

THE ROCK PONDS ECOSYSTEM RESTORATION PROJECT – A TRUE MOSAIC OF HABITATS FOR TAMPA BAY

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Surface Water Improvement
and Management (SWIM)
Program of the Southwest
Florida Water Management
District

In cooperation with
Hillsborough County Parks,
Recreation, and Conservation
Department

Design Consultants: Scheda
Ecological Associates, Inc. and
5M Civil LLC

HABITAT MOSAICS

Low and high marsh

Mangrove forest

Salterns

Mudflats

Shallow and deep open water

Hard bottom

Seagrass meadows

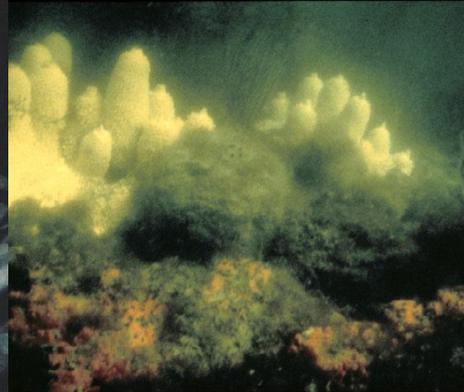
Tidal creeks

Transitional habitats

Island hammocks

Freshwater wetlands

Uplands



Tampa Bay Habitat Mosaics



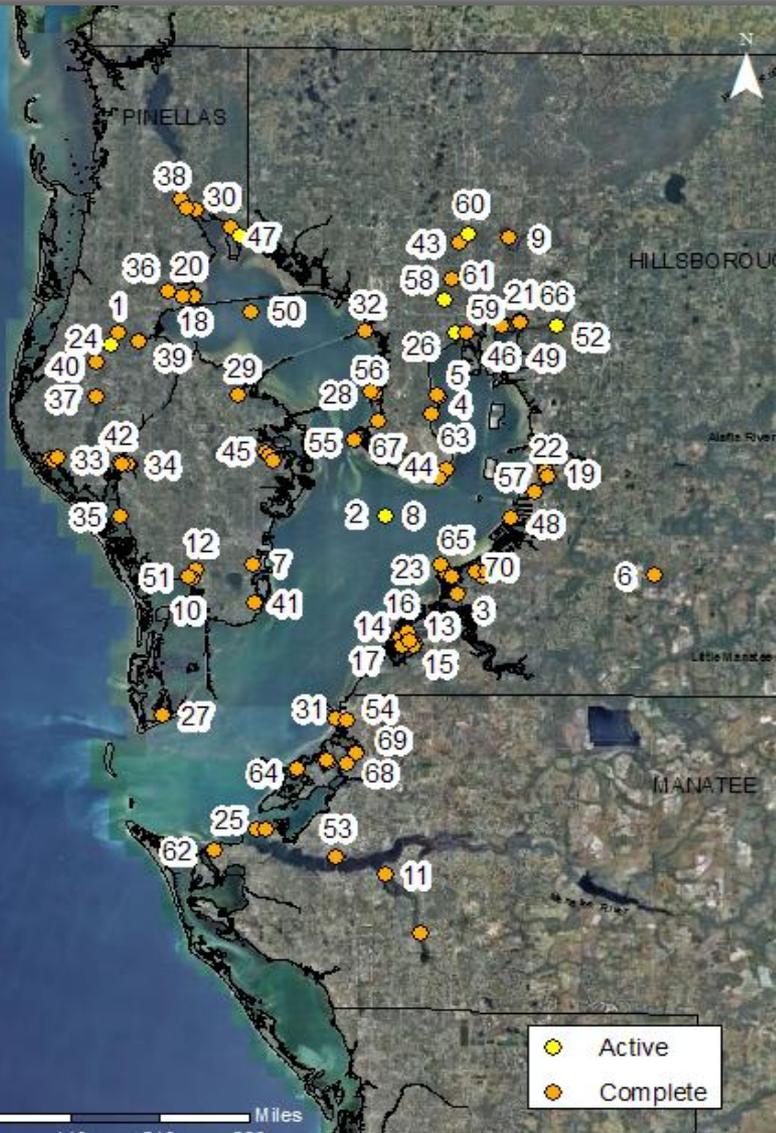
Southwest Florida
Water Management District

Habitat
Mosaics

=

Ecosystem
Restoration

Tampa Bay Habitat Restoration Projects



1988-2014

Pinellas,
Hillsborough,
and Manatee
Counties



- 95 Completed = 3838 ac
- >15 Ongoing
- Small Urban Projects
- Small to Large Ecosystem
- Partnerships
- Sarasota Bay
Charlotte Harbor

SWIM HABITAT RESTORATION: Tampa Bay Acreage 1989 - 2014

1989.....	3.0 ac	2002.....	209.3 ac
1990.....	16.5 ac	2003.....	37.0 ac
1991.....	17.5 ac	2004.....	578.0 ac
1992.....	8.5 ac	2005.....	109.0 ac
1993.....	22.0 ac	2006.....	364.6 ac
1994.....	13.6 ac	2007.....	86.2 ac
1995.....	13.5 ac	2008.....	134.5 ac
1996.....	19.5 ac	2009.....	47.9 ac
1997.....	94.0 ac	2010.....	135.0 ac
1998.....	64.0 ac	2011.....	422.0 ac
1999.....	163.4 ac	2012.....	162.0 ac
2000.....	50.0 ac	2013.....	370.7 ac
2001.....	184.0 ac	2014.....	315.3 ac

95 projects
in 25 years

Total = 3838 ac (6 sq. miles)

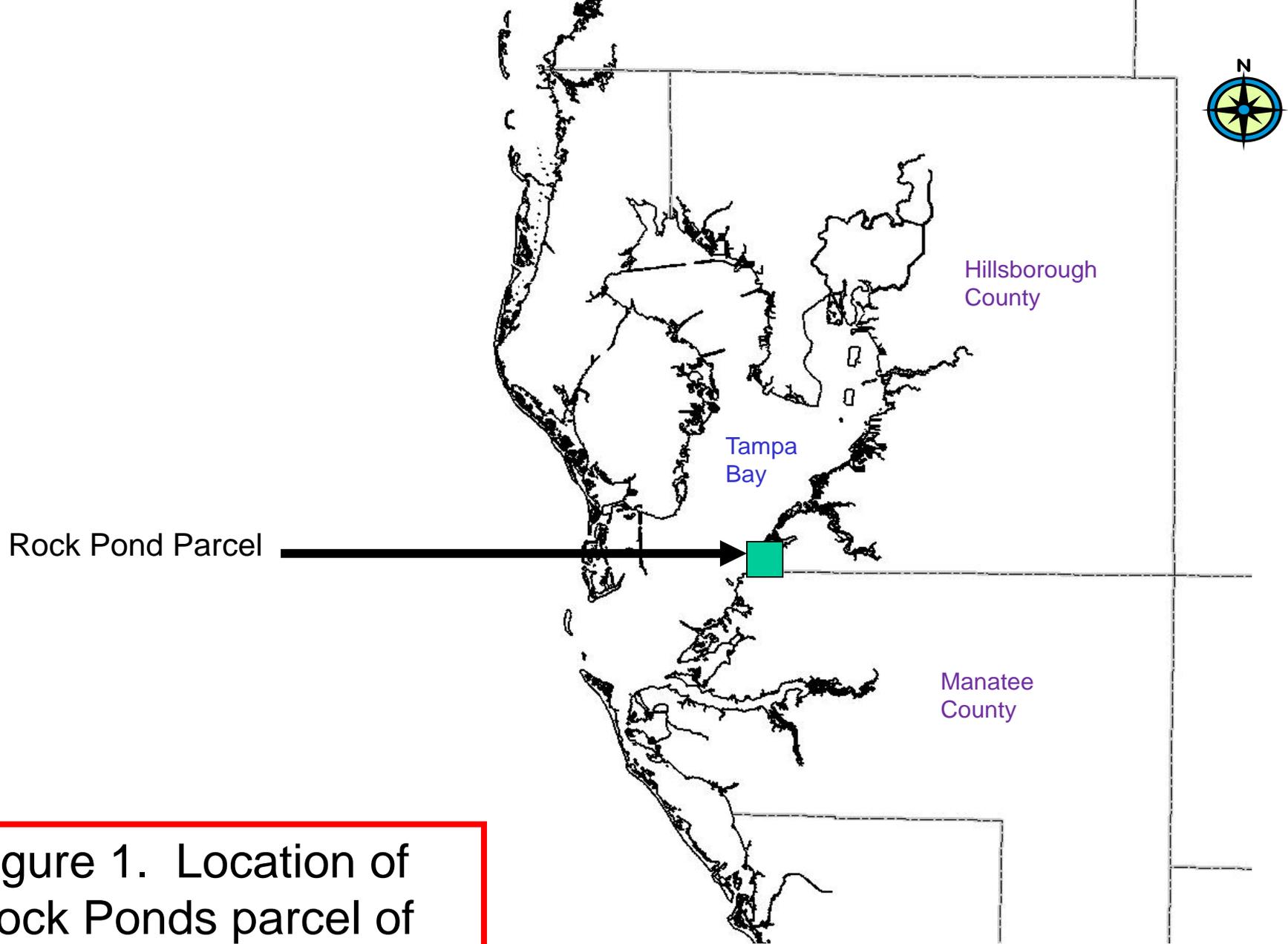


Figure 1. Location of Rock Ponds parcel of Tampa Bay

The logo for the Southwest Florida Water Management District is located in the top left corner. It features the text "Southwest Florida" in a serif font above "Water Management District" in a smaller serif font. Below the text are three stylized, wavy lines representing water. The logo is set against a background of a large, faint, circular seal that contains a map of Florida and the words "SOUTH FLORIDA WATER MANAGEMENT DISTRICT".

