MEGINNIS ARM SHORELINE RESTORATION MITIGATION SITE
Annual Monitoring Report, Year 5 of 5
February 23, 2012

PROJECT OVERVIEW

Impact:	I-10 (Ochlockonee River to CR 361) in Leon County
USACE Permit No.:	SAJ-2005-1406 IP-SEG, Issued 4/6/06
Mitigation:	Meginnis Arm Shoreline Restoration
Permittee/Consultant:	FDOT
Responsible Party for Monitoring:	Northwest Florida Water Management District (NWFWMD) 81 Water Management Dr. Havana, FL 32333
Date of Inspection:	February 21, 2012
Inspectors:	Graham Lewis, Leigh Brooks

Purpose of the Approved Project

The Meginnis Arm Shoreline Restoration project provides mitigation to compensate for the functional loss of 1.9 acres of wetlands resulting from the widening of Interstate 10 in Leon County. The roadway section widened extended from approximately ½ mile west of CR 361 (Mission Road) to the westbound rest area near the Ochlockonee River.

Location and Directions

The Meginnis Arm mitigation site is located in Leon County at the south end of Lake Jackson and just north of I-10 (Figures 1 and 2). The site is on the western side of Meginnis Arm, bounded on the south by the county-owned Fuller Landing Road boat ramp and on the north by Lake Jackson Mounds Archaeological State Park. From the I-10 interchange at US 27/Monroe Street, head north on US 27 and take the first right turn onto Okeeheepkee Road. Immediately turn right on Livingston Road. Follow the road 0.8 miles. At T, turn right onto Fuller Road. Go about 400 feet to parking area.

Project Summary

The project seeks to restore native shoreline vegetation on approximately 17 acres of wetlands on the western side of Meginnis Arm at Lake Jackson. The mitigation site covers portions of state sovereign lands of the Lake Jackson Aquatic Preserve and Leon County's Okeeheepkee Prairie Regional Stormwater Management Facility (Figures 3 and 4). Restoration of native shoreline wetland communities consisted of eradication and management of Chinese tallow (*Sapium sebiferum*), wild taro (*Colocasia esculenta*), purple sesban (*Sesbania punicea*), and other exotic and/or invasive species using approved herbicides and application methods followed by the planting of appropriate wetland species (generally marsh species with inclusions of cypress where appropriate). This project complements several decades of work to improve environmental quality of Meginnis Arm through stormwater improvement and other efforts.

MITIGATION ACTIVITIES

Work Schedule (past and future)

- Within two years of permit issuance, eradication of exotic/invasive species and planting of native wetland shoreline species: **Carried out in 2006, 2007, 2008 and 2009, with an additional treatment in May 2011.**
- Annual monitoring (photo-documentation and inspection of mitigation site by a qualified biologist to estimate survival of planted vegetation and percent cover of any exotic/invasive plant species), if required, for five years after shoreline restoration or duration of permit. **This completes the fifth year of monitoring.**
- Annual reports after exotic/invasive species eradication and shoreline restoration, if required, for five years or duration of permit. **This completes the fifth year monitoring report.**
- Additional exotic/invasive species eradication and planting of shoreline vegetation if success criteria are not met. **Invasive species eradication appears to meet criteria. Shoreline vegetation survival could not be determined for all planted species due to dormancy at time of monitoring.**

Description of Management Activities

Herbicide treatment for eradication of exotic species was initiated in 2006-2007. Treatments targeted Chinese tallow, purple sesban, and wild taro. Follow up treatment was conducted in 2008 with five monthly treatments conducted in May-September. The site was treated again in 2009. All herbicides were labeled for aquatic systems and administered by licensed pesticide applicators. A followup treatment was carried out throughout the site in May 2011.

