input & Treatment (WQ)* |
|-----|---------------------------------------|

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| natural undevel | 3.0 | 1.00 | 3.0 |
| LU Total = | | | 3.0 |

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| natural undevel | 3.0 | 1.00 | 3.0 |
| PT Total = | | | 3.0 |

Glad_MAR_1 Uniform Mitigation Assessment Method, page 1

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

| | | | |
|--|--|---|---|
| Site/Project Name FPL / EMP | | Application Number NA | Assessment Area Name or Number Glad_MAR_1 |
| FLUCCs code 641 Fresh Water Marsh | Further classification (optional) none | | Impact or Mitigation Site? Mitigation Bank |
| Assessment Area Size 93 ha (230 ac) | | | |
| Basin/Watershed Name/Number SE FL Coast HUC 03090202 | Affected Waterbody (Class) 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 Contributes to the greater Everglades area and contributes freshwater inflow to Manatee Bay, part of the Barnes Sound waterway. | | | |
| Assessment area description Marl Everglades marsh dominated by short (1-2') sawgrass (<i>Cladium jamaicense</i>) with a limited mix of additional graminoid and herbaceous species. Area characterized with mixed wetland hardwood tree islands (scored separately as DABUTN). | | | |
| Significant nearby features Across US1 and Card Sound Rd. from Southern Glades and Model Lands Basin owned by SFWMD. Lack of exotic species control on highway shoulder by FDOT. | Uniqueness (considering the relative rarity in relation to the regional landscape.) Some nearby areas in conservation by state or water management districts, so nearby areas slated for restoration. North is highly urbanized Miami-Dade area | | |
| Functions Trap and cycle organic materials with downstream detrital export to estuaries; provide important food chain resources with high rate of primary production; provide habitat and nursery grounds for many species; provides habitat for many transient and resident fish and wildlife species. | Mitigation for previous permit/other historic use Canals previously divided and drained area - portions have been backfilled | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) <i>Odocoileus virginianus</i> (white-tailed deer), <i>Oryzomys palustris</i> (rice rat), <i>Peromyscus gossypinus</i> (cotton mouse), <i>Procyon lotor</i> (raccoon), <i>Sylvilagus palustris</i> (marsh rabbit), <i>Callinectes sapidus</i> (blue crab), <i>Ardea herodias</i> (great-blue heron), <i>Butorides striatus</i> (green-backed heron), arachnids (spiders), abundant insects, other small to medium size mammals, variety of birds, snakes, etc. | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Egretta caerulea</i> (little blue heron)SSC, <i>Egretta tricolor</i> (tricolored heron)SSC, <i>Egretta thula</i> (snowy egret)SSC, <i>Mycteria americana</i> (wood stork)E, <i>Aramus guarana</i> (limpkin)SSC, <i>Egretta thula</i> (snowy egret - SSC), <i>Alligator mississippiensis</i> (alligator - SSC), <i>Eudocimus alba</i> (white Ibis - SSC), <i>Puma concolor coryi</i> (Florida panther)E. | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Spiders throughout sawgrass marsh, including triangular spider eggs; dragonflies; greater yellow legs flying overhead; game trails visible to and from tree islands; small holes in periphyton mat perhaps from small animals such as crabs, crayfish, etc.; tree swallows flying overhead; palm warbler; white peacock butterfly. | | | |
| Additional relevant factors: Entire area is approximately 93 ha; wildfire from arson in 2004, bank has burned twice since it became a bank in early spring, fire suppressed prior to that; button wood in small patches in the marsh, killed back from fire, resprouting < 1m; borders of bank have exotic species established, FDOT road widening mitigation will treat exotics on US 1, no timeline known for this action; very even elevation in marsh, gradual changes in elevation, easy to walk on except for softness of marl; some patches of muhly grass (<i>Muhlenbergia capillaris</i>) have slightly higher elevation; oily deposits on some standing water; can hear US 1 through out WAA in marsh; major powerlines along US 1, some towers in the distance; periphyton very thick and forms a mat on water surface, we think this is why we haven't seen fish or amphibians; saw water flowing south in one of the well used game trails leading south from tree island. | | | |
| Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | | Assessment date(s): 12/7/2005 | |

Glad_MAR_1 Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|--|--|
| Site/Project Name FPL / EMB | Application Number NA | Assessment Area Name or Number Glad_MAR_1 |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | Assessment date: 12/7/2005 |

| | | | | |
|---|---|---|---|--|
| 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 water functions | 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 w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> | 7 | A variety of habitats are generally available, but there is some reduced availability in terms of distance and barriers and also habitat loss to the north due from the mine and urban development (roads to east and west). This will limit the likelihood of larger land mammals (ex. Florida panthers) using the area. Some of the plant community composition in adjacent areas is composed of exotic species such as thin, narrow strips surrounding the bank (especially Australian pines, <i>Casuarina</i> species). Wildlife access for land bound species is impeded by roadways (US1 on west and Card Sound Rd. to east) and flying species may have complication with power lines and radio tower lines. Downstream flow not limited by distance or barrier, there should be increased freshwater out flow from enhancement activities. Adjacent roads, towers, canals, and Florida Rock mine (to the north) have negative impacts on fish and wildlife. No hydrologic restrictions preventing down stream benefits but perhaps less water discharge (volume) due to Card Sound Rd. on eastern edge, which has a channelized canal running parallel to the road that pulls substantial surficial groundwater flow from the northern adjacent areas, in effect reducing the sheet flow of freshwater in this area. Downstream areas receive significant benefit from freshwater discharge/sheet flow. There are many edge effects described here - and much of the area has interior support because it is such a large track of land. |
| | 9 | Water levels and flows appear appropriate considering the climate and local conditions. Water level indicators are not apparent in the marsh, though we did see marl soils and healthy and appropriate vegetation species. Water level indicators were not distinct. Soils were inundated, no erosion or deposition patterns visible. Fire history does not show signs of atypical fire. Vegetation appropriate, no indicators of atypical hydrologic conditions. Vegetation shows no signs of hydrologic stress. The occurrence of wildlife/animal species present was less than expected. In general, the area was species poor, with some burrows in periphyton/marl patches. This may have been a factor of the late visit (December), the cool weather, or other undetermined factors. There were no species tolerant of or associated with water quality degradation or changes in water frequency, depth, or duration. Standing water appeared appropriate - no turbidity, discoloration, there was an organic sheen. No water quality data were available. Light penetration limited, but expected for periphyton covered water surface. |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> | 9 | Plant cover is by appropriate plant species. No invasive exotic species present in the wetland assessment area. Bladderwort (<i>Utricularia</i> sp.) in bloom, southern swamp-lily (<i>Crinum americanum</i>) in fruit. Site well revegetated after early spring fire. No shrub or tree layers - this is a marl flats marsh. Some mortality of very young buttonwoods (<i>Conocarpus erectus</i>) from fire, all buttonwoods less than 1m tall. This was appropriate for the wetland system. No coarse woody debris anticipated or found. Plants in good condition - no evidence of chlorotic or spindly growth, no signs of insect damage. Land management appears optimal, no controlled burns have yet been permitted due to permitting issues - they have had wildfires which burned across the site in a timely interval. Topographic features were slight - some were visible with a shift in the dominant species composition - this was appropriate for the wetland system. Periphyton and bladderwort cover was normal and appropriate for area. Constant threat of exotic species encroached in the developed south Florida environment, plus some concern over ability to conduct regular controlled burns due to permitting issues. Vegetation cover slightly less than reference condition based on low percent cover estimates. |

| | |
|---|--|
| Score = sum of above scores/30 (if uplands, divide by 20) | current or w/o pres <input type="checkbox"/> with <input type="checkbox"/> |
| 0.83 | |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Glad_MAR_1 Wetland Rapid Assessment Procedure, page 1

Project Name: Glad_MAR_1

Date: 12/2/2005

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: Marl Everglades

Wetland Size: ~93 ha (230 ac)

FLUCCS Code/Description: 6411 Freshwater marsh sawgrass

| | |
|------|---------------------------|
| 2.5 | Wildlife Utilization (WU) |
| N/A | Wetland Canopy (O/S) |
| 3.0 | Wetland Ground Cover (GC) |
| 1.6 | Habitat Support/Buffer |
| 2.5 | Field Hydrology (HYD) |
| 2.1 | WQ Input & Treatment (WQ) |
| 11.7 | SUM |
| 5 | Count |
| 0.78 | WRAP |

Glad_MAR_1 Wetland Rapid Assessment Procedure, page 2

| | |
|---|----------------------------------|
| 2.5 | Wildlife Utilization (WU) |
| <p>Some small holes in periphyton mat, could be made by crustaceans. Some limited game trails seen leaving tree islands. Did not see macroinvertebrates, forage fish or amphibians in water. Periphyton is 100% cover on water surface and on the bladderwort (<i>Utricularia</i> sp.) roots, maybe these organisms are not visible because of this. Early morning site visit on a relatively cool day for south Florida, did have some butterflies and dragonflies, some birds flying overhead. Natural tree islands with abundant habitat support and food sources in landscape. Human disturbances includes US1 on western boundary of wetland assessment area, the road is between 55-70 m wide and has high density traffic. Road kill was visible. On the eastern edge of Phase I is Card Sound Road, traffic is moving fast but is less dense and the road is more narrow than US1. Major power lines on the side of the road and some towers in the landscape outside the bank.</p> | |

| | |
|-----|-----------------------------|
| N/A | Wetland Canopy (O/S) |
|-----|-----------------------------|

| | |
|--|----------------------------------|
| 3.0 | Wetland Ground Cover (GC) |
| <p>Low diversity in ground cover expected due to type of wetland. Looks well vegetated after an early spring wildfire. No exotics. Species composition includes all desirable species. No exotic, invasive, or nuisance species identified in the groundcover. Some disturbance to ground cover from low impact vehicle and fire plow lines from DOF. Low impact vehicles left tracks but did not appear to have left damage such as rutting or destroying vegetation. Will be managed with fire. Wildfire burned in a patchy mosaic, leaving some un-burned areas with thicker cover.</p> | |

| 1.6 | Habitat Support/Buffer | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|-------------|-------------|-------------|-------------|------|---|------|------|-------|---|------|------|------|-----|------|------|-------|---|------|------|----------------|--|--|------------|
| <p>West side, quarter of buffer < 30' with exotics and US1 road (0). North buffer > 300' some exotics but mostly native open glades (2). East side Card Sound Road has narrow vegetated with strip with exotic species (1.5). South natural glades (3).</p> | <table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 30%;">Buffer Type</th> <th style="width: 15%;">(Score) x</th> <th style="width: 15%;">(% of Area)</th> <th style="width: 15%;">= Sub Total</th> </tr> </thead> <tbody> <tr> <td>West</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.00</td> </tr> <tr> <td>North</td> <td style="text-align: center;">2</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.50</td> </tr> <tr> <td>East</td> <td style="text-align: center;">1.5</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.38</td> </tr> <tr> <td>South</td> <td style="text-align: center;">3</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.75</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total =</td> <td style="text-align: center;">1.6</td> </tr> </tbody> </table> | Buffer Type | (Score) x | (% of Area) | = Sub Total | West | 0 | 0.25 | 0.00 | North | 2 | 0.25 | 0.50 | East | 1.5 | 0.25 | 0.38 | South | 3 | 0.25 | 0.75 | Total = | | | 1.6 |
| Buffer Type | (Score) x | (% of Area) | = Sub Total | | | | | | | | | | | | | | | | | | | | | | |
| West | 0 | 0.25 | 0.00 | | | | | | | | | | | | | | | | | | | | | | |
| North | 2 | 0.25 | 0.50 | | | | | | | | | | | | | | | | | | | | | | |
| East | 1.5 | 0.25 | 0.38 | | | | | | | | | | | | | | | | | | | | | | |
| South | 3 | 0.25 | 0.75 | | | | | | | | | | | | | | | | | | | | | | |
| Total = | | | 1.6 | | | | | | | | | | | | | | | | | | | | | | |

| | |
|---|------------------------------|
| 2.5 | Field Hydrology (HID) |
| <p>Canals on Phase I have been back filled. Closer to US1 and Card Sound Roads there is some ditching and drainage off the roads that may affect the edges of Phase I. Vegetation looks healthy. Hydroperiod appears normal. Some sheet flow may be interrupted by outside factors. Card Sound Road ditch is deep enough to reach surficial aquifer, this ditch had very strong southward flow.</p> | |

| | |
|-----|---------------------------------------|
| 2.1 | WQ Input & Treatment (WQ)* |
|-----|---------------------------------------|

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| high vol. hwy | 1.0 | 0.50 | 0.5 |
| mining | 1.0 | 0.25 | 0.3 |
| nat. undeveloped | 3.0 | 0.25 | 0.75 |
| LU Total = | | | 1.5 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|------------------------|-----------|-------------|-------------|
| wet detention | 2.5 | 0.50 | 1.25 |
| wet detention with dry | 2.5 | 0.25 | 0.63 |
| undeveloped | 3.0 | 0.25 | 0.75 |
| PT Total = | | | 2.63 |

Glad_MAR_1 Hydrogeomorphic Approach, page 1

Variable Subindex and FCI Calculation for Florida Marl Flats Glades

Assessment Team:

Project Name: Glad_MAR_1
Location: FPL Everglades Bank
Date: 12/2/05
Subclass: Marl Flats

| Function | FCI |
|--------------------------------------|------|
| Surface and Subsurface Water Storage | 1 |
| Cycle Nutrients | 0.95 |
| Characteristic Plant Community | 0.98 |
| Wildlife Habitat | 0.96 |

| Variables | Measure | Units | Subindex |
|-----------|---------|-------|----------|
| VTRACT | > 8000 | ha | 1 |
| VCORE | 84 | % | 1 |
| VCONNECT | 90 | % | 1 |
| VMICRO | 0 | % | 1 |
| VWOODY | 0 | % | 1 |
| VINVASIVE | 0 | % | 1 |
| VMAC | 26 | % | 0.68 |
| VPERI | 99 | % | 1 |
| VSURTEX | 100 | % | 1 |
| VCOMP | 100 | % | 1 |

Glad_MAR_2 Uniform Mitigation Assessment Method, page 1

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

| | | | | | |
|---|--|--|--|---|--|
| Site/Project Name FPL/EMB | | Application Number NA | | Assessment Area Name or Number Glad_MAR_2 | |
| FLUCCs code SFWMD 1999 6411 fresh water marsh sawgrass | | Further classification (optional) more specifically, high marsh/tidal flats | | Impact or Mitigation Site? Mitigation Bank | |
| Assessment Area Size 2.2 ha (5.4 ac) | | | | | |
| Basin/Watershed Name/Number SE FL Coast HUC 03090202 | | Affected Waterbody (Class) 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 Contributes to the greater Everglades area and contributes fresh/brackish water inflow to Manatee Bay, part of the Barnes Sound waterway. | | | | | |
| Assessment area description High marsh, canal back filled in 1998, appears to be in transition from sawgrass marsh to high marsh. To east is canal along Card Sound Rd. that drains the surficial aquifer from areas to the north, changing the water balance for this area. | | | | | |
| Significant nearby features Across US1 and Card Sound Rd. from Southern Glades and Model Lands Basin owned by SFWMD. Lack of exotic species control on highway shoulder by FDOT. | | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Some nearby areas in conservation by state or water management districts, so nearby areas slated for restoration. North is highly urbanized Miami-Dade area | | |
| Functions Trap and cycle organic materials with downstream detrital export to estuaries; provide important food chain resources with high rate of primary production; provide habitat and nursery grounds for many species; provides habitat for many transient and resident fish and wildlife species. | | | Mitigation for previous permit/other historic use Canals previously divided and drained area - portions have been backfilled | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) <i>Odocoileus virginianus</i> (white-tailed deer), <i>Oryzomys palustris</i> (rice rat), <i>Peromyscus gossypinus</i> (cotton mouse), <i>Procyon lotor</i> (raccoon), <i>Sylvilagus palustris</i> (marsh rabbit), <i>Callinectes sapidus</i> (blue crab), <i>Ardea herodias</i> (great-blue heron), <i>Butorides striatus</i> (green-backed heron), arachnids (spiders), abundant insects, other small to medium size mammals, variety of birds, snakes, perhaps additional species that can tolerate brackish water conditions as well. | | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Egretta caerulea</i> (little blue heron)SSC, <i>Egretta tricolor</i> (tricolored heron)SSC, <i>Mycteria americana</i> (wood stork)E, <i>Aramus guarauna</i> (limpkin)SSC, <i>Egretta thula</i> (snowy egret - SSC), <i>Alligator mississippiensis</i> (alligator - SSC), <i>Eudocimus alba</i> (white Ibis - SSC), <i>Puma concolor coryi</i> (Florida panther)E. | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Numerous song birds, raptor, wading birds, evidence of alligator trail, raccoon tracks, fish in shallow pools. Good diversity of macroinvertebrates and amphibians. | | | | | |
| Additional relevant factors: Three constructed tree islands occur within the wetland assessment area. FWCC Strategic Habitat Conservation Areas: priority habitat. FMRI Habitats: mangroves present. | | | | | |
| Assessment conducted by: Kelly Chinneres Reiss, Erica Hernandez | | | Assessment date(s): 12-Dec-05 | | |

Glad_MAR_2 Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|--|--|
| Site/Project Name FPL/EMB | Application Number NA | Assessment Area Name or Number Glad_MAR_2 |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Erica Hernandez, Kelly Chinnners Reiss | Assessment date: 12/12/2005 |

| | | | | |
|--|---|---|---|--|
| 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 water functions | 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 | Habits outside the wetland assessment area support most wildlife species, but there is some reduced availability of adjacent habitat, mainly it transitions into fresh water marsh but then transition into upland that has been used as a Florida Rock mine. Some invasive exotic species occur in the proximity to the wetland assessment area, particularly along roads and to the area to the east that has not yet been restored. Wildlife access is partially limited by a canal to the east along Card Sound Rd. and also the road itself. There is a "quick sand" substrate within the backfilled interior canal in pools with less dense vegetation and shallow pools of open water, however these areas are still colonized by vegetation and have evidence of wildlife use (small fish, crabs, crayfish, etc.). Downstream functions are generally not limited to by distance or barriers (excluding fragmentation of landscape by road ways creating some disturbance to historic sheet flow). Land use outside the wetland assessment area do have some minimal impacts to fish and wildlife (ex. Card Sound Rd, transmission tower). The opportunity for the wetland assessment area to provide downstream benefits has not been limited by impediment but some flow restrictions do occur because of the eastern canal pulling out ground water from surficial aquifer upstream, reducing freshwater flow downstream. Downstream habitats receive significant benefits from this area and could experience substantial adverse impacts if quality were altered. | |
| | w/o pres or current 8 | with |
| .500(6)(b) Water Environment (n/a for uplands) | Water levels appeared appropriate during the site visit, though perhaps the shallow pooled areas in the footprint of the restored canal bed were more common than anticipated. Water level indicators were distinct and consistent including rack lines, regeneration of red mangroves (<i>Rhizophora mangle</i>), and mangrove pneumatophors. Soil moisture is appropriate - no evidence of subsidence, oxidation or desiccation. No evidence of soil erosion or deposition patterns. No atypical fire history. Vegetation zonation is in a state of flux between fresh and brackish water environments, but the species were appropriate for the system type. The composition was not necessarily as expected but not a sign of hydrologic issues. Plants appeared healthy, no signs of stress, though there was patchy evidence of grazing (from Lubber grasshoppers?) on the red mangrove leaves. The freshwater pools were full of wetland dependent species. These species were abundant, more so than anticipated due to artificial topographic relief from pooled areas in filled canal footprint. There were no plant species present suggesting water quality degradation. Standing water suggested no water quality degradation (no oil sheen, turbidity, or discoloration). No water quality data available, except 4% salinity tested in one pool indicates low salinity. | |
| | w/o pres or current 8 | with |
| .500(6)(c) Community structure 1. Vegetation and/or 2. Benthic Community | Plant cover was by appropriate species. There were red mangrove (<i>Rhizophora mangle</i>), spikerush (<i>Eleocharis</i> sp.), sawgrass (<i>Cladium jamaicense</i>), saltgrass (<i>Distichlis spicata</i>), etc. Invasive exotic species were not present. Strong evidence of red mangrove recruitment throughout site. Age & size class appears appropriate although the strip of back filled canal lacks larger trees, but there was active recruitment in that area. Density and quality of coarse woody debris appropriate. Did see loggerhead shrike on snag, so we observed wildlife use of the snags and cavities. Plants in good condition - some grazing on red mangrove but not inappropriate or excessive - no chlorotic or spindly growth. Land management practices generally appropriate - mainly monitoring and invasive species control. However, new (spreader canal) that will be installed upstream has uncertain effects for the future, could improve freshwater flows and shift salt communities southward. Topographic features may be slightly greater than anticipated within canal footprint. | |
| | w/o pres or current 9 | with |

| | |
|---|------|
| Score = sum of above scores/30 (if uplands, divide by 20) | |
| current or w/o pres 0.83 | with |

| |
|---|
| If preservation as mitigation, Preservation adjustment factor = Adjusted mitigation delta = |
|---|

| |
|---|
| For impact assessment areas FL = delta x acres = |
|---|

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|---|
| If mitigation Time lag (t-factor) = Risk factor = |
|---|

| |
|--|
| For mitigation assessment areas RFG = delta/(t-factor x risk) = |
|--|

Glad_MAR_2 Wetland Rapid Assessment Procedure, page 1

Project Name: Glad_MAR_2

Date: 12/2/2005

Evaluator(s): Kelly Chinners Reiss & Erica Hernandez

Wetland Type/Description: High marsh, canal back filled in 1998, appears to be in transition from sawgrass marsh to high marsh.

Wetland Size: 2.2 ha (5.4 ac)

FLUCCS Code/Description: FLUCCS SFWMD 1999 6411 fresh water marsh sawgrass more specifically, high marsh/tidal flats in the wetland assessment area.

| | |
|------|---------------------------|
| 2.5 | Wildlife Utilization (WU) |
| 3.0 | Wetland Canopy (O/S) |
| 2.5 | Wetland Ground Cover (GC) |
| 2.0 | Habitat Support/Buffer |
| 2.0 | Field Hydrology (HYD) |
| 2.4 | WQ Input & Treatment (WQ) |
| 14.4 | SUM |
| 6 | Count |
| 0.80 | WRAP |

Glad_MAR_2 Wetland Rapid Assessment Procedure, page 2

| | | |
|-----|----------------------------------|---|
| 2.5 | Wildlife Utilization (WU) | Numerous song birds, raptor, wading birds, evidence of alligator trail, raccoon tracks, fish in shallow pools. Good diversity of macroinvertebrates and amphibians. Upland food sources in tree islands located within marsh. Restored canal has a footprint where disturbance is evident, though the vegetation and wildlife use appeared similar to surrounding area within the footprint of the restored canal. Soil substrate is sometimes less in footprint of restored canal. Some man made structures in the landscape: tower south of wetland assessment area, small ditch, and Card Sound Road. Abundant habitat support, good habitat structure, abundant cover in mangroves, tree islands, and buttonwood (<i>Conocarpus erectus</i>) snags. |
|-----|----------------------------------|---|

| | | |
|-----|-----------------------------|--|
| 3.0 | Wetland Canopy (O/S) | Low shrubby red mangroves (<i>Rhizophora mangle</i>), some taller and more mature patches mixed in with buttonwood (<i>Conocarpus erectus</i>) in landscape. Some buttonwood snags. No exotics and no undesirable species. Strong evidence of natural recruitment in red mangroves. Numerous sprouted propagules. Uneven age distribution. Healthy live canopy trees, some evidence of grazing on mangrove leaves. |
|-----|-----------------------------|--|

| | | |
|-----|----------------------------------|--|
| 2.5 | Wetland Ground Cover (GC) | No exotic, invasive, or nuisance species. Vegetation is patchy. Human induced impacts apparent in restored canal footprint. Substrate is very soft in some areas where there are vegetation gaps and shallow open pools. As part of restoration sawgrass (<i>Cladium jamaicense</i>) was planted but is transitioning out and not present in great numbers. Three to four additional species were planted as well after the canal was backfilled. The vegetation is also characterized by patches of spikerush (<i>Eleocharis</i> sp.) and saltgrass (<i>Distichlis spicata</i>). Species composition has shifted since planting and is now dominated by short red mangrove (<i>Rhizophora mangle</i>) patches. |
|-----|----------------------------------|--|

| | | | | | | |
|-----|-------------------------------|---|-------------|----------------|-------------|-------------|
| 2.0 | Habitat Support/Buffer | East: ditch and Card Sound Road, exotic spp. on road, Phase II past road with more available habitat and Australian pine (<i>Casuarina</i> sp.). Buffer < 30' with some desirable species. South: >300' average buffer within bank with desirable species, on borders there are exotic species. North: habitat loss outside of bank, rock quarry. West: US1, no connection to offsite wetlands but considerable distance from wetland assessment area, > 300'. Loss of corridors off the property on west and north. | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | East | | 1 | 0.25 | 0.25 | |
| | South | | 2 | 0.25 | 0.50 | |
| | West | | 2.5 | 0.25 | 0.63 | |
| | North | | 2.5 | 0.25 | 0.63 | |
| | | | | Total = | 2.0 | |

| | | |
|-----|------------------------------|--|
| 2.0 | Field Hydrology (HID) | Hydrology adequate to maintain viable wetland. May have external influences. Close distance to ditch on Card Sound Road which is deep enough to drain surficial aquifer. Plants appear healthy, species composition is shifting due to changes in salinity(?). 4ppt salinity detected with refractometer in shallow pool. No soil subsidence, no transitional species encroachment. Rack line distinct from marsh into tree islands. |
|-----|------------------------------|--|

2.4 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| natural undevel | 3.0 | 0.75 | 2.25 |
| high volume hwy | 1.0 | 0.25 | 0.25 |
| LU Total = | | | 2.5 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| natural undevel | 3.0 | 0.75 | 2.25 |
| no treatment | 0.0 | 0.25 | 0.00 |
| PT Total = | | | 2.3 |

Glad_MAR_3 Uniform Mitigation Assessment Method, page 1

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

| | | | | | |
|--|--|--|--|--|--|
| Site/Project Name FPL/EMB | | Application Number NA | | Assessment Area Name or Number Glad_MAR_3 | |
| FLUCCs code 6410 Freshwater Marsh | | Further classification (optional) sawgrass marsh; Perrine Marl and Lauderdale Muck soils, very poorly drained | | Impact or Mitigation Site? Mitigation Bank | |
| | | | | Assessment Area Size 8.1 ha (20.0 ac) | |
| Basin/Watershed Name/Number SE FL Coast HUC 03090202 | | Affected Waterbody (Class) 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 Historically would have contributed to the greater Everglades area sending freshwater inflow to Manatee Bay, part of the Barnes Sound waterway. Now, this triangular shaped wetland has berms on all three sides and is essentially hydrologically isolated as all sheet flow processes have been removed. | | | | | |
| Assessment area description Marl Everglades marsh dominated by patches of sawgrass (<i>Cladium jamaicense</i>) or spikerush (<i>Eleocharis</i> sp.) with a very limited mix of additional graminoid and herbaceous species. Area has not undergone restoration/enhancement activities. | | | | | |
| Significant nearby features Across Card Sound Rd. from Phase I, where restoration/enhancement activities have been completed. Further west across US1 is the Southern Glades and Model Lands Basin owned by SFWMD. Lack of exotic species control on highway shoulder by FDOT. | | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Some nearby areas in conservation by state or water management districts, so nearby areas slated for restoration. North is highly urbanized Miami-Dade area | | |
| Functions Trap and cycle organic materials with downstream detrital export to estuaries; provide important food chain resources with high rate of primary production; provide habitat and nursery grounds for many species; provides habitat for many transient and resident fish and wildlife species. | | | Mitigation for previous permit/other historic use unknown | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Odocoileus virginianus (white-tailed deer), Oryzomys palustris (rice rat), Peromyscus gossypinus (cotton mouse), Procyon lotor (raccoon), Sylvilagus palustris (marsh rabbit), Callinectes sapidus (blue crab), Ardea herodias (great-blue heron), Butorides striatus (green-backed heron), arachnids (spiders), abundant insects, other small to medium size mammals, variety of birds, snakes, etc. | | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Egretta caerulea (little blue heron)SSC, Egretta tricolor (tricolored heron)SSC, Mycteria americana (wood stork)E, Aramus guarauna (limpkin)SSC, Egretta thula (snowy egret - SSC), Alligator mississippiensis (alligator - SSC), Eudocimus alba (white Ibis - SSC), Puma concolor coryi (Florida panther)E. | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Evidence of rail, kingfisher overhead, American bittern, small fish, dragonflies, cricket frogs, snails, snipe, crayfish, clams. Evidence limited to smaller species - no evidence of large mammals or reptiles - did see aquatic macroinvertebrates, amphibians and forage fish. No game trails visible. | | | | | |
| Additional relevant factors: FWCC Biodiversity Hotspots: 7+ focal species overlap. FWCC Priority Wetlands: 1-3 species, wetland habitat. FMRI Habitats: mangroves and salt marshes present. | | | | | |
| Assessment conducted by: Kelly Chinnere Reiss, Erica Hernandez | | | Assessment date(s): 14-Dec-05 | | |

Glad_MAR_3 Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|--|--|
| Site/Project Name FPL/EMB | Application Number NA | Assessment Area Name or Number Glad_MAR_3 |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | Assessment date: 12/14/2005 |

| | | | | |
|--|---|---|---|--|
| 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 water functions | 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 | Habitats around the wetland assessment area support some requirements for wildlife species. There is open glades marsh, but a lack of native tree islands and lack of species richness for food and cover. Some of the plant community composition in the nearby areas are moderately composed of invasive and exotic species, which changes the ecosystem for functions. Wildlife access is partially limited by berms, barriers and dirt roads and also distance to natural habitats. Also, Card Sound Rd., a 2-lane paved high traffic road, is within 3000'. Land uses outside the wetland assessment area have adverse impacts on wildlife. There is a public county road, which has led to ATV trespassing trails, arson, shotgun shells, etc. Downstream benefits have been stopped/eliminated due to berms, preventing any free exchange of water and wildlife and stopping sheet flow typical of glades marshes. The berms act as hydrologic impediments. Downstream no longer receives benefits, though this is a relatively small area considering the size of the glades, so while downstream is negatively impacted by the lack of water inflows these downstream areas are not solely dependent on historic water outflows from this small area. | |
| | w/o pres or current 5 | with |
| .500(6)(b)Water Environment (n/a for uplands) | Water levels are moderately different than expected. Water lines are 4-5" higher than current levels - the assessment area appears to have significant variation in water levels. Soils were inundated, no soil erosion or deposition evident. Arson burned through in 2004, fire intensity seemed much higher than appropriate as evidenced by patchy vegetation, dead shrubby remains, etc. Vegetation zonation appropriate, but poor species richness. Mortality to sawgrass (<i>Cladium jamaicense</i>) from intensity of fire. Some animals noted with certain hydrologic requirements such as fish, crayfish, frogs, marsh bird species. No vegetation species present indicative of water quality degradation, except perhaps some cattail (<i>Typha</i> sp.) along the roadside. Standing water appeared clear and appropriate. No available water quality data. Water depth is sufficient, but may fluctuate more than appropriate and has caused changes in species cover/density, this is especially visible in the high sawgrass mortality from atypical fire. | |
| | w/o pres or current 7 | with |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community | Plant cover is by desirable species, invasive exotics are present but cover is minimal. Lack of strong evidence of regeneration, sawgrass (<i>Cladium jamaicense</i>) grew at a low density two years after a wild fire. Within this glades marsh there are "dead" Australian pine (<i>Casuarina</i> sp.) throughout from fire, the land manager suggested these will likely resprout. Despite these standing dead remains, we have scored this area as a marsh, as there is no living canopy or shrub components. Course woody debris maybe greater than normal due to Australian pine burning in marsh and falling onto surface, however the UMAM rule says this should be "native" vegetation - clearly Australian pine is not native, and so we did not feel it appropriate to consider this to reduce the scoring for this assessment area. Plants appear to be in good condition. Land management has caused water control features, including berms on all sides. Topographic features appear optimal for the area being assessed, though perhaps slightly higher with more hummocks than normal (perhaps remnants of uneven burn history?). Periphyton growth was as expected. Lower regeneration anticipated. Complete lack of species richness. | |
| | w/o pres or current 6 | with |

| | |
|---|------|
| Score = sum of above scores/30 (if uplands, divide by 20) | |
| current | with |
| or w/o pres | |
| 0.60 | |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Glad_MAR_3 Wetland Rapid Assessment Procedure, page 1

Project Name: Glad_MAR_3

Date: 12/2/2005

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: This site has not yet undergone restoration or enhancement activities. It occurs in Phase II of the mitigation bank. A fire burned through in 2004 (from arsen) and burned an uneven mosaic throughout the sawgrass patches.

Wetland Assessment Area: 8.1 ha (20.0 ac)

FLUCCS Code/Description: 1995 SFWMD 6410 Freshwater Marsh

| | |
|------|---------------------------|
| 1.5 | Wildlife Utilization (WU) |
| N/A | Wetland Canopy (O/S) |
| 2.0 | Wetland Ground Cover (GC) |
| 1.5 | Habitat Support/Buffer |
| 2.0 | Field Hydrology (HYD) |
| 2.8 | WQ Input & Treatment (WQ) |
| 9.8 | SUM |
| 5 | Count |
| 0.65 | WRAP |

Glad_MAR_3 Wetland Rapid Assessment Procedure, page 2

| | | |
|-----|---------------------------|--|
| 1.5 | Wildlife Utilization (WU) | Evidence of rail, kingfisher overhead, American bittern, small fish, dragonflies, cricket frogs, snails, snipe, crayfish, clams. Evidence limited to smaller species - no evidence of large mammals or reptiles - did see aquatic macroinvertebrates, amphibians and forage fish, not abundant upland food sources - no nearby tree islands, just scrubby species along berms. Some cover in wetland, lack of abundant cover, vegetation not dense. Obvious evidence of human disturbance. No game trails visible. ATV trails show evidence of human disturbance plus roads/berms. |
|-----|---------------------------|--|

| | |
|-----|----------------------|
| N/A | Wetland Canopy (O/S) |
|-----|----------------------|

| | | |
|-----|---------------------------|--|
| 2.0 | Wetland Ground Cover (GC) | Moderate cover of desirable groundcover species. Cover was by desirable species, but there was a general lack of species richness throughout. Patchy areas with either sawgrass (<i>Cladium jamaicense</i>) or spikerush (<i>Eleocharis</i> sp.), limited other species. Perhaps higher mortality of species (had burned over 1 year ago and had 2 years of growing season to recover) from the arsen fire than would be anticipated (based on visual comparison from same wetland type that has already undergone enhancement/restoration activities). |
|-----|---------------------------|--|

| | | | | | | | |
|----------------|---|--|-------------------|-----------|-------------|-------------|--|
| 1.5 | Habitat Support/Buffer | | Buffer Type | (Score) x | (% of Area) | = Sub Total | |
| | Buffer >300' wide but that includes the dirt road and the berm, so not desirable cover necessarily because the berm is lined with undesirable species. Patches of punktree (<i>Melaleuca quinquenervia</i>) and Australian pine (<i>Casuarina</i> sp.). Support area hosts exotic and invasive species, this area has not yet undergone enhancement. There are some species that provide desirable cover and food. | | Disturbed habitat | 1.5 | 1 | 1.5 | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| Total = | | | | | | 1.5 | |

| | | |
|-----|-----------------------|--|
| 2.0 | Field Hydrology (HYD) | Has been maintained as a wetland. Stain lines show water levels have receded by 4-5." Wetland assessment area forms a triangle with impounded berms on all three sides, so hydrology is not "natural" as this area is adjacent to berms that alter hydrology by eliminating sheet flow into and out of the system. This changes drainage area. Plants appear healthy but show evidence of stress and changes (low richness, patchiness etc). |
|-----|-----------------------|--|

| | |
|-----|----------------------------|
| 2.8 | WQ Input & Treatment (WQ)* |
|-----|----------------------------|

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

**In wetland systems that are totally isolated (i.e., bermed) from surrounding areas and receive rainfall as part of the water budget, the evaluator should not consider the surrounding land use pretreatment rating index. A water quality score of 2.75 should be assigned under this scenario. (Miller and Gunsalus 1999, page 20)

Glad_MAR_3 Hydrogeomorphic Approach, page 1

Variable Subindex and FCI Calculation for Florida Marl Flats Glades

Assessment Team:

Project Name: Glad_MAR_3
Location: FPL Everglades Bank
Date: 12/2/05
Subclass: Marl Flats

| Function | FCI |
|--------------------------------------|------|
| Surface and Subsurface Water Storage | 1 |
| Cycle Nutrients | 0.9 |
| Characteristic Plant Community | 0.96 |
| Wildlife Habitat | 0.9 |

| Variables | Measure | Units | Subindex |
|-----------|---------|-------|----------|
| VTRACT | > 8000 | ha | 1 |
| VCORE | 79 | % | 1 |
| VCONNECT | 65 | % | 0.85 |
| VMICRO | 0 | % | 1 |
| VWOODY | 0 | % | 1 |
| VINVASIVE | 0 | % | 1 |
| VMAC | 15 | % | 0.4 |
| VPERI | 99 | % | 1 |
| VSURTEX | 100 | % | 1 |
| VCOMP | 100 | % | 1 |

Appendix B-11. Florida Mitigation Bank

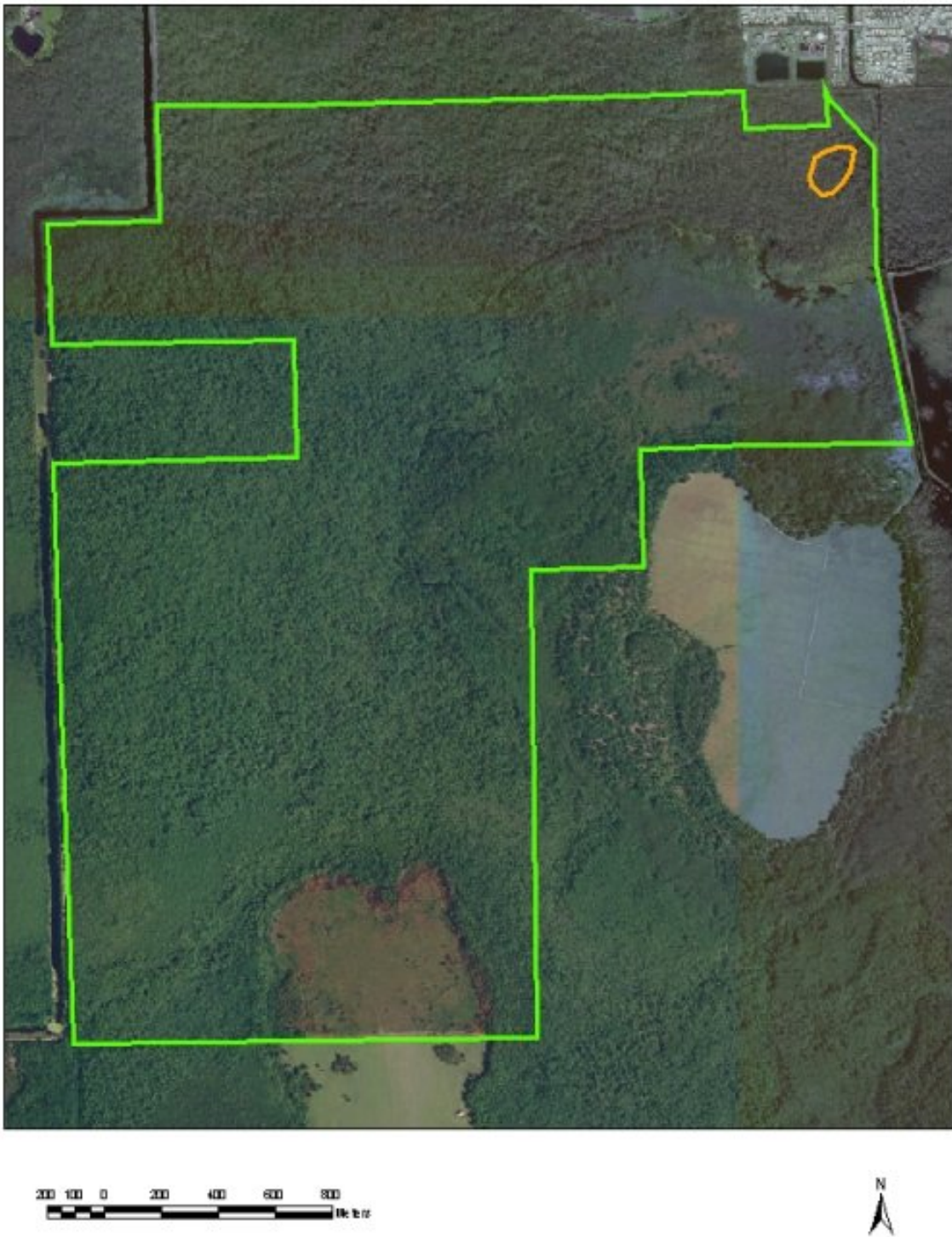


Figure B-11.1. Landscape location of Florida Mitigation Bank (green line). Boundary of the wetland assessment area FLMB_FOR (orange line) shown.



Figure B-11.2. Site photo of Florida Mitigation Bank assessment area FLMB_FOR a wetland forested mixed system adjacent to a large marsh. This forested system has been impacted by years of hydrologic impacts and more recent hurricanes.

FLMB_FOR Uniform Mitigation Assessment Method, page 1

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

| | | | |
|---|---|--|--|
| Site/Project Name Florida Mitigation Bank | | Application Number NA | Assessment Area Name or Number FLMB_FOR |
| FLUCCs code 1995 SFWMD 6300 Wetland Forested Mixed | Further classification (optional) Hontoon Muck soils, very poorly drained. | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size 1.8 ha (4.4 ac) |
| Basin/Watershed Name/Number Kissimmee River HUC 03090101 | Affected Waterbody (Class) Class III | Special Classification (i.e. OFW, AP, other local/state/federal designation of importance) none | |
| <p>Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Water empties from this forested wetland into Shingle Creek. Receives water from channelized Reedy Creek from the west. The up stream part of this watershed is extremely fragmented from large roads (i.e. US-192, I-4, etc.) and urban development (residential, commercial, wastewater treatment facilities, etc.).</p> <p>Assessment area description Historically the area was highly drained. High evidence of soil loss - measured at least 70cm in areas. Trees are stressed either due to historic drainage or now currently flooded conditions, this area is in a state of transition, and it is unclear if the established trees will survive the new water regime. There are numerous invasive exotic and nuisance species throughout the groundcover.</p> | | | |
| Significant nearby features The channelized Reedy Creek is to the west, and the channelized Shingle Creek is to the east. There are other area lakes and creeks, but also a great deal of urban development (ex. the town of Celebration, the Kissimmee Municipal Airport). | | <p>Uniqueness (considering the relative rarity in relation to the regional landscape.) This site is still undeveloped, compared to nearby urban areas, but it is a highly disturbed system.</p> | |
| Functions Important habitat for wildlife. Flood storage, aquifer recharge, and nutrient cycling. Provides cover to many species. Offers refugia for migrating birds. Provide permanent water pools for wildlife while improving water quality and controlling quantity. Structural and species diversity within canopy layer supports one of the most productive and diverse habitats. | | <p>Mitigation for previous permit/other historic use unknown</p> | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Mole salamander, tiger salamander, dwarf salamander, oak toad, cricket frog, pinewoods tree frog, barking frog, squirrel frog, southern chorus frog, little grass frog, narrowmouth toad, eastern spadefoot toad, snakes, snapping turtle, mud turtles, eastern mud snake, cottonmouth, wood duck, swallow-tailed kite, barred owl, pileated woodpecker, great-crested flycatcher, prothonotary warbler, rusty blackbird, raccoon, bobcat, opossum, white-tailed deer, striped skunk, armadillo, cottontail rabbit, cotton mouse, cotton rat, flycatchers, warblers, red-shouldered hawk, pileated woodpecker, northern bobwhite, southern black racer, eastern diamondback rattlesnake, yellow rat snake, pygmy rattlesnake | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Gopher frog (SSC), white ibis (SSC), American alligator (T), sandhill crane (T), woodstork (E), little blue heron (SSC), tricolor heron (SSC), great egret (SSC), little green heron (SSC) | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Evidence of macroinvertebrates, forage fish, amphibians, anoles, some game trails and matted vegetation indicating large mammal or possible reptiles. White peacock butterfly, red shouldered hawk, black swallowtail, caterpillars on cattails (<i>Typha</i> sp.), green tree frog, green anoles, red bellied woodpecker, kingfisher, brown anoles. | | | |
| Additional relevant factors: This represents an evaluation of current condition. FNAI Bird Aggregation Areas: bird rookery; FWCC Biodiversity Hotspots: 7+ focal species overlap; FWCC Priority Wetlands: 1-3 species, upland habitat. | | | |
| Assessment conducted by: Erica Hernandez, Kelly Chinnners Reiss | | Assessment date(s): 11-Oct-05 | |

FLMB_FOR Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|--|--|
| Site/Project Name Florida Mitigation Bank | Application Number NA | Assessment Area Name or Number OSSWIM |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | Assessment date: 10/11/2005 |

| 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 water functions | 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 | Available habitats represent most needs of wildlife. Some partial limitations due to water connections and also berm/canal barriers. Some of the plant community composition in the proximity of the wetland assessment area consists of invasive exotic species, but cover is minimal and has minimal adverse effects. Wildlife access is partially limited with the waste water treatment plant to the north and the berm/canal to east - this would especially effect aquatic species. The area does connect near the top of the berm in extreme high water events and may actually breach the berm, but this is a rare occurrence and the berms act as barriers with limitations during most of the time. The functions of the wetland assessment area that benefit fish and wildlife downstream are somewhat limited by barriers that reduce the opportunity for the wetland assessment area to provide these benefits. Land uses have limited adverse impacts on fish and wildlife (ex. this area is fed canal water of unknown source and quality). Some hydrologic impediments occur - has overflow structure with modeled water levels to maintain appropriate hydrologic connection. Downstream areas benefit from water quality clarification from the forested wetland, it does provide head waters to Shingle Creek as part of Orin Brown Canal. | |
| | w/o pres or current 8 | with |

| | | |
|---|---|------|
| .500(6)(b)Water Environment (n/a for uplands) | Difficult to assess the current condition because of the effects of past hydrologic stress, so must determine differences of present versus past indicators of the changing water environment. Water levels and flows appear appropriate. This area had many facultative wetland and obligate species, though it grades up to the drier NW areas. This area has a natural slope down towards the adjacent basin marsh. Water level indicators were not as distinct or consistent as expected, but this is thought to be a relic of past hydrologic stress. Soils currently saturated or inundated but there is clear evidence of severe subsidence from the effects of the altered hydrology pre-restoration. This past altered hydrology still has effects on trees that are currently growing there. Measured soil subsidence was 70 cm. Regeneration of forest species will reflect hydrologically restored conditions. No evidence of soil erosion or deposition was evident. No atypical fire scarring. Vegetation zonation shows facultative, invasive, and nuisance species on hummocks and down woody debris. Other appropriate vegetation was found throughout the | |
| | w/o pres or current 7 | with |

| | | |
|---|---|------|
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community | Plant community composition not ideal. This area lacks appropriate species richness. Invasive and exotic species cover estimated at 25%, considered more than minimal cover. Some regeneration by canopy species but not necessarily by ideal species. Some regeneration by sweetbay (<i>Magnolia virginiana</i>), swamp bay (<i>Persea palustris</i>), swamp tupelo (<i>Nyssa sylvatica</i> var. <i>biflora</i>), red maple (<i>Acer rubrum</i>). Limited shrub regeneration. Overall considered to have greater than minimal regeneration. Coarse woody debris slightly greater or greater than anticipated probably due to past hydrologic stress, but this debris is still present throughout the wetland assessment area. Plant condition is generally good, but trees do have thinned canopies. Land management includes past water control (drained), but has been restored. Land management also includes exotic species removal. Topographic features show slightly more elevation than expected from excess woody debris and mortality. Age and size class distribution of canopy is not appropriate, as the system lacks the mid-size cohort and many of the larger trees that have fallen over. This may not be a permanent deviation | |
| | w/o pres or current 5 | with |

| | |
|---|------|
| Score = sum of above scores/30 (if uplands, divide by 20) | |
| current or w/o pres 0.67 | with |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

FLMB_FOR Wetland Rapid Assessment Procedure, page 1

Project Name: FLMB_FOR Fl Mitigation Bank

Date: 10/11/05

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: Historically area was highly drained. High evidence of soil loss - measured at least 70cm in areas. Trees are stressed either due to historic drainage or now currently flooded conditions, this area is in a state of transition, and it is unclear if the established trees will survive the new water regime. There are numerous invasive exotic and nuisance species throughout the groundcover.

Wetland Assessment Area: 1.8 ha (4.4 ac)

FLUCCS Code/Description: 1995 SFWMD 6300 Wetland Forested Mixed

| | |
|------|---------------------------|
| 2.5 | Wildlife Utilization (WU) |
| 1.5 | Wetland Canopy (O/S) |
| 2.0 | Wetland Ground Cover (GC) |
| 1.8 | Habitat Support/Buffer |
| 2.0 | Field Hydrology (HYD) |
| 0.9 | WQ Input & Treatment (WQ) |
| 10.7 | SUM |
| 6 | Count |
| 0.59 | WRAP |

FLMB_FOR Wetland Rapid Assessment Procedure, page 2

| | |
|--|---------------------------|
| 2.5 | Wildlife Utilization (WU) |
| Evidence of macroinvertebrates, forage fish, amphibians, anoles, some game trails and matted vegetation indicating large mammal or possible reptile use. Abundance of woody debris and snags from changing hydrology and hurricane damage. Refugia ponds formed from root ball hollows under downed trees. Lots of evidence of cavities. Severe soil subsidence left lots of den space under exposed roots. Adequate upland food sources nearby. Saw two deer stands and human footprints on a path to them, indicating some recent human disturbance. | |

| | |
|--|----------------------|
| 1.5 | Wetland Canopy (O/S) |
| Canopy is currently very open from recent hurricane damage and hydrologic stress. Some natural recruitment of red maple (<i>Acer rubrum</i>), swamp tupelo (<i>Nyssa sylvatica</i> var. <i>biflora</i>), and sweetbay (<i>Magnolia virginiana</i>). Canopy has uneven age distribution, there are not many large dbh trees, but there are some tall trees. Did see some Chinese tallow (<i>Sapium sebiferum</i>) in the midstory and as seedlings. Many snags, some probably due to pre-restoration hydrologic stress, hurricanes, and hydrologic restoration. There is the potential for the canopy to provide increased habitat support over time. | |

| | |
|---|---------------------------|
| 2.0 | Wetland Ground Cover (GC) |
| Torpedo grass (<i>Panicum repens</i>) growing in thick clumps in drier areas. Some native species growing within the patches of torpedo grass. Patches of invasive, exotic, or nuisance species including water hyacinth (<i>Eichhornia crassipes</i>); cattail (<i>Typha</i> sp.) with pickerelweed (<i>Pontederia cordata</i>) growing within it; some Caesar weed (<i>Urena lobata</i>) in patches, also growing in down woody debris; most open water areas otherwise covered in water spangles (<i>Salvinia minima</i>); patch of Peruvian primrosewillow (<i>Ludwigia peruviana</i>). Total cover by invasive or exotic species estimated at <25%. | |

| | | | | | |
|--|------------------------|----------------|-----------|-------------|-------------|
| 1.8 | Habitat Support/Buffer | | | | |
| South of this wetland opens up to more of the mitigation bank large basin marsh with open water, saw grass, and cypress, large contiguous forested wetland through the bank and south. Far west boundary of bank is berm and then the C-1 canal with a forested wetland on other side. Most of the bank is buffered by either pasture or more forested wetland. East edge has a berm and then the Orin Brown Canal. Past this buffer is Poiciana Blvd. On the northern border is a sewage treatment plant, the effluent travels in pipes to spray fields south of the bank. Adjacent lands are continuous seed sources for exotic vegetation. Portions connected to off site wetlands. Flows into Shingle Creek and then Lake Tahoe. The main hydrologic connections are into the bank from the C-1 Canal and off the bank at control structure into the Orin Brown Canal. Does not appear to be interchanging flow, could limit some species dispersal. Berms could limit some dispersal. | | | | | |
| | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | N - WWTP | 1.5 | 0.25 | 0.4 |
| | | E - berm/canal | 1.5 | 0.25 | 0.4 |
| | | W - berm/canal | 1.5 | 0.25 | 0.4 |
| | | S - wetland | 2.5 | 0.25 | 0.6 |
| Total = | | | | 1.8 | |

| | |
|---|-----------------------|
| 2.0 | Field Hydrology (HYD) |
| Evidence of severe soil subsidence from historical land use. Hydrology has been somewhat restored. Trees are obviously hydrologically stressed. Soils inundated. Some upland transitional species on hummocks but not invading wetland. Many facultative, facultative wetland, and obligate species. Did see limited recruitment of swamp tupelo (<i>Nyssa sylvatica</i> var. <i>biflora</i>) and sweetbay (<i>Magnolia virginiana</i>). Red maple (<i>Acer rubrum</i>) recruitment evident. This wetland is in transition but appears that the hydrology may be appropriate for maintaining an adequate wetland in the future. | |

| | |
|--|----------------------------|
| 0.9 | WQ Input & Treatment (WQ)* |
| *The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2. | |

| LANDUSE CATEGORY (LU) | | | |
|--------------------------|-----------|-------------|-------------|
| Land Use Category | (Score) x | (% of Area) | = Sub Total |
| Canal from urban sources | 1.0 | 0.83 | 0.8 |
| Runoff from forest | 3.0 | 0.17 | 0.5 |
| LU Total = | | | 1.3 |

| PRETREATMENT CATEGORY (PT) | | | |
|----------------------------|-----------|-------------|-------------|
| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
| No Treatment | 0.0 | 0.83 | 0.0 |
| Nat. Undevel. | 3.0 | 0.17 | 0.5 |
| PT Total = | | | 0.5 |

Water input is from canal to west that receives urban runoff and stormwater. Some rainwater and runoff from the upslope forested area to the north must be considered (water contribution estimated at 1/6 of water budget).

Appendix B-12. Florida Wetlandsbank



Figure B-12.1. Landscape location of Florida Wetlandsbank (green line). Boundary of the wetland assessment areas FLWt_MAR_1 in yellow and FLWt_MAR_2 outlined in blue, represent different phases of restoration of organic Everglades flats communities.



Figure B-12.2. Site photos of Florida Wetlandsbank assessment areas FLWt_MAR_1 the first phase to begin restoration with time zero occurring in 1995. There is no site photo for FLWt_MAR_2 one of the last phases to be restored with time zero in 1999.

FLWt_MAR_1 Uniform Mitigation Assessment Method, page 1

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

| | | | |
|--|--|---|--|
| Site/Project Name Florida Wetlands Bank | | Application Number | Assessment Area Name or Number FLWt_MAR_1 |
| FLUCCs code FLUCCs 1995 - 4240 | Further classification (optional) NWI - Palustrine Emergent, Soils - Dania muck, Lauderhill muck. Organic flats | Impact or Mitigation Site? | Assessment Area Size 22.6 acres |
| Basin/Watershed Name/Number HUC - SE FL Coast C-11 West | Affected Waterbody (Class) | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands BRBANK is surrounded by a berm and has an influx of water through a NE connection and flows out in SE corner. A canal and rainwater are the primary source of water to the bank. Water leaves the bank via canal into residential areas. Some may be channeled West across Hwy 27 to conservation lands. Each section of restored area on the bank is surrounded by a berm. | | | |
| Assessment area description Small square shaped Organic flats dominated by <i>Eleocharis spp.</i> , <i>Rhynchosopora spp.</i> and <i>Sagittaria spp.</i> WAA is surrounded by a landscaped berm planted with subtropical hardwoods and <i>Spartina spp.</i> Standing water is waist high in some areas becoming shallower to Western edge. Some young planted cypress and deeper pools with <i>Thalia</i> and <i>Nuphar</i> . BRBANK is surrounded by the rest of the bank on the N and East sides. Residential to West and city property to the South. | | | |
| Significant nearby features To the South is city owned property. On Western edge is a residential area and then Hwy 27. To the West of hwy 27 are conservation lands for Florida panther habitat owned by SFWMD and private partnerships. There is a waste disposal site North of the bank. | | Uniqueness (considering the relative rarity in relation to the regional landscape.) In general much of Broward county has been converted from its natural landscape. Exotics tend to dominate land that is not being managed naturally or in development of agriculture or urban. | |
| Functions Surface and subsurface water storage, wildlife habitat, biogeochemical processes | | Mitigation for previous permit/other historic use This area was hydrologically impacted and dominated by <i>Melaleuca quinquenervia</i> . | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Apple snails, alligators, marsh rabbit, wading birds, raccoon, turtles, saifin molly | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Snail kites <i>Rostrhamus sociabilis plumbeus</i> (E), Woodstork <i>Mycteria americana</i> (E), Bald eagle <i>Haliaeetus leucocephalus</i> (T), Limpkin <i>Aramus guarana</i> (SSC), Wading Birds (threatened and SSC), Least tern <i>Sterna antillarum</i> (T) | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Marsh rabbit, game trails, numerous small fish, mosquitoes. Snail kites have been noted on site. | | | |
| Additional relevant factors: This is the oldest restored area in the bank. It was restored in 1995. It was regraded to limestone and planted. There is now a good amount of muck on site, in some areas it was pretty difficult to walk through. | | | |
| Assessment conducted by: EH, KCR | | Assessment date(s): 27-Jun-05 | |

FLWt_MAR_1 Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|-------------------------------------|--|
| Site/Project Name Florida Wetlands Bank | Application Number | Assessment Area Name or Number FLWt_MAR_1 |
| Impact or Mitigation | Assessment conducted by: EH, KCR | Assessment date: 6/27/2005 |

| | | | | |
|---|---|--|---|--|
| 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 w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 4 | Habitats outside the wetland assessment area provide support for generalists species, and fails to provide support for many important wildlife species. Limits from the urban interface. Some upland invasive species on berms are supposed to be treated. Some limits to connectivity by berms, berms are broken out in some areas for hydrologic connection however site can not sheet flow like it might have historically. Wildlife access is substantially limited to this area from highways and canals. Some generalist species are expected to be able to fly over and or deal with the distance and barriers. The downstream areas receive a single outflow into a SFWMD canal - this area would have contributed to the regional water budget with sheet flow style drainage pre-development. This wetland and the entire wetland mitigation bank probably act as water purifier for the SFWMD canal water. Land uses outside of the wetland assessment area have adverse impacts (landfill, roads, urban, etc.). There is less magnitude and frequency of beneficial downstream influences. |
| .500(6)(b)Water Environment (n/a for uplands) w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 9 | Levels and flows appear appropriate. Water indicators are appropriate. (adventitious rooting seen, thick organic matter) No atypical fire frequency. No erosion or deposition apparent. No excessive mortality. Animal use is consistent. No water quality indicator species present but there are no oil sheens, algal blooms or turbidity. Water is very clear. Vegetation zonation and composition is appropriate. One inflow of water to the wetland mitigation bank from degraded quality canal water, with the other main source of water being rainfall. Wetland assessment area is impounded by berms on three sides. There is some sheet flow through the wetland mitigation bank but much of the flow is impeded from berms and the outflow is limited to a point discharge at a SFWMD canal. There are some unknown factors, but the evidence on site suggested a general lack of concern for water quality degradation. The site appeared to have acceptable water quality. No water data available. |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 9 | Zonations consistent with water depth and topography due to regrading from restoration efforts. Nearly all appropriate species, a few melaleuca were seen in drier area. Coarse woody debris higher than anticipated as a result of treated exotics. Refugia ponds and hummocks are appropriate. <i>Sagittaria spp.</i> and <i>Utricularia spp.</i> in flower. An effort was made during regrading to have areas of higher elevation and lower elevation to increase species richness and diversity in the wetland. |

| |
|--|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current or w/o pres <input type="checkbox"/> with <input type="checkbox"/> |
| 0.73333 |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

FLWt_MAR_1 Wetland Rapid Assessment Procedure, page 1

Project Name: FLWt_MAR_1 Fl Wetlands Bank

Date: 6/27/05

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: organic flats glades - wetland surface has been scraped to grade to create marsh with appropriate hydrology.

Wetland Assessment Area:

FLUCCS Code/Description: 1995 SFWMD - 4240 Upland Hardwood Forests, Melaleuca infested- has now been restored as 6410 Freshwater Marsh

| | |
|------|---------------------------|
| 1.5 | Wildlife Utilization (WU) |
| N/A | Wetland Canopy (O/S) |
| 2.5 | Wetland Ground Cover (GC) |
| 0.5 | Habitat Support/Buffer |
| 2.5 | Field Hydrology (HYD) |
| 1.8 | WQ Input & Treatment (WQ) |
| 1.8 | SUM |
| 5 | Count |
| 0.55 | WRAP |

FLWt_MAR_1 Wetland Rapid Assessment Procedure, page 2

| | |
|--|----------------------------------|
| 1.5 | Wildlife Utilization (WU) |
| Audible amphibian calls, Leopard frog, red winged black birds, rabbit, apple snail shells, fish, tadpoles, wading birds, game trails, dead fox on road. No use by large mammals, use by alligators. Lack of adjacent upland food source. Appropriate cover and food in wetland. Small to medium sized mammals can use limited adjacent food source. Human disturbance in form two-lane road, urban developemnt, housing etc. | |

| | |
|----|-----------------------------|
| NA | Wetland Canopy (O/S) |
| | |

| | |
|---|----------------------------------|
| 2.0 | Wetland Ground Cover (GC) |
| More diversity in shallow areas <i>Pluchea spp.</i> , <i>Bacopa spp.</i> , <i>Taxodium spp.</i> , <i>Sagittaria spp.</i> and <i>Hypericum spp.</i> Dominated by large <i>Eleocharis</i> and <i>Cladium jamaicense</i> some <i>Utricularia spp.</i> in flower. <10 % exotics, some young <i>Melaleuca quinquenervia</i> , probably previously treated. Ground is uneven making walking difficult due to build of organic materials. Woody debris was present but not characteristic for comunity type and results from exotic species treatment. | |

| | | | | | |
|---|-------------------------------|------------------|-----------|-------------|-------------|
| 2.0 | Habitat Support/Buffer | | | | |
| Patches on three sides with the invasive exotic punktree (<i>Melaleuca quinquenervia</i>). North: thin buffer strip and then two-lane road and landfill. Three sides have berms that have been planted with native species and that are somewhat maintained for exotic species removal, they also host some nuisance species, the berms are approximately 20' wide. Housing developments and roads beyond berms. No offsite wildlife corridor or connections. | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | N: berm, exotics | 0.5 | 0.25 | 0.1 |
| | | E: berm, exotics | 0.5 | 0.25 | 0.1 |
| | | W: berm, exotics | 0.5 | 0.25 | 0.1 |
| | | S: berm, exotics | 0.5 | 0.25 | 0.1 |
| | | Total = | | | |

| | |
|--|------------------------------|
| 2.5 | Field Hydrology (HYD) |
| Inflow and outflow connects to SFWMD canals - though not directly inflowing to this portion of the bank - water for the WAA comes from rainfall and sheet flow from up gradient restored wetlands (that receive canal water). Water levels are regulated. We anticipated indicators or poor or low water quality becuase of the water source (SFWMD canal), but we observed nothing to suggest impaired water quality. In fact, <i>Utricularia spp.</i> was in full bloom and flourishing throughout the WAA. Plants appeared healthy and we did not observe signs of stress. Site does not dry down, with only minimal if any water level fluctuations. | |

1.8 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| Wetland | 3.0 | 0.50 | 1.5 |
| Canal | 1.0 | 0.50 | 0.5 |
| | | | 0.0 |
| LU Total = | | | 2.0 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| Nat. Undev. | 3.0 | 0.50 | 1.5 |
| No treatment | 0.0 | 0.50 | 0.0 |
| | | | 0.0 |
| PT Total = | | | 1.5 |

Additional Notes: Water inflow from neighboring wetland, water originates into bank from SFWMD canal, mainly from urban land uses. No runoff contribution from surrounding areas due to berms.

FLWt_MAR_1 Hydrogeomorphic Approach, page 1

Variable Subindex and FCI Calculation for Florida Organic Flats Glades

Assessment Team: Erica Hernandez, Kelly Chinnners Reiss
Project Name: Florida Wetlandsbank FLWt_MAR_1
Location: Broward County
Date: 6/27/05
Subclass: Organic Flats

| Function | FCI |
|--------------------------------------|------|
| Surface and Subsurface Water Storage | 0.63 |
| Cycle Nutrients | 0.69 |
| Characteristic Plant Community | 0.66 |
| Wildlife Habitat | 0.56 |

| Variables | Measure | Units | Subindex |
|-----------|---------------|-------|----------|
| VTRACT | 189 | HA | 0.03 |
| VCORE | 27 | % | 0.38 |
| VCONNECT | 8.6 | % | 0.10 |
| VMICRO | 100 | % | 0.00 |
| VWOODY | 10 | % | 0.90 |
| VINVASIVE | < 1 | % | 1.00 |
| VMAC | 43 | % | 1.00 |
| VSURTEX | GIS says Muck | | 1.00 |
| VCOMP | 76 | % | 0.76 |

Vsurtex field verified

FLWt_MAR_1 Hydrogeomorphic Approach, page 2

| | | | | | |
|------------------|---|---------|---------|---------|--------|
| VTRACT | < 189 ha | | | | |
| VCORE | 124.6 acres | | | | |
| VCONNECT | total perim of wetland tract 6486.68 556.8 m connected | | | | |
| VMICRO | all wetland area has altered microtopography from rock plow | | | | |
| VWOODY | 0%, 0%, 10% | | | | |
| VINVASIVE | 0%, 0%, <1% | | | | |
| VMAC | 1. 30% | 2. 25% | 3. 20% | 4. 40% | 5. 35% |
| | 6. 15% | 7. 60% | 8. 60% | 9. 100% | |
| VSURTEX | 100% clay loam | | | | |
| VCOMP | 1. 100% | 2. 100% | 3. 100% | | |
| | 4. 33% | 5. 0% | 6. 100% | | |
| | 7. 100% | 8. 50% | 9. 100% | | |

FLWt_MAR_2 Uniform Mitigation Assessment Method, page 1

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

| | | | | | |
|---|--|---|---|---|--|
| Site/Project Name FI Wetlands Bank | | Application Number NA | | Assessment Area Name or Number FLWt_MAR_2 | |
| FLUCCs code 1995 SFWMD - 4240 Upland Hardwood Forests, Melaleuca infested- has now been restored as 6410 Freshwater Marsh | | Further classification (optional) Lauderhill Muck soils, very poorly drained | | Impact or Mitigation Site? Mitigation Bank | |
| Assessment Area Size 1.2 ha (3.0 ac) | | | | | |
| Basin/Watershed Name/Number SE FL Coast HUC 03090202 | | Affected Waterbody (Class) Class III | | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) none | |
| <p>Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands</p> <p>While this small wetland assessment area does have connection to a larger wetland system (the wetland mitigation bank), the wetland mitigation bank does not have any offsite connections or wildlife corridors. The water inflows to the bank from a SFWMD canal, and later outflows into a SFWMD canal, perhaps improving the water quality within the canal system. The entire mitigation bank is surrounded by berms preventing much connectivity with adjacent (though poor quality) uplands.</p> | | | | | |
| <p>Assessment area description</p> <p>Organic flats glades - freshwater marsh system. Wetland surface has been scraped to grade to create a wetland with the appropriate hydrology to maintain an organic flats glades system. Overall there was low plant species richness. Wildlife habitat for medium or large mammals is severely limited due to lack of connections to offsite wetland or upland habitats.</p> | | | | | |
| Significant nearby features Everglades and Francis Taylor WMA within one-two miles to west. Some other nearby small conservation parcels, but no direct connections. | | | <p>Uniqueness (considering the relative rarity in relation to the regional landscape.) Much of Broward County is in high intensity urban development, so considering this is a green space it is relatively rare, however the greater Everglades is with one-two miles, so the habitat type is not necessarily rare, but so much has been lost to development.</p> | | |
| Functions Surface and subsurface water storage, biogeochemical processes, important wildlife habitat support | | | <p>Mitigation for previous permit/other historic use unknown</p> | | |
| <p>Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)</p> <p>Florida apple snail, crayfish, marsh rice rat, bobcat, raccoon, white tailed deer, gray fox, water snakes, southern toad, mosquito, amphiuma, mosquito fish, flag fish, marsh killifish, wading birds</p> | | | <p>Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)</p> <p>American alligator (<i>Alligator mississippiensis</i>)SSC; Everglades snail kite (<i>Rostrhamus sociabilis plumbeus</i>)END; American bald eagle (<i>Haliaeetus leucocephalus</i>)T; Florida panther (<i>Puma concolor coryi</i>)E could potentially pass through but would not be expected here and would probably prefer higher ground; little blue heron (<i>Egretta caerulea</i>)SSC; tricolored heron (<i>Egretta tricolor</i>)SSC; snowy egret (<i>Egretta thula</i>)SSC; wood stork (<i>Mycteria americana</i>)E; limpkin (<i>Aramus guarauna</i>)SSC; white ibis (<i>Eudocimus alba</i>)SSC.</p> | | |
| <p>Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):</p> <p>Leopard frog, black vulture, turkey vulture, northern harrier, two small parrots, apple snail shells, small fish, burrows on berm, smaller snails, yellow rumped warblers (audio), small vegetation matted nest, (1' x 1/2' and 1/2' above H2O surface), grasshoppers, spider webs across vegetation, dragonflies, tree swallow. No use by large mammals, use by alligators.</p> | | | | | |
| <p>Additional relevant factors:</p> <p>FNAI Bird Aggregation Areas: bird rookery; FWCC Strategic Habitat Conservation Areas: priority habitat.</p> | | | | | |
| Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | | | Assessment date(s): 1-Dec-05 | | |

FLWt_MAR_2 Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|--|--|
| Site/Project Name FI Wetlands Bank | Application Number NA | Assessment Area Name or Number FLWt_MAR_2 |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | Assessment date: 12/1/2005 |

| | | | | |
|--|---|---|---|--|
| 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 water functions | 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 w/o pres or current 4 | with | Habitats outside the wetland assessment area provide support for generalists species, and fails to provide support for many important wildlife species. Some of the nearby areas have excessive punktree (<i>Melaleuca quinquenervia</i>) infestations and other exotic species (excluding the maintained berms and tree islands). The remaining nearby areas are highly developed (urban). Wildlife access is substantially limited to this area from highways and canals. Some generalist species are expected to be able to fly over and or deal with the distance and barriers. The downstream areas receive a single outflow into a SFWMD canal - this area would have contributed to the regional water budget with sheet flow style drainage pre-development. This wetland and the entire wetland mitigation bank probably act as water purifier for the SFWMD canal water. Land uses outside of the wetland assessment area have adverse impacts (landfill, roads, urban, etc.). There is less magnitude and frequency of beneficial downstream influences. |
| | | |
| .500(6)(b)Water Environment (n/a for uplands) w/o pres or current 9 | with | The water levels have been modeled to stay high and inundated - this wetland type has a long hydroperiod, and the wetland is likely wet > 9 months of the year. Water level indicators appear appropriate considering presence of muck, appropriate wetland vegetation composition. Soil moisture appropriate, no soil erosion present. No atypical fire history. Vegetation zonation appropriate. No sign of hydrologic stress or excessive mortality. Did see fish which have specific hydrologic requirements. No signs of species tolerant or associated with water quality degradation. Standing water appeared clear - no turbidity/oil sheen/dicoloration. Light penetration optimal. One inflow of water to the wetland mitigation bank from degraded quality canal water, with the other main source of water being rainfall. Wetland assessment area is impounded by berms on three sides. There is some sheet flow through the wetland mitigation bank but much of the flow is impeded from berms and the outflow is limited to a point discharge at a SFWMD canal. There are some unknown factors, but the evidence on site suggested a general lack of concern for water quality degradation. The site appeared to have acceptable water quality. No water data available. |
| | | |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current 8 | with | Plant cover is by appropriate and desirable plant species. There is minimal cover by invasive or exotic species, though some are present. Regeneration by herbaceous species appears appropriate. Punktree (<i>Melaleuca quinquenervia</i>) stumps are present from past land management activities, which increase the amount of coarse woody debris greater than expected, as the freshwater marsh system would otherwise have limited if any woody debris throughout. Plants are in good condition with no evidence of chlorotic or spindly growth or insect damage. Land management must maintain exotic species control and water levels. Topographic features appear less than optimal, the uneven nature of the substrate is drastic in some areas with large/rapid changes in the microtopography. This area had been regraded through a massive earth moving operation. Normal algal growth. |
| | | |

| | | |
|---|---------|------|
| Score = sum of above scores/30 (if uplands, divide by 20) | current | with |
| | 0.70 | |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Form 62-345.900(2), F.A.C. [effective date 02-04-2004]

FLWt_MAR_2 Wetland Rapid Assessment Procedure, page 1

Project Name: FLWt_MAR_2 Fl Wetlands Bank

Date: 12/1/05

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: organic flats glades - wetland surface has been scraped to grade to create marsh with appropriate hydrology.