Southwest Florida
Water Management District

This is the Largest Single Coastal
Ecosystem Restoration Project
Ever Done for Tampa Bay

Southwest Florida
Water Management District

Project Design



GPS Mapping and Design

Create Habitat Mosaics

Restore Historical Habitats

Retention of Extant Native Habitats

Use of Freshwater Flows and Some Stormwater Polishing

Restore Hydrology

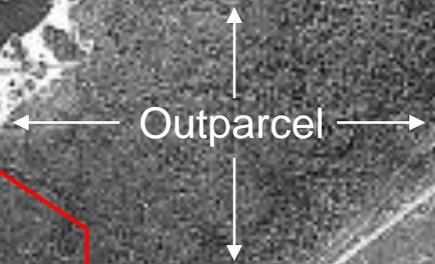
Accommodate Sea Level Rise



Review of Historical Aerials

Tampa Bay

Cockroach Bay



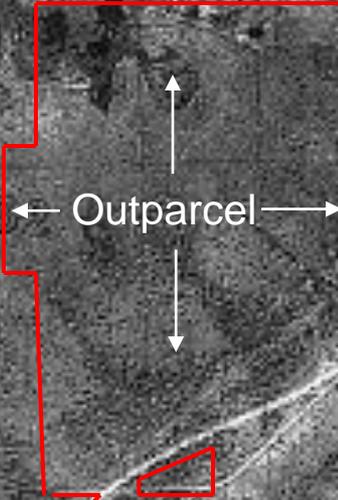
30

1 144

OV 21 1938

80F

1 137



1938 Aerial of Pre-Restoration Rock Ponds (property boundaries in red) 2543 ac

31

30



Tampa Bay

Cockroach Bay

Sun City

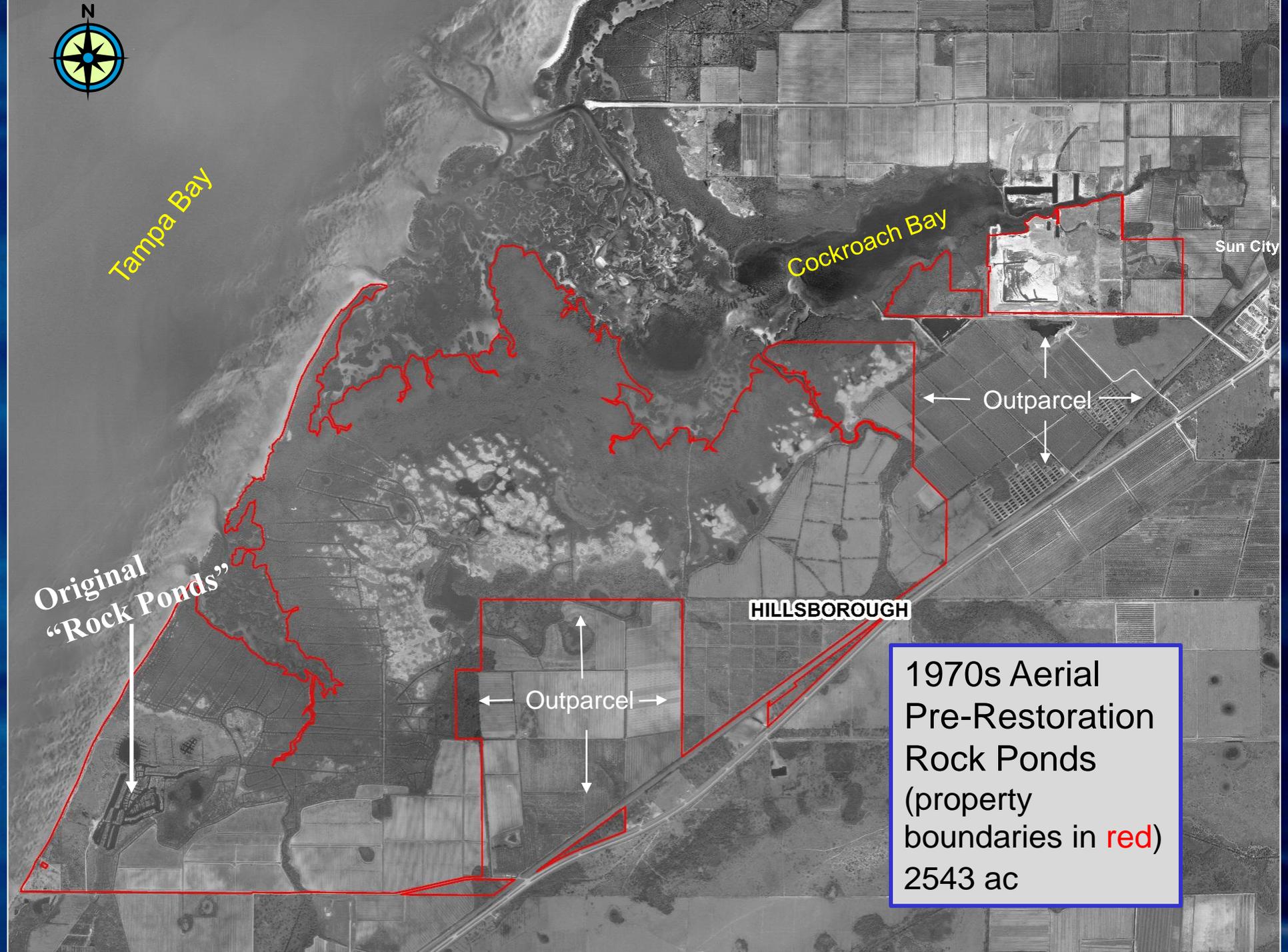
← Outparcel →

Original
"Rock Ponds"

HILLSBOROUGH

← Outparcel →

1970s Aerial
Pre-Restoration
Rock Ponds
(property
boundaries in red)
2543 ac





Tampa Bay

Cockroach Bay Ecosystem Restoration Project on North Side of Cockroach Bay



Cockroach Bay

Borrow Pit Restoration Sector

Central Restoration Sector

← Outparcel →

Western Restoration Sector

← Outparcel →

41

41

Hillsborough County

Manatee County

2013 Aerial Pre-Restoration Rock Ponds (property boundaries in red) 2543 ac

Freshwater Flows and Stormwater Polishing



Extensive GPS Habitat Mapping



Use Water Data to Understand Hydrology



Piezometers to Collect Over Two Years of Groundwater Data



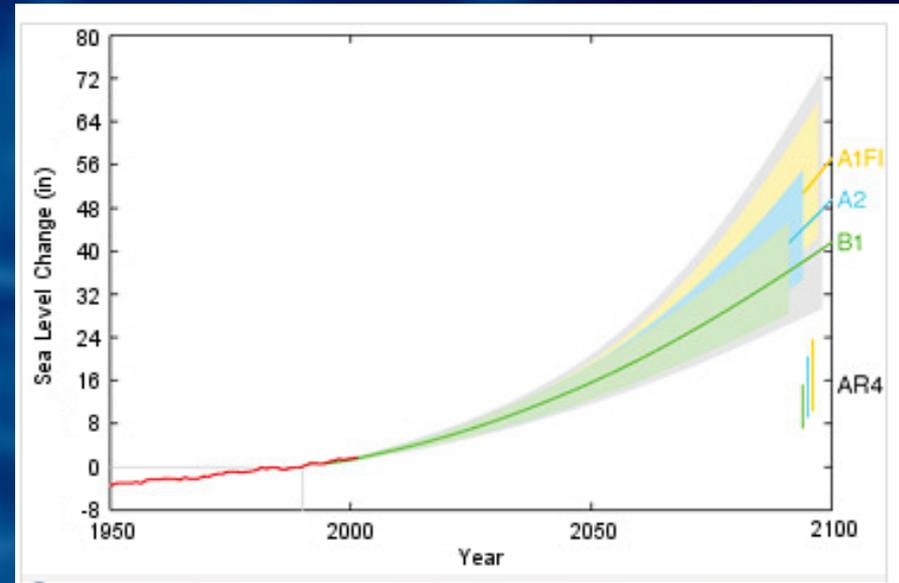
Locate Internal Agricultural Ditches



and Agricultural Water Control Structures

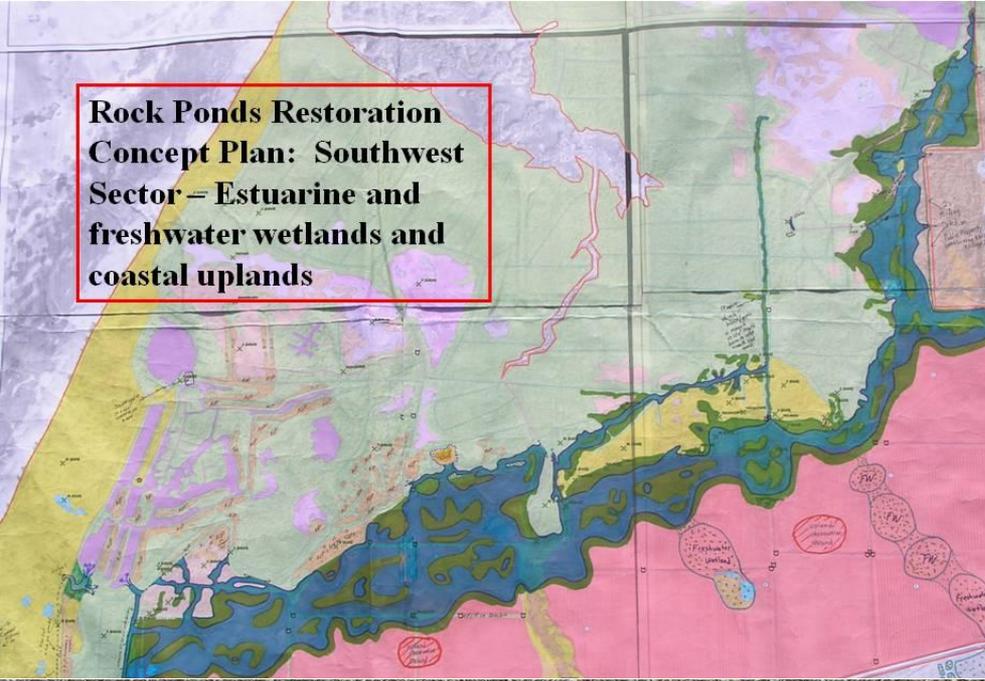
Design took into consideration projected sea level rise over the next 100 years and incorporated a lot of high marsh, transitional, and upland habitats, allowing habitat transition upslope.