Planting of native shoreline vegetation began in April 2009 with button bush (*Cephalanthus occidentalis*), pickerel weed (*Pontederia cordata*), arrowhead (*Sagittaria lancifolia*), and soft rush (*Juncus effusus*). In November 2009, climbing aster (*Symphyotrichum carolinianum*), marsh mallow (*Hibiscus moscheutos*), and pond cypress (*Taxodium ascendens*) were planted.

MONITORING REQUIREMENTS (from Northwest Florida Umbrella, Watershed-based, Regional Mitigation Plan (UWRMP); NWFWMD July 2006, revised March 2009):

- Any project specific requirements per permit.
- Annual or more frequent site inspection
    - Perimeter for signs of trespassing, fencing and signage integrity and infestation by exotic or nuisance vegetation;
    - Internal roads (both public and maintenance) for signs of dumping or trespassing, erosion, road integrity, exotic vegetation and nuisance vegetation and fauna;
    - All construction areas for stabilization and re-vegetation, structure operation and integrity.
- Qualitative monitoring, as appropriate.
    - Pedestrian survey - Notes on general health and reproductive status of vegetation, dominant species, recruitment of new species, the presence or spread of nuisance/exotic species, and the hydrologic condition will be recorded on field data sheets. Potential problems and appropriate solutions will be identified.
    - Permanent photographic stations.
    - Best available digital ortho photography for aerial monitoring.

    - Wildlife utilization - direct sightings, scat, tracks, vocalizations.
- Annual reports posted at www.NWFWMDwetlands.com for duration of monitoring.

From mitigation plan attachment to permit:

- Annual monitoring (photo-documentation and inspection of mitigation site by a qualified biologist or wetland scientist to estimate survival of planted vegetation and percent cover of any exotic/invasive plant species), if required, for five years after shoreline restoration or duration of permit.
- Annual reports after exotic/invasive eradication and shoreline restoration, if required, for five years or duration of permit.

SUMMARY OF MONITORING ACTIVITIES

Monitoring Observations

The current monitoring was carried out on February 21, 2012, and consisted of a meandering pedestrian survey throughout the site with photographs taken at a variety of points (Figures 3 and 4). Field sheets are attached documenting site conditions and observed species.

In the transition area between upland and wetland, there were imposing thickets of sawtooth blackberry (*Rubus pensilvanicus*). Loblolly (*Pinus taeda*) and slash (Pinus elliottii) pines and wax myrtle (*Myrica cerifera*) dominated the upland portion of the site. Dead pines and wax myrtle were scattered in the lower wetland portion, drowned from previous higher lake levels. The lake level was low at the time of this visit. Roots of willow trees were exposed above the water line, as can be seen in Photo 1. Soft rush (Photo 1) and marsh mallow were abundant, seeds capsules present on the latter. Dormant or dead grasses, mostly maidencane (*Panicum hemitomon*), created a very thick and dense groundcover (Photos 2-4). A narrow trail was evident from trampled grasses in this area (Photo 4), although it could not be determined if animal or human, possibly both. Animal tunnels/burrows were seen in wetland areas and grasses. No pond cypress were observed. A small stream was running from the upland, through a wetland, to the lake. This wetland had a canopy of willows and a groundcover dominated by sedges (Photo 5). A few butterweed (*Packera glabella*) plants were in bloom in this wetland. The adjacent upland stormwater pond appears to be the source of the discharge as flow was noted leaving the rocked area downstream of the discharge overflow structure.

Only one live invasive exotic plant was observed on the mitigation site, a Chinese privet (Ligustrum sinense) at the north end by the fence line which the observers flagged. Cut stumps of Chinese tallow trees remained, visible in Photo 3. At the parking area for Fuller Landing Road boat ramp, a large Japanese privet (*Ligustrum japonicum*) in fruit was observed and possibly a small cluster of dormant Chinese tallow; however, this area is not technically on the mitigation site. A few apple snail shells of various sizes were seen in the wetland (Photo 6). It was not determined if they were native or exotic species although several of the shells were large; none were found living. Apple snail occurrence should be monitor in the future both at this site and throughout Lake Jackson. In addition, several red ant mounds were scattered around the site.