Wetland Assessment Area: 1.2 ha (3.0 ac)

FLUCCS Code/Description: 1995 SFWMD - 4240 Upland Hardwood Forests, Melaleuca infested- has now been restored as 6410 Freshwater Marsh

| | |
|------|---------------------------|
| 1.5 | Wildlife Utilization (WU) |
| NA | Wetland Canopy (O/S) |
| 1.5 | Wetland Ground Cover (GC) |
| 0.5 | Habitat Support/Buffer |
| 2.5 | Field Hydrology (HYD) |
| 1.8 | WQ Input & Treatment (WQ) |
| 7.8 | SUM |
| 5 | Count |
| 0.52 | WRAP |

FLWt_MAR_2 Wetland Rapid Assessment Procedure, page 2

| | |
|--|----------------------------------|
| 1.5 | Wildlife Utilization (WU) |
| Leopard frog, black vulture, turkey vulture, northern harrier, two small parrots, apple snail shells, small fish, burrows on berm, smaller snails, yellow rumped warblers (audio), small vegetation matted nest, (1' x 1/2' and 1/2' above H ₂ O surface), grasshoppers, spider webs across vegetation, dragonflies, tree swallow. No use by large mammals, use by alligators. Lack of adjacent upland food source. Appropriate cover and food in wetland. Small to medium sized mammals can use limited adjacent food source. Human disturbance in form two-lane road, urban developemnt, housing etc. | |

| | |
|----|-----------------------------|
| NA | Wetland Canopy (O/S) |
| | |

| | |
|--|----------------------------------|
| 1.5 | Wetland Ground Cover (GC) |
| Few undesirable species (certainly <25%). Human disturbance obvious with grading of soils - though not routinely managed. Groundcover composed of knontted spikerush (<i>Eleocharis interstincta</i>), gulf coast spikeruch (<i>Eleocharis cellulosa</i>), Eastern purple bladderwort (<i>Utricularia purpurea</i>), arrowhead (<i>Sagittaria</i> sp.) punktree (<i>Melaleuca quinquenervia</i>) sprout, yellow flowered bladderwort (<i>Utricularia</i> sp.), two unknown submerged aquatics. Overall low species richness. | |

| | | | | | |
|---|-------------------------------|------------------|-----------|-------------|-------------|
| 0.5 | Habitat Support/Buffer | | | | |
| Patches on three sides with the invasive exotic punktree (<i>Melaleuca quinquenervia</i>). North: thin buffer strip and then two-lane road and landfill. Three sides have berms that have been planted with native species and that are somewhat maintained for exotic species removal, they also host some nuisance species, the berms are approximately 20' wide. Housing developments and roads beyond berms. No offsite wildlife corridor or connections. | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | N: berm, exotics | 0.5 | 0.25 | 0.1 |
| | | E: berm, exotics | 0.5 | 0.25 | 0.1 |
| | | W: berm, exotics | 0.5 | 0.25 | 0.1 |
| | | S: berm, exotics | 0.5 | 0.25 | 0.1 |
| | | | | | |
| Total = | | | | 0.5 | |

| | |
|--|------------------------------|
| 2.5 | Field Hydrology (HYD) |
| Periphyton mat on water and soil surfaces. Has muck soils. Some unknown submerged aquatic, if these are exotics they would only contribute a small percent in cover by exotic species. Controlled hydroperiod from SFWMD canal. Plants appear adapted to current hydrology. Site does not dry down, with only minimal if any water level fluctuations. Hydrology adequate and maintain viable wetland - some external influences from canal control. | |

1.8 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| Wetland | 3.0 | 0.50 | 1.5 |
| Canal | 1.0 | 0.50 | 0.5 |
| | | | 0.0 |
| LU Total = | | | 2.0 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| Nat. Undev. | 3.0 | 0.50 | 1.5 |
| No treatment | 0.0 | 0.50 | 0.0 |
| | | | 0.0 |
| PT Total = | | | 1.5 |

Additional Notes: Water inflow from neighboring wetland, water originates into bank from SFWMD canal, mainly from urban land uses. No runoff contribution from surrounding areas due to berms.

FLWt_MAR_2 Hydrogeomorphic Approach, page 1

Variable Subindex and FCI Calculation for Florida Organic Flats Glades

Assessment Team: EH, KCR, TD
Project Name: FLWt_MAR_2
Location: Florida Wetlands Bank area 29
Date: 12/1/05
Subclass: Organic Flats

| Function | FCI |
|---|------------|
| Surface and Subsurface Water Storage | 0.67 |
| Cycle Nutrients | 0.64 |
| Characteristic Plant Community | 0.62 |
| Wildlife Habitat | 0.53 |

| Variables | Measure | Units | Subindex |
|------------------|----------------|--------------|-----------------|
| VTRACT | ≤ 188 | ha | 0.025 |
| VCORE | 27 | % | 0.38 |
| VCONNECT | 9 | % | 0.1 |
| VMICRO | 100 | % | 0 |
| VWOODY | 0 | % | 1 |
| VINVASIVE | 3 | % | 1 |
| VMAC | 41 | % | 1 |
| VSURTEX | 100 | % | 1 |
| VCOMP | 56 | % | 0.55 |

FLWt_MAR_2 Hydrogeomorphic Approach, page 2

| | |
|------------------|--|
| VTRACT | ≤ 188 ha |
| VCORE | 124.6 acres |
| VCONNECT | 9% |
| VMICRO | all of the microtopographic features have been rock plowed |
| VWOODY | 0% on average of each 0.04 ha plots sampled |
| VINVASIVE | 3%, 0%, 0% |
| VMAC | 1. 35% 2. 15% 3. 20% 4. 45% 5. 25% |
| avg 41% | 6. 45% 7. 35% 8. 80% 9. 70 % |
| VSURTEX | muck 100% for each plot sampled |
| VCOMP | 1. 25% <i>Utricularia purpurea</i> 67% |
| avg 56% | 25% <i>Eleocharis cellulosa</i> |
| | 25% <i>Eleocharis interstincta</i> |
| | 2. 50% <i>Eleocharis interstincta</i> 50% |
| | 25% <i>Utricularia purpurea</i> |
| | 3. 50% <i>Eleocharis interstincta</i> 50% |
| | 25% <i>Utricularia purpurea</i> |

Appendix B-13. Garcon Peninsula Mitigation Bank

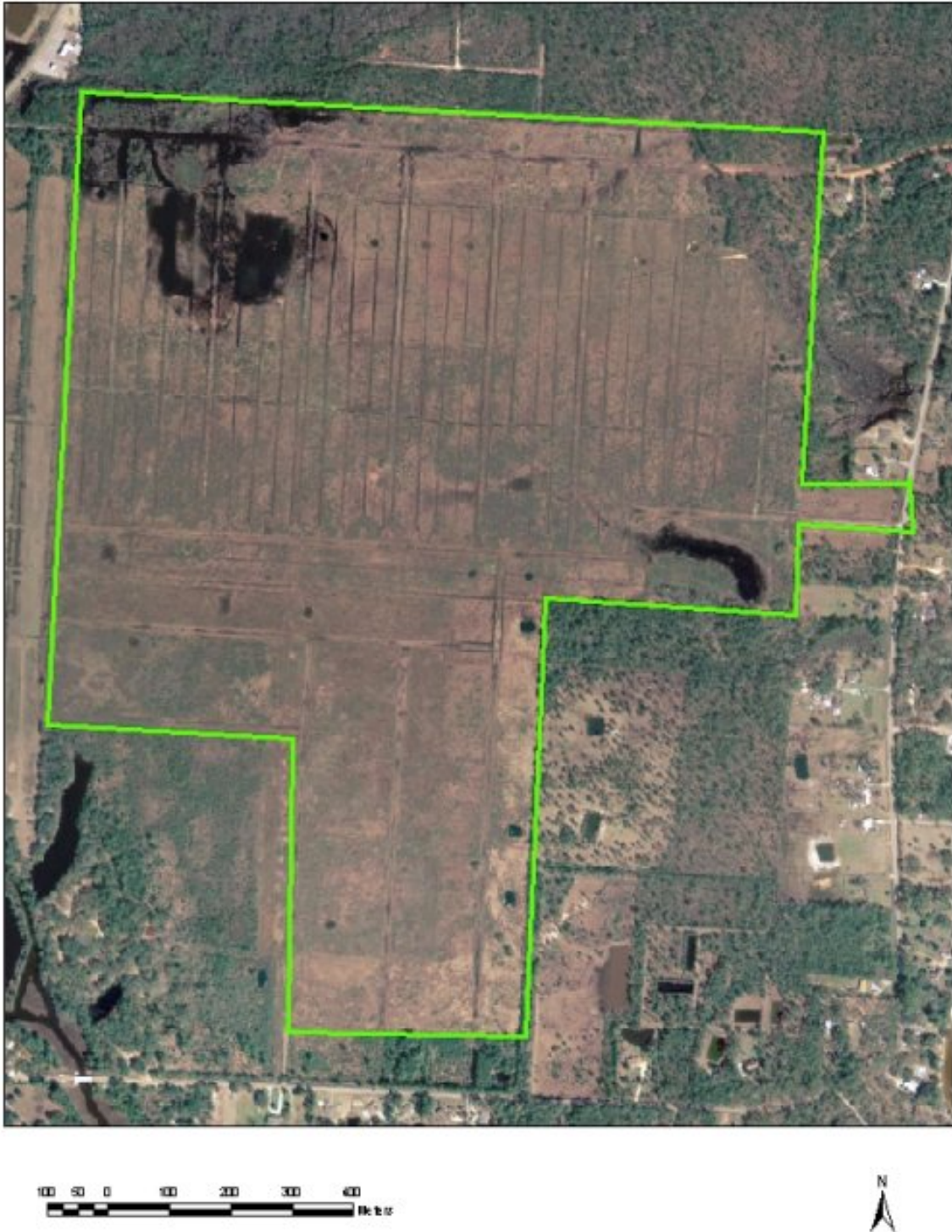


Figure B-13.1. Landscape location of Garcon Peninsula Mitigation Bank (green line). The boundary of the wetland assessment area Garc_FLA includes most of the bank's wet prairie habitat.



Figure B-13.2. Site photo of Garcon Peninsula Mitigation Bank assessment area Garc_FLA with yellow pitcherplant (*Sarracenia flava*) pitcher plant featured in the foreground.

Garc_FLA Uniform Mitigation Assessment Method, page 1

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

| | | | |
|---|--|---|--|
| Site/Project Name Garcon Peninsula Mitigation Bank | | Application Number NA | Assessment Area Name or Number Garc_FLA |
| FLUCCs code 1995 NFWFMD FLUCCS 2100 Pasture land | Further classification (optional) Roughly, the north portion of bank is Goldhead fine sand, middle Mulat loamy fine sand, south Rutlege loamy sand, all hydric. | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size roughly 200 acres of bank is in wet prairie (~81 ha) |
| Basin/Watershed Name/Number HUC ID 14, Pensacola Bay | Affected Waterbody (Class) 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 Bank is pretty flat and mostly sheet flows to various slough like drainage feature that all flow to Pensacola Bay. One outflow is blocked by an earthen mound in the SE corner of the bank but has been breached by hurricanes. Some footprints of old ditches have been left on the bank but no longer serve as an outflow because they have ditch blocks. These may alter the hydroperiod. | | | |
| Assessment area description Historic wet prairie was converted to pasture for cattle and now looks like a fallow pasture dominated by early successional weedy plants and remnant pasture grasses. There is an overstory of dead and stressed woody vegetation, Chinese tallow (<i>Sapium sebiferum</i>) and wax myrtle (<i>Myrica cerifera</i>). Ditch footprints are distinguishable in the landscape by elevation and vegetation stratification. There are open patches were native desirable species are dominant maybe because they were recently burned in the growing season and there are less shrubs there. | | | |
| Significant nearby features Little over 2 miles northeast from Garcon Point water management area. Drains into and is less than half a mile away from the Blackwater Bay which is also the Yellow River Marsh Aquatic Preserve. Across the bay are more Florida Managed Areas and corridors including Eglin Air Force Base. | | Uniqueness (considering the relative rarity in relation to the regional landscape.) In its present degraded condition this area is not rare in comparison to the landscape, but an intact restored wet prairie ecosystem would be beneficial to this rapidly developing part of Florida. Intact wet prairie especially with pitcher plant (<i>Sarracenia</i> spp.) areas are increasingly | |
| Functions Habitat for flora and fauna. Flood retention and storage. Maintaining biodiversity. Sediment retention. | | Mitigation for previous permit/other historic use Turned into pasture for cattle. | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Cricket frog, chorus frog, little grass frog, black racer, yellow rat snake, cottonmouth, pygmy rattlesnake, northern harrier, southeastern kestrel, killdeer, long-billed marsh wren, red-winged blackbird, marsh rabbit, cotton rat, and cotton mouse. | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Sarracenia flava</i> (T), <i>Sarracenia leucophylla</i> (E), <i>Lilium catebaei</i> (T), <i>Eleocharis quadrangulata</i> (rare but not listed) | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Hum of insects, pileated woodpecker, white eyed vireo, tohee, killdeer, dragon flies, grasshoppers, raccoon scat, animal trail, snipe, tree swallow, osprey, Carolina wren, mourning dove, skippers, green anole, crayfish chimney, great blue heron, bluebird (on bank west edge), Yellow legs (west edge), spiders, butterflies, crayfish chimney, blue gray gnatcatcher | | | |
| Additional relevant factors: Wax myrtle (<i>Myrica cerifera</i>) and Chinese tallow (<i>Sapium sebiferum</i>) have rapidly invaded this bank due to a lack of aggressive fire program. Very little growing season fire has been effectively applied on the property. There are patches where groundcover is appropriate so there is hope for the seedbank but until a regular prescription burning program can be applied and maintained and the woody mid-story removed it is unknown how this wet prairie community will recover. Hydrology alterations and historic cattle grazing may have some yet unseen effects in trying to restore this prairie back to reference conditions. Fire program has had difficulty because of red flags for burning and excessive standing water on the site. Most management has consisted of treating the established <i>Sapium sebiferum</i> by aerial spraying with chopper and attacking by hand. | | | |
| Assessment conducted by: Erica Hernandez | | Assessment date(s): 9/6/2006 | |

Garc_FLA Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|---|--|
| Site/Project Name Garcon Peninsula Mitigation Bank | Application Number NA | Assessment Area Name or Number Garc_FLA |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Erica Hernandez | Assessment date: 9/6/2006 |

| | | | | |
|--|---|--|---|--|
| 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 | Certain wildlife populations may be limited due to the reduced availability of habitats needed to fulfill their life history requirements. Invasive Chinese tallow (<i>Sapium sebiferum</i>) is present in the landscape, it brings an inappropriate woody canopy to a treeless target reference community. There is a constant seed source outside the bank of Chinese tallow. There are no significant landscape barriers on the peninsula between the bank and other conservation areas. They are separated by inappropriate habitat but they are mostly agricultural and low density residential. North of the bank is I-10 which is a significant barrier, it is unknown whether there are corridors underneath the interstate. Sandy Bayou does not appear to have any downstream barriers and flows into an Aquatic Preserve. The bank is not surrounded by optimal habitats, agricultural and residential areas may be conduits for exotic species, natural flow ways in the landscape have impoundments. I-10 may be acting as a barrier to the north and west for species migration. There appear to be no hydrologic impediments on Sandy Bayou but another wetland in the SE corner of the bank is impounded. Downstream is not solely dependant on this system. | | |
| | w/o pres or current 6 | with | |

| | | | |
|---|--|------|--|
| .500(6)(b)Water Environment (n/a for uplands) | Site was dry due to seasonality. According to FNAI, wet prairie can be seasonally inundated or saturated for 50 to 100 days each year. Generally they have shorter hydroperiods than other herbaceous wetlands and are subject to regular and prolonged desiccation during the dry season due to their flat topography. No observations were contrary to this information. Ditches that were installed historically for raising cattle have been blocked or filled. The ditches that have been blocked but not filled did tend to have wetland vegetation growing in them whereas adjacent areas at a higher elevation tended to have more facultative or upland species. In some areas this linear zonation of vegetation was not an issue or as apparent. Some crayfish chimneys were observed in the landscape. No standing water was observed. There were no species indicative of water quality degradation or alteration. The ditches with blocks, although no longer removing surface water off of the property, may be altering the hydroperiod of a system that would naturally sheet flow. This may be contributing to the ability of woody shrubs to take hold in the landscape of ditches. Growing season fire may make this less of an issue. | | |
| | w/o pres or current 7 | with | |

| | | | |
|---|--|------|--|
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community | On the southern portion of the assessment area Chinese tallow (<i>Sapium sebiferum</i>) were aerially treated and have been knocked back. They are stressed but still living and need further management for removal. Exotic pasture grasses and Japanese honeysuckle (<i>Lonicera japonica</i>) are also in the landscape. Wax myrtle (<i>Myrica cerifera</i>) is the dominant woody structure and some have also been knocked back but are still standing and probably still alive. These have become establish due to the lack of growing season fire. The woody structure probably has the biggest impact in altering the structure of a wet prairie community type. Land management practices will have to become more aggressive in applying an appropriate fire regime. There were pockets of intact groundcover indicative of wet prairie communities and therefore there is hope that the seed bank is still viable and will flourish with growing season fire and a removal of the woody over story biomass. At present time the majority of the assessment area resembles an overgrown pasture field. Desirable plants are being shaded out or have not yet had an opportunity to become established because of other weedy species dominating. This has implications for available food sources available to native species especially over wintering grassland birds that depend on grass seed. | | |
| | w/o pres or current 5 | with | |

| | | |
|---|------|--|
| Score = sum of above scores/30 (if uplands, divide by 20) | | |
| current or w/o pres | with | |
| 0.6 | | |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Garc_FLA Wetland Rapid Assessment Procedure, page 1

Project Name: Garcon Peninsula Mitigation Bank, Garc_FLA

Date: 9/6/2006

Evaluator(s): Erica Hernandez

Wetland Type/Description: Historic wet prairie had been ditched and seeded to create pasture for cattle production. Site has remnant patches of wet prairie species in an old field setting.

Wetland Size: about 200 ac (~ 81 ha)

FLUCCS Code/Description: pasture, 2100

| | |
|------|---------------------------|
| 1.5 | Wildlife Utilization (WU) |
| 0.5 | Wetland Canopy (O/S) |
| 1.0 | Wetland Ground Cover (GC) |
| 1.9 | Habitat Support/Buffer |
| 2.0 | Field Hydrology (HYD) |
| 1.8 | WQ Input & Treatment (WQ) |
| 8.7 | SUM |
| 6 | Count |
| 0.48 | WRAP |

Garc FLA Wetland Rapid Assessment Procedure, page 2

| | | |
|-----|---------------------------|--|
| 1.5 | Wildlife Utilization (WU) | There are a few patches of remnant wet prairie, but otherwise functionally and structurally this area is not wet prairie. Various birds and insects were noted during the field visit. This site could certainly provide food and cover to generalist species and is a large open expanse in a landscape that is not under high intensity development but instead mostly residential. The main concern is immediately on the bank there is quite a bit of human disturbance due to the encroachment of shrubby species, exotic species, an altered hydrology, and a lack of growing season fire. Species adapted to a diverse groundcover and an open landscape may have a difficult time surviving. |
|-----|---------------------------|--|

| | | |
|-----|----------------------|--|
| 0.5 | Wetland Canopy (O/S) | The presence of woody shrub species is inappropriate for a wet prairie system. The presence of wax myrtle (<i>Myrica cerifera</i>) is directly related to the management of the bank. An effort was made to aerially treat the dominant woody Chinese tallow (<i>Sapium sebiferum</i>) in the southern portion of the bank, it was deemed effective and now can be controlled by hand in the continuing management of the bank. Some of the larger wax myrtles (<i>Myrica cerifera</i>) have been killed or stressed but there are still many live shrubs and the presence of this woody mid-story species that forms a canopy undermines the structural integrity of wet prairie. These species might support perched predators, shade out the ground cover, and can alter the hydrology by tying up groundwater into the woody species. Few Chinese tallow saplings were seen except directly under larger trees, this is a good sign. Bank managers are working to irradiate the Chinese tallow and wax myrtle. |
|-----|----------------------|--|

| | | |
|-----|---------------------------|--|
| 1.0 | Wetland Ground Cover (GC) | Although there are small pockets on the bank that persist with appropriate wet prairie species either because of historic use or the application of growing season fire, most of the wet prairie areas of the bank are dominated by early successional and old field species. Individual desirable forbs and grasses are still around in these disturbed areas but are not dominant. With a more aggressive burn plan that uses prescribed fire in the growing season more native species might get better established. There are exotic species in the landscape. Japanese honey suckle (<i>Lonicera japonica</i>) was present in the southern portion of this habitat and torpedo grass (<i>Panicum repens</i>) was growing along the northern side in the Maggie Road footprint. In some areas, there was linear stratification of wetland species and upland or facultative species because of linear ditch and road foot prints in the landscape. |
|-----|---------------------------|--|

| 1.9 | Habitat Support/Buffer | A wall of <i>Sapium sebiferum</i> is present on the road south of the bank and will be a constant seed source. Interstate-10 runs northeast to southwest just north of the bank, unable to tell if drainage features are connected under the interstate but there should be connection. Might be a habitat fragmentation issue to a large forested area to the north. Lands around the bank look like low intensity residential and some agriculture. There are some Florida Managed areas to the south and then across the bay to Eglin Air Force Base where there are more extensive natural areas. Appropriate natural uplands do not really exist in an unaltered state immediately around the bank. Immediately north, work has been done to improve the flatwoods, north of that looks like planted pine and flatwoods. To the east are some overgrown planted pine areas and residential homes. To the west there is some remnant upland habitat but most is converted to agriculture. South there is a private home with flatwoods and then a low intensity use road and the exotics mentioned. Most drainage features in the landscape are impounded. | <table border="1"> <thead> <tr> <th>Buffer Type</th> <th>(Score) x</th> <th>(% of Area)</th> <th>= Sub Total</th> </tr> </thead> <tbody> <tr> <td>North</td> <td>2</td> <td>0.24</td> <td>0.48</td> </tr> <tr> <td>South</td> <td>1</td> <td>0.12</td> <td>0.12</td> </tr> <tr> <td>East</td> <td>2</td> <td>0.35</td> <td>0.70</td> </tr> <tr> <td>West</td> <td>2</td> <td>0.29</td> <td>0.58</td> </tr> <tr> <td colspan="3">Total =</td> <td>1.9</td> </tr> </tbody> </table> | Buffer Type | (Score) x | (% of Area) | = Sub Total | North | 2 | 0.24 | 0.48 | South | 1 | 0.12 | 0.12 | East | 2 | 0.35 | 0.70 | West | 2 | 0.29 | 0.58 | Total = | | | 1.9 |
|----------------|------------------------|--|---|-------------|-----------|-------------|-------------|-------|---|------|------|-------|---|------|------|------|---|------|------|------|---|------|------|----------------|--|--|------------|
| Buffer Type | (Score) x | (% of Area) | = Sub Total | | | | | | | | | | | | | | | | | | | | | | | | |
| North | 2 | 0.24 | 0.48 | | | | | | | | | | | | | | | | | | | | | | | | |
| South | 1 | 0.12 | 0.12 | | | | | | | | | | | | | | | | | | | | | | | | |
| East | 2 | 0.35 | 0.70 | | | | | | | | | | | | | | | | | | | | | | | | |
| West | 2 | 0.29 | 0.58 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total = | | | 1.9 | | | | | | | | | | | | | | | | | | | | | | | | |

| | | |
|-----|-----------------------|---|
| 2.0 | Field Hydrology (HID) | This site can be very saturated with standing water. At the time of site visit the site was very dry. Naturally this wet prairie ecosystem would have sheet flowed to a lower elevation towards slough like systems that drain through flatwoods to the Pensacola Bay. Most of the drainage features in the landscape appear impounded. It appears that Sandy Bayou does not have any impoundments and drains naturally, although up stream off of the property may be altered. This bank has the numerous crisscross of ditch foot prints. Some ditches have been filled and others plugged. They are no longer actively draining the property offsite. However at the time of visit it was noted that in some areas wetland vegetation was growing linearly in the ditches and more upland and facultative vegetation was growing on higher ground. This might be less of an issue when more active burning is implemented. Woody vegetation may be tying up available water as well. |
|-----|-----------------------|---|

1.8 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| pasture | 2.5 | 0.40 | 1.0 |
| natural areas | 3.0 | 0.30 | 0.9 |
| residential | 2.0 | 0.20 | 0.4 |
| planted pine | 1.0 | 0.10 | 0.1 |
| LU Total = | | | 2.4 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| natural undeve. | 3.0 | 0.40 | 1.2 |
| none | 0.0 | 0.60 | 0.0 |
| | | | 0.0 |
| PT Total = | | | 1.2 |

Appendix B-14. Graham Swamp Mitigation Bank



Figure B-14.1. Landscape location of Graham Swamp Mitigation Bank (green line) is estimated, as areas within this boundary have been used for mitigation projects not included as part of the larger mitigation bank. Boundary of the wetland assessment area Grhm_FOR in yellow includes most of the wetland mitigation bank.



Figure B-14.2. Site photo of Graham Swamp Mitigation Bank assessment area Grhm_FOR.

Grhm_FOR Uniform Mitigation Assessment Method, page 1
PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

| | | | |
|--|--|--|--|
| Site/Project Name Graham Swamp Mitigation Bank | | Application Number NA | Assessment Area Name or Number Grhm_FOR |
| FLUCCs code 6170 Mixed Wetland Hardwoods | Further classification (optional) SJRWMD SOILS - Favoretta, very poorly drained | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size ~ 89 acres (36 ha) |
| Basin/Watershed Name/Number Upper East Coast HUC 03080201 | Affected Waterbody (Class) 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 This area historically drained into the Graham Swamp Conservation Area to the south, which eventually flows into Bulow Creek and emptied into Tomoka Bay at Bulow Creek State Park and Tomoka State Park. Currently Graham Swamp Conservation Area backs up and flows North towards the bank. The bank is surrounded by canals. Weirs were installed to get some of that canal water back on to the mitigation bank. There is a spill over on the NW corner of the bank that flows into a larger North flowing canal which is connected to the Intracoastal Waterway. | | | |
| Assessment area description FWCC Biodiversity Hotspots - 7+ Focal Species Overlap. FWCC Priority Wetlands - 1-3 species, wetland habitat. Bounded by paved road to north and east. Connects to undeveloped lands to west and north. Large continuous tract of forested wetland. | | | |
| Significant nearby features The Graham Swamp Conservation Area is directly to the south. This area should drain into the Intracoastal Waterway, an Outstanding Florida Water Tomoka Marsh Aquatic Reserve. However flow is restricted and only connects through one small culvert underneath RR grade. Area is slated for hydrologic enhancement. Bank does not connect. | | Uniqueness (considering the relative rarity in relation to the regional landscape.) The fact that this area has been preserved and not ditched, filled, and turned into urban sprawl is significant. To the south is the Graham Swamp Conservation Area, so there are other similarly vegetated conservation lands nearby. | |
| Functions Provide permanent water pools for wildlife. Improve water quality. Control water quantity. Structural and species diversity within canopy supports a productive and diverse habitat. Provides important habitat, refugia, and breeding grounds for waterfowl, wading birds, and aquatic animals. | | Mitigation for previous permit/other historic use Unknown. Mosquito control may be responsible for some canals. | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Opossum, river otter, white-tailed deer, raccoon, gray squirrel, bobcat, wood and rice rats, egrets, herons, hawks, wood duck, woodpeckers (pileated, downy), turkey, swallow-tailed kite, cottonmouth snake, variety of frogs, toads, salamanders, snakes, and turtles. | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Mycteria americana</i> (wood stork - E), <i>Aramus guaranauna</i> (limpkin - SSC), <i>Egretta thula</i> (snowy egret - SSC), <i>Egretta caerulea</i> (little blue heron - SSC), <i>Alligator mississippiensis</i> (alligator - SSC) | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Queen butterfly emerging from cocoon, dragonflies, fritillary butterfly, pig frog, 3 ft. alligator, apple snail eggs, green tree frog, great egret flying through canopy, sapsucker holes on hickory, lubbers, ribbon or garter snake, green anole, banded water snake, 2 large water moccasins, small fish (minnows? and gambusia), downy woodpecker, red bellied woodpecker, snails along tree trunks, red shouldered hawk, Carolina wren, leopard frog, pileated woodpecker. In support area: hunting stand, snowy egret along W canal, great blue heron in canal, deer tracks on berm, turkey feather on berm, titmouse, white eyed vireo, ?water thrush. | | | |
| Additional relevant factors: Water flow has been reversed. The water now flows north and overflows into the surrounding canals. Historically the flow went south and eventually fed into the Intracoastal Waterway (an OFW). This swamp created the headwaters for Bulow Creek that becomes channelized south of Highway 100 and eventually drains into the Halifax River/the Intracoastal Waterway. | | | |
| Assessment conducted by: Kelly Chinnere Reiss, Erica Hernandez | | Assessment date(s): 9/16/2005 | |

Grhm_FOR Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|--|--|
| Site/Project Name Graham Swamp Mitigation Bank | Application Number NA | Assessment Area Name or Number Grhm_FOR |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | Assessment date: 9/16/2005 |

| 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 water functions | 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 | North of the bank is Colbert Lane a paved two lane highway on the edge of the bank's North and East boundaries. There are small retention areas along Colbert Lane. Between the road and the bank is a grassy edge, sidewalk, a fence and a canal and then berm on the bank side. Canals surrounding bank on the East have water flow North and then West to larger canal flowing out NW corner of bank under the road and to the Intracoastal Waterway. On the South side of the bank the canal has less flow but does make its way West to the larger North flowing canal. There is a berm separating the bank from the adjacent bottomland swamp to the South on the South side of the canal. On the West side is a conservation easement on uplands that look like old fields in succession and forested uplands, this edge between the bank and the North flowing canal is anywhere from 3m to 800m wide. On the West side is a big canal with wooded uplands being cleared for development. Cleared area did not appear stabilized and organic debris and substrate were falling into the canal. Medium to high density housing developments are apparent on the North, East and Western edges of the bank. Outside areas are not available in sufficient quantity because at least two sides of the bank do not have adjacent habitat support. Adjacent land uses do not have many exotics, there are pasture grasses and one small <i>Sapium sebiferum</i> (Chinese tallow) was found on Northern berm. There were dense edges of unidentified grasses on the Southern berm. Barriers on North and East sides are substantial, many species could not cross the road and would probably be hit by cars if they could. The canal and berm on the South side is also substantially limiting for some but not all animals supported by this wetland. There are interior uplands within the bank that provide habitat support. On the Western edge there is some adjacent land that is not impeded by barriers until the Western canal. The historical downstream support to Bulow Creek has been completely removed. This area drains North into a canal and into the artificial Intracoastal Waterway that eventually drains to the Atlantic Ocean. The canal has small waterfall type features associated with a weir that could keep some species from exchanging between estuarine or intracoastal areas to fresh water upstream. The basin probably has an increased quantity of water leaving the system because the canal features can not hold as much water as a natural system. Water leaving the bank is probably better quality than other water draining off adjacent lands and flowing to the Intracoastal. Some land uses outside the assessment area have significant land use impacts. Downstream effects probably draw minimal benefits from the bank. | | | |
| | <table border="1"> <tr> <td>w/o pres or current</td> <td>4</td> <td>with</td> <td></td> </tr> </table> | w/o pres or current | 4 | with |
| w/o pres or current | 4 | with | | |
| .500(6)(b)Water Environment (n/a for uplands) | Water levels may be slightly lower than normal due to berms on the North and East side of the bank. There were large cypress knees and buttresses that would indicate water levels were once much higher. Canal on South side receives over flow from Graham Swamp Conservation Area and may pop over to bank but mostly connects to other canals that flow to the North. NW corner of bank has a spillover into North flowing canal if water is too high. Because of historically severe soil subsidence the bank can hold more water than it did. Water level indicators included loop roots, new small cypress knees, and stain lines however lichen lines and moss collars are not as distinct as would be expected. The site was mostly inundated at time of site visit. No evidence of erosion or soil deposition leaving the bank on the spill over. No evidence of fire. Ground cover vegetation is not typical for the system in some areas, this could be due to an open canopy from stressed trees or inappropriate hydrology. The bank supports wetland dependant species water snakes, an alligator, frogs and fish were seen during site visit. We did not see species indicative of degraded water quality. Direct observation of standing water looked clear and tannic. No water quality data. Light penetration seemed fine, depth of water was probably more shallow then it should be. The site appears to be improving from the efforts of hydrologic restoration. | | | |
| | <table border="1"> <tr> <td>w/o pres or current</td> <td>7</td> <td>with</td> <td></td> </tr> </table> | w/o pres or current | 7 | with |
| w/o pres or current | 7 | with | | |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community | Majority of plant cover is by appropriate and desirable plant species in canopy, shrub and ground stratum. Some pasture grasses (i.e. <i>Stenotaphrum secundatum</i> - St. Augustine grass) on berms and drier patches. Very green understory, canopy allowing light in. Species composition primarily grasses, sedges, and herbaceous species - no ferns visible except epiphytic species though ferns do grow across the southern boundary canal. Invasive species are present but cover is minimal. Regeneration of canopy species was patchy, some areas had young <i>Ulmus americana</i> (American elm) and <i>Celtis laevigata</i> (hackberry) growing up but only small number of very young <i>Taxodium distichum</i> (bald-cypress) were found. There has been some temporary deviation from normal age and size class distribution. Density and quality of coarse woody debris, snags, dens, and cavities is optimal for habitat support. No evidence of chlorotic or spindly growth. Land management in surrounding area includes water control features and canals that caused a shift in the plant community. Weirs have been installed to restore hydrology but maintenance and management of those structures is not consistent. Topographic features such as refugia ponds and hummocks are present and normal. | | | |
| | <table border="1"> <tr> <td>w/o pres or current</td> <td>7</td> <td>with</td> <td></td> </tr> </table> | w/o pres or current | 7 | with |
| w/o pres or current | 7 | with | | |

| | | | |
|---|------|------|--|
| Score = sum of above scores/30 (if uplands, divide by 20) | | | |
| current or w/o pres | 0.60 | with | |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

Grhm_FOR Wetland Rapid Assessment Procedure, page 1
Wetland Rapid Assessment Procedure (WRAP)

All Data Sheets for Existing Conditions. Sheets designed for Mitigation Bank Study - K.C.Reiss. 5/2005

Project Name: Grhm_FOR - Graham Swamp Mitigation Bank

Date: 9/16/2005

Evaluator(s): Kelly Chinners Reiss & Erica Hernandez

Wetland Type/Description: mixed forested wetland divided from northern section by busy 2-lane road. Encroaching urban development on uplands surrounding this area.

Wetland Size: 26.7 ha (65.9 ac)

FLUCCS Code/Description: 2000 SJRWMD - East side 6170 Mixed Wetland Hardwoods, West side 6210 Cypress

| | |
|------|---------------------------|
| 2.5 | Wildlife Utilization (WU) |
| 2.5 | Wetland Canopy (O/S) |
| 2.0 | Wetland Ground Cover (GC) |
| 1.3 | Habitat Support/Buffer |
| 2.0 | Field Hydrology (HYD) |
| 1.9 | WQ Input & Treatment (WQ) |
| 12.3 | SUM |
| 6 | Count |
| 0.68 | WRAP |

Grhm_FOR Wetland Rapid Assessment Procedure, page 2

2.5 Wildlife Utilization (WU)
 Within wetland: Queen butterfly coming out of cocoon, other Queen butterflies, Fritillary butterfly, dragonflies, sapsucker holes on hickory trees, great egret flying through the canopy, pig frog, 3 ft alligator, green treefrog, apple snail eggs, 2 large water mocossins, banded water snake, small fish (?minnows and gambusia), downy woodpecker, redbellied woodpecker, snails along tree bark, red shouldered hawk, Carolina wren, leopard frog, pileated woodpecker. In support area: hunting stand, pileated woodpecker, large fish in south canal, snowy egret along west canal, great blue heron in west canal, deer tracks on west berm, turkey feather on west berm, small furry critter in brush - thought to be a small hog, hog rooting, ?water thrush, titmouse, white eyed vireo - support area was disturbed hydric hammock. Much wildlife support in the wetland, but less than optimal support in the surrounding area. Strong evidence of wildlife utilization, especially by reptiles. Two sides of the mitigation bank are bordered by a road. There are canals on almost all sides, showing greater than human disturbance to water quality and quantity.

2.5 Wetland Canopy (O/S)
 Some fallen and down trees, open canopy allowing green groundcover. Many *Acer rubrum* (red maple) seedlings suggesting previous dryness especially along south side. Also regeneration of *Ulmus americana* (elm) and *Celtis laevigata* (sugar-berry) present. Mature old trees present, some patches with only *Sabal palmetto* (cabbage palm) trees throughout. Some limited *Taxodium distichum* (bald-cypress) regeneration in one patch in the SE also with *Fraxinus caroliniana* (Carolina pop ash) regeneration. *Ilex vomitoria* (yaupon holly) on upland/higher patches. Not strong evidence of recruitment of *Taxodium distichum*. Some snags and dead trees, perhaps more than appropriate. Abundant desirable canopy species. Less than 10% nuisance species, only one *Sapium sebiferum* (Chinese tallow) tree observed in northern area near busy 2-lane paved road.

2.0 Wetland Ground Cover (GC)
 Species composition not ideal for this type of forested system but not full of invasive, exotic, or nuisance species. Abundant desirable species, some disturbance visible with hog rooting and also some human impacts. Some pasture grasses (i.e. *Stenotaphrum secundatum* - St. Augustine grass) on berms and drier patches. Pretty green understory, canopy allowing light in. Species composition primarily grasses, sedges, and herbaceous species - no ferns visible except epiphytic species though ferns do grow across the southern boundary canal. Some *Lygodium* sp. (climbing fern) found near N/E side (close enough to hear traffic on busy 2-lane paved road). Noted groundcover species include *Asclepias* sp. (milkweed), *Polygonum hydropiperoides* (swamp smartweed), *Saururus cernuus* (lizard's tail), *Boehmeria cylindrica* (false-nettle), *Iris* sp. (iris), ?*Panicum gymnocarpon* (savannah panicum) - though not reported for Volusia Co. in online USF atlas. Cypress knees growing low to ground throughout - theory of bank manager is that these are new growth. No ground cover in areas of heavy *Sabal palmetto* (cabbage palm) canopy.

1.3 Habitat Support/Buffer
 Canals surround bank on nearly all sides (expect upland strip in center of bank), some canals with steep banks (at least on 3 sides). South canal has water level almost the same as the banks ground elevation. Water levels in this canal have been much lower with clear nonflowing water with large fish visible (did not see at this site visit). The other 3 sides also have berms associated with the canals. On 2 sides there is >300 ft buffer. On 2 sides there is little buffer because there is canal and then urban interface. Animals must be able to limb the berm and swim the canal to access areas of the bank. On the W side the buffer is >300' but separate from other natural area by the canal which prevents access by larger terrestrial species. To the S is the GSCA, water flow is to the north but really it goes around the bank into the bypass canals. On N and E is berm/canal/road with no connection to other natural areas and a <30 ft vegetated or flooded buffer. On the W is the >300 ft conservation easement, though not ideal habitat for all species, it is an desirable species but limited native groundcover or desirable canopy and midstory species. A portion is cut off by the canal spill-over feature. On the S side the wetland bank is connected to the GSCA with water flow to the north in high water times, species must cross canal.

| Buffer Type | (Score) x | (% of Area) | = Sub Total |
|----------------------|-----------|-------------|-------------|
| berm/canal/road | 0.5 | 0.17 | 0.08 |
| berm/canal/road | 0.5 | 0.33 | 0.17 |
| old field succession | 2 | 0.33 | 0.67 |
| canal/GS Con. Area | 2.5 | 0.17 | 0.42 |
| Total = | | | 1.3 |

2.0 Field Hydrology (HID)
 Loop roots, stain lines, knees visible. Lichen lines not as distinct as expected, moss collars not intact. Berm on S side of S border canal could be lined with an exotic species a bushy large grass. Soil subsidence clearly visible on *Acer rubrum* (red maple) and cypress knees. Some cypress knees crumble down when touched, these have not recovered from the previous drawdown period. *Utricularia* sp. (bladderwort) found in deeper water area. Many small young cypress knees found growing throughout - a good sign of successful hydrologic restoration as the trees respond to an increase in water level. Hydrology appears adequate, but not a natural hydroperiod as evidenced by the size of the buttresses and the reversed flow of water (historically drained to the S). External influence apparent with canals on all sides and species along the edges near canals showing more signs of hydrologic stress. Wetland is viable, some regeneration noted.

1.9 WQ Input & Treatment (WQ)*
 *The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| natural/undev. | 3.0 | 0.33 | 1.0 |
| low volume high. | 2.0 | 0.33 | 0.7 |
| single fam. Res. | 1.5 | 0.33 | 0.5 |
| LU Total = | | | 2.2 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|------------------------|-----------|-------------|-------------|
| nat/undev. | 3.0 | 0.33 | 1.0 |
| grass swal. w/dry det. | 2.0 | 0.33 | 0.7 |
| no treatment | 0.0 | 0.3 | 0.0 |
| PT Total = | | | 1.7 |

Appendix B-15. Hole in the Donut/Everglades National Park

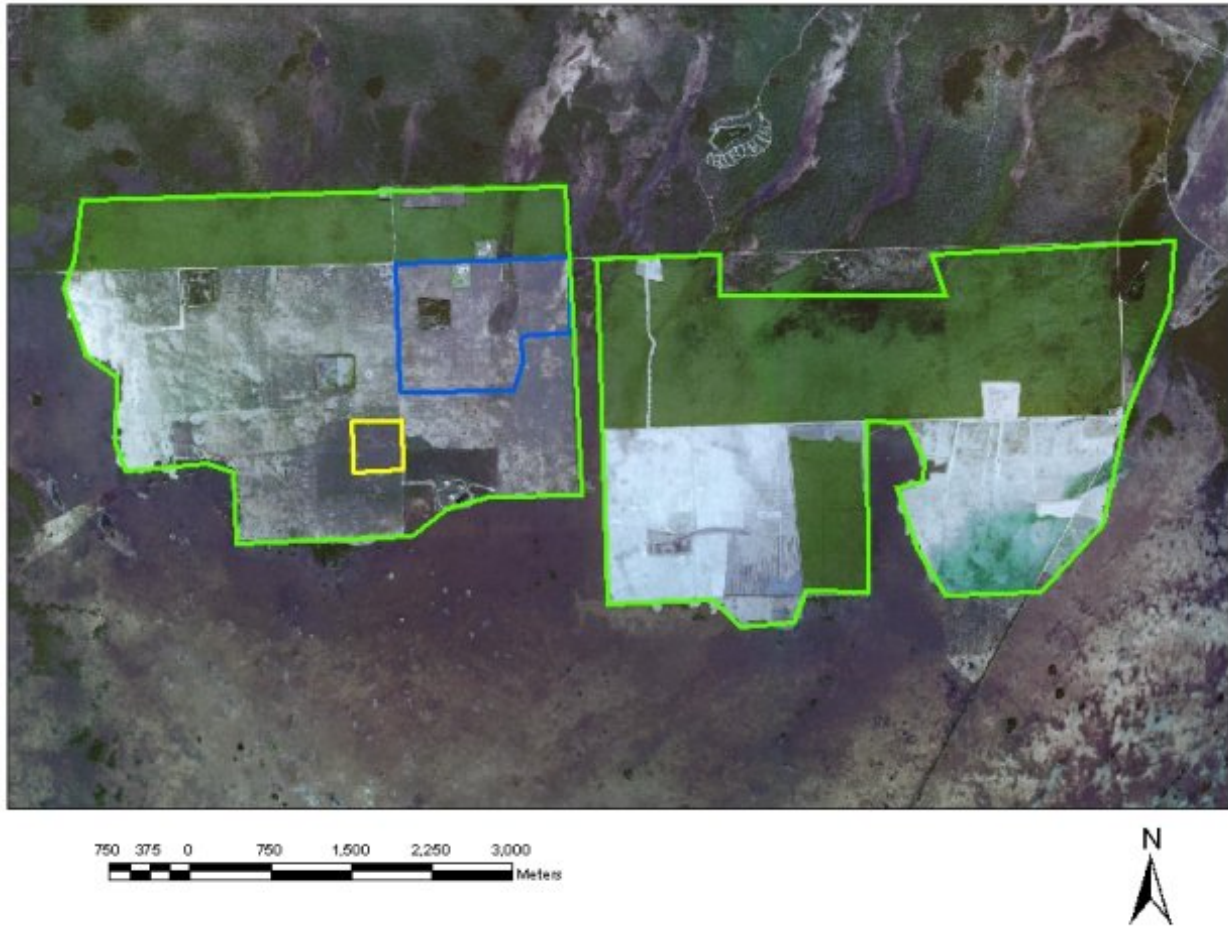


Figure B-15.1. Landscape location of Hole in the Donut/Everglades National Park (green line). Boundary of the wetland assessment areas HID_MAR_1 outlined in blue and HID_MAR_2 outlined in yellow are shown.

(A)



(B)



Figure B-15.2. Site photo of rocky glades assessment areas A) HID_MAR_1, the oldest portion of the bank with time zero starting in 1989 and B) HID_MAR_2 with time zero starting in 2001.

HID_MAR_1 Uniform Mitigation Assessment Method, page 1
PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

| | | | | | |
|--|--|---|--|---|--|
| Site/Project Name Hole in the Donut Mitigation Bank, Everglades National Park | | Application Number | | Assessment Area Name or Number HID_MAR_1 | |
| FLUCCs code 641 - Freshwater marsh | | Further classification (optional) Rocky Glades | | Impact or Mitigation Site? Assessment Area Size ~ 5.3 acres | |
| Basin/Watershed Name/Number HUC - SE Florida Coast | | Affected Waterbody (Class) | | Special Classification (i.e. OFW, AP, other local/state/federal designation of importance) OFW-Everglades National Park, Priority 3 in FNAI Habitat Cons. Priority | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Hydrologically connected to the rest of HID and connected to the greater Everglades which bears great ecological importance to Florida and Biscayne Bays. | | | | | |
| Assessment area description Square parcel restored in 1989 from Brazilian Pepper (<i>Shinus terebinthifolius</i>) infestation. To the North land in HID was restored in 2003. Areas West and South were restored in 1997. Bordered on East by narrow paved road which separates DAGLAD from land restored in 1999. DAGLAD is characterized as rocky glades, and is precipitation driven. The site has very diverse vegetation, standing water at time of site visit, and has areas of open water and clumps of saw grass. | | | | | |
| Significant nearby features Within the Everglades National Park. Conservation lands owned by SFWMD to the East, about 7 miles away. | | | Uniqueness (considering the relative rarity in relation to the regional landscape.) The Everglades is recognized through out the world as unique and ecologically and economically important ecosystem. | | |
| Functions Surface and subsurface water storage, biogeochemical processes, important wildlife habitat support | | | Mitigation for previous permit/other historic use Historically private in holding used for agriculture inside ENP. This area was rock plowed. | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Florida apple snail, crayfish, marsh rice rat, bobcat, raccoon, Florida Panther, white tailed deer, gray fox, water snakes, southern toad, mosquito, amphiuma, mosquito fish, flag fish, marsh killifish, alligator, wading birds, snail kite | | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Alligator mississippiensis</i> (SSC); <i>Rostrhamus sociabilis plumbeus</i> (END); <i>Haliaeetus leucocephalus</i> (T), <i>Puma concolor coryi</i> (E) could potentially pass through here but probably prefer higher ground. | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Apple snails, crayfish, marsh rat, fire ants, red winged black birds, grackles, mosquitoes | | | | | |
| Additional relevant factors: Entire site has been regraded as part of the restoration effort by removing agricultural fill bringing the ground to the limestone substrate. Spoil pile remains on site in HID. | | | | | |
| Assessment conducted by: EH, KCR | | | Assessment date(s): 20-Jun-05 | | |

HID_MAR_1 Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|-------------------------------------|---|
| Site/Project Name Hole-in-the-Donut/Everglades National Park | Application Number | Assessment Area Name or Number HID_MAR_1 |
| Impact or Mitigation mitigation | Assessment conducted by: EH, KCR | Assessment date: 6/20/2005 |

| |
|---|
| 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 |

| | |
|---|--|
| <p>.500(6)(a) Location and Landscape Support</p> <p>w/o pres or current <input type="text"/> with <input type="text"/></p> <p>9</p> | <p>Landscape consist of mosaic, on the North edge there are rocky pinelands, to the East, West and South are contiguous glades. <i>Schinus terebinthifolius</i> still exists on un-restored area but should not re-inhabit this site because of the current hydrologic regime. That area however probably has less habitat support then the other surrounding pinelands and glades. Wildlife utilization should be high in surrounding glades. Road on East edge is the only obstruction, not major. Could be barrier for small herps on the East edge, there are fire ants all along this road. Landuse outside the WAA is all native or restored glades, there are no negative downstream effects.</p> |
| <p>.500(6)(b)Water Environment (n/a for uplands)</p> <p>w/o pres or current <input type="text"/> with <input type="text"/></p> <p>9</p> | <p>No control structures we can see. Road on East edge has no apparent culverts although we may have missed them. Road isn't very high and probably floods during high water. There is probably also a high rate of transfer of water under the road through the limestone. Hydro-period appears normal. Plants are not stressed and look very healthy. Pockets of deeper water have appropriate plant species. We can hear amphibians and saw crayfish and a leopard frog. Standing water looks very clear.</p> |
| <p>.500(6)(c)Community structure</p> <p>1. Vegetation and/or 2. Benthic Community</p> <p>w/o pres or current <input type="text"/> with <input type="text"/></p> <p>10</p> | <p>Vegetation and physical structure appears optimal. Desirable and appropriate vegetation. Invasives not present. Plants look in good health. Normal topographic features. Some pockets of deeper water with appropriate plant species. There is some minimal typha on site, less than 1 %.</p> |

| |
|---|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current <input type="text"/> or w/o pres <input type="text"/> with <input type="text"/> |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

HID_MAR_1 Wetland Rapid Assessment Procedure, page 1

Project Name: HID_MAR_1- Hole in the Donut at Everglades National Park

Date: 6/20/2005

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: rocky glades - exposed limestone rock that had been rock plowed and used for agricultural crops. Restoration completed in 1989.

Wetland Size: 21.2 ha (52.4 ac)

FLUCCS Code/Description: 1995 SFWMD - 641 Freshwater Marshes

| | |
|------|---------------------------|
| 3.0 | Wildlife Utilization (WU) |
| NA | Wetland Canopy (O/S) |
| 3.0 | Wetland Ground Cover (GC) |
| 2.6 | Habitat Support/Buffer |
| 3.0 | Field Hydrology (HYD) |
| 2.5 | WQ Input & Treatment (WQ) |
| 14.1 | SUM |
| 5 | Count |
| 0.94 | WRAP |

HID_MAR_1 Wetland Rapid Assessment Procedure, page 2

3.0 Wildlife Utilization (WU)

Situated with Everglades National Park. Wildlife access available to and from assessment area. Near a mixture of habitats including rocky pine lands which provide food, cover, roosting, etc., for wildlife including large mammal species.

NA Wetland Canopy (O/S)

DAGLAD is a marsh. There are some patches of shrubs, but nothing that would be categorized as canopy.

3.0 Wetland Ground Cover (GC)

High diversity of groundcover species present. No exotic species identified within the assessment area, though some exotics do occur on adjacent property. The exotic species are being managed on site and hydrology has been restored which should prevent exotics from colonizing the assessment area. Mainly the concern is with *Schinus terebinthifolius* (Brazilian pepper).

2.6 Habitat Support/Buffer

The E boundary is a small paved 2-lane road that does not host heavy traffic. It has a narrow (1-2m) mowed edge. This could impede the movement of herps and act as a minor landscape barrier, because there is a change in the topography as the road is raised above the marsh surface.

| Buffer Type | (Score) x | (% of Area) | = Sub Total |
|------------------|-----------|-------------|-------------|
| Everglades marsh | 3 | 0.75 | 2.25 |
| 2-lane road | 1.5 | 0.25 | 0.38 |
| | | | |
| | | | |
| Total = | | | 2.6 |

3.0 Field Hydrology (HYD)

Hydrologic indicators appear appropriate. No signs of unhealthy, chlorotic, spindly, or diseased plants.

2.5 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| Everglades marsh | 3.0 | 0.75 | 2.3 |
| 2-lane road | 2.0 | 0.25 | 0.5 |
| | | | 0.0 |
| | | | |
| | | | |
| LU Total = | | | 2.8 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| natural undeveloped | 3.0 | 0.75 | 2.3 |
| no treatment | 0.0 | 0.25 | 0.0 |
| | | | 0.0 |
| | | | |
| | | | |
| PT Total = | | | 2.3 |

HID_MAR_1 Hydrogeomorphic Approach, page 1

Variable Subindex and FCI Calculation for Florida Rocky Flats Glades

Assessment Team: KCR, ECH
Project Name: HID_MAR_1
Location: Everglades National Park, HID WAA 1989
Date: 6/20/05
Subclass: Rocky Flats

| Function | FCI |
|--------------------------------------|------|
| Surface and Subsurface Water Storage | 0.64 |
| Cycle Nutrients | 0.65 |
| Characteristic Plant Community | 0.72 |
| Wildlife Habitat | 0.81 |

| Variables | Measure | Units | Subindex |
|------------|---------|-------|----------|
| VTRACT | > 500 | ha | 1.00 |
| VCORE | > 73 | % | 1.00 |
| VCONNECT | > 80 | % | 1.00 |
| VMICRO | 100 | % | 0.00 |
| VWOODY | 0 | % | 1.00 |
| VINVASIVE | 0 | % | 1.00 |
| VNATIVE | ≥ 20 | % | 1.00 |
| VMAC | 69 | % | 0.65 |
| VPERI | 58 | % | 0.73 |
| VSURTEX | marl | | 1.00 |
| VSOILTHICK | 1.88 | cm | 0.7 |

HID_MAR_1 Hydrogeomorphic Approach, page 2

| | | | | | |
|-------------------|---|----------|----------|-----------|----------|
| VTRACT | > 500 ha | | | | |
| VCORE | 73% | | | | |
| | 10091/13862 | | | | |
| VCONNECT | > 80% | | | | |
| VMICRO | all of the wetland microtopography has been rock plowed | | | | |
| VWOODY | 0%, 0%, 0% | | | | |
| VINVASIVE | 0%, 0%, 0% | | | | |
| VNATIVE | ≥ 20%, ≥ 20%, ≥ 20% | | | | |
| VMAC | 1. 95% | 2. 85% | 3. 98% | 4. 45% | 5. 40% |
| | 6. 75% | 7. 65% | 8. 15% | 9. 100% | |
| VPERI | 1. 40% | 2. 45% | 3. 10% | 4. 92% | 5. 80% |
| | 6. 60% | 7. 60% | 8. 100% | 9. 35% | |
| VSURTEX | 1. 100% | 2. 97% | 3. 10% | 4. 100% | 5. 100% |
| | 6. 100% | 7. 50% | 8. 50% | 9. 90% | |
| VSOILTHICK | 1. 2cm | 2. 1.5cm | 3. 1.7cm | 4. 0.75cm | 5. 1.5cm |
| | 6. 2.5cm | 7. 2 cm | 8. 3cm | 9. 2cm | |

HID_MAR_2 Uniform Mitigation Assessment Method, page 1
PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

| | | | |
|--|--|---|---|
| Site/Project Name Hole in the Donut Mitigation Bank, Everglades National Park | | Application Number | Assessment Area Name or Number HID_MAR_2 |
| FLUCCs code FLUCCs 6000 freshwater marsh | Further classification (optional) Rocky Glades | Impact or Mitigation Site? | Assessment Area Size ~ 422 acres |
| Basin/Watershed Name/Number HUC - SE Florida Coast | Affected Waterbody (Class) | Special Classification (i.e. OFW, AP, other local/state/federal designation of importance) OFW-Everglades National Park, Priority 3 in FNAI Habitat Cons. Priority | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Hydrologically connected to the rest of HID and connected to the greater Everglades which bears great ecological importance to Florida and Biscayne Bays. | | | |
| Assessment area description Southern part of DADUNE has deeper water, at least .5', North is drier with some areas of exposed limestone. North and East sides bordered by paved road (very little traffic). North of road is a wall of Brazilian Pepper (<i>Shinus terebinthifolius</i>). To the West of DADUNE are rocky pinelands, to the South is another area of HID restored in 1999 and 2000. | | | |
| Significant nearby features Within the Everglades National Park. Conservation lands owned by SFWMD to the East, about 7 miles away. | Uniqueness (considering the relative rarity in relation to the regional landscape.) The Everglades is recognized through out the world as unique and ecologically and economically important ecosystem. | | |
| Functions Surface and subsurface water storage, biogeochemical processes, important wildlife habitat support | Mitigation for previous permit/other historic use Historically private in holding used for agriculture inside ENP. When land went fallow it was invaded by <i>Shinus terebinthifolius</i> . Part of DADUNE was part of the Nike Missile Base Historic District. This area was rock plowed. | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Florida apple snail, crayfish, marsh rice rat, bobcat, raccoon, Florida Panther, white tailed deer, gray fox, water snakes, southern toad, mosquito, amphiuma, mosquito fish, flag fish, marsh killifish, alligator, wading birds, snail kite | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Alligator mississippiensis</i> (SSC); <i>Rostrhamus sociabilis plumbeus</i> (END); <i>Haliaeetus leucocephalus</i> (T), <i>Puma concolor coryi</i> (E) could potentially pass through here but probably prefer higher ground. | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Common buckeye caterpillars and butterflies on <i>Agalinis spp.</i> Fire ants, grackles, red wing black birds, marsh rat numerous macroinvertebrates | | | |
| Additional relevant factors: This site is quite a bit drier on the North end of the WAA and has more exposed limestone than on DAGLAD. Some very young <i>Shinus terebinthifolius</i> , probably less than 1 %. Less diversity in plant cover than expected. | | | |
| Assessment conducted by: EH, KCR | | Assessment date(s): 6/21/2005 | |

HID_MAR_2 Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|-------------------------------------|---|
| Site/Project Name Hole in the Donut Mitigation Bank, Everglades National Park | Application Number | Assessment Area Name or Number HID_MAR_2 |
| Impact or Mitigation mitigation | Assessment conducted by: EH, KCR | Assessment date: 6/21/2005 |

| |
|---|
| 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 |

| | |
|---|---|
| <p>.500(6)(a) Location and Landscape Support</p> <p>w/o pres or current with</p> <p>8 <input type="checkbox"/></p> | <p>Optimal support for most wildlife in surrounding landscape. North edge is most problematic because of road and wall of Brazilian Pepper (<i>Shinus terebinthifolius</i>) on the North side of the road. South and West edge are restored or natural glades. The Brazilian Pepper (<i>Shinus terebinthifolius</i>) seems to have a very small presence less than or equal to 1 % on the Northern end of DADUNE. Wildlife access could be partially limited by roads. Function for fish and wildlife downstream from this site should be optimal. No limitations downstream.</p> |
| <p>.500(6)(b)Water Environment (n/a for uplands)</p> <p>w/o pres or current with</p> <p>9 <input type="checkbox"/></p> | <p>Macroinvertebrates and tadpoles on site. Periphyton present on limestone. Transitional plants in shallower water and wetland plants in deeper water. Standing water looks very clear. Water consistent with topography. Road on the North edge may have some small impact.</p> |
| <p>.500(6)(c)Community structure</p> <p>1. Vegetation and/or 2. Benthic Community</p> <p>w/o pres or current with</p> <p>8 <input type="checkbox"/></p> | <p>No control structures. Majority or nearly all plant cover is appropriate. Invasives are present at a minimal coverage. Plant condition looks good. Land management is optimal for viability of the wetland. Topographic features are present and normal. No siltation or impeding algal growth on plants. Diversity and abundance is not optimal but not inappropriate for a recently restored site.</p> |

| |
|---|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current or w/o pres with |
| 0.83 <input type="checkbox"/> |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
| <input type="text"/> |

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

HID_MAR_2 Wetland Rapid Assessment Procedure, page 1

Wetland Rapid Assessment Procedure (WRAP)

All Data Sheets for Existing Conditions. Sheets designed for Mitigation Bank Study - K.C.Reiss. 5/2005

Project Name: HID_MAR_2 Hole in the Donut at Everglades National Park

Date: 6/21/2005

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: rocky glades - exposed limestone rock that had been rock plowed and used for agricultural crops. Restoration completed in 2001.

Wetland Size: 171 ha (422 ac)

FLUCCS Code/Description: 6000 freshwater marsh

| | |
|------|---------------------------|
| 3.0 | Wildlife Utilization (WU) |
| NA | Wetland Canopy (O/S) |
| 2.5 | Wetland Ground Cover (GC) |
| 2.0 | Habitat Support/Buffer |
| 2.0 | Field Hydrology (HYD) |
| 2.0 | WQ Input & Treatment (WQ) |
| 11.5 | SUM |
| 5 | Count |
| 0.77 | WRAP |

HID_MAR_2 Wetland Rapid Assessment Procedure, page 2

3.0 Wildlife Utilization (WU)

Observed: macroinvertebrates, tadpoles, birds, fire ants, butterflies, marsh rat, red winged black bird. Heard: frogs calling, birds calling.

NA Wetland Canopy (O/S)

Herbaceous marsh.

2.5 Wetland Ground Cover (GC)

Many appropriate species. *Schinus terebinthifolius* (Brazilian pepper) present, but perhaps < 1%. Less diversity of groundcover species than expected.

2.0 Habitat Support/Buffer

N - boundary road and thick strip of *Schinus terebinthifolius* (Brazilian pepper) on other side. W - edge with 2-land road, not wide (<10m) or heavily traveled. E & S - restored rocky glade marshes.

| Buffer Type | (Score) x | (% of Area) | = Sub Total |
|----------------|-----------|-------------|-------------|
| N-boundary rd. | 1 | 0.25 | 0.25 |
| W-smaller rd. | 1 | 0.25 | 0.25 |
| E&S wetland | 3 | 0.5 | 1.50 |
| Total = | | | 2.0 |

2.0 Field Hydrology (HYD)

SW corner holds lots of water, comparatively low species diversity, certainly less than expected. Limited upland and transitional species encroachment. N end if much shallower, it has been graded that way. There is more exposed rock, more vines, and more transitional species encroaching. This area also hosts some obligate wetland species however.

2.0 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| N-boundary rd. | 2.0 | 0.25 | 0.5 |
| W-smaller rd. | 2.0 | 0.25 | 0.5 |
| E-marsh | 3.0 | 0.25 | 0.75 |
| S-marsh | 3.0 | 0.25 | 0.75 |
| LU Total = | | | 2.5 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| N/W-no treatment | 0.0 | 0.50 | 0.0 |
| E/S-nat. undev. | 3.0 | 0.50 | 1.5 |
| | | | 0.0 |
| PT Total = | | | 1.5 |

HID_MAR_2 Hydrogeomorphic Approach, page 1

Variable Subindex and FCI Calculation for Florida Rocky Flats Glades

Assessment Team: KCR, ECH
Project Name: HID_MAR_2
Location: Everglades National Park HID WAA 2001
Date: 6/21/05
Subclass: Rocky Flats

| Function | FCI |
|--------------------------------------|------|
| Surface and Subsurface Water Storage | 0.48 |
| Cycle Nutrients | 0.68 |
| Characteristic Plant Community | 0.59 |
| Wildlife Habitat | 0.81 |

| Variables | Measure | Units | Subindex |
|------------|---------|-------|----------|
| VTRACT | > 500 | ha | 1.00 |
| VCORE | 77 | % | 1.00 |
| VCONNECT | 93 | % | 1.00 |
| VMICRO | 100 | % | 0.00 |
| VWOODY | 0 | % | 1.00 |
| VINVASIVE | 0.33 | % | 1.00 |
| VNATIVE | 20 | % | 1.00 |
| VMAC | 42 | % | 1.00 |
| VPERI | 88 | % | 1.00 |
| VSURTEX | 0.7 | index | 0.70 |
| VSOILTHICK | 0.472 | cm | 0.2 |

HID_MAR_2 Hydrogeomorphic Approach, page 2

| | | | | | |
|-------------------|---|----------|--------|-----------|----------|
| VTRACT | > 500 ha | | | | |
| VCORE | 77% | | | | |
| | 26632/34744 | | | | |
| VCONNECT | 93% | | | | |
| VMICRO | all of the wetland microtopography has been rock plowed | | | | |
| VWOODY | 0%, 0%, 0% | | | | |
| VINVASIVE | 0%, 1%, 0% | | | | |
| VNATIVE | 20%, 20%, 20% | | | | |
| VMAC | 1. 15% | 2. 25% | 3. 35% | 4. 40% | 5. 75% |
| | 6. 40% | 7. 50% | 8. 60% | 9. 35% | |
| VPERI | 1. 90% | 2. 95% | 3. 80% | 4. 90% | 5. 60% |
| | 6. 15% | 7. 80% | 8. 60% | 9. 40% | |
| VSURTEX | 1. 100% | 2. 97% | 3. 10% | 4. 100% | 5. 100% |
| loamy sand | 6. 100% | 7. 50% | 8. 0% | 9. 0% | |
| VSOILTHICK | 1. 0.25cm | 2. 1.5cm | 3. 1cm | 4. 0.25cm | 5. 0.5cm |
| | 6. 0.25cm | 7. 0.5cm | 8. 0cm | 9. 0cm | |

Appendix B-16. Lake Louisa and Green Swamp

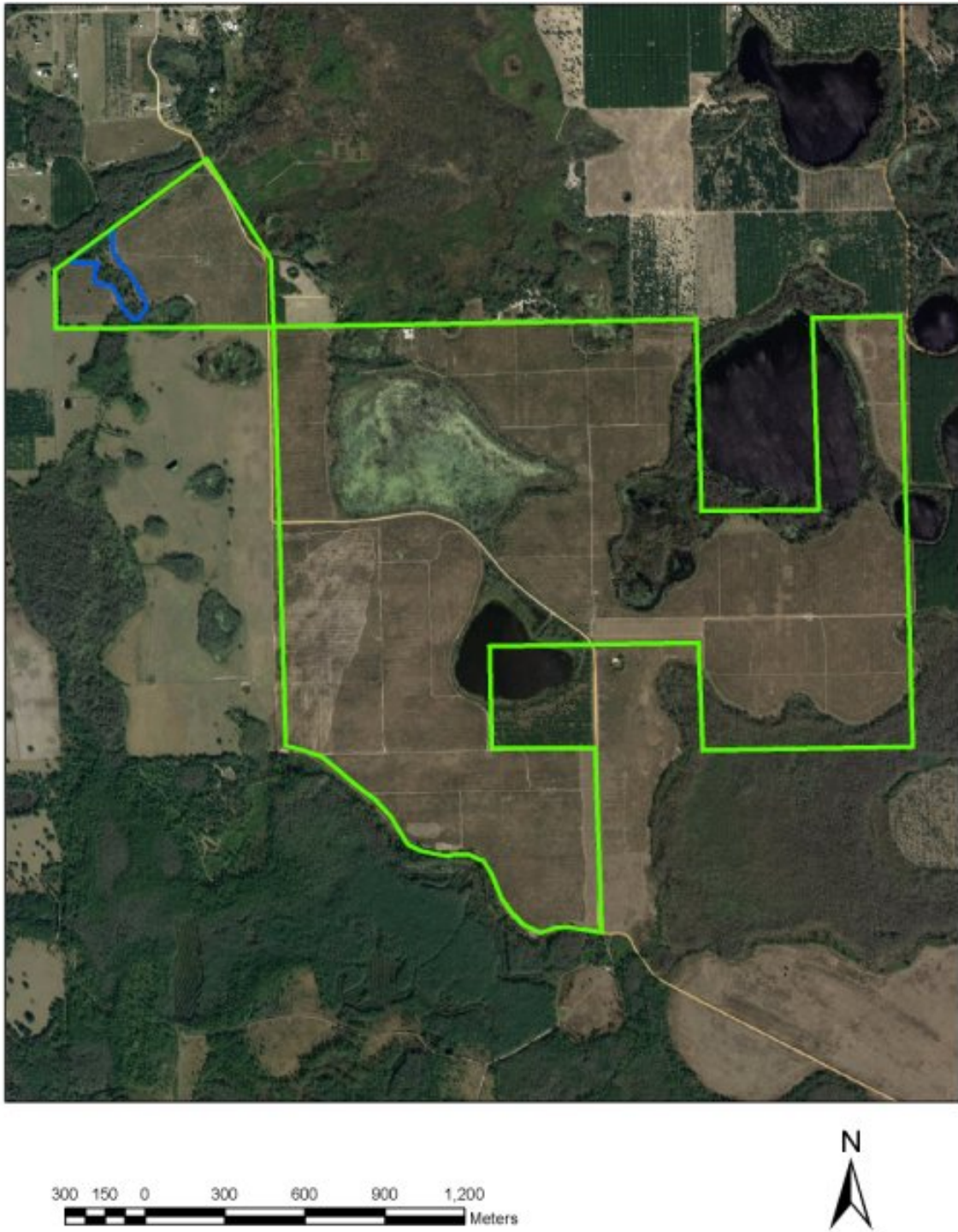


Figure B-16.1. Landscape location of Lake Louisa and Green Swamp Mitigation Bank (green line). Boundary of the wetland assessment area Loui_SHR (blue line) shown.



Figure B-16.2. Site photo of Lake Louisa and Green Swamp Mitigation Bank assessment area Loui_SHR in phase II.

