MILLER LEGG

January 26, 2009

Mr. Richard Stalker
Compliance Environmental Manager
Florida Department of Environmental Protection
400 North Congress Avenue, Suite 200
West Palm Beach, FL 33401

Re: S5-A Boat Ramp Mitigation
DEP Permit No. 50-0220536-001
ML Project No. 04-00114

Dear Richard,

The purpose of this letter is to submit the 4th Annual Monitoring Report for the S-5A Boat Ramp Mitigation project.

This report was prepared in accordance with the Florida Department of Environmental Protection (FDEP) Permit No. 50-0220536-001. The mitigation plantings were completed on November 22, 2004. The site visit was conducted on December 22, 2008 to collect data and make observations for the enclosed report. Overall the mitigation area is exhibiting decent coverage by native species. Native coverage has increased slightly from last year while nuisance/exotic species present is less than 1%.

If you have any questions or require additional information, please call John Tessier or me at (561) 689-1138.

Sincerely,

Mark E. Brandenburg, C.E., P.W.S.
Associate, Environmental

MB/jt/mb
Enc.
cc: Marjorie Moore, SFWMD
Larry Fink, SFWMD

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Palm Beach Office: 2005 Vista Parkway · Suite 100 · West Palm Beach, Florida · 33411-2719
(561) 689-1138 · Fax: (561) 689-8108
www.millerlegg.com

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January 6, 2009

Mr. Cameron Shaw
United States Army Corps of Engineers
PO Box 4970
Jacksonville, FL 32232-0019

Re: S5-A Boat Ramp Mitigation
USACOE Permit No. SAJ-2004-1059
ML Project No. 04-00114

Dear Cameron,

The purpose of this letter is to submit the 4th Annual Monitoring Report for the S-5A Boat Ramp Mitigation project.

This report was prepared in accordance with the United States Army Corps of Engineers Dredge and Fill Permit No. SAJ-2004-1059. The mitigation plantings were completed on November 22, 2004. The site visit was conducted on December 22, 2008 to collect data and make observations for the enclosed report. Overall the mitigation area is exhibiting decent coverage by native species. Native coverage has increased slightly from last year while nuisance/exotic species present is less than 1%.

If possible we request that a read receipt from your office be emailed to jtessier@millerlegg.com to verify that you have received this monitoring report. If you have any questions or require additional information, please call John Tessier or myself at (561) 689-1138.

Sincerely,

Mark E. Brandenburg, C.E., P.W.S.
Associate, Environmental

MB/jt/mb
Enc.
cc: David Black, SFWMD
Larry Fink, SFWMD

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John Tessier

From: Shaw, Cameron S SAJ [Cameron.S.Shaw@usace.army.mil]
Sent: Wednesday, January 21, 2009 2:14 PM
To: John Tessier
Subject: FW: 2004-1059

-----Original Message-----
From: Shaw, Cameron S SAJ
Sent: Wednesday, January 21, 2009 1:53 PM
To: 'jtessier@millerleff.com'
Subject: 2004-1059

Received 4th annual monitoring report

MILLER LEGG

January 6, 2009

RECEIVED

JAN 26 2009

DEPT of ENV PROTECTION
WEST PALM BEACH

Mr. Richard Stalker
Compliance Environmental Manager
Florida Department of Environmental Protection
400 North Congress Avenue, Suite 200
West Palm Beach, FL 33401

Re: S5-A Boat Ramp Mitigation
DEP Permit No. 50-0220536-001
ML Project No. 04-00114

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This report was prepared in accordance with the Florida Department of Environmental Protection (FDEP) Permit No. 50-0220536-001. The mitigation plantings were completed on November 22, 2004. The site visit was conducted on December 22, 2008 to collect data and make observations for the enclosed report. Overall the mitigation area is exhibiting decent coverage by native species. Native coverage has increased slightly from last year while nuisance/exotic species present is less than 1%.

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F:\PROJECTS\2005\05-00090 S5A Annual Mitigation Monitoring\Reports\4th Annual Monitoring Report\4YearCoverLtr_FDEP.doc

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MILLER LEGG

S-5A BOAT RAMP MITIGATION AREA

"Improving Communities ...