Success Criteria

From mitigation plan attachment to permit:

- 80% survival of planted wetland vegetation. **Survival of *Hibiscus moscheutos* and *Juncus effusus* was high at time of monitoring. Survival of other planted species could not be assessed due to winter dormancy.**
- Exotic species ≤ 1% of vegetation cover. **Exotic species cover remains below 1%.**
- Invasive species ≤ 5% of vegetation cover. **Invasive species cover remains well below 5%.**

Restoration Success Criteria		Condition Met
RC-1	Desired species showing evidence of increasing coverage	Yes
RC-2	No more than 1% coverage of invasive exotic and 5% nuisance native and non-invasive exotic species unless otherwise specified in a management plan	Yes
RC-3	Increase in appropriate herbaceous, shrub and / or tree species	Yes
RC-4	Kind and total coverage of shrub species appropriate for management goals and target natural community	Yes
RC-5	Kind and total coverage of herbaceous species appropriate for management goals and target natural community	Yes
RC-6	Kind and total coverage of tree species appropriate for management goals and target natural community	Yes
RC-7	Maintain the ecological conditions so that the mitigation UMAM scores are met for each of the specified community types.	Yes

CONCLUSIONS

The freshwater marsh is progressing well toward successful restoration of the natural wetland community. Performance standards appear to have been met for this project. Controlling invasive exotic vegetation allowed for recruitment and recovery of native species. Continued periodic inspection and control for exotics will be needed to prevent reinfestation from the many seed sources around Lake Jackson. It is a difficult task to clear and maintain a site for exotic/invasive species when these species occur in adjacent untreated areas; long-term vigilance and continued eradication may be required. As this is the fifth year of monitoring, the District should request release from further annual monitoring requirements; continued, but less frequent surveys can ensure successful exotic control.