Loui_SHR Uniform Mitigation Assessment Method, page 1
PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

| | | | | | |
|--|--|---|--|---|---|
| Site/Project Name Lake Louisa | | Application Number NA | | Assessment Area Name or Number Loui_SHR | |
| FLUCCs code 1988 611 Bay Swamp 1995 and 2000 631 Mixed scrub shrub wetland | | Further classification (optional) NWI - scrub shrub wetland; Soils - Myakka soil | | Impact or Mitigation Site? mitigation | Assessment Area Size ~ 8 ac (~ 3.2 ha) |
| Basin/Watershed Name/Number Basin - Little Creek; HUC - Oklawaha River | | Affected Waterbody (Class) 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 Wetland assessment area connected to cypress swamps and bayheads. WAA is within upland complex that was historically in citrus production and is now being restored to sandhill. Phase II of the mitigation bank. Outside of the bank there are also lands in pasture. | | | | | |
| Assessment area description Ditched channel connects previously isolated pond cypress wetlands, the connection extends to a creek that is North of the mitigation bank. The natural community appears shrubby and successional. The wetland was "enhanced" by providing a better connection through a culvert under a small impoundment, (an old road or foot path?) | | | | | |
| Significant nearby features State Park Lake Louisa shares a North West border to the mitigation bank. The bank is in the process of being restored from citrus to a sandhill community. Nearby pastures could affect water quality? | | | Uniqueness (considering the relative rarity in relation to the regional landscape.) The current state of this wetland does not appear to be anything unique or rare for this region or in this landscape. | | |
| Functions Wildlife corridor and flood attenuation, provide cover and forage for a variety of wildlife species | | | Mitigation for previous permit/other historic use Historic use: citrus groves in uplands. | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) No FNAI element occurrences. Associated with Strand Swamps by FNAI are ribbon snake, cotton mouth, opossum, grey squirrel, black bear, raccoon, otter, white tailed deer | | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Little blue heron (SSC) has been associated with other wetlands on the bank and Gopher Tortoise (SSC) in adjacent uplands. | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Deer tracks and game trails adjacent to the wetland. A pair of red shoulder hawks heard from the wetland. Vultures and wood storks seen flying overhead. Numerous butterfly species seen at the site. | | | | | |
| Additional relevant factors: The wetland is connected to and flows into FNAI habitat conservation priority lands. It is also connected to Outstanding Florida Waters, Clermont Chain of Lakes and Lake Louisa. We don't know if much attention has been given to this particular wetland in the bank and if there are future plans at this time to do any additional enhancement. There are no monitoring transects in the wetland. Beyond the more stable connection of a culvert nothing else has been done to this wetland. The emphasis in this section of Phase II is in the upland restoration component. | | | | | |
| Assessment conducted by: Erica Hernandez, Kelly Chinnners Reiss | | | Assessment date(s): 5/9/2005 | | |

Form 62-345.900(1), F.A.C. [effective date 02-04-2004]

Loui_SHR Uniform Mitigation Assessment Method, page 2

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

| | | |
|------------------------------------|-------------------------------------|--|
| Site/Project Name Lake Louisa | Application Number | Assessment Area Name or Number Loui_SHR |
| Impact or Mitigation Mitigation | Assessment conducted by: EH, KCR | Assessment date: 5/9/2005 |

| | | | | |
|---|---|--|---|--|
| 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 w/o pres or current <input type="checkbox"/> 8 <input type="checkbox"/> with <input type="checkbox"/> | Open and accessible wildlife corridor. Some exotic species present in the wetland proximity. Landscape barriers are not too much of an issue. Nearby road is not heavily used. There are low density residential areas nearby as well as pasture and restored sandhill without major impediments. Downstream impacts are not apparent. Down stream areas are not solely dependent on water discharge. Adjacent upland is being restored and is trending towards success and should benefit this wetland. |
| .500(6)(b)Water Environment (n/a for uplands) w/o pres or current <input type="checkbox"/> 6 <input type="checkbox"/> with <input type="checkbox"/> | The wetland does have a ditch feature going through it that shouldn't be there. No pond cypress regeneration detected. Water levels indicators are not distinct. A shrubby elderberry ring around the pond cypress, the cypress has an open center and is a very thin canopy. The presense and abundance <i>Acer rubrum</i> suggests a shift in water quantity. Erosion and deposition is not visible in the stream channel (ditch). |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current <input type="checkbox"/> 5 <input type="checkbox"/> with <input type="checkbox"/> | Very shrubby. Regeneration of canopy species not seen. <i>Vitis</i> spp. vines and <i>Acer rubrum</i> encroaching in to the wetland. The plant cover is not what was expected for this wetland community, many weedy and transitional species observed on site, however some desirable and appropriate species are still present. In its current condition this wetland may not persist. Perhaps prior to the culvert being put in place the hydrology was very flashy, either flooded or too dry and this has affected the species composition on site. Species seen on site include, <i>Pontederia cordata</i> , <i>Juncus</i> spp., <i>Acer rubrum</i> , <i>Rubus</i> spp., <i>Sambucus canadensis</i> , <i>Magnolia virginiana</i> , <i>Ludwigia peruviana</i> , <i>Taxodium ascendens</i> , <i>Erechtites hieracifolia</i> , <i>Saururus cernuus</i> , <i>Iris</i> spp., <i>Urena lobata</i> , <i>Nyssa sylvatica</i> , <i>Vitis</i> spp., <i>Eupatorium capillifolium</i> , <i>Baccharis</i> spp., <i>Boehmerian cylindrica</i> . |

| |
|--|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current or w/o pres <input type="checkbox"/> 0.63 <input type="checkbox"/> with <input type="checkbox"/> |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Loui_SHR Wetland Rapid Assessment Procedure, page 1

Project Name: Loui_SHR, Lake Louisa & Green Swamp Mitigation Bank

Date: 5/9/2005

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: Shrubby disturbed wetland with exotic species. Surrounded by restoration of former citrus grove to *Pinus palustris* (longleaf pine) sandhills.

Wetland Assessment Area: 2.4 ha (6 ac)

FLUCCS Code/Description: SWFWMD 2000 - 6300 Wetland Forested Mixed -Perhaps more appropriately 6310 Wetland Shrub

| | |
|------|---------------------------|
| 2.0 | Wildlife Utilization (WU) |
| 1.0 | Wetland Canopy (O/S) |
| 2.0 | Wetland Ground Cover (GC) |
| 2.0 | Habitat Support/Buffer |
| 1.0 | Field Hydrology (HYD) |
| 2.8 | WQ Input & Treatment (WQ) |
| 10.8 | SUM |
| 6 | Count |
| 0.60 | WRAP |

Loui_SHR Wetland Rapid Assessment Procedure, page 2

| | |
|---|----------------------------------|
| 2.0 | Wildlife Utilization (WU) |
| Viewed wood stork and hawk pair (perhaps nest nearby because of vocalizations) and vultures. Deer tracks in mitigation bank and game trails visible. Butterflies present. | |

| | |
|--|-----------------------------|
| 1.0 | Wetland Canopy (O/S) |
| Has <i>Taxodium ascendens</i> (pond cypress) fringe, no recruitment noticeable. Shrubby disturbed canopy. <i>Acer rubrum</i> (red maple) abundant in some patches. | |

| | |
|---|----------------------------------|
| 2.0 | Wetland Ground Cover (GC) |
| Not much of a wetland groundcover present. Less than 25% undesirable species. Few exotics in the wetland area, many on areas just adjacent to the wetland area. | |

| | | | | | |
|---|-------------------------------|--------------------|------------------|--------------------|--------------------|
| 2.0 | Habitat Support/Buffer | | | | |
| Connected to wildlife corridor along connected creek. Greater than 300 ft wide not dominant desirables, area being restored, composed of many weedy species that do not provide optimal cover, food, etc. | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | Restoration | 2 | 1 | 2.0 |
| | | | | | 0.0 |
| | | | | | 0.0 |
| Total = | | | | | 2.0 |

| | |
|--|------------------------------|
| 1.0 | Field Hydrology (HYD) |
| Effects of ditching, filling, and impoundment obvious which changes the hydrology. | |

2.75 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| disturbed but | | | |
| natural | 2.5 | 1.00 | 2.5 |
| | | | 0.0 |
| LU Total = | | | 2.5 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| nat. undev. | 3.0 | 1.0 | 3.0 |
| | | | 0.0 |
| | | | 0.0 |
| PT Total = | | | 3.0 |

Appendix B-17. Lake Monroe

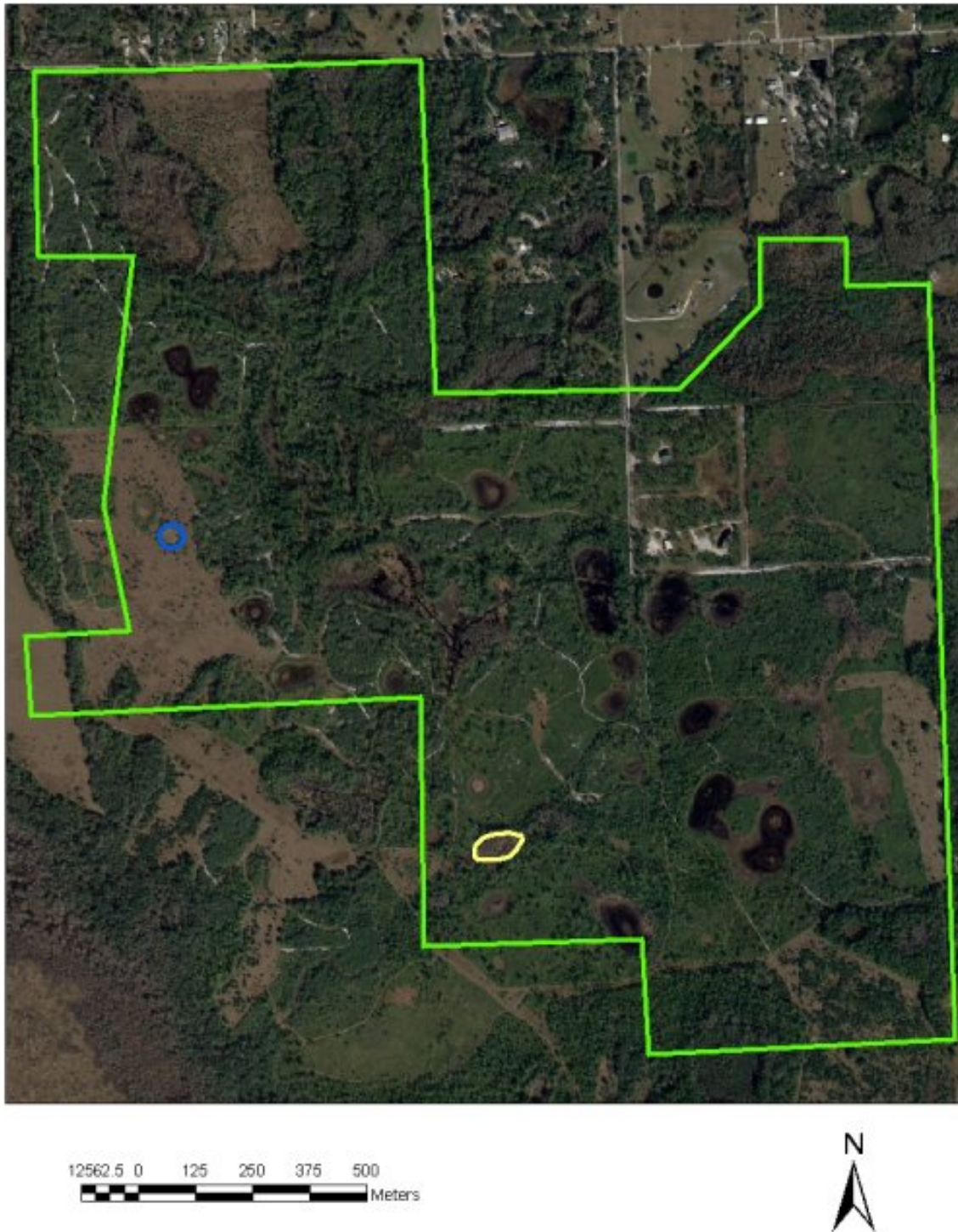


Figure B-17.1. Landscape location of Lake Monroe Mitigation Bank (green line). Boundary of the wetland assessment areas Monr_CYP (yellow line) and Monr_MAR (blue line).

(A)



(B)



Figure B-17.2. Site photo of Lake Monroe Mitigation Bank assessment areas A) Monr_CYP, a cypress dome in an intact flatwoods and scrub, and B) Monr_MAR, a marsh surrounded by pasture.

Monr_CYP Uniform Mitigation Assessment Method, page 1

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

| | | | | | |
|---|--|---|--|---|--|
| Site/Project Name Lake Monroe Mitigation Bank | | Application Number NA | | Assessment Area Name or Number Monr_CYP | |
| FLUCCs code SJRWMD 2000 - 6210 Cypress | | Further classification (optional) depressional forested - SJRWMD soils mix of Immokalee and Pomona | | Impact or Mitigation Site? Mitigation Bank | |
| | | | | Assessment Area Size 0.6 ha (1.5 ac) | |
| Basin/Watershed Name/Number HUC 03080101 St Johns Upper | | Affected Waterbody (Class) Class III | | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) GWECO priority 7, not critical linkage | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Connected with areas that spill over in high water times to a bayhead (E) and herbaceous marsh (S). The herbaceous marsh may continue to drain off the property in times of high water. Many depressional forested and herbaceous wetland features as well as a variety of sizes of lakes throughout this area. | | | | | |
| Assessment area description NW1 - Palustrine Forested Needle-Leaved Deciduous Semi-Permanently Flooded. Forested wetland that is oblong along the ENE/WSW axis. Some cut stumps visible throughout the wetland as evidence of logging, particularly evident in SE portion where ground cover is characterized by grasses, sedges, and herbaceous species. In the more shaded areas, groundcover characterized by ferns and more shade adapted species. | | | | | |
| Significant nearby features Lake Jessup Conservation Area to the south (not contiguous). Large water body Lake Monroe to east up river corridor, state lands on west side of Lake Monroe. Lake Harney to the east, Lake Jessup to the south. | | | Uniqueness (considering the relative rarity in relation to the regional landscape.) FWCC Priority Wetlands - 1-3 species, wetland habitat; FWCC Strategic Habitat Conservation Areas Priority Habitat | | |
| Functions Wildlife habitat and refuge, in particular waterfowl, wading birds, and aquatic animals, which may depend on cypress swamps for breeding purposes. Provide water storage by holding excess water and slowly releasing it into the water table. Enhance water quality by absorbing nutrients from the water. | | | Mitigation for previous permit/other historic use This parcel had cattle grazing in "native rangeland" - uplands not completely cleared for pasture lands. | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) <i>Odocoileus virginianus</i> (white-tailed deer), <i>Procyon lotor</i> (raccoon), <i>Lynx rufus floridanus</i> (bobcat), <i>Sciurus carolinensis</i> (gray squirrel), many species of frogs, small fish, wading birds, butterflies, aquatic insects. | | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Mycteria americana</i> (wood stork)E, <i>Aramus guarauna</i> (limpkin)SSC, <i>Egretta thula</i> (snowy egret)SSC, <i>Egretta caerulea</i> (little blue heron)SSC, <i>Eudocimus alba</i> (white Ibis)SSC, <i>Alligator mississippiensis</i> (alligator)T | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Visual: skink, oak toad, grass frog, small mammal footprints, deer scat. Audio: cricket frog, pine woods treefrog, songbirds. Scratching on trees, from a bobcat maybe? | | | | | |
| Additional relevant factors: There is a shallow ditch that is sometimes swale like around the wetland assessment area. It is probably a remnant of cattle operations in the area. There is evidence it conveys or holds water from the algal mats and sphagnum growing in it. It does not appear to be improved or managed for a long time. Ground cover in the dome appears undisturbed. Cattle was removed from the property in 1996. | | | | | |
| Assessment conducted by: Kelly Chinnners Reiss & Erica Hernandez | | | Assessment date(s): 5/18/2005 | | |

Monr_CYP Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|---|--|
| Site/Project Name Lake Monroe Mitigation Bank | Application Number NA | Assessment Area Name or Number Monr_CYP |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinnners Reiss & Erica Hernandez | Assessment date: 5/18/2005 |

| | | | | |
|---|---|--|---|--|
| 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 w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 9 | State and county lands around the bank. Wetland assessment area is inside a large tract of conservation land. It is north and west of the St John's River. Nearby airport and a housing development have placed some restrictions on prescribed burning. Adjacent habitat has a full range of uplands and other wetlands in the landscape for fulfilling life history requirements for expected fauna. There are old pastures in the landscape with exotic pasture grasses. There are no barriers for wildlife to access adjacent lands. There are no downstream benefits because this is an isolated depression. |
| .500(6)(b) Water Environment (n/a for uplands) w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 9 | Hydrologic indicators appear appropriate. Uncertain of water level fluctuation, lichen lines appear below buttresses. Soil moisture appears normal. Possible subsidence on the NW edge. No evidence of inappropriate or severe fire. Vegetation appears appropriate for type of wetland. No evidence of hydrologic stress on vegetation. Amphibians are present. Good plant species richness. No existing water quality data. No standing water. |
| .500(6)(c) Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 9 | Desirable and appropriate plant species. No exotic species seen. Near normal recruitment of canopy species. Western edge appears to have been cut over at some point, more open and less trees but there are young cypress coming up and this does not appear to be a permanent deviation. Structure is good, cavities available. Normal microtopography and areas of refugia. |

| |
|--|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current <input type="checkbox"/> with <input type="checkbox"/> |
| 0.90 |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Form 62-345.900(2), F.A.C. [effective date 02-04-2004]

Monr_CYP Wetland Rapid Assessment Procedure, page 1

Project Name: Monr_CYP - Lake Monroe Mitigation Bank

Date: 5/18/2005

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: depressional forested wetland

Wetland Size: 0.6 ha (1.5 ac)

FLUCCS Code/Description: 2000 SJRWMD - 6210 Cypress

| | |
|------|---------------------------|
| 3.0 | Wildlife Utilization (WU) |
| 2.0 | Wetland Canopy (O/S) |
| 3.0 | Wetland Ground Cover (GC) |
| 2.5 | Habitat Support/Buffer |
| 2.0 | Field Hydrology (HYD) |
| 3.0 | WQ Input & Treatment (WQ) |
| 15.5 | SUM |
| 6 | Count |
| 0.86 | WRAP |

Monr_CYP Wetland Rapid Assessment Procedure, page 2

| | |
|---|----------------------------------|
| 3.0 | Wildlife Utilization (WU) |
| Visual: skink, oak toad, grass frog, small mammal footprints, deer scat. Audio: cricket frog, pine woods treefrog, songbirds. Many cavities for wildlife use. Food in adjacent upland useful to wildlife species. | |

| | |
|---|-----------------------------|
| 2.0 | Wetland Canopy (O/S) |
| Canopy nearly 100% <i>Taxodium ascendens</i> (pond-cypress) species composition. Regeneration apparent from both coppice and seed. Uneven aged stand. No apparent disease or insect damage. Historic logging evidence on south - removed many canopy trees. | |

| | |
|---|----------------------------------|
| 3.0 | Wetland Ground Cover (GC) |
| No exotic species visually identified. No recent evidence of human activity or disturbance (historic damage from logging). Fire evidence, perhaps a wildfire, but not atypical. Nice species composition including ferns, <i>Sagittaria</i> sp. (arrowhead), and <i>Drosera</i> sp. (sundew). Change in species composition to south where there is evidence of logging - more grasses, sedges, herbaceous species. | |

| | | | | | |
|--|-------------------------------|----------------|-----------|-------------|-------------|
| 2.5 | Habitat Support/Buffer | | | | |
| Buffer greater than 300 ft. Mainly saw palmetto scrub under fire suppression, may hinder some ground nesting species. The vegetation cover is much thicker than the native <i>Pinus palustris</i> (longleaf)/ <i>Aristida stricta</i> var. <i>beyrichiana</i> (wiregrass) community. Ditch occurs along N border which may prohibit movement of some smaller species. Connections (at times of high water) to a forested bay head wetland and an herbaceous marsh. | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | Restoration | 2.5 | 1 | 2.5 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | Total = | | | |

| | |
|--|------------------------------|
| 2.0 | Field Hydrology (HYD) |
| Minimal soil subsidence apparent on trees on N. side. Wetland/upland boundary is not distinct because of fire suppression and a ditch. Transitional species encroachment observed. Hydrology adequate to maintain a wetland. | |

| | |
|-----|---------------------------------------|
| 3.0 | WQ Input & Treatment (WQ)* |
|-----|---------------------------------------|

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| nat. undev. | 3.0 | 1.0 | 3.0 |
| | | | 0.0 |
| | | | 0.0 |
| LU Total = | | | 3.0 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| nat. undev. | 3.0 | 1.0 | 3.0 |
| | | | 0.0 |
| | | | 0.0 |
| PT Total = | | | 3.0 |

Monr_CYP Hydrogeomorphic Approach, page 1

Variable Subindex and FCI Calculation for Florida Depressions Cypress

Assessment Team: EH, KCR, TD
Project Name: Monr_CYP, Lake Monroe Cypress Dome
Location: 28 degrees 48 m 54.89s/ -81 degrees 9m 40.57s
Date: 5/18/05
Subclass: cypress dome

| Function | FCI |
|--------------------------------|--------|
| Surface Water Storage | 0.9354 |
| Subsurface Water Storage | 0.875 |
| Cycle Nutrients | 0.791 |
| Characteristic Plant Community | 0.8775 |
| Wildlife Habitat | 0.931 |

| Variables | Measure | Units | Subindex |
|-----------|----------------|--------------------|----------|
| V CATCH | 52 | % | 0.5 |
| V UPUSE | 100 | % | 1 |
| V WETPROX | 1055 | meters | 1 |
| V WETVOL | no change | % | 1 |
| V SUROUT | no effect | % | 1 |
| V SUBOUT | no effect | % | 1 |
| V ZONES | intact | number | 1 |
| V CANOPY | 80 | % | 1 |
| V SURTEX | no disturbance | | 1 |
| V TBA | 37 | m ² /ha | 0.2 |
| V SSD | 95 | % | 0.88 |
| V TCOMP | 100 | % | 1 |

Monr_CYP Hydrogeomorphic Approach, page 2

Vcatch

Size of original catchment 2.87 ha
 Size of current catchment 1.4974 ha

Vupuse

shrub brushland cover type curve # 55 percent 60
 fresh water marsh cover type curve # 55 percent 30
 forested wetland cover type curve # 77 percent 10

Vwetprox

| | | | |
|---------------|------------------|------------------|-----------------|
| Sector 1 364m | Sector 2 40m | Sector 3 172m | Sector 4 92m |
| Sector 5 82m | Sector 6 121m | Sector 7 91m | Sector 8 93m |

Vwetvol

| | | | | | | | | | | | |
|------------------------------|-----|----------------------------|------|------------------|------|-------------------------|------|------------------------|------|------------------------------------|------|
| diameter wetland north-south | 53m | diameter wetland east-west | 100m | depth of wetland | 40cm | length of fill material | none | width of fill material | none | average thickness of fill material | none |
|------------------------------|-----|----------------------------|------|------------------|------|-------------------------|------|------------------------|------|------------------------------------|------|

Vsurout Lowest point in ditch is higher than wetland

Vsubout n/a

Vzones intact

Vcanopy 80%

Vsurtex sand 100%

| | | | | |
|-------------|--------------------------------|----------------------------------|--------------------------------|--------------------------------|
| Vtba | plot 1 62m ² /ha | plot 2 14.5m ² /ha | plot 3 14m ² /ha | plot 4 56m ² /ha |
|-------------|--------------------------------|----------------------------------|--------------------------------|--------------------------------|

Vssd 95% 19/20

Vtcomp Pond cypress 100%

Monr_CYP Florida Wetland Condition Index, macrophyte field data sheets, page 1
 *NOTE: field codes are different than reported codes, Monr_CYP = VODOME

| Species | 05-10 | 05-15 | 05-20 | 05-25 | 05-30 | 05-35 | 05-40 | 05-45 | 05-50 | 05-55 | 05-60 | 05-65 | 05-70 | 05-75 | 05-80 |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <i>Panicum hemizonense</i> | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | | | |
| <i>Pantephoris cordata</i> | | | | ✓ | ✓ | | | | | | | | | | |
| <i>Taraxacum officinale</i> | | | | ✓ | | | | | | | | | | | |
| <i>Lachnolobos carolinensis</i> | | ✓ | ✓ | | | | | | | | | | | | |
| <i>Woodwardia virginiana</i> | ✓ | ✓ | | | | | | | | | | | | | |
| <i>Pluchea odorata</i> | | ✓ | | | | | | | | | | | | | |
| <i>Gordonia lasiocarpa</i> | | ✓ | | | | | | | | | | | | | |
| <i>Myrica carolinensis</i> | | ✓ | | | | | | | | | | | | | |
| <i>Peltandra virginiana</i> | | ✓ | | | | | | | | | | | | | |
| <i>Lygia lucida</i> | | ✓ | | | | | | | | | | | | | |
| <i>Sagittaria arifolia</i> | | ✓ | | | | | | | | | | | | | |

VODOME
 Site: Lake Monroe Dome
 Date: May 18, 1995
 Boushey Field Data Sheet - Transects, Vegetation Presence - UFP Center for Wetlands
 Transect Direction: North
 Data Recorder: [Signature]

Monr_CYP Florida Wetland Condition Index, macrophyte field data sheets, page 2

*NOTE: field codes are different than reported codes, Monr_CYP = VODOME

| Species | 0.5 m | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|-------------------------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Hypericum ciliatum | ✓ | | | | | | | | | | | | | | | |
| Serenoa repens | ✓ | | | | | | | | | | | | | | | |
| Ilex glabra | ✓ | | | | | | | | | | | | | | | |
| Vaccinium corymbosum | ✓ | | | | | | | | | | | | | | | |
| Gordonia lasiantha | ✓ | | | | | | | | | | | | | | | |
| Andropogon virginicus | ✓ | | | | | | ✓ | | | | | | | | | |
| Wandsworthia virginica | ✓ | | | ✓ | ✓ | | | | | | | | | | | |
| Centella asiatica | ✓ | | | | | | | | | | | | | | | |
| Loxianthes cactiflora | ✓ | | | ✓ | ✓ | | | ✓ | | | | | | | | |
| Wrightia alba | ✓ | | | | | | | | | | | | | | | |
| Stenotaphrum secundatum | ✓ | | | | | | | | | | | | | | | |
| Eleocharis horridula | ✓ | | | | | | | | | | | | | | | |
| Rhynchospora | ✓ | | | | | | | | | | | | | | | |
| Panicum capillare | ✓ | | | | | | | | | | | | | | | |
| Amphioxys virginica | ✓ | | | | | | | | | | | | | | | |
| Panicum lanthornum | ✓ | | | | | | | | | | | | | | | |
| Taraxacum officinale | ✓ | | | | | | | | | | | | | | | |
| Aster multiflorus | ✓ | | | | | | | | | | | | | | | |
| Sabal palmetto | ✓ | | | | | | | | | | | | | | | |
| Cyperus tenuis | ✓ | | | | | | | | | | | | | | | |
| Rhynchospora | ✓ | | | | | | | | | | | | | | | |
| Euphorbia corollata | ✓ | | | | | | | | | | | | | | | |
| Portulaca oleracea | ✓ | | | | | | | | | | | | | | | |
| Osmunda regalis | ✓ | | | | | | | | | | | | | | | |

VODOME

Eisner Field Data Sheet - Transect, Vegetation Presence - UP Center for Wetlands

Site: Lake Moore Dome

Date: 11/18/05

Transact Direction: East 1/2

Data Recorder: T. Dawson

Monr_CYP Florida Wetland Condition Index, macrophyte field data sheets, page 3

*NOTE: field codes are different than reported codes, Monr_CYP = VODOME

| Species | 0-5 m | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|---------------------------------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <i>Eleocharis</i> ¹⁰ | | | | | | | ✓ | ✓ | | | | | | | | |
| <i>Sagittaria</i> ¹¹ | | | | | | | ✓ | ✓ | | | | | | | | |
| <i>Ruppia</i> sp. | | | | | | | ✓ | | | | | | | | | |
| <i>Myrica</i> ¹² | | | | | | | ✓ | | | | | | | | | |

VODOME
 Breunery Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands
 Site: Lake Monroe Dome
 Date: May 19, 05
 Transact Direction: East 2/2
 Data Recorder: T. Duran

Monr_CYP Florida Wetland Condition Index, macrophyte field data sheets, page 4
 *NOTE: field codes are different than reported codes, Monr_CYP = VODOME

| Species | 0.5m | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|-------------------------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <i>Sagittaria repens</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Ilex glabra</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Panicum sp. - bushy</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Sagittaria gigantea #2</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Beesia brouha</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Rhynchospora #3</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Panicum axillare? tall</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Proserpinaca portulaca</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Sagittaria (small)</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Amphicarpum</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Panicum hamatum</i> | | | | ✓ | ✓ | ✓ | | | | | | | | | | |
| <i>Ternstroemia ascendens</i> | | | | ✓ | | | | | | | | | | | | |
| <i>Sagittaria sibirica</i> | | | | ✓ | | | | | | | | | | | | |
| <i>Dielia virginiana</i> | | | | ✓ | | | | | | | | | | | | |
| <i>Wolffia virginiana</i> | | | | ✓ | | | | | | | | | | | | |
| <i>Eriocaulon giganteum</i> | | | | ✓ | | | | | | | | | | | | |

Site: Lake Monroe Dome
 Date: May 18, 05
 VODOME
 Transect Direction: South
 Data Recorder: Tom Dorman
 Biosurvey Field Data Sheet - Transects, Vegetation Presence - UP Center for Wetlands

Panicum repens, Sagittaria sp.
Callitriche sp. var. minor
Aster sp. (disturbance)

Monr_CYP Florida Wetland Condition Index, macrophyte field data sheets, page 5

*NOTE: field codes are different than reported codes, Monr_CYP = VODOME

VODDOME
Biosurvey Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands

Site: Lake Monroe Dam
Date: May 18, 05
Transact Direction: N05°E
Data Recorder: T. Monroe

| Species | 05-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <i>Sagittaria</i> ¹¹ | ✓ | | | | | | | | | | | | | |
| <i>Eupatorium</i> ¹² | ✓ | | | | | | | | | | | | | |
| <i>Sagittaria</i> ¹¹ <i>graminifolia</i> | | | | | | | | | | | | | | |
| <i>Abies</i> ¹³ | | | | | | | | | | | | | | |
| <i>Panicum</i> ¹⁴ | | | | | | | | ✓ | ✓ | ✓ | | | | |
| <i>Centella</i> ¹⁵ | | | | | | | | | | | | | | |
| <i>Sagittaria</i> ¹² | | | | | | | | | | | | | | |
| <i>Panicum</i> sp. (Gross?) | | | | | | | | | | | | | | |
| <i>Panicum</i> ¹⁴ | | | | | | | | | | | | | | |
| Gross ¹³ | | | | | | | | | | | | | | |
| <i>Andropogon</i> ¹⁴ | | | | | | | | | | | | | | |
| <i>Panicum</i> ¹³ | | | | | | | | | | | | | | |
| <i>Rhynchospora</i> ¹⁴ | | | | | | | | | | | | | | |
| <i>Dodonaea</i> ¹⁵ | | | | | | | | | | | | | | |
| <i>Opuntia</i> ¹⁵ | | | | | | | | | | | | | | |
| <i>Sida</i> ¹⁶ | | | | | | | | | | | | | | |
| <i>Potamogeton</i> ¹⁷ | | | | | | | | | | | | | | |
| <i>Typha</i> ¹⁸ | | | | | | | | | | | | | | |
| <i>Rhynchospora</i> ¹⁴ | | | | | | | | | | | | | | |
| <i>Lythrum</i> ¹⁹ | | | | | | | | | | | | | | |
| <i>Rhynchospora</i> ¹⁶ | | | | | | | | | | | | | | |
| <i>Potamogeton</i> ¹⁷ | | | | | | | | | | | | | | |
| <i>Wolffia</i> ¹⁸ | | | | | | | | | | | | | | |
| <i>Eleocharis</i> ¹⁹ | | | | | | | | | | | | | | |
| <i>Eriocaulon</i> ²⁰ | | | | | | | | | | | | | | |

NO ID

NO ID

Lake Monroe - Dome

~~LADOME~~

VODOME

1. Bunch Panicum
2. Sagittaria graminea (prolifera?)
3. Rhynchospora ? rariflora ?
4. Panicum ensiforme ?
5. Amphicarpum nuttallianum
6. Wiregrass clump - Aristida stricta
7. Rhexia sp.
8. Rhynchospora microcephala
10. Eleocharis sp.
11. Sagittaria graminea
12. Paspalum ? praecox ? setaceum ?
13. Panicum erectifolia
14. Rhynchospora decurrens
15. Scroph. (Sturms plant)
16. Rhynchospora inundata

~~Axonopus stricta~~

Monr_MAR Uniform Mitigation Assessment Method, page 1
PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

| | | | |
|--|---|---|--|
| Site/Project Name Lake Monroe Mitigation Bank | | Application Number NA | Assessment Area Name or Number Monr_MAR |
| FLUCCs code SJRWMD 2000 - 6410 Fresh water marsh | Further classification (optional) NWI - palustrine unconsolidated bottom, Myakka soils | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size 0.2 ha (0.5 ac) |
| Basin/Watershed Name/Number HUC 03080101 St Johns Upper | Affected Waterbody (Class) Class III | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) GWECO priority 7, not critical linkage | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Isolated depression in an herbaceous fallow pasture and scrub mosaic. Other isolated depressions in the landscape. | | | |
| Assessment area description Small depression marsh with a saw palmetto edge. Abandoned pasture around the isolated depression. Scrub in the area. Pretty uniform, some standing water in the depression. Other isolated depressions in close proximity and in the landscape. | | | |
| Significant nearby features Lake Jessup Conservation Area to the south (not contiguous). Large water body Lake Monroe to east up river corridor, state lands on west side of Lake Monroe. Lake Harney to the east, Lake Jessup to the south. | Uniqueness (considering the relative rarity in relation to the regional landscape.) FWCC Strategic Habitat Conservation Areas: Priority Habitat. Scrubby flatwoods and rare species in the area but this community type of an herbaceous depression in its current condition is not rare. | | |
| Functions Isolation and small size supports a very different assemblage of species than found in larger more permanent wetlands. Extremely important breeding and forage habitat. Provides water storage by holding excess water and slowly releasing it into the water table. Enhances water quality by absorbing nutrients from the water. | Mitigation for previous permit/other historic use This parcel had cattle grazing in "native rangeland" - uplands not completely cleared for pasture lands. This wetland assessment area is in an inactive pasture that has not been grazed since 1996. | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) <i>Odocoileus virginianus</i> (white-tailed deer), <i>Procyon lotor</i> (raccoon), <i>Lynx rufus floridanus</i> (bobcat), <i>Sciurus carolinensis</i> (gray squirrel), Sandhill cranes , many species of salamanders, frogs, small fish, wading birds, butterflies, aquatic insects. | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Mycteria americana</i> (wood stork)E, <i>Aramus guarauna</i> (limpkin)SSC, <i>Egretta thula</i> (snowy egret)SSC, <i>Egretta caerulea</i> (little blue heron)SSC, <i>Eudocimus alba</i> (white Ibis)SSC, <i>Haliaeetus leucocephalus</i> (bald eagle) T, <i>Grus canadensis pratensis</i> (Florida sandhill crane) T, <i>Aphelocoma coerulescens</i> (Florida scrub jay) T, <i>Alligator mississippiensis</i> (alligator)T | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): At least two Florida scrub jays (<i>Aphelocoma coerulescens</i>) observed on depression edge and in surrounding pasture. Also observed were little grass frog (<i>Pseudacris ocularis</i>), Eastern meadowlark (<i>Sturnella magna</i>), Northern bobwhite (<i>Colinus virginianus</i>) and crayfish (<i>Procambarus alleni</i>). | | | |
| Additional relevant factors: <i>Panicum hemitomon</i> (maidencane) dominates wetland interior. Other species present include, <i>Bacopa caroliniana</i> (lemon bacopa), <i>Fuirena scirpoidea</i> (southern umbrellasedge), <i>Paspalum</i> spp. (crowngrass), <i>Serenoa repens</i> (saw palmetto), <i>Ludwigia</i> spp. (primrosewillow), <i>Eupatorium</i> spp. (thoroughwort), <i>Proserpinaca</i> spp. (mermaidweed), <i>Diodia virginiana</i> (Virginia buttonweed), <i>Centella asiatica</i> (spadeleaf), <i>Amphicarpum muhlenbergianum</i> (blue maidencane), <i>Erechtites hieracifolius</i> (American burnweed). | | | |
| Assessment conducted by: Kelly Chinners Reiss & Erica Hernandez | | Assessment date(s): 5/18/2005 | |

Monr_MAR Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|---|--|
| Site/Project Name Lake Monroe Mitigation Bank | Application Number NA | Assessment Area Name or Number Monr_MAR |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinnners Reiss & Erica Hernandez | Assessment date: 5/18/2005 |

| | | | | |
|---|---|--|---|--|
| 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 w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 7 | Minimal or no invasive exotic species. Surrounding pasture does not support optimal wildlife use. Some patchy scrub and additional isolated depressions in the landscape. Now that the bank is being managed with fire and may eventually return to a more natural floral diversity, the adjacent landuses have a minimal adverse impact to fish and wildlife. Bank is being used for low impact passive recreation. |
| .500(6)(b)Water Environment (n/a for uplands) w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 10 | Water levels appear appropriate for time of year and type of wetland. Hydrologic indicators are consistent. Soil moisture is appropriate. Shallow standing water in center of wetland. No evidence of severe fire. Normal vegetation zonation. Species composition may be off due to cattle grazing in the past but not a result of hydrologic stress. |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 7 | Wetland edge does not appear to have expected species composition. There are no invasive exotic species but some pasture grasses on drier wetland edge. Interior of wetland is dominated by maidencane and looks healthy. Shift in plant community due to previous management and human impacts. |

Score = sum of above scores/30 (if uplands, divide by 20)
 current with
 0.80

If preservation as mitigation,
 Preservation adjustment factor =
 Adjusted mitigation delta =

For impact assessment areas
 FL = delta x acres =

Delta = [with-current]

If mitigation
 Time lag (t-factor) =
 Risk factor =

For mitigation assessment areas
 RFG = delta/(t-factor x risk) =

Monr_MAR Wetland Rapid Assessment Procedure, page 1

Project Name: Monr_MAR - Lake Monroe Mitigation Bank

Date: 5/18/2005

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: depressional herbaceous marsh

Wetland Size: 0.15 ha (0.4 ac)

FLUCCS Code/Description: 2000 SJRWMD - 6410 Freshwater Marshes

| | |
|------|---------------------------|
| 2.0 | Wildlife Utilization (WU) |
| NA | Wetland Canopy (O/S) |
| 2.0 | Wetland Ground Cover (GC) |
| 2.0 | Habitat Support/Buffer |
| 3.0 | Field Hydrology (HYD) |
| 2.5 | WQ Input & Treatment (WQ) |
| 11.5 | SUM |
| 5 | Count |
| 0.77 | WRAP |

Monr MAR Wetland Rapid Assessment Procedure, page 2

| | |
|---|---------------------------|
| 2.0 | Wildlife Utilization (WU) |
| Visual: meadowlark, scrub jay on nearby tree, game trails. Adequate adjacent food source, questionable because left as pasture land with trees plants at low density (~50 trees/ac) and no removal of <i>Paspalum notatum</i> (Bahia grass), so species composition is less than ideal for wildlife food, cover, etc. | |

| | |
|------------------|----------------------|
| NA | Wetland Canopy (O/S) |
| No canopy layer. | |

| | |
|--|---------------------------|
| 2.0 | Wetland Ground Cover (GC) |
| No exotic species apparent. No human management apparent. Had cattle throughout prior to 1996. <i>Serenoa repens</i> (saw palmetto) fringe all around. Two vegetation zones not in complete circles. Zone 1 closest to uplands included a mix of grasses, sedges, and herbaceous species. Zone 2 was deeper and consisted mainly of <i>Panicum hemitomon</i> (maidencane). | |

| | | | | | |
|---|------------------------|-----------------|-----------|-------------|-------------|
| 2.0 | Habitat Support/Buffer | | | | |
| Greater than 300 ft buffer all around. Mostly pasture left to succession. Still contains remnant pasture grasses from 1996. Has some nearby wetlands. | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | Remnant Pasture | 2 | 1 | 2 |
| | | | | | |
| Total = | | | | | 2 |

| | |
|--|-----------------------|
| 3.0 | Field Hydrology (HYD) |
| Appears appropriate to maintain viable wetland. No signs of hydrologic stress. | |

2.5 WQ Input & Treatment (WQ)*

**The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.*

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| Restoration from | | | |
| Improved Pasture | 2.0 | 1.0 | 2.0 |
| | | | 0.0 |
| LU Total = | | | 2.0 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| nat. undev. | 3.0 | 1.0 | 3.0 |
| | | | 0.0 |
| PT Total = | | | 3.0 |

Monr_MAR Hydrogeomorphic Approach, page 1

Variable Subindex and FCI Calculation for Florida Depressions Marsh

Assessment Team: KCR, ECH
Project Name: Monr_MAR, Lake Monroe Depression Marsh
Location: 28 degrees 49m 17.42s / -81 degrees 10m 6.79s
Date: 5/18/05
Subclass: Depression Marsh

| Function | FCI |
|--------------------------------|------|
| Surface Water Storage | 1.00 |
| Subsurface Water Storage | 1.00 |
| Cycle Nutrients | 0.99 |
| Characteristic Plant Community | 0.99 |
| Wildlife Habitat | 0.99 |

| Variables | Measure | Units | Subindex |
|-----------|-----------|--------|----------|
| V CATCH | 0 | % | 1.00 |
| V UPUSE | 100 | % | 1.00 |
| V WETPROX | 2154 | meters | 1.00 |
| V WETVOL | no change | % | 1.00 |
| V SUROUT | no ditch | % | 1.00 |
| V SUBOUT | no ditch | % | 1.00 |
| V ZONES | no change | number | 1.00 |
| V MAC | 92.5 | % | 0.98 |
| V SURTEX | no change | | 1.00 |
| V HCOMP | 100 | % | 1.00 |

Monr_MAR Hydrogeomorphic Approach, page 2

Vcatch no change
Size of original catchment ha
Size of current catchment ha

Vupuse
open space good condition cover type curve # 61/80 percent 100%

Vwetprox

| | | | |
|----------|----------|----------|----------|
| Sector 1 | Sector 2 | Sector 3 | Sector 4 |
| 165m | 500m | 220m | 191m |
| Sector 5 | Sector 6 | Sector 7 | Sector 8 |
| 500m | 500m | 37m | 41m |

Vwetvol no change

| | | | | | |
|---|---|---------------------|-------------------------------|---------------------------|--|
| diameter wetland north-south 50m | diameter wetland east-west 51m | depth of wetland | length of fill material | width of fill material | average thickness of fill material |
|---|---|---------------------|-------------------------------|---------------------------|--|

Vsurout no ditch

Vsubout no ditch

Vzones no change

Vmac 92.50% 37/40

Vsurtex loamy sand

Vhcomp 100%
wet meadow
100% *Panicum hemitomon*
shallow marsh
100% *Panicum hemitomon*

Monr_MAR Florida Wetland Condition Index, macrophyte field data sheets, page 1
 *NOTE: field codes are different than reported codes, Monr_MAR = VOMONA

| Species | 0-5 m | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|---|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| ✓ <i>Viagra</i> ¹ <i>stricta</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Paspalum</i> <i>paspalum</i> ² <i>Axonopus</i> <i>axonopus</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Echinochloa</i> <i>crispata</i> ³ | | | | | | | | | | | | | | | | |
| ✓ <i>Grass</i> ³ <i>crispata</i> ^{no id} | | | | | | | | | | | | | | | | |
| ✓ <i>Eriochloa</i> <i>crispata</i> ⁴ | | | | | | | | | | | | | | | | |
| ✓ <i>Hypericum</i> <i>adpressum</i> ⁵ | | | | | | | | | | | | | | | | |
| ✓ <i>Medicago</i> <i>retusa</i> ⁴ | | | | | | | | | | | | | | | | |
| ✓ <i>Sarcocolla</i> <i>repens</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Paspalum</i> <i>paspalum</i> ⁶ | | | | | | | | | | | | | | | | |
| ✓ <i>Eupatorium</i> <i>capitatum</i> ⁷ | | | | | | | | | | | | | | | | |
| ✓ <i>Andropogon</i> <i>virginicus</i> ⁸ | | | | | | | | | | | | | | | | |
| ✓ <i>Fusaria</i> <i>scirpoides</i> ⁵ | | | | | | | | | | | | | | | | |
| ✓ <i>Mikania</i> <i>scandens</i> | | | | | | | | | | | | | | | | |
| ✓ <i>Panicum</i> <i>harmistum</i> | | | | | | | | | | | | | | | | |

VOMONA
 Site: Monroe - north
 Date: May 8, 05
 Disavney Field Data Sheet - Taxifera, Vegetation Presence - UF Center for Wetlands
 Transect Direction: North
 Data Recorder: T. Disavney

Monr_MAR Florida Wetland Condition Index, macrophyte field data sheets, page 2

*NOTE: field codes are different than reported codes, Monr_MAR = VOMONA

VOMONA

Site: *Los Amigos Marsh*
Date: *May 18, 05*

Biosurvey Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands

Transsect Direction: *East*
Data Recorder: *T. Danvers*

| 75-80 | 70-75 | 65-70 | 60-65 | 55-60 | 50-55 | 45-50 | 40-45 | 35-40 | 30-35 | 25-30 | 20-25 | 15-20 | 10-15 | 5-10 | 0-5 | Species |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-----|-------------------------------|
| | | | | | | | | | | | | | | | ✓ | <i>Serenoa repens</i> |
| | | | | | | | | | | | | | | | ✓ | <i>Borrichia verticillata</i> |
| | | | | | | | | | | | | | | | ✓ | <i>Grass + 3 Panicum</i> |
| | | | | | | | | | | | | | | | ✓ | <i>Paspalum + 16</i> |
| | | | | | | | | | | | | | | | ✓ | <i>Eriochloa verticillata</i> |
| | | | | | | | | | | | | | | | ✓ | <i>Hedyotis + 4 uniflora</i> |
| | | | | | | | | | | | | | | | ✓ | <i>Eriocaulon scandens</i> |
| | | | | | | | | | | | | | | | ✓ | <i>Hypochaeris multiflora</i> |
| | | | | | | | | | | | | | | | ✓ | <i>Eupatorium capillatum</i> |
| | | | | | | | | | | | | | | | ✓ | <i>Andropogon virginicus</i> |
| | | | | | | | | | | | | | | | ✓ | <i>Proserpinaca pectinata</i> |
| | | | | | | | | | | | | | | | ✓ | <i>Euthamia minor</i> |
| | | | | | | | | | | | | | | | ✓ | <i>Mikania scandens</i> |
| | | | | | | | | | | | | | | | ✓ | <i>Bacopa caroliniana</i> |
| | | | | | | | | | | | | | | | ✓ | <i>Ludwigia + 11 repens</i> |
| | | | | | | | | | | | | | | | ✓ | <i>Lochnera caroliniana</i> |
| | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | <i>Panicum hemilamium</i> |

soil

Monr_MAR Florida Wetland Condition Index, macrophyte field data sheets, page 3

*NOTE: field codes are different than reported codes, Monr_MAR = VOMONA

| Species | 0-5m | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|--|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <i>Sagittaria repens</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Eupatorium capillatum</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Hypericum matriflorum</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Chloanthus</i> #8 <i>pennsylvanicum</i> | ✓ | | | | | | | | | | | | | | | |
| Grass #3 | ✓ | | | | | | | | | | | | | | | |
| <i>Furcraea scabra</i> #5 | ✓ | | | | | | | | | | | | | | | |
| <i>Andropogon virginicus</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Proserpinaca pectinata</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Quercus virginiana</i> #18 | ✓ | | | | | | | | | | | | | | | |
| <i>Eriochloa maculata</i> | ✓ | | | | | | | | | | | | | | | |
| #17 - <i>Rhynchospora</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Paspalum</i> #16 <i>flaccidum</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Amphicarpum nuttallianum</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Ludwigia</i> #11 <i>repens</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Baccharis halimifolia</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Pluchea odorata</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Panicum hemisphaerum</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Hypericum</i> <i>scaberrimum</i> | ✓ | | | | | | | | | | | | | | | |

VOMONA

Site: Lake Monroe Marsh
Date: May 14, 05

Transsect Direction: South
Data Recorder: J. Monahan

Bosurvey Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands

Monr_MAR Florida Wetland Condition Index, macrophyte field data sheets, page 4

*NOTE: field codes are different than reported codes, Monr_MAR = VOMONA

| 75-80 | 70-75 | 65-70 | 60-65 | 55-60 | 50-55 | 45-50 | 40-45 | 35-40 | 30-35 | 25-30 | 20-25 | 15-20 | 10-15 | 5-10 | 0-5 m | Species |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|--|
| | | | | | | | | | | | | | | | | ✓ <i>Corchorus</i> *6 <i>leucanthus</i> |
| | | | | | | | | | | | | | | | | ✓ <i>Rhynchospora</i> → <i>discolor</i> |
| | | | | | | | | | | | | | | | | ✓ <i>Eleocharis</i> *8 <i>peruviana</i> |
| | | | | | | | | | | | | | | | | ✓ <i>Carex</i> <i>distachya</i> *9 |
| | | | | | | | | | | | | | | | | ✓ <i>Cyperus</i> *10 <i>Cyperaceae</i> ? |
| | | | | | | | | | | | | | | | | ✓ <i>Ludwigia</i> *11 <i>purpurea</i> <i>reper</i> |
| | | | | | | | | | | | | | | | | ✓ <i>Cyperus</i> <i>contingens</i> |
| | | | | | | | | | | | | | | | | ✓ <i>Cyperus</i> <i>capillaris</i> |
| | | | | | | | | | | | | | | | | ✓ <i>Proserpinaca</i> <i>peruviana</i> |
| | | | | | | | | | | | | | | | | ✓ <i>Centella</i> <i>asiatica</i> |
| | | | | | | | | | | | | | | | | ✓ <i>Oxalis</i> <i>corioli</i> *12 |
| | | | | | | | | | | | | | | | | ✓ <i>Hydrocotyle</i> <i>umbellata</i> |
| | | | | | | | | | | | | | | | | ✓ <i>Drosera</i> <i>virginiana</i> |
| | | | | | | | | | | | | | | | | ✓ <i>Eleocharis</i> *13 <i>atropurpurea</i> |
| | | | | | | | | | | | | | | | | ✓ <i>Baccharis</i> <i>halimifolia</i> |
| | | | | | | | | | | | | | | | | ✓ <i>Eriochloa</i> <i>horridula</i> |
| | | | | | | | | | | | | | | | | ✓ <i>Paspalum</i> <i>notatum</i> |
| | | | | | | | | | | | | | | | | ✓ <i>Myrica</i> <i>canadensis</i> |
| | | | | | | | | | | | | | | | | ✓ <i>Galocha</i> <i>elliottii</i> |
| | | | | | | | | | | | | | | | | ✓ <i>Andropogon</i> <i>virginicus</i> |
| | | | | | | | | | | | | | | | | ✓ <i>Rumex</i> <i>crispus</i> *14 |
| | | | | | | | | | | | | | | | | ✓ Dead spike *15 <i>Plantago</i> <i>virginica</i> |
| | | | | | | | | | | | | | | | | ✓ <i>Asplenium</i> *16 <i>platyneuron</i> |
| | | | | | | | | | | | | | | | | ✓ <i>Crass</i> *3 |
| | | | | | | | | | | | | | | | | ✓ <i>Fragaria</i> <i>virginiana</i> *5 |

Date: May 18, 05
 Site: Lake Harding - West
 VOMONA
 Bearney Field Data Sheet - Transect, Vegetation Presence - UF Center for Wetlands
 Transect Direction: West
 Data Recorder: T. Brown

void

Monr_MAR Florida Wetland Condition Index, macrophyte field data sheets, page 5
 *NOTE: field codes are different than reported codes, Monr_MAR = VOMONA

| | Species |
|-------|-----------------------------------|
| 0.5m | |
| 0-10 | ✓ <i>Spartina patens</i> |
| 10-15 | ✓ <i>Hypericum fasciculatum</i> |
| 15-20 | ✓ <i>Drosera rotundifolia</i> |
| 20-25 | ✓ <i>Hypericum matrona</i> |
| 25-30 | ✓ <i>Rhynchospora sp.</i> |
| 30-35 | ✓ <i>Amphicarpum nuttallianum</i> |
| 35-40 | ✓ <i>Pluchea rosea</i> |
| 40-45 | ✓ <i>Panicum hemitomon</i> |
| 45-50 | |
| 50-55 | |
| 55-60 | |
| 60-65 | |
| 65-70 | |
| 70-75 | |
| 75-80 | |

no id

VOMONA
 Reserve Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands
 Date: May 18, 05
 Site: Lake Marion - Forest
 Transect Direction: west
 Data Recorder: J. Duane

Lake Monroe - Marsh VOMONA

- 1 Wiregrass clump - Aristida stricta
- 2 Paspalum? Axonopus fasciatus
- 3 Grass no id
4. Hedyotis uniflora?
5. Fuirena scirpoides
6. Coreopsis laeviventris?
7. Rhynchospora Juncus dichotomus
- 8 Graptalum foliatum? perispermium
9. Carex abrotensis
- 10? Cyperus? - Cyperaceae
- 11 Ludwigia repens
- 12 Oxalis corniculata?
- 13 Eleocharis atropurpurea
- 14 Rhynchospora sp
- 15 Plantago virginica
- 16 Paspalum Axonopus fasciatus
- 17 Common marsh reed - unknown
- 18 Panicum distachyon → Marsh
- 19 Saccharis indica → Marsh

Appendix B-18. Little Pine Island



Figure B-18.1. Landscape location of Little Pine Island Mitigation Bank (green line). LPI_MAR is a marsh assessment area outlined in orange. LPI_SLT_1 outlined in yellow was assessed prior to restoration activities involving removal of melaleuca trees. LPI_SLT_2 is a restored salt marsh area outlined in blue.

(A)



(B)



(C)



Figure B-18.2. Site photos of Little Pine Island Mitigation Bank. A) LPI_MAR B) LPI_SLT_1 C) LPI_SLT_2.

LPI_MAR Uniform Mitigation Assessment Method, page 1
PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

| | | | |
|--|---|---|---|
| Site/Project Name Little Pine Island Mitigation Bank | | Application Number NA | Assessment Area Name or Number LPI_MAR |
| FLUCCs code 641 Freshwater Marsh | Further classification (optional) -misclassified as 411 Pine Flatwoods from 1995 SFWMD Land Use cover - entire area seems to be misclassified based on monitoring reports and on site notes | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size 6 ha |
| Basin/Watershed Name/Number HUC 03100103 Charlotte Harbor | Affected Waterbody (Class) Class III | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) no | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands This marsh is located on Little Pine Island, which is surrounded by coastal waters including the Matlacha Aquatic Preserve. As the elevation slopes down to the coastal water surface this marsh transitions into salt marsh and then mangrove forest. There is hydric <i>Pinus elliotii</i> (slash pine)/ <i>Sabal palmetto</i> (cabbage palm) habitat to the north. | | | |
| Assessment area description Freshwater marsh species dominant, with patches of <i>Juncus roemerianus</i> (black needle rush), a salt marsh species. Bounded by upland fringe of pine flatwoods/cabbage palm habitat that has been restored, <i>Melaleuca quinquenervia</i> removed. 2-lane road bounds northern patch of hydric uplands, grades into other wetland ecosystems on remaining sides | | | |
| Significant nearby features The assessment area is located on an island, almost all of which is being restored or enhanced for mitigation banking. | Uniqueness (considering the relative rarity in relation to the regional landscape.) Small patch of freshwater (somewhat brackish) marsh - more continuous freshwater marsh farther inland (east). | | |
| Functions trap and cycle organic materials with detrital export to estuaries; provide important food chain resources with high rate of primary production; provide habitat and nursery grounds for many species; offshore protection by buffering wind and wave action including sediment stabilization; provides habitat for many transient and resident fish and wildlife species. | Mitigation for previous permit/other historic use Had E/W ditches along SR78 and a N/S ditch separating this marsh from the downslope mangrove forest which have been filled. | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Odocoileus virginianus (white-tailed deer), Oryzomys palustris (rice rat), Peromyscus gossypinus (cotton mouse), Procyon lotor (raccoon), Sylvilagus palustris (marsh rabbit), Callinectes sapidus (blue crab), Ardea herodias (great-blue heron), Butorides striatus (green-backed heron), Uca spp. (fiddler crabs), Sesarma cinereum (marsh crab), arachnids (spiders), abundant insects. | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Egretta caerulea (little blue heron) ^{SSC} , Egretta tricolor (tricolored heron) ^{SSC} , Egretta thula (snowy egret) ^{SSC} . | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): rabbit scat; <i>Haliaeetus leucocephalus</i> (bald eagle) perched on <i>Pinus elliotii</i> (slash pine) tree on fringe of marsh; <i>Hirundo rustica</i> (barn swallows) flying overhead; tadpoles in water; <i>Bufo quercicus</i> (oak toad), <i>Bufo terrestris</i> (southern toad), <i>Rana sphenoccephala</i> (leopard frog) visible; no game trails visible, but ground cover very open. <i>Chrysops spp.</i> (deer flies). | | | |
| Additional relevant factors: Site visit conducted in early evening after 1 hour rain event. | | | |
| Assessment conducted by: Kelly Chinnners Reiss and Erica Hernandez | | Assessment date(s): 16-Aug-05 | |

LPI_MAR Uniform Mitigation Assessment Method, page 2
PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

| | | |
|---|---|---|
| Site/Project Name Little Pine Island Mitigation Bank | Application Number NA | Assessment Area Name or Number LPI_MAR |
| Impact or Mitigation Mitigation Bank Assessment | Assessment conducted by: Kelly Chinnners Reiss & Erica Hernandez | Assessment date: 8/16/2005 |

| | | | | |
|--|---|---|---|--|
| 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 water functions | 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 w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 8 <input type="checkbox"/> | Provides full range of life history requirements. Greater than minimal cover by <i>Melaleuca quinquenervia</i> , <i>Schinus terebinthifolius</i> , <i>Casuarina</i> spp. in proximity of the assessment area but being controlled. Barrier is a 2-lane paved road (very busy) within 300m of marsh. Connections to offsite wetlands and upland habitats. Downstream benefits limited by road barrier, most likely historically connected to the habitat north of the road and spilled over in times of high water. No other hydrologic impediments or flow restrictions. Downstream habitats need freshwater inputs, perhaps not critically or solely dependent however. |
| .500(6)(b)Water Environment (n/a for uplands) w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 10 <input type="checkbox"/> | Water level and flows appear appropriate. No apparent water level indicators, but difficult to see in a marsh setting anyway. Soil saturated and in parts inundated, no evidence of soil subsidence. No atypical fire history. No vegetation zonation problems. No apparent hydrologic stress. Many tadpoles, frogs, and wading birds present. Plant community composition is not indicative of species suggesting water quality degradation. Water clarity appropriate, no turbidity or oil sheen visible. Residual effects of pesticide used on <i>Melaleuca quinquenervia</i> stumps not evident - what are these effects? [Not covered by this rule.] |
| .500(6)(c)Community structure 1. Vegetation and/or Benthic Community w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 8 <input type="checkbox"/> | 2. Ground stratum covered by predominantly desirable species composition. Some exotic species found in the assessment area including small <i>Melaleuca quinquenervia</i> growing freely or associated with old treated cut stumps and a single sizable <i>Syzygium</i> spp. (to 2 m tall). Structural habitat appropriate - snags were left and most treated <i>Melaleuca quinquenervia</i> removed. Land management optimal (included exotic species removal, prescribed burning plan), plants healthy - in fruit and flower. Amount and condition of refugia ponds appropriate. Much algal growth present, slightly greater than expected. |

| |
|---|
| Score = sum of above scores/30 (if uplands, divide by 20) current <input type="checkbox"/> or w/o pres <input type="checkbox"/> with <input type="checkbox"/> 0.87 <input type="checkbox"/> |
|---|

| |
|---|
| If preservation as mitigation, Preservation adjustment factor = Adjusted mitigation delta = |
|---|

| |
|---|
| For impact assessment areas FL = delta x acres = |
|---|

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|---|
| If mitigation Time lag (t-factor) = Risk factor = |
|---|

| |
|--|
| For mitigation assessment areas RFG = delta/(t-factor x risk) = |
|--|

LPI_MAR Wetland Rapid Assessment Procedure, page 1
Project Name: LPI_MAR - Little Pine Island Mitigation Bank

Date: 8/16/2005

Evaluator(s): Kelly Chinners Reiss & Erica Hernandez

Wetland Type/Description: freshwater marsh - perhaps slightly brackish

Wetland Size: 6 ha

FLUCCS Code/Description: 641 Freshwater Marshes

| | |
|------|---------------------------|
| 2.5 | Wildlife Utilization (WU) |
| NA | Wetland Canopy (O/S) |
| 2.5 | Wetland Ground Cover (GC) |
| 3.0 | Habitat Support/Buffer |
| 3.0 | Field Hydrology (HYD) |
| 3.0 | WQ Input & Treatment (WQ) |
| 14.0 | SUM |
| 5 | Count |
| 0.93 | WRAP |

LPI_MAR Wetland Rapid Assessment Procedure, page 2

2.5 Wildlife Utilization (WU)

rabbit scat, barn swallows overhead, tadpoles in water, oak toad, southern toad, leopard frog, highway noise may disturb species, very open vegetation without game trails visible, abundant upland food sources and cover, also available within the wetland, bald eagle perched on tree on fringe. Human disturbance includes the 2-lane road. Also, roads in place for exotic species removal have cause soil compaction. Cut stumps of exotic species had been treated with pesticides. There is a powerline on the 2-lane road that borders the hydric pine/cabbage palm upland fringe.

NA Wetland Canopy (O/S)
marsh - no canopy score appropriate

2.5 Wetland Ground Cover (GC)

Blechnum serrulatum, *Sarcostemma clausum*, *Andropogon virginicus*, *Myrica cerifera* (appropriate because in small patches), *Bacharis* sp., *Sabatia* sp., *Rhynchospora* spp., *Pluchea* sp., *Euthamia minor*, *Polygala ?rugelli*, *Juncus roemerianus*, *Mikania scandens*, *Setaria geniculata*, *Centetlla asiatica*, *Panicum* spp., *Phyla nodiflora*, *Sagittaria graminea*, *Sagittaria lanceolata*, *Coreopsis* sp., *Cyperus ligularis*. Small *Melaleuca quinquenervia* coming back in and cut stump remains and debris. Also *Syzygium* sp. exotic tree species present.

3.0 Habitat Support/Buffer

Buffer greater than 300 ft of hydric pine/palmetto flatwoods - low pine density. Less than 10% nuisance and exotic species. Connected to other wetlands. Did not take off for 2 land road because it is farther than 300 ft away.

| Buffer Type | (Score) x | (% of Area) | = Sub Total |
|---------------------|-----------|-------------|-------------|
| natural/undeveloped | 3.0 | 1.00 | 3.0 |
| | | | |
| | | | |
| Total = | | | 3.0 |

3.0 Field Hydrology (HYD)

Palnts do not appear stressed. No upland/transitional species encroachment observed. Some grasses forming tussocks (hydrologic indicators).

3.0 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| undeveloped | 3.0 | 1.00 | 3.0 |
| | | | 0.0 |
| | | | 0.0 |
| LU Total = | | | 3.0 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| undeveloped | 3.0 | 1.00 | 3.0 |
| | | | 0.0 |
| | | | 0.0 |
| PT Total = | | | 3.0 |

LPI_SLT_1 Uniform Mitigation Assessment Method, page 1
PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

| | | | | | |
|--|--|---|--|---|--|
| Site/Project Name Little Pine Island Mitigation Bank | | Application Number NA | | Assessment Area Name or Number LPI_SLT_1 | |
| FLUCCs code 642 Saltwater Marshes | | Further classification (optional) none | | Impact or Mitigation Site? Mitigation Bank | |
| Assessment Area Size 10 ha | | | | | |
| Basin/Watershed Name/Number HUC 03100103 Charlotte Harbor | | Affected Waterbody (Class) Class III | | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) no | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands This marsh is located on Little Pine Island, which is surrounded by coastal waters including the Matlacha Aquatic Preserve. As the elevation slopes down to the coastal water surface this marsh transitions into mangrove forest. There is hydric <i>Pinus elliotii</i> (slash pine)/ <i>Sabal palmetto</i> (cabbage palm) habitat on the opposite side of SR78 a 2-lane paved road. | | | | | |
| Assessment area description The assessment area includes a salt marsh with some small patched of mangroves along the fringes, as it grades into mangrove forest before grading into open estuarine waters. This are is located N of SR78 and W of the office facilities. Exotic species removal activates have not been completed in the immediate proximity, and W of the office much need to be completed both N and S of SR78. | | | | | |
| Significant nearby features The assessment area is located on an island, almost all of which is being restored or enhanced for mitigation banking. | | | Uniqueness (considering the relative rarity in relation to the regional landscape.) FNAI Bird Aggregation Area - Bird Rookery; FWCC Strategic Habitat Conservation Areas - Priority Habitat | | |
| Functions trap and cycle organic materials with detrital export to estuaries; provide important food chain resources with high rate of primary production; provide habitat and nursery grounds for many species; offshore protection by buffering wind and wave action including sediment stabilization; provides habitat for many transient and resident fish and wildlife species. | | | Mitigation for previous permit/other historic use Had E/W ditches along SR78 which have been filled. | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) <i>Odocoileus virginianus</i> (white-tailed deer), <i>Oryzomys palustris</i> (rice rat), <i>Peromyscus gossypinus</i> (cotton mouse), <i>Procyon lotor</i> (raccoon), <i>Sylvilagus palustris</i> (marsh rabbit), <i>Callinectes sapidus</i> (blue crab), <i>Ardea herodias</i> (great-blue heron), <i>Butorides striatus</i> (green-backed heron), <i>Uca</i> spp. (fiddler crabs), <i>Sesarma cinereum</i> (marsh crab), arachnids (spiders), abundant insects. | | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Egretta caerulea</i> (little blue heron) ^{SSC} , <i>Egretta tricolor</i> (tricolored heron) ^{SSC} , <i>Egretta thula</i> (snowy egret) ^{SSC} . | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Our visit was in the heat of the day, so wildlife evidence was limited. We did see a Carolina wren, dragonflies, damselflies, fish, a leopard frog, a morning dove, and a brown anole. We also heard a towhee and cycads calling. | | | | | |
| Additional relevant factors: This area is part of the larger Little Pine Island Mitigation Bank that is undergoing extensive exotic species removal. This section does not meet permit release criteria based on the presence of exotic species alone. | | | | | |
| Assessment conducted by: Kelly Chinnners Reiss and Erica Hernandez | | | Assessment date(s): 17-Aug-05 | | |

LPI_SLT_1 Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|--|---|
| Site/Project Name Little Pine Island Mitigation Bank | Application Number NA | Assessment Area Name or Number LPI_SLT_1 |
| Impact or Mitigation Mitigation Bank Assessment | Assessment conducted by: Kelly Chinners Reiss & Erica Hernandez | Assessment date: 8/17/2005 |

| | | | | |
|--|---|--|---|--|
| 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 w/o pres or current with | Habitats outside the assessment area provide better habitat than this area, though some thick <i>Melaleuca quinquenervia</i> to the west. Some adjacent areas also have some exotics, but this area is managed by exotic species control. A 2-lane road cuts the mitigation bank in half and acts as a barrier for wildlife access. Surrounding land uses do not have negative impacts, except for the road. Hydrologic restrictions and flow restrictions are not an issue, except perhaps that some of the historic catchment area may be lost due to the road separating the areas, quantity that would have run-in from the upland may have been small, but still important. Connected habitats derive benefits because of the high primary productivity of the salt marsh species and the exchange with tidally influenced waters. There should be some expected change in outflows and tidal exchange because of the occurrence of <i>Melaleuca quinquenervia</i> . |
| | |
| .500(6)(b)Water Environment (n/a for uplands) w/o pres or current with | Water level appears appropriate though some changes in level are perhaps anticipated from the presence of <i>Melaleuca quinquenervia</i> (ex. hummock building and creation of duff layer). Full of obligate species. Mucky soil. No distinct water level indicators apparent. Soils are inundated except the high and dry areas of <i>Melaleuca quinquenervia</i> duff. Erosion and deposition not noted, no signs of atypical fire. No hydrologic stress noted, the interspersed black mangroves look healthy. Visited in middle of day, did see tadpoles, leopard frog. Some species tolerant of and associated with water quality degradation, for example <i>Melaleuca quinquenervia</i> is present due to the alteration of frequency, depth, and saturation. No water turbidity or clarity issues. |
| | |
| .500(6)(c)Community structure 1. Vegetation and/or Benthic Community 2. w/o pres or current with | Canopy composed of a majority of undesirable species, <i>Melaleuca quinquenervia</i> . Some interspersed black mangroves. Shrub layer also dominated by exotic species. Ground stratum is appropriate in areas without exotic species, but there is no desirable groundcover under the canopy of <i>Melaleuca quinquenervia</i> . Evidence of recruitment and regeneration in open patches without the exotic species canopy. The lack of appropriate species under the exotic species will lead to a permanent deviation from expected community is unmanaged. Plants did appear healthy, though a majority were the exotic species. Land management has corrected for some previous practices by filling a ditch along the road to restore the hydrology (as best as possible without removing the road). Some native species still occur in the open areas, so not wall-to-wall exotic species. |
| | |

| |
|---|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current with |
| or w/o pres |
| 0.67 |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

LPI_SLT_1 Wetland Rapid Assessment Procedure, page 1
Project Name: LPI_SLT_1 - Little Pine Island Mitigation Bank

Date: 8/17/2005

Evaluator(s): Kelly Chinners Reiss & Erica Hernandez

Wetland Type/Description: salt marsh - with islands of *Melaleuca quinquenervia*

Wetland Size: 10 ha

FLUCCS Code/Description: 642 Saltwater Marshes

| | |
|------|---------------------------|
| 2.0 | Wildlife Utilization (WU) |
| 0.5 | Wetland Canopy (O/S) |
| 1.0 | Wetland Ground Cover (GC) |
| 1.5 | Habitat Support/Buffer |
| 1.5 | Field Hydrology (HYD) |
| 2.4 | WQ Input & Treatment (WQ) |
| 8.9 | SUM |
| 6 | Count |
| 0.49 | WRAP |

LPI_SLT_1 Wetland Rapid Assessment Procedure, page 2

2.0 Wildlife Utilization (WU)

Carolina wren, damsel flies, fish, leopard frogs, brown anole, towhee (heard call), cycads calling, old hog rooting throughout, morning dove, dragonflies. Woody debris from old exotic species control hinders habitat for some species. Macroinvertebrates and fish are probably ok (connection to off site wetlands), also off site food sources and adequate cover and food. Human disturbance visible because of exotics presence and cut stumps with treatment, debris piles left on site.

0.5 Wetland Canopy (O/S)

Melaleuca quinquenervia islands throughout salt marsh, perhaps 15-30 ft tall. Provides structure in marsh habitat, which would otherwise not be there. There is also sparse Australian pine, buttonwood, and black mangrove. The canopy is easily greater than 75% *Melaleuca quinquenervia* but some native species are mixed in.

1.0 Wetland Ground Cover (GC)

Patches under *Melaleuca quinquenervia* with no species cover, patches without *Melaleuca quinquenervia* had appropriate species - each area covers approximately 50% of the wetland area. Muckier soils in this wetland than expected perhaps because of *Melaleuca quinquenervia* duff. Ground cover full of *Andropogon* sp., *Cuscuta* sp. (dodder), small *Eleocharis* sp., large *Eleocharis cellulosa*, *Distichilis*, *Alternanthera maritima*, *Spartina bakerii*, *Salicornia* sp. Short patches of buttonwood and black mangrove. Less diversity of ground cover than expected, not the mosaic you would expect in a restored or pristine salt marsh. Human disturbance evident.