... Creating Environments"

4th Annual Monitoring Report
December 2008

ERP Permit #50-0220536-001
USACOE Permit #SAJ-2004-1059
Miller Legg Project #05-00090

Prepared for:
South Florida Water Management District

S-5A Mitigation Monitoring
4th Annual Monitoring Report

TABLE OF CONTENTS

I. Project Overview

- USACOE Permit No. SAJ-2004-1059 (Date Issued: 1/27/04)

- **Permittee**: South Florida Water Management District
  3301 Gun Club Rd.
  West Palm Beach, FL 33406
  561-686-8800

  Consultant: Miller Legg
  2005 Vista Parkway Suite 100
  West Palm Beach, FL 33411
  Phone # 561-689-1138

- **Field Visit Information**: Reviewed on 12/22/2008 by John Tessier

- **Project Summary**: The S-5A boat ramp replacement project is located within unincorporated Palm Beach County, Florida. For this project, the Department of Environmental Protections (FDEP) and the United States Army Corps of Engineers (USACOE) required ±2.0 acres of onsite mitigation, which included marsh area planting and eradication of exotic/nuisance plant species.

- **Project Location**: The project is located south of Southern Boulevard, east of 20 Mile Bend, on the northern tip of the Arthur R. Marshall Loxahatchee National Wildlife Refuge within Section 6, Township 44S, Range 43E, in unincorporated Palm beach County, Florida (Figure 1).

- **Directions to Mitigation Site**: From Florida's Turnpike, go west on Southern Boulevard (US 441) for 13.6 miles to County Road 880. Turn left (south) on CR-880 and go over the bridge. Make the first left (east) after the bridge onto Twenty Mile Bend Boat Ramp Road. Continue to 0.9 miles and pass through the yellow gates, the mitigation area is on the right.

- **Mitigation Completion Date**: November 22, 2004

- **Compliance Status** – Native vegetation is increasing slightly and nuisance coverage has decreased below the threshold.
  - Marsh
    - Desirable herbaceous plant coverage is at ±69% overall
    - Nuisance/exotic plant coverage is <1% overall

- **Date of Last Maintenance Activities**: 9/2005

- **Maintenance Recommendations**: Some clusters of cattail (*Typha* sp.) and castor bean (*Ricinus communis*) are located to the east, mainly along the north banks and a few primrose willow (*Ludwigia peruviana*) are also in the eastern half of the mitigation area. Efforts will be coordinated with maintenance personnel to target and eliminate these problem areas.

II. Requirements

- Permit Success Criteria

  - A minimum of 80% coverage by desirable wetland species after two (2) years and a demonstration of persistence for three (3) additional years.

  - Less than 5% coverage by invasive exotic and undesirable species is allowable if plants are dispersed and not concentrated in any particular area. Exotic and undesirable species include, but are not limited to melaleuca (*Melaleuca quinquenervia*), Australian pine (*Casuarina equisetifolia*), Brazilian pepper (*Schinus terebinthifolius*), bishop wood (*Bischoffia javanica*), torpedo grass (*Panicum repens*), primrose willow (*Ludwigia peruviana*), and cattail (*Typha* sp.). Treatment efforts must be tailored to prevent these species from becoming reproductively mature.

  - A minimum of 80% survival of each planted species. This rate shall be maintained each quarter except where species composition, density of planted and recruited species and overall wetland condition, growth rates and viability of the areas, are of higher quality, as determined by the regulatory agencies.

  - Hydrologic conditions and soil characteristics are in general conformity to those specified in the plans. Data from the permanent surveyed staff gauges must be collected every two weeks and submitted with the quarterly monitoring reports.

  - Any preserved/planted species shall be maintained as to exhibit new growth and/or propagation, viability, and overall health.

Table 1. Success Criteria Evaluation.

Success Criteria	Percent Coverage/Survivorship per Monitoring Period (for Entire Site)					
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
80%+ Hydrophyte Cover.	8.3%	51.5%	64.5%	67.4%	68.5%	
<5% Invasive/Ex. Cover.	0%	3.5%	2.4%	1.1%	<1%	

TABLE 1

S5-A Mitigation - 4th Annual Monitoring Report, December 22, 2008
Quadrat Data and Mean Percent Coverages