Figure 1. Meginnis Arm Shoreline Restoration Location Map.
RTN

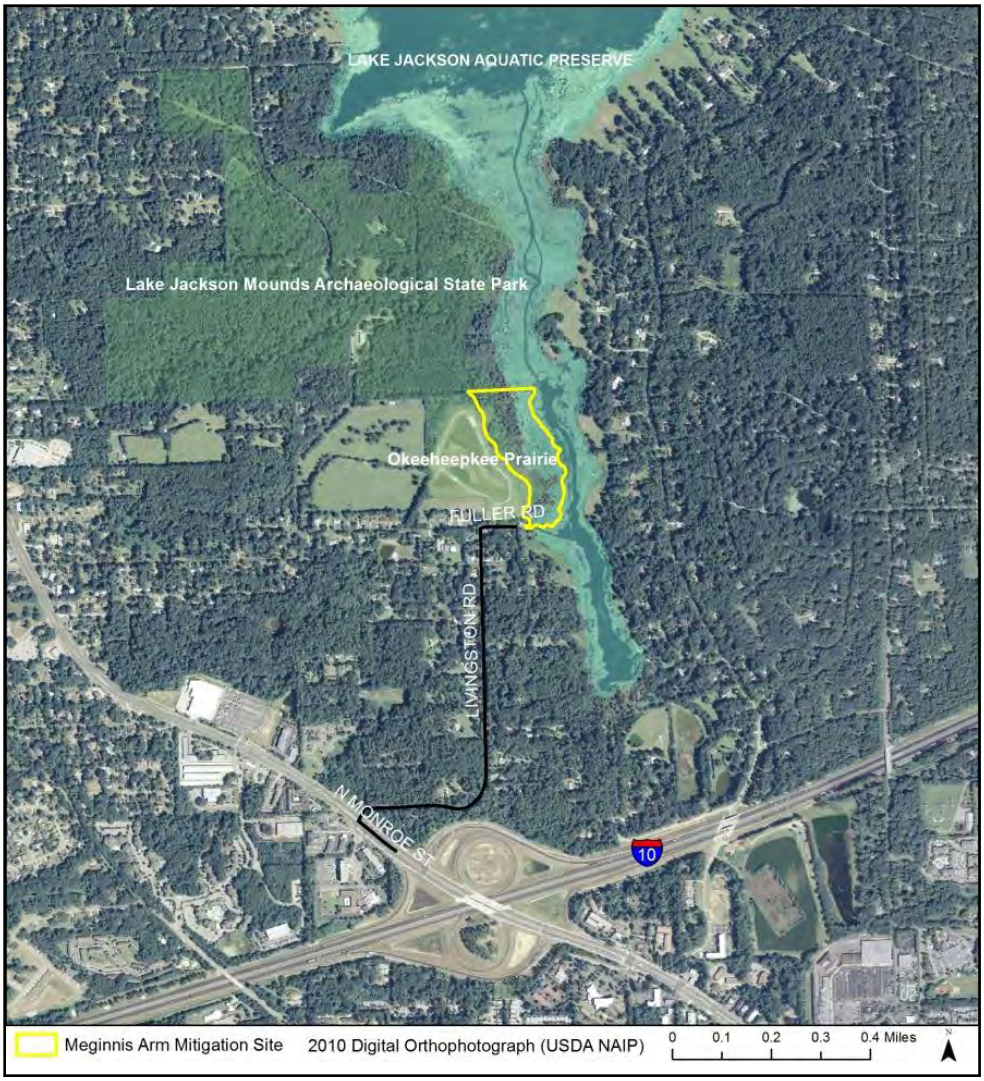

Figure 2. Meginnis Arm Shoreline Restoration Site. RTN