“Sea level rise is one of the most pronounced effects of climate change. The latest projection from the United Nation’s Intergovernmental Panel on Climate Change has seas levels rising anywhere from 0.8 to 3.2 feet by the end of the century.” NPR 3/11/14

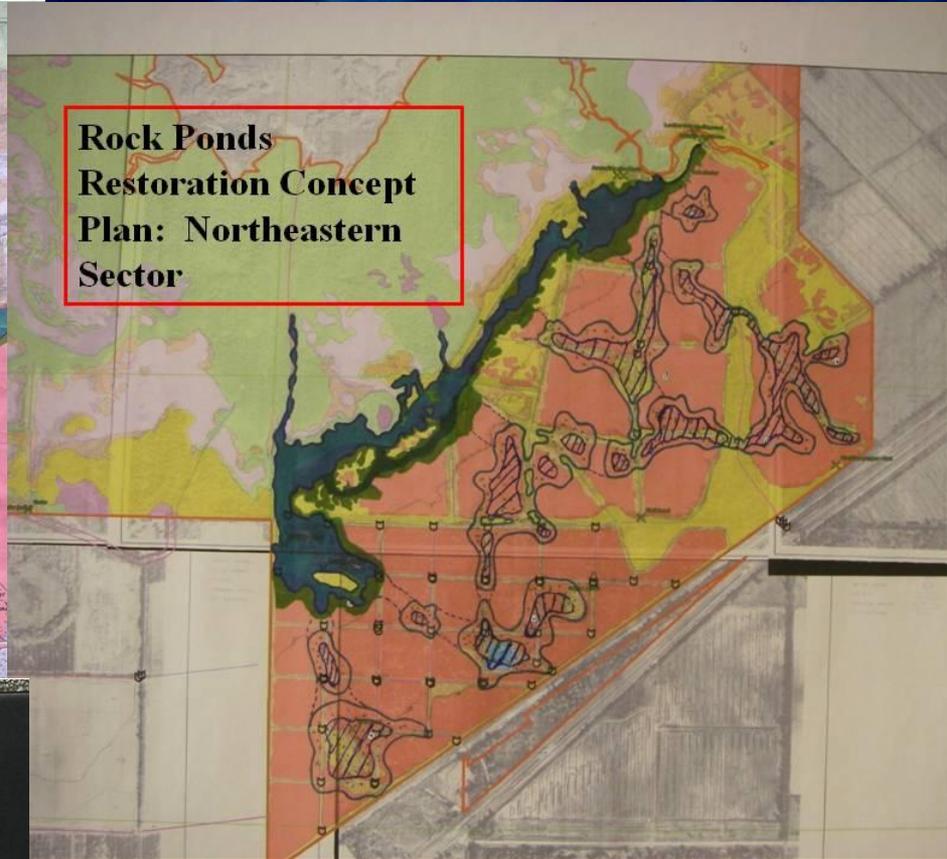


“Past and projected sea level rise from 1800 to 2100. The orange line...[A1F1 above] shows the currently projected range of sea level rise of 1 to 4 feet by 2100; the wider range (0.66 feet to 6.6 feet) reflects uncertainty about how glaciers and ice sheets will react to climate change. Source: [National Climate Assessment, 2014.](http://www3.epa.gov/climate_change)”
www3.epa.gov/climate_change

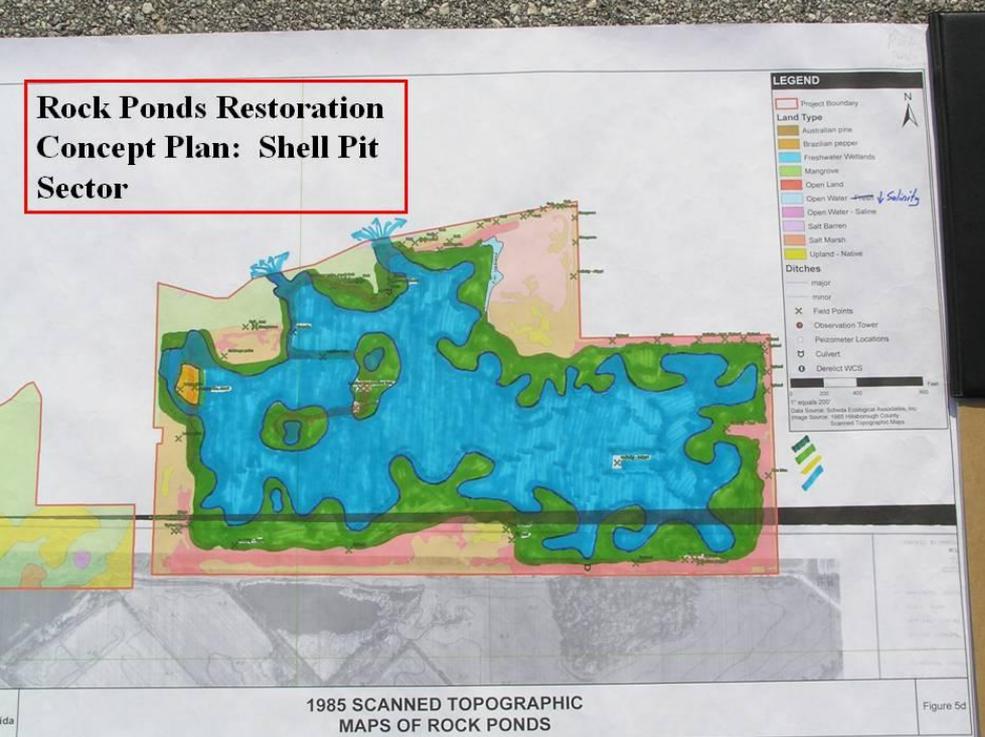
**Rock Ponds Restoration
Concept Plan: Southwest
Sector – Estuarine and
freshwater wetlands and
coastal uplands**



**Rock Ponds
Restoration Concept
Plan: Northeastern
Sector**



**Rock Ponds Restoration
Concept Plan: Shell Pit
Sector**



Preliminary Concept
Plans – Subject to
Field Verification and
Refinement

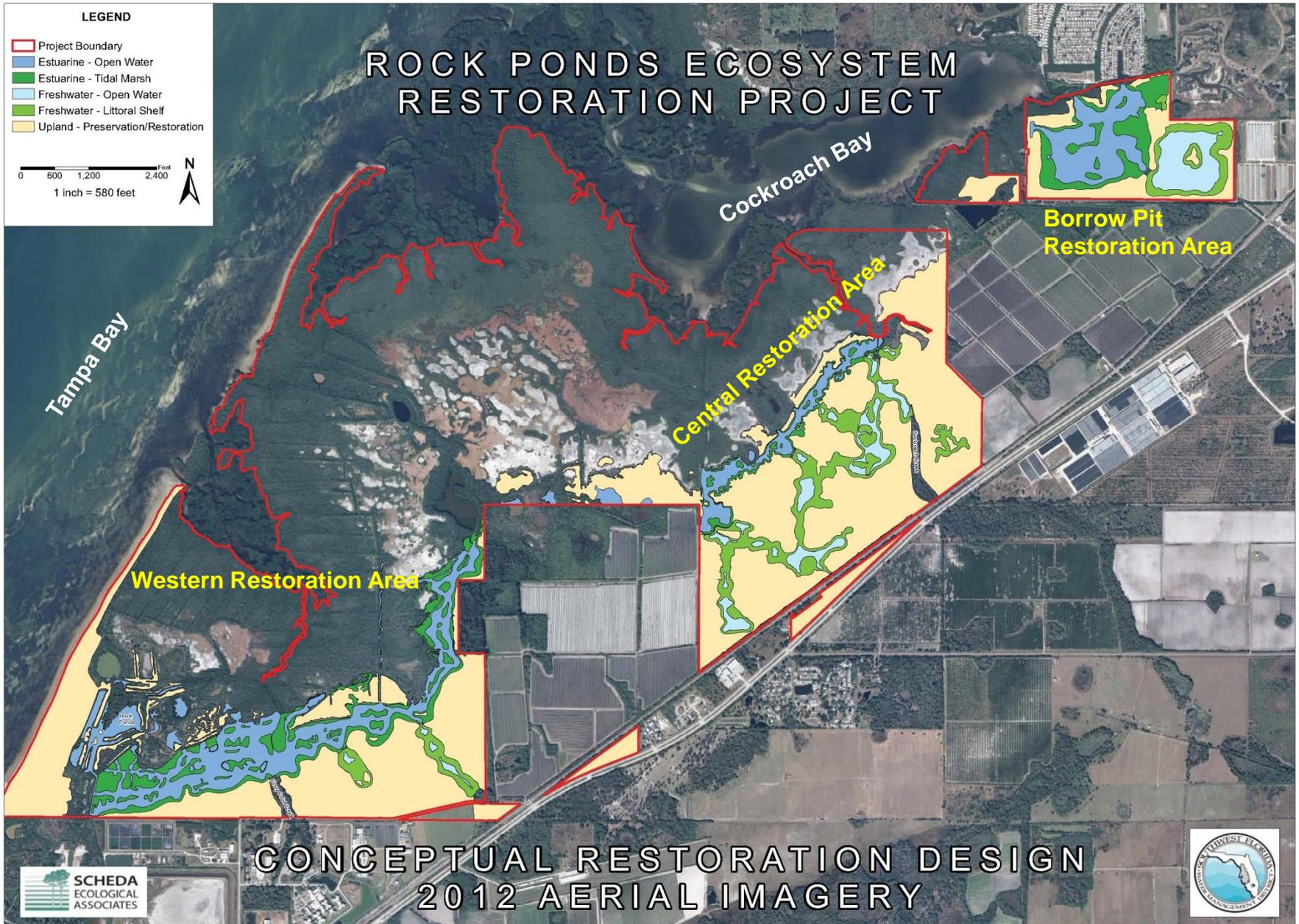


Figure 3. Rock Ponds Ecosystem Restoration Project Plans (Uplands + Wetlands)

Rock Ponds Design Statistics:

Upland Enhancement/Restoration...645 ac
Wetland Enhancement/Restoration..398 ac
1043 ac total -- over 1.6 square miles

Total Length of New Shoreline....85,590 ft.
(16.2 miles - a round trip on Howard Frankland Bridge
between Tampa and St. Petersburg)

Total Number of Plants Installed.....972,127

Total Volume of Dirt Moved...1,600,000 CY
(Equivalent to dirt stacked 611' high on a
football field!!!)