SPECIES	COMMON NAME	TRANSECT 1 QUADRAT 1	TRANSECT 1 QUADRAT 2	TRANSECT 1 QUADRAT 3	TRANSECT 1 QUADRAT 4	TRANSECT 1 QUADRAT 5	TRANSECT 1 QUADRAT 6	TRANSECT 1 QUADRAT 7	TRANSECT 1 QUADRAT 8	TRANSECT 1 QUADRAT 9	TRANSECT 1 QUADRAT 10	MEAN
Acrostichum danaeifolium	leatherfern											0.0
Ambrosia artemisiifolia	common ragweed											0.0
Andropogon virginicus	broomsedge	7										0.7
Bacopa monnieri	water hyssop	5	7			5	15	50	30	7	5	11.9
Bidens sp.	Spanish needles					3					3	1.8
Canna flaccida	yellow canna											0.0
Centella asiatica	coinwort											0.0
Chara sp.	musk grass											0.0
Chrysobalanus icaco (seedling)	cocoplum											0.0
Cladium jamaicense	sawgrass											0.0
Conoclinium coelestinum	mistflower					40	10					5.0
Crinum americanum	swamp lily											0.0
Cyperus sp.	sedge											0.0
Dactyloctenium aegyptium	crow foot grass											0.0
Dichromena colorata	star rush											0.0
Echinochloa sp.	barnyard grass											0.0
Eclipta alba	false daisy					3						0.3
Eleocharis cellulosa	spikerush			25	12		25	35	45	50	60	25.2
Eleocharis geniculata	spikerush					2						0.2
Eleocharis interstincta	spikerush											0.0
Erigeron sp.	daisy fleabane										3	0.3
Flaveria linearis	yellow top											0.0
Hydrocotyle umbellata	marsh pennywort						2					0.2
Iris hexagona	southern blue flag											0.0
Juncus effusus	soft-rush											0.0
Lachnocaulon sp	bog buttons											0.0
Lippia nodiflora	capeweed											0.0
Ludwigia repens	red ludwigia		5	12	20							3.7
Ludwigia sp.	water primrose											0.0
Mitreolea petiolata	Stalked miterwort											0.0
Nymphea odorata	fragrany water lily											0.0
Panicum hemitomon	maidencane											0.0
Panicum sp.	red top grass											0.0
Phyla nodiflora	frog fruit					7						0.7
Pluchea sp.	fleabane						7					0.7
Polygonum hydropiperoides	smartweed		5	5					2	2	2	1.6
Pontederia cordata	pickerelweed					5						0.5
Proserpinaca paulustris	mermaidweed											0.0
Rhyncospora sp.	beakrush					7						0.7
Sagittaria lancifolia	duck potato	50	60		12							12.2
Sagittaria lattofolia	arrowhead											0.0
Saururus cernuus	lizard's tail											0.0
Scirpus sp.	bulrush											0.0
Stenotaphrum secundatum	St. Augustine grass											0.0
Tripsacum dactyloides	Fakahatchee grass											0.0
Thalia geniculata	Fireflag				35							3.5
												0.0
												0.0
	TOTAL	62	77	42	79	72	57	87	77	59	73	68.5
EXOTIC/NUISIANCE SPECIES												
Ludwigia peruviana	primrose willow											0.0
Panicum repens	torpedo grass											0.0
Typha sp.	cattail											0.0
Vigna luteola	cowpea											0.0
Alternanthera philoxeroides	alligator weed											0.0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0.0
Non-vegetated/Detritus		38	23	58	21	28	43	13	23	41	27	31.5
	TOTAL	100	100	100	100	100	100	100	100	100	100	100.0

Photo1 – East end of transect, facing south.

Photo 2 - East end of transect, looking west.

Photo 3 – East end of transect, looking north.

