CAT POINT MITIGATION SITE
Annual Monitoring Report, Year 5 of 5
January 11, 2012

PROJECT OVERVIEW

Impact:	SR 300 St. George Island Bridge, Franklin County
USACE Permit No.:	SAJ-2003-05450 NW-JWS, issued 6/6/2003
Mitigation:	Cat Point, Franklin County
Permittee/Consultant:	Northwest Florida Water Management District (NWFWMD)
Responsible Party for Monitoring:	NWFWMD 81 Water Management Dr. Havana, FL 32333
Date of Inspection:	November 9, 2011
Inspectors:	Leigh Brooks, Graham Lewis

Purpose of the Approved Project

This project provides mitigation for loss of 0.3 acre of seagrass in Apalachicola Bay from replacement and realignment of the St. George Island Bridge (SR 300 Bryant Patton Bridge) in Franklin County. A restoration site of approximately 0.8 acres of degraded shoreline was selected. The majority of the adjacent upland property is owned by the State of Florida (55 acres with 4000 feet of shoreline) and is managed by the Apalachicola National Estuarine Research Reserve (ANERR). The state acquired a 3-acre parcel in the middle of the area to be developed as a public education and recreation site. The site had experienced noticeable erosion in recent years as evidenced by the numerous tree stumps exposed in the water along a portion of the shoreline. Prior to acquisition of the site, concrete construction material and other debris was placed near the edge of the water along approximately 500 feet of the shoreline in an effort to prevent erosion.

Location and Directions

The Cat Point mitigation site is located along the southeastern shore of Cat Point in East Point, Florida (Figures 1 and 2) at approximately 29°43'N and 84°54'W in Section 31, Township 8S, Range 6W. Access is via Millender Street on the south side of Patton Drive.

Project Summary

The approved mitigation plan included removing old debris from 0.5 acre of shoreline, establishing a minimum marsh/breakwater area of 0.3 acre within the debris removal area, and restoring 0.3 acre of upland native habitat and vegetation on a strip landward of the created marsh. The marsh habitat includes the breakwater footprint, gaps in the breakwater, and areas of planted emergent vegetation. Planted marsh vegetation is intended to enhance the amount of habitat along this section of shoreline. Gaps in the breakwater allow flushing and ingress/egress of aquatic organisms utilizing the marsh area. The breakwater itself provides valuable hard substrate for various forms of estuarine epifauna.

The general project design was based on the specifications of a demonstration project implemented by ANERR in 1994. A breakwater of 2-3 foot diameter rock was placed approximately 10-25 feet offshore, roughly parallel to the shore with a 1:1 slope (6-foot base and 3 feet high; Figure 3). The base of the breakwater was located such that at Mean Low Water (MLW) it will be covered with several inches of water and at Mean High Water (MHW) approximately 0.5 to 1 foot of the breakwater will remain above the water surface. This placement was based on a 2-foot tidal range typical of Apalachicola Bay. Six foot wide breaks were located at 75-foot intervals along the breakwater.

MITIGATION ACTIVITIES

Description of Management Activities

The project was initiated in Fall 2003. Work commenced in Winter 2003/2004. Construction was completed in March 2004 and the site was allowed to stabilize for about three months during which time the terrestrial portion of the shoreline began to re-vegetate. Marsh planting was initiated in Spring/Summer 2004 with plantings occurring on June 4 and July 6 and 7. Clumps of smooth cordgrass (*Spartina alterniflora*) were collected from local marshes on the north side of Little St. George Island, transported intact to the site, and planted on 2-foot centers in the nearshore area. Initial plantings were accomplished in three to five rows just above and below the MHW line.

The success of marsh plantings was affected significantly by numerous tropical storm events over the next few years. During the late Summer and early Fall 2004, the shoreline was severely disturbed as three hurricanes passed through the Gulf, the most intense damage coming from Hurricane Ivan in late September 2004. Although the breakwater itself was undamaged, wave action was significant, overtopping the rock structure by several feet. Significant erosion occurred; a substantial portion of the planted cordgrass and significant upland vegetation were scoured. Hurricane Dennis, although landfall occurred near Pensacola in July 2005, brought an extreme storm surge in the Apalachicola area that damaged the marsh and upland areas. A series of new plantings was completed in August 2006 with over 3,000 new *Spartina alterniflora* tublings interspersed among the remaining shoots. Mortality was high on these tublings and replanting of approximately 1,500 plants took place in January 2007.