Pre-Restoration Site Conditions of the Rock Ponds Parcels

Majority of Site with Altered
and/or Degraded Habitats

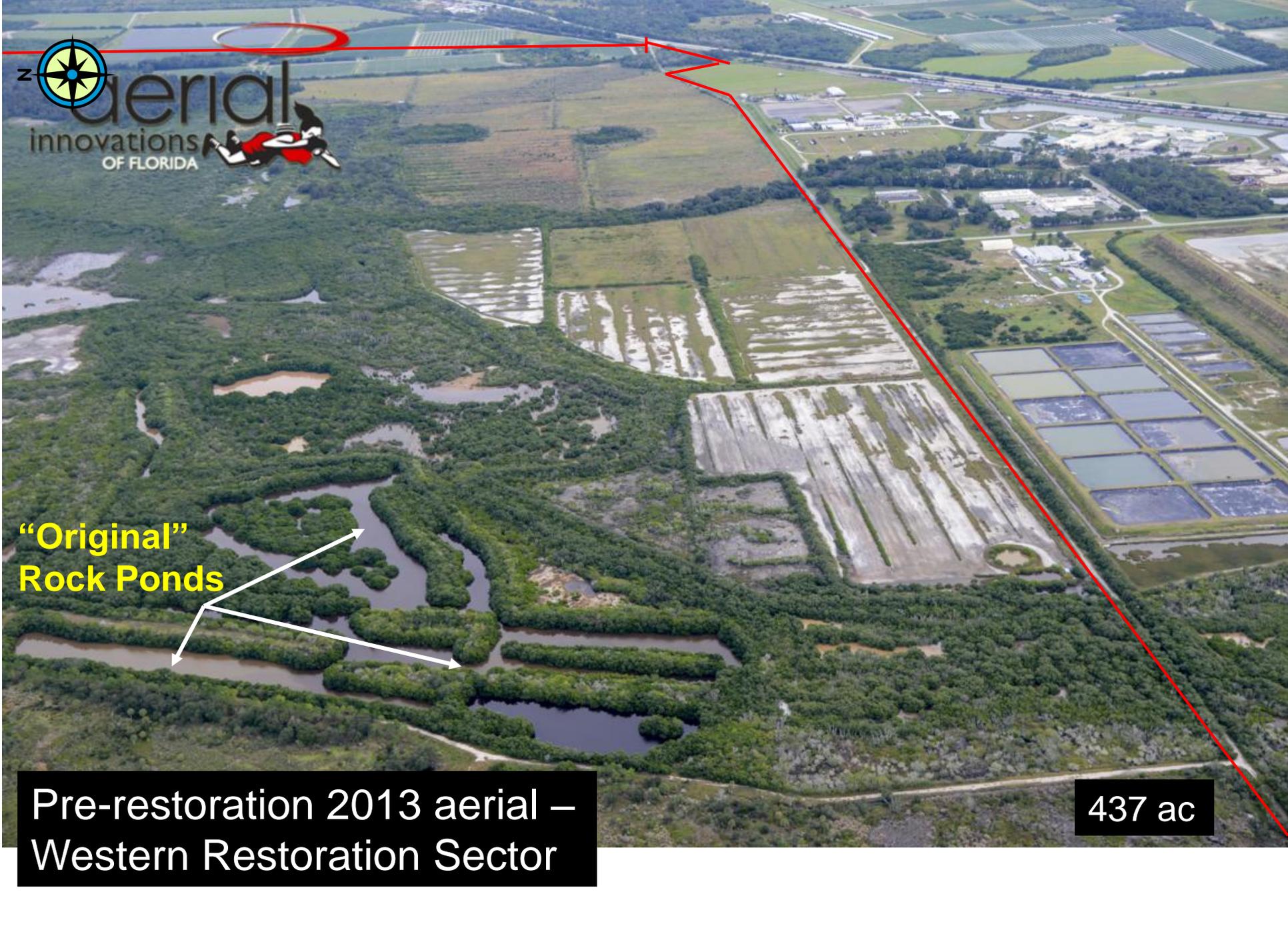


**“Original”
Rock Ponds**



**Pre-restoration 2013 aerial –
Western Restoration Sector**

437 ac





Pre-restoration 2013 aerial –
Central Restoration Sector

453 ac





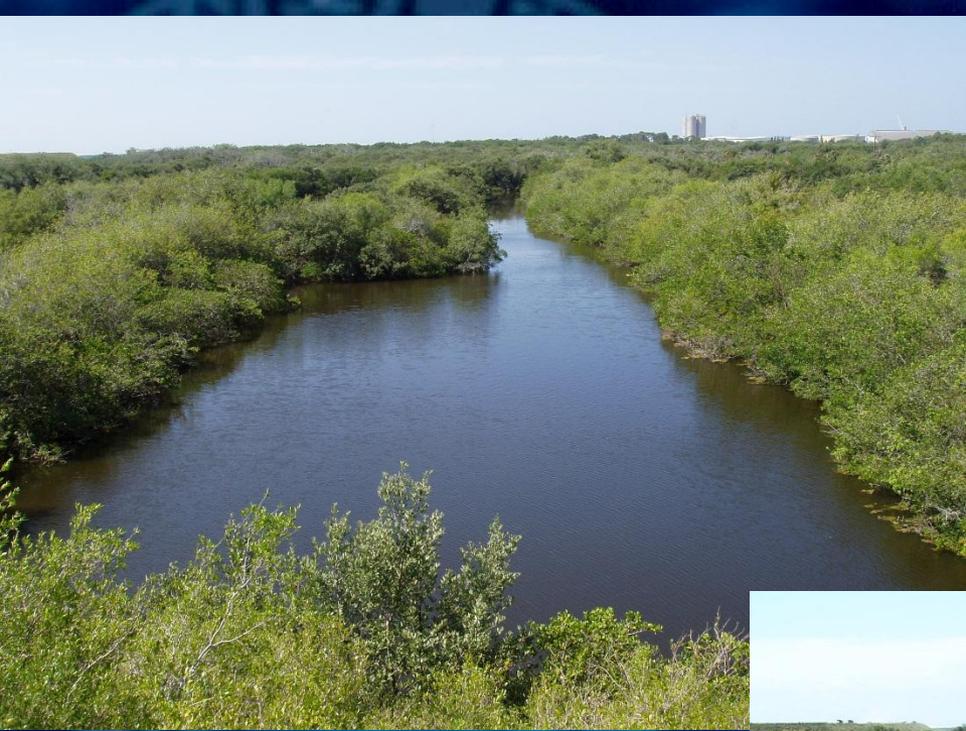
Tampa Bay

Little Manatee River

Cockroach Bay

Pre-restoration 2013 aerial – Borrow Pit Restoration Sector

153 ac



The “Original” Rock Ponds =
Sand/Shell Mining Pit: Poor
Water Quality + Algae Blooms



Fallow farm fields with
paspalum, bahia, and St.
Augustine sod interspersed



Widespread and Dense
Growth of Non-Native Plants



Cogon Grass
and
Guinea Grass

Pervasive Throughout
Site



Nancy Norton
5'5"



**Brazilian pepper thickets
and Australian pine forests
within Rock Ponds tract**



Nancy crossing ditch!!



Seasonal dry ditch with berms



Internal Drainage and Mosquito Ditches

Trash/Debris Piles



Tires





Jet Ski



Relic Agricultural Water Control Structure



Lumber Piles



Although lots of disturbed,
degraded habitats, some
areas in relatively good
shape!!!



Salterns = Salt Barrens



High Marsh



Mangrove Forest



Shallow Tidal Ponds

Some Upland
Preserve Areas in
Good to Excellent
Shape

Mixed Pine – Hardwood Hammock



Southwest Florida
Water Management District

Project Construction

This Project Done in Two Phases

Phase 1

Upland Restoration
264 acres –
Completed 2012

Phase 2

Upland & Wetland
Restoration 779 acres
Completion December 2015

Total Project: 1043 acres

Rock Ponds Ecosystem Restoration Project

Managed and Funded by:

The Southwest Florida Water Management District
Surface Water Improvement and Management (SWIM) Program

In cooperation with:

Hillsborough County Parks, Recreation, and Conservation Department

Designed by:
Scheda Ecological Assoc. Inc.
5M Civil LLC



Constructed by:
QGS Development Inc.



FUNDING PARTNERS



Phase 2 Project Construction Began December 2013

WARNING!
Trespassing is a Crime
This area is a designated
CONSTRUCTION SITE

Theft from this site is a
FELONY
Anyone trespassing on this property
upon conviction, shall be guilty of a
FELONY
We will prosecute violators under
Florida Statutes 812.014 & 810.09(d)
QGS Development, Inc.

**CIVIL & SITE
CONTRACTOR**

**QGS
DEVELOPMENT**

813-634-3326

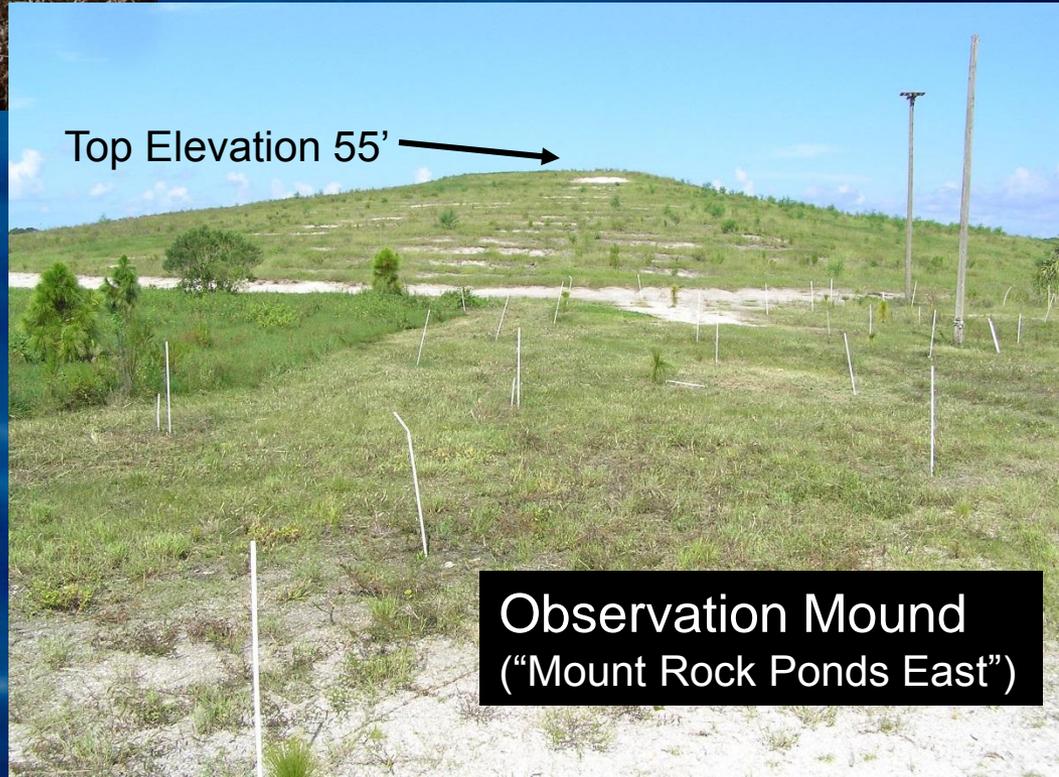
WWW.QGSDEVELOPMENT.COM
LICENCE CGC1512412



Unrestored Borrow Pit



Borrow Pit and Observation Mounds: recycled excavate placed here for creation of estuarine/freshwater wetlands, uplands, and public use.