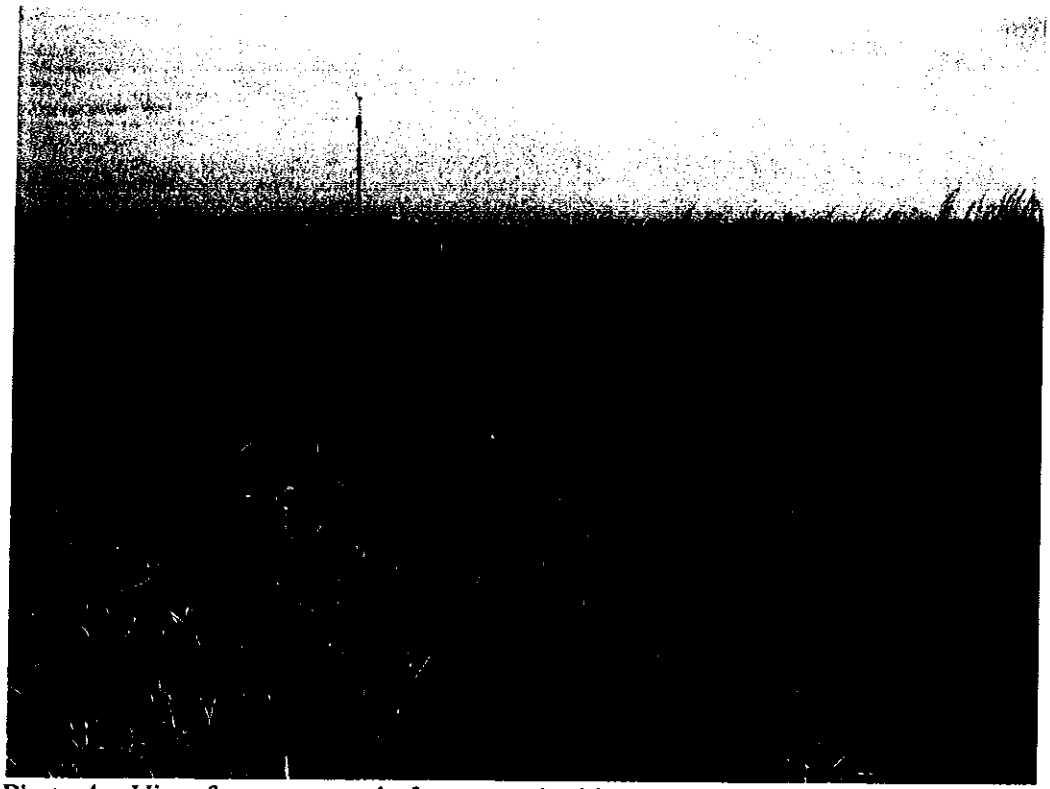


Photo 4 – View from west end of transect, looking east.

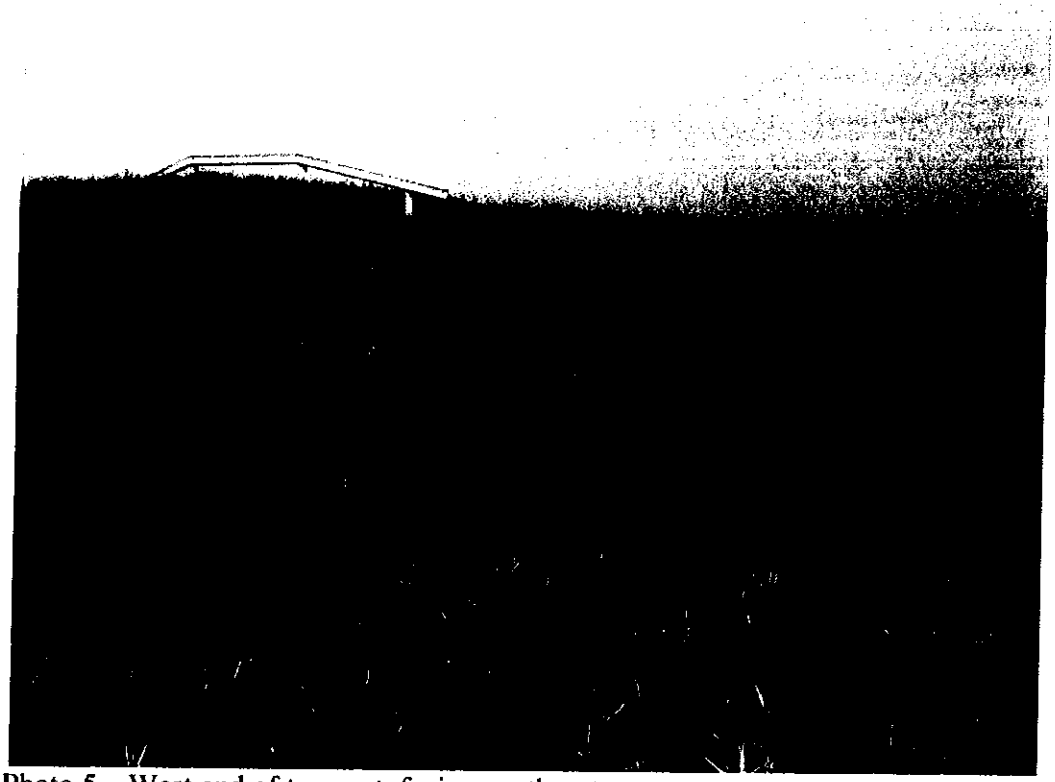


Photo 5 – West end of transect, facing northeast.