In September 2007, 6,000 upland plants of seven species – saltmeadow cordgrass (*Spartina patens*), railroad vine (*Ipomoea pes-caprae* subsp. *brasiliensis*), muhly grass (*Muhlenbergia capillaris*), shoreline seapurslane (*Sesuvium portulacastrum*), seacoast marshelder (*Iva imbricata*), salt bush (*Atriplex pentandra*), and beach panic grass (*Panicum amarum*) - were planted in the transition zone between the beach and the upland. An additional 500 *Spartina alterniflora* were planted to supplement the existing marsh. The first annual monitoring report was issued 21 December 2007 describing conditions with all plantings completed. Prior to the 2008 monitoring event, significant erosion and scouring occurred from multiple storms during the summer including Fay, Gustav and Ike, though none made landfall nearby. The 2010 monitoring event documented 80% survival of planted salt marsh materials.

The fourth annual monitoring of January, 2011 showed an intact breakwater supporting flora and fauna such as sea lettuce (*Ulva lactuca*), barnacles (*Balanus* sp.), and bivalves (*Crassostrea virginica* and *Brachidontes exustus*). The presence of these fouling organisms indicated good water quality, an increase in appropriate species diversity, and an increase in organisms that

provide food and water filtration services.

Anticipated Work Schedule for 2012

- Site conditions are steadily improving. Monitoring will occur on a 3 year interval starting with 2012.
- No replanting necessary. ANERR staff may do some limited plantings with students as part of their environmental education program.

MONITORING REQUIREMENTS

- Annual site inspection to determine planting success.
- Photo-documentation of site.
- Annual report posted at www.NWFWMDwetlands.com for duration of monitoring.

SUMMARY OF MONITORING ACTIVITIES

Monitoring Observations

The current monitoring was carried out on November 9, 2011, and consisted of a meandering pedestrian survey of both the intertidal marsh and transitional buffer zones. Photographs were taken; photo points are shown in Figures 4 and 5. Field sheets are attached documenting site conditions and listing observed species; several new floral species were found during the 2011 inspection and are discussed below.

The salt marsh restoration area exhibited 64% overall cover (GIS calculation) of *Spartina alterniflora* in three dense patches along the shoreline (Figures 4 and 5, Photo 1). There appeared to be very good survival of planted *Spartina alterniflora* as well as natural recruitment through both sexual and vegetative reproduction that is filling in the lower shoreline. Species planted or naturally recruited on the upper beach comprised approximately 60-70% overall cover (Photos 2-4). The *Spartina patens* planting from January 2010 shows over 80% survival and also exhibits both vegetative and sexual reproduction. Most of the other native beach species that were planted at the site in 2007 are still present; however these species are not present in large numbers indicating limited survival, probably due to past hurricane/storm events. Many of the planted and naturalized plant species were in fruit or flower at the time of the survey, indicating a trend toward greater species cover and an increase in the desired species composition. No nuisance or invasive exotic species were seen within the restoration area.

Of note is that there was a fairly consistent strip of bare sand, often with peaty material, parallel to the shoreline running between vegetated areas of the upper and lower beaches. Erosion was evident in the exposed tree roots and peat deposits on shore and stumps in nearshore water. Due to erosive events, the shoreline is now further separated from the breakwater. Initially established at 10-25 feet offshore, the breakwater is now approximately 50 feet from shore.