1.5 Habitat Support/Buffer

Buffer on one side <30 ft wide with 2-lane busy road on the other side of a thick *Melaleuca quinquenervia* forest. Some buffer >300 ft but with predominantly undesirable species. On fourth side, marsh is greater than 300 ft wide, has been restored and hosts desirable species. There is support for wildlife species from this restored marsh.

| Buffer Type | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| disturbed forest & rd | 1.0 | 0.25 | 0.3 |
| disturbed forest | 1.0 | 0.50 | 0.5 |
| restored marsh | 3.0 | 0.25 | 0.8 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| Total = | | | 1.5 |

1.5 Field Hydrology (HYD)

Hummocks of *Melaleuca quinquenervia* throughout marsh. Obligate wetland species present. Though *Melaleuca quinquenervia* changes the hydrology by building a duff layer and raising the elevation, no obligate species were growing under the *Melaleuca* trees on the hummocks. The ditch which has been credited with causing/allowing exotic species encroachment has been restored - the hydrology should improve because what we see is a symptom of previous land management practices. The hydrology is currently adequate for wetland regeneration.

2.4 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| disturbed forest & rd | 2.0 | 0.25 | 0.5 |
| disturbed forest | 2.5 | 0.50 | 1.3 |
| restores marsh | 3.0 | 0.25 | 0.8 |
| LU Total = | | | 2.5 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| undeveloped | 3.0 | 0.25 | 0.8 |
| undeveloped | 3.0 | 0.50 | 1.5 |
| no treatment | 0.0 | 0.25 | 0.0 |
| PT Total = | | | 2.3 |

LPI_SLT_2 Uniform Mitigation Assessment Method, page 1
PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

| | | | |
|--|--|--|---|
| Site/Project Name Little Pine Island Mitigation Bank | | Application Number NA | Assessment Area Name or Number LPI_SLT_2 |
| FLUCCs code 642 Saltwater Marshes | Further classification (optional) Soils FL071 Estero Muck | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size 24 ha |
| Basin/Watershed Name/Number HUC 03100103 Charlotte Harbor | Affected Waterbody (Class) Class III | Special Classification (i.e. OFW, AP, other local/state/federal designation of importance) no | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands This marsh is located on Little Pine Island, which is surrounded by coastal waters including the Matlacha Aquatic Preserve. As the elevation slopes down to the coastal water surface this marsh transitions into mangrove forest. There is hydric <i>Pinus elliotii</i> (slash pine)/ <i>Sabal palmetto</i> (cabbage palm) habitat on the opposite side of SR78 a 2-lane paved road. | | | |
| Assessment area description The assessment area includes a salt marsh with some small patches of mangroves along the fringes, as it grades into mangrove forest before grading into open estuarine waters. This area is located N of SR78 and E of the office facilities. Most exotic species removal activities have been completed in the immediate proximity, however W of the office much need to be completed both N and S of SR78. | | | |
| Significant nearby features The assessment area is located on an island, almost all of which is being restored or enhanced for mitigation banking. | Uniqueness (considering the relative rarity in relation to the regional landscape.) FNAI Bird Aggregation Area - Bird Rookery; FWCC Strategic Habitat Conservation Areas - Priority Habitat | | |
| Functions trap and cycle organic materials with detrital export to estuaries; provide important food chain resources with high rate of primary production; provide habitat and nursery grounds for many species; offshore protection by buffering wind and wave action including sediment stabilization; provides habitat for many transient and resident fish and wildlife species. | Mitigation for previous permit/other historic use Had E/W ditches along SR78 and a N/S ditch separating this marsh from the downslope mangrove forest which have been filled. | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) <i>Odocoileus virginianus</i> (white-tailed deer), <i>Oryzomys palustris</i> (rice rat), <i>Peromyscus gossypinus</i> (cotton mouse), <i>Procyon lotor</i> (raccoon), <i>Sylvilagus palustris</i> (marsh rabbit), <i>Callinectes sapidus</i> (blue crab), <i>Ardea herodias</i> (great-blue heron), <i>Butorides striatus</i> (green-backed heron), <i>Uca</i> spp. (fiddler crabs), <i>Sesarma cinereum</i> (marsh crab), arachnids (spiders), abundant insects. | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Nerodia clarkii taeniata</i> (Atlantic salt marsh snake) ^T - population limited to Volusia, Brevard, and Indian River Counties. <i>Egretta caerulea</i> (little blue heron) ^{SSC} , <i>Egretta tricolor</i> (tricolored heron) ^{SSC} , <i>Egretta thula</i> (snowy egret) ^{SSC} . | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): <i>Hirundo rustica</i> (barn swallow), <i>Hyla cinerea</i> (green treefrog), small spiders and webs throughout vegetation, small fish, <i>Egretta tricolor</i> (tricolored heron) ^{SSC} , hog tracks - visit late in morning on a sunny and hot day limited wildlife observations. | | | |
| Additional relevant factors: | | | |
| Assessment conducted by: Kelly Chinnners Reiss and Erica Hernandez | | Assessment date(s): 17-Aug-05 | |

LPI_SLT_2 Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|---|---|
| Site/Project Name Little Pine Island Mitigation Bank | Application Number NA | Assessment Area Name or Number LPI_SLT_2 |
| Impact or Mitigation Mitigation Bank Assessment | Assessment conducted by: Kelly Chinnners Reiss & Erica Hernandez | Assessment date: 8/17/2005 |

| |
|---|
| 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 |

| | |
|--|---|
| <p>.500(6)(a) Location and Landscape Support</p> <p>w/o pres or current <input type="checkbox"/> with <input type="checkbox"/></p> <p>8 <input type="checkbox"/></p> | <p>Habitats outside of the assessment area provide habitat, cover, forage, etc. for anticipated species. Some areas adjacent to this site have exotic species present including <i>Melaleuca quinquenervia</i> (melaleuca), <i>Schinus terebinthifolius</i> (Brazilian pepper), <i>Casuarina</i> sp. (Australian pine). Wildlife access is partially limited by a 2-lane road (SR 78) on one side of the marsh that separated areas of different habitat type. Downstream benefits are not limited by distance or barriers. Land uses outside the assessment area have some impacts on wildlife (primarily the road). No flow restrictions or hydrologic impediments (central N/S ditch has been restored). Downstream not solely dependent on this area for discharge, though this area does provide an important input of primary production for downstream habitats.</p> |
| <p>.500(6)(b) Water Environment (n/a for uplands)</p> <p>w/o pres or current <input type="checkbox"/> with <input type="checkbox"/></p> <p>10 <input type="checkbox"/></p> | <p>Lenticels apparent on stems, pneumatophors of <i>Avicennia germinans</i> (black mangrove). Water levels and flows appear appropriate - there is no indication otherwise. Soil erosion and deposition are not apparent. Vegetation is appropriate for each strata, includes a mosaic of vegetation types. No signs of hydrologic stress apparent. Some evidence of species with specific hydrologic requirements (though visited in heat o fthe day), including small fish, tadpoles, snails, <i>Ceryle alcyon</i> (kingfisher), wading birds. No characteristic species present that would suggest water quality degradation. Standing water is clear. Periphyton mats intact.</p> |
| <p>.500(6)(c) Community structure</p> <p>1. Vegetation and/or Benthic Community <input type="checkbox"/> 2. <input type="checkbox"/></p> <p>w/o pres or current <input type="checkbox"/> with <input type="checkbox"/></p> <p>10 <input type="checkbox"/></p> | <p>All plant cover is by appropriate species in canopy, shrub, and ground layers. Invasive exotics not present within the assessment area. Strong evidence of <i>Avicennia germinans</i> (black mangroves) and (buttonwood) regeneration and recruitment as small ground species (<1m tall) in fruit. Density and quality of coarse woody debris appropriate. Plants in good condition - no evidence of chlorotic leaves, spindly growth, or insect damage. Land management appears optimal - includes potential burning and exotic species removal/control. Microtopography appropriate, including standing water pools, hummocks, tussocks (with <i>Spartina</i> sp.), open water, and salt flats. Algal growth present, but does not appear to impede normal plant growth.</p> |

| |
|---|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current <input type="checkbox"/> or w/o pres <input type="checkbox"/> with <input type="checkbox"/> |
| 0.93 <input type="checkbox"/> |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

LPI_SLT_2 Wetland Rapid Assessment Procedure, page 1
Project Name: LPI_SLT_2 - Little Pine Island Mitigation Bank

Date: 8/17/2005

Evaluator(s): Kelly Chinnners Reiss, Erica Hernandez, & Tony Davanzo

Wetland Type/Description: salt marsh

Wetland Size: 24 ha

FLUCCS Code/Description: 642 Saltwater Marshes

| | |
|------|---------------------------|
| 2.5 | Wildlife Utilization (WU) |
| 3.0 | Wetland Canopy (O/S) |
| 3.0 | Wetland Ground Cover (GC) |
| 2.5 | Habitat Support/Buffer |
| 3.0 | Field Hydrology (HYD) |
| 2.5 | WQ Input & Treatment (WQ) |
| 16.5 | SUM |
| 6 | Count |
| 0.92 | WRAP |

LPI_SLT_2 Wetland Rapid Assessment Procedure, page 2

2.5 Wildlife Utilization (WU)

Anticipated wildlife species should have adequate cover and habitat support in marsh. Barn swallow, green treefrog, small spiders with webs throughout the vegetation, small fish, tricolored heron, hog tracks, game trails, tricolored heron, snails on vegetation, kingfisher, little green heron, common grackle, buckeye butterflies, skipper butterflies, *Argiope* spiders. Abundant food and cover in the surrounding areas. Busy 2-lane road to S, with 5-10 m wide buffer strip of red mangrove (*Rhizophora mangle*) between the marsh and the road.

3.0 Wetland Canopy (O/S)

Sparse, patchy black mangrove and buttonwood throughout area, grades into thicker mangrove patches and eventual mangrove forest. No invasive species in the canopy or midstory. Good structural support for birds. Much evidence of natural recruitment. Many snags available as cavities and perches. Mix of black mangrove that grades into red, though we did not transverse into the depths of the red mangroves.

3.0 Wetland Ground Cover (GC)

Distichlis spicata, *Juncus roemerianus*, *Salicornia* sp., *Batis* sp., *Cuscuta* sp., *Sesuvium* sp., *Agalinis* sp., sea lavender, *Alternanthera maritima*, *Limonium carolinianum*, buttonwood. A mosaic of species. Minimal disturbance to the ground cover. Ditch features along road and extending N/S through marsh have been restored, and are now covered with ground cover species. Land management practices will keep removing exotic species, a prescribed fire burn plan has been drafted (though not yet used).

2.5 Habitat Support/Buffer

One edge has a 5-10m mangrove border and then a busy 2-lane road. Three sides have >300 ft buffer. Exotic species do occur in the vicinity of the assessment area. Area is connected to other wetland habitats including mangrove and fresh/brackish marsh.

| Buffer Type | (Score) x | (% of Area) | = Sub Total |
|----------------|-----------|-------------|-------------|
| road | 1.0 | 0.25 | 0.3 |
| undeveloped | 3.0 | 0.75 | 2.3 |
| | | | 0.0 |
| | | | |
| Total = | | | 2.5 |

3.0 Field Hydrology (HYD)

Standing water is clear, no turbidity or oils sheen issues. Plants are healthy, no stress apparent beyond what one would anticipate for the harsh salt marsh environment. No upland or transitional species encroachment observed.

2.5 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| road | 2.0 | 0.25 | 0.5 |
| undeveloped | 3.0 | 0.75 | 2.3 |
| | | | 0.0 |
| LU Total = | | | 2.8 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| no treatment | 0.0 | 0.25 | 0.0 |
| undeveloped | 3.0 | 0.75 | 2.3 |
| | | | 0.0 |
| PT Total = | | | 2.3 |

Appendix B-19. Loblolly Mitigation Bank

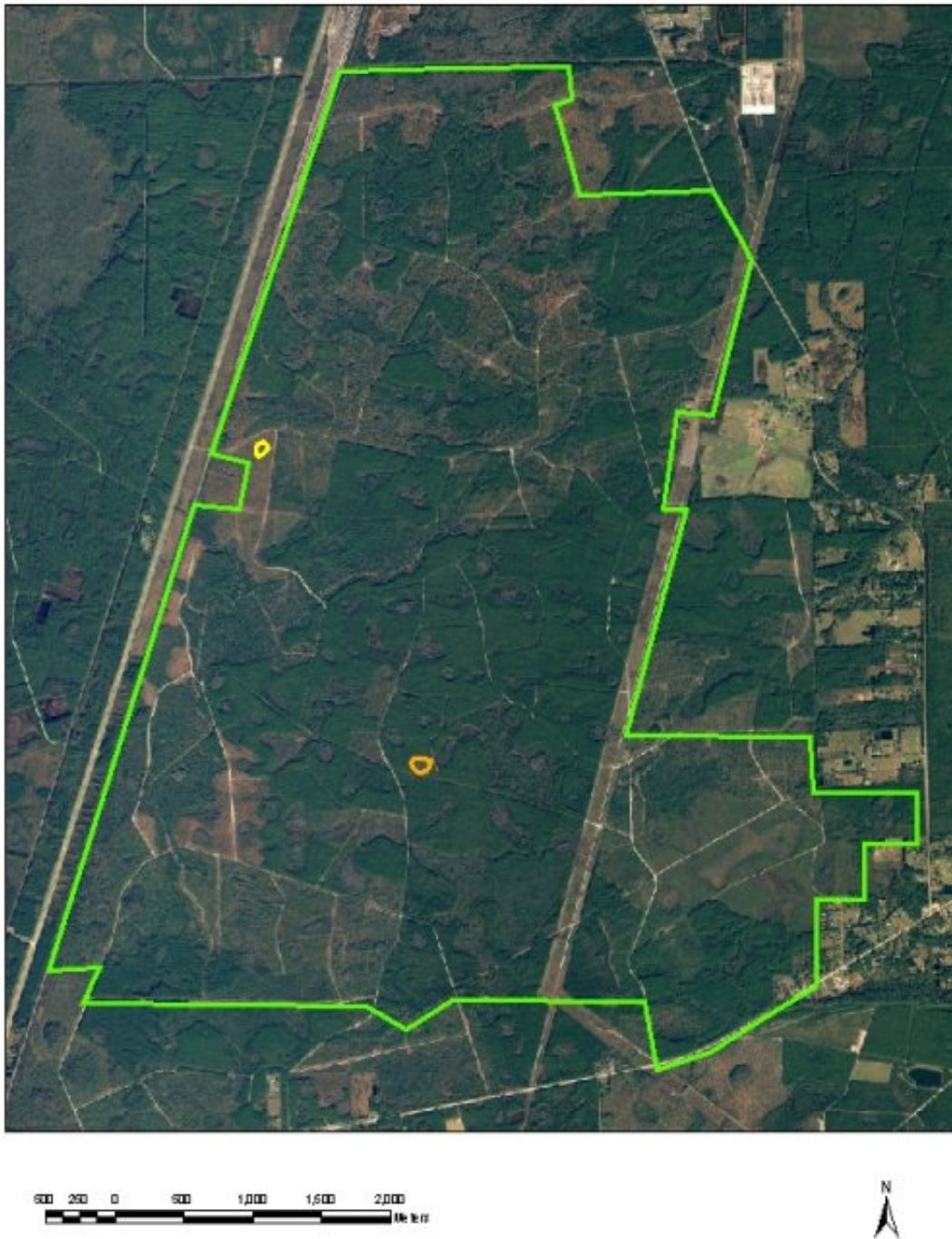


Figure B-19.1. Landscape location of Loblolly Mitigation Bank (green line). Boundary of the wetland assessment areas are outlined in orange (Lob_CYP_1) and yellow (Lob_CYP_2).

(A)



(B)



Figure B-19.2. Site photos of Loblolly Mitigation Bank. (A) Lob_CYP_1 is located in an area still planted in rows for silviculture at the time of the assessment. (B) Lob_CYP_2 is located within an area that had been clear cut prior to the time of wetland assessment.

Lob_CYP_1 Uniform Mitigation Assessment Method, page 1
PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

| | | | |
|---|--|---|---|
| Site/Project Name Loblolly Mitigation Bank | | Application Number NA | Assessment Area Name or Number Lob_CYP_1 |
| FLUCCs code 6210 Cypress | Further classification (optional) depressional forested wetland - palustrine forested | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size 1.1 ha (2.7 ac) |
| Basin/Watershed Name/Number HUC 03080103 Lower St. John's River | Affected Waterbody (Class) 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 Depressional wetland, receives run-off from surrounding pine plantation - hydrology has been altered by bedding activities within wetland boundary. Many other depressional or strand features throughout immediately adjacent landscape. | | | |
| Assessment area description Depressional forested wetland, dominant canopy species was pondcypress (<i>Taxodium ascendens</i>), low species richness in support habitat. Wetland canopy thin from past logging and perhaps hydrologic stress or even insect damage (uncertain of direct cause). Ground cover richness very low inside wetland, with only 3 herbaceous species and a few graminoid species recorded. | | | |
| Significant nearby features Connected to or corridor to S. Taylor Creek Preserve, Jennings State Forest, Peterson Tract (private ownership), Cecil Field Conservation Corridor, Yellow Water Branch Trail Head. Though some areas may be separated by a busy Jacksonville roadway. Northwest 3/4 of bank overlaps with Florida Ecological Greenways high priority, critical linkage Camp Blanding-Osceola National Forest corridor, based on black bear focal species. | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Not unique, many depressional wetlands in area and nearby preservation or conservation lands. | |
| Functions Wildlife habitat and refuge, in particular waterfowl, wading birds, and aquatic animals, which may depend on cypress swamps for breeding purposes; provide water storage by holding excess water and slowly releasing it into the water table; enhance water quality by absorbing nutrients from the water | | Mitigation for previous permit/other historic use Surrounding lands in active silviculture land use. | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) <i>Odocoileus virginianus</i> (white-tailed deer), <i>Procyon lotor</i> (raccoon), bobcat, many species of frogs, small fish, wading birds, butterflies, aquatic insects. | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Mycteria americana</i> (wood stork) ^E , ? <i>Ursus americanus floridanus</i> (Florida black bear) ^T , <i>Alligator mississippiensis</i> (alligator) ^T , <i>Aramus guarauna</i> (limpkin) ^{SSC} . | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Common yellow throat, red spiders, buck rub on black gum (<i>Nyssa sylvatica</i> var. <i>biflora</i>), cat bird (a migrant), small fish, medium size frog in buffer, cricket frogs, damsel flies in buffer, leopard frog in buffer, evidence of use by deer (rub). | | | |
| Additional relevant factors: Area has not been restored at all - upland pine will be harvested - used in companion to DUTOAD. FWCC Biodiversity Hotspots with 5-6 focal species overlap. FWCC Priority Wetlands with 1-3 species and upland habitat. | | | |
| Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | | Assessment date(s): 9/29/2005 | |

Lob_CYP_1 Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|--|---|
| Site/Project Name Loblolly Mitigation Bank | Application Number NA | Assessment Area Name or Number Lob_CYP_1 |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | Assessment date: 9/29/2005 |

| | | | | |
|--|---|---|---|--|
| 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 water functions | 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 w/o pres or current 6 with | Habitats outside wetland assessment area provide support for most species but some may be impeded. No exotic species present. Some nuisance cattail (<i>Typha sp.</i>) in roadside ditches. Bedding acts as a barrier and thick brush impede some wildlife access. Land uses outside assessment area have moderate impacts. These areas will be harvested shortly as it is in active rotation pine plantation. Habitats outside wetland assessment area are fair, though lack species richness. Younger rotation monotypic slash pine (<i>Pinus elliotii</i>) canopy does not provide optimal support (lack of food and cover). |
| | |
| .500(6)(b)Water Environment (n/a for uplands) w/o pres or current 8 with | Water standing in troughs in adjacent bed rows. No distinct water level indicators, water levels appeared lower than anticipated, perhaps due to change in catchment from bedding activities. No distinct evidence of water level changes, however some very large (~1m high) hummocks (could be from previous earth moving). No evidence of soil subsidence or atypical fire. Vegetation and benthic community zonation appropriate. Pondcypress (<i>Taxodium ascendens</i>) trees did not grow as appropriate or expected - suggested indicator of hydrologic stress. No species showing water quality degradation. Black/brown coating on water surface and vegetation (expected bacterial activity). Many gas bubbles coming up at water surface. Darker water than anticipated. Light penetration not optimal because of coating. Hydrology impacted by planted pine and bedding with ditches. Hummocks from initial logging activities. In general, a lack of evidence. Indicators were unclear and so we are not completely confident in the strength of this score (it seems high compared to the site conditions, but a lack of specific evidence and looking specifically at the UMAM rule led to a score of 8). |
| | |
| .500(6)(c)Community structure w/o pres or current 6 with | Plant cover is by appropriate and desirable species - though lack of species richness and therefore lack of desirable species. No exotic or invasive species. Evidence of near-normal recruitment or regeneration. Age and size distribution approximates typical conditions but temporary deviations apparent with cut stumps and small (low dbh) trees. No very large pondcypress (<i>Taxodium ascendens</i>). Snags and dens limited, trees were small, so levels lower than anticipated. Plant condition generally good, though pondcypress had anomalies - small pondcypress were completely covered with lichens and larger pondcypress did not have full canopies (branch growth suppressed). Land management practices include bedding into the wetland, fire suppression, and change in hydrology because of bedding - removed natural structure by bedding and logging and also created troughs and beds in wetland. Topographic features somewhat appropriate (slightly less than optimal) except in fringes with bedding and perhaps extra large hummocks/mounds) thought to be previous evidence of logging). Growth/coating of black/brown material covering water surface and impeding light penetration. |
| | |

| |
|---|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current or w/o pres 0.67 with |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Lob_CYP_1 Wetland Rapid Assessment Procedure, page 1

Project Name: Lob_CYP_1- Loblolly Mitigation Bank

Date: 9/29/05

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: Depressional forested wetland, dominant canopy species was pondcypress (*Taxodium ascendens*), low species richness in support habitat. Wetland canopy thin from past logging and perhaps hydrologic stress or even insect damage (uncertain of direct cause). Ground cover richness very low inside wetland, with only three herbaceous species and a few graminoid species recorded.

Wetland Assessment Area: 1.1 ha (2.7 ac)

FLUCCS Code/Description: 6210 Cypress

| | |
|------|---------------------------|
| 2.0 | Wildlife Utilization (WU) |
| 2.0 | Wetland Canopy (O/S) |
| 2.0 | Wetland Ground Cover (GC) |
| 2.5 | Habitat Support/Buffer |
| 2.0 | Field Hydrology (HYD) |
| 1.0 | WQ Input & Treatment (WQ) |
| 11.5 | SUM |
| 6 | Count |
| 0.64 | WRAP |

Lob_CYP_1 Wetland Rapid Assessment Procedure, page 2

| | |
|--|----------------------------------|
| 2.0 | Wildlife Utilization (WU) |
| <p>Evidence of small mammals and reptiles, macroinvertebrates, amphibian, and fish. Low species richness in support habitat. Lack of appropriate structure for food and cover providing adequate adjacent food sources. Cover available within wetland but trees small and limited large cavities and dens should provide adequate (but not optimal) protective cover. Cover in upland is thick vegetation. Common yellow throat, *red spiders, *buck rub on black gum (<i>Nyssa sylvatica</i> var. <i>biflora</i>), spiders, cat bird (a migrant), small fish, *medium size frog, *cricket frogs, *damselflies, *leopard frog, [* means in buffer support area]. Not abundant upland food sources, some available but difficult for many species to get access because of thick growth. Human disturbance apparent (though considered minimal) with planted pine and deep troughs and tall beds for slash pine (<i>Pinus elliotii</i>).</p> | |

| | |
|--|-----------------------------|
| 2.0 | Wetland Canopy (O/S) |
| <p>Desirable canopy and shrub species. No invasive or exotic species. Evidence of natural recruitment. Very shrubby. Some cavity space on hummocks with limited snags and den trees. All trees are small dbh. Mixed age class distribution of pondcypress (<i>Taxodium ascendens</i>), heavy on the small dbh trees, young pondcypress not robust - filled with lichens. Thick shrubs. Slash pine (<i>Pinus elliotii</i>) with buttresses. Pondcypress have thin and narrow canopy and do not branch out far from trunk. Small pondcypress trees (small dbh). Pondcypress recruitment noted, cut stumps apparent, much down/woody debris. Much black gum (<i>Nyssa sylvatica</i> var. <i>biflora</i>) recruitment, especially at around 5cm dbh. Turpentine remnants on burnt-out stumps. Myrtle dahoon holly (<i>Ilex myrtifolia</i>) and black gum regeneration and recruitment.</p> | |

| | |
|--|----------------------------------|
| 2.0 | Wetland Ground Cover (GC) |
| <p>No exotic species, no nuisance species. Mostly beaksedges (ex. <i>Rhynchospora</i> spp.) and Virginia chain fern (<i>Woodwardia virginica</i>). Much open water. Lack of species richness throughout. Disturbance apparent with bedding up into wetland boundary. No managed or periodic burns. Eastern purple bladderwort (<i>Utricularia purpurea</i>) on south edge.</p> | |

| | | | | | |
|--|-------------------------------|-----------------|-----------|-------------|-------------|
| 2.5 | Habitat Support/Buffer | | | | |
| <p>Bedded pine plantation, dark stain from receded water (with black coating on water surface) on Carolina reedroot (<i>Lachnanthes caroliniana</i>) in troughs of beds. Has pitcherplants (<i>Sarracenia</i> spp.) and warty sedge (<i>Carex verrucosa</i>) on perimeter and tenangle pipewort (<i>Eriocaulon decangulare</i>). Greater than 300' buffer with lack of species richness - canopy of slash pine (<i>Pinus elliotii</i>) and limited other species, though no exotic, invasive, or nuisance species. Ditch at roadside. Score raised because of open forest areas with decent access routes and vastness of landscape.</p> | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | Pine Plantation | 2.5 | 1 | 2.5 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| Total = | | | | | 2.5 |

| | |
|---|------------------------------|
| 2.0 | Field Hydrology (HYD) |
| <p>Darker water, brown/black coating (thought to be from bacteria), stain lines visible, lichens all the way down to moss collars. Ditch at roadside ~0.75 m deep, with water depth ~ 0.5 m, effecting hydrology. Hydrology adequate to maintain viable wetland. External influences present. No upland species encroachment.</p> | |

| | |
|--|---------------------------------------|
| 1.0 | WQ Input & Treatment (WQ)* |
| <p><small>*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.</small></p> | |

| LANDUSE CATEGORY (LU) | | | |
|-----------------------|-----------|-------------|-------------|
| Land Use Category | (Score) x | (% of Area) | = Sub Total |
| Pine Plantation | 2.0 | 1.00 | 2.0 |
| | | | 0.0 |
| | | | 0.0 |
| LU Total = | | | 2.0 |

| PRETREATMENT CATEGORY (PT) | | | |
|----------------------------|-----------|-------------|-------------|
| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
| No Treatment | 0.0 | 1.00 | 0.0 |
| | | | 0.0 |
| | | | 0.0 |
| PT Total = | | | 0.0 |

Additional Notes:

Plantation Pine given the land use score of citrus due to the bedding, changes to hydrology, and potential application of fertilizers and pesticides.

Lob_CYP_2 Uniform Mitigation Assessment Method, page 1
PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

| | | | | | |
|--|--|--|---|---|--|
| Site/Project Name Loblolly Mitigation Bank | | Application Number NA | | Assessment Area Name or Number Lob_CYP_2 | |
| FLUCCs code 6210 Cypress | | Further classification (optional) depressional forested wetland - palustrine forested | | Impact or Mitigation Site? Mitigation Bank | |
| Assessment Area Size 0.7 ha (1.7 ac) | | | | | |
| Basin/Watershed Name/Number HUC 03080103 Lower St. John's River | | Affected Waterbody (Class) 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 Depressional wetland, receives run-off from surrounding pine plantation - hydrology has been altered by bedding activities within wetland boundary. Many other depressional or strand features throughout immediately adjacent landscape. | | | | | |
| Assessment area description Depressional forested wetland, dominant canopy species was pondcypress (<i>Taxodium ascendens</i>), support habitat has been recently harvested (removal of timber). | | | | | |
| Significant nearby features Connected to or corridor to S. Taylor Creek Preserve, Jennings State Forest, Peterson Tract (private ownership), Cecil Field Conservation Corridor, Yellow Water Branch Trail Head. Though some areas may be separated by a busy Jacksonville roadway. Northwest 3/4 of bank overlaps with Florida Ecological Greenways high priority, critical linkage Camp Blanding-Osceola National Forest corridor, based on black bear focal species. | | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Not unique, many depressional wetlands in area and nearby preservation or conservation lands. | | |
| Functions Wildlife habitat and refuge, in particular waterfowl, wading birds, and aquatic animals, which may depend on cypress swamps for breeding purposes; provide water storage by holding excess water and slowly releasing it into the water table; enhance water quality by absorbing nutrients from the water | | | Mitigation for previous permit/other historic use Surrounding lands in active silviculture land use. | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) <i>Odocoileus virginianus</i> (white-tailed deer), <i>Procyon lotor</i> (raccoon), bobcat, many species of frogs, small fish, wading birds, butterflies, aquatic insects. | | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Mycteria americana</i> (wood stork)E, <i>Ursus americanus floridanus</i> (Florida black bear)T, <i>Alligator mississippiensis</i> (alligator)T, <i>Aramus guarauna</i> (limpkin)SSC. | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Spider eggs, palm warbler, *game trails, *deer tracks and turkey in support area, spiny crab-like orb weaver spider, *oak toad, leopard frog, heard noise of animals scurrying away at wetland edge - couldn't find, common yellow throat, downy woodpecker, *scat in upland/edge (perhaps otter because of piled up vegetation and location on water banks. Deer use in support area, small fish and expect macroinvertebrates (did see dragonflies for example), dragonfly, fish (small), red shouldered hawk call, large insect casing, blue gray gnatcatcher, potential gator hole, bird nest in trees, small mammal nest of cypress bark in tree cavity on hummock, green anoles, many overhead red spiders, grasshoppers variety of flying insects, *common buckeye butterfly, *cricket frogs, Carolina wren calling, *sleepy orange butterfly. (* signifies evidence is support area). | | | | | |
| Additional relevant factors: Area has not been restored at all - upland pine has just been harvested. FWCC Priority Wetlands with 1-3 species and upland habitat. | | | | | |
| Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | | | Assessment date(s): 9/29/2005 | | |

Lob_CYP_2 Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|--|---|
| Site/Project Name Loblolly Mitigation Bank | Application Number NA | Assessment Area Name or Number Lob_CYP_2 |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | Assessment date: 9/29/2005 |

| | | | | |
|---|---|---|---|--|
| 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 water functions | 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 w/o pres or current with | 8 | Isolated depression - no downstream effects/flows. Habits outside wetland assessment area available in decent quantity, not entirely optimal support for all species especially because of rutted up area. Invasive exotics not present or at least not noted. Cattail (<i>Typha</i> sp.), a nuisance species, is present within many roadside ditches. Wildlife access maybe slightly limited by distance from harvested pine patch, but most of the rest of the support area is pine plantation. Also train tracks to west. Adjacent lands have been timbered. There has been a reduction of fine fuels, rutting, and lower species richness. Wildlife access is partially limited by the train tracks and US-301 (a 4-lane divided highway) just further to west. Embedded within pine plantation landscape. Silvicultural areas have been thinned, slash pine (<i>Pinus elliotii</i>) are taller and older with some development of appropriate understory species. Wetland assessment area edge is harvested pine resulting in a fairly open landscape, grades into dirt road and pine plantation. |
| | 9 | Water level appeared appropriate. Water level indicators were appropriate with cypress knees, loop roots, moss collars in tact on hummocks and tree bases, lenticels on black gum (<i>Nyssa biflora</i>), stain lines, lichen line not as distinct as anticipated. No species indicative of water quality degradation. Soils inundated - no evidence of subsidence, desiccation, or oxidation. Vegetation zonation appropriate for type of system. No vegetation stress suggesting atypical hydrologic condition. Use by species such as frogs and small fish (with specific hydrologic requirements). No discoloration, turbidity, or oil sheen in standing water. No water quality data. Water depth and light penetration optimal. Catchment has been reduced because of rutting around the wetland edges, water not flowing into wetland as it historically would. |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current with | 9 | Cover by appropriate species in all strata. Invasive or exotic species not present. Evidence of regeneration and recruitment (pondcypress, <i>Taxodium ascendens</i> ; black gum, <i>Nyssa biflora</i> ; and shrubs too). Age and size class distribution typical though missing older cohorts (largest dbh trees). Optimal structural habitat (snags, dens, cavities visible). Plants in good condition. No insect disease, stress, chlorotic leaves, etc. Land management practices not optimal. No supplemental ground cover species planted. Prescribed fire will nor carry with current lack of fine fuel load. Topographic features present and normal within wetland assessment area, but ecotone (and outside support area) suffers from rutting. No evidence of siltation and algae growth to impede vegetation. |

| | | |
|---|---------|------|
| Score = sum of above scores/30 (if uplands, divide by 20) | current | with |
| 0.87 | | |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Form 62-345.900(2), F.A.C. [effective date 02-04-2004]

Lob_CYP_2 Wetland Rapid Assessment Procedure, page 1

Project Name: Lob_CYP_2 - Lololly Mitigation Bank

Date: 9/29/05

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: Palustrine forested wetland, clear tannic water, some algal growth on submerged woody debris and vegetation. Support area immediately adjacent to wetland has been timbered within the past two years.

Wetland Assessment Area: 0.7 ha (1.7 ac)

FLUCCS Code/Description: 6210 Cypress

| | |
|------|---------------------------|
| 2.5 | Wildlife Utilization (WU) |
| 3.0 | Wetland Canopy (O/S) |
| 2.5 | Wetland Ground Cover (GC) |
| 2.5 | Habitat Support/Buffer |
| 2.5 | Field Hydrology (HYD) |
| 3.0 | WQ Input & Treatment (WQ) |
| 16.0 | SUM |
| 6 | Count |
| 0.89 | WRAP |

Lob_CYP_2 Wetland Rapid Assessment Procedure, page 2

| | |
|--|----------------------------------|
| 2.5 | Wildlife Utilization (WU) |
| <p>Spider eggs, palm warbler, *game trails, *dees tracks and turkey in support area, spiny cral-like orb weaver spider, *oak toad, leopard frog, heard noise of animals scurrying away at wetland edge - couldn't find, common yellow throat, downy woodpecker, *scat in upland/edge (perhaps otter because of piled up vegetation and location on water banks. Deer use in support area, small fish and expect macroinvertebrates (did see dragonflies for example). Abundant upland food sources. Greater than minimal human disturbance, adjacent pine harvested and rutted uplands surrounding wetlands. Dragonfly, fish (small), red shouldered hawk call, large insect casing, bluegray gnatcatcher, potential gatore hole, bird nest in trees, small mammal nest of cypress bark in tree cavity on hummock, green anoles, many overhead red spiders, grasshoppers variety of flying insects, *common buckey butterfly, *cricket frogs, Carolina wren calling, *sleepy orange butterfly. (* signifies evidence is support area).</p> | |

| | |
|---|-----------------------------|
| 3.0 | Wetland Canopy (O/S) |
| <p>Pondcypress (<i>Taxodium ascendens</i>) regeneration (cones) and recruitment. Black gum (<i>Nyssa biflora</i>) recruitment too. Large pondcypress snags, fire scars on east edge. Slash pine (<i>Pinus elliottii</i>) regeneration on edge. No invasive canopy or midstory trees. Good habitat support - some dead low branches (result of fire suppression). Age and size class distribution lower end (younger, smaller dbh), but nice uneven aged stand. Did let in more light than perhaps should and shrubs at higher density than optimal. Some snags with cavities and dens. Canopy appeared healthy.</p> | |

| | |
|--|----------------------------------|
| 2.5 | Wetland Ground Cover (GC) |
| <p>No exotic species noted. Tire left in wetland. Few open patches with pickerel weed (<i>Pontederia cordata</i>), otherwise limited of understory because of shade from trees and shrubs. Suffering from lack of periodic burning and now that the pines have been harvested there is nothing to carry a fire to the ecotone.</p> | |

| 2.5 | Habitat Support/Buffer | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-------------------------------|-------------|-------------|-------------|-------------|----------------|-----|---|-----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----------------|--|--|------------|
| <p>Rutting up of ground on northwest and northeast edge where we walked out into the buffer, not so much on east edge. Buffer >300 feet with great plant species richness, but missing species necessary for fine fuels. Perhaps the seed bank would come back with a series of winter burns? No exotic species identified. The nuisance species cattail (<i>Typha</i> sp.) in roadside ditches on property.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Buffer Type</th> <th style="width: 10%;">(Score) x</th> <th style="width: 10%;">(% of Area)</th> <th style="width: 20%;">= Sub Total</th> </tr> </thead> <tbody> <tr> <td>Disturbed land</td> <td style="text-align: center;">2.5</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2.5</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td colspan="3" style="text-align: right;">Total =</td> <td style="text-align: center;">2.5</td> </tr> </tbody> </table> | | Buffer Type | (Score) x | (% of Area) | = Sub Total | Disturbed land | 2.5 | 1 | 2.5 | | | | | | | | | | | | | | | | | Total = | | | 2.5 |
| Buffer Type | (Score) x | (% of Area) | = Sub Total | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Disturbed land | 2.5 | 1 | 2.5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total = | | | 2.5 | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | |
|--|------------------------------|
| 2.5 | Field Hydrology (HYD) |
| <p>Lenticels on black gum (<i>Nyssa biflora</i>), moss collars intact on hummocks and tree bases, cypress knees and loop roots, large hummock development, stain lines. No upland species encroachment. No soil subsidence. Hydrology adequate to maintain viable wetland. Hydroperiod recovering - lichen line not as distinct as anticipated. Adjacent to negetive impacts - rutted up areas pool water, diverts water away, and not feeding the wetland as anticipated.</p> | |

| | |
|-----|---------------------------------------|
| 3.0 | WQ Input & Treatment (WQ)* |
|-----|---------------------------------------|

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| Natural Undev. | 3.0 | 1.00 | 3.0 |
| | | | 0.0 |
| | | | 0.0 |
| LU Total = | | | 3.0 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| Natural Undev. | 3.0 | 1.00 | 3.0 |
| | | | 0.0 |
| | | | 0.0 |
| PT Total = | | | 3.0 |

Appendix B-20. Loxahatchee Mitigation Bank



Figure B-20.1. Landscape location of Loxahatchee Mitigation Bank (green line). Boundary of the wetland assessment areas Lox_SHR outlined in orange, Lox_CYP outlined in blue, and Lox_FOR outlined in yellow.

(A)



(B)



Figure B-20.2. Site photos of (A) Lox_SHR, and (B) Lox_CYP. Lox_FOR does not have a site photo.

Lox_SHR Uniform Mitigation Assessment Method, page 1
PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

| | | | |
|---|---|---|---|
| Site/Project Name Loxahatchee Mitigation Bank | | Application Number NA | Assessment Area Name or Number Lox_SHR |
| FLUCCs code 1995 - 6172 Mixed Wetland Hardwood, mixed shrub | Further classification (optional) NWI - Palustrine Forested; soils - Okeelanta muck | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size 184 acres |
| Basin/Watershed Name/Number HUC - SE Florida Coast; | Affected Waterbody (Class) Class III | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) no | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands The North Parcel of Lox. Mitigation bank is an impoundment, the wetland is surrounded by berms with canals on the outside of these berms. The Lox bank wetlands only connect as a source of discharge water at times of high water which has not yet happened even after the three hurricanes in 2004 caused high water levels. | | | |
| Assessment area description Impounded contiguous wetland. The wetland mosaic is an organic flat, historically part of the greater Everglades. The vegetative community has areas of shrubby wetlands with willow (<i>Salix caroliniana</i>), wax myrtle (<i>Myrica cerifera</i>), button bush (<i>Cephalanthus occidentalis</i>), and pond apple (<i>Annona glabra</i>). Also areas of red maple (<i>Acer rubrum</i>) and some more open spots have some sawgrass (<i>Cladium jamaicense</i>). Understory includes numerous ferns and herbaceous aquatics. There is at least 1 foot of standing water. | | | |
| Significant nearby features Loxahatchee National Wildlife Refuge on the Western boundary, over the berm and canal. SFWMD water reservoir North and East of the WAA, on the other side of berm and canal. | Uniqueness (considering the relative rarity in relation to the regional landscape.) West of the bank is the Loxahatchee wildlife refuge and further West the landscape changes to sugar cane agriculture. Land North, South and East of the bank are commercial and residential and are already or rapidly being developed. | | |
| Functions Surface and subsurface water storage. Nutrient cycling. Provide wildlife habitat. | Mitigation for previous permit/other historic use Mitigation bank in year 2 of restoration. | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Turtles, frogs, alligators, woodpeckers, wading birds, osprey, raccoon, bobcat, deer, fish, salamanders, complete spp. list in the 2005 monitoring report. | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Limpkin SSC - observed during site visit; Woodstork END - observed during site visit. Snail Kite END - has not been observed; Little Blue Heron; American Alligator; White Ibis, Snowy Egrets, Tri Color heron, glossy ibis are all SSC | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Saw numerous wading birds including Limpkin SSC. Saw evidence of game/alligator trails. Heard frogs. Large diversity of butterflies and caterpillars. Saw apple snail egg clusters and empty apple snail shells. | | | |
| Additional relevant factors: Biologist guiding us on the site visit commented that there is more water on the site then usual. This is a good thing, the bank has been below its target for wetland hydrology. This area will probably never have the open saw grass community that was envisioned for much of the vegetative community on the North Parcel of the Lox. bank. | | | |
| Assessment conducted by: Erica Hernandez & Kelly Chinnners Reiss | | Assessment date(s): 6/29/2005 | |

Lox_SHR Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|---|---|
| Site/Project Name Loxahatchee | Application Number NA | Assessment Area Name or Number Lox_SHR |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinnners Reiss & Erica Hernandez | Assessment date: 6/29/2005 |

| 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 |

| | |
|--|--|
| <p>.500(6)(a) Location and Landscape Support</p> <p>w/o pres or current <input type="checkbox"/> with <input type="checkbox"/></p> <p>6</p> | <p>Adjacent landscape to the West is a berm, canal then Lox. Refuge. Completely surrounded by berms and canals. Florida Power and Light in-holding to the South and on other side of canal area there is an urban interface with residential homes to the East. No real upland support or natural edge or grading into an upland. There are engineered gator crossings on the berm. Wildlife that can move about easily like birds can travel between the refuge and the bank easily. Many exotics on the berms and on bordering properties, agricultural fields and fallow lands. Canals can be an obstruction to some animals but bobcats and raccoons could probably cross it. No downstream effects, the wetlands are not connected to the canals. Adverse impacts to wildlife, on East edge, 441 and residential homes, vector for nuisance animals like feral cats and dogs. Lawn chemicals wouldn't effect bank because urban runoff flows into the canals that would by pass the WAA, though they do experience seepage from the berm banks.</p> |
| <p>.500(6)(b)Water Environment (n/a for uplands)</p> <p>w/o pres or current <input type="checkbox"/> with <input type="checkbox"/></p> <p>7</p> | <p>Water levels are lower than and slightly different than target hydrology for the success criteria. Monitoring report said water levels are inappropriate. Site has standing water during site visit. Soils are inundated. Dead and dying trees from intentionally killing of exotics and hurricane damage. There was more hurricane damage to trees (red maple, <i>Acer rubrum</i>) maybe because hydrology wasn't right and trees are stressed? Wading birds observed, heard frogs. Water clarity looked good. In some open areas saw some cattail (<i>Typha</i> spp.) near the berm. Some of the species present can be tolerant of moderate water degradation. Water is very tannic.</p> |
| <p>.500(6)(c)Community structure</p> <p>1. Vegetation and/or 2. Benthic Community</p> <p>w/o pres or current <input type="checkbox"/> with <input type="checkbox"/></p> <p>7</p> | <p>Desirable and appropriate plant species. Exotics are minimal. Young pond apple (<i>Annona glabra</i>) observed, evidence of regeneration. No comment on age and size distribution. Snags of dead trees standing due to killing of exotics, check success criteria. Vegetation looks very healthy. Water control features can effect site. Topographic features, refugia ponds, hummocks etc. are appropriate.</p> |

| |
|--|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current <input type="checkbox"/> with <input type="checkbox"/> |
| 0.67 |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Lox_SHR Wetland Rapid Assessment Procedure, page 1

Project Name: Lox_SHR, Loxahatchee Mitigation Bank

Date: 6/29/2005

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: Shrubby wetland - towards the center of the wetland

is an open area with cut-over *Melaleuca quinquenervia* with stumps cut and treated and woody

debris left in the wetland, farther to the E the presence of *Acer rubrum* becomes more apparent.

Wetland Assessment Area: 113 ha (184 ac)

FLUCCS Code/Description: SFWMD 1995 6300-Wetland Forested Mixed & 6172-Mixed Wetland

Hardwood/Mixed Shrub

| | |
|------|---------------------------|
| 1.5 | Wildlife Utilization (WU) |
| 2.5 | Wetland Canopy (O/S) |
| 2.5 | Wetland Ground Cover (GC) |
| 1.0 | Habitat Support/Buffer |
| 2.0 | Field Hydrology (HYD) |
| 1.4 | WQ Input & Treatment (WQ) |
| 10.9 | SUM |
| 6 | Count |
| 0.60 | WRAP |

Lox_SHR Wetland Rapid Assessment Procedure, page 2

| | |
|---|----------------------------------|
| 1.5 | Wildlife Utilization (WU) |
| Moderate evidence of wildlife use, though visit was on a rainy/overcast day. Visual identification of limpkins and cardinals. Limited adjacent food, cover, etc. for wildlife species. Adequate cover in the wetland, difficult to access adjacent areas (for wildlife) because of berms without cover (mower roads) and canals with steep banks, also somewhat limited availability because some surrounding landuses have predominantly invasive or nuisance species. | |

| | |
|--|-----------------------------|
| 2.5 | Wetland Canopy (O/S) |
| Less than 10% invasive canopy and midstory. Some natural recruitment of <i>Annona glabra</i> , though no strong evidence it is in fruit. No evidence of den trees but some snags, much of these areas dominated by pockets of <i>Acer rubrum</i> , perhaps relics of some past hydrologic changes. Large <i>Salix caroliniana</i> stems. Some concern about current species composition, for example, one large <i>Taxodium ascendens</i> (pondcypress) tree in the entire assessment area we walked through - where are the others? | |

| | |
|---|----------------------------------|
| 2.5 | Wetland Ground Cover (GC) |
| Less than 25% nuisance or invasive species, including <i>Typha</i> sp., <i>Lygodium</i> sp. (though this is a vine), <i>Schinus terebinthifolius</i> (though this is a shrub, there was regeneration in the <1m tall, no dbh range of vegetation). Also has some desirable wetland species such as <i>Saururus cernuus</i> and <i>Polygonum punctatum</i> . Some human induced impact in wetland. | |

| 1.0 | Habitat Support/Buffer | | | | | | | | | | | | |
|---|---|-------------|-------------|-------------|-------------|-----|-----|---|-----|----------------|--|--|------------|
| Buffer >30 ft wide because of roads and canals. Does have FPL easement, which is not managed for exotics, has mowed roads, canals, and many many weeds. | | | | | | | | | | | | | |
| | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;">Buffer Type</th> <th style="width: 15%;">(Score) x</th> <th style="width: 15%;">(% of Area)</th> <th style="width: 30%;">= Sub Total</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">All</td> <td style="text-align: center;">1.0</td> <td style="text-align: center;">1</td> <td style="text-align: center;">1.0</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total =</td> <td style="text-align: center;">1.0</td> </tr> </tbody> </table> | Buffer Type | (Score) x | (% of Area) | = Sub Total | All | 1.0 | 1 | 1.0 | Total = | | | 1.0 |
| Buffer Type | (Score) x | (% of Area) | = Sub Total | | | | | | | | | | |
| All | 1.0 | 1 | 1.0 | | | | | | | | | | |
| Total = | | | 1.0 | | | | | | | | | | |

| | |
|---|------------------------------|
| 2.0 | Field Hydrology (HYD) |
| Adequate hydrology with some regeneration of <i>Annona glabra</i> and <i>Acer rubrum</i> . Presence of <i>Myrica cerifera</i> (FAC) and many FAC vines (from NWI, since FDEP does not categorize vines, so these would be "invisible by FDEP). Such vines include <i>Ampelopsis arborea</i> (peppervine), <i>Parthenocissus quinquefolia</i> (Virginia creeper), <i>Momordica</i> spp. (balsampear), etc. Inundation prevented anticipated evidence of soil subsidence. Negative impacts present, surrounded by berms and canals. | |

1.4 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| berm/canal | 1.0 | 1.0 | 1.0 |
| | | | 0.0 |
| LU Total = | | | 1.0 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| wet detention | 2.5 | 0.5 | 1.3 |
| very small veg stri | 1.0 | 0.5 | 0.5 |
| PT Total = | | | 1.8 |

*used score for unimproved pasture/rangeland

Water in canals is from agricultural areas, so give score of row crop/improved pasture (1.0)

Surrounded by 5m wide roads and 5 m wide canals, then other landuses, but these are technically not hydrologically connected though there is seepage.

Lox_CYP Uniform Mitigation Assessment Method, page 1

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

| | | | |
|--|---|--|---|
| Site/Project Name Loxahatchee Mitigation Bank | | Application Number NA | Assessment Area Name or Number Lox_CYP |
| FLUCCs code SFWMD 1995 6210-Cypress, 6300-Wetland Forested Mixed, & 6170-Mixed Wetland Hardwood | Further classification (optional) Should be FLUCCS 6210 Cypress for entire area. FWCC Strategic Habitat Conservation Areas - Priority Habitat | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size 82 ha (203 ac) |
| Basin/Watershed Name/Number HUC - Southeast Florida Coast 03090202 | Affected Waterbody (Class) Class III | Special Classification (i.e. OFW, AP, other local/state/federal designation of importance) no | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands This parcel of the Loxahatchee Mitigation bank is surrounded by berms with canals on the outside of these berms to the S and E. Continuous wetland habitats exist to the N and W. This parcel only connects as a source of discharge water at times of high water which has not yet happened even after the three hurricanes in 2004 caused high water levels. | | | |
| Assessment area description Impounded contiguous wetland. The wetland mosaic is a mix of organic flat, shrubs, and cypress dominated forested wetland, historically part of the greater Everglades. The primary canopy species is pond-cypress (<i>Taxodium ascendens</i>). The connected area to the W was considered in a separate assessment due to the change in vegetative community composition. | | | |
| Significant nearby features Loxahatchee National Wildlife Refuge on the Western boundary, across the shrub wetland and over the berm and canal. | Uniqueness (considering the relative rarity in relation to the regional landscape.) West of the bank is the Loxahatchee National Wildlife Refuge and further West the landscape changes to sugar cane agriculture. Land N, S, and E of the bank are commercial and residential and are already or rapidly being developed. | | |
| Functions Surface and subsurface water storage. Nutrient cycling. Provide wildlife habitat. Provides structure for birds for nesting. | Mitigation for previous permit/other historic use Mitigation bank in year 2 of restoration. | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Turtles, frogs, alligators, woodpeckers, wading birds, osprey, raccoon, bobcat, deer, fish, salamanders, complete spp. list in the 2005 monitoring report. | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Limpkin SSC - observed at bank; Wood stork END - observed at bank. Snail Kite END - has not been observed; Little Blue Heron; American Alligator; White Ibis, Snowy Egrets, Tricolored heron, glossy ibis are all SSC | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Visual evidence of deer matting. Raining during visit which limited wildlife viewing and unable to hear and identify wildlife calls. Wading birds seen throughout adjacent areas on drive and inspection of other wetland areas. This was one of the last sites we visited at the bank before being forced to leave because of inclement weather. | | | |
| Additional relevant factors: Biologist guiding us on the site visit commented that there is more water on the site then usual. This is a good thing, the bank has been below its target for wetland hydrology. | | | |
| Assessment conducted by: Erica Hernandez & Kelly Chinnners Reiss | | Assessment date(s): 6/29/2005 | |

Lox_CYP Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|---|---|
| Site/Project Name Loxahatchee Mitigation Bank | Application Number NA | Assessment Area Name or Number Lox_CYP |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinnners Reiss & Erica Hernandez | Assessment date: 6/29/2005 |

| | | | | |
|---|---|---|---|--|
| 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 water functions | 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 w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> | Availability of habitat is fair. Habitat not available in sufficient quantity. Barriers and distance reduce the opportunity of wildlife for access to food and cover. No downstream discharge - the bank is not designed to discharge, though historically it was part of the greater Everglades system. Some negative influences by adjacent land uses (ex. cats disturbing wildlife, people disturbing wildlife, littering, etc.). Water from surrounding urban areas and agricultural lands is diverted in by-pass canal, though some exchange possible through seepage. More than minimal human disturbance. Adjacent areas have some invasive exotic species present, so areas will be actively treated for certain species (i.e. <i>Melaleuca quinquenrvia</i>). |
| | 5 |

| | |
|--|---|
| .500(6)(b) Water Environment (n/a for uplands) w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> | Water levels may be slightly lower than expected. Edge of <i>Taxodium ascendens</i> (pond-cypress) area is very dry, there is a distinct moisture gradient from the wetland towards the berm. The vegetative strata appear appropriate though there are many "invisible" vines throughout. The dominant understory species is the facultative wetland exotic fern <i>Pteris tripartita</i> (giant brake fern). No water discoloration or oil sheen were observed. Water quality data were not available. Did not note distinct lichen lines or water stain lines, perhaps because water levels were higher this year than in any year since the bank was started. We were told that the water levels have been low as compared to the target water levels when the bank was permitted. The canopy appeared to be thin compared to the nearby reference areas. Vines grew thick in understory and midstory suggesting that the site was under hydrologic stress and was much drier than expected (water levels should be high enough to relegate species to growing on hummocks). Conditions considered less than normal, but still maintaining a wetland, as a facultative wetland species was the dominant understory. |
| | 7 |

| | |
|--|--|
| .500(6)(c) Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> | The dominant understory species was the exotic fern <i>Pteris tripartita</i> (giant brake fern), cover greater than "minimal." Tree structure was good, but no regeneration or recruitment noted. Vegetative composition was not comprised of a majority of "appropriate or desirable" species in the shrub and ground cover layers. The canopy/subcanopy was appropriate and consisted of <i>Taxodium ascendens</i> (pond-cypress), <i>Ilex cassine</i> (dahoon holly), and <i>Itea virginica</i> (Virginia willow), though trees had excessive vines growing up them. Indication of permanent deviation for age and size class distribution because of the lack of regeneration of <i>Taxodium ascendens</i> . Topographic features appear optimal. Land management practices have not caused a major shift in the wetland species status though it may cause a major shift in the vegetative community composition - can still have a wetland, but not necessarily a cypress dominated forested wetland. Coarse woody debris and snags appear normal. |
| | 5 |

| |
|--|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current <input type="checkbox"/> with <input type="checkbox"/> |
| 0.57 |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Lox_CYP Wetland Rapid Assessment Procedure, page 1

Project Name: Lox_CYP, Loxahatchee Mitigation Bank

Date: 6/29/2005

Evaluator(s): Kelly Chinners Reiss & Erica Hernandez

Wetland Type/Description: Cypress forested wetland - east side of parcel - canopy of cypress
mostly fern understory and many vines

Wetland Assessment Area: 82 ha (203 ac)

FLUCCS Code/Description: SFWMD 1995 6210-Cypress, 6300-Wetland Forested Mixed, &
6170-Mixed Wetland Hardwood

| | |
|------|---------------------------|
| 1.5 | Wildlife Utilization (WU) |
| 1.5 | Wetland Canopy (O/S) |
| 1.0 | Wetland Ground Cover (GC) |
| 1.5 | Habitat Support/Buffer |
| 1.5 | Field Hydrology (HYD) |
| 1.9 | WQ Input & Treatment (WQ) |
| 8.9 | SUM |
| 6 | Count |
| 0.49 | WRAP |

Lox_CYP Wetland Rapid Assessment Procedure, page 2

| | |
|--|----------------------------------|
| 1.5 | Wildlife Utilization (WU) |
| <p>Visual deer evidence/matting. Rained during site visit which hindered visual sightings and audible calls of wildlife species. To the W is shrub wetland, predominant species was <i>Salix caroliniana</i>. To the E and S is urban sprawl but separated by a road/berm and 10 ft wide canal. More than minimal human disturbance. Not adequate adjacent cover/habitat or upland food sources for wildlife species. Cover is provided by wetland trees, though the presence of exotics can displace and discourage some wildlife use. Wading birds were sited on drive to and from site.</p> | |

| | |
|---|-----------------------------|
| 1.5 | Wetland Canopy (O/S) |
| <p>Little evidence of recruitment of native overstory and shrubs. Did see <i>Itea virginica</i> (Virginia willow). Covered by exotic <i>Pteris tripartita</i> (giant brake fern) - which excluded typical subcanopy species. This fern grew very dense and shaded out the all prospects of regeneration. The shrub layer appears highly disturbed. No evidence of fire. Generally the <i>Taxodium ascendens</i> (pond cypress) trees looked healthy with many older trees with large diameters. There was abundant desirable overstory, and minimal desirable shrubs. There was no evidence of disease or insect damage or snags due to hydrologic or other problems.</p> | |

| | |
|---|----------------------------------|
| 1.0 | Wetland Ground Cover (GC) |
| <p>Some desirable ground cover species in patches, but cover was sparse. Mostly cover was by the exotic <i>Pteris tripartita</i> (giant brake fern) and vines - these covered ? 50% of the area, so little remaining areas for colonization by desirable species.</p> | |

| | | | | | |
|--|-------------------------------|---------------|-----------|-------------|-------------|
| 1.5 | Habitat Support/Buffer | | | | |
| <p>E & S are bers/canal/housing in < 30 ft. W & N are wetland shrub system connected - > 300 ft. wide of mostly but not predominantly desirable species - do provide food, cover, etc.</p> | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | Berms/Canals | 0.5 | 0.5 | 0.3 |
| | | Wetland Shrub | 2.5 | 0.5 | 1.3 |
| Total = | | | | | 1.5 |

| | |
|---|------------------------------|
| 1.5 | Field Hydrology (HYD) |
| <p>The exotic fern species <i>Pteris tripartita</i> (giant brake fern) is FACW and covers a great deal of the area. Lots of cover by "invisible" vine species. So, of those species that count, approximately 90-95% are wetland dependent species. No evidence of upland or transitional species encroachment. No evidence of soil subsidence. Mostly flooded throughout wetland, but patchy dry areas did not show evidence of subsidence. Hydrology adequate for maintenance of wetland, but perhaps not for the regeneration of the canopy species (ex. seed scarification of <i>Taxodium ascendens</i>).</p> | |

1.9 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|--------------------|-----------|-------------|-------------|
| N-impaired wetland | 2.0 | 0.1 | 0.2 |
| W-impaired wetland | 2.0 | 0.5 | 1.0 |
| E-berm/canal | 1.0 | 0.35 | 0.4 |
| S-berm/canal | 1.0 | 0.05 | 0.1 |
| LU Total = | | | 1.6 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| W-nat. undev. | 3.0 | 0.1 | 0.3 |
| N-nat. undev. | 3.0 | 0.5 | 1.5 |
| E-small strip | 1.0 | 0.35 | 0.4 |
| S-small strip | 1.0 | 0.05 | 0.1 |
| PT Total = | | | 2.2 |

Surrounded by 5 m wide road/berm and then 5 m wide canals. Then, urban land uses, though these drain into the canals and not directly into the wetlands - only through seepage through berm walls. The water input into the canals is predominantly upstream agricultural land uses, so it was assigned a row crop or improved pasture score.

Lox_FOR Uniform Mitigation Assessment Method, page 1

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

| | | | |
|--|---|---|---|
| Site/Project Name Loxahatchee Mitigation Bank | | Application Number NA | Assessment Area Name or Number Lox_FOR |
| FLUCCs code 1995 - N section 6300 Wetland Forested Mixed; S section 6170 Mixed Wetland Hardwood | Further classification (optional) FWCC Strategic Habitat Conservation Areas - Priority Habitat | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size 282 ha |
| Basin/Watershed Name/Number HUC - SE Florida Coast; | Affected Waterbody (Class) Class III | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) no | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands This parcel of the Loxahatchee Mitigation bank is surrounded by berms with canals on the outside of these berms to the S and W. Continuous wetland habitats exist to the N and E. This parcel only connect as a source of discharge water at times of high water which has not yet happened even after the three hurricanes in 2004 caused high water levels. | | | |
| Assessment area description Impounded contiguous wetland. The wetland mosaic is an organic flat, historically part of the greater Everglades. The vegetative community has areas of shrubby wetlands with willow (<i>Salix caroliniana</i>), wax myrtle (<i>Myrica cerifera</i>), button bush (<i>Cephalanthus occidentalis</i>), and pond apple (<i>Annona glabra</i>). The connected area to the E was considered in a separate assessment due to the forested nature of this system. | | | |
| Significant nearby features Loxahatchee National Wildlife Refuge on the Western boundary, over the berm and canal. | Uniqueness (considering the relative rarity in relation to the regional landscape.) West of the bank is the Loxahatchee National Wildlife Refuge and further West the landscape changes to sugar cane agriculture. Land N, S, and E of the bank are commercial and residential and are already or rapidly being developed. | | |
| Functions Surface and subsurface water storage. Nutrient cycling. Provide wildlife habitat. | Mitigation for previous permit/other historic use Mitigation bank in year 2 of restoration. | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Turtles, frogs, alligators, woodpeckers, wading birds, osprey, raccoon, bobcat, deer, fish, salamanders, complete spp. list in the 2005 monitoring report. | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Limpkin SSC - observed at bank; Woodstork END - observed at bank. Snail Kite END - has not been observed; Little Blue Heron; American Alligator; White Ibis, Snowy Egrets, Tri Color heron, glossy ibis are all SSC | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Did not observe mammal or reptile usage, but assumption are that it is used because of evidence of game trails. Site visit on rainy/stormy day in the summer, may have limited wildlife viewing. | | | |
| Additional relevant factors: Biologist guiding us on the site visit commented that there is more water on the site then usual. This is a good thing, the bank has been below its target for wetland hydrology. This area will probably never have the open saw grass community that was envisioned for much of the vegetative community on the North Parcel of the Lox. bank. | | | |
| Assessment conducted by: Erica Hernandez & Kelly Chinnners Reiss | | Assessment date(s): 6/29/2005 | |

Lox_FOR Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|---|---|
| Site/Project Name Loxahatchee Mitigation Bank | Application Number NA | Assessment Area Name or Number Lox_FOR |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinnners Reiss & Erica Hernandez | Assessment date: 6/29/2005 |

| |
|---|
| 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 |

| | |
|---|--|
| <p>.500(6)(a) Location and Landscape Support</p> <p>w/o pres or current with</p> <p>6 <input type="checkbox"/></p> | <p>W edge has berm and canal then WCA1. E borders 60m wide cypress wetland. S borders berm and canal and then an urban interface with houses and roads. Not providing the full range of most wildlife needs, and support habitats are not available in sufficient quantity or diversity for all wildlife support needs. Some exotic species in areas adjacent to the assessment area (ex. the FACW <i>Pteris tripartita</i> fern). Also, <i>Lygodium</i> spp. vine in the cypress wetland to the E. Some adverse impacts from the urban interface to the south and across the cypress wetland to the E - including cats and dogs harming wildlife, noise and air pollution, physical garbage piles, etc.</p> |
| <p>.500(6)(b)Water Environment (n/a for uplands)</p> <p>w/o pres or current with</p> <p>9 <input type="checkbox"/></p> | <p>High standing water level, not abnormal for antecedent weather, but may not be normal for vegetative community, consultant suggested water levels are lower than anticipated because of the bank seepage removing water from the wetland and into the adjacent canals. Water level indicators: did see adventitious rooting on <i>Ludwigia peruviana</i> - appears to confirm stationary water level or at least a persistent water level. No comments on soil moisture and erosion because of inundation. No evidence of atypical fire history. No evidence of abnormal vegetation zonations. More hurricane damage visible in this parcel than throughout the bank, large exotic plum tree (<i>Syzygium</i> sp.) fallen and created large gap. Water coloration appeared good, no turbidity or discoloration - high color from tanins. Could see submerged species like <i>Bacopa</i> sp. and parrot-feather. No excess algal growth. No species indicative of water quality degradation.</p> |
| <p>.500(6)(c)Community structure</p> <p>1. Vegetation and/or 2. Benthic Community</p> <p>w/o pres or current with</p> <p>5 <input type="checkbox"/></p> | <p>Wetland species include <i>Salix caroliniana</i>, <i>Annona glabra</i>, <i>Sabal palmetto</i>, <i>Cephalanthus occidentalis</i>, <i>Acer rubrum</i>. Land management practices result in fire suppression and water impoundment, no natural water exchange with surrounding wetlands (separated by berms and canals). More than "minimal" cover by exotic and nuisance species such as <i>Ludwigia peruviana</i>, <i>Lygodium</i> spp., <i>Syzygium</i> spp., <i>Solanum viarum</i>. Cover greater than "minimal" undesirable species because of <i>Ludwigia peruviana</i>, perhaps 35% cover. Ground cover has ? 50% cover by undesirable species, though some areas with predominantly native species are mixed in too. There is a thicker shrub layer than expected. Perhaps decreased refugia ponds. The aquatic plant community appears to be in good condition. Exotic species presence (and abundance) is expected to hinder plant successional trends. More hurricane damage in this area compared to other areas in the bank has led to an increase in the woody debris and snags in this wetland.</p> |

| |
|---|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current with |
| 0.67 <input type="checkbox"/> |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Lox_FOR Wetland Rapid Assessment Procedure, page 1

Project Name: Lox_FOR, Loxahatchee Mitigation Bank

Date: 6/29/2005

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: Shrub/scrub wetland currently, was intended to be restored
as sawgrass marsh. However, 1995 FLUCCS considered it 6300 Wetland Forested Mixed and
6170 Mixed Wetland Hardwoods.

Wetland Assessment Area: 282 ha

FLUCCS Code/Description: SFWMD 1995 6300 & 6170 - Mixed Forested

| | |
|------|---------------------------|
| 1.5 | Wildlife Utilization (WU) |
| 2.0 | Wetland Canopy (O/S) |
| 2.0 | Wetland Ground Cover (GC) |
| 0.5 | Habitat Support/Buffer |
| 2.0 | Field Hydrology (HYD) |
| 1.3 | WQ Input & Treatment (WQ) |
| 9.3 | SUM |
| 6 | Count |
| 0.52 | WRAP |

Lox_ FOR Wetland Rapid Assessment Procedure, page 2

| | |
|---|---------------------------|
| 1.5 | Wildlife Utilization (WU) |
| <p>Did not observe mammal or reptile usage, though visit during stormy/rainy day. In area of frequent human disturbance. Limited adjacent upland food sources - wetland food sources on adjacent wetland or across berm and canal through WCA1. Less than limited habitat for birds and mammals outside of the assessment area and bank boundaries on to E and S. Species composition high exotics in these adjacent areas limits some of its utility to wildlife. Berms and canals pose as barriers to wildlife accessibility.</p> | |

| | |
|---|----------------------|
| 2.0 | Wetland Canopy (O/S) |
| <p>Some undesirable tree and shrub species including <i>Syzygium</i> spp. And <i>Ludwigia peruviana</i> , approximately 25% cover by these species. No natural recruitment or regeneration noted for the native species <i>Annona glabra</i> . Structure does provide for some habitat support.</p> | |

| | |
|--|---------------------------|
| 2.0 | Wetland Ground Cover (GC) |
| <p>Some <i>Solanum viarum</i> (tropical soda apple) in groundcover and many hummocks covered by <i>Lygodium</i> spp. And moon vine. The thick density of <i>Ludwigia peruviana</i> in patches makes the groundcover difficult to see. We were concerned with the limitations of the scoring for this category, because we did see <i>Bacopa</i> sp. and parrots feather, but not much else in the way of desirable groundcover - but did not score down too low because the nuisance (<i>Ludwigia peruviana</i>) and exotic (<i>Lygodium</i> sp. and moon vine) are not considered groundcover, but shrub and vines!</p> | |

| 0.5 | Habitat Support/Buffer | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|-------------|-------------|-------------|-------------|---|-----|-----|-----|---|-----|-----|------|---|-----|-----|------|---|-----|-----|-----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----------------|--|--|------------|
| <p>E - approximately 50 m wide cypress wetland. S - urban with a 30m buffer by a canal and berm and then housing. N - 30 m berm and canal and then wetland as part of mitigation bank, not composed of desirable plants for food, cover, etc. W - 30m berm and canal and then wetland as part of WCA1, with some desirable species, though a large canal, maybe another 30m on other side of berm and then thick wall of <i>Typha</i> spp. and other less than desirable vegetation.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>Buffer Type</th> <th>(Score) x</th> <th>(% of Area)</th> <th>= Sub Total</th> </tr> </thead> <tbody> <tr> <td>E</td> <td>0.5</td> <td>0.2</td> <td>0.1</td> </tr> <tr> <td>S</td> <td>0.5</td> <td>0.1</td> <td>0.05</td> </tr> <tr> <td>N</td> <td>0.5</td> <td>0.1</td> <td>0.05</td> </tr> <tr> <td>W</td> <td>0.5</td> <td>0.6</td> <td>0.3</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="3">Total =</td> <td>0.5</td> </tr> </tbody> </table> | Buffer Type | (Score) x | (% of Area) | = Sub Total | E | 0.5 | 0.2 | 0.1 | S | 0.5 | 0.1 | 0.05 | N | 0.5 | 0.1 | 0.05 | W | 0.5 | 0.6 | 0.3 | | | | | | | | | | | | | | | | | Total = | | | 0.5 |
| Buffer Type | (Score) x | (% of Area) | = Sub Total | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E | 0.5 | 0.2 | 0.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S | 0.5 | 0.1 | 0.05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| N | 0.5 | 0.1 | 0.05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| W | 0.5 | 0.6 | 0.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total = | | | 0.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | |
|--|-----------------------|
| 2.0 | Field Hydrology (HYD) |
| <p>No natural hydroperiod because of berms and canals, but hydrology is adequate to maintain a viable wetland, as evidenced by the presence of Obligate and Facultative Wetland species.</p> | |

| | |
|-----|----------------------------|
| 1.3 | WQ Input & Treatment (WQ)* |
|-----|----------------------------|

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|----------------------|-----------|-------------|-------------|
| E - cypress impacted | 2.0 | 0.2 | 0.4 |
| S - urban/berm | 1.0 | 0.1 | 0.1 |
| N - berm | 1.0 | 0.1 | 0.1 |
| W - berm | 1.0 | 0.6 | 0.6 |
| | | | |
| | | | |
| LU Total = | | | 1.2 |

*used score for unimproved pasture/rangeland

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-------------------------|-----------|-------------|-------------|
| E - natural undeveloped | 3.0 | 0.2 | 0.6 |
| S - small strip | 1.0 | 0.1 | 0.1 |
| N - small strip | 1.0 | 0.1 | 0.1 |
| W - small strip | 1.0 | 0.6 | 0.6 |
| | | | |
| | | | |
| PT Total = | | | 1.4 |

Appendix B-21. Panther Island Mitigation Bank

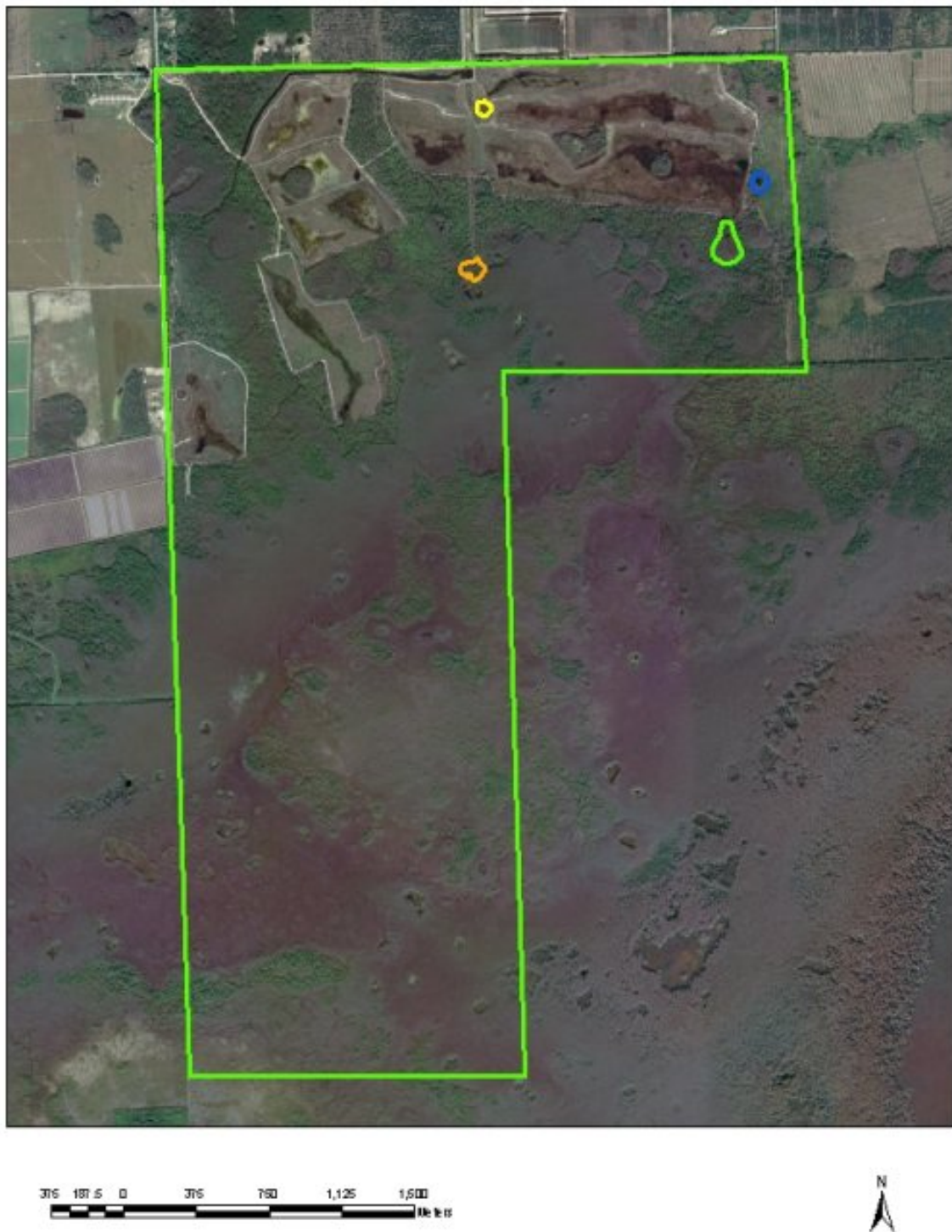


Figure B-21.1. Landscape location of Panther Island Mitigation Bank (green line). Boundary of the wetland assessment areas: Pant_CYP_1 is outlined in yellow, Pant_CYP_2 is outlined in blue, Pant_CYP_3 is outlined in green, and Pant_FOR is outlined in orange.