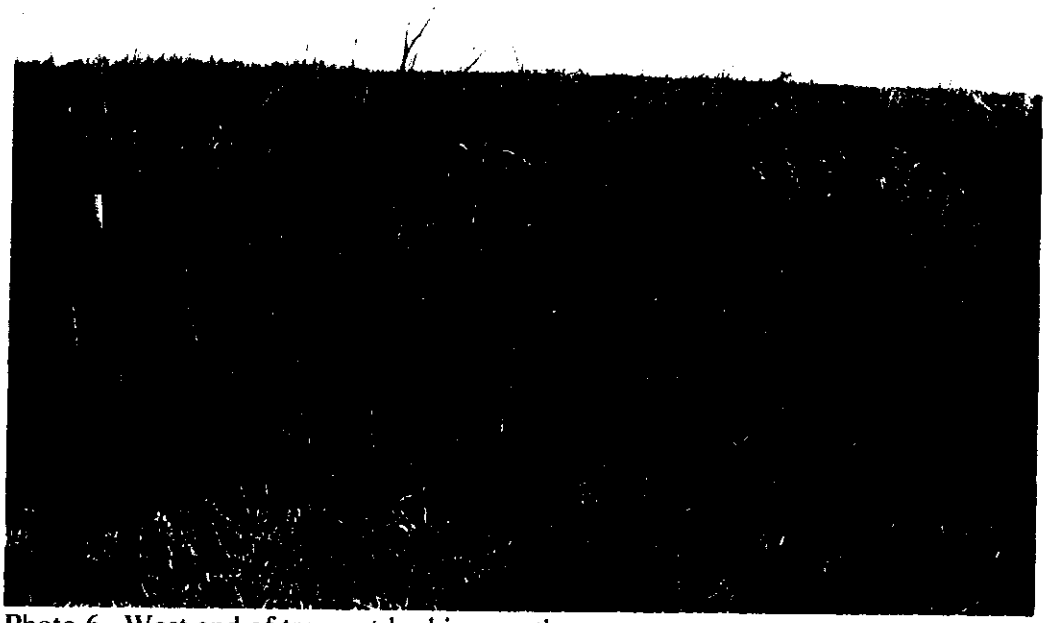
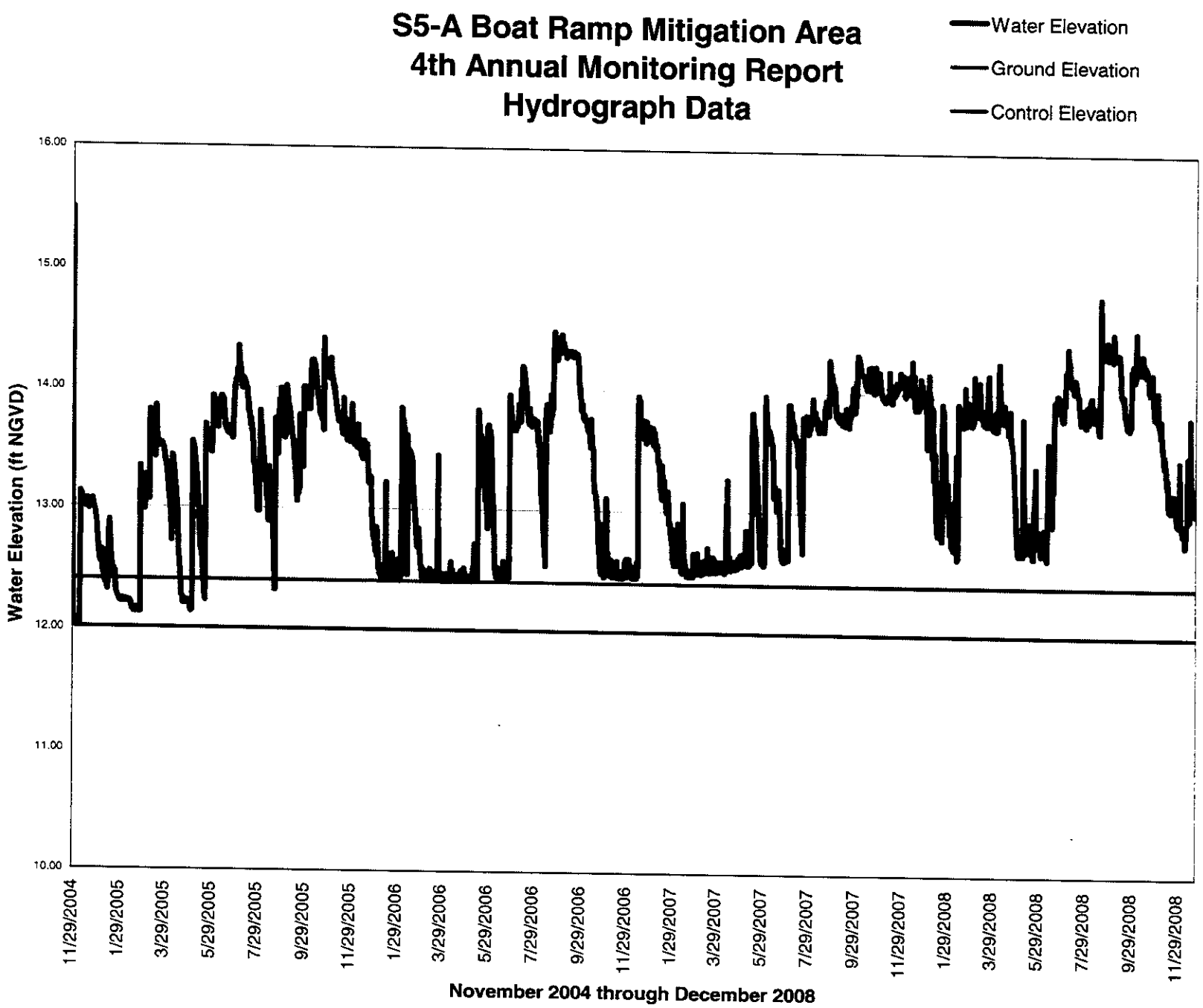