Several plant species not recognized in the prior year's report were observed in this inspection including: beggarticks (*Bidens alba*), St. John's wort (*Hypericum* sp.), railroad vine, red cedar seedlings and juveniles (*Juniperus virginiana*), muhly grass, glasswort (*Sarcocornia ambigua*), and perennial saltmarsh aster (*Symphyotrichum tenuifolium*). In flower were silverling (*Baccharis glomeruliflora*), camphorweed (*Heterotheca subaxillaris*), marshpennywort

(*Hydrocotyle* sp.), St. John's wort, smooth cordgrass, and perennial saltmarsh aster. Animal species observed included marsh periwinkle (*Littorina irrorata*) (Photo 5), moon snail (*Polinices duplicatus*), Eastern oyster (*Crassostrea virginica*) (Photo 5), fiddler crab (*Uca* sp.), hermit crab (*Pagurus* sp. and *Clibanarius vitatus*), monarch butterfly (*Danaus plexippus*), and Gulf fritillary (*Agraulis vanillae*). Tracks of raccoon (*Procyon lotor*) were seen.

Success Criteria

During the recent site inspection, the following success criterion specified in the USACE Permit (SAJ-2003-05450 NW-JWS) was evaluated; this criterion was met and exceeded as evidenced by the growth of the marsh and upland buffer vegetation.

Permit	Success Criterion	Condition Met
1	Minimum survival of planted smooth cordgrass/saltmarsh cordgrass (*Spartina alterniflora*) of 80% for three years.	Yes

In addition, the following performance standards, taken from the Northwest Florida Umbrella, Watershed-based, Regional Mitigation Plan (NWFWMD July 2006, revised March 2009) were evaluated during the recent site inspection; all success criteria were met.

Mitigation Plan	Restoration Success Criteria	Condition Met
RC1	Desired species showing evidence of increasing coverage.	Yes
RC2	Invasive exotic species cover ≤ 1% and nuisance native and non-invasive exotic species cover ≤ 5% of sites.	Yes
RC3	Increase in appropriate herbaceous, shrub and/or tree species.	Yes
RC4	Kind and total coverage of herbaceous species appropriate for management goals and target natural community.	Yes
RC5	Kind and total coverage of shrub species appropriate for management goals and target natural community.	Yes
RC6	Kind and total coverage of tree species appropriate for management goals and target natural community.	Yes
RC7	Maintain the ecological conditions so that the mitigation UMAM scores are met for each of the specified community types.	Yes

CONCLUSIONS

The salt marsh is doing very well, showing a strong increasing trend in cover and providing productive habitat for various types of wildlife. The increased distance between the breakwater and the shoreline after erosive storm events may have impeded marsh establishment by not providing protection from high energy waves. Despite the setback, the marsh has since become well established and gaps between marsh sections are expected to fill in, creating a continuous line of salt marsh behind the breakwater. The upper beach vegetation, though patchy, is continuing to fill in and is also being used by wildlife. The art of artificial breakwater positioning has yet to be perfected. Given that shorelines are inherently dynamic; this is likely to

be a recurring challenge. Success of plantings will largely depend on an establishment period free from tropical storms. Once suitable habitat is available, animals will utilize it.

As the five year monitoring period has expired, it is time to evaluate if this project can be released from the annual monitoring requirement.