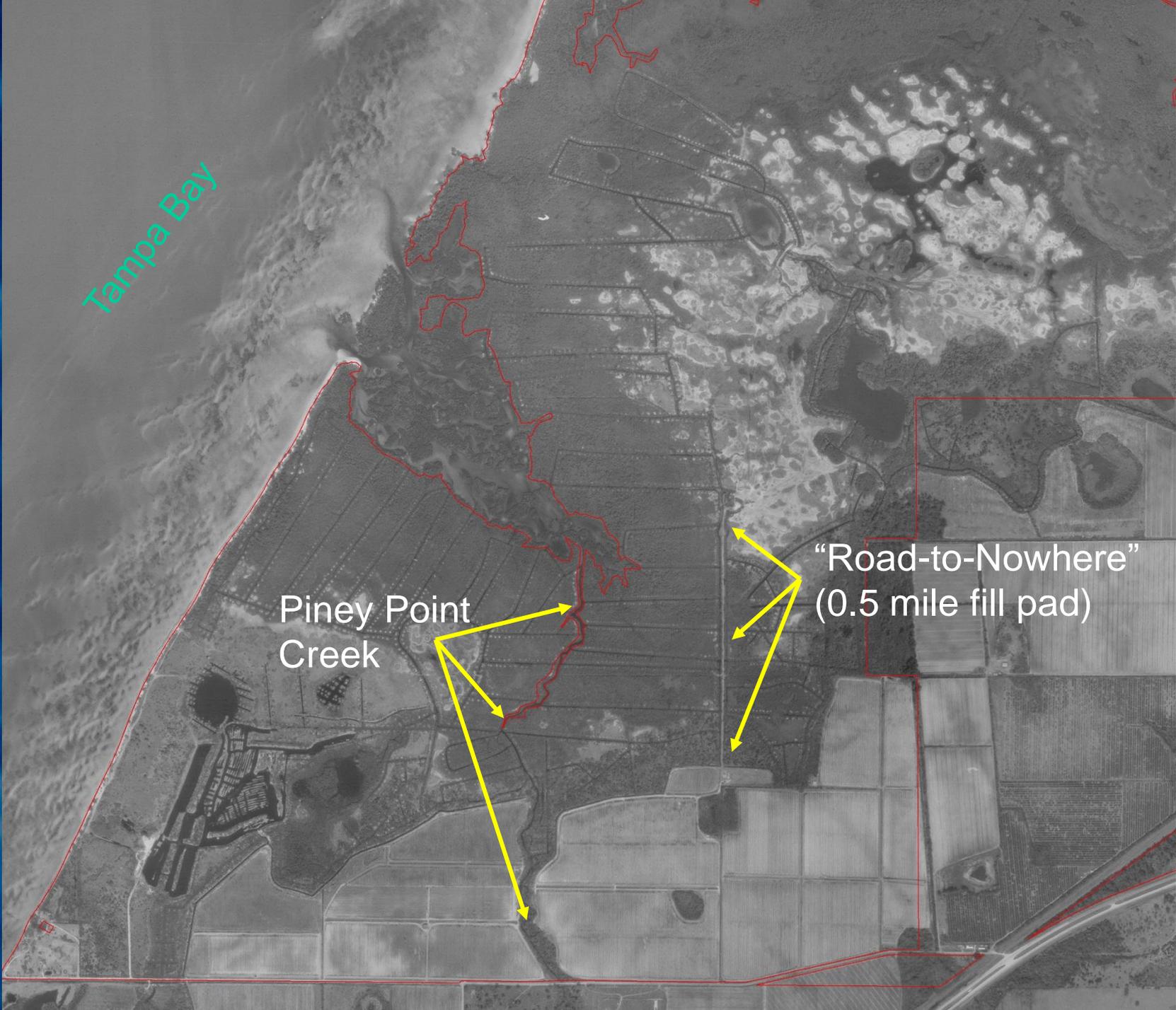
Top Elevation 55' →

Observation Mound
("Mount Rock Ponds East")

Tampa Bay

Piney Point
Creek

“Road-to-Nowhere”
(0.5 mile fill pad)





Piney Point Creek
Pre-Restoration



Piney Point Creek
Mid-Restoration
via Hillsborough
County "Menzi Muck"
Machine



“Menzi Muck”
restoring Piney
Point Creek



Piney Point
Creek “restored”,
prior to planting

“Road-to-Nowhere”: 0.5 mile long fill pad through mangroves excavated and contoured into a sinusoidal tidal channel (cross-linking with mosquito ditches)



Low-Tech Overflow Weirs that “Blend In”



Geoweb Weir Installation



Filled Geoweb Weir with Riprap

Weirs Part of Cascading Freshwater
Wetlands Draining to Intertidal Lagoons



Geoweb Weir with Seashore Paspalum sod

Weir "Blends In" – Not Obvious – Provides Habitat



(Agricultural) Berm Breaches to Help Restore Area's Hydrology



“Insta-Hammocks”

506 Sabal Palms
Transplanted
throughout Project





With Tampa Bay Watch,
conducted 15 volunteer events
installing 71,630 plugs



November 22, 2014



2nd Largest Volunteer Marsh Planting in History of Tampa Bay: 275 volunteers installed 31,600 marsh plugs in 2 hours



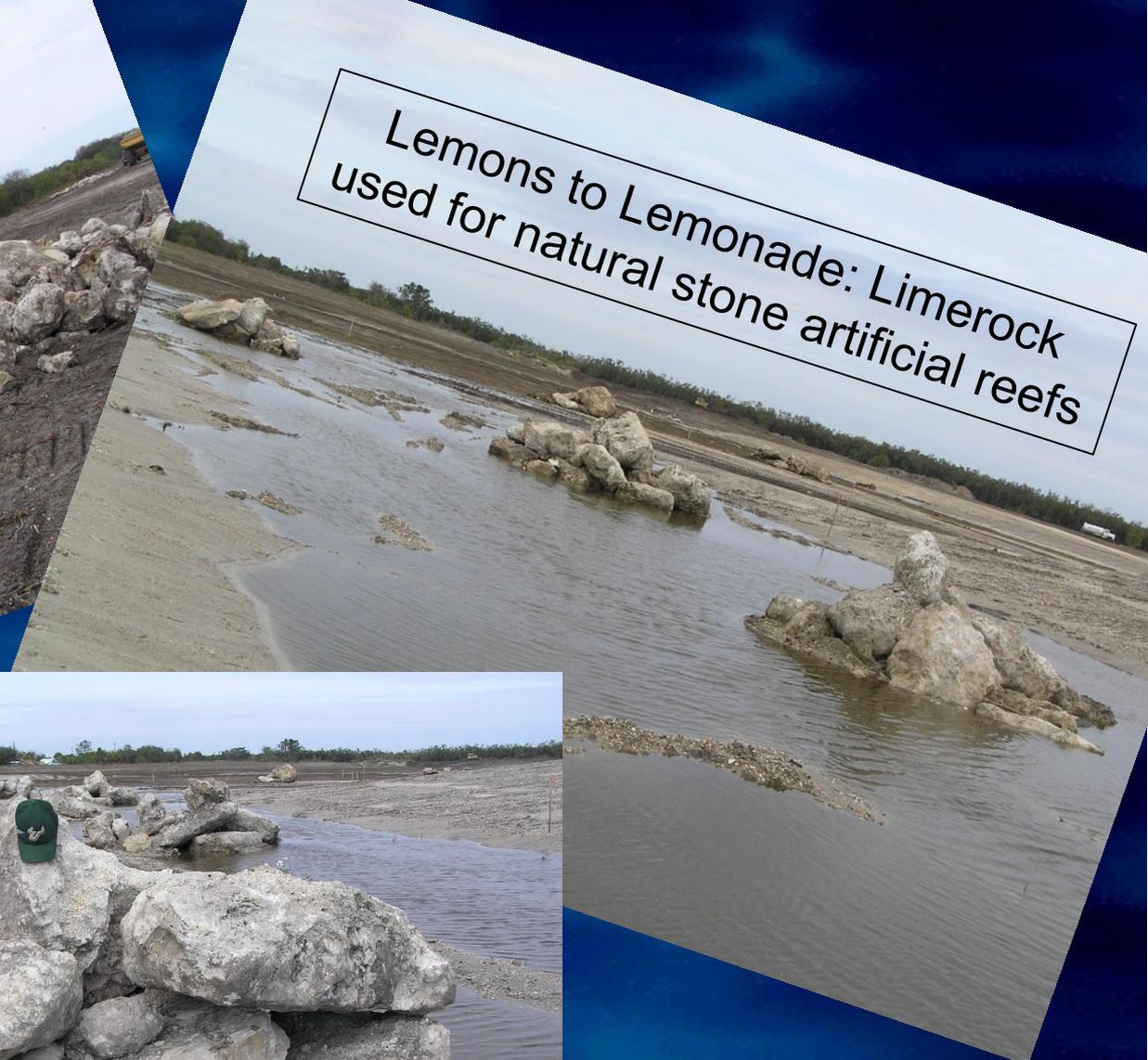
Southwest Florida
Water Management District

Construction Challenges

Limerock hindered excavation

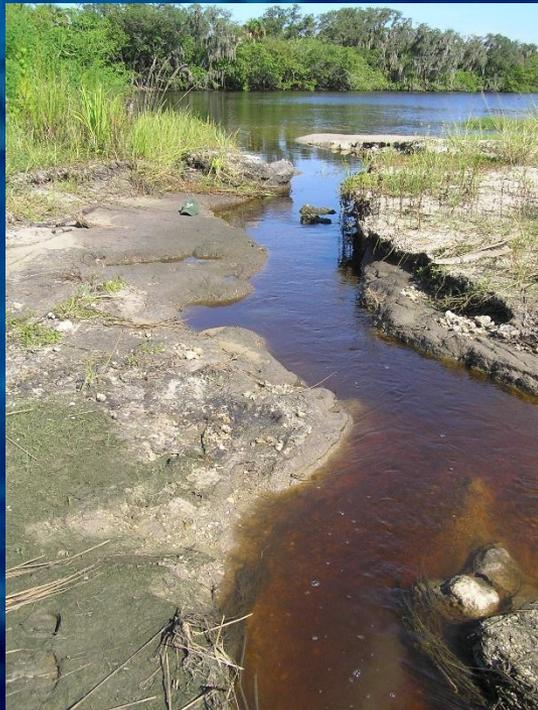
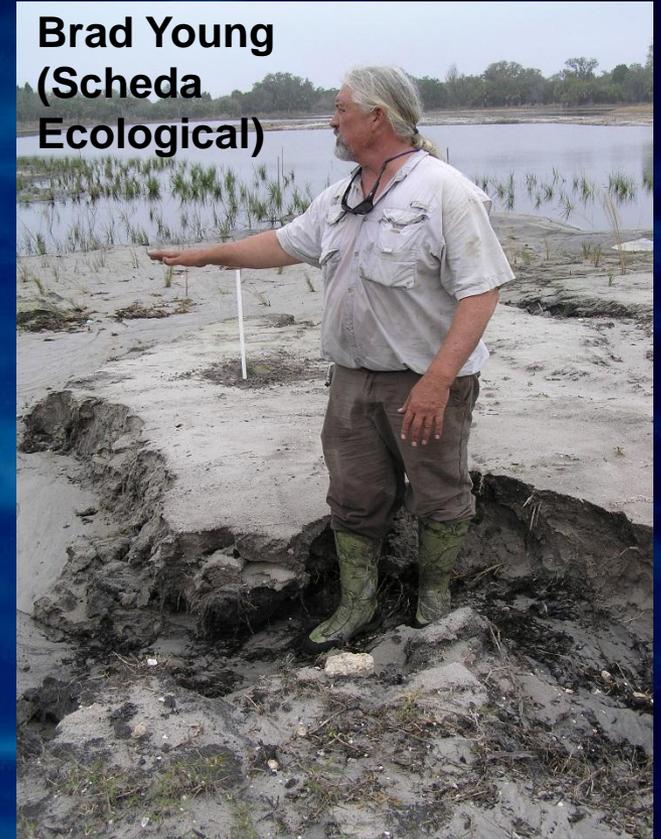


Lemons to Lemonade: Limerock used for natural stone artificial reefs





**Brad Young
(Scheda
Ecological)**



**Site Access and
Erosion Issues due
to Heavy Rainfalls**



Arsenic
contaminated soil
removal – near
Piney Point Creek





Do You See a Building Here??