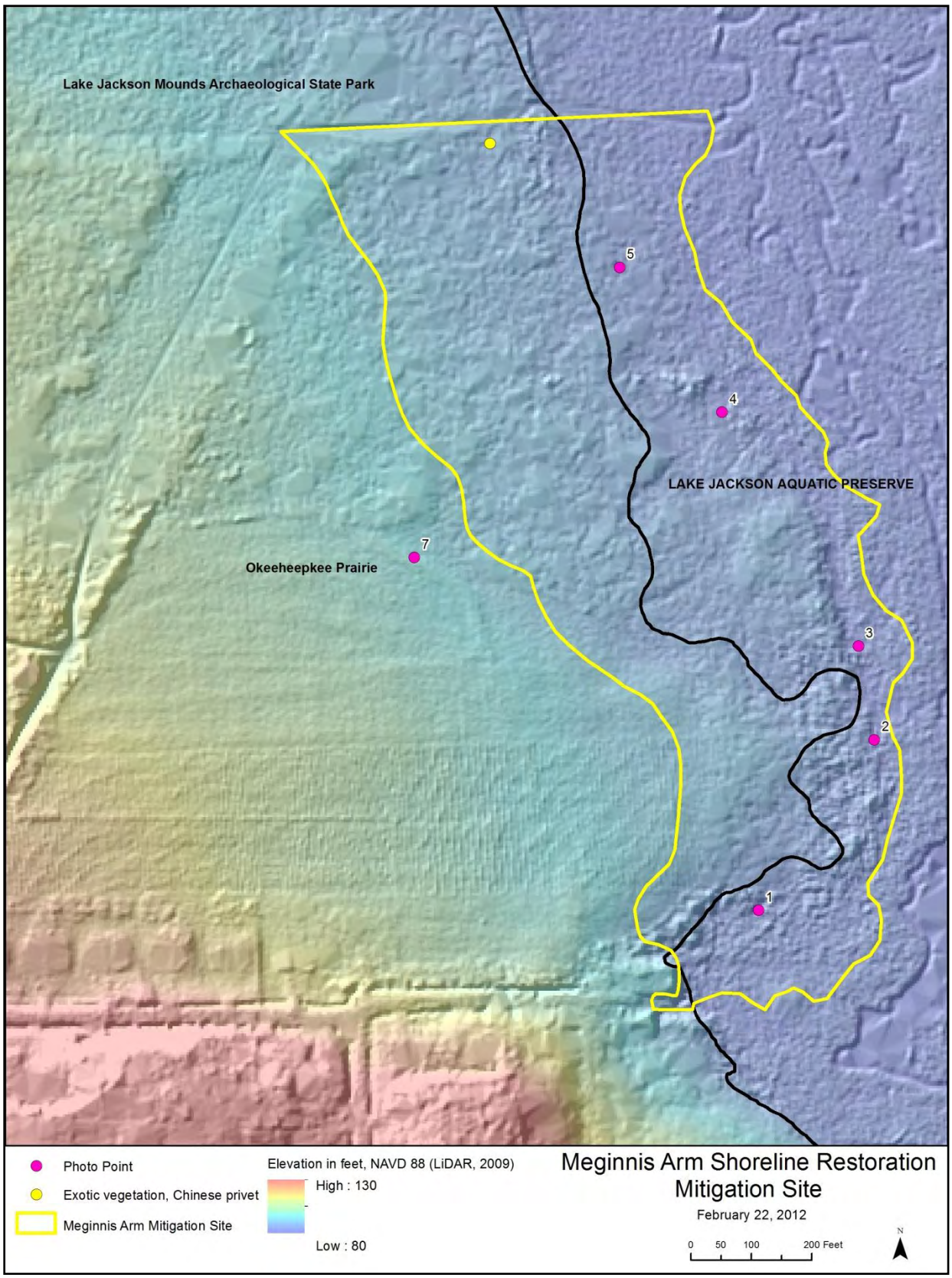

Figure 3. Topography of Meginnis Arm Shoreline Restoration site prior to development of Okeeheepkee Prairie Regional Stormwater Management Facility. RTN