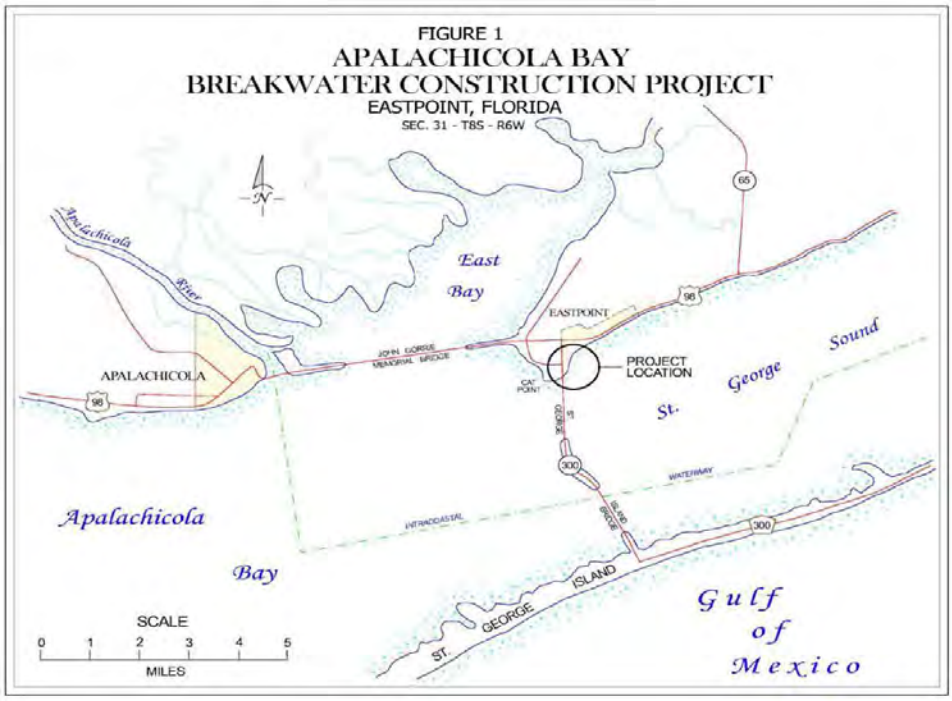

Figure 1. General location for the Cat Point mitigation site.