(A)



(B)



(C)



(D)



Figure B-21.2. Site photos of (A) Pant_CYP_1 (B) Pant_CYP_2 (C) Pant_CYP_3 and (D) Pant_FOR.

Pant_CYP_1 Uniform Mitigation Assessment Method, page 1
PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

| | | | |
|--|--|---|--|
| Site/Project Name Panther Island Mitigation Bank | | Application Number NA | Assessment Area Name or Number Pant_CYP_1 |
| FLUCCs code 1995 - 621 Cypress | Further classification (optional) depressional forested | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size 2 ha |
| Basin/Watershed Name/Number HUC 03090204 Everglades-West Coast | Affected Waterbody (Class) Class III | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) no | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands No surface hydrologic connection to other wetlands. Surrounded by dirt road and disturbed uplands for 20-60 m, than surrounded by created freshwater marsh. Forested slough system to the south. Nearby land uses include agricultural activities (row crops and pasture) and a large, lighted tower with guide wires. | | | |
| Assessment area description Depressional forested wetland, immediately adjacent land is disturbed upland. Wetland with predominantly <i>Taxodium ascendens</i> canopy and some mixed species; slightly open canopy with weedy species below. Many exotic species in wetland and support area. | | | |
| Significant nearby features Corkscrew Swamp Sanctuary to east which is also continuous with C.R.E.W. to NE and Golden Gate Estates to SW | Uniqueness (considering the relative rarity in relation to the regional landscape.) considered FWCC Priority Habitat under Strategic Habitat Conservation Areas | | |
| Functions wildlife habitat and refuge, in particular waterfowl, wading birds, and aquatic animals, which may depend on cypress swamps for breeding purposes; provide water storage by holding excess water and slowly releasing it into the water table; enhance water quality by absorbing nutrients from the water | Mitigation for previous permit/other historic use Mitigation Bank | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) <i>Odocoileus virginianus</i> (white-tailed deer), <i>Procyon lotor</i> (raccoon), | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Puma concolor coryi</i> (Florida panther) ^E , <i>Mycteria americana</i> (wood stork) ^E , <i>Ursus americanus floridanus</i> (Florida black bear) ^T , <i>Alligator mississippiensis</i> (alligator) ^T , <i>Aramus guarana</i> (limpkin) ^{SSC} , | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): rabbit droppings, viceroy butterfly, dead tadpoles in swamp buggy tire ruts, cricket frog calls, downy woodpecker, observed frogs (?leopard frogs), crayfish parts, shrimp in water column, scat of something large that consumed coco plums, red rat snake, alligator trails | | | |
| Additional relevant factors: none | | | |
| Assessment conducted by: Kelly Chinnners Reiss & Erica Hernandez | | Assessment date(s): 8/16/2005 | |

Pant_CYP_1 Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|---|--|
| Site/Project Name Panther Island Mitigation Bank | Application Number NA | Assessment Area Name or Number Pant_CYP_1 |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinnners Reiss & Erica Hernandez | Assessment date: 8/16/2005 |

| |
|---|
| 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 |

| | |
|---|--|
| <p>.500(6)(a) Location and Landscape Support</p> <p>w/o pres or current <input type="checkbox"/> with <input type="checkbox"/></p> <p>7 <input type="checkbox"/></p> | <p>habitat outside the assessment area provides adequate/good cover, forage, and habitat support for species; surrounded by created marsh and patches of disturbed upland planted with <i>Pinus elliottii</i>; invasive exotics do occur in the proximity of the assessment area and there is a continuously available seed source; wildlife access is ok with no distance or barriers, a small 12ft wide canal exists to the north carrying offsite agricultural wetland to a forested system to the south; system is not connected, so no scoring on downstream impacts; large cell tower with light and guide wires on adjacent property - attracts neotropical migratory birds and kills them.</p> |
| <p>.500(6)(b)Water Environment (n/a for uplands)</p> <p>w/o pres or current <input type="checkbox"/> with <input type="checkbox"/></p> <p>8 <input type="checkbox"/></p> | <p>water level is lower than it had been because the lichen lines are not perfectly distinct, the lichen line is approximately 2ft higher than the water stains and moss collars with spotted lichens occurring from the distinct lichen lines down to the moss collars; catchment size has been reduced, had been receiving agricultural waters from agricultural fields which have been converted into created marsh, water levels now known to be lower than previously from agricultural water inputs; fire history - has had fire but not atypical and not extreme; zonation ok, do not see signs of hydrologic stress or insect damage; see tadpols, fish, shrimp which have specific hydrologic requirements; some turbidity in the water column, and more algae growth than expected.</p> |
| <p>.500(6)(c)Community structure</p> <p>1. Vegetation and/or 2. Benthic Community</p> <p>w/o pres or current <input type="checkbox"/> with <input type="checkbox"/></p> <p>6 <input type="checkbox"/></p> | <p>majority of plant cover appropriate in canopy; however, shrub and groundcover not comprised of a majority of appropriate species - including <i>Alternanthera philoxeroides</i>, <i>Hymenachne amplexicalis</i>, <i>Ludwigia peruviana</i>, <i>Schinus terebinthifolius</i>, and <i>Urena lobata</i>; cover is more than minimal but not a majority by exotic species; tree layer has normal regeneration and appropriate age class distribution, some very large mature trees with very large buttresses; land management practices include prescribed fires and exotic species control; amount of coarse woody debris much greater than expected because of land management practices, where <i>Schinus terebinthifolius</i> is cut and sprayed and left to decompose; plant condition generally good - some foraging of <i>Thalia geniculata</i> but not necessarily excessive overall species; land management generally appropriate; refugia ponds and topographic relief appropriate, though perhaps lessened by large piles of woody debris in south; more than minor algal growth observed.</p> |

| |
|--|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current <input type="checkbox"/> with <input type="checkbox"/> |
| 0.70 <input type="checkbox"/> |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Pant_CYP_1 Wetland Rapid Assessment Procedure, page 1

Project Name: Pant_CYP_1- Panther Island Mitigation Bank

Date: 8/16/2005

Evaluator(s): Kelly Chinners Reiss & Erica Hernandez

Wetland Type/Description: depressional forested wetland

surrounded by created marsh, encircled by dirt swamp buggy road, some patches of
regenerating disturbed uplands, planted with *Pinus elliottii* and *Chrysobalanus icaco*

Wetland Size: 80m N/S by 65 m E/W

FLUCCS Code/Description:

| | |
|------|---------------------------|
| 3.0 | Wildlife Utilization (WU) |
| 3.0 | Wetland Canopy (O/S) |
| 1.5 | Wetland Ground Cover (GC) |
| 2.5 | Habitat Support/Buffer |
| 2.5 | Field Hydrology (HYD) |
| 2.8 | WQ Input & Treatment (WQ) |
| 15.3 | SUM |
| 6 | Count |
| 0.85 | WRAP |

Pant_CYP_1 Wetland Rapid Assessment Procedure, page 2

3.0 Wildlife Utilization (WU)

rabbit droppings, viceroy butterfly, crayfish parts, cricket frog calls, tadpoles, frogs (?leopard), downy woodpecker, large scat of something eating coco plums, red rat snake, alligator trail on north side of wetland, history of human disturbance but not currently - had been in row crops and pasture, now adjacent to created marsh and newly planted, disturbed pine flatwoods

3.0 Wetland Canopy (O/S)

predominantly *Taxodium ascendens*, edges have some *Pinus elliottii*, *Sabal palmetto*, and *Ficus aurea* also some of these species on hummocks throughout the wetland; planted *Chrysobalanus icaco* (coco plum) around edge of wetland; not entirely a closed canopy, not thoroughly shaded allowing weedy species to grow throughout wetland; large piles of woody debris throughout south side; some regeneration of canopy species

1.5 Wetland Ground Cover (GC)

Schinus terebinthifolius, *Ludwigia peruviana*, *Urena lobata*, *Alternanthera philoxeroides*, *Hymenachne amplexicalis* in pockets throughout ? 40% coverage estimated; very weedy throughout; deepest center pool open water and fringed with *Hymenachne amplexicalis*; estimated 30-40% cover by *Blechnum serrulatu*; under management for exotic species control; large piles of woody debris remnants of cut and spray *Schinus terebinthifolius* treatment

2.5 Habitat Support/Buffer

dirt road surrounds wetland, mixed patched of disturbed pine flatwoods with newly planted *Pinus elliottii*, further out is created freshwater marsh; tire ruts in dirt road left pools of dead tadpoles; buffer is greater than 300 feet but has disturbance and some nuisance (ex. *Typha* spp.) and exotic (ex. *Schinus terebinthifolia*); very large lit cell phone tower with vast guidewires in adjacent land; many refugia ponds in east and north portions of wetland; nearby a canal that receives water from off site agricultural activities (row crops and pasture) within 300 m, farther than 100m

| Buffer Type | (Score) x | (% of Area) | = Sub Total |
|----------------|-----------|-------------|-------------|
| All | 2.5 | 1 | 2.5 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| Total = | | | 2.5 |

2.5 Field Hydrology (HYD)

receives less water than historically would have; most recent land use was agricultural fields, water had been diverted to this wetland to drain the fields, now surrounding area is created marsh which truncates historic catchment size; high and distinct lichen lines, low moss collars and stain lines; in the gap between the lichen line and moss collars, spotty lichens occurred, suggesting wetland is adjusting to change in hydrologic regime

2.8 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| dirt road* | 2.5 | 0.3 | 0.8 |
| created marsh | 3.0 | 0.3 | 1.0 |
| disturbed upland* | 2.5 | 0.3 | 0.8 |
| | | | |
| | | | |
| | | | |
| LU Total = | | | 2.7 |

*used score for unimproved pasture/rangeland

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| dirt road` | 3.0 | 0.3 | 1.0 |
| created marsh` | 3.0 | 0.3 | 1.0 |
| disturbed upland` | 3.0 | 0.3 | 1.0 |
| | | | |
| | | | |
| | | | |
| PT Total = | | | 3.0 |

`used score for natural undeveloped area

Pant_CYP_1 Hydrogeomorphic Approach, page 1

Variable Subindex and FCI Calculation for Florida Depressions Cypress

Assessment Team: EH, KCR
Project Name: Panther Island Mitigation Bank Pant_CYP_1
Location: 26 degrees 25 m 9.56s / -81 degrees 38m 33.13s
Date: 8/16/05
Subclass: cypress dome

| Function | FCI |
|--------------------------------|------|
| Surface Water Storage | 0.88 |
| Subsurface Water Storage | 0.78 |
| Cycle Nutrients | 0.78 |
| Characteristic Plant Community | 0.88 |
| Wildlife Habitat | 0.82 |

| Variables | Measure | Units | Subindex |
|-----------|---------------|--------------------|----------|
| V CATCH | 87 | % | 0.12 |
| V UPUSE | 79 | % | 1 |
| V WETPROX | 3912 | meters | 0.1 |
| V WETVOL | 0 | % | 1 |
| V SUROUT | 0 | % | 1 |
| V SUBOUT | 0 | % | 1 |
| V ZONES | 0 | number | 1 |
| V CANOPY | 90 | % | 1 |
| V SURTEX | 3 L.S. 1 muck | % | 1 |
| V TBA | 72 | m ² /ha | 0.37 |
| V SSD | 90 | % | 0.9 |
| V TCOMP | 90 | % | 0.9 |

Pant_CYP_1 Hydrogeomorphic Approach, page 2

Vcatch 87% change
 Size of original catchment 15 ha
 Size of current catchment 2 ha

Vupuse
 open space improved road cover type curve # 84 percent 25%
 native range cover type curve # 77 percent 75%

Vwetprox

| | | | |
|----------|----------|----------|----------|
| Sector 1 | Sector 2 | Sector 3 | Sector 4 |
| 500m | 500m | 412m | 500m |
| Sector 5 | Sector 6 | Sector 7 | Sector 8 |
| 500m | 500m | 500m | 500m |

Vwetvol

| | | | | | |
|------------------------------|----------------------------|------------------|-------------------------|------------------------|------------------------------------|
| diameter wetland north-south | diameter wetland east-west | depth of wetland | length of fill material | width of fill material | average thickness of fill material |
| 72m | 68m | 0.65m | none | none | none |

Vsurout no effect

Vsubout ditch about 5 feet deep = 1.5m
 lateral effect of ditch 199m distance ditch to wetland 228m

Vzones ecotone disturbed by ditch and agriculture but zonation intact in wetland

Vcanopy 90%

Vsurtex loamy sand

Vtba plot 1 91m²/ha plot 2 65m²/ha plot 3 72m²/ha plot 4 59m²/ha

Vssd 18/20 90%

Vtcomp 90%

Pant_CYP_1 Florida Wetland Condition Index, macrophyte field data sheets, page 1

*NOTE: field codes are different than reported codes, Pant_CYP_1 = COBUGY

| Species | 05m | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|-------------------------------|-----|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| West Indian gnat Hydrachne | | | | | | | | | | | | | | | | |
| Lemna sp. | | | | | | | | | | | | | | | | |
| Ludwigia repens | | | | | | | | | | | | | | | | |
| Milium serotens | | | | | | | | | | | | | | | | |
| Blechnum serrulatum | | | | | | | | | | | | | | | | |
| Cochnera cylindrica | | | | | | | | | | | | | | | | |
| Taxodium ascendens | | | | | | | | | | | | | | | | |
| Polygonum hydropiperifolium | | | | | | | | | | | | | | | | |
| Pontederia cordata | | | | | | | | | | | | | | | | |
| Alternanthera philoxeroides | | | | | | | | | | | | | | | | |
| Suaeda clausea | | | | | | | | | | | | | | | | |
| Vigna luteola | | | | | | | | | | | | | | | | |
| Ficus aurea | | | | | | | | | | | | | | | | |
| Ornithoglossum regalis | | | | | | | | | | | | | | | | |
| Shorea terebinthifera | | | | | | | | | | | | | | | | |
| Toxicodendron radicans | | | | | | | | | | | | | | | | |
| Panicum laetiflorum | | | | | | | | | | | | | | | | |
| Hydrocotyle | | | | | | | | | | | | | | | | |
| Aster carolinianus | | | | | | | | | | | | | | | | |
| Bidens alba | | | | | | | | | | | | | | | | |
| Baccharis sp. | | | | | | | | | | | | | | | | |
| Arthrocnemum subterminatum | | | | | | | | | | | | | | | | |

Site: **COBUGY**
 Date: **Aug 16, 05**
 Hydrachne amphioxys

Biosurvey Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands
 Transect Direction: **North**
 Data Recorder: **Tony D'Amore**
 Alternanthera sessilis

Bidens pilosa

Pant_CYP_1 Florida Wetland Condition Index, macrophyte field data sheets, page 2

*NOTE: field codes are different than reported codes, Pant_CYP_1 = COBUGY

| Species | 05-05 | 05-10 | 05-15 | 05-20 | 05-25 | 05-30 | 05-35 | 05-40 | 05-45 | 05-50 | 05-55 | 05-60 | 05-65 | 05-70 | 05-75 | 05-80 |
|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Sabal palmetto | | | | | | | | | | | | | | | | |
| Excoecaria agallocha | | | | | | | | | | | | | | | | |
| Ruellia caroliniana | | | | | | | | | | | | | | | | |
| Spartina patens | | | | | | | | | | | | | | | | |
| Stachys serotina | | | | | | | | | | | | | | | | |
| Andropogon scoparius | | | | | | | | | | | | | | | | |
| Blechnum serrulatum | | | | | | | | | | | | | | | | |
| Sporobolus indicus | | | | | | | | | | | | | | | | |
| Desmodium sp. | | | | | | | | | | | | | | | | |
| Urena lobata | | | | | | | | | | | | | | | | |
| Ambrosia artemisiifolia | | | | | | | | | | | | | | | | |
| Erechtias americanus | | | | | | | | | | | | | | | | |
| Phytolacca americana | | | | | | | | | | | | | | | | |
| Murdannia sp. | | | | | | | | | | | | | | | | |
| Datura stramonium | | | | | | | | | | | | | | | | |
| Sida aff. sp. | | | | | | | | | | | | | | | | |
| Melothra pendula | | | | | | | | | | | | | | | | |
| Mikania scandens | | | | | | | | | | | | | | | | |
| Hydrocotyle sp. | | | | | | | | | | | | | | | | |
| Perithousia quadrifida | | | | | | | | | | | | | | | | |
| Thalassia - 8 | | | | | | | | | | | | | | | | |
| Commersonia - 9 | | | | | | | | | | | | | | | | |
| Ampelopsis arborea | | | | | | | | | | | | | | | | |
| Crotalaria peruviana | | | | | | | | | | | | | | | | |
| Eclipta prostrata | | | | | | | | | | | | | | | | |

Site: Cobugy
Date: Aug 16, 05

Biosurvey Field Data Sheet: Transects, Vegetation Presence - Life Center for Wetlands
Transect Direction: East
Data Recorder: Tom Dargatzis

Thalassia thalassoides
Eclipta alba

Pant_CYP_1 Florida Wetland Condition Index, macrophyte field data sheets, page 3

*NOTE: field codes are different than reported codes, Pant_CYP_1 = COBUGY

| Species | 6-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|----------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <i>Blignum hyssopoides</i> | | | | ✓ | | | | | | | | | | | |
| <i>Bidens pilosa</i> | | | | ✓ | | | | | | | | | | | |
| <i>Vitis rotundifolia</i> | | | | ✓ | | | | | | | | | | | |
| <i>Setaria parviflora</i> | | | | ✓ | | | | | | | | | | | |
| <i>Lemna sp</i> | | | | ✓ | | | | | | | | | | | |
| <i> Ludwigia repens</i> | | | | ✓ | | | | | | | | | | | |
| <i>Utricularia</i> | | | | ✓ | | | | | | | | | | | |
| <i>Utricularia</i> | | | | ✓ | | | | | | | | | | | |

Site: *Cobugy*
 Date: *Aug 16*
Bidens pilosa
Setaria parviflora
 Biomass Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands
Utricularia
 Transect Direction: *east 242 ft*
 Data Recorder: *Tony D'Amico*

Pant_CYP_1 Florida Wetland Condition Index, macrophyte field data sheets, page 4

*NOTE: field codes are different than reported codes, Pant_CYP_1 = COBUGY

| Species | 0.5 m | 1-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|--|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <i>Bufo marinus</i> cyathicus | ✓ | | | | | | | | | | | | | | | |
| <i>Sagittaria</i> perfoliata | | | | | | | | | | | | | | | | |
| <i>Hydrocotyle</i> sp | | | | | | | | | | | | | | | | |
| <i>Taxodium ascendens</i> | | | | | | | | | | | | | | | | |
| <i>Vigna luteola</i> 1 | | | | | | | | | | | | | | | | |
| <i>Andropogon virginicus</i> | | | | | | | | | | | | | | | | |
| <i>Mikania scandens</i> | | | | | | | | | | | | | | | | |
| <i>Cyperus tenuis</i> | | | | | | | | | | | | | | | | |
| <i>Carex apiculata</i> | | | | | | | | | | | | | | | | |
| <i>Scirpus</i> gracilis | | | | | | | | | | | | | | | | |
| <i>Ambrisia cymatophylla</i> | | | | | | | | | | | | | | | | |
| <i>Ludwigia palustris</i> | | | | | | | | | | | | | | | | |
| <i>Polygonum hydropiperifolium</i> | | | | | | | | | | | | | | | | |
| <i>Ampelopsis arborea</i> | | | | | | | | | | | | | | | | |
| <i>Plectranthus serrulatus</i> | | | | | | | | | | | | | | | | |
| <i>Shorea tetralobata</i> | | | | | | | | | | | | | | | | |
| <i>Urena lobata</i> | | | | | | | | | | | | | | | | |
| <i>Amorpha glabra</i> | | | | | | | | | | | | | | | | |
| <i>Bacopa maritima</i> | | | | | | | | | | | | | | | | |
| <i>Scirpus</i> gracilis | | | | | | | | | | | | | | | | |
| <i>Aluminum</i> finlayii | | | | | | | | | | | | | | | | |
| <i>Salicornia</i> peruviana | | | | | | | | | | | | | | | | |
| <i>Distichlis virginiana</i> | | | | | | | | | | | | | | | | |
| West Indian Grass - <i>Hybanthus amplexicaulis</i> | | | | | | | | | | | | | | | | |
| <i>Ludwigia repens</i> | | | | | | | | | | | | | | | | |
| Lemna sp. | | | | | | | | | | | | | | | | |

Site: COBUGY
Date: Aug 15, 05
Sagittaria
perfoliata

Biosurvey Field Data Sheet - Transects Vegetation Presence - UF Center for Wetlands
Transect Direction: South
Data Recorder: Tom Dawidson

4. *Paspalum conjugatum*
5. *Alternanthera versicolor*

Pant_CYP_1 Florida Wetland Condition Index, macrophyte field data sheets, page 5
 *NOTE: field codes are different than reported codes, Pant_CYP_1 = COBUGY

| Species | 25-30 | 20-25 | 15-20 | 10-15 | 5-10 | 0-5 |
|-----------------------------|-------|-------|-------|-------|------|-----|
| West Indian grass | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Lemna sp. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Polygonum hydropiperifolium | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Ludwigia repens | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mikania scandens | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Baccharis cylindrica | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Taxodium ascendens | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Hydrocotyle sp. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Hydrocotyle rennellioides | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Blechnum serrulatum | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sarcocornia clausa | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Vigna luteola | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Diadema virginianum | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Setaria pumila | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bimberg grass - 4 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Amnion glabra | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Ludwigia peruviana | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

Site: **COBUGY**
 Date: **Aug 16, 05**
 Biosurvey Field Data Sheet - Transect, Vegetation Presence, UF Center for Wetlands
 Transect Direction: **West**
 Data Recorder: **Tony Davanzo**

- Cobugy Aug 15-16, 03
- 1 Vigna luteola - Not pressed
 - 2 Carex ~~abundans~~ longii
 - 3 Switchgrass (about 1 m tall) - ~~Saccolopis?~~ Saccolopis indica Panicum virgatum
 - 4 Bifurcated grass - Paspalum conjugatum
 - 5 Alternanthera sessilis
 - 6 ~~Sida~~ Solidago stricta
 - 7 Sida rhombifolia
 - 8 Thelypteris ~~hispidula~~ Kunthii
 - 9 Commelina diffusa

Pant_CYP_1 Florida Wetland Condition Index, macroinvertebrate list

List of macroinvertebrates identified to the genus taxonomic level

Pant_CYP_1 = COBUGY

Ancylidae
Arrenurus
Bivalvia
Bratislavia
Celina
Chaoborus
Chironomus
Coenagrionidae
Dero
Forcipomyia
Goeldichironomus
Haemonais
Hydrocanthus
Kiefferulus
Micromenetus
Monopelopia
Odontomyia
Palaemonetes
Polypedilum
Tanytarsus
Tubificidae

Pant_CYP_2 Uniform Mitigation Assessment Method, page 1
PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

| | | | |
|--|--|--|--|
| Site/Project Name Panther Island Mitigation Bank | | Application Number NA | Assessment Area Name or Number Pant_CYP_2 |
| FLUCCs code 6210 Cypress | Further classification (optional) Depressional forested, palustrine forested, has open center | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size 0.7 ha (1.7 ac) |
| Basin/Watershed Name/Number HUC 03090204 Everglades-West Coast | Affected Waterbody (Class) 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 Historic catchment size somewhat reduced due to previous agricultural activities and current created marsh habitat. | | | |
| Assessment area description Depressional forested wetland with primarily pondcypress (<i>Taxodium ascendens</i>) in the canopy. Center of wetland is open water area with much emergent and submerged herbaceous vegetation. Water surface covered by pollen coating. | | | |
| Significant nearby features Connected on SE to Corkscrew Regional Sanctuary. To east is CREW - SFWMD lands (many exotic species). The entire southern portion of Panther Island (not the created marsh segment in the north) falls in high priority Florida Ecological Greenways Corridor. | Uniqueness (considering the relative rarity in relation to the regional landscape.) There are many preservation and conservation tracks in this area, though it is important for its connectivity with other large wild lands. | | |
| Functions Wildlife habitat and refuge, in particular waterfowl, wading birds, and aquatic animals, which may depend on cypress swamps for breeding purposes; provide water storage by holding excess water and slowly releasing it into the water table; enhance water quality by absorbing nutrients from the water. | Mitigation for previous permit/other historic use | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Wildlife habitat and refuge, in particular waterfowl, wading birds, and aquatic animals, which may depend on cypress swamps for breeding purposes; provides water storage by holding excess water and slowly releasing it into the water table; enhances water quality by absorbing nutrients from the water. | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Mycteria americana</i> (wood stork) ^E , <i>Ursus americanus floridanus</i> (Florida black bear) ^T , <i>Alligator mississippiensis</i> (alligator) ^T , <i>Aramus guarauna</i> (limpkin) ^{SSC} , <i>Puma concolor</i> (Florida panther) ^E , <i>Haliaeetus leucocephalus</i> (American bald eagle) ^T | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Suspected use by large mammals and reptiles, but open areas (little vegetation) made game trails not evident. Many spider webs, crickets, cricket frog, fish, many dragonflies, water boatman bugs, yellow crowned night heron (1st year), warblers calling and one seen. | | | |
| Additional relevant factors: This is described as a depressional forested wetland, though the center of this wetland is open water with limited or no canopy development. | | | |
| Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | | Assessment date(s): 8/15/2005 | |

Pant_CYP_2 Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|--|--|
| Site/Project Name Panther Island Mitigation Bank | Application Number NA | Assessment Area Name or Number Pant_CYP_2 |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | Assessment date: 8/15/2005 |

| | | | | |
|--|---|---|---|--|
| 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 water functions | 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 w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 8 | Areas outside assessment are provide most of wildlife needs, perhaps not optimal support for all because of adjacent lands with many exotic species. Invasive exotic species present is support landscape. Wildlife not limited by distance but barriers include cell tower and exotic species patch, including Brazilian pepper (<i>Schinus terebinthifolius</i>). Nearby land uses have some adverse impacts, for example SFWMD property (this area has diminished biodiversity and a lack of available food and cover). Also there is a large/tall (radio/cell?) tower that acts to attract and then harm or kill birds that fly too close. Some of the adjacent areas are restored wetlands, created wetlands, or restored hydric pine flatwoods. |
| .500(6)(b)Water Environment (n/a for uplands) w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 9 | Water levels and flows appear appropriate with distinct water level indicators: lichen lines, stain lines, moss collars. No soil subsidence, deposition, or erosion. Wildfire did occur from very thick flatwoods, probably not due to excessive dryness. Vegetation zonation appropriate, smooth gradient from flatwoods ecotone to open water. No evidence of stress, disease, etc. Evidence of species with specific hydrologic requirements including fish, frogs, yellow crowned night heron. No species characteristic of water quality degradation. Did see bladderwort (<i>Utricularia</i> sp.). Clear standing water with pollen coating but not atypical, no oil sheen. Healthy submerged aquatic species - because of light penetration in no canopied center. Catchment size smaller than historically would have been because surrounding area had been in agricultural fields which diverted water away. No the support area is created marsh, so less water is coming in as run-off, possibly resulting in loss of ecotone width and changing the total volume of water running into the wetland. |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 8 | Canopy and shrub layers composed of nearby all appropriate/desirable species. Ground stratum has exotic species including West Indian marsh grass (<i>Hymenachne amplexicaulis</i>), Caesar weed (<i>Urena lobata</i>), Peruvian primrosewillow (<i>Ludwigia peruviana</i>), maybe 15% cover. Land management practices will monitor and remove exotic species every few years. Age and size class distribution normal, though few of the largest trees. Some temporary deviation. Amount of coarse woody debris seems appropriate, though one path to south with wildlife remains has heavier debris. Plants healthy, no stress apparent. Topographic features normal. Submerged aquatics show no evidence of too much algae or siltation. |

Score = sum of above scores/30 (if uplands, divide by 20)
current or w/o pres with
0.83

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres =

Delta = [with-current]

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Pant_CYP_2 Wetland Rapid Assessment Procedure, page 1

Project Name: Pant_CYP_2 - Panther Island Mitigation Bank

Date: 8/15/05

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: Depressional forested wetland with an open center - few if trees and open water with submerged aquatics and some emergent species along the shallower tree zone.

Wetland Assessment Area: 0.7 ha (1.7 ac)

FLUCCS Code/Description: 6210 Cypress

| | |
|------|---------------------------|
| 2.5 | Wildlife Utilization (WU) |
| 3.0 | Wetland Canopy (O/S) |
| 2.5 | Wetland Ground Cover (GC) |
| 2.5 | Habitat Support/Buffer |
| 3.0 | Field Hydrology (HYD) |
| 3.0 | WQ Input & Treatment (WQ) |
| 16.5 | SUM |
| 6 | Count |
| 0.92 | WRAP |

Pant_CYP_2 Wetland Rapid Assessment Procedure, page 2

| | |
|--|----------------------------------|
| 2.5 | Wildlife Utilization (WU) |
| <p>Few hummocks and cavities. Not optimal support habitat for species needing cover. Narrow edge/ecotone around half of the wetland assessment area from old swamp buggy ruts. Abundant upland food source and habitat. Suspected use by large mammals and reptiles, but open areas (little vegetation) made game trails not evident. Many spider webs, crickets, cricket frog, fish, many dragonflies, water boatman bugs, yellow crowned night heron (1st year), warblers calling and one seen.</p> | |

| | |
|--|-----------------------------|
| 3.0 | Wetland Canopy (O/S) |
| <p>Pondcypress (<i>Taxodium ascendens</i>) with large buttresses towards center of dome but only a few as the center was generally open water. Limited snag and den trees. Pondcypress provides habitat support. Evidence of natural recruitment. No exotic species in the canopy or shrub layers.</p> | |

| | |
|---|----------------------------------|
| 2.5 | Wetland Ground Cover (GC) |
| <p>Big floatingheart (<i>Nymphoides aquatica</i>) and bladderwort (<i>Utricularia</i> sp.) in open water. Vegetation around hummocks. Invasive, nuisance, or exotic species present, including Peruvian primrosewillow (<i>Ludwigia peruviana</i>), Caesar weed (<i>Urena lobata</i>), West Indian marsh grass (<i>Hymenachne amplexicaulis</i>). Undesirable ground cover <25% (maybe even 15%), other desirable healthy species present.</p> | |

| | | | | | |
|---|-------------------------------|------------------|-----------|-------------|-------------|
| 2.5 | Habitat Support/Buffer | | | | |
| <p>Buffer >300' of hydric pine flatwoods with some exotic species, through managed for prescribed fires and exotic species control. Exotic species nearby, on adjacent property with many exotics and many undesirable species. Connected to off site wetlands. Buffer provides cover and forage for wildlife species.</p> | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | Disturbed upland | 2.5 | 1 | 2.5 |
| | | | | | |
| | | | | | |
| | | | | | |
| Total = | | | | | 2.5 |

| | |
|--|------------------------------|
| 3.0 | Field Hydrology (HYD) |
| <p>Consistent indicators (lichen lines, moss collars). Pollen coating on water surface. No oil sheen, very clear water. Many healthy submerged aquatics. Plants healthy - no stress apparent. No ditches or canals immediately adjacent. Hydrology adequate to maintain viable wetland. Swamp buggy ruts on edge may reduce water in the wetland (as more stands in the ruts though historically it would have flowed into the wetland), but no signs of hydrologic stress apparent.</p> | |

3.0 WQ Input & Treatment (WQ)*

**The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.*

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| Nat. Undev. | 3.0 | 1.00 | 3.0 |
| | | | |
| | | | |
| LU Total = | | | 3.0 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| Nat. Undev. | 3.0 | 1.00 | 3.0 |
| | | | |
| | | | |
| PT Total = | | | 3.0 |

Pant_CYP_3 Uniform Mitigation Assessment Method, page 1

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

| | | | | | |
|---|--|--|--|---|--|
| Site/Project Name Panther Island Migration Bank | | Application Number NA | | Assessment Area Name or Number Pant_CYP_3 | |
| FLUCCs code 6210 Cypress | | Further classification (optional) Boca, Riviera, limestone substratum and Copeland very poorly drained soils. | | Impact or Mitigation Site? Mitigation Bank | |
| Assessment Area Size 2.5 ha (6.2 ac) | | | | | |
| Basin/Watershed Name/Number HUC 03090204 Everglades West Coast | | Affected Waterbody (Class) 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 Appears to have wetland signature area in south that overflows into much larger forested wetland complex. Historic catchment size somewhat reduced due to previous agricultural activities and current created marsh habitat. | | | | | |
| Assessment area description Depressional forested wetland with primarily pondcypress (<i>Taxodium ascendens</i>) in the canopy and some mixed midstory species including pond apple (<i>Annona glabra</i>), cabbage palm (<i>Sabal palmetto</i>), and strangler fig (<i>Ficus aurea</i>). Water surface covered by the invasive exotic aquarium watermoss (<i>Salvinia molesta</i>). | | | | | |
| Significant nearby features Connected on SE to Corkscrew Regional Sanctuary. To east is CREW - SFWMD lands (many exotic species). The entire southern portion of Panther Island (not the created marsh segment in the north) falls in high priority Florida Ecological Greenways Corridor. | | | Uniqueness (considering the relative rarity in relation to the regional landscape.) There are many preservation and conservation tracks in this area, though it is important for its connectivity with other large wild lands. | | |
| Functions Wildlife habitat and refuge, in particular waterfowl, wading birds, and aquatic animals, which may depend on cypress swamps for breeding purposes; provide water storage by holding excess water and slowly releasing it into the water table; enhance water quality by absorbing nutrients from the water. | | | Mitigation for previous permit/other historic use Northern section had been in agricultural land use activities. | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) <i>Odocoileus virginianus</i> (white-tailed deer), <i>Procyon lotor</i> (raccoon), bobcat, many species of frogs, snakes, small fish, wading birds, butterflies, aquatic insects. | | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Mycteria americana</i> (wood stork) ^E , <i>Ursus americanus floridanus</i> (Florida black bear) ^T , <i>Alligator mississippiensis</i> (alligator) ^T , <i>Aramus guarauna</i> (limpkin) ^{SSC} , <i>Puma concolor</i> (Florida panther) ^E , <i>Haliaeetus leucocephalus</i> (American bald eagle) ^T | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Jumping spiders (<i>Phidippus</i> sp.), no large spider webs across trees, peacock butterfly, viceroy butterflies, green anole, crickets, squirrel, red shouldered hawks in support area, evidence of eaten bird eaten, some unidentified scat, red bellied woodpecker, king fisher (migrant), crayfish, small fish, tadpoles. Use by aquatic macroinvertebrates, amphibians and small fish apparent and tadpoles. Game trails in ecotone and uplands. Hog damage apparent. | | | | | |
| Additional relevant factors: FNAI Bird Aggregation Areas - bird rookery. FWCC Biodiversity Hotspots - 7+ focal species overlap. FWCC Priority Wetlands - 1-3 species, wetland habitat. FWCC Strategic Habitat Conservation Areas - priority habitat. Current management plans involve spraying for the West Indian Marsh grass (<i>Hymenachne amplexicaulis</i>). | | | | | |
| Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | | | Assessment date(s): 8/15/2005 | | |

Pant_CYP_3 Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|---|--|
| Site/Project Name Panther Island Migration Bank | Application Number NA | Assessment Area Name or Number Pant_CYP_3 |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinners Reiss, Erica Hernandez | Assessment date: 8/15/2005 |

| | | | | |
|---|---|---|---|--|
| 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 water functions | 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 w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 8 | Tower guide lines and lights in adjacent, offsite agricultural field draw in and harm birds, particularly neotropical migrants. Pine flatwoods and created marsh provide full range of habitat, but guide wires to large and tall cell tower (?) within 500m. Invasive exotic species characterize some of plant community in adjacent areas. Wildlife access is not limited by distance, but cell tower acts as a barrier. Surrounding land use have limited adverse impact, but the level of invasive exotic species is overwhelming in adjacent areas and the cell tower kills birds. Immediately adjacent land represents mosaics of available habitats. |
| .500(6)(b) Water Environment (n/a for uplands) w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 9 | Water levels appear appropriate. Water level indicators are distinct. Soils were inundated, so appropriate soil moisture was assumed. No evidence of erosion or deposition evident. No fire scars observed, Vegetation zonation was appropriate with a shallow ecotone zone. No species indicative of water quality degradation were evident, though the water surface was covered by aquarium watermoss (<i>Salvinia molesta</i>). Water was clear with no turbidity. No oil sheen visible. Light penetration not optimal due to presence of aquarium watermoss. |
| .500(6)(c) Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 6 | Majority plant cover or nearly all of cover for canopy and shrub layer by appropriate and desirable species. Ground stratum and water surface is covered completely by aquarium watermoss (<i>Salvinia molesta</i>). Canopy dominated by pondcypress (<i>Taxodium ascendens</i>) with appropriate age and size class distribution. Normal and anticipated level of snags and woody debris. Plants appeared healthy, except air plants, possible effects of weevil. Land management appears appropriate and includes prescribed fire in adjacent uplands and exotic species removal. No siltation or excess algal growth visible, but all water covered by aquarium watermoss. |

| |
|---|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current <input type="checkbox"/> or w/o pres <input type="checkbox"/> with <input type="checkbox"/> |
| 0.77 |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Pant_CYP_3 Wetland Rapid Assessment Procedure, page 1

Project Name: Pant_CYP_3- Panther Island Mitigation Bank Preservation Dome I

Date: 8/15/05

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: Depressional forested wetland in preservation. Area is about to be released.

Inside wetland, surface water completely covered by aquarium watermoss (*Salvinia molesta*).

Wetland Assessment Area: 2.5 ha (6.2 ac)

FLUCCS Code/Description: 6210 cypress

| | |
|------|---------------------------|
| 2.5 | Wildlife Utilization (WU) |
| 3.0 | Wetland Canopy (O/S) |
| 1.5 | Wetland Ground Cover (GC) |
| 2.5 | Habitat Support/Buffer |
| 2.5 | Field Hydrology (HYD) |
| 2.8 | WQ Input & Treatment (WQ) |
| 14.8 | SUM |
| 6 | Count |
| 0.82 | WRAP |

Pant_CYP_3 Wetland Rapid Assessment Procedure, page 2

| | |
|--|----------------------------------|
| 2.5 | Wildlife Utilization (WU) |
| <p>Minimal human disturbance - though water surface covered by exotic aquarium watermoss (<i>Salvinia molesta</i>). Support area burned summer 2004. Aquarium watermoss covering entire water surface. This non-native species can alter dissolved oxygen levels in water column and effect submerged or emergent species (due to decreased light) and alter fish and amphibian needs. Abundant food sources and cover in wetlands and adjacent areas. Jumping spiders (<i>Phidippus</i> sp.), no large spider webs across trees, peacock butterfly, viceroy butterflies, green anole, crickets, squirrel, red shouldered hawks in support area, evidence of eaten bird eaten, some unidentified scat, red bellied woodpecker, kind fisher (migrant), crayfish, small fish, tadpoles. Use by aquatic macroinvertebrates, amphibians and small fish apparent and tadpoles. Some cavities/dens. Game trails in ecotone and uplands. Hog damage apparent.</p> | |

| | |
|---|-----------------------------|
| 3.0 | Wetland Canopy (O/S) |
| <p>Mature pondcypress (<i>Taxodium ascendens</i>) had been harvested in past. Some pond apple (<i>Annona glabra</i>), cabbage palm (<i>Sabal palmetto</i>), and strangler fig (<i>Ficus aurea</i>) mixed in. Many dead bromeliads (perhaps from the weevil). Good habitat support. No exotic species in canopy. Regeneration visible. Minimal evidence of disease, insect. Would anticipate slightly higher density/canopy cover.</p> | |

| | |
|---|----------------------------------|
| 1.5 | Wetland Ground Cover (GC) |
| <p>Species clustered around hummocks. Ecotone has high species richness. Estimated between 25-50% cover by exotics. Common species include bog hemp (<i>Boehmeria cylindrica</i>), ferns, wild orchid (<i>Eulophia alta</i>), water-spider orchid (<i>Habenaria repens</i>). Aquarium watermoss (<i>Salvinia molesta</i>) cover impeding other plant growth. Some human induced impacts. Some exotics including (but not limited to) trompetilla (<i>Hymenachne amplexicaulis</i>), water-lettuce (<i>Pistia stratiotes</i>), the nuisance species Peruvian primrosewillow (<i>Ludwigia peruviana</i>), and aquarium watermoss (<i>Salvinia molesta</i>).</p> | |

| | | | | | |
|--|-------------------------------|----------------|-----------|-------------|-------------|
| 2.5 | Habitat Support/Buffer | | | | |
| <p>Enhanced pine flatwoods, including exotic species removal and burning. >300' buffer, predominantly desirable species, connected to off site wetlands and wildlife corridors. Some exotic species in proximity.</p> | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | Enhanced lands | 2.5 | 1 | 2.5 |
| | | | | | 0.0 |
| | | | | | 0.0 |
| | | | | | 0.0 |
| Total = | | | | | 2.5 |

| | |
|--|------------------------------|
| 2.5 | Field Hydrology (HYD) |
| <p>Aquarium watermoss (<i>Salvinia molesta</i>) covering water surface. Clear water. Some water-lettuce (<i>Pistia stratiotes</i>). No evidence of soil subsidence, but soils inundated (high water level) during site visit, so difficult to determine. Not adjacent to negative impacts. Evidence of natural hydroperiod. Plants healthy, no stress. Hydrology adequate.</p> | |

2.8 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| Enhanced lands | 2.5 | 1.00 | 2.5 |
| | | | 0.0 |
| | | | 0.0 |
| LU Total = | | | 2.5 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| Enhanced lands | 3.0 | 1.00 | 3.0 |
| | | | 0.0 |
| | | | 0.0 |
| PT Total = | | | 3.0 |

Pant_FOR Uniform Mitigation Assessment Method, page 1

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

| | | | |
|--|---|--|--|
| Site/Project Name Panther Island Mitigation Bank | | Application Number NA | Assessment Area Name or Number Pant_FOR |
| FLUCCs code 6300 Wetland Forested Mixed | Further classification (optional) Large interconnected slough system | Impact or Mitigation Site? in Phase II of Mitigation Bank | Assessment Area Size 0.9 ha (2.2 ac) |
| Basin/Watershed Name/Number HUC 03090204 Everglades-West Coast | Affected Waterbody (Class) 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 Part of a much larger forested wetland complex. This wetland drains south and connects with wetlands from preservation lands including from Corkscrew Regional Wildlife Sanctuary. It receives water inflow from direct rainfall and run-off from surrounding uplands, it also receives water from some agricultural fields from the north (off property) through a canal feature. | | | |
| Assessment area description Large interconnected forested wetland receiving some agricultural waters through a connected canal feature. Water flowing to the SW slightly. Canopy was predominantly pondcypress (<i>Taxodium ascendens</i>). Within the more open patches were alligator flag (<i>Thalia geniculata</i>) and giant leather fern (<i>Acrostichum danaeifolium</i>) growing at least 8-10 feet tall. | | | |
| Significant nearby features Connected on SE to Corkscrew Regional Sanctuary. To east is CREW - SFWMD lands (many exotic species). The entire southern portion of Panther Island (not the created marsh segment in the north) falls in high priority Florida Ecological Greenways Corridor. | Uniqueness (considering the relative rarity in relation to the regional landscape.) Support lands south and east in relatively good shape considering pressure of urban and agricultural encroachment from Ft. Myers and Naples. | | |
| Functions Surface and subsurface water storage, flood abatement. Nutrient cycling. Provides fish and wildlife habitat. Provides structure for nesting birds. | Mitigation for previous permit/other historic use Northern parcel had been in row crops, this wetland still receives water from agricultural activities from a parcel of land to the north of the mitigation bank property. | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Turtles, frogs, snakes, woodpeckers, wading birds, osprey, raccoon, bobcat, deer, fish, salamanders. | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Wood stork E; Everglades snail kite E; Florida panther E; Florida black bear T; limpkin SSC; little blue heron SSC; American alligator T(S/A); white ibis, snowy egrets SSC, tricolored heron SSC, glossy ibis SSC. | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Claw marks on pondcypress (<i>Taxodium ascendens</i>) trunk, possible evidence of bobcat; apple snail eggs; amphibians; spiders; large nesting cavities; armored catfish. | | | |
| Additional relevant factors: This wetland had a direct ditch feature and received surface water (through a canal) from agricultural activities on lands north of the mitigation bank. There is also a large (cell or radio?) tower on this northern property close to the bank boundary that causes problems for birds. | | | |
| Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | | Assessment date(s): 8/15/2005 | |

Pant_FOR Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|---|--|
| Site/Project Name Panther Island | Application Number NA | Assessment Area Name or Number Pant_FOR |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinners Reiss, Erica Hernandez | Assessment date: 8/15/2005 |

| | | | | |
|--|---|---|---|--|
| 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 water functions | Minimal level of support of wetland/surface water functions | Condition is insufficient to provide wetland/surface water functions |

| | |
|---|---|
| <p>.500(6)(a) Location and Landscape Support</p> <p>w/o pres or current <input type="checkbox"/> with <input type="checkbox"/></p> <p>9 <input type="checkbox"/></p> | <p>Available habitats outside the assessment area represent the full range of habitats needed for listed wildlife species and in sufficient quantity. Exotics are present in the proximity of the wetland assessment area and make up some of the plant community. Wildlife access is not limited by distance or barriers. Functions of the assessment area are not limited either. Land uses outside of the wetland assessment area would impact large mammals and birds with larger territories. The immediately adjacent habitat is ok for most small species. There is a tower with guide wires within 750m of the wetland assessment are. Also, there is a continuous seed source of invasive exotic species from adjacent farm fields and the South Florida Water Management District property to the east. Discharges are considered critically important for downstream areas.</p> |
| <p>.500(6)(b)Water Environment (n/a for uplands)</p> <p>w/o pres or current <input type="checkbox"/> with <input type="checkbox"/></p> <p>10 <input type="checkbox"/></p> | <p>Water levels and flows appear appropriate: distinct and consistent stain lines, lichen lines, moss collars, and also consistent water level compared to other wetlands within the mitigation bank. Soils inundated - no erosion or deposition visible. Ecotone shows continuous transition into hydric flat woods (good zonation). No signs of hydrologic stress based on species present - we noted obligate wetland plant species, frogs, fish, and an alligator in a connected portion. The plant community composition is not characterized by species indicative of water quality degradation. Water coloration appropriate, no turbidity or oil sheen apparent. Brown hoplo (or armor-plated catfish; <i>Hoplosternum littorale</i>) and sailfin catfish (<i>Pterygoplichthys multiradiatus</i>) found, but these are common in all natural areas of south Florida.</p> |
| <p>.500(6)(c)Community structure</p> <p>1. Vegetation and/or 2. Benthic Community</p> <p>w/o pres or current <input type="checkbox"/> with <input type="checkbox"/></p> <p>8 <input type="checkbox"/></p> | <p>Majority of plant cover by appropriate and desirable plant species in canopy, shrub (all or nearly all actually), but ground stratum is composed of some invasive exotic species, though cover is minimal. Strong evidence of normal regeneration and natural recruitment, particularly of pond apple (<i>Annona glabra</i>), pondcypress (<i>Taxodium ascendens</i>), and a few red maple (<i>Acer rubrum</i>). Good age and size class distribution. Density and quality of coarse woody debris, snag, dens, and cavities provides optimal structural habitat. Plants in good condition. Land management optimal - including prescribed fire, exotic species control, patches of treated vegetation visible such as Peruvian primrosewillow (<i>Ludwigia peruviana</i>). Topographic features appropriate. Submerged aquatic plants appeared healthy, no excess siltation or algal growth.</p> |

Score = sum of above scores/30 (if uplands, divide by 20)

current or w/o pres with

0.90

If preservation as mitigation,

Preservation adjustment factor =

Adjusted mitigation delta =

For impact assessment areas

FL = delta x acres =

Delta = [with-current]

If mitigation

Time lag (t-factor) =

Risk factor =

For mitigation assessment areas

RFG = delta/(t-factor x risk) =

Pant_ FOR Wetland Rapid Assessment Procedure, page 1

Project Name: Pant_FOR - Panther Island Mitigation Bank

Date: 8/15/05

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: Large interconnected cypress area receiving some agricultural waters.

Water flowing to the SW slightly. Canopy was predominantly pondcypress (*Taxodium ascendens*).

Within the more open patches were alligator flag (*Thalia geniculata*) and giant leather fern (*Acrostichum danaeifolium*) growing at least 8-10 feet tall.

Wetland Assessment Area: 0.9 ha (2.2 ac)

FLUCCS Code/Description: 6300 Wetland Forested Mixed

| | |
|------|---------------------------|
| 3.0 | Wildlife Utilization (WU) |
| 3.0 | Wetland Canopy (O/S) |
| 2.0 | Wetland Ground Cover (GC) |
| 2.5 | Habitat Support/Buffer |
| 3.0 | Field Hydrology (HYD) |
| 2.0 | WQ Input & Treatment (WQ) |
| 15.5 | SUM |
| 6 | Count |
| 0.86 | WRAP |

Pant_ FOR Wetland Rapid Assessment Procedure, page 2

| | |
|---|----------------------------------|
| 3.0 | Wildlife Utilization (WU) |
| Claw marks on pondcypress (<i>Taxodium ascendens</i>) trunk - evidence of bobcat. Apple snail eggs, amphibians, spiders. Abundant cover and food sources. | |

| | |
|---|-----------------------------|
| 3.0 | Wetland Canopy (O/S) |
| Good size and age class distribution. Predominantly pondcypress (<i>Taxodium ascendens</i>), some mixed midstory species including pond apple (<i>Annona glabra</i>). Some red maple (<i>Acer rubrum</i>) in canopy. Also dahoon holly (<i>Ilex cassine</i>), and slash pine (<i>Pinus elliotii</i> var. <i>densa</i>) mixed in along edge. Good habit support. Snags with cavities and dens available and in good quantity. Strong evidence of natural recruitment. Uneven age distribution. Some climbing fern (<i>Lygodium</i> sp.) at base of tree, maybe less than a 1 x 1 m patch on ground. | |

| | |
|--|----------------------------------|
| 2.0 | Wetland Ground Cover (GC) |
| Mixed patches of exotic species including West Indian marsh grass <i>Hymenachne amplexicaulis</i> , Peruvian primerosewillow (<i>Ludwigia peruviana</i>), climbing fern (<i>Lygodium</i> sp.). Some extensive patches of native vines too including muscadine (<i>Vitis</i> sp.), greenbrier (<i>Smilax</i> sp.), Virginia creeper (<i>Parthenocissus quinquefolia</i>). Mostly desirable species in groundcover including swamp fern (<i>Blechnum serrulatum</i>), alligator flag (<i>Thalia geniculata</i>), royal fern (<i>Osmunda regalis</i>), submerged aquatics, and pickerelweed (<i>Pontederia cordata</i>). | |

| | | | | | |
|---|-------------------------------|-----------------|-----------|-------------|-------------|
| 2.5 | Habitat Support/Buffer | | | | |
| Buffer >300' all around. Grades into pine flatwoods, with management including prescribed fire and exotic species removal. Connected to wildlife corridors and off site wetland systems. Exotic species represent >10% but less than 50% in support area. | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | Disturbed lands | 2.5 | 1 | 2.5 |
| | | | | | |
| | | | | | |
| Total = | | | | | 2.5 |

| | |
|---|------------------------------|
| 3.0 | Field Hydrology (HYD) |
| Distinct water level indicators: lichen lines, moss collars, and obligate wetland plant species. Plants appeared healthy with no stress. Not adjacent to negative impacts. No soil subsidence visible - water levels high. Hydrology adequate to maintain viable wetland. | |

2.0 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|--------------------|-----------|-------------|-------------|
| Restored upland | 2.5 | 0.67 | 1.7 |
| Agricultural canal | 1.0 | 0.33 | 0.3 |
| | | | 0.0 |
| LU Total = | | | 2.0 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| Nat. Undev. | 3.0 | 0.67 | 2.0 |
| No treatment | 0.0 | 0.33 | 0.0 |
| | | | 0.0 |
| PT Total = | | | 2.0 |

Additional Notes: restored areas

Appendix B-22. Reedy Creek Mitigation Bank

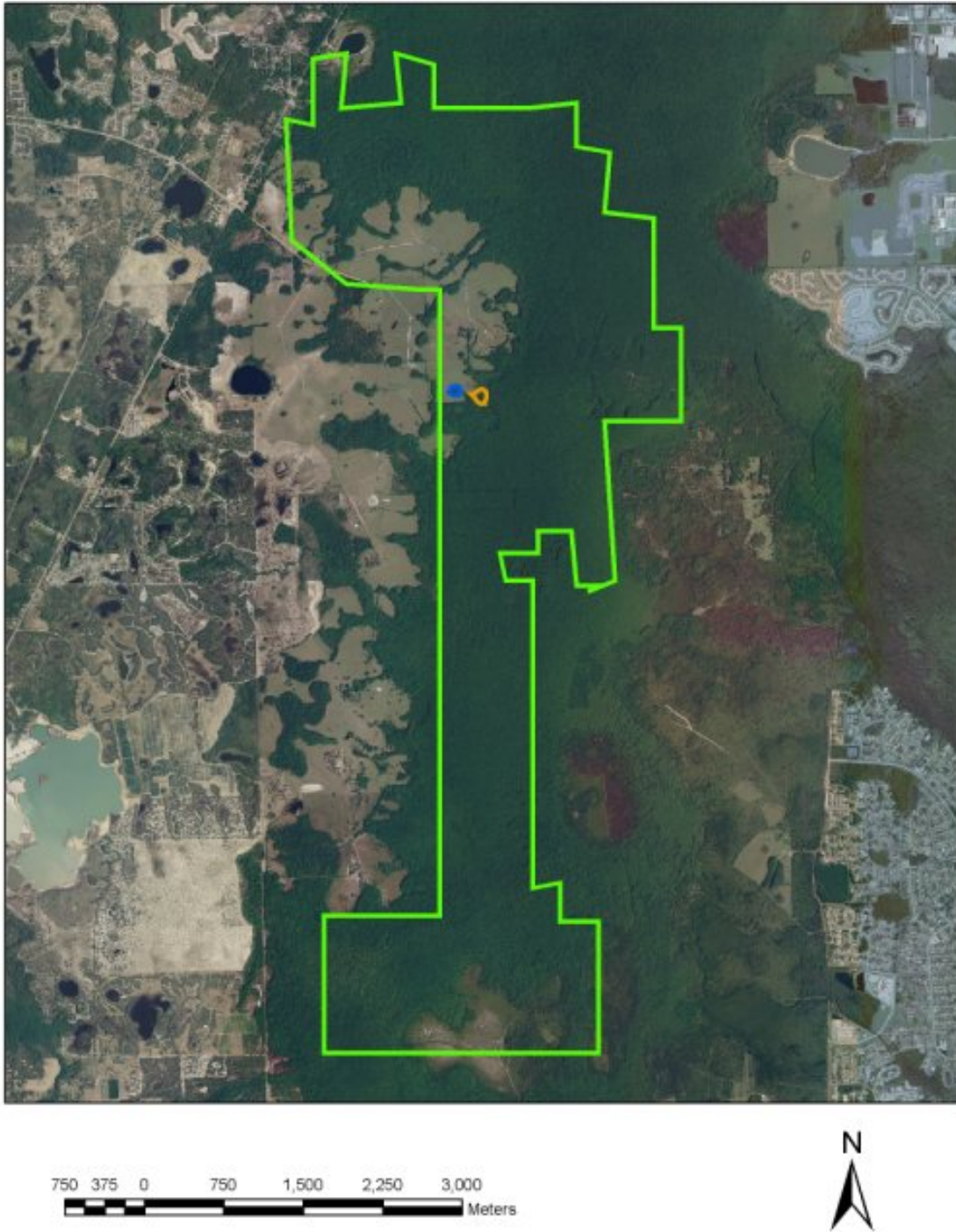


Figure B-22.1. Landscape location of Reedy Creek Mitigation Bank (green line). Boundary of the wetland assessment area Reed_BOT is outlined in orange, and Reed_FOR is outlined in blue.

(A)



(B)



Figure B-22.2. Site photos of assessment area photos of (A) the outer edge of Reed_BOT and (B) Reed_FOR at Reedy Creek Mitigation Bank. Reed_FOR is located in pasture in a phase that had not begun restoration at the time of site visit.

Reed_BOT Uniform Mitigation Assessment Method, page 1

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

| | | | | | |
|---|--|---|--|--|--|
| Site/Project Name Reedy Creek Mitigation Bank | | Application Number NA | | Assessment Area Name or Number Reed_BOT | |
| FLUCCs code 6150 Stream and Lake Swamps (Bottomland) | | Further classification (optional) SFWMD Soils mainly Kaliga Muck (very poorly drained), but had been drained. NWI Palustrine Forested Broadly-deciduous, seasonally flooded. | | Impact or Mitigation Site? Mitigation Bank | |
| | | | | Assessment Area Size 1.3 ha (3.1 ac) | |
| Basin/Watershed Name/Number HUC 03090101 Kissimmee River | | Affected Waterbody (Class) 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 On one side is upland which has been cleared and used as improved pasture, it appears this area is currently being harvested for sod. The remaining 3 sides are continuous forested wetland which grades eventually into Reedy Creek, the creek channel must be narrow as it is not visible on the 2004 DOQQs. | | | | | |
| Assessment area description A forested wetland with high species richness in the canopy and shrub layers. The exotic species water spangles (<i>Salvinia minima</i>) covers the entire water surface. There were distinct linear features running through the wetland that were deeper than the adjacent forested areas. | | | | | |
| Significant nearby features Bordered to north by Upper Lake Basin Watershed (SFWMD property). It appears that the headwaters to Reedy Creek are essential all water bodies associated with the Walt Disney World complex. | | | Uniqueness (considering the relative rarity in relation to the regional landscape.) This is part of a much larger forested wetland system surrounding Reedy Creek. The areas all around the forested wetland complex are very built-up and part of Kissimmee, Orlando, St. Cloud, and Celebration. Much of this wetland appears to be in similar condition. | | |
| Functions Provide permanent water pools for wildlife. Improve water quality. Control water quantity. Structural and species diversity within canopy supports a productive and diverse habitat. Provides important habitat, refugia, and breeding grounds for waterfowl, wading birds, and aquatic animals. | | | Mitigation for previous permit/other historic use Surrounding areas in cattle pasture, evidence of past logging and earth moving activities. | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Opossum, river otter, white-tailed deer, raccoon, gray squirrel, bobcat, gray fox, wood and rice rats, hawks, wood duck, woodpeckers (pileated, downy), turkey, swallow-tailed kite, cottonmouth snake, variety of frogs, toads, salamanders, snakes, and turtles. | | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Alligator mississippiensis (alligator-T(S/A)), Mycteria americana (wood stork-E), Aramus guarauna (limpkin-SSC), Puma concolor coryi (Florida panther-E), Haliaeetus leucocephalus (bald eagle-T), Drymarchon corais couperi (Eastern indigo snake-T). | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Blue gray gnat catcher, leopard frog, fish eating spiders, green tree frogs, green anoles, phoebes, red shouldered hawk, bull ants, other species of spiders, butterflies, yellow rump warblers, ?squirrel tree frog, large tree spiders. At one point it sounded as though a few large mammals were fleeing our presence - these may have been hog or deer - you could hear the sounds of movement in the water and vegetation being displaced, particularly the palm fronds. | | | | | |
| Additional relevant factors: Lat 28° 13m 11.83s , Lon -81° 32m 10.05s. FWCC Priority Wetlands: 4-6 species, wetland habitat. | | | | | |
| Assessment conducted by: Kelly Chinnners Reiss | | | Assessment date(s): 11/8/2005 | | |

Reed_BOT Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|---|--|
| Site/Project Name Reedy Creek Mitigation Bank | Application Number NA | Assessment Area Name or Number Reed_BOT |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinnners Reiss | Assessment date: 11/8/2005 |

| | | | | |
|--|---|--|---|--|
| 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 | Habitats outside the assessment area are available in sufficient quantity and variety to provide optimal support for most, but not all wildlife species. Some of the plant community composition in the proximity of the assessment area consists of invasive exotic or other invasive plant species, but cover is minimal and has minimal adverse effect on the functions provided by the assessment area. Mainly this is true of the pasture areas that should eventually be restored. This is also true of the forested wetland, as the entire water surface is covered by the exotic species water spangles (<i>Salvinia minima</i>). There are areas where cover by such species should be considered greater than minimal, though there is not an area where these species provide a majority of plant cover. Wildlife access to and from habitats outside the assessment area is partially limited, either by distance, as the adjacent pasture habitat does not provide adequate cover. Functions of the assessment area that benefit downstream fish and wildlife are not limited by distance or barriers that reduce the opportunity for the assessment area to provide these benefits. Land uses outside the assessment area have significant adverse impacts on fish and wildlife - the headwaters appear to be surrounded by very urban and built up lands, plus the only areas of preservation, conservation, or reclamation are associated with the forested wetland complex, and little of the upland support areas is intact or to be preserved. The opportunity for the assessment area to provide benefits to downstream or other hydrologically connected areas appears to be limited by hydrologic impediments or flow restrictions. This area should be seasonally flooded, and the water level indicators present suggest stationary year round water levels and some type of water impoundment. Perhaps the accumulation of water from the past two hurricane seasons created such high water levels, but according to the type of wetland this is, the hydrology appears off - there is more standing water impounded here than would be anticipated. Downstream habitats derive significant benefits from discharges from the assessment area and could suffer adverse impacts if the quality or quantity of these discharges were altered. | |
| | w/o pres or current 6 | with |
| .500(6)(b)Water Environment (n/a for uplands) | Water levels and flows are higher than appropriate, considering seasonal variation, tidal cycle, antecedent weather and other climatic effects. Water level indicators are distinct and consistent with current hydrologic conditions, but stain lines and lichen lines are much higher than expected for the type of system being evaluated. Soil was inundated - no evidence of atypical soil erosion or deposition, considering high standing water level. It is possible that past drainage led to soil oxidation, which has led to tree fall, then as water level has been increased trees could not tolerate stress and have reduced canopies or have fallen over - this is a hypothetical explanation of changes to vegetation from the water environment for this site. If the system were dry, evidence of soil subsidence may be visible. There is no evidence of atypical fire history. Vegetation zonation is inappropriate for the type of system being evaluated, indicating atypical hydrologic conditions - this is evident in the linear deep water herbaceous features throughout this portion of the forested wetland. Vegetation has strong evidence of much greater have more generalized hydrologic requirements - this is mainly noted due to the absence of fish - while they should be abundant in this wetland type, perhaps the surface covering of water spangles (<i>Salvinia minima</i>) has reduced available habitat. Some of the plant community composition consists of species tolerant of and associated with moderate water quality degradation: cattail (<i>Typha</i> sp.), Peruvian primrosewillow (<i>Ludwigia peruviana</i>). Direct observation of standing water indicates slight water quality degradation including highly colored water with high turbidity. Once the sediment layer has been disrupted, it remains as flocculant organic material in the water column. Water depth and light penetration are not well suited for this type of community and are expected to cause significant changes in species, age classes, and densities. This may be particularly true for changes in the benthic community due to the water surface coverage by water spangles. | |
| | w/o pres or current 5 | with |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community | All or nearly all of the plant cover is by appropriate and desirable plant species in the canopy and shrub layers. Much of the plant cover is by inappropriate and undesirable plant species in the ground stratum. There is minimal evidence of regeneration or natural recruitment - this was mainly visible along the shallow edge walking into the forested wetland where we noted some regeneration of cabbage palm (<i>Sabal palmetto</i>), Carolina pop ash (<i>Fraxinus caroliniana</i>), and pondcypress (<i>Taxodium ascendens</i>). No regeneration was noted in the interior of the wetland. Age and size distribution approximates conditions typical of that type of system, with no indication of permanent deviation from normal successional or mortality pattern overall, although this may be true for certain species. There have been temporary deviations or impacts to age and size distribution, as evidenced by large trees removed from historic timber harvesting activities. Coarse woody debris and snags have greater than normal quantity due to deviation from expected age structure or land management. Some plants are in good condition, others are not. Much of the canopy has been reduced, and there was a large patch of dead and dying common buttonbush (<i>Cephalathus occidentalis</i>). Land management practices are generally appropriate, though there is still effects from cattle and sod harvesting activities that influence this wetland. Topographic features are much greater than expected due to linear deeper water features throughout wetland. These areas are deeper by 0.5m or more. | |
| | w/o pres or current 6 | with |

| |
|---|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current or w/o pres |
| with |
| 0.57 |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Form 62-345.900(2), F.A.C. [effective date 02-04-2004]

Reed_BOT Wetland Rapid Assessment Procedure, page 1

Project Name: Reed_BOT, Reedy Creek Mitigation Bank

Date: 11/8/2005

Evaluator(s): Kelly Chinnners Reiss

Wetland Type/Description: Mixed forested wetland. HUC 03090101 Kissimmee River Basin

Wetland Assessment Area: 1.3 ha (3.1 ac)

FLUCCS Code/Description: 6150 Stream and Lake Swamps (Bottomland)

| | |
|------|---------------------------|
| 2.0 | Wildlife Utilization (WU) |
| 1.5 | Wetland Canopy (O/S) |
| 1.5 | Wetland Ground Cover (GC) |
| 2.1 | Habitat Support/Buffer |
| 2.0 | Field Hydrology (HYD) |
| 2.2 | WQ Input & Treatment (WQ) |
| 11.3 | SUM |
| 6 | Count |
| 0.63 | WRAP |

Reed BOT Wetland Rapid Assessment Procedure, page 2

| | |
|---|----------------------------------|
| 2.0 | Wildlife Utilization (WU) |
| <p>Blue gray gnat catcher, leopard frog, fish eating spiders, green tree frogs, green anoles, phoebes, red shouldered hawk, bull ants, other species of spiders, butterflies, yellow rump warblers, ?squirrel tree frog, large tree spiders. At one point it sounded as though a few large mammals were fleeing our presence - these may have been hog or deer - you could hear the sounds of movement in the water and vegetation being displaced, particularly the palm fronds. Moderate evidence of wildlife use, certainly used by small and medium mammals, amphibians. No fish were visible, but the water was dark and the surface was covered with water spangles (<i>Salvinia minima</i>) and a some duckweed (<i>Lemna</i> sp.). There was evidence of movement by large mammals, but whether that was by desirable species (ex. bobcat, panther, etc.) versus undesirables (ex. hog) is uncertain. There is ample adjacent wetland habitat, but it has been impacted with steep gradients (ex. large changes in water levels), and the adjacent upland is historic pasturelands that appear currently to be harvested for sod. There is evident human disturbance in these open pasture areas, and also in the forested wetland itself.</p> | |

| | |
|---|-----------------------------|
| 1.5 | Wetland Canopy (O/S) |
| <p>Dominant canopy species include: laurel oak (<i>Quercus laurifolia</i>), Carolina pop ash (<i>Fraxinus caroliniana</i>), cabbage palm (<i>Sabal palmetto</i>), sweetgum (<i>Liquidambar styraciflua</i>), swamp tupelo (<i>Nyssa sylvatica</i> var. <i>biflora</i>), red maple (<i>Acer rubrum</i>), American elm (<i>Ulmus americana</i>), slash pine (<i>Pinus elliottii</i>), and pondcypress (<i>Taxodium ascendens</i>). There was also a rich species composition in the shrub layer including: wax myrtle (<i>Myrica cerifera</i>), swamp dogwood (<i>Cornus foemina</i>), falsewillow (<i>Baccharis</i> sp.), Walter's viburnum (<i>Viburnum obovatum</i>), common buttonbush (<i>Cephalanthus occidentalis</i>), Virginia willow (<i>Itea virginica</i>), Carolina willow (<i>Salix caroliniana</i>), swamp bay (<i>Persea palustris</i>), Peruvian primrosewillow (<i>Ludwigia peruviana</i>), common persimmon (<i>Diospyros virginiana</i>), and highbush blueberry (<i>Vaccinium corymbosum</i>). There is logging evidence a great distance into the wetland - even past 100m from the edge. There was a patch of dead and dying common buttonbush. The canopy has self-pruned and looks stressed. There is <10% invasive canopy and midstory species cover - the two nuisance species noted include cattail (<i>Typha</i> sp.) and Peruvian primrosewillow. The wetland overstory and shrub layers do provide habitat support, but mainly in a patchy mosaic, with excess downed logs and debris. Natural recruitment was noted for Carolina pop ash, cabbage palm, and pondcypress, though strong evidence of natural recruitment was lacking. Canopy trees did not appear healthy - had signs of reduced canopies and patch of dead and dying common buttonbush.</p> | |

| | |
|---|----------------------------------|
| 1.5 | Wetland Ground Cover (GC) |
| <p>The ground cover had a mix of species, including many desirable wetland species and some undesirable species. Considering the covering of the surface water with the exotic species water spangles (<i>Salvinia minima</i>), there was certainly >25% cover by undesirable species. Some additional less desirable species include Eastern poison ivy (<i>Toxicodendron radicans</i>), dogfennel (<i>Eupatorium capillifolium</i>), and Virginia buttonweed (<i>Diodia virginiana</i>). In addition there were many vines growing low throughout the wetland interior including saw greenbrier (<i>Smilax bona-nox</i>), laurel greenbrier (<i>Smilax laurifolia</i>), peppervine (<i>Ampelopsis arborea</i>), groundnut (<i>Apios americana</i>), cowitch vine (<i>Decumaria barbara</i>), and muscadine (<i>Vitis rotundifolia</i>). These are included in the wetland ground cover category because of their physical location in the wetland, which suggests perhaps an open canopy allowing vines to grow and vines suppressing growth of typical wetland ground cover. There was an unidentified fern with circular to kidney shaped sori and tufts of brown hair along the 2nd rachis that grew in patches and was over 6 feet tall! The ground cover appeared in linear zones, which were thought to be remnant logging roads or remains from some previous anthropogenic earth moving activity. These areas hosted herbaceous vegetation (no trees or shrubs) and had deeper water levels than where the woody vegetation grew.</p> | |

| 2.1 | Habitat Support/Buffer | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-------------------------------|-------------|-------------|-------------|-------------|---------|---|------|-----|------------------|-----|------|-----|--|--|--|--|--|--|--|--|----------------|--|--|------------|
| <p>1/4 of buffer is improved pasture, the buffer here is >300' wide but has >75% exotic/nuisance/invasive plant species. 3/4 of buffer is continuous forested wetland, the buffer here is >300' wide but there are some nuisance/invasive/exotic species (>10% cover) in this wetland. It is not however predominantly undesirable species (as a score of 2.0 suggests).</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Buffer Type</th> <th style="width: 10%;">(Score) x</th> <th style="width: 10%;">(% of Area)</th> <th style="width: 10%;">= Sub Total</th> </tr> </thead> <tbody> <tr> <td>Pasture</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.3</td> </tr> <tr> <td>Forested Wetland</td> <td style="text-align: center;">2.5</td> <td style="text-align: center;">0.75</td> <td style="text-align: center;">1.9</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td colspan="3" style="text-align: right;">Total =</td> <td style="text-align: center;">2.1</td> </tr> </tbody> </table> | | Buffer Type | (Score) x | (% of Area) | = Sub Total | Pasture | 1 | 0.25 | 0.3 | Forested Wetland | 2.5 | 0.75 | 1.9 | | | | | | | | | Total = | | | 2.1 |
| Buffer Type | (Score) x | (% of Area) | = Sub Total | | | | | | | | | | | | | | | | | | | | | | |
| Pasture | 1 | 0.25 | 0.3 | | | | | | | | | | | | | | | | | | | | | | |
| Forested Wetland | 2.5 | 0.75 | 1.9 | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total = | | | 2.1 | | | | | | | | | | | | | | | | | | | | | | |

| | |
|---|------------------------------|
| 2.0 | Field Hydrology (HYD) |
| <p>The water regime varies because of the linear strips of vegetation, so some areas have much deeper water. The water color was dark and tannic, and walking through the wetland created a great deal of flocculent soft organic material that stayed in the water column. There were indicators of appropriate wetland hydrology such as loop roots with lenticels, knees, high water stain lines (perhaps 0.5 m greater than during site visit), and lichen lines above high water mark. Hydrology appears adequate to maintain a viable wetland (did see regeneration of canopy species), though there are effects visible from past anthropogenic earth moving activities. Plants do show signs of stress including having reduced canopy and excessive tree fall.</p> | |

| | |
|---|---------------------------------------|
| 2.2 | WQ Input & Treatment (WQ)* |
| <p>*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.</p> | |

| LANDUSE CATEGORY (LU) | | | |
|-----------------------|-----------|-------------|-------------|
| Land Use Category | (Score) x | (% of Area) | = Sub Total |
| Pasture | 1.0 | 0.25 | 0.3 |
| Forested Wetland | 2.5 | 0.75 | 1.9 |
| LU Total = | | | 2.1 |

| PRETREATMENT CATEGORY (PT) | | | |
|----------------------------|-----------|-------------|-------------|
| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
| No Treatment | 0.0 | 0.25 | 0.0 |
| Nat. Undev. | 3.0 | 0.75 | 2.3 |
| PT Total = | | | 2.3 |

Reed_FOR Uniform Mitigation Assessment Method, page 1
PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

| | | | |
|---|--|--|--|
| Site/Project Name Reedy Creek Mitigation Bank | | Application Number NA | Assessment Area Name or Number Reed_FOR |
| FLUCCs code SFWMD 1999 6170 mixed wetland hardwood | Further classification (optional) NWI Palustrine forested SSURGO Smyrna and Myakka fine sand | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size 0.7 ha (1.8 ac) |
| Basin/Watershed Name/Number HUC 03090101 Kissimmee River | Affected Waterbody (Class) 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 Isolated depression. Large continuous bottomland hardwood depression in the adjacent landscape separated by pasture. | | | |
| Assessment area description Forested depression. Baldcypress (<i>Taxodium distichum</i>) may have been cut historically. Some mature and signs of regeneration, but less baldcypress than expected. Mature elm (<i>Ulmus americana</i>) and red maple (<i>Acer rubrum</i>). No transitional edge or ecotone into adjacent natural community. Pasture right up to depression edge. Shrubby wax myrtle (<i>Myrica cerifera</i>) growing on edge of wetland. | | | |
| Significant nearby features Bordered to north by Upper Lake Basin Watershed (SFWMD property). It appears that the headwaters to Reedy Creek are essentially all water bodies associated with the Walt Disney World complex. Lake Russel and Cypress Lake are part of Lake Kissimmee and Kissimmee River basin. | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Bank is designated as important in CARL, important aquifer recharge area. Also a biodiversity hot spot. The actual wetland assessment area is not rare or unique. | |
| Functions Isolation and small size helps to support a very different assemblage of species than that found in larger, more permanent wetlands. Wildlife habitat and refuge, in particular waterfowl, wading birds, and aquatic animals, which may depend on cypress swamps for breeding purposes. Provide water storage by holding excess water and slowly releasing it into the water table. Enhance water quality by absorbing nutrients from the water. | | Mitigation for previous permit/other historic use Surrounding areas in cattle pasture although this area was reported to be not as intensely used. | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Opossum, river otter, white-tailed deer, raccoon, gray squirrel, bobcat, gray fox, wood and rice rats, hawks, wood duck, woodpeckers (pileated, downy), turkey, swallow-tailed kite, cottonmouth snake, variety of frogs, toads, salamanders, snakes, and turtles. | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Alligator mississippiensis</i> (alligator-T(S/A)), <i>Mycteria americana</i> (wood stork-E), <i>Aramus guarauna</i> (limpkin-SSC) | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Several garter snakes, rat snake, tree frogs, Northern parula (<i>Parula americana</i>), red-shouldered hawk (<i>Buteo lineatus</i>), red-tailed hawk (<i>Buteo jamaicensis</i>), numerous butterflies (one monarch emerging from cocoon), wood storks (<i>Mycteria americana</i>) and swallow-tailed kite (<i>Elanoides forficatus</i>) flew over site. | | | |
| Additional relevant factors: Archaeological sites within a mile buffer of wetland assessment area. Housing development is going in on western edge of property. Pasture around wetland assessment area is permitted for Phase III restoration to flatwoods community. | | | |
| Assessment conducted by: Erica Hernandez, Kelly Chinnners Reiss, Tony Davanzo | | Assessment date(s): 5/12/2005 | |

Reed_FOR Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|---|--|
| Site/Project Name Reedy Creek Mitigation Bank | Application Number NA | Assessment Area Name or Number Reed_FOR |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinnners Reiss | Assessment date: 5/12/2005 |

| | | | | |
|---|---|--|---|--|
| 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 w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 7 | Biodiversity hotspot. Reedy Creek is an important forested wetland. Pasture currently surrounding the wetland assessment area does not support many species or provide habitat or cover. The pasture also limits natural landscape processes such as fire that would keep a natural ecotone around the depression. Listed species are known in area. Historic and recent cattle land use in the landscape although this area has had a lower density of cattle than other areas on the property. New housing development is going in on the western edge of Phase III. |
| .500(6)(b) Water Environment (n/a for uplands) w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 9 | Hydrologic indicators are consistent. Water levels and soil moisture appropriate for seasonality. Plant species are typical. Wetland dependant amphibians have been seen and heard. No evidence of water quality degradation. This area was apparently not heavily used by cattle and cattle have been removed. Very little standing water at time of assessment but that water was not turbid or discolored. Wetland does not have a natural buffer or ecotone, edge effects could affect microhabitats on depression's edge by increasing heat and light and could affect catchment size. |
| .500(6)(c) Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 7 | Majority of plant cover is appropriate. Canopy composition not what would be expected. Canopy not as closed and shaded as it should be. Some of this could be due to recent hurricane damage (2004). Light penetration greater than expected. Very dense herbaceous ground cover could indicate canopy has been very open for a long time. Some down debris and tree limbs probably due to hurricane damage. Some exotic species are present, but cover is minimal. Age distribution is normal for something that may have had a disturbance over 50 years ago. There is evidence of regeneration. Wetland edge does not get adequate fire due to conversion of flatwoods to pasture. Wax myrtle (<i>Myrica cerifera</i>) has grown up in what should have been a natural ecotone. No wetland buffer before it grades into pasture. |

| |
|--|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current or w/o pres <input type="checkbox"/> with <input type="checkbox"/> |
| 0.77 |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Reed_FOR Wetland Rapid Assessment Procedure, page 1

Project Name: Reed_FOR Reedy Creek Mitigation Bank

Date: 5/12/2005

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: Mixed forested wetland.