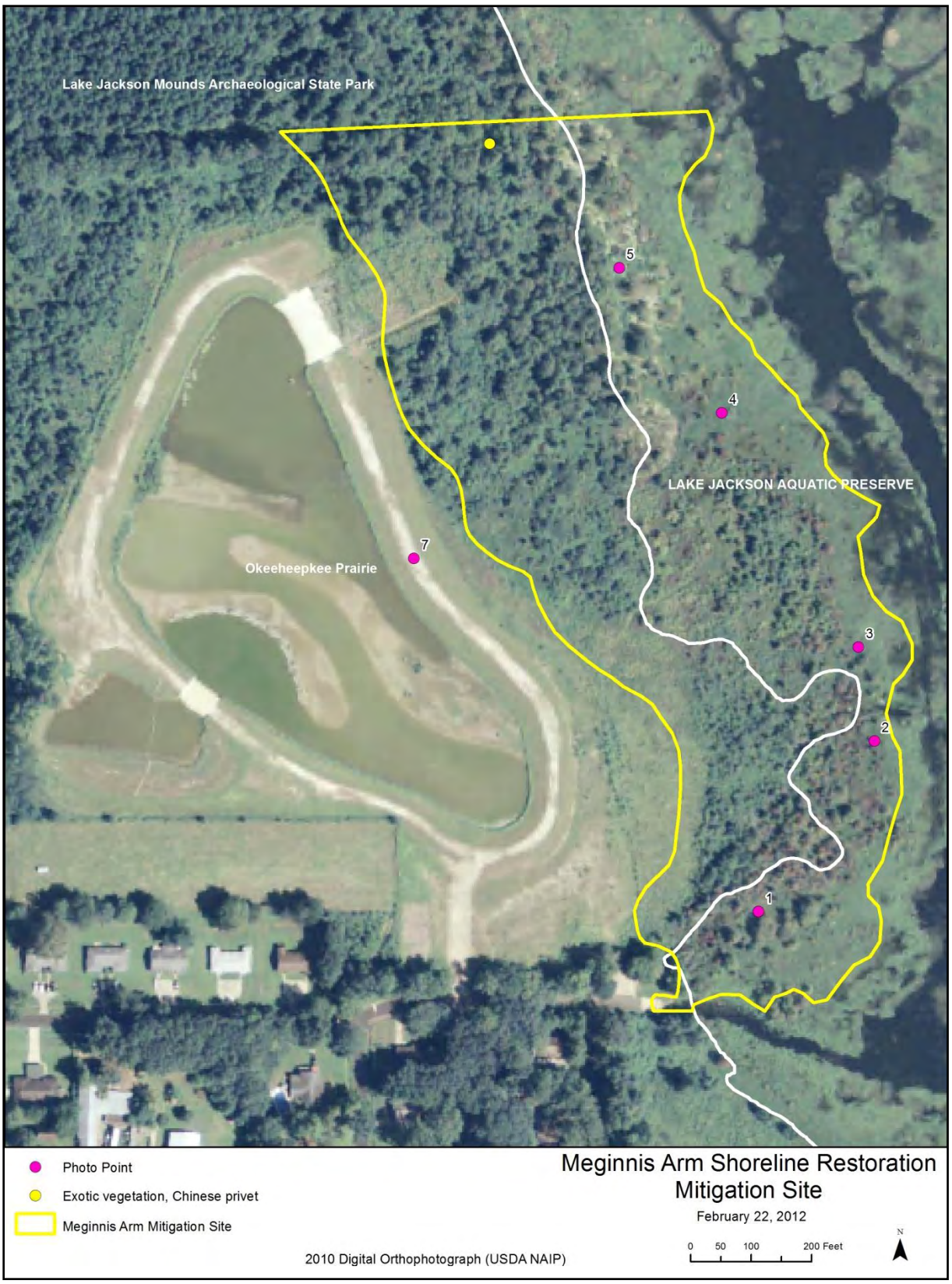

Figure 4. Aerial photograph of Meginnis Arm Shoreline Restoration site after development of Okeeheepkee Prairie Regional Stormwater Management Facility. RTN

Photo 1. Southern end of wetland site with *Juncus effusus* in foreground. Photo point 1, looking east. 2/21/12. RTN

Photo 2. Wetland site with dense herbaceous groundcover. Photo point 2, looking west. 2/21/12.

Photo 3. Wetland edge with cut stumps of Chinese tallow visible. Photo point 3, looking east. 2/21/12. RTN

Photo 4. Wetland edge with animal/human trail visible. Photo point 4, looking north. 2/21/12. RTN

Photo 5. Small stream flowing through willow trees and herbaceous wetland near transition between upland and wetland. Photo point 5, looking west. 2/21/12. RTN

Photo 6. Apple snail; several shells were observed throughout site. 2/21/12. RTN

Site Inspection Field Form

Project: Meginnis Arm Shoreline Restoration Date: February 21, 2012

Name(s) of Data Collectors: Graham Lewis, Leigh Brooks

Environmental Description: Freshwater marsh

Weather: Warm, mostly sunny, slight breeze. Temp F: 70s

Polygon: Meginnis Arm mitigation GPS Location: 30°29'44.936 84°18'25.568"W Time: 2:00 p.m.

On at least a yearly basis, the site will be inspected as follows:

A: Perimeter for signs of trespassing, fencing and signage integrity and infestation by exotic or nuisance vegetation;

Mitigation site encompasses county and state land and is not fenced or signed.

Season was not ideal for assessing exotic vegetation since most plants were dormant. One Chinese privet (*Ligustrum sinense*) was observed at north end of site. One Japanese privet (*Ligustrum japonicum*) and possibly a small cluster of Chinese tallow (*Sapium sebiferum*) were observed at the parking lot, though not technically within mitigation site.

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

N/A. There are no roads in the mitigation site.