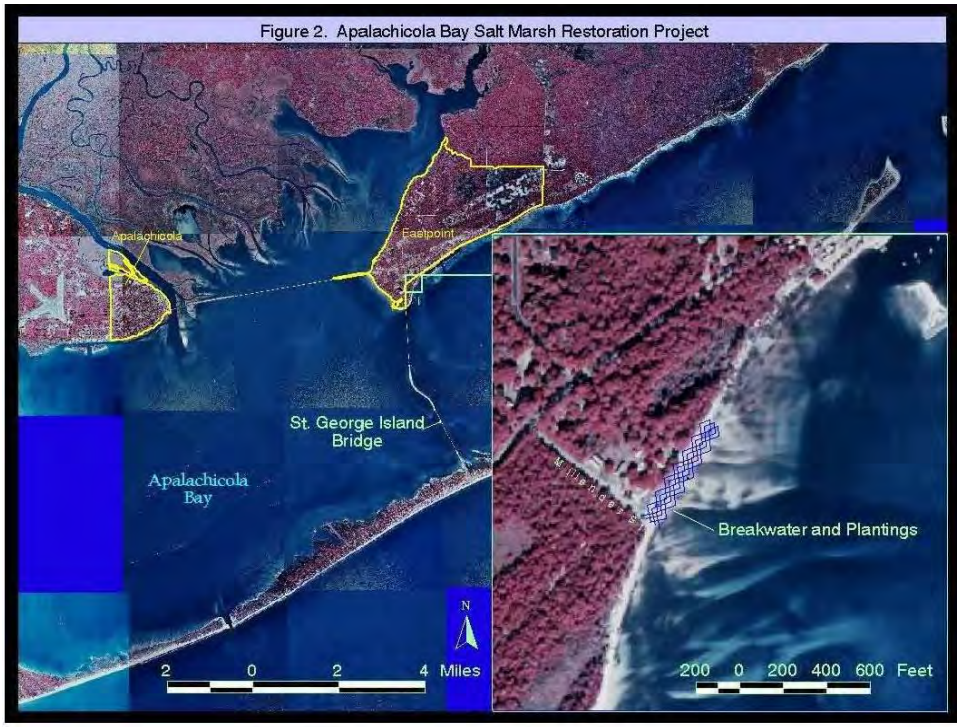

Figure 2. Aerial photograph with location of Cat Point mitigation site. RTN

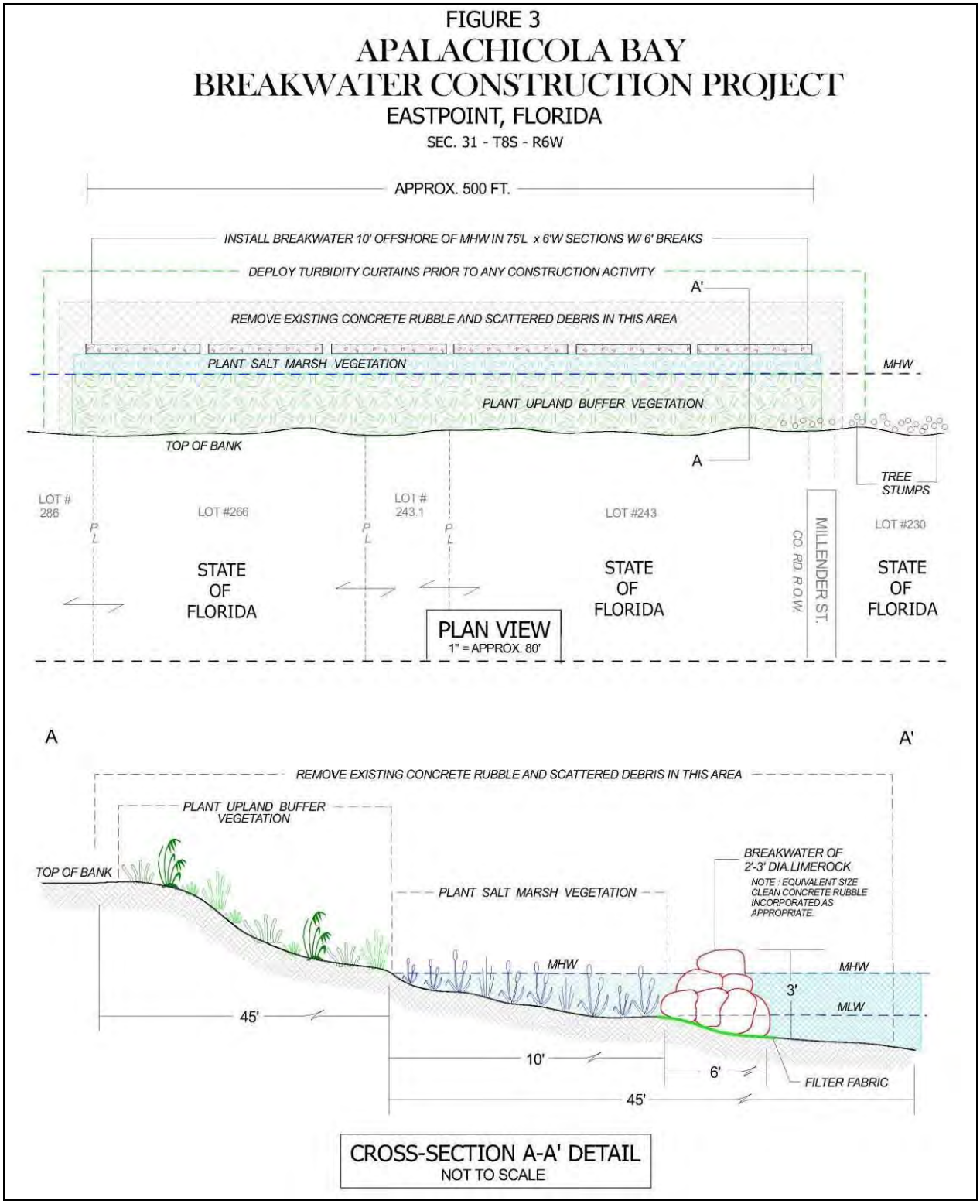

Figure 3. Schematic diagrams (plan and cross-sectional views) of Cat Point breakwater and planting design. RTN

Figure 4. Aerial photograph of mitigation site with location of photographic points indicated. At the time of inspection the marsh (indicated in bluegreen) had expanded to cover nearly the entire length of the breakwater.