Wetland Assessment Area: 0.7 ha (1.7 ac)

FLUCCS Code/Description: Not differentiated on SFWMD 1995 Land Use coverage.

Should be 6170 Mixed Wetland Hardwoods - or perhaps previously 6210 Cypress

| | |
|------|---------------------------|
| 2.0 | Wildlife Utilization (WU) |
| 2.0 | Wetland Canopy (O/S) |
| 2.0 | Wetland Ground Cover (GC) |
| 1.5 | Habitat Support/Buffer |
| 3.0 | Field Hydrology (HYD) |
| 0.5 | WQ Input & Treatment (WQ) |
| 11.0 | SUM |
| 6 | Count |
| 0.61 | WRAP |

Reed_FOR Wetland Rapid Assessment Procedure, page 2

| | |
|---|----------------------------------|
| 2.0 | Wildlife Utilization (WU) |
| Yellow rat snake, green tree frog, little grass frog, green anole, leopard frog. Situated in improved pasture. Good habitat for some song birds, but leaves them open to predators, true for herps too. Questioned whether it should be lower at a 1.5, but decided upon 2.0 because of proximity to stream and bottomland swamp and visual evidence of wildlife use on site. | |

| | |
|---|-----------------------------|
| 2.0 | Wetland Canopy (O/S) |
| Less than 10% invasive canopy species. Some natural recruitment apparent. | |

| | |
|--|----------------------------------|
| 2.0 | Wetland Ground Cover (GC) |
| Some exotic species present (i.e. <i>Alternanthera philoxeroides</i> - alligator weed, an 2001 Exotic Pest Plant Council Category II listed species). Good diversity of graminoid species. Other species include <i>Iris</i> sp. (iris) and <i>Cephalanthus occidentalis</i> (buttonbush). | |

| 1.5 | Habitat Support/Buffer | | | | | | | | | | | | | | | | |
|---|---|-------------|-------------|-------------|-------------|---------|-----|---|-----|--|--|--|-----|----------------|--|--|------------|
| Greater than 300 ft vegetated buffer of improved pasture. To the W side of the wetland is additional off-property pasture, to the E is bottom hardwood forest - a large continuous wetland. | | | | | | | | | | | | | | | | | |
| | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;">Buffer Type</th> <th style="width: 15%;">(Score) x</th> <th style="width: 15%;">(% of Area)</th> <th style="width: 30%;">= Sub Total</th> </tr> </thead> <tbody> <tr> <td>Pasture</td> <td style="text-align: center;">1.5</td> <td style="text-align: center;">1</td> <td style="text-align: center;">1.5</td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: center;">0.0</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total =</td> <td style="text-align: center;">1.5</td> </tr> </tbody> </table> | Buffer Type | (Score) x | (% of Area) | = Sub Total | Pasture | 1.5 | 1 | 1.5 | | | | 0.0 | Total = | | | 1.5 |
| Buffer Type | (Score) x | (% of Area) | = Sub Total | | | | | | | | | | | | | | |
| Pasture | 1.5 | 1 | 1.5 | | | | | | | | | | | | | | |
| | | | 0.0 | | | | | | | | | | | | | | |
| Total = | | | 1.5 | | | | | | | | | | | | | | |

| | |
|---|------------------------------|
| 3.0 | Field Hydrology (HYD) |
| Appears adequate. No soil subsidence evident. Small ditch/swale about 20m away. | |

0.5 WQ Input & Treatment (WQ)*

**The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.*

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| improved pasture | 1.0 | 1.0 | 1.0 |
| | | | 0.0 |
| | | | 0.0 |
| | | | 0.0 |
| LU Total = | | | 1.0 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| no treatment | 0.0 | 1.0 | 0.0 |
| | | | 0.0 |
| | | | 0.0 |
| | | | 0.0 |
| PT Total = | | | 0.0 |

Reed_FOR Hydrogeomorphic Approach, page 1

Variable Subindex and FCI Calculation for Florida Depressions Cypress

Assessment Team: KCR, EH
Project Name: Reedy Creek Reed_FOR
Location: lat 28 degrees 13m 15.12s/ long -81 degrees 32m 1'
Date: 5/12/05
Subclass: Cypress depression

| Function | FCI |
|--------------------------------|------|
| Surface Water Storage | 0.92 |
| Subsurface Water Storage | 0.93 |
| Cycle Nutrients | 0.75 |
| Characteristic Plant Community | 0.31 |
| Wildlife Habitat | 0.61 |

| Variables | Measure | Units | Subindex |
|-----------|---------|--------------------|----------|
| V CATCH | 0.01 | % | 1 |
| V UPUSE | 55 | number | 1 |
| V WETPROX | 3284 | meters | 0.82 |
| V WETVOL | 1 | % | 1 |
| V SUROUT | 1 | % | 1 |
| V SUBOUT | 1 | % | 1 |
| V ZONES | 0.5 | number | 0.5 |
| V CANOPY | 15 | % | 0.4 |
| V SURTEX | 0.7 | | 0.7 |
| V TBA | 418 | m ² /ha | 1 |
| V SSD | 5 | % | 0.08 |
| V TCOMP | 20 | % | 0.2 |

Reed_FOR Hydrogeomorphic Approach, page 2

Vcatch very small change from road, not enough to change subindex from 1.0

Vupuse

open space cover type curve # 61 percent 100%

Vwetprox

| | | | |
|----------|----------|----------|----------|
| Sector 1 | Sector 2 | Sector 3 | Sector 4 |
| 500m | 133m | 500m | 500m |
| Sector 5 | Sector 6 | Sector 7 | Sector 8 |
| 500m | 500m | 267m | 384m |

Vwetvol no change

| | | | | | |
|------------------------------------|----------------------------------|---------------------|-------------------------------|---------------------------|--|
| diameter wetland north-south | diameter wetland east-west | depth of wetland | length of fill material | width of fill material | average thickness of fill material |
|------------------------------------|----------------------------------|---------------------|-------------------------------|---------------------------|--|

Vsurout none

Vsubout none

Vzones there is no wetland edge transitions from wetland to pasture now 1 was 2

Vcanopy 15%

Vsurtex silt and loam

Vtba plot 1 475m²/ha plot 2 247m²/ha plot 3 250m²/ha plot4 700m²/ha

Vssd 1 intersect, 5%

Vtcomp 20%
Bald cypress 14%

Reed_FOR Florida Wetland Condition Index, macrophyte field data sheets, page 1

*NOTE: field codes are different than reported codes, Reed_FOR = POREED

| Species | 0.5 m | 0-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|---|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <i>Rhynchospora inundata</i> | | | | | | | | | | | | | | | | |
| <i>Carex gigantea</i> | | | | | | | | | | | | | | | | |
| <i>Pontederica cordata</i> | | | | | | | | | | | | | | | | |
| <i>Hydrocotyle</i> sp. | | | | | | | | | | | | | | | | |
| <i>Iris versicolor</i> | | | | | | | | | | | | | | | | |
| <i>Ptilium capillare</i> | | | | | | | | | | | | | | | | |
| <i>Polypodium sp.</i> ^{sp. 9} sp. 10 | | | | | | | | | | | | | | | | |
| <i>Myrica carolinensis</i> | | | | | | | | | | | | | | | | |
| <i>Alternanthera philoxeroides</i> | | | | | | | | | | | | | | | | |
| <i>Centella asiatica</i> | | | | | | | | | | | | | | | | |
| <i>Salix</i> ^{#4} sp. 4 | | | | | | | | | | | | | | | | |
| <i>Drosera virginiana</i> | | | | | | | | | | | | | | | | |
| <i>Cyperus hemisphaericus</i> ^{sp. 11} | | | | | | | | | | | | | | | | |
| <i>Galium</i> sp. 12 | | | | | | | | | | | | | | | | |
| <i>Toxicaria radicans</i> | | | | | | | | | | | | | | | | |
| <i>Panicum</i> sp. 13 ^{#7} | | | | | | | | | | | | | | | | |
| <i>Bertholletia senegalensis</i> | | | | | | | | | | | | | | | | |
| <i>Juncus megacephalus</i> | | | | | | | | | | | | | | | | |
| <i>Salix caroliniana</i> | | | | | | | | | | | | | | | | |
| <i>Cudrania</i> ^{#8} sp. 14 ^{repens} | | | | | | | | | | | | | | | | |
| <i>Acer rubrum</i> | | | | | | | | | | | | | | | | |
| <i>Sabal palmetto</i> | | | | | | | | | | | | | | | | |
| <i>Lycopus radiolatus</i> | | | | | | | | | | | | | | | | |
| <i>Baccharis halimifolia</i> | | | | | | | | | | | | | | | | |
| <i>Ruellia carolinensis</i> | | | | | | | | | | | | | | | | |

Site: **POREED**
 Reedy Cr.
 Date: May 12, 05

Resurvey Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands
 Transect Direction: North
 Data Recorder: Tony Downing
 1992

Reed_FOR Florida Wetland Condition Index, macrophyte field data sheets, page 2
 *NOTE: field codes are different than reported codes, Reed_FOR = POREED

| Species | 0.5 m | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|---|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <i>Ampelopsis arborea</i> | | ✓ | | | | | | | | | | | | | | |
| <i>Wedelia virginica</i> | | ✓ | | | | | | | | | | | | | | |
| <i>Quercus nigra</i> | | ✓ | | | | | | | | | | | | | | |
| <i>Juncus effusus</i> | | ✓ | | | | | | | | | | | | | | |
| <i>Polypogon monspeliensis</i> / <i>Rumex</i> sp. | | ✓ | | | | | | | | | | | | | | |
| <i>Taxodium distichum</i> | | ✓ | | | | | | | | | | | | | | |
| <i>Parthenocissus quinquefolia</i> | | ✓ | | | | | | | | | | | | | | |
| <i>Bacopa caroliniana</i> | | ✓ | | | | | | | | | | | | | | |
| <i>Pichroma edentata</i> | | ✓ | | | | | | | | | | | | | | |
| Utricularia <i>Utricularia</i> | | ✓ | | | | | | | | | | | | | | |
| <i>Eriogonum aquaticum</i> | | ✓ | | | | | | | | | | | | | | |
| Unit 10 <i>Sisyrinchium angustifolium</i> | | ✓ | | | | | | | | | | | | | | |
| Unit 11 <i>Ludwigia confinis</i> | | ✓ | | | | | | | | | | | | | | |
| <i>Paspalum notatum</i> | | ✓ | | | | | | | | | | | | | | |
| Tray edge <i>Eleocharis vivipara</i> | | ✓ | | | | | | | | | | | | | | |

Date: May 12, 05
 Site: Neely Creek POREED
 Transect Direction: North
 Data Recorder: Tom Davitt
 Penarvey Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands

Reed_FOR Florida Wetland Condition Index, macrophyte field data sheets, page 3
 *NOTE: field codes are different than reported codes, Reed_FOR = POREED

| 175-80 | 170-75 | 65-70 | 60-65 | 55-60 | 45-50 | 40-45 | 35-40 | 30-35 | 25-30 | 20-25 | 15-20 | 10-15 | 5-10 | 0-5 m | Species |
|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|---|
| | | | | | | | | | | | | | | | <i>Boehmeria</i> <i>Cubidrica</i> |
| | | | | | | | | | | | | | | | <i>Eupatorium</i> <i>Capitatum</i> |
| | | | | | | | | | | | | | | | <i>Pithecolobium</i> <i>capitatum</i> |
| | | | | | | | | | | | | | | | <i>Dioscorea</i> <i>virginiana</i> |
| | | | | | | | | | | | | | | | <i>Hydrocotyle</i> <i>verticillata</i> |
| | | | | | | | | | | | | | | | <i>Carex</i> <i>lanceolata/albidescens</i> |
| | | | | | | | | | | | | | | | <i>Cephaelis</i> <i>occidentalis</i> |
| | | | | | | | | | | | | | | | <i>Sium</i> <i>fracturum</i> |
| | | | | | | | | | | | | | | | <i>Carex</i> <i>gigantea</i> |
| | | | | | | | | | | | | | | | <i>Polygonum</i> <i>perfoliatum</i> |
| | | | | | | | | | | | | | | | <i>Trifolium</i> <i>virginica</i> |
| | | | | | | | | | | | | | | | <i>Rhynchospora</i> <i>corniculata</i> |
| | | | | | | | | | | | | | | | <i>Acer</i> <i>rusticum</i> |
| | | | | | | | | | | | | | | | <i>Ulmus</i> <i>americana</i> |
| | | | | | | | | | | | | | | | <i>Quercus</i> <i>laevis</i> <i>hemisphaerica</i> |
| | | | | | | | | | | | | | | | <i>Pantheroxylon</i> <i>benquetfolia</i> |
| | | | | | | | | | | | | | | | <i>#4 Smilax</i> <i>auriculata</i> |
| | | | | | | | | | | | | | | | <i>Pericleria</i> <i>cordata</i> |
| | | | | | | | | | | | | | | | <i>#19 Polygonum</i> <i>perfoliatum</i> |
| | | | | | | | | | | | | | | | <i>Urtica</i> <i>virginiana</i> |
| | | | | | | | | | | | | | | | <i>#20 Panicum clump</i> <i>arvensis</i> |
| | | | | | | | | | | | | | | | <i>Cenchrus</i> <i>asiatica</i> |
| | | | | | | | | | | | | | | | <i>Woodwardia</i> <i>virginica</i> |
| | | | | | | | | | | | | | | | <i>Toxicaria</i> <i>distichum</i> |
| | | | | | | | | | | | | | | | <i>Toxicaria</i> <i>radicans</i> |

Date: 5/12/05
 Site: Ruby Creek
 Bosuvey Field Data Sheet - Transects, Vegetation Presence - LF Center for Wetlands
 POREED
 Transect Direction: E
 Data Recorder: K. Peiss
 #19
 #20

Reed_FOR Florida Wetland Condition Index, macrophyte field data sheets, page 4
 *NOTE: field codes are different than reported codes, Reed_FOR = POREED

| Species | 0.5 m | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|--------------------------------------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Quercus nigra | | ✓ | | | | | | | | | | | | | | |
| Vitis rotundifolia | | ✓ | | | | | | | | | | | | | | |
| Mynca cerifera | | ✓ | | | | | | | | | | | | | | |
| 17 Hedysotis uniflora | | ✓ | | | | | | | | | | | | | | |
| Ampelopsis gibbosa | | ✓ | | | | | | | | | | | | | | |
| Parthenocissus parviflora | | ⊕ | | | | | | | | | | | | | | |
| Berchemia scandens | | ✓ | | | | | | | | | | | | | | |
| Cornus foemina | | ✓ | | | | | | | | | | | | | | |
| Juncus echinops | | ✓ | | | | | | | | | | | | | | |
| Alternanthera philoxeroides | | ✓ | | | | | | | | | | | | | | |
| Lycopus rebethus | | ✓ | | | | | | | | | | | | | | |
| Stenotaphrum secundatum | | ✓ | | | | | | | | | | | | | | |
| Rubus argutus | | ✓ | | | | | | | | | | | | | | |

Date: 5/12/05
 Site: Reed/Creek
 POREED
 Blaney Field Data Sheet - Transects, Vegetation Presence - LF Center for Wetlands
 Transect Direction: E 200 ft
 Data Recorder: W. Reed

Reed_FOR Florida Wetland Condition Index, macrophyte field data sheets, page 5
 *NOTE: field codes are different than reported codes, Reed_FOR = POREED

| Species | 0-5 m | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|--|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Pinus elliptica | ✓ | | | | | | | | | | | | | | | |
| Parthenocissis quinquefolia | ✓ | | | | | | | | | | | | | | | |
| Canna flaccida | ✓ | | | | | | | | | | | | | | | |
| Centella asiatica | ✓ | | | ✓ | | | | | | | | | | | | |
| Hydrocotyle sp. | ✓ | | ✓ | ✓ | | | | ✓ | | | | | | | | |
| Bacopa caroliniana | ✓ | | | | | | | | | | | | | | | |
| Andropogon repens | ✓ | | | | | | | | | | | | | | | |
| Polygonum erectum ^{Rumex} | ✓ | | | | | | | | | | | | | | | |
| Paspalum notatum | ✓ | | | | | | | | | | | | | | | |
| Rhynchospora corniculata | ✓ | | | | | | | | | | | | | | | |
| Lycopus radiata | ✓ | | | | | | ✓ | ✓ | | | | | | | | |
| Galium aparine | ✓ | | | | ✓ | | | | | | | | | | | |
| Panicum ² capillare ^{capillare} | ✓ | | | | | | | | | | | | | | | |
| Carex obovata ³ | ✓ | | | | ✓ | | | | | | | | | | | |
| Cephalanthus occidentalis | ✓ | | | | ✓ | | | | | | | | | | | |
| Andropogon glaucus | ✓ | | | | | | | | | | | | | | | |
| Panicum humboldtianum | ✓ | | | | | | | | | | | | | | | |
| Panicum sp. | ✓ | | | | | | | | | | | | | | | |
| Panicum rupestris | ✓ | | | | ✓ | | ✓ | ✓ | | | | | | | | |
| Diodora virginiana | ✓ | | | | ✓ | | ✓ | ✓ | | | | | | | | |
| Ilex virginica | ✓ | | | | ✓ | | ✓ | ✓ | | | | | | | | |
| Andropogon ^{Asclepias} torreyi ^{torreyi} | ✓ | | | | | | | | | | | | | | | |
| Carex rigida | ✓ | | | | | | ✓ | ✓ | | | | | | | | |
| Polygonum sp. ⁹ hydropiper | ✓ | | | | | | ✓ | ✓ | | | | | | | | |
| Toxicaria indiana | ✓ | | | | | | ✓ | ✓ | | | | | | | | |

Site: Reedy Creek POREED
 Date: May 12, 05
 Transect Direction: South
 Data Recorder: Tommy Danner

Blauvelt Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands
 W/ 100 grass P. long
 P. long 20-25
 Carex ~~rigida~~
 P. long 20-25
 Carex ~~rigida~~

Reed_FOR Florida Wetland Condition Index, macrophyte field data sheets, page 6

*NOTE: field codes are different than reported codes, Reed_FOR = POREED

| 75-80 | 65-70 | 55-60 | 45-50 | 35-40 | 25-30 | 15-20 | 5-10 | 0-5 m | Species |
|-------|-------|-------|-------|-------|-------|-------|------|-------|---------------------------------|
| | | | | | | | | | <i>Cornus spicosa</i> |
| | | | | | ✓ | | | | <i>Sagittaria arifolia</i> #4 |
| | | | | ✓ | | ✓ | | | <i>Cyperus longifolius</i> |
| | | | | | | ✓ | | | <i>Juncus effusus</i> |
| | | | | | | ✓ | | | <i>Sagittaria arifolia</i> |
| | | | | | | ✓ | | | <i>Eupatorium capillifolium</i> |
| | | | | | | ✓ | | | <i>Sagittaria sp.</i> |
| | | | | | | ✓ | | | <i>Eriochloa hieracifolia</i> |
| | | | | | | ✓ | | | <i>Vitis sp.</i> |
| | | | | | | ✓ | | | <i>Circinnaria sp.</i> #6 |
| | | | | | | ✓ | | | <i>Ternstroemia litoralis</i> |
| | | | | ✓ | ✓ | ✓ | | | <i>Peltandra caroliniana</i> |
| | | | | | | ✓ | | | <i>Eriochloa gigantea</i> |
| | | | | | | ✓ | | | <i>Aster carolinensis</i> |
| | | | | | ✓ | ✓ | | | <i>Rhynchospora macrochaeta</i> |
| | | | | | ✓ | ✓ | | | <i>Dasypogon virginicus</i> |
| | | | | | ✓ | ✓ | | | <i>Wolffia virginica</i> |
| | | | | ✓ | ✓ | ✓ | | | <i>Utricularia virginica</i> |
| | | | | ✓ | ✓ | ✓ | | | <i>Panicum dichotomum</i> #7 |

Site: POREED
 Date: 10/20/08
 Transect Direction: South
 Data Recorder: Tony Rimmer
 Survey Field Data Sheet - Transects, Vegetation Preference - UF Center for Wetlands
 Eupatorium capillifolium
 Sagittaria sp.
 Panicum dichotomum

Reed FOR Florida Wetland Condition Index, macrophyte field data sheets, page 7
 *NOTE: field codes are different than reported codes, Reed_FOR = POREED

| Species | 0-5 m | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|---|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <i>Eriochloa gigantea</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Hydrocotyle verticillata</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Cortaderia spicata</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Galium tatarum</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Juncus effusus</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Quercus laevis laurifolia</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Paspalum notatum</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Toxicodendron radicans</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Taxodium distichum</i> | | | | | | | | | | | | | | | | |
| <i>Diadin virginianum</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Aster carolinianus</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Sagittaria arifolia arifolia</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Carex albertensis</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Ulmus americana</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Parthenocissus occidentalis vitacea</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Acer rubrum</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Andropogon scirpoides scoparius</i> | ✓ | | | | | | | | | | | | | | | |
| <i>R. concolor caroliniana</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Eupatorium spicatum spicatum</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Rubus argutus</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Berchemia scandens</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Sabal palmetto</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Sagittaria sp. (small) - small</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Carex gigantea</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Fraxinus sp. caroliniana</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Hydrocotyle umbellata</i> | ✓ | | | | | | | | | | | | | | | |

Site: *Foot creek POREED*
 Date: *May 12, 05*
 Transect Direction: *W51*
 Data Recorder: *Tony Danner & Kellam*
 Date: *11/18/05*
 Location: *Foot Creek*

Reed FOR Florida Wetland Condition Index, macrophyte field data sheets, page 8
 *NOTE: field codes are different than reported codes, Reed_FOR = POREED

| Species | 05-10 | 05-15 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Woodwardia virginica | ✓ | | | | | | | | | | | | | | | |
| Iris virginica | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | |
| Pontederaca cordata | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | |
| Peltandra sp. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | |
| Diarrhea virginica | | | | | | | | | | | | | | | | |
| Clump panicum #15 | | | | | | | | | | | | | | | | |
| Rhynchospora annulata #16 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | |
| Panicum allistoyi | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | |
| Quercus agrifolia | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | |
| Cephalanthus occidentalis | | | | | | | | | | | | | | | | |
| #6 Circaea-like plummetata | | | | | | | | | | | | | | | | |
| #17 Hedyotis indica | | | | | | | | | | | | | | | | |
| Mimosa canifera | | | | | | | | | | | | | | | | |
| #20 clump panicum dracaena | | | | | | | | | | | | | | | | |

Site: *Pedra Creek*
 Date: *5/12/03*
 Transect Direction: *West 242-774*
 Data Recorder: *Tom Panton + P. Brown*
 Blauvelt Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands
 #1010

- Reedy Creek POREED
1. Big-leaved Polygonum? Rumex? Rumex sp.
 2. Purple-flower - Acanthaceae *Ruellia caroliniana*
 3. *Carex abutilascens* or *longis*
 4. *Smilax ~~aristata~~*? *binnaria*
 5. *Smilax*
 6. Thistle - *Cirsium nuttallii*
 7. *Panicum communis*?
 8. *Ludwigia repens*
 9. *Polygonum hydropiperoides*
 10. *Sisyrinchium angustatum*
 11. *Ludwigia curtisii*
 12. *Hyptis alata*
 13. *Eleocharis vivipara*
 14. *Smilax*
 15. Clump panicum
 16. *Rhynchospora corniculata* (I don't think so)
 17. *Hedyotis*? *uniflora*?
 18. *Rhynchospora megalota corniculata*
 19. *Polygonum lapathifolium*
 20. Clump Panicum *aristata*?

Reed_FOR Florida Wetland Condition Index, macroinvertebrate list

List of macroinvertebrates identified to the genus taxonomic level

Reed_FOR = POREED

Ancylidae
Anopheles
Atrichopogon
Berosus
Caecidotea
Callibaetis
Cambaridae
Carabidae
Chauliodes
Chironomus
Collembola
Corynoneura
Derallus
Dero
Dicrotendipes
Dryopidae
Enallagma
Goeldichironomus
Hydrobiidae
Ischnura
Kiefferulus
Mesovelia
Micromenetus
Monopelopia
Nemertea
Odontomyia
Polypedilum
Scirtes
Suphisellus
Tanytarsus
Uranotaenia

Appendix B-23. R.G. Reserve Mitigation Bank

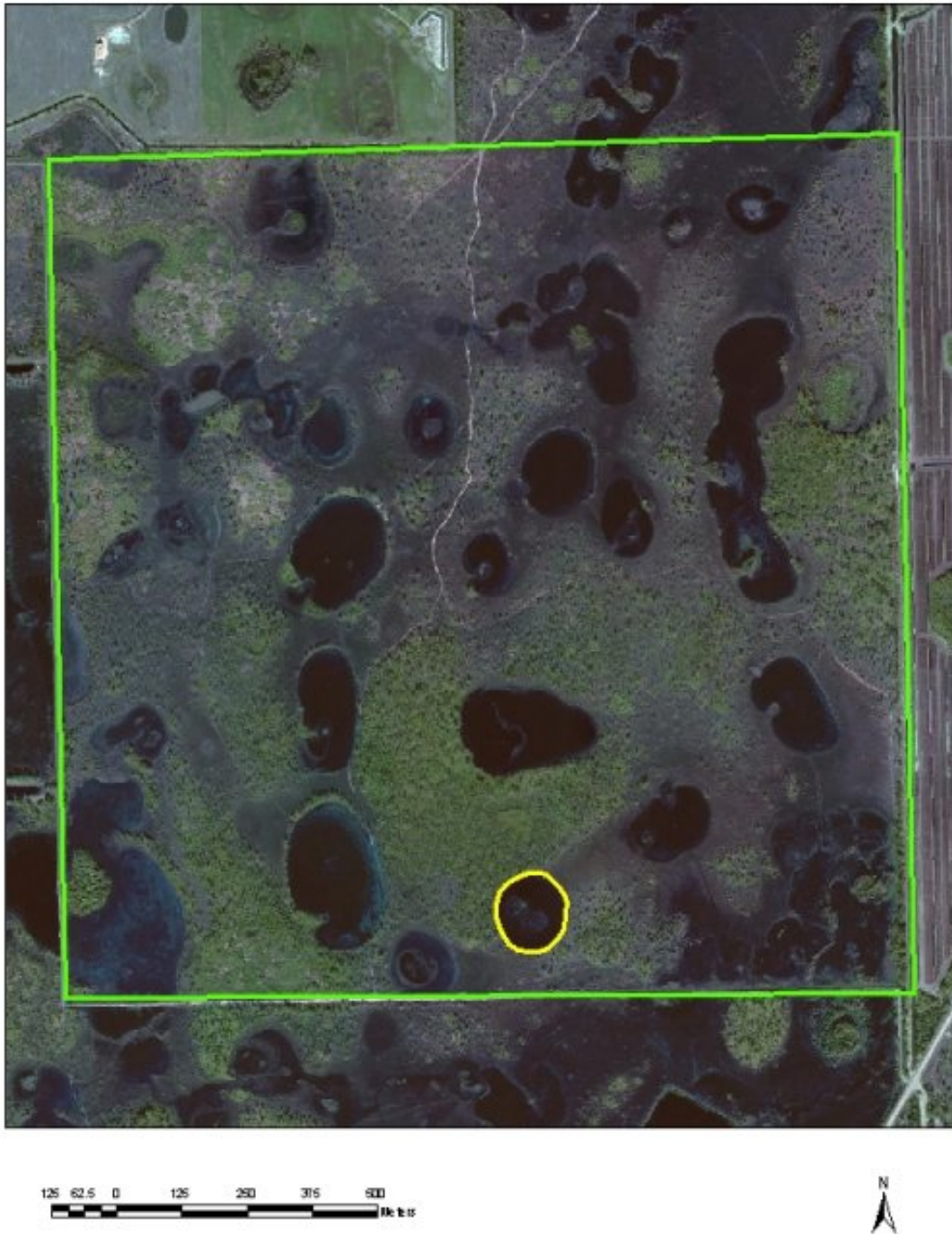


Figure B-23.1. Landscape location of RG Reserve Mitigation Bank (green line). Boundary of the wetland assessment area RG_MAR is outlined in yellow.



Figure B-23.2. Site photo of assessment area RG_MAR at RG Reserve Mitigation Bank.

RG_MAR Uniform Mitigation Assessment Method, page 1
PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

| | | | | | |
|--|--|---|---|---|--|
| Site/Project Name RG Reserve mitigation bank | | Application Number NA | | Assessment Area Name or Number RG_MAR | |
| FLUCCs code SFWMD 1995 - 6410 freshwater marsh SFWMD 1999 - 5250 freshwater lake | | Further classification (optional) NWI - palustrine emergent soils (SFWMD) - Riviera fine sand depressional, hydric group D | | Impact or Mitigation Site? Mitigation bank | |
| | | SSURGO | | Assessment Area Size 4 ac (1.62 ha) | |
| Basin/Watershed Name/Number HUC ID 44 South East Florida Coast / South fork St Lucie | | Affected Waterbody (Class) Class III | | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) FNAI rare habitat type Wet Flatwoods on bank | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Bank is surrounded by berm except an open portion on North boundary. Wetland is rain water driven. Water sheet flows at times of high water. There are swale like features through out the pine flatwoods connecting wetlands through sheet flow. Water seeps west to east through the berm. Ditch on the inside of the berm on west and south side and pops off in southeast corner. (see notes) | | | | | |
| Assessment area description Four ac depression marsh. Disturbance from ATV and other vehicles have impacted vegetation in the shallow marsh and wet meadow areas. These are being allowed to revegetate. Thick vegetation and algae and organic matter in the marsh interior. Surrounded by hydric pine flatwoods and marsh communities. | | | | | |
| Significant nearby features South Fork of the St. Lucie River SOR project, Atlantic Ridge Ecosystem, Jonathan Dickinson State Park, and is immediately adjacent to the SFWMD Jones/Hungryland Wildlife and Environment Area and the Pal Mar Conservation Area. It is near Lake Okeechobee, Allapattah Ranch, Dupuis Reserve, JW Corbett WMA, and NW fork of the Loxahatchee River. Agricultural and rural lands to the north and east. | | | Uniqueness (considering the relative rarity in relation to the regional landscape.) High quality pine flatwoods surrounding this marsh are uncommon in South Florida. This area is contiguous with several natural areas managed by different agencies. There are various degrees of human impact from misuse to altered hydrology, but considering its landscape location, preserved land like this is rare. | | |
| Functions Provide habitat for native flora and fauna. Water storage and flood attenuation. Nutrient cycling. | | | Mitigation for previous permit/other historic use Hunting, destructive recreational vehicle use in wetlands and on native range | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) <i>Odocoileus virginianus</i> (white-tailed deer), <i>Procyon lotor</i> (raccoon), <i>Lynx rufus floridanus</i> (bobcat), <i>Sciurus carolinensis</i> (gray squirrel), many species of salamanders, frogs, small fish, wading birds, butterflies, aquatic insects. | | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) <i>Mycteria americana</i> (wood stork)E, <i>Aramus guarana</i> (limpkin)SSC, <i>Egretta thula</i> (snowy egret)SSC, <i>Egretta caerulea</i> (little blue heron)SSC, <i>Eudocimus alba</i> (white ibis)SSC, <i>Grus canadensis pratensis</i> (Florida sandhill crane) T, <i>Alligator mississippiensis</i> (American alligator)T | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): small frogs, beetles, small fish, dragonflies, three swallow-tailed kites (<i>Elanoides forficatus</i>) flying overhead, possibly old rail nest, possible alligator hole, least killifish (<i>Heterandria formosa</i>), apple snail (<i>Pomacea paludosa</i>) shell, apple snail eggs | | | | | |
| Additional relevant factors: Site visited before rainy season really began. Land manager said site would be difficult to access in rainy season. Believes there is considerable difference in wildlife presence pre-rainy season. In the past he has seen many mosquitofish (<i>Gambusia holbrooki</i>) in this wetland, today we had none. At the time of site visit land manager and owner are still waiting for approval from U.S. Army Corp of Engineer for permits. The bank owner may decide to no longer keep the land as a mitigation bank if credits are not awarded or released. Burning is still continuing and there has been some exotic species removal, but annual monitoring for exotic species and the decision to replant some of the disturbed re-graded areas in the marshes are on hold for now. | | | | | |
| Assessment conducted by: Erica Hernandez | | | Assessment date(s): 6/20/2006 | | |

RG_MAR Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|---|--|
| Site/Project Name RG Reserve Mitigation Bank | Application Number NA | Assessment Area Name or Number RG_MAR |
| Impact or Mitigation Mitigation bank | Assessment conducted by: Erica Hernandez | Assessment date: 6/20/2006 |

| | | | | |
|--|---|--|---|--|
| 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 | The assessment area is surrounded by appropriate native landscape suitable for wildlife life history requirements inside the bank. There have been some loss of habitat to the north and east, but there are high quality wetlands and pine flatwoods in conservation areas to the west and south. These conservation lands are separated from the site by a berm and ditch which might impede connectivity for some species. There are invasive species present on the bank on the berms and in the region. The bank managers are trying to control the exotic species. There are landscape barriers to connectivity outside the bank including berms, ditches, roads, and unsuitable habitat. Although drainage from this site flow towards the Loxahatchee river, the presence of berms and ditches alters this sites natural flow and channelizes the water off site instead of sheet flow. North (west side) of the bank was in agriculture, but is now a low density rural development. There is some loss of habitat and connectivity from this development. Most lands in the area are being managed for conservation. Row crops to the east are a loss of habitat in the landscape, change of hydrology and possible chemical influence. There are exotic species along road that may act as a conduit for exotics into the bank. This region is probably important to Loxahatchee and associated bays because it has not been heavily urbanized but it is not the sole headwaters for the river. | | |
| w/o pres or current | with | | |
| 7 | | | |

| | | | |
|---|--|--|--|
| .500(6)(b)Water Environment (n/a for uplands) | This wetland probably stays wet even during times of little rain because it is large and deep. The wrack line for the wetland in the wet meadow zone was a couple of feet high. The wetland interior was deep. Soil moisture was appropriate. No inappropriate fire history or soil erosion. Vegetation strata was appropriate but zonation was patchy. Vegetation did not appear stressed. Macroinvertebrates, forage fish, and amphibians were present. Wetland plant species present were appropriate for the system. There were no species present indicative of water quality degradation. Water was warm and had a lot of algae and smelled of sulfur. This seemed normal because the rainy season had not yet begun at the time of site visit. It is possible that during the rainy season the site gets so wet this wetland acts more as a small lake than a marsh, perhaps this is why vegetation is patchy? Marsh appears like it is recovering from vehicle impacts but the berms around the property and ditches must be affecting the surficial acquifer. | | |
| w/o pres or current | with | | |
| 7 | | | |

| | | | |
|-------------------------------|--|--|--|
| .500(6)(c)Community structure | Vegetation present in the wetland is appropriate.No invasive exotics were noted in the wetland at the time of the site visit.Evidence of regeneration was not specifically noted, but the areas impacted by vehicles appear to be recovering with some vegetation.This bank is waiting for further approval for mitigation actions from the U.S. Army Corp of Engineers, in the mean time there is not much management.The site is being burned when there is opportunity,which is probably the best thing land managers could do for the property.Topographic features are normal.Algal growth does not appear to be impeding plant growth because the plants it is growing on appear healthy.There are questions about the patchiness of vegetation of plants in the shallow marsh. Is this a result of soil compaction from vehicles or unrelated? The marsh was not very diverse and overwhelmingly dominated by <i>Panicum hemitomon</i> (maidencane) and <i>Rhynchospora tracyi</i> (Tracy's beaksedge).The marsh interior is expected to have low diversity but greater species richness is expecting moving out towards the outer rings of the marsh in reference conditions.This lack of diversity might be | | |
| 1. Vegetation and/or | a result of extreme hydrologic changes during wet and dry seasons (because of altered landscape) or the initial impact from vehicles that may take a long time to recover.There is no inappropriate woody debris in the wetland. | | |
| 2. Benthic Community | | | |
| w/o pres or current | with | | |
| 6 | | | |

| | | |
|---|----------------------------------|-----------------------------|
| Score = sum of above scores/30 (if uplands, divide by 20) | If preservation as mitigation, | For impact assessment areas |
| current | Preservation adjustment factor = | FL = delta x acres = |
| w/o pres | Adjusted mitigation delta = | |
| 0.67 | | |

| | | |
|------------------------|-----------------------|---------------------------------|
| Delta = [with-current] | If mitigation | For mitigation assessment areas |
| | Time lag (t-factor) = | RFG = delta/(t-factor x risk) = |
| | Risk factor = | |

RG_MAR Wetland Rapid Assessment Procedure, page 1

Project Name: RG_MAR at RG Reserve Mitigation Bank

Date: 6/20/2006

Evaluator(s): Erica Hernandez

Wetland Type/Description: depression marsh. Disturbance from ATV and other vehicles have impacted vegetation in the shallow marsh and wet meadow areas. These are being allowed to revegetate. Thick vegetation and algae and organic matter in the marsh interior. Surrounded by hydric pine flatwoods and marsh communities.

Wetland Size: 4 ac (1.62 ha)

FLUCCS Code/Description: SFWMD 1995 - 6410 freshwater marsh
SFWMD 1999 - 5250 freshwater lake

| | |
|------|---------------------------|
| 2.0 | Wildlife Utilization (WU) |
| n/a | Wetland Canopy (O/S) |
| 2.0 | Wetland Ground Cover (GC) |
| 1.8 | Habitat Support/Buffer |
| 2.0 | Field Hydrology (HYD) |
| 2.8 | WQ Input & Treatment (WQ) |
| 10.6 | SUM |
| 5 | Count |
| 0.71 | WRAP |

RG_MAR Wetland Rapid Assessment Procedure, page 2

| | |
|-----|---------------------------|
| 2.0 | Wildlife Utilization (WU) |
|-----|---------------------------|

Possible evidence of an *Alligator mississippiensis* (American alligator) utilizing this wetland in the past, based on open deeper center of wetland. Appears there is also some sort of nest made by emergent vegetation, possibly a rail? No way to verify at this time. Some small fish present. *Pomacea paludosa* (apple snail) shell and eggs. Dragonflies and macroinvertebrates. Rainy season has not yet begun, water is stagnant, warm and full of vegetation and algae. The bank is probably more wet than it would be historically because of the berm around its east, west, and south borders, however there is also a large ditch on the inside and outside of the berm with standing water. The upland communities probably have standing water on them during the rainy season but the pine flatwoods are intact have nice diversity of vegetation. Human disturbance is in the form of exotic species present in the landscape, hydrologic impacts and barriers, and the old scaring from vehicles driving in the wetlands. There is abundant habitat and cover for those species that are unaffected by the berm barriers.

| | |
|-----|----------------------|
| n/a | Wetland Canopy (O/S) |
|-----|----------------------|

A few shrubby *Myrica cerifera* (wax myrtles) and *Salix caroliniana* (coastalplain willow) growing in wetland interior on the western edge that seems to have a steeper slope than the other sides of the wetlands that have a more extensive wet meadow and shallow marsh zone before the deep marsh. Trees are in a small clump next to the deep open water. These shrubs do not cover 20% of the wetland acreage even though they do meet the criteria for 1-4 inch diameter, so this category is not scored.

| | |
|-----|---------------------------|
| 2.0 | Wetland Ground Cover (GC) |
|-----|---------------------------|

Vehicular traffic in the wetland marshes prior to this property becoming a mitigation bank has caused soil compaction and vegetation loss in the wet meadow and shallow marsh zones. Vegetation is slowly recovering in these areas now that this impact has been removed. Species present are desirable native marsh species but their presence is patchy. There were no undesirable or exotic species present. The landscape has experienced some winter burns and land managers will continue to burn when there is an opportunity to do so. Fish and Wildlife may help in burning the property. Wetland has a natural grade into swale and pine flatwoods vegetation.

| | |
|-----|------------------------|
| 1.8 | Habitat Support/Buffer |
|-----|------------------------|

Site is monitored to keep out trespassers who could again damage the marshes on the bank. The bank is surrounded by agricultural areas and conservation areas as well as low density rural housing. Access to the berms are limited by gates and large ditches. These berms and ditches are barriers to normal hydrology and could be barriers for some native species. There is a road on the east side of the bank outside the berm and ditch, then there is row crops, and then a road between the bank and a conservation area. South and west side is managed by Florida Fish and Wildlife Commission (as well as property on the other side of eastern Road). Berm supports exotic and native species.

| Buffer Type | (Score) x | (% of Area) | = Sub Total |
|----------------|-----------|-------------|-------------|
| North | 2 | 0.25 | 0.50 |
| South | 2 | 0.25 | 0.50 |
| East | 1 | 0.25 | 0.25 |
| West | 2 | 0.25 | 0.50 |
| Total = | | | 1.8 |

| | |
|-----|-----------------------|
| 2.0 | Field Hydrology (HID) |
|-----|-----------------------|

Wetland is fairly deep and is characterized in 1999 SFWMD FLUCCS as a freshwater lake. The wetland is holding water even when there has been very little rain for several months, this is probably a result of its hardpan and the depth of the marsh. Hydroperiod appears normal even though it is within 500 feet of a large ditch and berm. This marsh is rainwater driven so the berm may not affect it too much, although the ditch probably has some affect on subsurface groundwater. The wrack line for this wetland was a few feet high into the wet meadow. Plants appear healthy and hydrology is probably not impacting their zonation.

| | |
|-----|----------------------------|
| 2.8 | WQ Input & Treatment (WQ)* |
|-----|----------------------------|

**The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.*

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| N- low den resid. | 2.0 | 0.25 | 0.5 |
| W-nat undev | 3.0 | 0.25 | 0.8 |
| *S- nat undev | 2.75 | 0.25 | 0.7 |
| *E - row crop | 2.75 | 0.25 | 0.7 |

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| N - nat undevel. | 3.0 | 0.25 | 0.8 |
| W- nat undevel | 3.0 | 0.25 | 0.8 |
| S- nat undevel | 3.0 | 0.25 | 0.8 |
| E- nat undevel | 3.0 | 0.25 | 0.8 |

RG_MAR Hydrogeomorphic Approach, page 1

Variable Subindex and FCI Calculation for Florida Depressions Marsh

Assessment Team: KCR, ECH
Project Name: RG_MAR
Location: RG Reserve, Martin county W -80 degrees 16 minutes 40.92 seconds | N 27 degrees 0 minutes 8.79 seconds
Date: June 20, 2006
Subclass: depression marsh

| Function | FCI |
|--------------------------------|------|
| Surface Water Storage | 1.00 |
| Subsurface Water Storage | 0.79 |
| Cycle Nutrients | 0.83 |
| Characteristic Plant Community | 0.58 |
| Wildlife Habitat | 0.69 |

| Variables | Measure | Units | Subindex |
|-----------|---------|--------|----------|
| V CATCH | 0 | % | 1.00 |
| V UPUSE | 100 | % | 1.00 |
| V WETPROX | 2071 | meters | 1.00 |
| V WETVOL | 0 | % | 1.00 |
| V SUROUT | 0 | % | 1.00 |
| V SUBOUT | 100 | % | 0.15 |
| V ZONES | 2 | number | 0.25 |
| V MAC | 50 | % | 0.50 |
| V SURTEX | 100 | | 1.00 |
| V HCOMP | 67 | % | 0.67 |

RG_MAR Hydrogeomorphic Approach, page 2

Vcatch no change
Size of original catchment ha
Size of current catchment ha

Vupuse
native cover type curve #77 percent 100%

Vwetprox

| | | | |
|---------------|------------------|------------------|------------------|
| Sector 1 210m | Sector 2 175m | Sector 3 401m | Sector 4 500m |
| Sector 5 237m | Sector 6 138m | Sector 7 217m | Sector 8 193m |

Vwetvol no fill or excavation

| diameter wetland north- south | diameter wetland east-west | depth of wetland | length of fill material | width of fill material | average thickness of fill material |
|-------------------------------------|----------------------------------|---------------------|-------------------------------|---------------------------|--|
| 146m | 131m | | 1.37 | | |

Vsurout Difference in elevation of bottom of ditch and bottom of wetland 1.23 m
0% lateral effect of ditch 78m; distance of ditch to wetland 79m

Vsubout Difference in elevation of bottom of ditch and bottom of wetland + 6inches 1.38 m
100% lateral effect of ditch 219m; distance of ditch to wetland 79m

Vzones wet meadow and shallow marsh are disturbed

Vmac WM 70%; SM 30%; DM 50%
50% cover

Vsurtex sand

Vhcomp
wet meadow
50% *Hypericum fasciculatum*
Rhynchospora inundata
shallow marsh zone
100% *Rhynchospora tracei*
deep marsh
50% *Eleocharis cellulosa*
Panicum hemitomom

RG_MAR Florida Wetland Condition Index, macrophyte field data sheets, page 1
 *NOTE: field codes are different than reported codes, RG_MAR = MARACE

Biosurvey Field Data Sheet - Transects, Vegetation Presence - UFR Center for Wetlands

Site: MARACE RG Reserve
 Date: 1/20/06
 Transect Direction: N T1
 Data Recorder: EHTD

| Species | 0-5 m | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|-------------------------------------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <i>Ferula</i> <i>subsp.</i> | X | | | | | | | | | | | | | | | |
| <i>Rhynchospora</i> <i>fl.</i> | X | | | | | | | | | | | | | | | |
| <i>Panicum</i> <i>sp.</i> | | | | | | | | | | | | | | | | |
| <i>Eleocharis</i> <i>sp.</i> | | | | | | | | | | | | | | | | |
| <i>Xyris</i> <i>sp.</i> #2 | | | | | | | | | | | | | | | | |
| <i>Eriocaulon</i> <i>compressum</i> | | | | | | | | | | | | | | | | |
| <i>Sagittaria</i> <i>fl.</i> | | | | | | | | | | | | | | | | |
| <i>Hypericum</i> <i>fl.</i> | | | | | | | | | | | | | | | | |
| <i>Grassia</i> <i>sp.</i> | | | | | | | | | | | | | | | | |
| <i>Eleocharis</i> <i>sp.</i> | | | | | | | | | | | | | | | | |
| <i>Asiatica</i> <i>sp.</i> | | | | | | | | | | | | | | | | |
| <i>Amphioxys</i> <i>sp.</i> | | | | | | | | | | | | | | | | |
| <i>Eleocharis</i> <i>sp.</i> | | | | | | | | | | | | | | | | |

RG_MAR Florida Wetland Condition Index, macrophyte field data sheets, page 2
 *NOTE: field codes are different than reported codes, RG_MAR = MARACE

Biosurvey Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands

Date: 6/20/08
 Site: MARACE R6 Reserve
 Transect Direction: South
 Data Recorder: CAJTD

| Species | 05-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <i>Najas verticillata</i> | X | | | | | | | | | | | | | | |
| <i>Rhynchospora racemosa</i> | X | | | | | | | | | | | | | | |
| <i>Amphicarpum</i> | X | | | | | | | | | | | | | | |
| <i>Xyris</i> \odot <i>allotris</i> | X | | | | | | | | | | | | | | |
| <i>Stylidium</i> | X | | | | | | | | | | | | | | |
| <i>Hypochaeris</i> | X | | | | | | | | | | | | | | |
| <i>Eriocaulon compressum</i> | X | | | | | | | | | | | | | | |
| <i>Syntherisma</i> | X | | | | | | | | | | | | | | |
| <i>Lycopodium</i> | X | | | | | | | | | | | | | | |
| <i>Scleria</i> \odot <i>edwardsii</i> | X | | | | | | | | | | | | | | |
| <i>Pennisetum</i> | X | | | | | | | | | | | | | | |
| <i>Eupatorium</i> | X | | | | | | | | | | | | | | |
| <i>Lactuca</i> | X | | | | | | | | | | | | | | |
| <i>Drosera</i> | X | | | | | | | | | | | | | | |
| <i>Xyris</i> sp. not found to | X | | | | | | | | | | | | | | |
| <i>Fragaria</i> | X | | | | | | | | | | | | | | |
| <i>Rhynchospora</i> | X | | | | | | | | | | | | | | |
| <i>Panicum</i> | X | | | | | | | | | | | | | | |
| <i>Eleocharis</i> | X | | | | | | | | | | | | | | |

RG_MAR Florida Wetland Condition Index, macrophyte field data sheets, page 3
 *NOTE: field codes are different than reported codes, RG_MAR = MARACE

Biosurvey Field Data Sheet - Transects, Vegetation Presence - UFR Center for Wetlands

Site: MARACE
 Date: 6/20/08
 Transect Direction: EAST
 Data Recorder: EHL, TD

| Species | 0-5 m | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|---|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <i>Scleria spp. baldwinii</i> | X | | | | | | | | | | | | | | | |
| <i>Panicum fasciculatum</i> | X | X | | | | | | | | | | | | | | |
| <i>Limnoloba sp. latica</i> | X | X | | | | | | | | | | | | | | |
| <i>Polygala micrantha</i> | X | | | | | | | | | | | | | | | |
| <i>Procastrum decantherum</i> | X | | | | | | | X | X | X | | | | | | |
| <i>Lycopodium appeltii</i> | X | | | | | | | | | | | | | | | |
| <i>Phytolacca integrifolia</i> | X | X | | | | | | | | | | | | | | |
| <i>Hypericum fasciculatum</i> | X | X | | | | | | | | | | | | | | |
| <i>Sagittaria arifolia</i> | X | X | | | | | | | | | | | | | | |
| <i>Sagittaria arifolia</i> | X | X | | | | | | | | | | | | | | |
| <i>Myrica tenuiflora</i> | X | | | | | | | | | | | | | | | |
| <i>Dracopis brevifolius</i> | X | | | | | | | | | | | | | | | |
| <i>Phytolacca integrifolia</i> | X | X | | | | | | | | | | | | | | |
| <i>Azorella</i> | X | X | | | | | | | | | | | | | | |
| <i>Eudragia spp.</i> | X | | | | | | | | | | | | | | | |
| <i>Xyris</i> ^{elliptica} colubata | X | X | | | | | | | | | | | | | | |
| <i>Fuirena spiridocarpa</i> | X | | | | | | | | | | | | | | | |
| <i>Procastrum decantherum</i> | X | | | | | | | | | | | | | | | |
| <i>Eleocharis acicularis</i> | X | X | | | | | | | | | | | | | | |
| <i>Panicum fasciculatum</i> | X | X | | | | | | | | | | | | | | |

RG_MAR Florida Wetland Condition Index, macrophyte field data sheets, page 4
 *NOTE: field codes are different than reported codes, RG_MAR = MARACE

Blountway Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands

Date: 6/20/06
 Site: MARACE R4 Reserve
 Transect Direction: West
 Data Recorder: EMTD

| Species | 0.5m | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|------------------------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <i>Panicum maritimum</i> | | | | | | | | | | | | | | | | |
| <i>Eleocharis acicularis</i> | | | | | | | | | | | | | | | | |
| <i>Rhynchospora tenuis</i> | | | | | | | | | | | | | | | | |
| <i>Sagittaria arifolia</i> | | | | | | | | | | | | | | | | |
| <i>Najas</i> | | | | | | | | | | | | | | | | |
| <i>Tuckerm. cordata</i> | | | | | | | | | | | | | | | | |
| <i>Erigeron acer</i> | | | | | | | | | | | | | | | | |
| <i>Xyris</i> | | | | | | | | | | | | | | | | |
| <i>Erigeron acer</i> | | | | | | | | | | | | | | | | |
| <i>Sagittaria</i> | | | | | | | | | | | | | | | | |
| <i>Hypericum</i> | | | | | | | | | | | | | | | | |
| <i>Dracopis</i> | | | | | | | | | | | | | | | | |
| <i>Eleocharis</i> | | | | | | | | | | | | | | | | |
| <i>Woodwardia</i> | | | | | | | | | | | | | | | | |
| <i>Lychnis</i> | | | | | | | | | | | | | | | | |
| <i>Portulaca</i> | | | | | | | | | | | | | | | | |

Appendix B-24. Split Oak Mitigation Bank



Figure B-24.1. Landscape location of Split Oak Mitigation Bank (green line). Boundaries of the wetland assessment areas are outlined in orange (SpIO_CYP) and blue (SpIO_MAR).

(A)



(B)



Figure B-24.2. Site photos of wetland assessment areas (A) SpIO_CYP and (B) SpIO_MAR.

SpIO_CYP Uniform Mitigation Assessment Method, page 1
PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

| | | | | | |
|--|--|--|--|--|--|
| Site/Project Name Split Oak Mitigation Bank | | Application Number NA | | Assessment Area Name or Number SpIO_CYP | |
| FLUCCs code 6210 Cypress | | Further classification (optional) palustrine forested | | Impact or Mitigation Site? Mitigation Bank | |
| Assessment Area Size 1.9 ha (4.7 ac) | | | | | |
| Basin/Watershed Name/Number HUC - Kissimmee River | | Affected Waterbody (Class) 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 Wetland assessment area within a large crescent shaped isolated depression. This wetland receives water from direct rainfall and run-off from surrounding areas. It is bordered on all sides by scrubby pine/oak mixed forest and dirt roads. It appears from the digital orthophoto quad signature that in times of high water there is some connectivity to the lake fringe swamp to the north, though no connection was noted during the site visit. | | | | | |
| Assessment area description Our wetland assessment area was approximately 1/6 of a larger crescent shaped pondcypress (<i>Taxodium ascendens</i>) dominated wetland. Within the wetland boundary there was a 1.5 m slope from the ecotone to the center, with some smaller deeper pools. The wetland edge had higher shrub and tree density, whereas the deeper interior had vegetation rooted on hummocks and tall emergents and bladderwort. | | | | | |
| Significant nearby features TM Econ mitigation bank to the West. NE bordered by county lands, Moss Park. Lake Mary Jane and Lake Hart border property. | | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Such wetlands are not rare but should be considered in a context of the natural landscape of flatwoods and scrub which are often desirable for development. Nearby areas are under significant development pressure. Probably not much of this kind of landscape under protection regionally, as the adjacent properties are already slated for housing developments. | | |
| Functions Important breeding and foraging habitat. Flood storage, aquifer recharge, and nutrient cycling. | | | Mitigation for previous permit/other historic use Not known. | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Mole salamander, tiger salamander, dwarf salamander, oak toad, cricket frog, pinewoods tree frog, barking frog, squirrel frog, southern chorus frog, narrowmouth toad, eastern spadefoot toad, snakes, deer, raccoon, bobcat, little grass frog, snapping turtle, mud turtles, eastern mud snake, cottonmouth, wood duck, swallow-tailed kite, barred owl, pileated woodpecker, great-crested flycatcher, prothonotary warbler, and rusty blackbird | | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Gopher frog (SSC), white ibis (SSC), American alligator (T), sandhill crane (T), woodstork (E) | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Many oak toads (hard not to step on them), recent looking armadillo hole in the middle of the wetland, deer tracks, dead eaten crawfish (not recent), sandhill crane flew over head, many grasshoppers, toees, abundance of spiders (large and small, many species). | | | | | |
| Additional relevant factors: Deep standing water during site visit, near high water marks. Some leaning down trees (possible from previous active hurricane season) many large trees with wildlife cavities. Evidence of past fire in the landscape, though the acetone could use a burn. The Orlando International Airport is nearby and provides nearly constant background noise as well as air pollution. | | | | | |
| Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | | | Assessment date(s): 8/9/2005 | | |

SplO_CYP Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|--|--|
| Site/Project Name Split Oak Mitigation Bank | Application Number NA | Assessment Area Name or Number SplO_CYP |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | Assessment date: 8/9/2005 |

| | | | | |
|---|---|---|---|--|
| 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 water functions | 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 w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 9 | Outside habitats represent full range necessary to support wildlife. Adjacent areas undergoing restoration efforts with controlled burns. Limited exotic species present, but some are apparent outside the assessment area. We do not know the extent of exotic species pressure, but this area is near many highly developed lands. Wildlife access is not limited by distance and barriers. Land uses immediately adjacent not presenting adverse impacts. |
| .500(6)(b)Water Environment (n/a for uplands) w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 10 | Water levels and flows appear appropriate. No species present that suggest water quality degradation. Water level indicators are distinct and consistent: distinct lichen lines, adventitious roots, water stain lines, knees of pondcypress (<i>Taxodium ascendens</i>). Soil erosion/moisture appear appropriate. High standing water levels, so evidence would have been hidden. Bladderwort (<i>Utricularia</i> sp.) and algae throughout water column, but trees probably thinned from recent hurricane damage, some normal canopy gaps. Species with special hydrological requirements including fish and fish eating spider, dragonflies laying eggs. No signs of hydrologic stress, no excessive mortality, no evidence of insect damage, chlorotic or spindly leaves. Standing water clear and tannic. No water quality data. Water depth optimal. |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 9 | Plant species appropriate and desirable in all strata. Did note single plant of climbing fern (<i>Lygodium</i> sp.) on ecotone. Strong evidence of recruitment and regeneration of pondcypress (<i>Taxodium ascendens</i>) and red maple (<i>Acer rubrum</i>) on edge. Size and age class distribution apparent in midstory and canopy species - ranging from some very large trees down to seedlings. Density and quality of coarse woody debris slightly higher than anticipated (could be from hurricanes), dens abundant, some tree cavities. Plants in good condition - no evidence of chlorotic, spindly leaves or insect damage. Land use practices optimal for long term viability of plant community. Hummocks present and pools of deeper water appropriate. Algal growth apparent but not necessarily over-bearing. |

| |
|--|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current or w/o pres <input type="checkbox"/> with <input type="checkbox"/> |
| 0.93 |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

SplO_CYP Wetland Rapid Assessment Procedure, page 1

Project Name: Split Oak Mitigation Bank SplO_CYP

Date: 8/9/2005

Evaluator(s): Kelly Chinners Reiss & Erica Hernandez

Wetland Type/Description: Depression forested wetland in a restored flatwoods landscape.