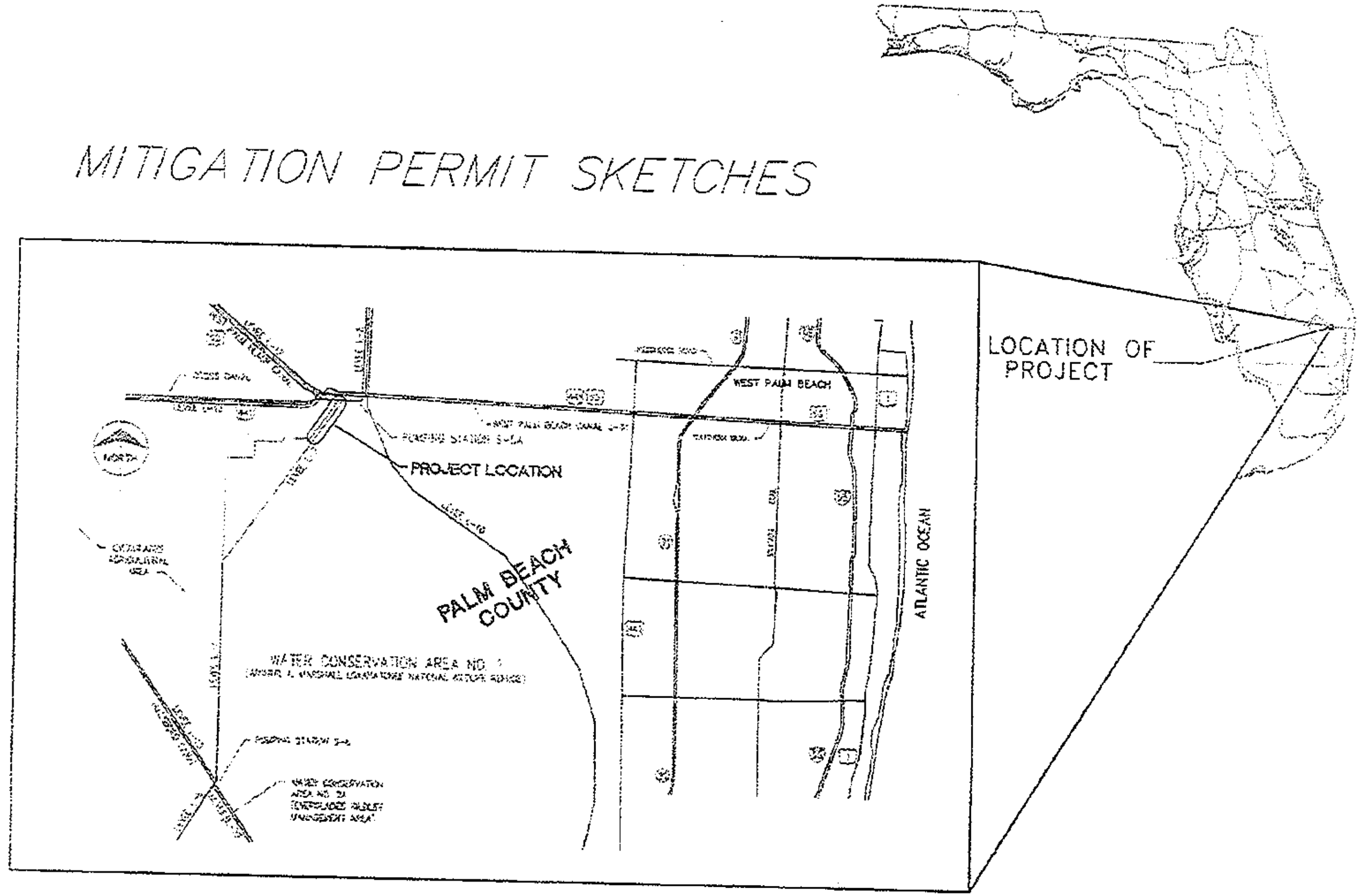
Photo 6 –West end of transect looking south.