RTN

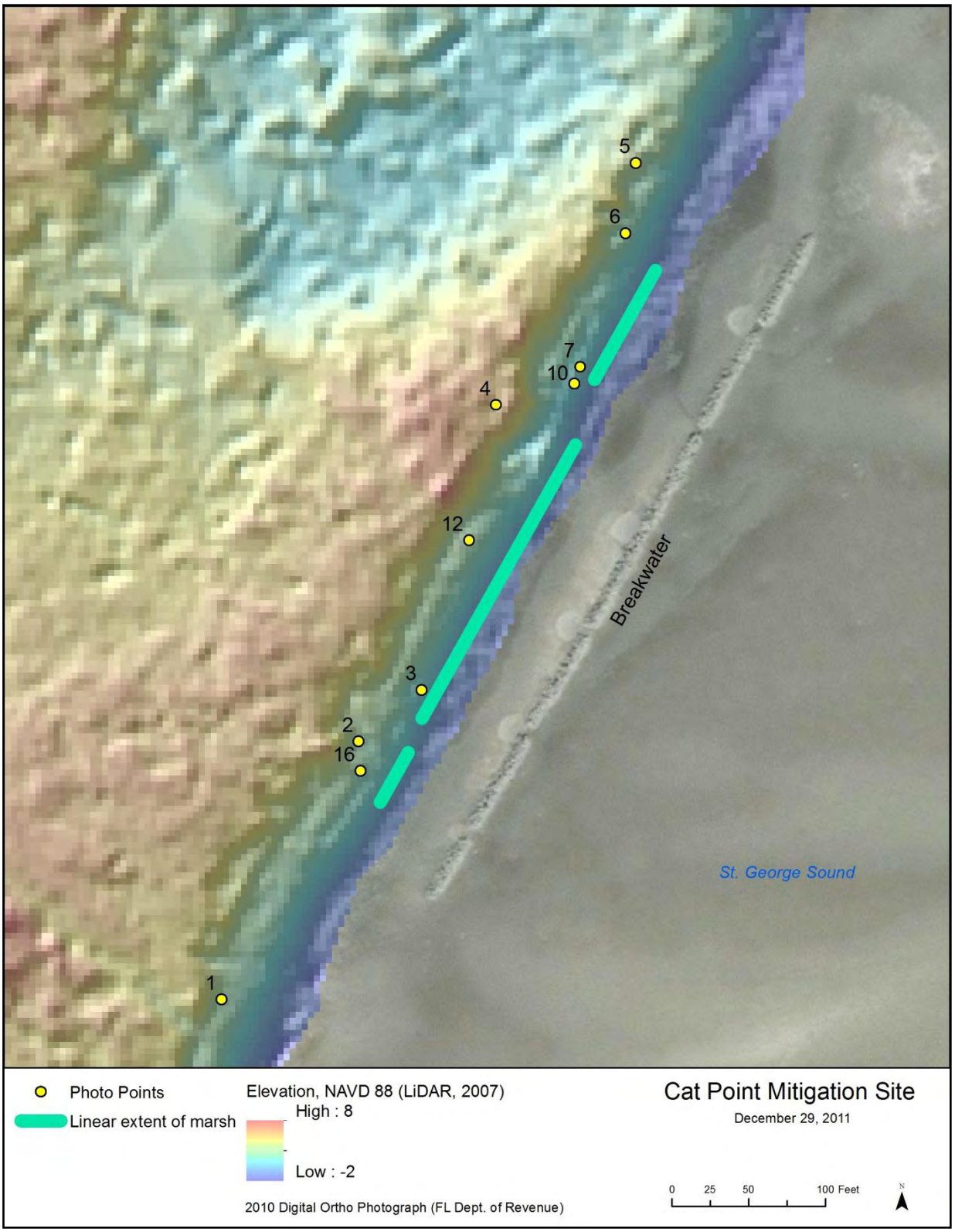

Figure 5. Topography of mitigation site with photo points indicated. RTN

Photo 1. Created marsh of *Spartina alterniflora* ; spreading vegetatively. Photo point 3, looking northeast. 11/09/2011. RTN

Photo 2. Upland buffer with marsh in background. Photo point 1, looking northeast. 11/09/2011. RTN

Photo 3. Scattered portions of marsh growing together. Photo point 4, looking east. 11/09/2011. RTN

Photo 4. Natural recruitment of upland plants in buffer. Photo point 10, looking southwest. 11/09/2011. RTN

Photo 5. Marsh periwinkle (*Littorina irrorata*) and Eastern oyster (*Crassostrea virginica*) were common in the created *Spartina alterniflora* marsh. 11/09/2011. RTN

Site Inspection Field Form	
Project: **Cat Point Breakwater**	Date: Nov 9, 2011
Name(s) of Data Collectors: Leigh Brooks, Graham Lewis	Weather: sunny, calm
Environmental Description: Shoreline to breakwater in Apalachicola Bay; salt marsh and buffer	
GPS Location: 29°43'54.63"N 84°53'1.61"W	Time: 12:30 pm

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:

The sign at the entrance is intact, the site is accessible to the public and is adjacent to a public park so trespassing is not an issue, and no exotic invasive species were seen along the perimeter or within the project boundaries.