Wetland Assessment Area: 1.9 ha (4.7 ac)

FLUCCS Code/Description: 621 Cypress

| | |
|------|---------------------------|
| 3.0 | Wildlife Utilization (WU) |
| 3.0 | Wetland Canopy (O/S) |
| 2.5 | Wetland Ground Cover (GC) |
| 3.0 | Habitat Support/Buffer |
| 3.0 | Field Hydrology (HYD) |
| 3.0 | WQ Input & Treatment (WQ) |
| 17.5 | SUM |
| 6 | Count |
| 0.97 | WRAP |

SplO_CYP Wetland Rapid Assessment Procedure, page 2

| | |
|---|----------------------------------|
| 3.0 | Wildlife Utilization (WU) |
| Frogs were visible and audible (pig, leopard, cricket). Abundance of very large spiders, fish, butterflies. Heard <i>Haliaeetus leucocephalus</i> (bald eagle) call. Upland food sources, cover in wetland and upland available. Cavities in trees. No evidence of large mammals or reptile in wetland, but high water levels hiding evidence. Evidence apparent in adjacent uplands. | |

| | |
|--|-----------------------------|
| 3.0 | Wetland Canopy (O/S) |
| No invasive species present in canopy or shrub layer. Good habitat support provided. Tall canopy structure. Regeneration of <i>Taxodium ascendens</i> (pond-cypress) found. Healthy live canopy trees. Some tree fall but not abnormal (considering last years active hurricane season) and no abnormal canopy openings. | |

| | |
|---|----------------------------------|
| 2.5 | Wetland Ground Cover (GC) |
| Did have <i>Lygodium</i> sp. (climbing fern), considered in the groundcover category even though this species is a vine. Tall, robust, healthy vegetation. Orchids on <i>Taxodium ascendens</i> (pond-cypress) trees. No disturbance noted. | |

| | | | | | |
|---|-------------------------------|-------------|-----------|-------------|-------------|
| 3.0 | Habitat Support/Buffer | | | | |
| Buffer width >300 ft predominantly desirable species. Ditch/canal and excavated pond about 200m to the south but not adverse to this system. Buffer undergoing restoration, perhaps currently slightly more shrubby than ideal but not significantly hindering support of buffer. | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | nat. undev. | 3.0 | 1 | 3.0 |
| | | | | | 0.0 |
| | | | | | 0.0 |
| | | | | | 0.0 |
| Total = | | | | | 3.0 |

| | |
|--|------------------------------|
| 3.0 | Field Hydrology (HYD) |
| Hydrology adequate. Evidence of species regeneration that have specific hydrologic requirements, for example <i>Taxodium ascendens</i> (pond-cypress) regeneration needs appropriate seed soaking, also presence of frogs and tadpoles and fish. Water level indicators distinct, including water stain lines, lichen lines, moss collars. | |

3.0 WQ Input & Treatment (WQ)*

**The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.*

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| nat. undev. | 3.0 | 1.0 | 3.0 |
| | | | 0.0 |
| LU Total = | | | 3.0 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| nat. undev. | 3.0 | 1.0 | 3.0 |
| | | | 0.0 |
| PT Total = | | | 3.0 |

SpIO _MAR Uniform Mitigation Assessment Method, page 1
PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

| | | | |
|---|---|---|---|
| Site/Project Name Split Oak Mitigation Bank | | Application Number NA | Assessment Area Name or Number SpIO _MAR |
| FLUCCs code SFWMD 95 - 6410 freshwater marsh | Further classification (optional) NWI - palustrine emergent | Impact or Mitigation Site? mitigation | Assessment Area Size 2.22 acres |
| Basin/Watershed Name/Number HUC - Kissimmee River | Affected Waterbody (Class) 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 WAA is an isolated depression. There is a significant ditch perpendicular to this herbaceous depression about 35 meters South which is connected to a man-made open water feature. Extensive isolated forested depression about 150 meters to the NW. | | | |
| Assessment area description Kidney shaped small isolated depression surrounded by scrubby flatwoods and xeric oak scrub. Large ditch runs perpendicular to the South. Area appears recently burned. Marsh is very dry. Lots of wax myrtle and hypericum killed from fire. Surrounding landscape looks fire managed and has nice open patches of sand. | | | |
| Significant nearby features TM Econ mitigation bank to the West. NE bordered by county lands, Moss Park. Lake Mary Jane and Lake Hart border property. | Uniqueness (considering the relative rarity in relation to the regional landscape.) Herbaceous marshes are not rare but should be considered in a context of the natural landscape of flatwoods and scrub which are often desirable for development. Nearby areas are under significant development pressure. Probably not much of this kind of landscape under protection regionally. | | |
| Functions Important breeding and foraging habitat. Isolated and small in size wetlands support different assemblage of species than larger more permanent wetlands. Flood storage, aquifer recharge, and nutrient cycling. | Mitigation for previous permit/other historic use | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Mole salamander, tiger salamander, dwarf salamander, oak toad, cricket frog, pinewoods tree frog, barking frog, squirrel frog, southern chorus frog, narrowmouth toad, eastern spadefoot toad | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Sandhill crane (T), Woodstork (E), Gopher Frog (SSC), White Ibis (SSC) | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Many many oak toads (hard not to step on them), Recent looking armadillo hole in the middle of the wetland, Deer tracks, Dead eaten crawfish (not recent), Sandhill Crane flew over head, Many grasshoppers, Tohees | | | |
| Additional relevant factors: Pieces of palmetto trunk in the wetland, not sure what to make of them. Dead <i>Juncus effusus</i> patches. Deep large ditch South of wetland. Marsh is bone dry. <i>Hypericum</i> spp. edge is uniformly dead. Some very tiny plants coming up that look like could be <i>Hypericum</i> spp. Mermaid-weed <i>Proserpinaca</i> spp. and <i>Pontederia cordata</i> growing in dry conditions. Algae crunchy on wetland bottom. Historically there were cattle. Evidence of <i>Juncus effus</i> (which cattle do not eat) but most of it is dead. Evidence that young <i>Lyonia lucida</i> is coming back from fire. Most all shrubs are dead including <i>Myrica cerifera</i> and <i>Hypericum</i> spp. Evidence of fire in the marsh and landscape. At time of assessment we do not know any details about the fire that occurred here. Maintenance, restoration technique? Trying to kill all shrubs? Unspecified DOS archaeological sites on the bank. Some of the herbaceous plants have yellow color towards their base, <i>Fuirena scripoidea</i> looks like it could be stressed. Water stains are 6-8 inches deep. Maybe water here is flashy? | | | |
| Assessment conducted by: EH, KCR | | Assessment date(s): 8/9/2005 | |

SpIO _MAR Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|-------------------------------------|--|
| Site/Project Name Split Oak mitigation bank | Application Number NA | Assessment Area Name or Number SpIO_MAR |
| Impact or Mitigation mitigation bank | Assessment conducted by: EH, KCR | Assessment date: 8/9/2005 |

| | | | | |
|---|---|--|---|--|
| 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 w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 8 | Habitat is nearly full range outside, has large ditch to the South, other wise very natural setting. Invasive exotics not present in adjacent area although one <i>Lygodium</i> sp. plant seen in nearby cypress. Some wildlife obstruction by canal as access limiting. Land use practices somewhat limit water level and therefore the wildlife habitat- perhaps more than minimal impact but only partially, water levels of the wetland on a subsurface level are reduced. |
| .500(6)(b)Water Environment (n/a for uplands) w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 6 | There is obligate vegetation in the marsh but being that there was no standing water at time of the assessment seemed uncharacteristic for the seasonality. There are appropriate water level indicators but not as distinct as other wetlands on the bank. Water stain lines appear appropriate. Soil moisture is dry for a marsh for early August. Unsure of the use of fire in this marsh. Evidence of recent fire suggest it was a very hot fire, looks like 100% kill of shrubby edge mostly <i>Hypericum</i> spp. and <i>Lyonia lucida</i> . However this could have been a technique applied on purpose. Zonation is mixed and messy and at times inappropriate, ie: saw palmetto trunks in open marsh areas. Some gaps in zones (just bare ground) instead of concentric rim. Vegetation does show some yellowing stems and could be due to hydrologic stress. Armadillo hole in wetland does not appear appropriate for the center of a marsh. Crayfish pieces found. Hundreds of oak toads in the marsh. No water quality data available. |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 7 | Plant species desirable but odd zonation. Exotic and or nuisance species not identified in WAA. Plant condition is variable. Some chlorotic and spindly vegetation. Land management has caused a shift in plant community because of fire intensity and canal lowering the water table and standing water levels. Topographic features greater than anticipated, some elevated areas within marsh interior. |

| | |
|---|---|
| Score = sum of above scores/30 (if uplands, divide by 20) | current <input type="checkbox"/> or w/o pres <input type="checkbox"/> with <input type="checkbox"/> |
| 0.70 | |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

SpLO _MAR Wetland Rapid Assessment Procedure, page 1

Project Name: Split Oak mitigation bank SpLO_MAR

Date: 8/9/2005

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: Isolated depression marsh in a scrubby flatwoods, xeric oak landscape.

Other isolated wetland features in the landscape. Nearby ditch feature runs perpendicular to wetland and connects a dug out surface water feature and another wetland offsite. Wetland is very dry at time of assessment.

Wetland Assessment Area: 2.22 acres

FLUCCS Code/Description: 6410 Freshwater marsh.

| | |
|------|---------------------------|
| 2.0 | Wildlife Utilization (WU) |
| N/A | Wetland Canopy (O/S) |
| 2.0 | Wetland Ground Cover (GC) |
| 2.4 | Habitat Support/Buffer |
| 1.5 | Field Hydrology (HYD) |
| 3.0 | WQ Input & Treatment (WQ) |
| 10.9 | SUM |
| 5 | Count |
| 0.73 | WRAP |

SplO _MAR Wetland Rapid Assessment Procedure, page 2

| | |
|---|---------------------------|
| 2.0 | Wildlife Utilization (WU) |
| <p>Evidence of mammals bedding down in marsh vegetation. Lots of oak toads. Pieces of crayfish, armadillo hole in marsh. Numerous insects. Wetland is dry now, couldn't support fish. Adjacent landuses have upland support for expected wildlife. Nice adjacent flatwoods being managed with fire. No frequent human disturbance besides the ditch to the South. Can't support all expected wildlife for a marsh in its current dry state. Especially this would effect wetland dependant species such as wading birds, amphibians and fish.</p> | |

| | |
|--|----------------------|
| N/A | Wetland Canopy (O/S) |
| <p>There is no living shrub layer.</p> | |

| | |
|---|---------------------------|
| 2.0 | Wetland Ground Cover (GC) |
| <p><i>Panicum hemitomon</i>, <i>Amphicarpum muhlenbergianum</i>, <i>Proserpinaca spp.</i>, <i>Polygonum spp.</i> Some ecotone species in the interior or the wetland zone. <i>Hypericum spp.</i> edge dead from fire. Open patches with dead <i>Juncus effusus</i>. Some very small <i>Pontederia cordata</i> in dry interior areas. No exotics seen. Species are desireable but there are some upland, ecotone species that could be considered undesirable in the wetland interior. Some plants look stressed. <10% big empty or dead patches. Unusual that the wetland is this dry.</p> | |

| 2.4 | Habitat Support/Buffer | | | | | | | | | | | | | | | | | | | | | | | | |
|---|------------------------|-------------|--------------|-------------|-------------|---------|---|------|------|---|-----|------|-------|--|--|--|--|--|--|--|--|----------------|--|--|--------------|
| <p>Buffer is > 300 feet average; connected by natural landscape to other wetlands. Desireable plants in buffer. There is a canal feature about 35 meters South of WAA. Other wise the wetland is surrounded by high quality conservation lands.</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Buffer Type</th> <th style="width: 15%;">(Score) x</th> <th style="width: 15%;">(% of Area)</th> <th style="width: 10%;">= Sub Total</th> </tr> </thead> <tbody> <tr> <td>N, W, E</td> <td style="text-align: center;">3</td> <td style="text-align: center;">0.75</td> <td style="text-align: center;">2.25</td> </tr> <tr> <td>S</td> <td style="text-align: center;">0.5</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.125</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td colspan="3" style="text-align: right;">Total =</td> <td style="text-align: center;">2.375</td> </tr> </tbody> </table> | | Buffer Type | (Score) x | (% of Area) | = Sub Total | N, W, E | 3 | 0.75 | 2.25 | S | 0.5 | 0.25 | 0.125 | | | | | | | | | Total = | | | 2.375 |
| Buffer Type | (Score) x | (% of Area) | = Sub Total | | | | | | | | | | | | | | | | | | | | | | |
| N, W, E | 3 | 0.75 | 2.25 | | | | | | | | | | | | | | | | | | | | | | |
| S | 0.5 | 0.25 | 0.125 | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total = | | | 2.375 | | | | | | | | | | | | | | | | | | | | | | |

| | |
|---|-----------------------|
| 1.5 | Field Hydrology (HYD) |
| <p>Possible external effect from large canal about 100 feet South of wetland. Marsh is very shallow. Distinct water marks on wetland vegetation. Algal mats. No water present at this time which seems unusual for this time of year. Vegetation appears stressed. Some ecotone and upland plants in the wetland. Does appear wetland will persist based on wetland indicators and plant and animal species. May not be optimal support though.</p> | |

3.0 WQ Input & Treatment (WQ)*

**The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.*

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|--------------------------|-----------|-------------|-------------|
| natural undeveloped area | 3.0 | 1.0 | 3.0 |
| | | | |
| LU Total = | | | 3.0 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| nat. undeveloped area | 3.0 | 1.0 | 3.0 |
| | | | |
| PT Total = | | | 3.0 |

SpIO _MAR Hydrogeomorphic Approach, page 1

Variable Subindex and FCI Calculation for Florida Depressions Marsh

Assessment Team: KCR, ECH
Project Name: SpIO _MAR
Location: 28 degrees 21m 9.85s/ -81 degree
Date: 8/9/05
Subclass: herbaceous depression

| Function | FCI |
|--------------------------------|------------|
| Surface Water Storage | 0.92 |
| Subsurface Water Storage | 0.71 |
| Cycle Nutrients | 0.92 |
| Characteristic Plant Community | 0.53 |
| Wildlife Habitat | 0.56 |

| Variables | Measure | Units | Subindex |
|------------------|----------------|--------------|-----------------|
| V CATCH | 14 | % | 0.85 |
| V UPUSE | 100 | % | 1.00 |
| V WETPROX | 3860 | meters | 0.10 |
| V WETVOL | 0 | % | 1.00 |
| V SUROUT | 22 | % | 0.78 |
| V SUBOUT | 100 | % | 0.00 |
| V ZONES | 1 | number | 0.50 |
| V MAC | 82 | % | 0.87 |
| V SURTEX | 100 L.S. and S | % | 1.00 |
| V HCOMP | 25 | % | 0.25 |

SplO _MAR Hydrogeomorphic Approach, page 2

Vcatch

Size of original catchment 3.44 ha

Size of current catchment 2.95 ha

Vupuse

native range flatwoods cover type curve # 79 percent 100%

Vwetprox

| | | | |
|----------|----------|----------|----------|
| Sector 1 | Sector 2 | Sector 3 | Sector 4 |
| 500m | 500m | 500m | 360m |
| Sector 5 | Sector 6 | Sector 7 | Sector 8 |
| 500m | 500m | 500m | 500m |

Vwetvol

no change

| | | | | | |
|--|---|--------------------------------|-------------------------------|---------------------------|---|
| diameter wetland north- south 131m | diameter wetland east-west 78m | depth of wetland 0.3048m | length of fill material | width of fill material | average thickness of fill material |
|--|---|--------------------------------|-------------------------------|---------------------------|---|

Vsurout Difference is elevation of bottom of ditch and bottom of wetland 1.22m
22% Lateral effect of ditch 78m; distance of ditch to wetland 26 m

Vsubout Difference is elevation of bottom of ditch and bottom of wetland + 6in 1.37m
100% Lateral effect of ditch 219m; distance of ditch to wetland 26 m

Vzones two to 1, disturbance in whallow marsh

Vmac 29/35 82%

Vsurtex sand and loamy sand

Vhcomp

shallow marsh zone

20 cyperus spp.

20 *Panicum hemitomom*

20 *Gnaphalium* spp.

20 *Xyris*

SpIO_MAR Florida Wetland Condition Index, macrophyte field data sheets, page 1
 *NOTE: field codes are different than reported codes, SpIO_MAR = ORSPIT

| Species | 0.5 m | 1.0 m | 1.5 m | 2.0 m | 2.5 m | 3.0 m | 3.5 m | 4.0 m | 4.5 m | 5.0 m | 5.5 m | 6.0 m | 6.5 m | 7.0 m | 7.5 m | 8.0 m |
|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <i>Cyperus hexpan</i> | | | | | | | | | | | | | | | | |
| <i>Andropogon virginicus</i> | | | | | | | | | | | | | | | | |
| <i>Pectanites - 8 (Sp)</i> | | | | | | | | | | | | | | | | |
| <i>Tripsacum daniellii</i> | | | | | | | | | | | | | | | | |
| <i>Thalassia testudinum</i> | | | | | | | | | | | | | | | | |
| <i>Xyris sp. whitehead</i> | | | | | | | | | | | | | | | | |
| <i>Hydrocotyle sp.</i> | | | | | | | | | | | | | | | | |
| <i>Eleocharis acicularis</i> | | | | | | | | | | | | | | | | |
| <i>Eleocharis 13</i> | | | | | | | | | | | | | | | | |
| <i>Panicum hemitomon</i> | | | | | | | | | | | | | | | | |
| <i>Trasorpinia testudin</i> | | | | | | | | | | | | | | | | |
| <i>Lycopodium obscurum 12</i> | | | | | | | | | | | | | | | | |
| <i>Wolffia sp.</i> | | | | | | | | | | | | | | | | |
| <i>Amphicarpum nitidum</i> | | | | | | | | | | | | | | | | |
| <i>Panicum 4</i> | | | | | | | | | | | | | | | | |
| <i>Paspalum latifolium 2</i> | | | | | | | | | | | | | | | | |
| <i>Amphiprotium obtusifolium</i> | | | | | | | | | | | | | | | | |
| <i>Euthamia wisn</i> | | | | | | | | | | | | | | | | |
| <i>Woodwardia virginica</i> | | | | | | | | | | | | | | | | |
| <i>Eriocaulon sp.</i> | | | | | | | | | | | | | | | | |
| <i>Sagittaria arifolia</i> | | | | | | | | | | | | | | | | |
| <i>Scirpus 5</i> | | | | | | | | | | | | | | | | |
| <i>Rhynchospora 14</i> | | | | | | | | | | | | | | | | |
| <i>Xyris sp. 1</i> | | | | | | | | | | | | | | | | |
| <i>Hypericum sp.</i> | | | | | | | | | | | | | | | | |
| <i>Lygia lucida</i> | | | | | | | | | | | | | | | | |

Site: ORSPIT
 Date: Aug 9, 05
 Blourney Field Data Sheet - Transects, Vegetation Presence - LRF Center for Wetlands
 Transect Direction: North
 Data Recorder: [Signature]

SpLO_MAR Florida Wetland Condition Index, macrophyte field data sheets, page 2
 *NOTE: field codes are different than reported codes, SpLO_MAR = ORSPIT

| Species | 05/16 | 05/17 | 05/18 | 05/19 | 05/20 | 05/21 | 05/22 | 05/23 | 05/24 | 05/25 | 05/26 | 05/27 | 05/28 | 05/29 | 05/30 |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <i>Sagittaria arifolia</i> - 9 | | | | | | | | | | | | | | | |
| <i>Andropogon virginicus</i> | | | | | | | | | | | | | | | |
| <i>Hydrocotyle</i> sp. | | | | | | | | | | | | | | | |
| <i>Eleocharis</i> - 8 | | | | | | | | | | | | | | | |
| <i>Andropogon furcatus</i> - 10 | | | | | | | | | | | | | | | |
| <i>Prostrepria pectinata</i> | | | | | | | | | | | | | | | |
| <i>Guizotia scirpoides</i> | | | | | | | | | | | | | | | |
| <i>Panicum hemitomon</i> (var) | | | | | | | | | | | | | | | |
| <i>Pluchea odorata</i> | | | | | | | | | | | | | | | |
| <i>Eriocaulon</i> sp. | | | | | | | | | | | | | | | |
| <i>Syntherisma flandrus</i> | | | | | | | | | | | | | | | |
| <i>Scleria</i> - 5 | | | | | | | | | | | | | | | |
| <i>Amphioxylon mitchellii</i> | | | | | | | | | | | | | | | |
| <i>Kanthalium obtusifolium</i> | | | | | | | | | | | | | | | |
| <i>Lyonia lucida</i> | | | | | | | | | | | | | | | |
| <i>Drosera</i> sp. | | | | | | | | | | | | | | | |
| <i>Panicum</i> - 4 | | | | | | | | | | | | | | | |
| <i>Xyris</i> - 1 | | | | | | | | | | | | | | | |

Site: ORSPIT
 Date: Aug 9, 05
 Biorevery Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands
 Transect Direction: East TD
 Data Recorder: Tony Bennett

SpLO_MAR Florida Wetland Condition Index, macrophyte field data sheets, page 3
 *NOTE: field codes are different than reported codes, SpLO_MAR = ORSPIT

| Time | Species | 75-90 | 70-75 | 65-70 | 60-65 | 55-60 | 50-55 | 45-50 | 40-45 | 35-40 | 30-35 | 25-30 | 20-25 | 15-20 | 10-15 | 5-10 | 0-5 |
|------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-----|
| | <i>Panicum polystachion</i> | | | | | | | | | | | | | | | | |
| | <i>Catclaw sp.</i> | | | | | | | | | | | | | | | | |
| | <i>Andropogon virginicus</i> | | | | | | | | | | | | | | | | |
| | <i>Echinochloa polystachion</i> | | | | | | | | | | | | | | | | |
| | <i>Ilex glabra</i> | | | | | | | | | | | | | | | | |
| | <i>Cyperus tenuis</i> | | | | | | | | | | | | | | | | |
| | <i>Conyza stricta</i> | | | | | | | | | | | | | | | | |
| | <i>Paspalum leucostachyoides</i> | | | | | | | | | | | | | | | | |
| | <i>Panicum</i> | | | | | | | | | | | | | | | | |
| | <i>Cyperus tenuis</i> | | | | | | | | | | | | | | | | |
| | <i>Panicum tenuis</i> | | | | | | | | | | | | | | | | |
| | <i>Amphioxys arifolia</i> | | | | | | | | | | | | | | | | |
| | <i>Cyperus</i> | | | | | | | | | | | | | | | | |
| | <i>Ternstroemia macrocarpa</i> | | | | | | | | | | | | | | | | |
| | <i>Cyperus</i> | | | | | | | | | | | | | | | | |
| | <i>Furcraea scapularis</i> | | | | | | | | | | | | | | | | |
| | <i>Sagittaria arifolia</i> | | | | | | | | | | | | | | | | |
| | <i>Paspalum pectinatum</i> | | | | | | | | | | | | | | | | |
| | <i>Andropogon sp.</i> | | | | | | | | | | | | | | | | |
| | <i>Cyperus tenuis</i> | | | | | | | | | | | | | | | | |
| | <i>Cyperus tenuis</i> | | | | | | | | | | | | | | | | |
| | <i>Hydrocotyle</i> | | | | | | | | | | | | | | | | |

State: ORSPIT
 Date: Aug 9 85
 Transect Direction: South
 Data Recorder: [Name]
 Browney Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands

SpLO_MAR Florida Wetland Condition Index, macrophyte field data sheets, page 4

*NOTE: field codes are different than reported codes, SpLO_MAR = ORSPIT

Date: Aug 9, 05
Site: 501 SPIT
Biosurvey Field Data Sheet - Transects, Vegetation Presence - UF Center for Wetlands
Transect Direction: West #14
Data Recorder: Tony Dawson

| Species | 05-08 | 05-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <i>Sagittaria nitens</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Panicum polystachion</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Lythrum lineare</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Sagittaria nitens</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Eleocharis acicularis</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Thysanotus juncea</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Panicum polystachion</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Xyris</i> - 1 | ✓ | | | | | | | | | | | | | | | |
| <i>Paspalum paspalodes</i> - 2 | ✓ | | | | | | | | | | | | | | | |
| <i>Phytolacca</i> - 3 | ✓ | | | | | | | | | | | | | | | |
| <i>Panicum polystachion</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Eleocharis</i> sp. (small) | ✓ | | | | | | | | | | | | | | | |
| <i>Echinochloa polystachion</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Scleria</i> - 5 | ✓ | | | | | | | | | | | | | | | |
| <i>Pluchea odorata</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Xyris</i> sp. (under shade) | ✓ | | | | | | | | | | | | | | | |
| <i>Cr. aculeata</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Polygala cymosa</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Andropogon virginicus</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Panicum hemtani</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Eupatorium capillatum</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Cyperus retrofractus</i> - 6 | ✓ | | | | | | | | | | | | | | | |
| <i>H. linearis</i> sp. | ✓ | | | | | | | | | | | | | | | |
| <i>Eleocharis</i> GRASS - 7 | ✓ | | | | | | | | | | | | | | | |
| <i>Eleocharis</i> - 8 | ✓ | | | | | | | | | | | | | | | |
| <i>Juncus effusus</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Panicum polystachion</i> | ✓ | | | | | | | | | | | | | | | |
| <i>Cyperus retrofractus</i> - 9 | ✓ | | | | | | | | | | | | | | | |

Des 121 specify
R 5# 8, 15
5-14

ORSPIT

Panicum or Sacciolepis - no id used for this

- * 1 Xyris (narrow leaf) isoetifolia { ID not used for rare sp. found only in panhandle. This also in reticular fl.
- 2 Paspalum flavum ~~prosp.~~
- 3 Rhynchospora fascicularis
- 4 Panicum ?ensitolum
- 5 Scleria reticularis
- 6 Cyperus retrosus
- 7 Grass-erectus Cynodon dactylon
- 8 Eleocharis olivacea { ID not used for found only in panhandle.
- 9 Cyperus ~~harper~~ lecontei
- 10 Axonopus fulvus
- 11 Juncus ~~mesocarpus~~ scirpoides
- 12 Cyperus retrosus
- 13 Eleocharis olivacea { same as #8, just id.
- 14 Rhynchospora filifolia
- 15 Xyris (wide blade) - no id

Upland - sscrph? Taraxacum officinale
Gentiana puberula

Appendix B-25. Sundew Mitigation Bank

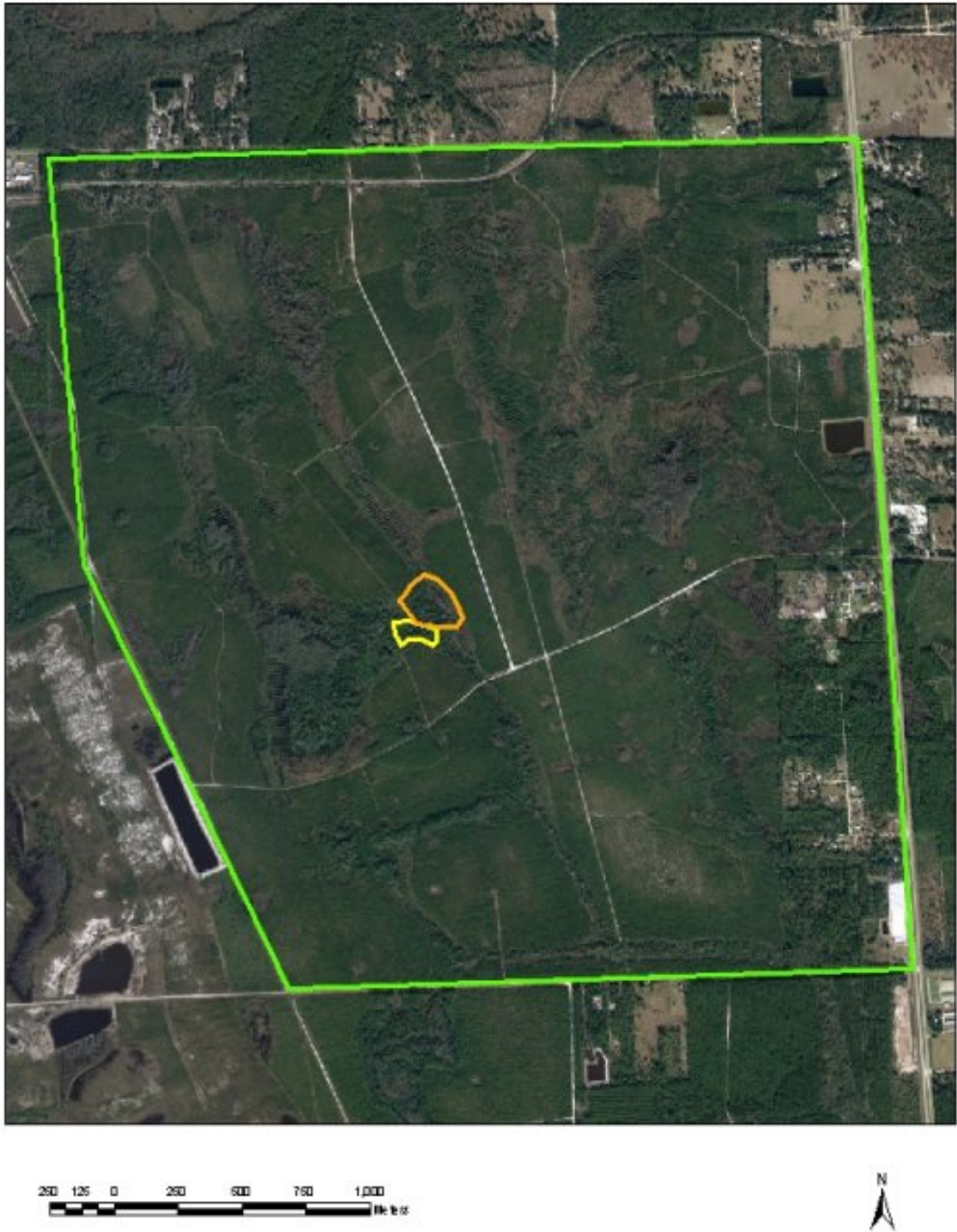


Figure B-25.1. Landscape location of Sundew Mitigation Bank (green line). Boundary of the wetland assessment areas Sun_FOR_1 outlined in orange and Sun_FOR_2 outlined in yellow.

(A)



(B)



Figure B-25.2. Site photos of assessment areas (A) Sun_FOR_1 and (B) Sun_FOR_2 at Sundew mitigation bank. At the time of site visit little mitigation activity had been initiated.

Sun_FOR_1 Uniform Mitigation Assessment Method, page 1

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

| | | | |
|--|---|--|---|
| Site/Project Name Sundew Mitigation Bank | | Application Number NA | Assessment Area Name or Number Sun_FOR_1 |
| FLUCCs code 6300 Wetland Forested Mixed | Further classification (optional) Continuous forested wetland patch with mix of codominant species, some cut stumps, hog rooting. Embedded in high intensity silvicultural activities. | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size 3.3 ha (8.2 ac) |
| Basin/Watershed Name/Number HUC 03080103 Lower St. John's River | Affected Waterbody (Class) 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 Continuous forested wetland system. Water flows to the south meeting up with another forested wetland and flowing east eventually into the St. John's River, an Outstanding Florida Water. Adjacent uplands are bedded pine plantation with some water storage between rows (in troughs). | | | |
| Assessment area description One area with more closed canopy, one area with more harvesting (evidenced by cut stumps) and hog rooting - all is one contiguous wetland and so scored as one system - clearly the same wetland type. | | | |
| Significant nearby features Bayard Conservation Area to NE across US 17. Lower portion of bank is in Florida Ecological Greenways data layer as low priority. Site is about 3 miles from Critical linkage, high priority ecological greenway to the West. Because of this it is possible to have black bears on this property, especially if the linkage was established. | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Much of this area has uplands in silviculture, this area is not considered unique. | |
| Functions Surface and subsurface water storage. Nutrient cycling. Provides wildlife habitat. Provides structure for birds for nesting. | | Mitigation for previous permit/other historic use Has been in active silviculture. | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Turtles, frogs, alligators, woodpeckers, wading birds, osprey, raccoon, bobcat, deer, fish, salamanders. | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Florida black bear T; Little Blue Heron; American Alligator; White Ibis, Snowy Egrets, Tricolored heron, glossy ibis are all SSC | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Some extensive areas of hog rooting which has removed ground cover and food sources for the other wildlife, some of rutting could be remnants of logging practices. No evidence of alligators necessarily but evidence of deer, did have standing water, some amphibians noted, should support wading birds, adjacent food source somewhat limited by thick vegetative growth in midstory/shrub layer and lack of spp. with desirable food sources - west side has more food and cover available because it is slightly more open and has more desirable spp. Area with apparent and regular human disturbance (timber activities). Common yellow throat, game trails, leopard frog, deer tracks on edge, fish eating spider, many red spiders, nursery spider webs, swallowtail butterfly, fish swirls in water. | | | |
| Additional relevant factors: Soils include Allanton and Rutlege, both very poorly drained, and Leon, which is poorly drained. FWCC Biodiversity Hotspots with 5-6 focal species overlap. FWCC Priority Wetlands with 1-3 species and wetland habitat. | | | |
| Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | | Assessment date(s): 9/30/2005 | |

Sun_FOR_1 Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|---|---|
| Site/Project Name Sundew Mitigation Bank | Application Number NA | Assessment Area Name or Number Sun_FOR_1 |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinners Reiss, Erica Hernandez | Assessment date: 9/30/2005 |

| | | | | |
|---|---|---|---|--|
| 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 water functions | 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 w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 6 | Habitats outside wetland assessment area provide support for most species though some lack of cover and food. Connected to wetland and strand features. No invasive exotics or other undesirable plant species. Wildlife access slightly limited due to bedding and rutting, and thick bedded pine plantation. Downstream effects include increased sediment deposition from support area (some ditch type features). Outside land uses impact fish and wildlife (includes significant adverse impacts). Ability to provide benefits downstream not limited (example: no flow impediments). Downstream gets some benefits, probably would not suffer adverse impacts because of changes to this wetland and certainly not solely dependent on this wetland as a primary water source. Landscape includes connected wetlands (of same quality or with more trees harvested). Landscape has low species richness, is fire suppressed, is difficult to traverse with vine and shrub overgrowth, and does not provide optimal habitat structure. |
| .500(6)(b) Water Environment (n/a for uplands) w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 8 | Silvicultural slash pine (<i>Pinus elliottii</i>) in support area is bedded and alters wetland hydrology. Not a great deal of evidence for water flow, levels or indicators - some areas with more distinct moss collars and lichen lines, some loop roots. No evidence of soil erosion, deposition, or subsidence. No evidence of atypical fire. Vegetation and benthic community zonation appropriate. Mortality normal, no thinned canopy or signs of insect damage. Species indicative of appropriate hydrologic conditions included fish and frogs using wetland. No vegetation indicative of water quality degradation nor changes in frequency, depth, or inundation. Standing water clear and tannic, though higher turbidity in area with greater woody debris. Light penetration appropriate. |
| .500(6)(c) Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 6 | Majority of plant cover by desirable species, but lack of richness of desirable species. Area very open with many graminoid species. Invasive and exotic species not present. Recruitment and regeneration of canopy species near-normal. Age and size class deviated because of logging with cut stumps, through regeneration near-normal. Not considered a permanent deviation in age and size class. Coarse woody debris greater than expected in area with hog damage, though more normal and appropriate in more closed canopy area versus rutted area. Plant condition generally good. Land management includes fires suppression and some removal of natural structure (harvest of tree) and water control (beds & troughs). Uplands will be harvested again soon resulting in another temporary deviation for the wetland (loss of support, edge effect, etc.). Topographic features appear appropriate in closed canopy areas. In areas with high coarse woody debris and hog damage topographic features were less obvious. No evidence of siltation or algal growth. |

| |
|--|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current or w/o pres <input type="checkbox"/> with <input type="checkbox"/> |
| 0.67 |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Sun_FOR_1 Wetland Rapid Assessment Procedure, page 1

Project Name: Sun_FOR_1 - Sundew Mitigation Bank

Date: 9/30/05

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez & Tony Davanzo

Wetland Type/Description: One area with more closed canopy, one area with more harvesting (evidenced by cut stumps) and hog rooting - all is one contiguous wetland and so scored as one system clearly the same wetland type.

Wetland Assessment Area: 3.3 ha (8.2 ac)

FLUCCS Code/Description: 6300 Wetland Forested Mixed

| | |
|------|---------------------------|
| 2.0 | Wildlife Utilization (WU) |
| 2.0 | Wetland Canopy (O/S) |
| 1.5 | Wetland Ground Cover (GC) |
| 2.0 | Habitat Support/Buffer |
| 2.5 | Field Hydrology (HYD) |
| 1.6 | WQ Input & Treatment (WQ) |
| 11.6 | SUM |
| 6 | Count |
| 0.65 | WRAP |

Sun_FOR_1 Wetland Rapid Assessment Procedure, page 2

| | |
|-----|---|
| 2.0 | Wildlife Utilization (WU) Common yellow throat, game trails, leopard frog, deer tracks on edge, fish eating spiders, red spiders, nursery spider webs, swallowtail butterfly, small fish in water. Some extensive areas of hog rooting which has removed ground cover and food sources for the other wildlife, some of the rutting could be remnants of logging practices. No direct evidence of alligators, but evidence of deer. Did have standing water, some amphibians noted, should support wading birds. Adjacent food source somewhat limited by thick vegetative growth in midstory/shrub layer and lack of species with desirable food sources - west side has more food and cover available because it is slightly more open and has more desirable species. Area with apparent and regular human disturbance (timber activities). Wetland itself provides decent habitat for wildlife and connections to other wetland systems. |
|-----|---|

| | |
|-----|--|
| 2.0 | Wetland Canopy (O/S) No invasive exotic species. Open sparse overstory (due to logging) allowing much light in. Regeneration and recruitment noted for many species including pondcypress (<i>Taxodium ascendens</i>). Many trees are mature, some immature. No excessive mortality - some habitat support (not optimal because of open canopy). |
|-----|--|

| | |
|-----|--|
| 1.5 | Wetland Ground Cover (GC) No exotic or invasive species. Ground cover mainly desirable species - impacted from hog rooting in certain areas (some with no growth at all) of wetland (particularly more open eastern edge). Some parts with excessive woody debris and lack of species and lack of ground cover structure (from logging). |
|-----|--|

| | | | | | |
|----------------|---|-----------------|-----------|-------------|-------------|
| 2.0 | Habitat Support/Buffer Buffer >300' no nuisance or exotic species (>75% undesirable non-invasive plant species as those associated with slash pine (<i>Pinus elliottii</i>) silviculture). Plant species do not provide optimal support. Undesirable species throughout planted pine - some food cover and roosting available, especially in adjacent or nearby wetland systems (though these are not optimal as they have been logged also). | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | Plantation Pine | 1.5 | 0.5 | 0.8 |
| | | Wetland | 2.5 | 0.5 | 1.3 |
| | | | | | |
| | | | | | |
| Total = | | | | | 2.0 |

| | |
|-----|---|
| 2.5 | Field Hydrology (HYD) Hydrology adequate, many wetland species were regenerating. Lichen lines and moss collars not as distinct as expected (in areas with heavy woody debris) - also water not as clear here and sheet flow somewhat impeded with rutting and hog damage. Some changes to hydroperiod anticipated. Uplands have been bedded - have been logged and rutted and woody debris influencing. No upland transitional species in wetland. No soil subsidence evident. |
|-----|---|

| | |
|-----|---------------------------------------|
| 1.6 | WQ Input & Treatment (WQ)* |
|-----|---------------------------------------|

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| Plantation Pine | 1.0 | 0.50 | 0.5 |
| Wetland | 2.5 | 0.50 | 1.3 |
| | | | 0.0 |
| LU Total = | | | 1.8 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| Plantation Pine | 0.0 | 0.50 | 0.0 |
| Wetland | 3.0 | 0.50 | 1.5 |
| | | | 0.0 |
| PT Total = | | | 1.5 |

Additional Notes:

Plantation Pine given the land use score of citrus due to the bedding, changes to hydrology, and potential application of fertilizers and pesticides.

Sun_FOR_2 Uniform Mitigation Assessment Method, page 1

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

| | | | |
|---|--|--|---|
| Site/Project Name Sundew Mitigation Bank | | Application Number NA | Assessment Area Name or Number Sun_FOR_2 |
| FLUCCs code 6300 Wetland Forested Mixed | Further classification (optional) called 6110 Bay Swamp, but this area had more than just loblolly bay (<i>Gordonia lasianthus</i>), though the signature must not have been distinct enough to characterize as 6300 Wetland Forested Mixed | | Impact or Mitigation Site? Mitigation Bank |
| | | Assessment Area Size 1.1 ha (2.7 ac) | |
| Basin/Watershed Name/Number HUC 03080103, Lower St. John's River | Affected Waterbody (Class) 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 Flows south into adjacent wetland system and eventually flows east into the St. John's River. Similar nearby wetlands exist throughout area, though most are in similar condition, which means that these wetlands have been harvested in the recent past. Receives run-off from adjacent pine plantation (heavily bedded from past earth moving activities). | | | |
| Assessment area description This wetland assessment area should be characterized as floodplain forest, though the strip of remaining floodplain vegetation had been greatly reduced from past logging activities and bedding for pine plantation continuing into the wetland. There are occasional pondcypress (<i>Taxodium ascendens</i>) in the canopy with some large loblolly bay (<i>Gordonia lasianthus</i>) throughout. Water flows in a distinct natural channel, connecting to other wetlands throughout the bank. No evidence of pondcypress regeneration was found. | | | |
| Significant nearby features Bayard Conservation Area to NE across US 17. Lower portion of bank is in Florida Ecological Greenways data layer as low priority. Site is about 3 miles from Critical linkage, high priority ecological greenway to the West. Because of this it is possible to have black bears on this property, especially if the linkage was established. | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Much of this area has uplands in silviculture, this area is not considered unique. | |
| Functions Surface and subsurface water storage. Nutrient cycling. Provides wildlife habitat. Provides structure for birds for nesting. | | Mitigation for previous permit/other historic use Has been in active silviculture. | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Turtles, frogs, alligators, woodpeckers, wading birds, osprey, raccoon, bobcat, deer, fish, salamanders. | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Florida black bear T; Little Blue Heron; American Alligator; White Ibis, Snowy Egrets, Tricolored heron, glossy ibis are all SSC | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Pileated woodpecker, white eyes vireo, crickets, whirly gigs, damsel flies, small fish expected because of movement in water but none visually identified, deer tracks in support landscape, also turkey and hogs. | | | |
| Additional relevant factors: FWCC Biodiversity Hotspots with 5-6 focal species overlap. FWCC Priority Wetlands with 1-3 species, upland habitat. | | | |
| Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | | Assessment date(s): 9/30/2005 | |

Sun_FOR_2 Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|--|---|
| Site/Project Name Sundew Mitigation Bank | Application Number NA | Assessment Area Name or Number Sun_FOR_2 |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | Assessment date: 9/30/2005 |

| | | | | |
|---|---|---|---|--|
| 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 water functions | 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 w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 7 | Habitats outside wetland assessment area available for many species. Some reduced availability for wildlife. Not planted pine to edge. Does need fire. Has shrubby buffering habitat. No invasive, exotic, or nuisances species. Wildlife access somewhat limited by barriers - though not necessarily for smaller aquatic species but perhaps larger mammals. Downstream not limited, flows not impeded. Land uses outside wetland assessment areas have negative impacts. Impediments and flow restrictions not limited. Downstream areas get some benefits but not solely dependent on this area for a water source. Water does eventually make its way down to St. Johns River (an Outstanding Florida Water). |
| .500(6)(b) Water Environment (n/a for uplands) w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 9 | Water levels and flows appeared appropriate. Indicators consistent, including moss collars at trees in channel and hummocks, cypress knees. Soils indicated, no erosion or deposition. Channelized flow not incised. Shallow, broad channel with clear cool tannic water. No evidence of atypical fire history. Vegetation zonation appeared appropriate. No evidence of hydrologic stress. Species indicative of specific water requirements included fish. Frogs noted nearby but not in flowing stream. No species characteristic of water quality degradation or changes in frequency or inundation. Standing water clear and appropriate - no turbidity, discoloration, oil sheen. Ditches and rutting throughout watershed caused assumed changes to hydrologic functions, though perhaps slight. Score may be higher than appropriate but lack of significant, clear evidence led to this high score - could have been lower, perhaps an 8. This area is scheduled for upland (support area) clear cutting which will have dramatic effects on the water quality and quantity within this wetland. Much of the support area has planted pines within the surrounding wetland. |
| .500(6)(c) Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current <input type="checkbox"/> with <input type="checkbox"/> 7 | Some large pondcypress (<i>Taxodium ascendens</i>) remaining after harvest, but mature canopy lacking. Majority of cover by appropriate species, but species richness was lacking and there was a very thick shrub layer. A general lack of pondcypress occurrence was noted. No invasive or exotic species. Have been deviations to age and size class distribution, but not permanent with regeneration and restoration. Level of coarse woody debris appropriate though slightly higher standing stock of shrubs than anticipated. Stream not full of downed logs. Some snags, a pileated woodpecker was making cavities during our site visit. Area was probably too wet to log out the largest trees, so this area has slightly greater habitat support than some other areas of bank. Plant condition generally good. Land management practices include fire suppression and some water control features, plus harvesting will be done in support upland soon. Topographic features optimal - some decent size hummocks in and around the creek channel. No siltation or algal growth. |

| |
|--|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current or w/o pres <input type="checkbox"/> with <input type="checkbox"/> |
| 0.77 |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Sun_FOR_2 Wetland Rapid Assessment Procedure, page 1

Project Name: Sun_FOR_2 - Sundew Mitigation Bank

Date: 9/30/05

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: scored as blackwater stream and floodplain forest. Should have cypress and black gum as co-dominants. Cypress remnant canopy (past logging) with some large loblolly bays throughout.

Wetland Assessment Area: 1.1 ha (2.7 ac)

FLUCCS Code/Description: 6300 Wetland Forested Mixed

| | |
|------|---------------------------|
| 2.0 | Wildlife Utilization (WU) |
| 2.0 | Wetland Canopy (O/S) |
| 3.0 | Wetland Ground Cover (GC) |
| 2.0 | Habitat Support/Buffer |
| 2.5 | Field Hydrology (HYD) |
| 1.6 | WQ Input & Treatment (WQ) |
| 13.1 | SUM |
| 6 | Count |
| 0.73 | WRAP |

Sun_FOR_2 Wetland Rapid Assessment Procedure, page 2

| | |
|---|----------------------------------|
| 2.0 | Wildlife Utilization (WU) |
| Deer tracts in support landscape, damselfly, white eyed vireo, pileated woodpecker, crickets, whirly gigs, small fish expected because of movement in water, none visually identified. Some use by large and small mammals and aquatic macroinvertebrates. Adequate adjacent habitat (upland food source and cover). Much cover in wetland - very shrubby with vines creating difficulty for large mammals to traverse. | |

| | |
|--|-----------------------------|
| 2.0 | Wetland Canopy (O/S) |
| Overstory of remnant pondcypress (<i>Taxodium ascendens</i>) with some black gum (<i>Nyssa sylvatica</i> var. <i>biflora</i>). Midstory of loblolly bay (<i>Gordonia lasianthus</i>) - some very large trunks. Also some sweet bay magnolia (<i>Magnolia virginiana</i>), swamp bay (<i>Persea palustris</i>), wax myrtle (<i>Myrica cerifera</i>), evergreen bayberry (<i>Myrica heterophylla</i>), and highbush blueberry (<i>Vaccinium corymbosum</i>). Saw palmetto (<i>Serenoa repens</i>) on edges fairly high and somewhat thick. Very few big trees and much shrub cover. No exotic or invasive species. Does provide habitat support. No pondcypress regeneration noted. Some sweet bay magnolia regeneration. Some snags and den trees. Healthy canopy trees but lack of large canopy trees. Large gaps in canopy with thick shrub layer (logging and fire suppression effects). No undesirable species. Provides some habitat - not optimal though - too sparse canopy and too thick shrub layer. | |

| | |
|---|----------------------------------|
| 3.0 | Wetland Ground Cover (GC) |
| No exotic, invasive, or nuisance species. Thick shrub layer so very shaded and little ground cover but what was there was desirable. Ground not rutted up like support area. Mostly just noted Virginia chain fern (<i>Woodwardia virginica</i>). | |

| | | | | | |
|---|-------------------------------|-------------------|-----------|-------------|-------------|
| 2.0 | Habitat Support/Buffer | | | | |
| <p>>300' buffer. No exotic or invasive species. Dominated by pine plantation with undesirable native species, though not immediately adjacent. In buffer area, mainly ok species, some cover, food, roosting available - difficult to get through. Connection to wildlife corridors. Species richness in buffer not high, but does give some cover, food, etc. Some areas with loblolly bay (<i>Gordonia lasianthus</i>) as monotypic canopy. Unimproved grass road could act as a wildlife corridor for some species access, though it could also cause edge effects or act as a barrier for other species (especially because it provides no cover).</p> | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | Disturbed habitat | 2.5 | 0.5 | 1.3 |
| | | Pine plantation | 1.5 | 0.5 | 0.8 |
| | | | | | 0.0 |
| | | | | | |
| | | | | | 0.0 |
| | | | | | 0.0 |
| | | | | | 0.0 |
| Total = | | | | | 2.0 |

| | |
|--|------------------------------|
| 2.5 | Field Hydrology (HYD) |
| Hydrology adequate to maintain wetland. No stress apparent. Should be close to natural hydroperiod. Some alterations due to bedding of pine plantation (narrow strip of wetland associated with black water stream). Support area has much ditching and culverts at roads. No transitional species encroachment. No evidence of soil subsidence. | |

| | |
|--|---------------------------------------|
| 1.6 | WQ Input & Treatment (WQ)* |
| *The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2. | |

| LANDUSE CATEGORY (LU) | | | |
|-----------------------|-----------|-------------|-------------|
| Land Use Category | (Score) x | (% of Area) | = Sub Total |
| Disturbed habitat | 2.5 | 0.50 | 1.3 |
| Pine plantation | 1.0 | 0.50 | 0.5 |
| | | | 0.0 |
| LU Total = | | | 1.8 |

| PRETREATMENT CATEGORY (PT) | | | |
|----------------------------|-----------|-------------|-------------|
| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
| Disturbed habitat | 3.0 | 0.50 | 1.5 |
| Pine plantation | 0.0 | 0.50 | 0.0 |
| | | | 0.0 |
| PT Total = | | | 1.5 |

Additional Notes:
 Plantation Pine given the land use score of citrus due to the bedding, changes to hydrology, and potential application of fertilizers and pesticides.

Appendix B-26. TM-Econ Mitigation Bank



Figure B-26.1. Landscape location of TM Econ Mitigation Bank (green line). Boundary of the wetland assessment area TMEc_CYP_1 is outlined in orange and TMEc_CYP_2 is outlined in yellow.

(A)



(B)



Figure B-26.2. Site photos of wetland assessment areas (A) TMEc_CYP_1 and (B) TMEc_CYP_2 at TM Econ mitigation bank.

TMEc_CYP_1 Uniform Mitigation Assessment Method, page 1

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

| | | | | | |
|---|--|---|----------------------------------|--|---------------------------------------|
| Site/Project Name TM-ECON Mitigation Bank | | Application Number NA | | Assessment Area Name or Number TMEc_CYP_1 | |
| FLUCCs code SJRWMD 2000 - 6210 Cypress | | Further classification (optional) Cypress Strand | | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size 1 ha (2.5 ac) |
| Basin/Watershed Name/Number HUC- ST John River Upper | | Affected Waterbody (Class) Class III | | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) OFW Special Econolockhatchee River System | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands WAA is S and W of dirt road property line. This area will have hydrologic enhancement upstream as part of restoration efforts on bank. The WAA is part of larger forested strand system which is associated with 4-mile Creek and part of the Econ. River System, an OFW. | | | | | |
| Assessment area description Bottomland cypress strand, flowing black water. Flatwoods grade into flowing cypress strand. There has been some channelization of the main flow channel in this portion of the strand. | | | | | |
| Significant nearby features Split Oak mitigation bank; Lake Mary Jane; Bee Line expressway North ~ 4miles; Tossohatchee State Reserve ~11miles East and Hal Scott Preserve ~4 miles North | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Military testing land (Lockheed Martin) East. There is a lot of pasture in the landscape and urban encroachment. Difficult to find non-degraded strands in a natural flatwoods mosaic in this area of Florida (not that this is non-degraded though). Discharges to both SJRWMD and SFWMD through natural flow and by-pass canal, respectively. | | | |
| Functions Water storage; wildlife habitat; wildlife corridor; nutrient cycling | | Mitigation for previous permit/other historic use Lockheed Martin laser testing in flatwoods to the S of WAA. Some areas logged now privately owned. Area had large wildfire come through the site. Historically winter burns. Now privately owned. | | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Ribbon Snake, cottonmouth, opossum, gray squirrel, black bear, raccoon, mink, otter, Florida Panther, white-tailed deer | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Bald Eagle (E) nest previous years on bank on connected wetland to S, Wading birds: wood storks (E), little blue heron (SSC), white Ibis (SSC), snowy egret (SSC), great egret (SSC), tricolored heron (SSC); Florida panther (E) Bank has RCWs (E) and gopher tortoises (SSC) in flatwoods | | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Tracks: deer, hog, turkey, alligator, bobcat, raccoon. Visual: spiders, little blue heron, dragonfly laying eggs, frogs splashing (no positive species id). Audio: cricket frogs. | | | | | |
| Additional relevant factors: Hydrology not restored to this wetland system yet. Some work will be done upstream. | | | | | |
| Assessment conducted by: EH, KCR | | | Assessment date(s): 8/11/2005 | | |

TMEc_CYP_1 Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|--|--|
| Site/Project Name TM-ECON Mitigation Bank | Application Number NA | Assessment Area Name or Number TMEc_CYP_1 |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Erica Hernandez, Kelly Chinnners Reiss | Assessment date: 8/11/2005 |

| | | | | |
|--|---|---|---|--|
| 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 water functions | 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 w/o pres or current with | Habitat support represents full range necessary for anticipated wildlife species. Small dirt road through the system and a barbed wire fence plus a cleared 2-3 ac patch of improved pasture adjacent to NW. This should not substantially decrease the support for wildlife species. Invasive exotics are present, some pasture grasses that are not desirable species, there is also some <i>Imperata cylindrica</i> (cogongrass), some has been treated. There is also a <i>Solanaceae</i> exotic species and the exotic <i>Lygodium</i> sp. (climbing fern) along the connected forested upstream wetland. Wildlife access is not limited by distance or barriers. Land uses do not have extremely negative impacts - just a small part of the improved pasture abuts the WAA. Downstream benefits may be limited by barriers (such as road cutting through system). This system makes up the headwaters to the Econlockhatchee River (an OFW), so downstream is critically dependent on the water quality and quantity of this system. |
| | |
| .500(6)(b) Water Environment (n/a for uplands) w/o pres or current with | Water levels are high, but indicators are not as distinct as they should be - no visible stain lines, lichen lines not distinct, moss collars occur approximately 1.5 ft below the scattered lichen lines, moss covers the loop roots, the grasses have adventitious rooting. Excessive fire evident, but may or may not be from hydrologic stress - attributed (by bank manager) to climatic factors such as drought of 1998 followed by wildfire. Vegetation shows no distinct signs of hydrologic stress. Plant community composition includes the nuisance species <i>Typha</i> sp. (cattail) and <i>Ludwigia peruviana</i> (Peruvian primrosewillow) that are characteristic of disturbance (increased nutrients, increased light through canopy, etc.). Algal growth somewhat excessive, certainly greater than anticipated. Animal species with specific hydrologic requirements include alligators, fish, frogs, and dragonflies. There is also submerged aquatic vegetation growing in open water sections. The water depth is lower than anticipated based on water level indicators. |
| | |
| .500(6)(c) Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current with | Tree age and size class distribution lacks the older cohorts, some natural recruitment of canopy species along the fringe, signs of temporary deviation from expected age and size class distribution. Species composition is not optimal, especially considering the groundcover. Cover by invasive exotic species is minimal. The amount of woody debris is greater than expected. There are many dead trees and much fallen debris though the living trees appear somewhat healthy (perhaps a thin canopy). Land management practices appear ok for system maintenance. |
| | |

| |
|---|
| Score = sum of above scores/30 (if uplands, divide by 20) current or w/o pres with |
| 0.73 |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

TMEc_CYP_1 Wetland Rapid Assessment Procedure, page 1

Project Name: TMEc_CYP_!, TM Econ Mitigation Bank

Date: 8/11/2005

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: Cypress strand just S of dirt road which is property boundary. WAA is part of Econolockhatchee River System. Wildfire in this area around 1997 appears to have reached into the wetland.

Wetland Assessment Area: 1 ha (2.5 ac)

FLUCCS Code/Description: SJRWMD 2000 6210 Cypress

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| | |
|------|---------------------------|
| 2.5 | Wildlife Utilization (WU) |
| 1.5 | Wetland Canopy (O/S) |
| 1.5 | Wetland Ground Cover (GC) |
| 2.8 | Habitat Support/Buffer |
| 2.0 | Field Hydrology (HYD) |
| 2.7 | WQ Input & Treatment (WQ) |
| 12.9 | SUM |
| 6 | Count |
| 0.72 | WRAP |

TMEc_CYP_1 Wetland Rapid Assessment Procedure, page 2

| | |
|---|----------------------------------|
| 2.5 | Wildlife Utilization (WU) |
| <p>Tracks - raccoon, bobcat, alligator, turkey, deer, hog. Cricket frog calls, spiders, little blue heron, dragonfly laying eggs, frogs splashing (no positive id), small fish in water. Most surrounding uplands are optimal, but outside to the N is a cleared deforested pasture land, did not see cattle on the property but did see evidence of cattle. Very open tree canopy, probably has been logged historically perhaps wildlife food source and cover is somewhat limited. Adjacent wetland to the E of the road is optimal (large old trees, shaded ground, dense tree canopy).</p> | |

| | |
|--|-----------------------------|
| 1.5 | Wetland Canopy (O/S) |
| <p>Small trees but appear old. Large gaps between the trees, though not comprised of undesirable species. Many dead trees (from excessive fire, wind fall, storm damage . . . unknown). No large buttresses like in adjacent wetland to the E on other side of dirt road. Not as much <i>Nyssa sylvatica</i> (tupelo) or canopy or midstory species diversity as anticipated. Trees have little canopy development - very thin canopy, allowing lots of light to the understory. Recruitment visible at wetland edges. Large canopy gaps with no trees or dead trees. Overstory and shrub layers appear immature, but great potential for habitat support.</p> | |

| | |
|--|----------------------------------|
| 1.5 | Wetland Ground Cover (GC) |
| <p>Approximately 33% undesirable species. Species composition includes <i>Typha</i> sp. (cattail), <i>Ludwigia peruviana</i> (Peruvian primrosewillow), abundant <i>Triadenum virginicum</i> (Virginia marsh St. John's-wort), grasses, ferns, small red alternate leaved <i>Ludwigia</i> sp. (primrosewillow), unknown submerged aquatic species, <i>Dulichium arundinaceum</i> (threeway sedge), <i>Sagittaria</i> sp. (arrowhead), <i>Pontederia cordata</i> (pickerelweed), <i>Polygonum</i> sp. (smartweed), <i>Rhynchospora ?corniculata</i> (shortbristle horned beaksedge), <i>Saururus cernuus</i> (lizard's tail), <i>Woodwardia virginica</i> (Virginia chain fern), etc. Mixed signals in the herbaceous vegetation layer finding <i>Eriocaulon decangulare</i> (tenangle pipewort) and <i>Eupatorium capillifolium</i> (dogfennel) growing out from cypress trunks throughout the fringe.</p> | |

| | | | | | |
|---|-------------------------------|------------------|-----------|-------------|-------------|
| 2.8 | Habitat Support/Buffer | | | | |
| <p>Small pond to south, probably dug for fill for the road, very small, less than 1/4 ac. Upland in preservation to S with large dbh <i>Pinus elliotii</i> (slash pine) trees. Cleared pasture to N, small piece adjacent to wetland. Wildlife corridors for continuous off-site wetlands. Buffer mostly desirable species.</p> | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | Wetland | 3 | 0.25 | 0.75 |
| | | Upland | 3 | 0.625 | 1.875 |
| | | Improved Pasture | 1 | 0.125 | 0.125 |
| | | | | | |
| | | | | 2.75 | |

| | |
|--|------------------------------|
| 2.0 | Field Hydrology (HYD) |
| <p>Adventitious roots on grasses, No distinct stain lines, lichen lines not distinct and higher than 1.5 ft above the water level, moss collars near the water level, loop roots covered in moss. Hydrology adequate to maintain a viable wetland. Recruitment of tree species visible. No evidence of soil subsidence, but area is inundated. Not a natural hydroperiod because of not yet restored impoundments upstream in this wetland system.</p> | |

2.7 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| Wetland | 3.0 | 0.25 | 0.8 |
| Upland | 3.0 | 0.625 | 1.9 |
| Improved Pasture | 1.0 | 0.125 | 0.1 |
| LU Total = | | | 2.8 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| Nat. Undev. | 3.0 | 0.25 | 0.8 |
| Nat. Undev. | 3.0 | 0.625 | 1.9 |
| No Treatment | 0.0 | 0.125 | 0.0 |
| PT Total = | | | 2.6 |

TMEc_CYP_2 Uniform Mitigation Assessment Method, page 1

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

| | | | | | |
|--|--|---|--|--|--|
| Site/Project Name TM ECON Mitigation Bank | | Application Number | | Assessment Area Name or Number TMEc_CYP_2 | |
| FLUCCs code SJRWMD 2000 - 6210 Bottomland Cypress | | Further classification (optional) Cypress Strand | | Impact or Mitigation Site? Assessment Area Size ~3.61 acres | |
| Basin/Watershed Name/Number HUC- ST John River Upper | | Affected Waterbody (Class) | | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) OFW Special Econolockhatchee River System | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands WAA is North of road removal. This area will have hydrologic enhancement upstream as part of restoration efforts on bank. The WAA is part of larger forested strand system which is associated with 4 mile creek and part of the Econ. River System, an OFW. | | | | | |
| Assessment area description Bottomland cypress strand, flowing black water. Flatwoods grade into sawgrass edge to bottomland hardwood. WAA is open standing water with sections of large ferns, maidencane, sagittaria and a canopy of mature trees. | | | | | |
| Significant nearby features Split Oak mitigation bank; Lake Mary Jane; Bee Line expressway North ~ 4miles; Tossoghatchee State Reserve ~11miles East and Hal Scott Preserve ~4 miles North | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Military testing land (Lockett Martin) East. There is a lot of pasture in the landscape and urban encroachment. Difficult to find non-degraded strands in a natural flatwoods mosaic in this area of Florida. | | | |
| Functions Water storage; wildlife habitat; wildlife corridor; nutrient cycling | | Mitigation for previous permit/other historic use Lockett Martin laser testing in flatwoods to the East of WAA. Some areas logged now privately owned. Area had large wildfire come through the site. Historically winter burns. Now privately owned. | | | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Ribbon Snake, cottonmouth, opossum, gray squirrel, black bear, raccoon, mink, otter, Florida Panther, white tailed deer | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Bald Eagle (E) nest previous years on bank on connected wetland, Wading birds - Wood storks (E), Little blue heron (SSC), White Ibis (SSC), Snowy egret (SSC), Great Egret (SSC), tricolored heron (SSC); Florida Panther (E) Bank has RCWs (E) and gopher tortoises (SSC) in flatwoods | | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Whirly gig insects, green tree frogs, red bellied woodpecker, titmouse, red eyed vireo, downy woodpecker, dragon fly, spiders | | | | | |
| Additional relevant factors: | | | | | |
| Assessment conducted by: EH, KCR | | Assessment date(s): 8/11/2005 | | | |

TMEc_CYP_2 Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|-------------------------------------|--|
| Site/Project Name TMECON mitigation bank | Application Number | Assessment Area Name or Number TMEc_CYP_2 |
| Impact or Mitigation | Assessment conducted by: EH, KCR | Assessment date: 8/11/2005 |

| |
|---|
| 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 |

| | |
|--|---|
| <p>.500(6)(a) Location and Landscape Support</p> <p>w/o pres or current <input type="checkbox"/> with <input type="checkbox"/></p> <p>9</p> | <p>Habitats outside assessment provide full range of habitat support. High quality flatwoods, other wetlands connected to WAA and nearby. Found one lygodium growing on ground in forested edge of WAA. Possibly some weedy species associated with the unimproved roads in landscape but they don't appear to be moving into the flatwoods. There are no limitations for wildlife access. Current landuses in landscape do not have adverse impacts. Surrounded landscape is managed with fire. At the time of assessment there is a water impediments to hydrologically connected areas and downstream. There are some exotics on the bank but they look well managed for. (Saw some patches of dead sprayed cogon grass)</p> |
| <p>.500(6)(b)Water Environment (n/a for uplands)</p> <p>w/o pres or current <input type="checkbox"/> with <input type="checkbox"/></p> <p>8</p> | <p>Water level indicators are distinct and consistent. Lichen lines and stain lines are well defined. No evidence of soil desiccation or subsidence. No evidence of soil erosion. Wildfire of 1998 was very hot fire killed some trees on edge, many large trees bear high scars on edge of WAA. Very nice open edge. Fire was not evidence of dry or abnormal conditions. Vegetation zonation is appropriate. No signs of hydrologic stress. Some mortality on edge from fire and down trees from 2004 hurricanes. Presence of fish, tree frogs, cricket frogs, aquatic invert., dragon flies. Typha growing in area of WAA that is open and near the unimproved road that crosses the strand and is South of the WAA. The road will be removed.</p> |
| <p>.500(6)(c)Community structure</p> <p>1. Vegetation and/or 2. Benthic Community</p> <p>w/o pres or current <input type="checkbox"/> with <input type="checkbox"/></p> <p>9</p> | <p>Canopy, shrub and groundcover is appropriate and desirable. One small lygodium is growing on wetland edge. Typha growing in open area near road in this wetland system. The bank is managing to control typha with spraying and hand pulling. Exotic present (only one seen) so cover is minimal. Normal regeneration and recruitment. Age and size distribution is typical. Optimal structural habitat, very nice cavities and dens, hummocks. Plants and trees are in good condition. Land management practices are optimal. Lots of topographic features, distinct channels, refugia ponds are optimal. Some algae in open areas but it does not appear to be impeding aquatic plant growth. Floating hearts growing where algae is growing appear healthy.</p> |

| |
|--|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current or w/o pres <input type="checkbox"/> with <input type="checkbox"/> |
| 0.87 |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

TMEc_CYP_2 Wetland Rapid Assessment Procedure, page 1

Project Name: TMEc_CYP_2, TM Econ Mitigation Bank

Date: 8/11/2005

Evaluator(s): Kelly Chinners Reiss & Erica Hernandez

Wetland Type/Description: Bottomland cypress strand just North of unimproved road slated for removal.

WAA is part of Econolockhatchee River System. Hydrology has not yet been restored to this area.

WAA is surrounded by quality fire managed flatwoods.

Wetland Assessment Area: ~3.61 Acres

FLUCCS Code/Description: SJRWMD 2000 6210 Bottomland Cypress

| | |
|------|---------------------------|
| 3.0 | Wildlife Utilization (WU) |
| 3.0 | Wetland Canopy (O/S) |
| 2.5 | Wetland Ground Cover (GC) |
| 3.0 | Habitat Support/Buffer |
| 2.5 | Field Hydrology (HYD) |
| 2.9 | WQ Input & Treatment (WQ) |
| 16.9 | SUM |
| 6 | Count |
| 0.93 | WRAP |

TMEc_CYP_2 Wetland Rapid Assessment Procedure, page 2

| | |
|---|---------------------------|
| 3.0 | Wildlife Utilization (WU) |
| <p>Numerous small fish. Hear and see song birds and frogs. Upland food source is optimal. Small unimproved road through the strand has some deeper holes that pool water, seen as a minimal effect. Lots of cover in the wetland. No obvious use by large reptiles or mammals but the bank has records of use by Florida Panther. Deer seen in adjacent uplands. Species seen include whirly gig insects, red bellied wood pecker, titmouse, red eyed vireo, downy woodpecker, dragonflies, spiders and green tree frogs.</p> | |

| | |
|--|----------------------|
| 3.0 | Wetland Canopy (O/S) |
| <p>Abundant desirable over story and shrub. No exotics. Good habitat support. Canopy is healthy. Lots of snags and den trees, may be slightly higher than normal but expected because of intense wildfire in 1998 that crossed entire property and recent hurricanes of 2004. Evidence of natural recruitment of <i>Nyssa</i> and <i>Taxodium</i>. Canopy has unequal age stand with many mature trees. <i>Ilex cassine</i>, <i>Taxodium ascendens</i>, <i>Nyssa sylvatica</i>, <i>Lyonia lucida</i>, <i>Myrica cerifera</i>, <i>Tillandsia spp.</i></p> | |

| | |
|--|---------------------------|
| 2.5 | Wetland Ground Cover (GC) |
| <p>? 10 % <i>Typha</i> where the road crosses the WAA and the canopy is open. <i>Typha</i> is being treated and pulled by bank managers. Other species include <i>Blechnum serrulatum</i>, <i>Sagittaria spp.</i>, <i>Hymenocallis crassifolia</i>, <i>Nymphoides aquatica</i>. One small <i>Lygodium</i> found growing out of the ground on WAA edge.</p> | |

| | | | | | |
|--|------------------------|----------------|-----------|-------------|-------------|
| 3.0 | Habitat Support/Buffer | | | | |
| <p>Buffer > 300' average. < 10% nuisance and exotics. Wetland is part of greater system for the Econolockhatchee River System. Numerous types of wetlands in the landscape. Flatwoods around strand are in good condition, have desirable species and desirable species composition and is managed with prescribed fire.</p> | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | All | 3 | 1 | 3 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | Total = | | | |

| | |
|--|-----------------------|
| 2.5 | Field Hydrology (HYD) |
| <p>Trees, plants look healthy, no stress. Strong hydrologic indicators, look distinct. No evidence of un-natural hydroperiod or hydrologic conditions. Not adjacent to negative impacts although upstream there is potential for water input from pasture. No evidence of subsidence. Currently this strand system has artificial impoundments, in the future these hydrologic connections will be restored however this human induced impact keeps hydrology in the WAA from being optimal.</p> | |

2.9 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|--------------------------|-----------|-------------|-------------|
| natural undeveloped area | 3.0 | 0.9 | 2.7 |
| unimproved road* | 2.5 | 0.1 | 0.3 |
| | | | |
| | | | |
| | | | |
| LU Total = | | | 3.0 |

*used score for unimproved pasture/rangeland

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|--------------------------|-----------|-------------|-------------|
| natural undeveloped area | 3.0 | 0.9 | 2.7 |
| no treatment | 0.0 | 0.1 | 0.0 |
| | | | |
| | | | |
| | | | |
| PT Total = | | | 2.7 |

TMEc_CYP_2 Florida Wetland Condition Index, macrophyte field data sheets, page 1

*NOTE: field codes are different than reported codes, STMEc_CYP_2 = ORTMST

Site name: ORTMST
 Description:

Date: 8/11/05
 Transect: 1 down hole B.

Stream:
 County:

| Species | 0-5m | 5-10m | 10-15m | 15-20m | 20-25m | 25-30m | 30-35m | 35-40m | 40-45m | 45-50m |
|---|------|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| Ludwigia sp. | | | | | | | | | | ✓ |
| Pontederia cordata | | | | | | | | | | ✓ |
| (1) Floating hearts ^{in 3rd tran} | | | | | | | | | ✓ | ✓ |
| Woodwardia virginica | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ |
| Taxodium ascendens | ✓ | | | | | ✓ | ✓ | | | ✓ |
| (2) Sarcocolla | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sagittaria arifolia | ✓ | ✓ | ✓ | ✓ | | | | | | ✓ |
| Cephalanthus occidentalis | | | | | | | | | ✓ | ✓ |
| Nyssa sylvatica var. biflora | | | | | ✓ | ✓ | | ✓ | | |
| Cladium amaricense | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | |
| Pluchea odorata | | ✓ | ✓ | ✓ | ✓ | ✓ | | | | |
| Rhynchospora inundata | | ✓ | | | ✓ | | | | | |
| (3) Panicum 2. ^{scapanum} bracte | | | | ✓ | ✓ | | | | | |
| Blechnum sp. | | ✓ | ✓ | ✓ | ✓ | | | | | |
| Dioscorea virginiana | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| (4) Polygonum (S) | | | | ✓ | ✓ | | | | | |
| (5) Hypericum ^{virginianum} | | | ✓ | ✓ | | | | | | |
| Lychnis virginiana | | | ✓ | ✓ | | | | | | |
| Ludwigia ? ^{linearis} palustris | | | | ✓ | | | | | | |
| Proserpinaca zosterifera | | | ✓ | | | | | | | |
| Hypericum fasciculatum | ✓ | ✓ | ✓ | | | | | | | |
| (6) Paspalum ? ^{flaccidum} laeve | ✓ | ✓ | | | | | | | | |
| Viola lanceolata | ✓ | ✓ | | | | | | | | |
| Scleria paniculata/paniculata | | ✓ | | | | | | | | |
| (7) Rhynchospora short (S) | ✓ | ✓ | | | | | | | | |
| Portulaca | ✓ | ✓ | | | | | | | | |
| Mitella scandens | ✓ | | | | | | | | | |
| (8) Sorghastrum (presid?) ^{large} hitch | ✓ | | | | | | | | | |

Hydrophilous aquatic

Emergent

Arise from water

#5 - no. added or Eucalyptus sp. white

road

Common

Downed Logs

Starting Coordinates:

Ending Coordinates:

TMEc_CYP_2 Florida Wetland Condition Index, macrophyte field data sheets, page 2
 *NOTE: field codes are different than reported codes, STMEc_CYP_2 = ORTMST

Site name: ORTMST
 Description:

Date: 8/11/05
 Transect: 2

T2
 Stream: Econ head
 County: Orange

| Species | AT 0-5m | 5-10m | 10-15m | 15-20m | 20-25m | 25-30m | 30-35m | 35-40m | 40-45m | 45-50m |
|----------------------------|------------|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| Nyssa sulcata var. biflora | ✓ | | | | | | | | | |
| Ilex cassine | ✓ | | | | | | | | | |
| Lycia lucida | ✓ | | | | | | | | | |
| (1) floating hearts | ✓ | | | | | | | | | |
| (2) Saccilepis | | ✓ | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ |
| Blechnum serotinum | | | ✓ | ✓ | | | ✓ | ✓ | | |
| Pontederia cordata | | | ✓ | | | | | | | |
| Sagittaria arifolia | | | | ✓ | | | ✓ | | | |
| (4) Polygonum | | | | ✓ | | | ✓ | | | |
| (4) Smilax smallii | | | | ✓ | | | ✓ | | | |
| Pluchea odorata | | | | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ |
| (7) Rorippa | | | | | | ✓ | ✓ | | | |
| Woodwardia virginica | | | | | | ✓ | ✓ | ✓ | ✓ | |
| Drosera rot. cap. | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Taxodium ascendens | | | | | | | ✓ | | | ✓ |
| Ludwigia 7 | | | | | | | ✓ | | | |
| Chloris virginiana | | | | | | | ✓ | ✓ | | |
| Eleocharis sp. | | | | | | | ✓ | | | ✓ |
| Lechnoites caroliniana | | | | | | | ✓ | ✓ | | |
| Cladonia americana | | | | | | | ✓ | | ✓ | |
| (3) Panicum scoparium | | | | | | | ✓ | | ✓ | ✓ |
| Carex veruculosa | | | | | | | | ✓ | ✓ | |
| Ludwigia sp. | | | | | | | | ✓ | | |
| Rorippa lacustris | | | | | | | | ✓ | ✓ | ✓ |
| Prorhinotermis | | | | | | | | | ✓ | ✓ |
| (6) Paspalum | | | | | | | | | ✓ | ✓ |
| Hypochaeris | | | | | | | | | | ✓ |
| Centella asiatica | | | | | | | | | | ✓ |
| Andropogon virginica | | | | | | | | | | ✓ |
| (10) Sacciolepis stricta | | | | | | | | | | ✓ |

Handwritten notes on the left margin: "No. of plants", "Number of plants", "Plant height".