Radio Tower
Building – with
asbestos



Six “Discovered”
Abandoned Wells – Had
to be Plugged!



225 lb. Boar



1 Night of Rooting



Feral Pigs Causing Widespread Damage



Southwest Florida
Water Management District

Current Project Status

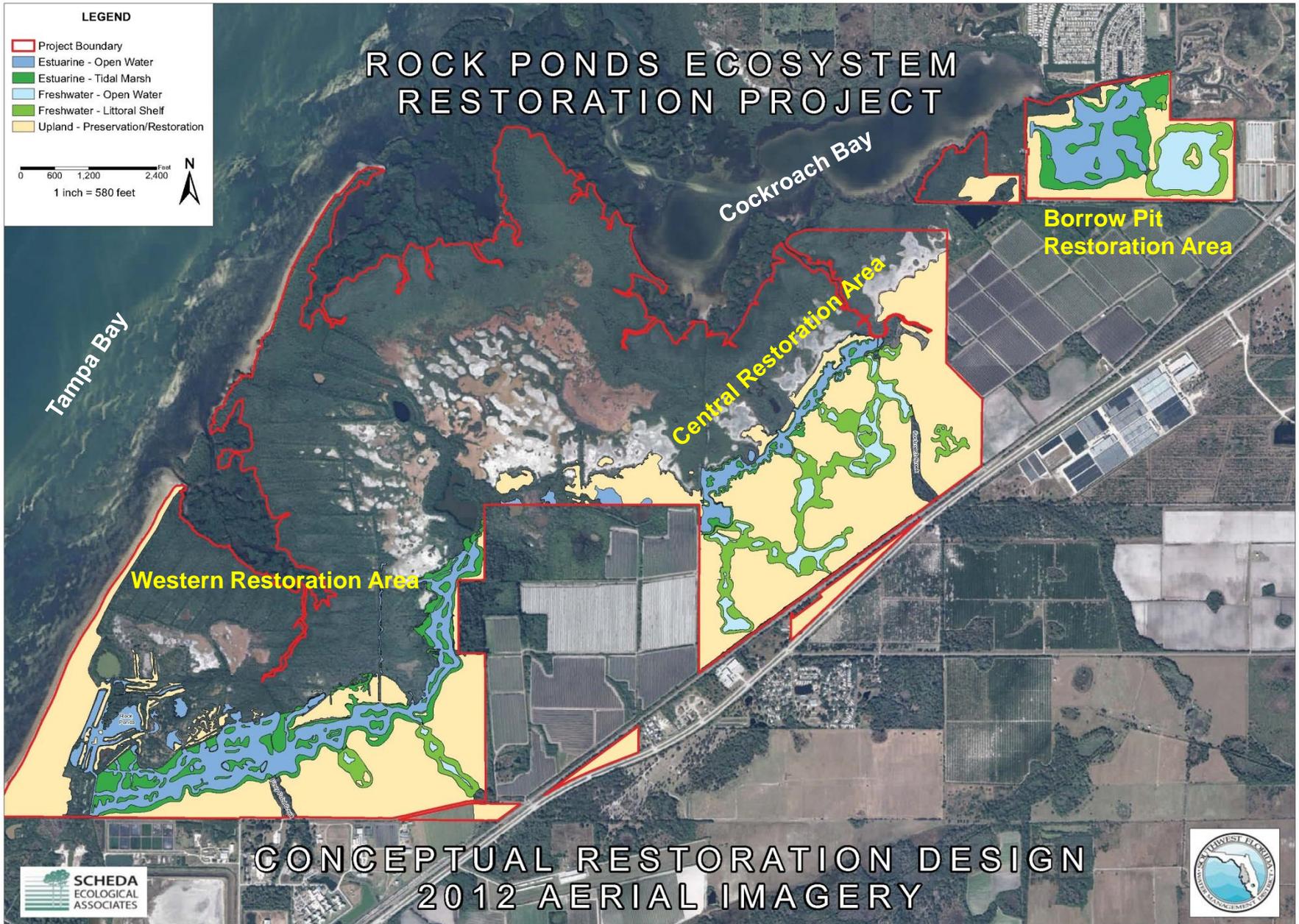
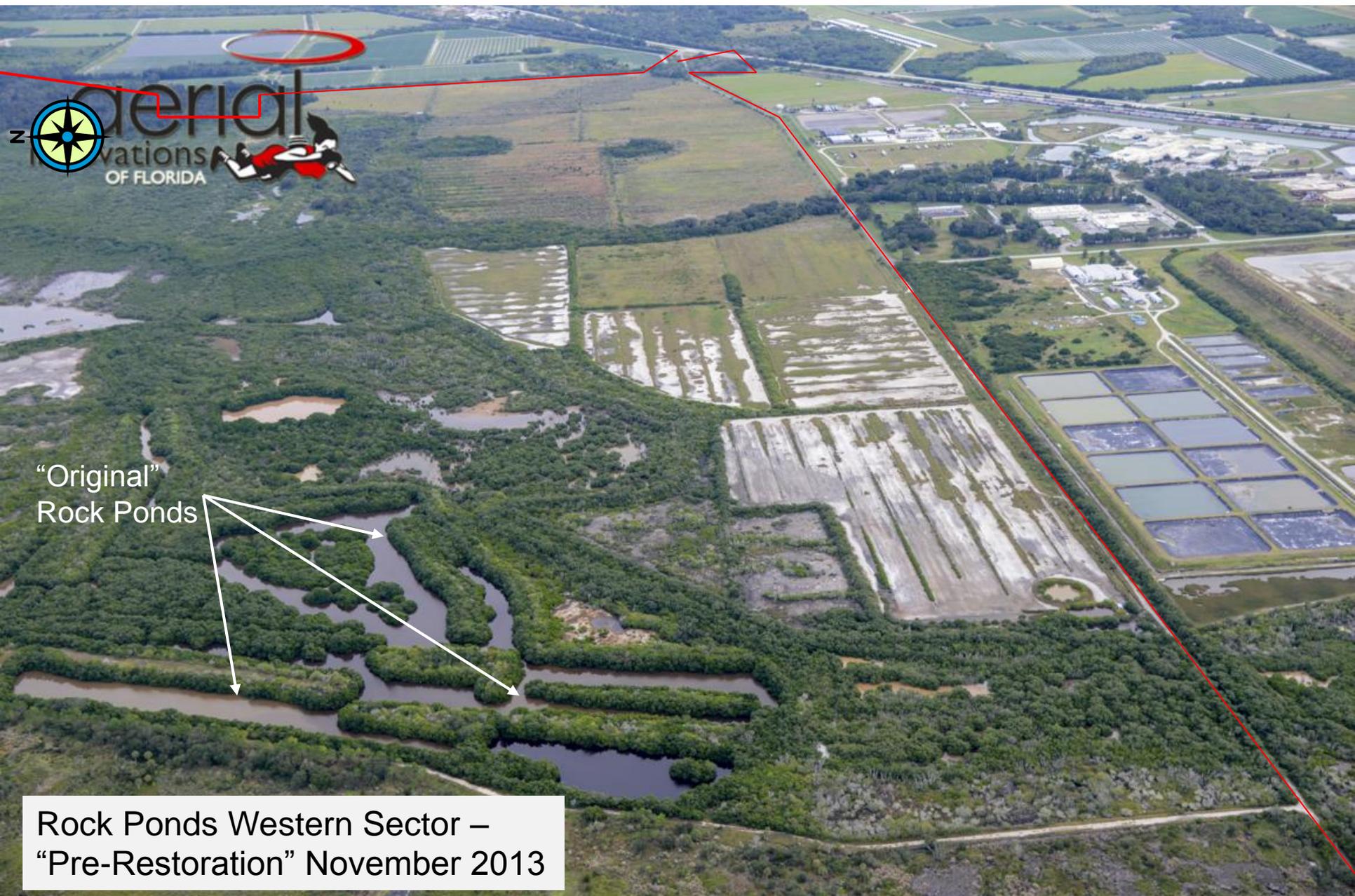


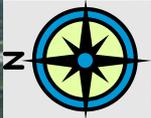
Figure 3. Rock Ponds Ecosystem Restoration Project Plans (Uplands + Wetlands)