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

N/A

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

Fuel load was low to moderate from dead pine trees, dead stumps from treated exotics, and masses of dried grasses covering most of the non-forested wetland. Season was not ideal for assessing exotic vegetation since most plants were dormant. Soft rush (*Juncus effusus*) and marsh mallow (*Hibiscus moscheutos*) were easily visible, the latter from dormant stalks with seed capsules present. Survival seemed high on those species; however, other planted species were not observed, possibly due to season.

Vegetation Assessment Field Form	**Qualitative Assessment**
Project: Meginnis Arm Shoreline Restoration	Date: February 21, 2012
Name(s) of Data Collectors: Graham Lewis, Leigh Brooks	
Environmental Description: Freshwater marsh	
Polygon: Meginnis Arm mitigation GPS Location: 30°29'44.936"N 84°18'25.568"W	Time: 2:00 p.m.
Nuisance Species: *Ligustrum sinense*	Fuel Load: Low to moderate

Wildlife Observations: Apple snail (*Pomacea* sp.), possibly exotic. Small animal burrows in the ground and in thick grass. Red ant mounds.

Water depth: Lake Jackson was at a very low level. Tree roots in the mitigation area were exposed. Marsh grasses had dried out.

Is the community observed along the walk path representative of the community being measured? Yes

To what degree is the restoration in this area trending towards success?
Very high trend toward success.

Potential Problems and solutions:
Potential future recruitment of exotics to area from adjacent untreated areas; continued monitoring and eradication.

RTN

Scientific Name	**Common Name**	**New observation**
Acer rubrum	Red maple	
Andropogon glomeratus	Bushy bluestem	
Andropogon virginicus	Broomsedge bluestem	
Baccharis halimifolia	Groundseltree	
Boehmeria cylindrica	Smallspike false nettle	
Centella asiatica	Spadeleaf	
Cephalanthus occidentalis	Common buttonbush	
Cirsium horridulum	Yellow thistle	
Cyperus sp.	Flatsedge	
Eupatorium capillifolium	Dogfennel	
Galium sp.	Bedstraw	
Geranium carolinianum	Carolina geranium	
Hibiscus moscheutos	Crimsoneyed rosemallow, marsh mallow	
Hydrocotyle sp.	Marshpennywort	
Ipomoea sp.	Morning-glory	
Jacquemontia tamnifolia	Hairy clustervine	

Juncus effusus	Soft rush	
Juncus sp.	Rush	
*Ligustrum sinense**	Chinese privet	X
Liquidambar styraciflua	Sweetgum	
Myrica cerifera	Wax myrtle	
Oxalis corniculata	Yellow woodsorrel	X
Packera glabella	Butterweed	X
Panicum hemitomon	Maidencane	X
Paspalum dilatatum	Dallisgrass	
Paspalum notatum	Bahiagrass	
Pinus taeda	Loblolly pine	
Polygonum hirsutum	Hairy smartweed	
Pontederia cordata	Pickerelweed	
Quercus laurifolia	Laurel oak	
Quercus nigra	Water oak	
Rhexia nashii	Maid Marian	
Rhynchospora corniculata	Shortbristle horned beaksedge	
Rubus pensilvanicus (syn R. argutus)	Sawtooth blackberry	
Rumex verticillatus	Swamp dock	X
Rumex sp.	Dock	
Sagittaria lancifolia	Bulltongue arrowhead	X (planted)
Sagittaria latifolia	Broadleaf arrowhead	
Salix nigra	Black willow	
Sambucus nigra	Black elderberry	
*Sapium sebiferum**	Chinese tallow	
Scirpus cyperinus	Woolgrass	X
Sesbania herbacea	Bigpod sesbania	
Setaria sp.	Bristlegrass	
Solidago sp.	Goldenrod	X
Symphyotrichum carolinianum	Climbing aster	
Taxodium ascendens	Pond cypress	
Verbena brasiliensis	Brazilian vervain	
Vicia sp.	Vetch	

*FLEPPC Category I or II invasive plant species

RTN