Handwritten note on the left margin: "Sedges".

Downed Logs

Starting Coordinates:

Ending Coordinates:

ORTM

- 1 Najas exigua
- 2 Panicum hemizonis
- 3 Panicum? scabrissimum
- 4 Polygonum hydropiperoides
- 5 ~~It?~~ Eleusine?
- 6 Paspalum hirsutum
- 7 ~~It?~~ Cyperus haspan
- 8 ~~Sagittaria~~ secundaria? Panicum? tenuis
- 9 Smilax small
- 10 Sagittaria glaberrima nothing recorded
- 10 Sagittaria ~~glaberrima~~ indica

Appendix B-27. Tosohatchee Mitigation Bank

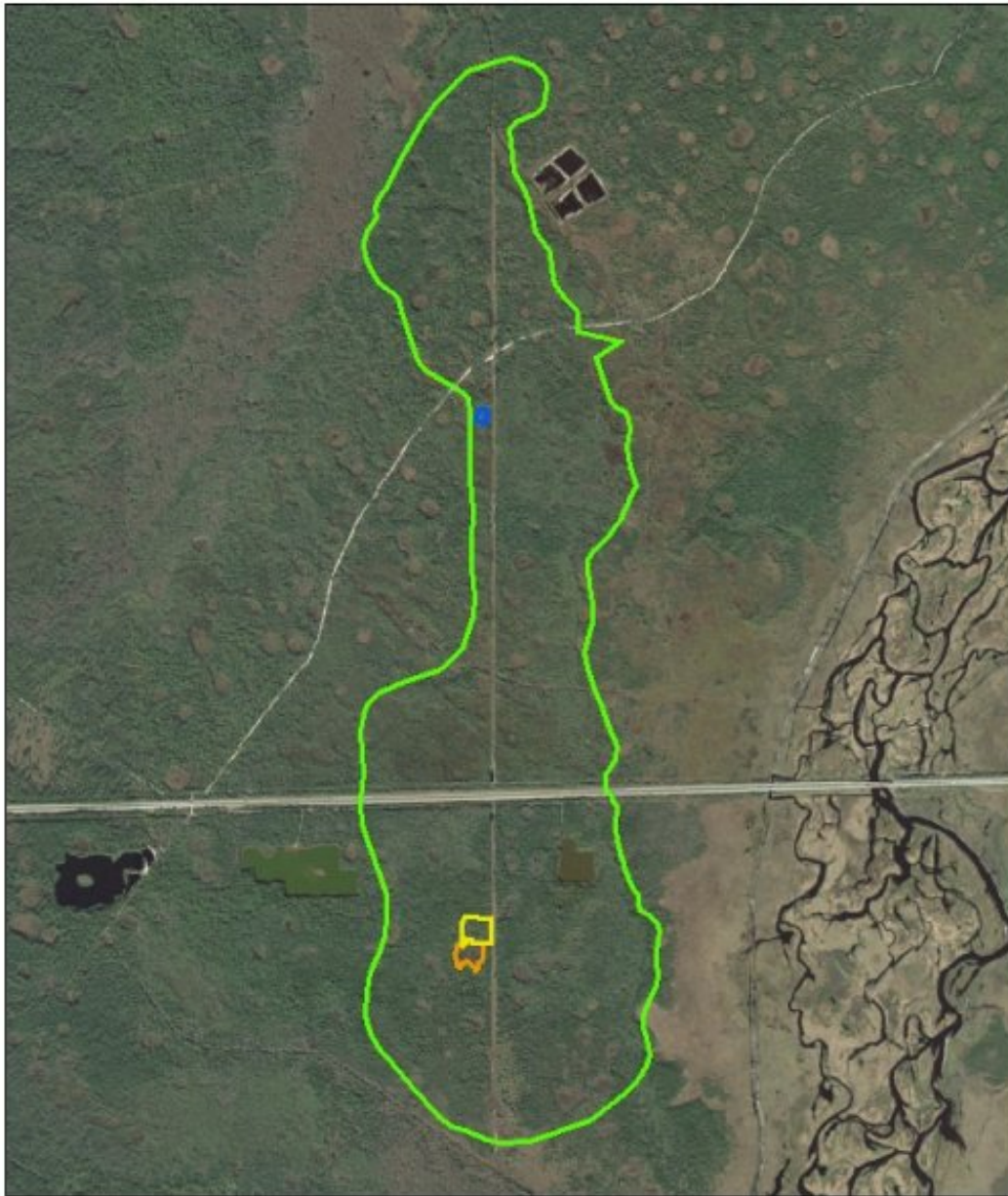


Figure B-27.1. Landscape location of Tosohatchee Mitigation Bank (green line). A boundary of the wetland assessment areas Toso_FOR is outlined in yellow, Toso_SHR is outlined in orange and Toso_MAR is outlined in blue. Tosohatchee mitigation bank is located in the interior of Tosohatchee State Reserve.

(A)



(B)



(C)



Figure B-27.2. Site photos of wetland assessment areas (A) Toso_FOR, (B) Toso_SHR and (C) Toso_MAR.

Toso_FOR Uniform Mitigation Assessment Method, page 1

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

| | | | |
|--|---|--|--|
| Site/Project Name Tosohatchee State Reserve Mitigation Bank | | Application Number NA | Assessment Area Name or Number Toso_FOR |
| FLUCCs code 6170 Mixed Wetland Hardwood | Further classification (optional) SJRWMD - Florida soil. FWCC Priority Wetlands - 1-3 species, upland habitat. | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size 0.9 ha (2.2 ac) |
| Basin/Watershed Name/Number Upper St Johns River HUC 03080101 | Affected Waterbody (Class) Class III | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) William Beardall Tosohatchee State Reserve listed as OFW | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Wetlands support the St Johns River, an OFW, which is connected to the mitigation bank by lands to the East. Embedded within the William Beardall Tosohatchee State Reserve. Separated into North and South sections by the Beeline Expressway, a high speed heavy access toll highway connecting Orlando to the East Coast and I-95. | | | |
| Assessment area description A hardwood hammock forest with saturated or inundated soils throughout, with dark shaded understory, some patches with more light through the canopy and higger species richness of grasses, sedges, and herbaceous species. | | | |
| Significant nearby features Within the boundaries of the William Beardall Tosohatchee State Reserve and bordered to the East by the St. Johns River. Considered an OFW. | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Embedded within a State Reserve. | |
| Functions Important habitat for wildlife. Valuable for native forage production. Provides food such as palm and palmetto fruits, pine mast, acorns. Provides cover to many species. Legumes and grasses furnish valuable food sources to quail and other small birds. Offers refugia for migrating birds. Undisturbed areas provide escape cover and travel routes for most forms of wildlife. | | Mitigation for previous permit/other historic use A portion of mitigation bank consists of old FDOT canal that has been filled for hydrologic restoration. | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Opossum, white-tailed deer, bobcat, striped skunk, raccoon, armadillo, cottontail rabbit, cotton mouse, cotton rat, flycatchers, warblers, red-shouldered hawk, pileated woodpecker, northern bobwhite, southern black racer, oak toad, Eastern diamondback rattlesnake, yellow rat snake, pygmy rattlesnake. | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) little blue heron (SSC), tricolor heron (SSC), great egret (SSC), little green heron (SSC), wood stork (E) | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): brown anole, black swallowtail butterfly, red shouldered hawk calling, small tree frog, spicebush butterflies, spiders, leopard frog, deer tracks on edge of system | | | |
| Additional relevant factors: This wetland system was situated adjacent to the restored FDOT canal that has been filled to grade (or just over). The vegetative community of this filled canal consists of many undesirable species with patchy clumps of vegetation. To the immediate east is an access road with an array of grasses and sedges and weed herbaceous vegetation. | | | |
| Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | | Assessment date(s): 9/14/2005 | |

Toso_FOR Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|---|--|
| Site/Project Name Tosohatchee State Reserve Mitigation Bank | Application Number NA | Assessment Area Name or Number Toso_FOR |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinners Reiss, Erica Hernandez | Assessment date: 9/14/2005 |

| | | | | |
|--|---|---|---|--|
| 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 water functions | 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 | Habitats represent some range or at least some support, most species are supported but not the largest terrestrial species perhaps. The Beeline Highway is close and borders/bisects the adjacent habitat. Water is collected from the highway and empties into the non-restored segment of Mud Lake Canal, so there is some level of pollution and effects to both the water quality and quantity. Larger wildlife may have complications with crossing the Beeline Highway and dispersal of species is interrupted. The highway is also loud and has noise levels that distract wildlife species. The area immediately to the E is the restored/filled Mud Lake Canal with poor habitat support. Just to the E is a mowed grass road/right-of-way. Invasive exotic species were present including <i>Schinus terebinthifolius</i> (Brazilian pepper), <i>Urena lobata</i> (Caesar weed), and <i>Lantana camara</i> (lantana) in adjacent areas. Wildlife access was partially limited/obstructed by the restored canal and road (no trees as in adjacent area) with limited herbaceous cover for wildlife and limited food sources. At | | | | | | |
| | <table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>8</td> <td></td> </tr> </table> | w/o pres or current | with | 8 | | Highway is a barrier. Functions of benefits to downstream is somewhat limited by the Beeline division (flow is north) of habitats. Land uses mainly do not have very bad effects, though there is hunting pressure on these lands, plus the highway. Hydrologic impediments and flow restrictions are a concern probably only in times of high water levels. This will cause a disconnect with downstream habitats and pooling of water at the Beeline Highway though water will pool in the adjacent habitat north, not in the wetland assessment area. Areas eventually flow into the St. John's River, but the river is not solely dependent on this wetland. There is better support to the N, S, and W with impacted but non-urbanized lands. Exotic species cover is minimal and land use practices to control exotics species cover may/should maintain minimal to diminished cover by these species. | |
| w/o pres or current | with | | | | | | |
| 8 | | | | | | | |
| .500(6)(b) Water Environment (n/a for uplands) | Water level appeared appropriate. Water level indicators are distinct and consistent (hummocks, fluted trunks, loop roots, obligate and facultative wetland vegetation, mucky soils, stain lines). Soil moisture is appropriate - some pools with standing water to 5cm deep. Some evidence of soil subsidence in roots, perhaps because of previous hydrologic effects of now restored canal. Soil erosion or deposition not noted. Evidence of fire history, may have been burnt through and removed the boots of the <i>Sabal palmetto</i> (cabbage palm) trees, but no excessive mortality visible. vegetation somewhat appropriate though the upland species <i>Juniperus virginiana</i> (red cedar) was present - probably not a significant indicator of a problem. No signs of stress like insect damage or disease but some leaning trees perhaps due to previous hydrologic stress. Plant community composition not characterized by species indicative of water quality issues. Did see leopard and tree frogs within the wetland. | | | | | | |
| | <table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>9</td> <td></td> </tr> </table> | w/o pres or current | with | 9 | | | |
| w/o pres or current | with | | | | | | |
| 9 | | | | | | | |
| .500(6)(c) Community structure 1. Vegetation and/or 2. Benthic Community | Most of plant cover by desirable species - "nearly all" though some <i>Schinus terebinthifolius</i> (Brazilian pepper) seedlings throughout wetland and a small patch of <i>Urena lobata</i> (Caesar weed) was also noted. Obviously some invasive exotics are present, but cover is minimal. Strong evidence of normal regeneration and recruitment of all main canopy species including <i>Quercus laurifolia</i> (swamp laurel oak), <i>Sabal palmetto</i> (cabbage palm), <i>Juniperus virginiana</i> (red cedar), <i>Diospyros virginiana</i> (common persimmons), and <i>Ulmus americana</i> (American elm). Age and size class distribution appropriate, much regeneration. Coarse woody debris appropriate - dens and cavities throughout wetland. Plants in good condition - no evidence of chlorotic or spindly growth or insect damage. Land management is optimal, includes State Reserve planning for prescribed fires and exotic species management. Topographic features include hummocks and some shallow pools with slight elevation changes - appropriate for this type of wetland system. | | | | | | |
| | <table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>9</td> <td></td> </tr> </table> | w/o pres or current | with | 9 | | | |
| w/o pres or current | with | | | | | | |
| 9 | | | | | | | |

| |
|---|
| Score = sum of above scores/30 (if uplands, divide by 20) |
| current |
| w/o pres |
| with |
| 0.87 |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Toso_FOR Wetland Rapid Assessment Procedure, page 1

Project Name: Toso_FOR - Tosohatchee State Reserve Mitigation Bank

Date: 9/14/2005

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: 6170 Mixed Wetland Hardwood

Wetland Assessment Area: 2 ha (5 ac)

FLUCCS Code/Description: 6181 Cabbage Palm Hammock

| | |
|------|---------------------------|
| 2.5 | Wildlife Utilization (WU) |
| 3.0 | Wetland Canopy (O/S) |
| 2.0 | Wetland Ground Cover (GC) |
| 2.5 | Habitat Support/Buffer |
| 2.5 | Field Hydrology (HYD) |
| 2.8 | WQ Input & Treatment (WQ) |
| 15.3 | SUM |
| 6 | Count |
| 0.85 | WRAP |

Toso_FOR Wetland Rapid Assessment Procedure, page 2

| | |
|---|----------------------------------|
| 2.5 | Wildlife Utilization (WU) |
| Brown anole, black swallowtail butterfly, cavities and dens in trees, red shouldered hawk, small treefrog, spicebush butterfly, spiders, leopard frog, deer tracks on edge of system, open areas with no visible game trails, not appropriate system for fish. Abundant upland food source. Perhaps more than minimal human disturbance (hunting pressure, restored canal), but good ground cover species provide good food and cover. Restored canal to E with some exotic species. Human disturbance includes foot path and painting of trees by hunter to mark trail to tree stand - small disturbance in localized area. Some cattle evidence - from neighboring properties, apparently they come across the river and get stuck on site. Human disturbance as 1-restored canal with undesirable species, 2-cows, 3-hunting pressure. | |

| | |
|--|-----------------------------|
| 3.0 | Wetland Canopy (O/S) |
| Canopy comprised mainly of: <i>Sabal palmetto</i> (cabbage palm)-FAC, <i>Ulmus americana</i> (American elm)-FACW, <i>Quercus laurifolia</i> (swamp laurel oak)-FACW, <i>Diospyros virginiana</i> (common persimmon)-FAC, and <i>Juniperus virginiana</i> (red cedar)-UPL. Lots of regeneration and small seedlings. Minimal disease or insect damage. Less than 10% invasive trees, really few to none were noted. Some snags and den trees. Live healthy trees, though some dead red cedars, perhaps because of increased water levels from canal restoration activities. Good habitat support by overstory and shrub species. Strong evidence of natural recruitment of trees. There was <i>Schinus terebinthifolius</i> (Brazilian pepper) regeneration abundant though not any with a DBH, so we include these in groundcover below. | |

| | |
|--|----------------------------------|
| 2.0 | Wetland Ground Cover (GC) |
| Patchy with more species in the more open canopy areas and few species in the darker, thick canopy areas. <i>Schinus terebinthifolius</i> (Brazilian pepper) seedlings throughout understory. Less than 5% undesirable species, but did have invasive exotics (Brazilian pepper and <i>Urena lobata</i> -Ceasar weed). Some human induced impacts. Mainly the groundcover was scored down because of the presence of the invasive exotics. | |

| | | | | | | |
|--|-------------------------------|-------------|-----------|----------------|-------------|--|
| 2.5 | Habitat Support/Buffer | | | | | |
| Fire scars visible, <i>Sabal palmetto</i> (cabbage palm) trees missing boots, fire history does not appear atypical. Greater than 300 ft vegetated buffer, part is restored canal adjacent to a grass road. Less than 10% exotic species. Connected to shrub wetland on one side. Wildlife have access to other appropriate habitat areas. The Beeline Highway to the N does impede wildlife access for certain species. | | Buffer Type | (Score) x | (% of Area) | = Sub Total | |
| | | disturbed | 2.5 | 1 | 2.5 | |
| | | | | | | |
| | | | | | 0.0 | |
| | | | | | 0.0 | |
| | | | | | 0.0 | |
| | | | | Total = | 2.5 | |

| | |
|---|------------------------------|
| 2.5 | Field Hydrology (HID) |
| Stain lines visible, fluted bases on <i>Ulmus americana</i> (American elm) and <i>Quercus laurifolia</i> (swamp laurel oak). Loop roots visible. <i>Sabal palmetto</i> (cabbage palm) growing on hummocks. Some soil subsidence as evidenced by some exposed roots but limited in scope, more apparent closer to filled/restored canal. Some leaning <i>Sabal palmetto</i> trees. Otherwise plants appear healthy. Hydroperiod appears appropriate. Limited adjacent impacts, though some water retention basins with runoff from the Beeline Highway to the N. | |

2.8 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| nat. undev. | 3.0 | 0.75 | 2.3 |
| disturbed | 2.0 | 0.25 | 0.5 |
| | | | 0.0 |
| LU Total = | | | 2.8 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|------------------------|-----------|-------------|-------------|
| nat. undev. | 3.0 | 0.75 | 2.3 |
| wet detention w/swales | 2.5 | 0.25 | 0.6 |
| | | | 0.0 |
| PT Total = | | | 2.9 |

Toso_SHR Uniform Mitigation Assessment Method, page 1

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

| | | | |
|--|---|---|--|
| Site/Project Name Tosohatchee Mitigation Bank | | Application Number NA | Assessment Area Name or Number Toso_SHR |
| FLUCCs code 6460 Mixed Scrub Shrub Wetland | Further classification (optional) perhaps more appropriately classified as 6180 Willow and Elderberry | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size 1.6 ha (4 ac) |
| Basin/Watershed Name/Number Upper St Johns River HUC 03080101 | Affected Waterbody (Class) Class III | Special Classification (i.e. OFW, AP, other local/state/federal designation of importance) William Beardall Tosohatchee State Reserve listed as OFW | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Wetlands support the St Johns River, an OFW, which is connected to the mitigation bank by undeveloped lands to the East. Embedded within the William Beardall Tosohatchee State Reserve. Separated into North and South sections by the Beeline Expressway, a high speed heavy access toll highway connecting Orlando to the East Coast and I-95. | | | |
| Assessment area description FWCC Biodiversity Hotspots - 7+ Focal Species Overlap. FWCC Priority Wetlands - 4-6 species, wetland habitat. FWCC Strategic Habitat Conservation Areas - Priority Habitat. | | | |
| Significant nearby features Within the boundaries of the William Beardall Tosohatchee State Reserve and bordered to the East by the St. Johns River. Considered an OFW. | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Embedded within a State Reserve. | |
| Functions Provides cover and forage for a variety of wildlife species including waterfowl, reptiles, amphibians, and mammals. Water quality enhancement by assimilation of inorganic and organic waste. Flood abatement. | | Mitigation for previous permit/other historic use Hunting reserve. Some portion of mitigation bank consists of old FDOT canal that has been filled for hydrologic restoration. | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Some mammals (opossum, bobcat, white-tailed deer, raccoon) may use for cover, though none specifically rely on these wetlands. Cottonmouth snake, other snakes and frogs. Wading birds can use these wetlands for perching and rookery habitat. | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) alligator (SSC), little blue heron (SSC), tricolor heron (SSC), great egret (SSC), little green heron (SSC), wood stork (E) | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Some areas with heavy cover of <i>Salvinia minima</i> (water spangles) perhaps made fish difficult to see, should provide good habitat for frogs, fish, snakes, and alligators, plus provide structural support habitat for roosting birds. Observed wildlife limited to a leopard frog, site visit at 2 pm on a sunny hot day. | | | |
| Additional relevant factors: Assessment conducted at 2pm on a hot sunny day, so limited wildlife viewing anticipated. | | | |
| Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | | Assessment date(s): 9/14/2005 | |

Toso_SHR Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|--|--|
| Site/Project Name Tosohatchee State Reserve Mitigation Bank | Application Number NA | Assessment Area Name or Number Toso_SHR |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | Assessment date: 9/14/2005 |

| | | | | |
|--|---|---|---|--|
| 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 water functions | 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 | Habitats are ideal but wildlife access is the main issue and also presence of exotic and/or nuisance species. Habitats outside the WAA provide most habitats needed for fish and wildlife - most of the species should be OK with what habitat is available. Some habitat fragmentation is apparent in the support habitat because of the Beeline Highway and the restored canal. Some invasive exotic species are present in the proximity of the WAA, but cover is minimal - mainly <i>Schinus terebinthifolius</i> (Brazilian pepper) and <i>Urena lobata</i> (Caesar weed) - these species are not taking over the area and will be managed for removal, currently they do not provide optimal food or cover. Wildlife access to and from the WAA is somewhat limited by barriers including nearby restored canal and grass road with patchy vegetation and also species with greater dispersal distances are limited by the Beeline Highway (for larger terrestrial species, hopefully birds can fly clear of the road). No downstream affects - fairly isolated wetland - at times of extremely high water this system would perhaps flow N and E to the St. Johns River, but it is really more of a basin marsh (not connected to other areas with sheet flow like the Spartina marsh). Land uses outside the assessment area are generally ok, except the Beeline Highway, these include managed lands within the Tosohatchee State Reserve around the mitigation bank. Some human evidence in hunting pressure (deer stands, paint cans, garbage on ground). | | | |
| | w/o pres or current 8 | with | | |

| | | | | |
|--|--|------|--|--|
| .500(6)(b) Water Environment (n/a for uplands) | Levels and flows appear appropriate. Water level indicators (stain lines, moss collars, hummocks) distinct and consistent. Soils were inundated, soil moisture appropriate. No fire scars visible and <i>Sabal palmetto</i> (cabbage palm) with boots, no evidence of atypical fire history. Obligate and facultative wetland species in the water with many facultative species on the hummocks. No signs of hydrologic stress (no excess mortality, leaning trees, etc.). Leopard frog visible, but anticipate other species with specific hydrologic requirements to use the wetland (considering site visit was at 2pm). Probably historically the system was stressed because of the now restored Mud Lake Canal. There is also evidence of previous logging. But the condition of <i>Salix caroliniana</i> (Carolina willow) and <i>Acer rubrum</i> (red maple) today do not indicate stress. Water was clear and tannic, no water quality degradation observed. No water quality data available. Light penetration not optimal because of presence of <i>Salvinia minima</i> (water spangles) covering much of the water surface. | | | |
| | w/o pres or current 9 | with | | |

| | | | | |
|--|--|------|--|--|
| .500(6)(c) Community structure 1. Vegetation and/or 2. Benthic Community | Majority of plant cover by appropriate species particularly in canopy and midstory. Groundcover is appropriate in shallow areas and on hummocks - open water is covered by <i>Salvinia minima</i> (water spangles), an exotic species. Invasive exotic species is present. Evidence of regeneration on hummocks (canopy and shrub species). Age and size class distribution typical - some larger dbh <i>Salix caroliniana</i> (Carolina willow). Coarse woody debris, snags, dens are appropriate. Plants in good condition, no evidence of chlorotic or spindly growth. Land management is appropriate - restored canal, prescribed burns in area, some hunting pressure. Hummocks are appropriate and normal topographic features. Emergent vegetation looks healthy as does canopy and midstory. Score was knocked down for <i>Salvinia minima</i> cover which changes light penetration, water temperature, ?water level because of evaporation/transpiration rates, etc. | | | |
| | w/o pres or current 8 | with | | |

| | |
|---|------|
| Score = sum of above scores/30 (if uplands, divide by 20) | |
| current or w/o pres 0.83 | with |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Toso_SHR Wetland Rapid Assessment Procedure, page 1

Project Name: Toso_SHR - Tosohatchee State Reserve Mitigation Bank

Date: 9/14/2005

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: Edge grades out from hardwood hammock/cabbage palm hammock wetland with *Acer rubrum* (red maple), *Sabal palmetto* (cabbage palm), *Myrica cerifera* (wax myrtle), *Salix caroliniana* (Carolina willow), and *Cephalanthus occidentalis* (buttonbush).

Center becomes mainly *Salix caroliniana* shrub head. Some emergent grasses and herbaceous vegetation, mainly in shallow areas and on hummocks. Appears to have historic impacts such as hydrologic alterations (from now restored canal) and logging history.

Wetland Assessment Area: 1.6 ha (4 ac)

FLUCCS Code/Description: 2000 SJRWMD 6460 Mixed Scrub-Shrub Wetland

| | |
|------|---------------------------|
| 2.5 | Wildlife Utilization (WU) |
| 3.0 | Wetland Canopy (O/S) |
| 2.0 | Wetland Ground Cover (GC) |
| 2.5 | Habitat Support/Buffer |
| 3.0 | Field Hydrology (HYD) |
| 3.0 | WQ Input & Treatment (WQ) |
| 16.0 | SUM |
| 6 | Count |
| 0.89 | WRAP |

Toso_SHR Wetland Rapid Assessment Procedure, page 2

| | |
|--|----------------------------------|
| 2.5 | Wildlife Utilization (WU) |
| <p>Leopard frog. No fish noted but they should occur here, <i>Salvinia minima</i> (water spangles) covered much of the water surface so perhaps they were just difficult to see. Should be appropriate habitat for alligators, snakes, frogs. Visit at 2 pm limited wildlife viewing. Evidence of large mammals (mainly deer) in adjacent hammock area. Abundant food sources and cover in wetland and adjacent habitats, though in one area there is patchy/sparse vegetation with some exotic species. This community type is often considered typical of disturbance, but this did not seem to impede wildlife habitat. Has Beeline Highway (busy 4-lane toll road connecting Orlando to the East Coast) and the filled/restored canal within a short distance. Expect wetland to support wading birds and fish, though did not observe these. Uncertain about lack of wildlife evidence, should have seen feathers and fish, but perhaps we did not because it was mid afternoon on a hot sunny day. We visually inspected about 1/4 of the wetland. Tony climbed a tree and surveyed the remaining portion suggesting a similar species composition throughout. As we walked towards the center the ground sloped down quickly and became much deeper - this appeared to be ideal habitat for alligators.</p> | |

| | |
|--|-----------------------------|
| 3.0 | Wetland Canopy (O/S) |
| <p>The edge is mixed species <i>Acer rubrum</i> (red maple), <i>Sabal palmetto</i> (cabbage palm), <i>Salix caroliniana</i> (Carolina willow), <i>Myrica cerifera</i> (wax myrtle), and <i>Cephalanthus occidentalis</i> (buttonbush). The interior is mainly <i>Salix caroliniana</i>. The trees occur on large hummocks. This area probably had been logged as evidenced by the large old hummocks that don't seem to match up with the smaller dbh residents. Remnant human disturbance is evident, but this is not a continued influence and the system now appears to be recovering from previous impacts. There were no invasive canopy or midstory trees. There is good habitat support. There are young trees growing on the hummocks (regeneration), which are full of vegetation. There are crevices for animals to hide in and there are some lying down rotted out trunks for cover. The canopy is healthy with some areas more open than others mainly based on where the hummocks are established. There is good nesting habitat for wading birds and the deeper areas provide good wading bird protection from predatory terrestrial species.</p> | |

| | |
|---|----------------------------------|
| 2.0 | Wetland Ground Cover (GC) |
| <p>In areas <i>Salvinia minima</i> (water spangles) covers much of the water surface, is patchy in other areas, and has nearly no cover in other areas - however there are more areas with cover than without cover. <i>Paspalum repens</i> (water paspalum) an infrequent native is locally abundant. Land management practices will probably never exclude <i>Salvinia minima</i> but at the edges of the wetland there are many other native and desirable species emergent through the standing covered water. The ground is not heavily disturbed, not rutted up. The edges are managed with periodic burns though prescribed fires should not burn into this area because the water is deep and appears somewhat permanent.</p> | |

| | | | | | |
|---|-------------------------------|----------------|-----------|-------------|-------------|
| 2.5 | Habitat Support/Buffer | | | | |
| <p>Located within the Tosohatchee State Reserve Mitigation Bank and surrounded by the Tosohatchee State Reserve. Surrounded mainly by hydric hammock which is adjacent to a restored canal with open patches of vegetation with some exotic species. The Beeline Highway is to the north and this will hinder larger terrestrial species (deer, bobcat) by means of limiting access. This area should support alligators. There have been historic panther sightings in the State Reserve. In the area immediately adjacent to the wetland is a hydric hammock with <10% nuisance or exotic species.</p> | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | Hydric Hammock | 3.0 | 0.67 | 2.0 |
| | | Restored Canal | 1.5 | 0.33 | 0.5 |
| | | | | | 0.0 |
| | | | | | 0.0 |
| | | | | | 0.0 |
| | | | | | 0.0 |
| | | | | | 0.0 |
| | | | | | 0.0 |
| | | Total = | | | |

| | |
|--|------------------------------|
| 3.0 | Field Hydrology (HYD) |
| <p>Clear tannic water. Plants healthy, no stress apparent. Ferns grew along edges, suggesting moist conditions. Water stain lines visible on hummocks and also moss collars visible. Hydrology adequate to maintain a viable wetland. Previous impacts from 15 ft deep Mud Lake Canal are noted, but the canal has been restored. This acts as an "isolated" feature which may spill over waters only in times of severely high waters and run into the St. Johns River. Primarily a rainwater fed system.</p> | |

| | |
|--|---------------------------------------|
| 3.0 | WQ Input & Treatment (WQ)* |
| <p><small>*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.</small></p> | |

| LANDUSE CATEGORY (LU) | | | | |
|-----------------------|-----------|-------------|-------------|--|
| Land Use Category | (Score) x | (% of Area) | = Sub Total | |
| nat. undev. | 3.0 | 1.0 | 3.0 | |
| | | | 0.0 | |
| LU Total = | | | 3.0 | |

| PRETREATMENT CATEGORY (PT) | | | |
|----------------------------|-----------|-------------|-------------|
| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
| nat. undev. | 3.0 | 1.0 | 3.0 |
| | | | 0.0 |
| PT Total = | | | 3.0 |

Toso_MAR Uniform Mitigation Assessment Method, page 1

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

| | | | |
|---|--|---|--|
| Site/Project Name Tosohatchee State Reserve Mitigation Bank | | Application Number NA | Assessment Area Name or Number Toso_MAR |
| FLUCCs code 6410 Freshwater Marsh | Further classification (optional) could also be classed as 6260 Hydric Pine Savanna, but with cabbage palm and not pine as the sparse canopy species. | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size 0.3 ha (0.8 ac) |
| Basin/Watershed Name/Number Upper St Johns River HUC 03080101 | Affected Waterbody (Class) Class III | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) William Beardall Tosohatchee State Reserve listed as OFW | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Wetlands support the St Johns River, an OFW, which is connected to the mitigation bank by undeveloped lands to the East. Embedded within the William Beardall Tosohatchee State Reserve. Separated into North and South sections by the Beeline Expressway, a high speed heavy access toll highway connecting Orlando to the East Coast and I-95. | | | |
| Assessment area description FWCC Biodiversity Hotspots - 7+ Focal Species Overlap. FWCC Priority Wetlands - 1-3 species, upland habitat. Soils are classified by SJRWMD as Pineda. Area is characterized with open canopy of <i>Sabal palmetto</i> (cabbage palm) with <10% cover and a high species richness in the groundcover layer. Adjacent to restored 15 ft deep Mud Lake Canal filled in 1995/96. Burned 2 years ago. | | | |
| Significant nearby features Within the boundaries of the William Beardall Tosohatchee State Reserve and bordered to the East by the St. Johns River. Considered an OFW. | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Embedded within a State Reserve. | |
| Functions Water storage during droughts. Reduction of water flow during floods. Nutrient assimilation, improving water quality before water enters rivers and lakes (in times of overflowing waters and for groundwater). Essential breeding grounds for many species of amphibians. Important wildlife habitat, especially as wintering habitat for wading birds. | | Mitigation for previous permit/other historic use A portion of mitigation bank consists of old FDOT canal that has been filled for hydrologic restoration. | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) white-tailed deer, bobcat, raccoon, opossum, rabbit, squirrel, turkey, wading birds, salamanders, toads, frogs, snakes | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) white ibis (SSC), sandhill crane (T), wood stork (E), little blue heron (SSC), tricolored heron (SSC) | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Game trails, leopard frog, green anole, spiders, insects (?assassin bugs), ants, moth caterpillars, small fish including gambusia, peacock butterfly, cicadas, cloudless sulfur butterflies, fish eating spiders, green dragonfly. | | | |
| Additional relevant factors: Ditches are intact along the Powerline Rd. to the N which could contribute to the backflow of water to this wetland system leading to nutrient enrichment which is suggested to be responsible for the recent appearance of <i>Typha</i> sp. (cattail) in the wetland. | | | |
| Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | | Assessment date(s): 9/14/2005 | |

Toso_MAR Uniform Mitigation Assessment Method, page 2

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

| | | |
|--|--|--|
| Site/Project Name Tosohatchee State Reserve Mitigation Bank | Application Number NA | Assessment Area Name or Number Toso_MAR |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Kelly Chinnners Reiss, Erica Hernandez | Assessment date: 9/14/2005 |

| |
|--|
| 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 water functions | Minimal level of support of wetland/surface water functions | Condition is insufficient to provide wetland/surface water functions |

| | | | |
|---|---|--|---|
| <p style="text-align: center;">.500(6)(a) Location and Landscape Support</p> <p>w/o pres or current with</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">9</td> <td style="width: 50%;"></td> </tr> </table> | 9 | | <p>Habitats outside the assessment area provide optimal support for wildlife - no barriers or distance to consider. Some invasive exotic species occur nearby. The roads and the edge of the restored canal are vectors for exotic species to spread including those identified as <i>Urena lobata</i> (Caesar weed), <i>Schinus terebinthifolius</i> (Brazilian pepper), <i>Alternanthera philoxeroides</i> (alligator weed), <i>Pistia stratiotes</i> (water-lettuce), <i>Eichhornia crassipes</i> (common water-hyacinth), <i>Momordica charantia</i> (balsampear), etc. Access not limited. Small dirt roads or grass roads, larger canal 100s of meters away. Downstream fish and wildlife not limited by distance or barriers - this is a sheet flow system. Land uses outside the assessment area have few adverse impacts - the Beeline Highway is quite far from here. There were noisy low-flying helicopters overhead. Downstream the St. John's River is dependent on this water but not solely dependent, though it is an important contribution for water quality and quantity controls. There are no flow restrictions. The adjacent canal has been restored to grade, and there are fire plans in place for habitat management.</p> |
| 9 | | | |
| <p style="text-align: center;">.500(6)(b) Water Environment (n/a for uplands)</p> <p>w/o pres or current with</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">9</td> <td style="width: 50%;"></td> </tr> </table> | 9 | | <p>Water levels and flows appear appropriate. Hydrologic indicators are consistent with expected hydrologic condition, for example, <i>Sabal palmetto</i> (cabbage palm) grew on hummocks out of the standing water. The soil moisture was appropriate, most of the site was inundated, there was no evidence of soil subsidence. Animals with specific hydrologic requirements included fish eating spiders, gambusia, and frogs. No evidence of soil erosion or soil deposition. No atypical fire history. Vegetation appears appropriate with changes in vegetation as water depth changes. Some <i>Myrica cerifera</i> (wax myrtle) throughout, probably because of previous fire suppression. Vegetation does not appear stressed with no excessive death or mortality. Some <i>Typha</i> sp. (cattail) is growing closer to the restored canal, cover is <1%. Standing water is clear and tannic. Turbidity may be slightly higher than anticipated but not abnormally high. Some algal growth in open patches, but not considered excessive.</p> |
| 9 | | | |
| <p style="text-align: center;">.500(6)(c) Community structure</p> <p style="text-align: center;">1. Vegetation and/or 2. Benthic Community</p> <p>w/o pres or current with</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">9</td> <td style="width: 50%;"></td> </tr> </table> | 9 | | <p>High herbaceous species richness. Nearly all cover by appropriate species, some <i>Myrica cerifera</i> (wax myrtle) throughout but mostly on edges and will be controlled with prescribed fire. Some <i>Typha</i> sp. (cattail) covering <1% of marsh. <i>Juniperus virginiana</i> (red cedar) growing on hummocks, though an upland species. Much proliferation of species, many flowers and seeds throughout marsh. <i>Sabal palmetto</i> (cabbage palm) regeneration apparent on hummocks. Amount of woody debris is appropriate, some dead <i>Sabal palmetto</i> trees and snags and some cavities as well. No evidence of chlorotic or spindly growth. No evidence of stress. Land management optimal. Hydrology has been restored and prescribed management plans have been drafted. There is periodic exotic species removal. Topographic feature appear appropriate with hummocks and refugia ponds. Some siltation and algal growth on submerged leaves, but not impeding plant growth.</p> |
| 9 | | | |

| | |
|---|------|
| Score = sum of above scores/30 (if uplands, divide by 20) | |
| current | with |
| 0.90 | |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Toso_MAR Wetland Rapid Assessment Procedure, page 1

Project Name: Toso_MAR - Tosohatchee State Reserve Mitigation Bank

Date: 9/14/2005

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: *Spartina bakeri* (sand cordgrass) marsh with sparse *Sabal palmetto* (cabbage palm) canopy.

Wetland Assessment Area: 0.3 ha (0.8 ac)

FLUCCS Code/Description: Called 6170 Mixed Wetland Hardwood, but clearly very low density of woody species. Could be more appropriate classed 6410 Freshwater Marsh

| | |
|------|---------------------------|
| 3.0 | Wildlife Utilization (WU) |
| NA | Wetland Canopy (O/S) |
| 3.0 | Wetland Ground Cover (GC) |
| 2.0 | Habitat Support/Buffer |
| 3.0 | Field Hydrology (HYD) |
| 3.0 | WQ Input & Treatment (WQ) |
| 14.0 | SUM |
| 5 | Count |
| 0.93 | WRAP |

Toso_MAR Wetland Rapid Assessment Procedure, page 2

| | |
|--|---------------------------|
| 3.0 | Wildlife Utilization (WU) |
| <p>Game trails, leopard frog, green anole, spiders, insects on <i>Polygonum</i> sp. seed head - could be assassin bugs. Caterpillars, many ants, small fish (mainly gambusia), peacock butterfly, cicadas, cloudless sulfur butterfly, fish eating spiders, green dragonfly. Little <i>Sabal palmetto</i> (cabbage palm) hummocks provide elevation and refugia. Abundant cover and habitat within wetland. Negligible human disturbance since 1995/1996 when the adjacent canal was restored. Abundant upland food sources. Strong evidence of use by wildlife.</p> | |

| | |
|--|----------------------|
| NA | Wetland Canopy (O/S) |
| <p><i>Sabal palmetto</i> (cabbage palm) overstory is sparse, edge of assessment area bordered by a more elevated strip with <i>Myrica cerifera</i> (wax myrtle) and <i>Acer rubrum</i> (red maple). Throughout the marsh there is some sparse <i>Baccharis</i> sp. (saltbush) and <i>Myrica cerifera</i>. Not more than 10% cover by woody vegetation in the canopy or midstory. Fire scars apparent up <i>Sabal palmetto</i> up the fronds, some estimated at 20 ft tall.</p> | |

| | |
|--|---------------------------|
| 3.0 | Wetland Ground Cover (GC) |
| <p>Minimum disturbance to groundcover. Managed periodic burns. Less than 10% nuisance plants, no exotic species within the wetland assessment area. Groundcover characterized by: <i>Sagittaria lancifolia</i> (bulltongue arrowhead), <i>Ipomoea sagittata</i> (saltmarsh morning-glory), <i>Mikania scandens</i> (climbing hempvine), <i>Woodwardia virginica</i> (Virginia chain fern), <i>Diodia virginiana</i> (Virginia buttonweed), <i>Polygonum hydropiperoides</i> (swamp smartweed), large and small <i>Panicum</i> spp. (grasses), <i>Juniperus virginiana</i> (red cedar) seedlings on hummocks, <i>Rhynchospora inundata</i> (narrowfruit horned beaksedge), and other <i>Rhynchospora</i> spp. (beaksedges), <i>Pluchea</i> sp. (camphorweed), <i>Callicarpa americana</i> (American beautyberry), <i>Bacopa caroliniana</i> (blue waterhyssop), <i>Spartina bakeri</i> (sand cordgrass), <i>Ludwigia repens</i> (creeping primrosewillow), <i>Hyptis alata</i> (clustered bushmint), <i>Juncus megacephalus</i> (bighead rush), <i>Juncus roemerianus</i> (black needlerush), <i>Eupatorium capilifolium</i> (dogfennel), <i>Eupatorium mikanioides</i> (semaphore thoroughwort), <i>Typha</i> sp. (cattail), <i>Hydrocotyle</i> sp. (marshpennywort), <i>Toxicodendron radicans</i> (Eastern poison ivy), <i>Rubus argutus</i> (sawtooth blackberry) growing out of downed palmetto trunk, <i>Eleocharis cellulosa</i> (gulf coast spikerush), small <i>Eleocharis</i> spp. (spikerush), <i>Centella asiatica</i> (spadeleaf).</p> | |

| 2.0 | Habitat Support/Buffer | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|------------------------|-------------|-------------|-------------|-------------|-------------|-----|---|-----|--|--|--|--|--|--|--|-----|--|--|--|-----|--|--|--|-----|----------------|--|--|------------|
| <p>E-restored canal into continuous marsh separated linearly by elevated area with <i>Sabal palmetto</i> (cabbage palm) and <i>Myrica cerifera</i> (wax myrtle) with some breaks which increases connectivity of contiguous wetland complex. Grades into <i>Pinus elliotii</i> (slash pine) system to W. Greater than 300 ft buffer with predominantly desirable plant species all around, <10% nuisance or exotic species in the buffer area.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Buffer Type</th> <th style="width: 10%;">(Score) x</th> <th style="width: 10%;">(% of Area)</th> <th style="width: 10%;">= Sub Total</th> </tr> </thead> <tbody> <tr> <td>nat. undev.</td> <td style="text-align: center;">2.0</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2.0</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td style="text-align: center;">0.0</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td style="text-align: center;">0.0</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td style="text-align: center;">0.0</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total =</td> <td style="text-align: center;">2.0</td> </tr> </tbody> </table> | | Buffer Type | (Score) x | (% of Area) | = Sub Total | nat. undev. | 2.0 | 1 | 2.0 | | | | | | | | 0.0 | | | | 0.0 | | | | 0.0 | Total = | | | 2.0 |
| Buffer Type | (Score) x | (% of Area) | = Sub Total | | | | | | | | | | | | | | | | | | | | | | | | | | |
| nat. undev. | 2.0 | 1 | 2.0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 0.0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total = | | | 2.0 | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | |
|--|-----------------------|
| 3.0 | Field Hydrology (HYD) |
| <p>Some algae growing throughout open areas of water with less vegetation. Obligate and facultative wetland species were dominant. <i>Sabal palmetto</i> (cabbage palm) trees growing on hummocks elevating them out of the standing water. Darker tannic water perhaps high Total Suspended Solids, though submerged species appear to be healthy. No evidence of soil subsidence. Plants healthy, no stress apparent. No negative impacts.</p> | |

3.0 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| nat. undev. | 3.0 | 1.0 | 3.0 |
| | | | 0.0 |
| LU Total = | | | 3.0 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|-----------------------|-----------|-------------|-------------|
| nat. undev. | 3.0 | 1.0 | 3.0 |
| | | | 0.0 |
| PT Total = | | | 3.0 |

Main water source is rainfall and sheet flow from State lands S of the bank property, area considered in natural/undeveloped.

Originally the canal was approximately 15 ft deep, filled in 1995/1996.

Burned this area 2 years ago.

Ditches in tact along power line road, could contribute to the backflow of water bringing in nutrient enrichment which is suggested to be bringing in the *Typha* sp. (cattail) we noted. There is westerly flow associated with the St. Johns River because of the high water levels currently in the River.

Appendix B-28. Tupelo Mitigation Bank

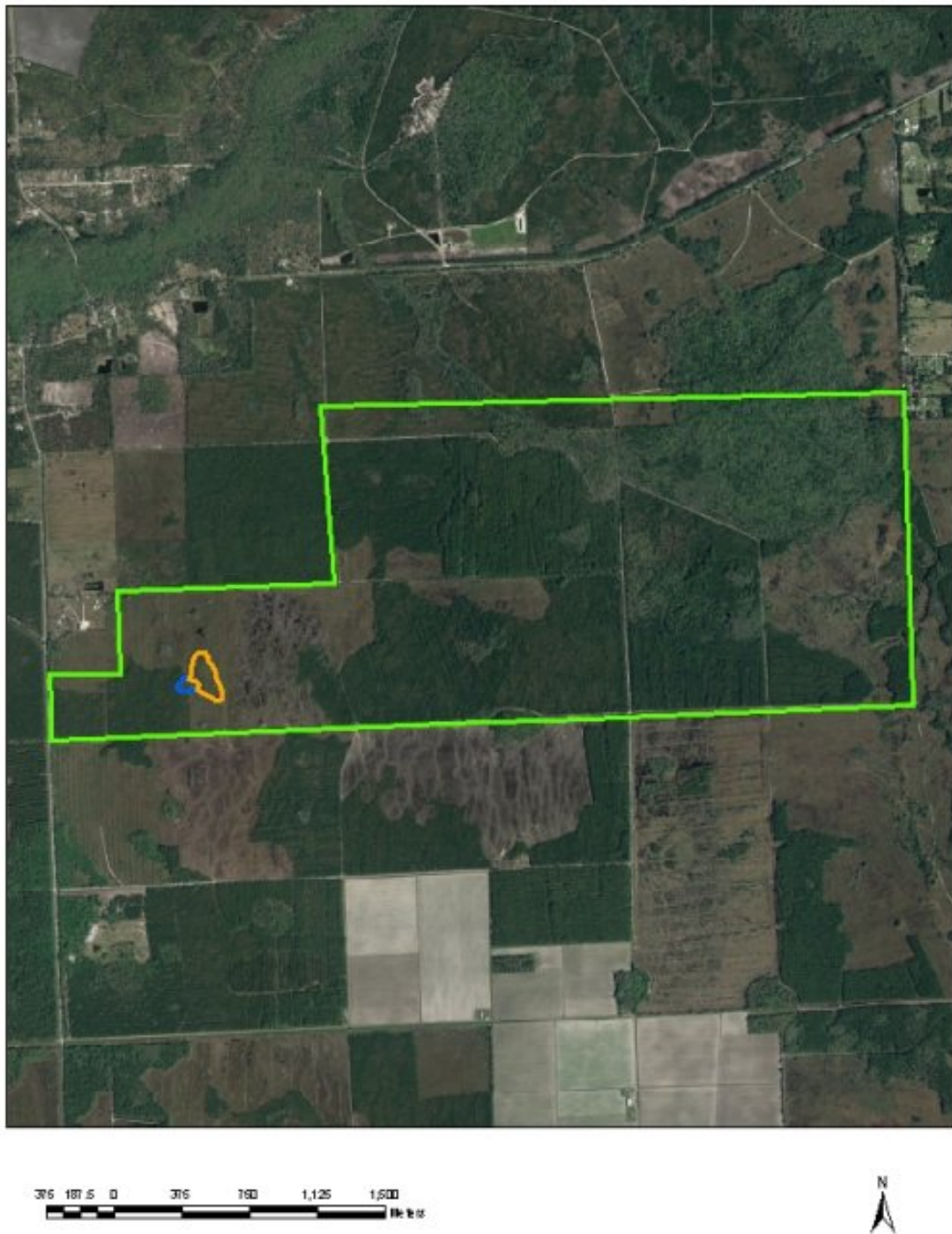


Figure B-28.1. Landscape location of Tupelo Mitigation Bank (green line). The boundary of the wetland assessment area Tup_PRA is outlined in orange and the boundary for Tup_FOR is outlined in blue.

(A)



(B)



Figure B-28.2. Site photos of (A) Tup_PRA and (B) Tup_FOR.

Tup_FOR Uniform Mitigation Assessment Method, page 1

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

| | | | |
|---|--|---|---|
| Site/Project Name Tupelo Mitigation Bank | | Application Number NA | Assessment Area Name or Number Tup_FOR |
| FLUCCs code 6300 Wetland Forested Mix | Further classification (optional) SSURGO soil Riviera, NWI Palustrine forested Florida Ecological Greenway critical linkages Medium priority, no critical link | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size 1.63 acres/0.7 ha |
| Basin/Watershed Name/Number St John's River, Lower HUC 03080103 | Affected Waterbody (Class) 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 Isolated depression feature. Catchment for this wetland has been reduced due to bedding and rows into the forested wetland edge. The clear cut areas on the eastern edge have left rutts and beds that are deeper on the edge and create a moat effect. The hydrology appears highly disturbed on this side of the wetland. | | | |
| Assessment area description On eastern side of forested wetland soils are saturated but covered in pine needle duff layer. Lichen lines on trees down to pine duff layer. Hardly any buttresses, some fluting on laurel oak (<i>Quercus laurifolia</i>). Some portions of center of wetland have shallow surface water. In deeper water about 5 cm, trees more prominently buttressed and moss collars are more distinct, loop roots from black gum (<i>Nyssa sylvatica</i> var. <i>biflora</i>). Flatwoods or wet prairie around wetland is very wet. Canopy mixed age, some very tall trees, some high dbh trees. No transitional ecotone. Many red maple (<i>Acer rubrum</i>) regenerating. Canopy primarily pondcypress (<i>Taxodium ascendens</i>) codominant with, slash pine (<i>Pinus elliotii</i>), black gum, and red maple. | | | |
| Significant nearby features St. John's River is about 6 miles west of bank. Town Branch flows NW in western corner of the bank and eventually flows into St. John's River. DOS archaeological sites in area. | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Jacksonville is expanding greatly to south and west. This area is partly low density residential, agriculture, and silviculture. For the time being there appear to be forested wetlands on the landscape. These areas may be altered or impacted in some way. | |
| Functions Wildlife habitat and refuge, in particular waterfowl, wading birds, and aquatic animals, which may depend on such swamps for breeding purposes; provide water storage by holding excess water and slowly releasing it into the water table; enhance water quality by absorbing nutrients from the water. | | Mitigation for previous permit/other historic use Numerous slash pine (<i>Pinus elliotii</i>) stumps with evidence of turpentine practices. Landscape has been silviculture for many years. | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Mole salamander, oak toad, dwarf salamander, southern cricket frog, pinewoods treefrog, little grass frog, narrowmouth toad, snapping turtle, mud turtles, eastern mud snake, cottonmouth, wood duck, woodstork, swallow-tailed kite, barred owl, pileated woodpecker, great-crested flycatcher, prothonotary warbler, and rusty blackbird | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Wood stork (<i>Mycteria americana</i>) ^E ; Swallow-tailed kite (<i>Elanoides forficatus</i>) ^{SSC} | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Cricket frog, blue jay, leopard frog, small fish, tiger swallowtail, red tailed hawk, dragon fly, green anole, spiders, tufted titmouse, red bellied woodpecker, downy woodpecker | | | |
| Additional relevant factors: | | | |
| Assessment conducted by: Erica Hernandez, Kelly Chinnners Reiss, Tony Davanzo | | Assessment date(s): 9/30/2005 | |

Tup_FOR Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|--|---|
| Site/Project Name Tupelo mitigation bank | Application Number NA | Assessment Area Name or Number Tup_FOR |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: Erica Hernandez, Kelly Chinners Reiss, Tony Davanzo | Assessment date: 9/30/2005 |

| 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 | Habitat outside wetland assessment area provide support for some species, however thick young plantation pine on 1/3 of wetland assessment area edge. 2/3 of clear-cut area has some habitat support, offsite pondcypress (<i>Taxodium ascendens</i>) wetland less than 200 meters away across the clear cut area. Invasive exotic species not apparent. Wildlife access may be somewhat limited by bedding. Distance not a limitation. Downstream benefits not appropriate as this is a depressional system (no outflows). When the planted pine on other 1/3 of wetland assessment area boundary is cut there will be additional adverse impacts and increase in edge effects. No clear ecotone to adjacent landuse. We considered the eastern side of the wetland assessment area to provide some adjacent upland support to wetter west side. | | | |
| | <table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>7</td> <td></td> </tr> </table> | w/o pres or current | with | 7 |
| w/o pres or current | with | | | |
| 7 | | | | |
| .500(6)(b)Water Environment (n/a for uplands) | Water level slightly lower than appropriate and east side of wetland assessment area has no standing water at all. Water level indicators not as distinct or consistent as expected. In wet area, moss collars are more distinct. Soil subsidence is minimal. Soil saturated but not inundated on east side. No atypical fire history. Vegetation on east edge inappropriate for system being evaluated. Wax myrtle (<i>Myrica cerifera</i>), saw palmetto (<i>Serenoa repens</i>), and vines coming into wetland, no obligate or facultative wetland species in ground cover or regenerating on east side. Canopy is still composed of obligate and facultative wetland species. No regeneration of pondcypress (<i>Taxodium ascendens</i>). Some fish and frogs visible, but not on east side, (less than expected). No vegetative indicators of water quality degradation. Red maple (<i>Acer rubrum</i>) seedlings through out, indication of water level alteration. No turbidity or discoloration of standing water. | | | |
| | <table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>6</td> <td></td> </tr> </table> | w/o pres or current | with | 6 |
| w/o pres or current | with | | | |
| 6 | | | | |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community | Trees healthy, no apparent stress throughout. Some cut stumps and many dead turpentine trees, many down trees too. On east side species not appropriate in ground and shrub stratum. No exotics present. Regeneration of red maple (<i>Acer rubrum</i>) throughout. No pondcypress (<i>Taxodium ascendens</i>) regeneration or recruitment at all even though 50% of canopy is pondcypress. Some black gum (<i>Nyssa sylvatica</i> var. <i>biflora</i>) and buttonbush (<i>Cephalanthus occidentalis</i>) regeneration, suggest transition from pondcypress to hardwoods. Age and size class distribution as a whole appears appropriate, although pondcypress lacks young cohorts. Density and quality of coarse woody debris provides optimal habitat support. Land management practices caused bedding and water alterations, change in catchement size and change of wetland vegetation to upland vegetation on east side. Topographic features are appropriate in center but there is a drop off of elevation on edge caused by earth moving and bedding that prevents a smooth transition to adjacent landuse. | | | |
| | <table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>6</td> <td></td> </tr> </table> | w/o pres or current | with | 6 |
| w/o pres or current | with | | | |
| 6 | | | | |

| | |
|---|------|
| Score = sum of above scores/30 (if uplands, divide by 20) | |
| current or w/o pres | with |
| 0.63 | |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Tup_FOR Wetland Rapid Assessment Procedure, page 1

Project Name: Tup_FOR, Tupelo Mitigation Bank

Date: 9/30/2005

Evaluator(s): Kelly Chinners Reiss & Erica Hernandez

Wetland Type/Description: Forested depression, altered hydrology evident,
canopy of cypress and mixed hardwoods some slash pine

Wetland Size: 0.7 ha (1.63 ac)

FLUCCS Code/Description: 6300 Wetland forested mixed

| | |
|------|---------------------------|
| 2.5 | Wildlife Utilization (WU) |
| 2.0 | Wetland Canopy (O/S) |
| 2.5 | Wetland Ground Cover (GC) |
| 2.0 | Habitat Support/Buffer |
| 1.5 | Field Hydrology (HYD) |
| 2.1 | WQ Input & Treatment (WQ) |
| 12.6 | SUM |
| 6 | Count |
| 0.70 | WRAP |

Tup_FOR Wetland Rapid Assessment Procedure, page 2

| | |
|--|----------------------------------|
| 2.5 | Wildlife Utilization (WU) |
| Saw deer and turkey tracks in bank. Some fish in standing water, frogs, green anoles, dragonfly, red shouldered hawk, song birds in canopy. Adjacent food sources are not optimal. Abundant cover for wildlife within wetland. Elevation change on eastern clear cut edge outside wetland assessment area, moat like feature from earth moving and ruts. | |

| | |
|---|-----------------------------|
| 2.0 | Wetland Canopy (O/S) |
| No exotics. Overstory appropriate many young black gum (<i>Nyssa sylvatica</i> var. <i>biflora</i>), wax myrtle (<i>Myrica cerifera</i>), buttonbush (<i>Cephalanthus occidentalis</i>), and swamp bay (<i>Persea palustris</i>) coming up. No pondcypress (<i>Taxodium ascendens</i>) regeneration. Much red maple (<i>Acer rubrum</i>) and some black gum regeneration. Habitat support ideal because of tall trees, some snags and den trees. Canopy appears healthy. Some cut stumps and old dead turpentine trees. | |

| | |
|---|----------------------------------|
| 2.5 | Wetland Ground Cover (GC) |
| Wetland vegetation lacking in some areas. On eastern side, saw palmetto (<i>Serenoa repens</i>) and wax myrtle (<i>Myrica cerifera</i>) could be interfering with presence of any desirable ground cover. No nuisance or exotic species. Minimal disturbance to groundcover. Some spots with potential earth moving from previous land management activities, some upland and vine species encroachment to the east. No evidence of fire (atypical or otherwise). Thick vegetation around edge of wetland assessment area on higher elevation. Cabbage palms (<i>Sabal palmetto</i>) do not have boots. | |

| | | | | | |
|--|-------------------------------|----------------|-----------|-------------|-------------|
| 2.0 | Habitat Support/Buffer | | | | |
| 1/3 planted pine, young trees, bedded, dense shrubs > 300' buffer, not full of desirable species 2/3 bedded still with some cuts for hydrologic connection, "restored" flatwoods, very wet, upland species on beds wetland vegetation in the troughs, no bunch grasses or wire grass evident, not all appropriate desired species | | Buffer Type | (Score) x | (% of Area) | = Sub Total |
| | | planted pine | 1.5 | 0.33 | 0.66 |
| | | flatwoods | 2 | 0.66 | 1.32 |
| | | | | | |
| | | Total = | | | |

| | |
|---|------------------------------|
| 1.5 | Field Hydrology (HID) |
| Adjacent to negative impacts. Will maintain wetland on western side of wetland assessment area, but eastern side does not seem to have adequate hydrology to maintain viable wetland. Many upland and vine species encroaching. Less water coming into wetland assessment area, reduced catchment side from land use impacts, moat like feature around wetland assessment area edge, no ecotone. West side evidence of minimal subsidence. Water on west side is cool, clear and tannic. Issue is water quantity not necessarily quality. | |

2.1 WQ Input & Treatment (WQ)*

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.

LANDUSE CATEGORY (LU)

| Land Use Category | (Score) x | (% of Area) | = Sub Total |
|-------------------|-----------|-------------|-------------|
| clear cut | | | |
| flatwoods | 2.5 | 0.66 | 1.7 |
| planted pine | 2.0 | 0.33 | 0.7 |
| | | | |
| LU Total = | | | 2.3 |

PRETREATMENT CATEGORY (PT)

| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
|--------------------------|-----------|-------------|-------------|
| natural undeveloped area | 3.0 | 0.66 | 2.0 |
| no treatment | 0.0 | 0.33 | 0.0 |
| | | | |
| PT Total = | | | 2.0 |

* Used FLUCCS unimproved pasture/ rangeland score: 2.5 as land use for clear cut "restored flatwoods"
Used citrus score: 2.0 for planted pine

Tup_PRA Uniform Mitigation Assessment Method, page 1

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

| | | | |
|---|--|--|---|
| Site/Project Name Tupelo Mitigation Bank | | Application Number NA | Assessment Area Name or Number Tup_PRA |
| FLUCCs code FLUCCS 2000: 6430 wet prairie | Further classification (optional) wet flatwoods | Impact or Mitigation Site? Mitigation Bank | Assessment Area Size ~ 2.8 ha (~7 ac) |
| Basin/Watershed Name/Number St John's River, Lower | Affected Waterbody (Class) Class III | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) medium priority critical wildlife corridor | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands This wet prairie/wet flatwoods is in bedded rows with breaks in the bedding for surface water flow. Water does pool up inside the bedding. Over all sheet flow from the region moves northwest towards the St John's River. | | | |
| Assessment area description Clear cut wet prairie, planted with slash pine (<i>Pinus elliotii</i>) for creation of a wet flatwoods community. The land has been in planted pine for a long time period. Land is still in beds but there are breaks for hydrologic connection. Landscape still has planted pine, some larger canals, and rural low density residential development. | | | |
| Significant nearby features Medium importance critical wildlife connection. St John's River is 2 miles to west. Archeological sites on bank and in landscape. Twelve Mile Swamp Conservation area about 3 miles to northeast. | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Jacksonville is expanding greatly to south and west. This area is partly low density residential, agriculture, and silviculture. Flatwoods and wet prairie do not appear to be common on the landscape and most are probably altered or impacted in some way. | |
| Functions Habitat for flora and fauna. Forage area for fauna. Enhancing water quality. Nutrient cycling with seasonal fire. | | Mitigation for previous permit/other historic use Clear cutting silviculture practiced for years. Now used for mitigation. | |
| Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Oak toad, cricket frog, chorus frog, black racer, yellow rate snake, diamondback rattle snake, pygmy rattlesnake, red-shouldered hawk, bobwhite, opossum, cottontail rabbit, cotton rat, cotton mouse, raccoon, striped skunk, bobcat, white-tailed deer, and grassland birds. | | 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 could use this area as a corridor if appropriate connections are available. | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Cricket frog, common yellow throat, large raccoon tracks, raccoon scat, rabbit, small fish trapped in drying puddles in troughs. Heard cricket type insects. | | | |
| Additional relevant factors: Rutting very apparent. Not restored to grade. Concerns about how well breaks in bedding will contribute to a natural hydrologic regime. Concerns about lack of fine fuels and bunch grasses in vegetative layer. Concerns about loss of species diversity due to historic fire suppression. | | | |
| Assessment conducted by: EH, KCR, TD | | Assessment date(s): 9/30/2005 | |

Tup_PRA Uniform Mitigation Assessment Method, page 2

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

| | | |
|---|---|---|
| Site/Project Name Tupelo Mitigation Bank | Application Number NA | Assessment Area Name or Number Tup_PRA |
| Impact or Mitigation Mitigation Bank | Assessment conducted by: EH, KCR, TD | Assessment date: 9/30/2005 |

| | | | | |
|--|---|--|---|--|
| 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 w/o pres or current 6 | with | Some wildlife may be limited due to reduced availability of habitats needed to fulfill their life history requirements in the landscape due to widespread conversion to silviculture. No invasive exotic species in proximity to the wetland assessment area evident. Some pasture grasses on road edges. Bedding in landscape may be a barrier to dispersal for some small reptiles and amphibians. Even though there are some cuts into the bedding, it appears to be reducing hydrologic connections for surface water flows and isolating small pockets of water that are unsuitable for fish because they dry down quickly and trap the fish. Landuses outside the assessment area that are in silviculture are young with dense slash pine (<i>Pinus elliottii</i>) trees, they do not offer much habitat support. There are some forested wetlands associated with flowing water features in the landscape. There are areas of clear cutting that impact wildlife, groundcover and hydrology. |
| | | |
| .500(6)(b)Water Environment (n/a for uplands) w/o pres or current 5 | with | Water levels have been altered. The only evident water level indicators were the species composition of wetland plants. No drift lines, rafted debris, or stain lines observed. Soils in troughs were saturated but because this area has been bedded it is difficult to comment on any natural conditions expected of the soil. No evidence of soil erosion (would not be expected for the system). No evidence of fire or atypical in the landscape. Low troughs support wetland vegetation, the bedding supports upland vegetation, upland vegetation not moving into troughs however vegetation is linear on the landscape. Vegetation does not appear to be experiencing hydrologic stress. Some frogs and small fish in shallow drying pools. No evidence of species tolerant of moderate degradation or alterations in water or hydrology. Not really any significant depth of standing water to comment on except for the small drying pools. No water quality data available. Could be a sink for forage fish, small amphibians and macroinvertebrates because natural flows are interrupted. |
| | | |
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current 5 | with | The vegetation species composition is appropriate, having wetland species in the troughs. Some desirable fine fuels, specifically bunch grasses, were not present. No invasive exotic species present. Many plants in flower and look robust. Age and size class distribution is inappropriate with only young slash pine (<i>Pinus elliottii</i>) planted for restoration efforts. The amount of coarse woody debris was higher than expected, there were young small trees that were cut and left, however no large snags standing. No cavities or dens, in a wet flatwood would not expect too many because tree density should be fairly low. Plant conditions look healthy. Land management practices have resulted in partial removal and alteration of natural structure and introduced artificial features. Refugia ponds are not adequate or available, bedding is not appropriate. As compared to reference conditions of a wet flatwoods with shallow marsh depressions, the function has been reduced by at least 50% in its current community structure. |
| | | |

| | |
|---|------|
| Score = sum of above scores/30 (if uplands, divide by 20) | |
| current or w/o pres 0.53 | with |

| |
|----------------------------------|
| If preservation as mitigation, |
| Preservation adjustment factor = |
| Adjusted mitigation delta = |

| |
|-----------------------------|
| For impact assessment areas |
| FL = delta x acres = |

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

| |
|-----------------------|
| If mitigation |
| Time lag (t-factor) = |
| Risk factor = |

| |
|---------------------------------|
| For mitigation assessment areas |
| RFG = delta/(t-factor x risk) = |

Tup_PRA Wetland Rapid Assessment Procedure, page 1

Project Name: Tup_PRA

Date: 9/30/2005

Evaluator(s): Kelly Chinnners Reiss & Erica Hernandez

Wetland Type/Description: Newly planted wet flatwoods/wet prairie, previously clearcut for silviculture. Ground is still in beds and rows although some breaks were cut for hydrologic connection.

Wetland Size: ~2.8 ha (~7 ac)

FLUCCS Code/Description: 6430 FLUCCS wet prairie

| | |
|------|---------------------------|
| 1.5 | Wildlife Utilization (WU) |
| 1.5 | Wetland Canopy (O/S) |
| 1.5 | Wetland Ground Cover (GC) |
| 2.2 | Habitat Support/Buffer |
| 1.5 | Field Hydrology (HYD) |
| 2.5 | WQ Input & Treatment (WQ) |
| 10.7 | SUM |
| 6 | Count |
| 0.59 | WRAP |

Tup_PRA Wetland Rapid Assessment Procedure, page 2

| | |
|--|----------------------------------|
| 1.5 | Wildlife Utilization (WU) |
| <p>Mammals probably utilize troughs for movement across this area, game trails are difficult to detect. Some evidence of raccoons from tracks and scat. Common yellow throat in wax myrtle (<i>Myrica cerifera</i>) growing on beds. Small fish in drying puddles between troughs. No evidence of large mammal or reptile utilization. The backing up of pools of water and lack of a natural sheet flow is not optimal for macroinvertebrates and forage fish. Small reptiles and amphibians could have a difficult time overcoming beds. No remnant patch of natural uplands. The bedding does support some upland plant species. Birds should be able to utilize this area. A natural flatwoods system would have more refugia, a less homogenous landscape, and a smoother topographic gradient.</p> | |

| | |
|---|-----------------------------|
| 1.5 | Wetland Canopy (O/S) |
| <p>This area was in silviculture and clearcut. Some young slash pine (<i>Pinus elliottii</i>) has been planted. No invasive exotic species present. Native shrubs on beds are full and healthy. Shrubs should provide some habitat support but linear structure on landscape is not optimal. Canopy too young to provide much habitat support or snags or dens. Flatwoods naturally have low densities of trees and shrubs. Eventually these planted trees will provide some structure.</p> | |

| | |
|---|----------------------------------|
| 1.5 | Wetland Ground Cover (GC) |
| <p>Nice species composition, good species richness, no exotic species, plants look healthy. Did not see fine fuels specifically bunch grasses and wiregrass (<i>Aristida stricta</i> var. <i>beyrichiana</i>) that will be important for carrying fire. Ground cover is rutted and bedded from silviculture practices. Distinct linear features in vegetation growth. Some areas in beds are cut out and provide some connection but other wise very tall beds and low troughs.</p> | |

| | |
|--|-------------------------------|
| 2.2 | Habitat Support/Buffer |
| <p>Cleared area very expansive, all of it with ruts, bedding and linear features. Some cypress (<i>Taxodium ascendens</i>) domes in landscape, patches of planted slash pine (<i>Pinus elliottii</i>), areas in agriculture, and low density housing in support landscape. Buffer is greater than 300 feet. Silvicultural areas do not offer much buffer support and this area is not connected to other wetlands except for the continuous cleared area and the two cypress domes. However this is a large area with some structure providing food and cover.</p> | |

| Buffer Type | (Score) x | (% of Area) | = Sub Total |
|----------------|-----------|-------------|-------------|
| planted pine | 2.0 | 0.25 | 0.5 |
| flatwoods | 2.0 | 0.60 | 1.2 |
| cypress dome | 3.0 | 0.15 | 0.5 |
| Total = | | | 2.2 |

| | |
|---|------------------------------|
| 1.5 | Field Hydrology (HID) |
| <p>Beds are not optimal for hydrology. There are some breaks in the beds for connection. Water appears to pool in some areas and draw down rapidly. Vegetation is distinctly wetlands in troughs, upland on beds. Plants do not appear stressed. This area could not support a natural hydroperiod. Zonation is inappropriate because of linear features in bedding. Upland species are not invading the lower areas. Hydrologic regime is probably adequate to maintain the vegetation in the troughs. These features may be impacting cypress (<i>Taxodium ascendens</i>) domes in the landscape.</p> | |

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|---|---------------------------------------|
| 2.5 | WQ Input & Treatment (WQ)* |
| <p>*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2.</p> | |

| LANDUSE CATEGORY (LU) | | | |
|-----------------------|-----------|-------------|-------------|
| Land Use Category | (Score) x | (% of Area) | = Sub Total |
| planted pine | 2.0 | 0.15 | 0.3 |
| forested depression | 3.0 | 0.09 | 0.3 |
| clearcut/wet prairie | 2.5 | 0.76 | 1.9 |
| LU Total = | | | 2.5 |

| PRETREATMENT CATEGORY (PT) | | | |
|----------------------------|-----------|-------------|-------------|
| Pretreatment Category | (Score) x | (% of Area) | = Sub Total |
| no treatment | 0.0 | 0.15 | 0.0 |
| natural undeveloped | 3.0 | 0.85 | 2.6 |
| PT Total = | | | 2.6 |

* Used FLUCCS unimproved pasture/ rangeland score: 2.5 as land use for clear cut "restored flatwoods" Used citrus score: 2.0 for planted pine