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

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

The breakwater is intact and stable. Beach has shown signs of erosion from high winds and waves associated with recent storm activity but vegetation is colonizing and expanding nicely.

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

The fuel load is low throughout the mitigation/restoration area. The species composition is appropriate for a beach community along the Apalachicola Bay, cover will increase with time. The lower beach is dominated by approximately 60-80% overall cover of planted *Spartina alterniflora* which is surviving well and exhibiting both vegetative and sexual reproduction. The upper beach is dominated by typical coastal species and 50-60% cover of planted *Spartina patens* which is surviving well and is exhibiting both vegetative and sexual reproduction. No exotic species were observed.

RTN

Vegetation Assessment Field Form Qualitative Assessment	
Project: **Cat Point Breakwater**	Date: Nov 9, 2011
Name(s) of Data Collectors: Leigh Brooks, Graham Lewis	Weather: sunny, calm
Environmental Description: Shoreline to breakwater in Apalachicola Bay; salt marsh and buffer	
GPS Location: 29°43'54.63"N 84°53'1.61"W	Time: 12:30 pm
Nuisance Species: None	Fuel Load: Low

Wildlife Observations: Little blue heron, killdeer, sandpiper, many fiddler crab burrows, barnacles, oysters, and sea lettuce living on breakwater.
Water depth: Incoming tide; high at 3:53 pm
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? The restoration is trending towards success as exhibited by survival and vegetative and sexual reproduction of the planted species and the colonization of native beach vegetation.
Potential Problems and solutions: As previous storm events have shown a hurricane or storm could damage the planted vegetation on the beach.

Species	**Common Name**	**2010[1]**	**2011[2]**	**Dominant**
Aster sp.	Aster	X		
Atriplex pentandra	Salt bush	X		
Baccharis glomeruliflora	Silverling	X		
Bidens sp.	Beggarticks		X	
Cakile lanceolata	Coastal searocket	X		
Cenchrus spinifex	Coastal sandbur	X		
Cyperus sp.	Flatsedge	X		
Dichanthelium sp.	Witchgrass	X		
Eupatorium compositifolium	Yankeeweed	X		
Fimbristylis spadicea	Marsh fimbry	X		
Heterotheca subaxillaris	Camphorweed	X		
Hydrocotyle bonarensis	Marshpennywort	X		
Hypericum sp.	St. John's wort		X	
Ipomoea pes-caprae	Railroad vine		X	
Iva imbricata	Seacoast marshelder	X		
Juncus roemerianus	Black needlerush	X		
Juncus sp.	Needlerush	X		
Juniperus virginiana	Red cedar		X	
Muhlenbergia capillaris	Muhly grass		X	
Panicum amarum	Beach panic grass	X		
Paspalum sp.	Crowngrass	X		
Phytolacca americana	American pokeweed	X		
Pinus elliottii	Slash pine	X		
Sarcocornia ambigua	Perennial glasswort		X	
Schizachyrium maritimum	Little bluestem	X		
Serenoa repens	Saw palmetto	X		

Species	Common Name	2010[1]	2011[2]	Dominant
Sesuvium portulacastrum	Shoreline seapurslane	X		
Smilax bona-nox	Saw greenbriar	X		
Spartina alterniflora	Smooth cordgrass	X		X
Spartina patens	Salt meadow cordgrass	X		X
Sporobolus virginicus	Seashore dropseed	X		
Symphyotrichum tenuifolium	Perennial saltmarsh aster		X	

[1] 2010 species were taken from the previous annual report.
[2] 2011 species are only those new species not previously observed and reported in annual reports.

RTN