“Original”
Rock Ponds



Rock Ponds Western Sector –
“Pre-Restoration” November 2013



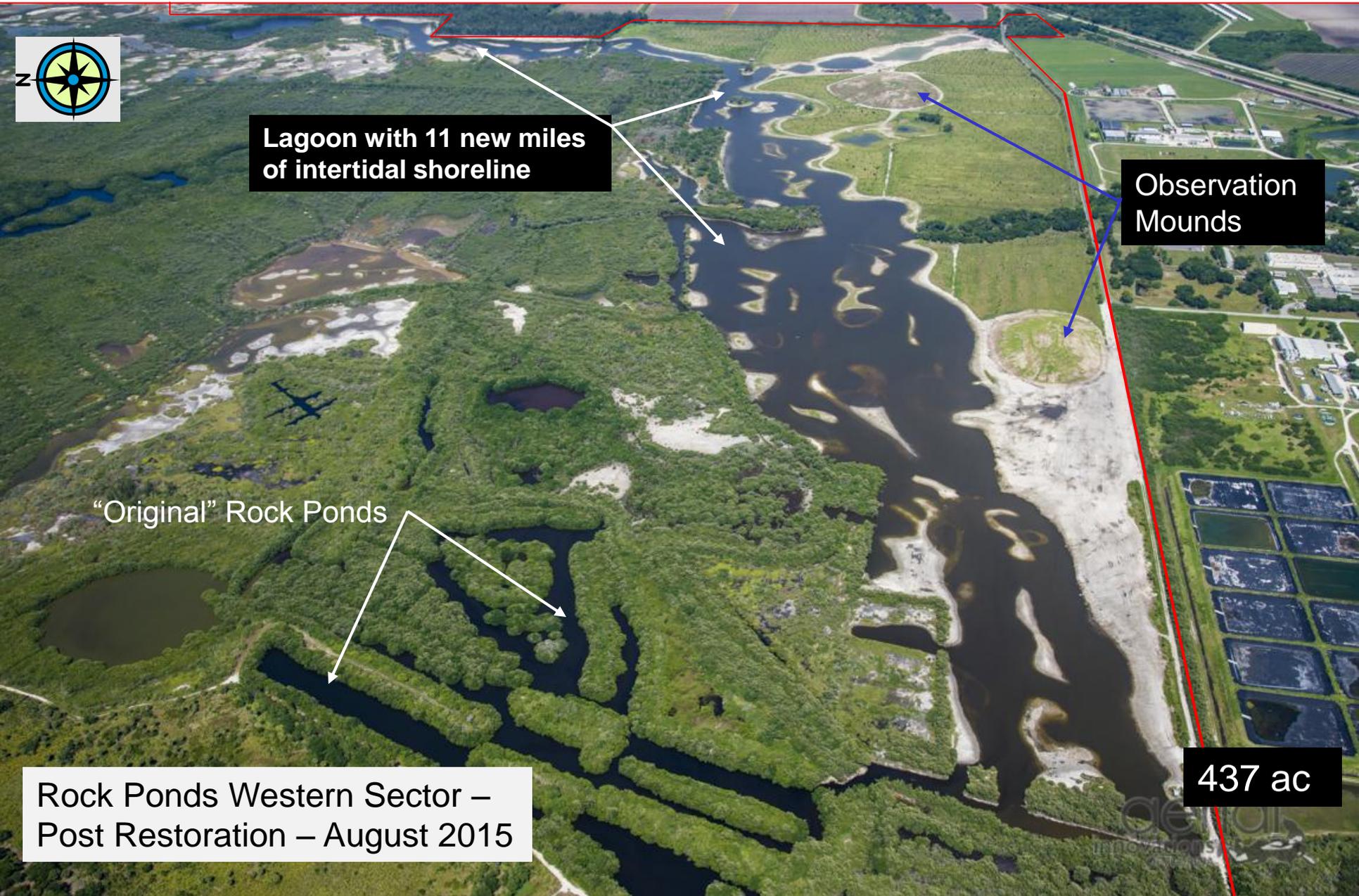
Lagoon with 11 new miles of intertidal shoreline