S5-A Boat Ramp Mitigation Area
4th Annual Monitoring Report
Hydrograph Data



V:\Non-Project\Environmental\S5A\03-00125 Permit Sketches.DWG Tue 10/14/2003 10:19a By adipiero

MITIGATION PERMIT SKETCHES



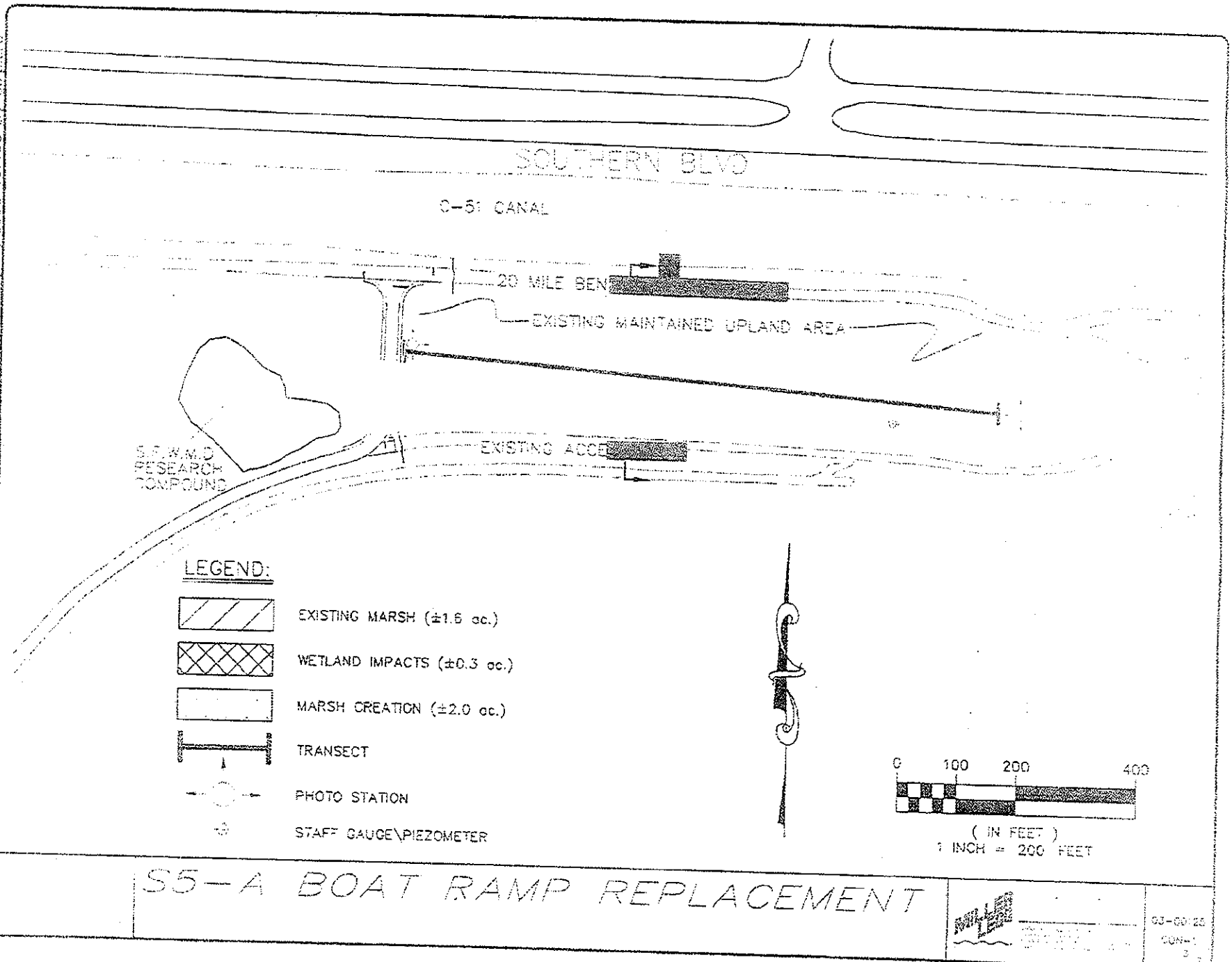
SECTION 5, TOWNSHIP 44, RANGE 40

LOCATION MAP

N.T.S.

S5-A BOAT RAMP REPLACEMENT

03-00125


SOUTHERN BLVD
C-51 CANAL
20 MILE BEND
EXISTING MAINTAINED UPLAND AREA
S.F.W.M.D. RESEARCH COMPOUND
LEGEND:
EXISTING MARSH (±1.6 ac.)
WETLAND IMPACTS (±0.3 ac.)
MARSH CREATION (±2.0 ac.)
TRANSECT
PHOTO STATION
STAFF GAUGE\PIEZOMETER
0 100 200 400
(IN FEET)
1 INCH = 200 FEET
S5-A BOAT RAMP REPLACEMENT

VI. Conclusions

Coverage by desirable, native hydrophytes within the marsh area has increased to ±69%, slightly up from the ±67% for the previous monitoring event. Installed plants appear to display new growth from and have begun to recruit naturally. Species present in relatively high abundance include spikerush (*Eleocharis cellulosa*), water hyssop (*Bacopa monnieri*), red ludwigia (*Ludwigia repens*), sawgrass (*Cladium jamaicense*), and duck potato (*Sagittaria lancifolia*). No nuisance species were recorded within the transects. The west side of the mitigation area remains nearly free of exotic coverage while east side continues to have some minor issues. The previously treated castor bean still persists mainly in the far eastern side of the mitigation area. Continued treatment is recommended as it will continue to prevent further encroachment of this species into the area. Some cattail coverage exists in scattered clusters throughout the mitigation area and will need to be monitored. Efforts to eliminate these nuisance species will be made as maintenance personnel will be notified of the problem areas.

The wetland community has had time to establish itself and as a result is beginning to provide additional habitat for various wildlife species. Some incidental wildlife observations include; raccoon (*Procyon lotor*) tracks, great blue heron (*Ardea herodias*), marsh rabbit (*Sylvilagus palustris*), loggerhead shrike (*Lanius ludovicianus*), killdeer (*Charadrius vociferus*), least sandpiper (*Calidris minutilla*), osprey (*Pandion haliaetus*), mockingbird (*Mimus polyglottos*), and black vulture (*Coragyps atratus*).

Overall the mitigation area appears to be doing very well. The west side of the wetland continues to be free of significant nuisance/exotic species, while the east has slightly improved but could benefit from some additional treatment in the transitional areas. Since the last monitoring event in September 2005 the site has showed promising natural results as the exotic coverage remains low and native coverage increased without treatment. While the mitigation area itself has not been treated recently, areas of concern surrounding it have been. Some re-growth of the castor bean that was noted in previous reports has been observed. Cattail coverage to the east has been reduced and exists only in small concentrated clusters, but overall coverage by native species appears to be limiting the further spread of the cattail.

We look forward to documenting the growth and spread of native herbaceous species (both installed and naturally recruited) as this mitigation area continues to mature.