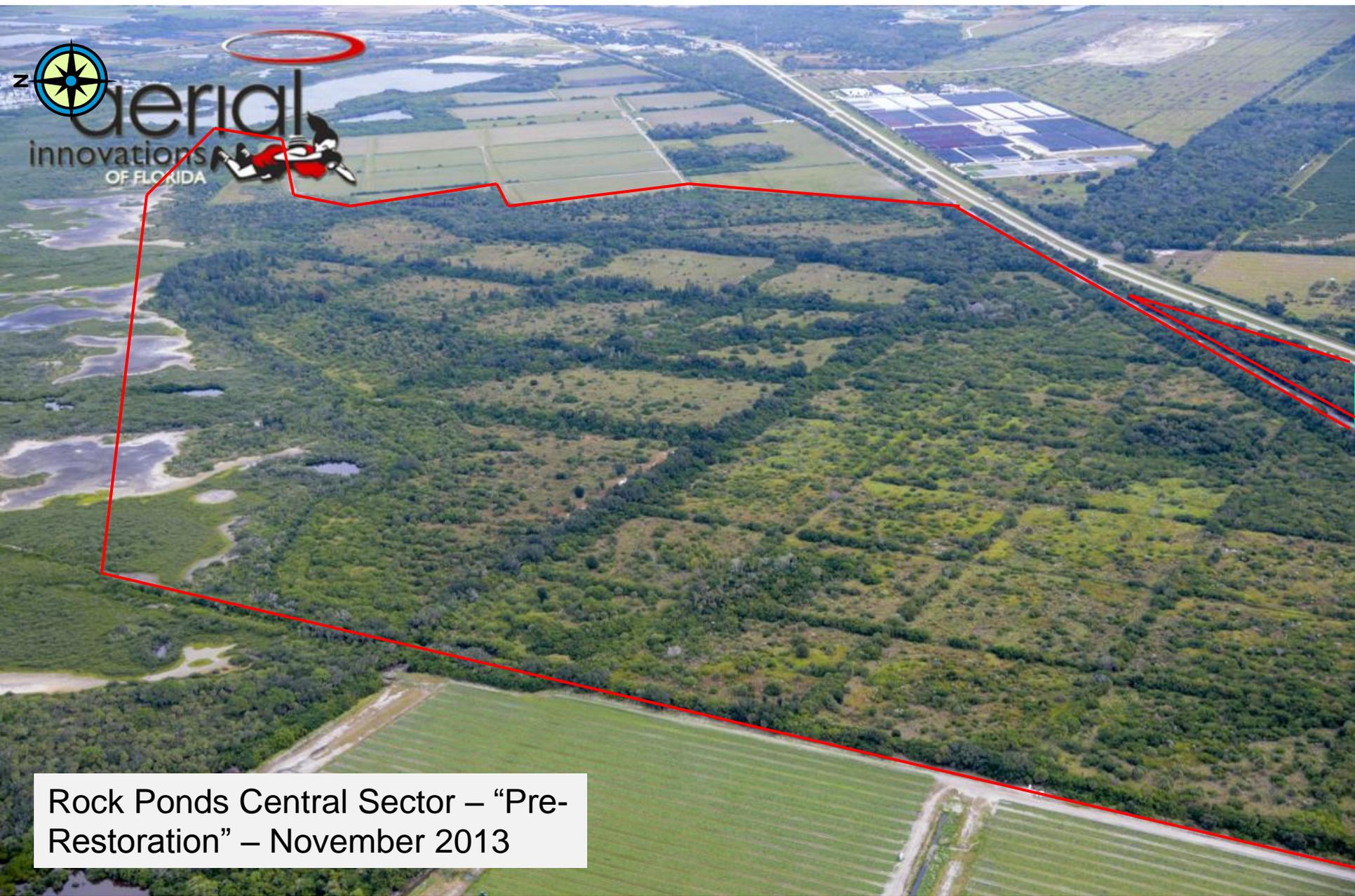
Observation Mounds

“Original” Rock Ponds

Rock Ponds Western Sector –
Post Restoration – August 2015

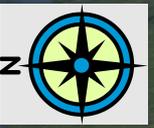
437 ac





Rock Ponds Central Sector – “Pre-Restoration” – November 2013

Cockroach Bay

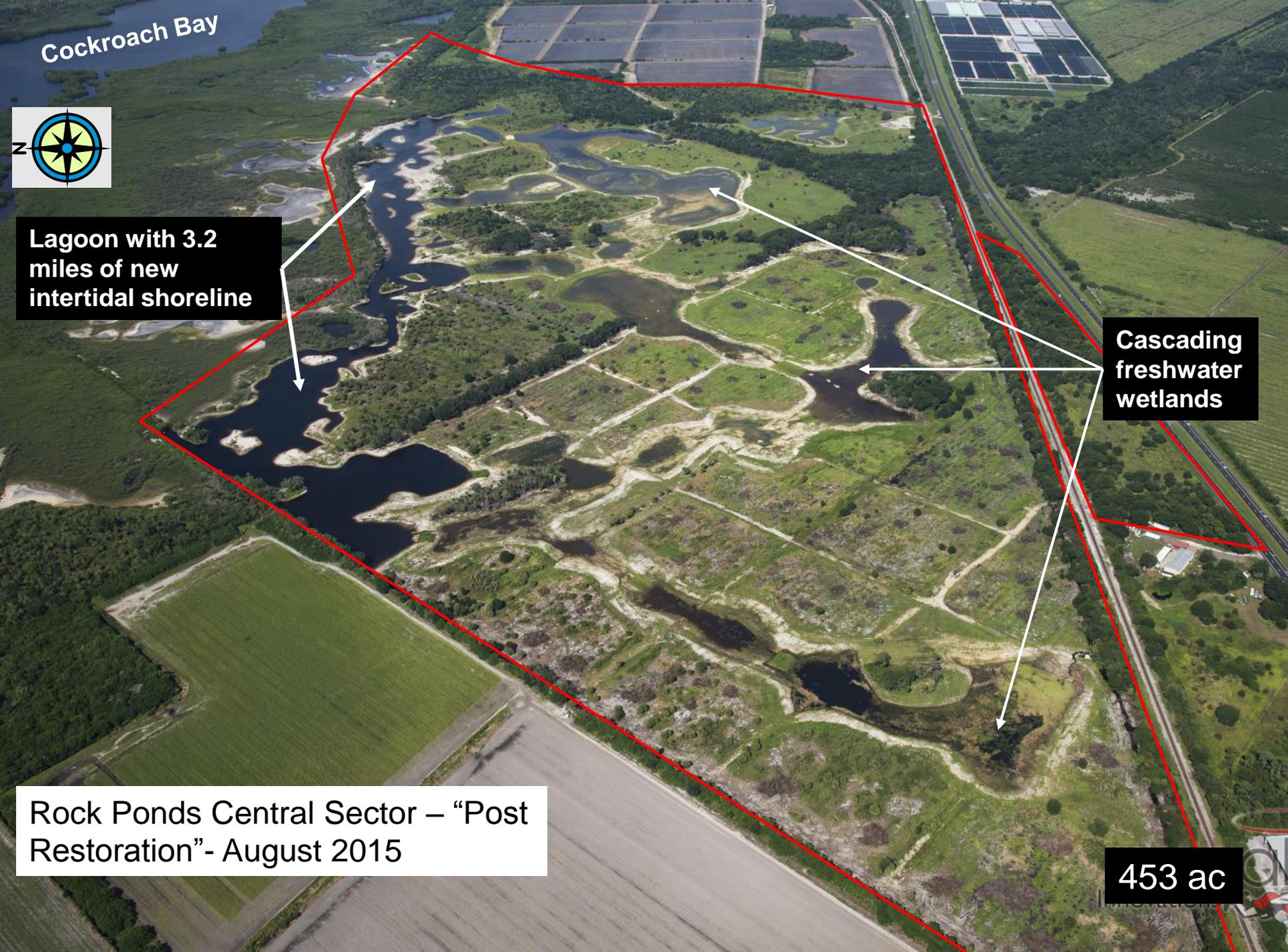


Lagoon with 3.2 miles of new intertidal shoreline

Cascading freshwater wetlands

Rock Ponds Central Sector – “Post Restoration”- August 2015

453 ac

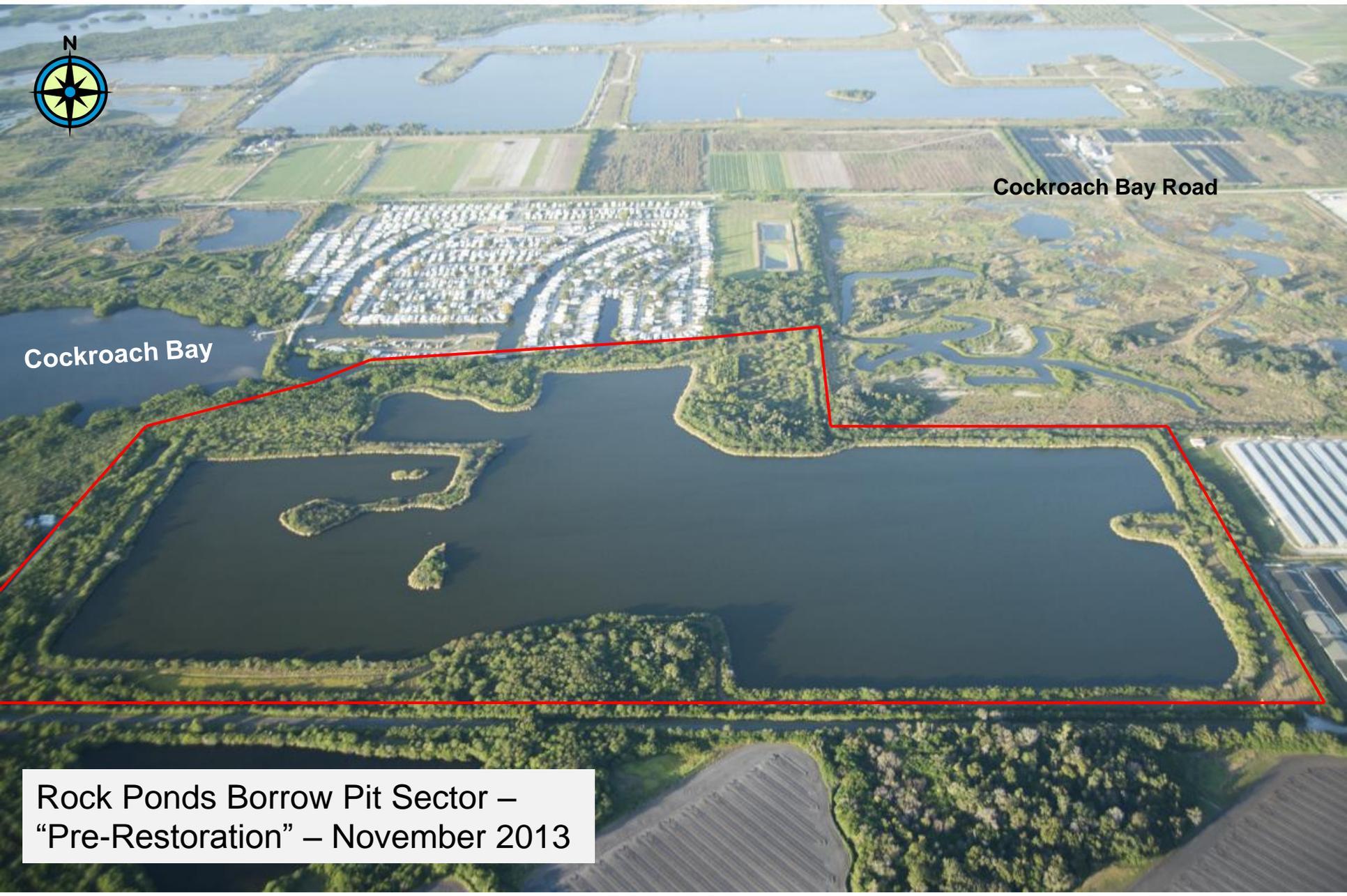




Cockroach Bay Road

Cockroach Bay

Rock Ponds Borrow Pit Sector –
“Pre-Restoration” – November 2013





Cockroach Bay Road

Cockroach Bay

Water Flow

Freshwater Wetland

Intertidal Lagoon

2.2 miles of new
intertidal shoreline

Rock Ponds Borrow Pit Sector – “Post
Restoration” – August 2015

153 ac



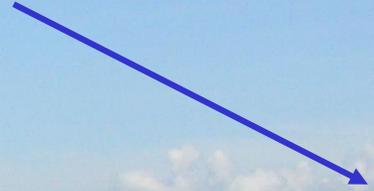


Phase 1 Uplands 2012



Phase 1 Uplands 2015

“Mount Rock Ponds East”



Western Restoration Pine Flatwoods



Restored Piney Point Creek



Western Restoration Lagoon

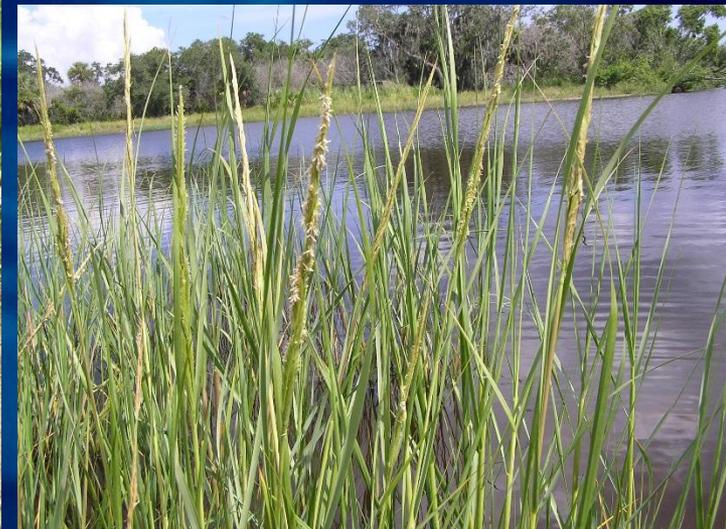


Western Restoration Lagoon

Exposed Artificial Reefs



Western Restoration Lagoon



Western Restoration Lagoon



Central Restoration Lagoon (unplanted)



Central Restoration Lagoon (unplanted)



Central Restoration Lagoon (unplanted)



Central Restoration Lagoon (unplanted)



Central Restoration Hammock



Central Restoration Cascading
Freshwater Wetlands

Borrow Pit Restoration Lagoon Panorama (partially planted)



Borrow Pit Restoration Sector



Borrow Pit Restoration Freshwater Wetland Panorama (unplanted)

Audubon Bird Study



Trash cleanup

USE OF VOLUNTEERS TO STRETCH BUDGETS



Volunteer Marsh Planting



Project of Special Note:

September 29, 2007: 350 volunteers set a new record for the greatest number of marsh plants ever installed during one volunteer marsh planting for Tampa Bay: 34,000 marsh plants installed at the Terra Ceia restoration site in 2 hours





Coordinated by:
SWIM Program of SWFWMD
Tampa Bay Watch
Fla. Fish & Wildlife Conserv. Comm.
Hills. Co. Conserv. & Enviro. Lands Dept.



**Rock Ponds Ecosystem
Restoration Project**
*Record Setting Volunteer
Planting!!!*

Saturday, November 14, 2015

9:00 AM

**40,000 Marsh Plugs – 400 Volunteers - Come
out and Volunteer and Have a Great Time!!!!
Please Pre-Register at Tampabaywatch.org!**

Project Summary

- Largest ecosystem project ever done for Tampa Bay
- 1043 ac of upland, freshwater, & estuarine habitats
- Salinity gradients/low salinity habitats created
- Area hydrology restored
- Some stormwater polishing
- Accommodates projected sea level rise
- Site will be open to public for recreational use
- Project completion slated for December 2015















Baby Whistling Ducks with their Moms!!



Juvenile Whistling Ducks with their Moms – 7 weeks later!!



Widespread Widgeon Seagrasses



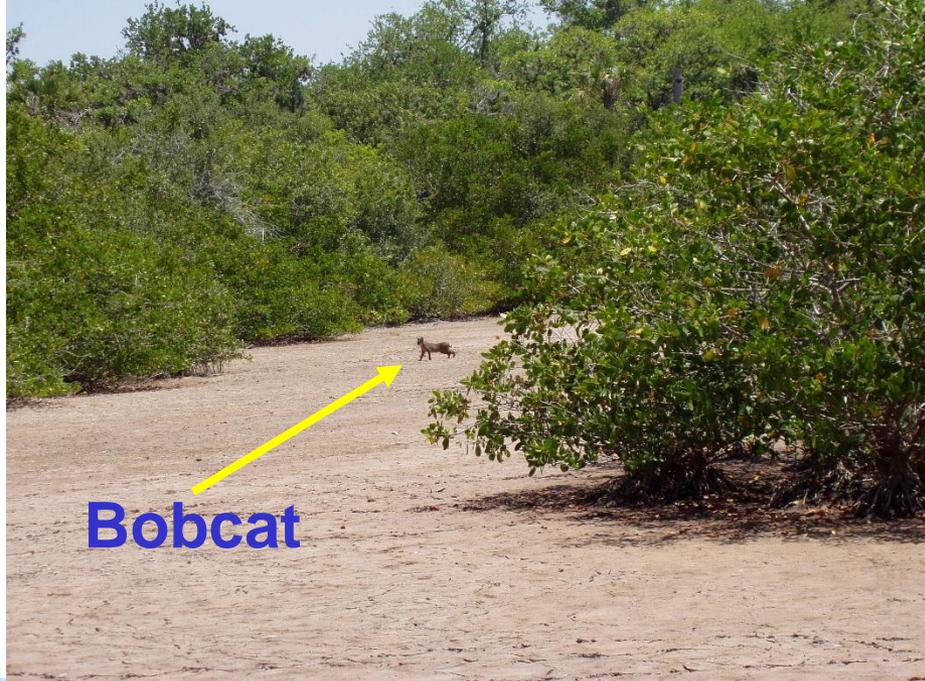
Tree Swallows







“Where’s Waldogator?”:
there are 21 baby alligators in this photo!!













School of Killifishes



20" Snook Caught in
Central Restoration
Lagoon

A woman wearing a camouflage cap, sunglasses, and a light-colored long-sleeved shirt is smiling while holding a large snook fish. She is standing in a white boat on a body of water. The boat contains various fishing gear, including a blue cooler, a white bucket, and a red bucket. The background shows a dense line of green trees under a blue sky with scattered clouds.

Now, that's a snook!!! 28" worth
of snook and a very happy
fisherman!!

**Caught at a different Tampa
Bay restoration site!!**

FUTURE HABITAT RESTORATION FOR TAMPA BAY

- Combination of small and large projects, keeping in perspective that bigger is better: >2000 ac under development
- Land acquisition critically important to long term success of efforts and future of bay
- Learn from successes and failures
- Secure additional grants and creative funding
- Dedication for the long term
- Updates and implementations of management plans



The End



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For more info call Brandt
Henningsen (SWIM) at ext. 2202



Rock Ponds Ecosystem Restoration Project *Record Setting Volunteer Planting!!!*

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