GHCA Pond and Estuary Plan

GHCA Board Meeting
February 25, 2025

Overview

- Background
- Pond and Estuary Problem
- How Did We Get Here?
- Actions Needed
- Our Plan, Priorities, and Timing
- Costs and Funding
- Challenges and Recommendations
- Our Team

Background

Why did developer build ponds and conservation easement?

Federal, State and County permits required them:

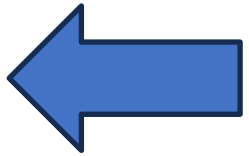
- Flood control infrastructure required onsite (meet 25-year storm event)
- Water released to estuary must meet water quality standards
- Control mosquito breeding (water flow)
- Conserve Existing Mangroves

Added Value Benefits:

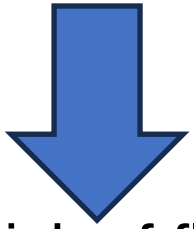
- Irrigation
- Wildlife
- Aesthetics

Stormwater Pond and Estuary Problem

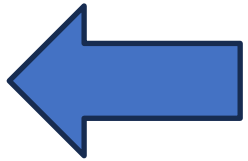
- Pond banks eroded
- Sediments deposited into ponds
- Loss of water storage and water flow
- Loss of littoral shelf and plants
- Blocked channels and culverts



Ignoring these conditions



- Increased risk of flooding
- Reduced water quality
- Increased mosquito breeding
- Less water for irrigation
- Increased risk of permit enforcement action



Risk of doing nothing

Stormwater Ponds Need Maintenance

- Erosion and Sedimentation
- Water flow obstruction
- Decreased storage capacity
- Loss of vegetation to remove nutrients

Pond 13

Pond 16
South Wing

Pond 14

Estuary Flushing Channels, Culverts and Waterways Need Maintenance

- Flushing channels filled in
- Culverts and waterways blocked
- Waterways narrowed by mangroves

St Phillips Loop Blocked

Southernmost Inlet Blocked

Northern Inlet Blocked

How Did We Get Here?

- Stormwater ponds and estuary are 35-40 years old
- Erosion and sedimentation are natural processes
- Our stormwater management system needs maintenance
- Developer controlled board did not perform maintenance
- Restoration of ponds and estuary are long past due

Actions Needed

- Hydraulic and mechanical dredging
- Bank and slope restoration and stabilization
- Littoral shelf restoration and planting
- Remove invasive plants
- Program for ongoing monitoring and maintenance

Our Plan, Priorities, and Timing

Ponds

- Restore to original design (when practical)
- Rank worst to best and restore in that order
- Work as quickly as possible subject to funding and disruption
- Complete work by 2031

Estuary

- Prioritize restoration actions to improve water flow
- Work as quickly as possible subject to funding and disruption
- Complete work by 2030

Pond Plan

- Dredging
- Bank and slope restoration
- Clearing narrow channels, culverts and invasive plants
- Bank and littoral plantings
- Monitoring and maintenance

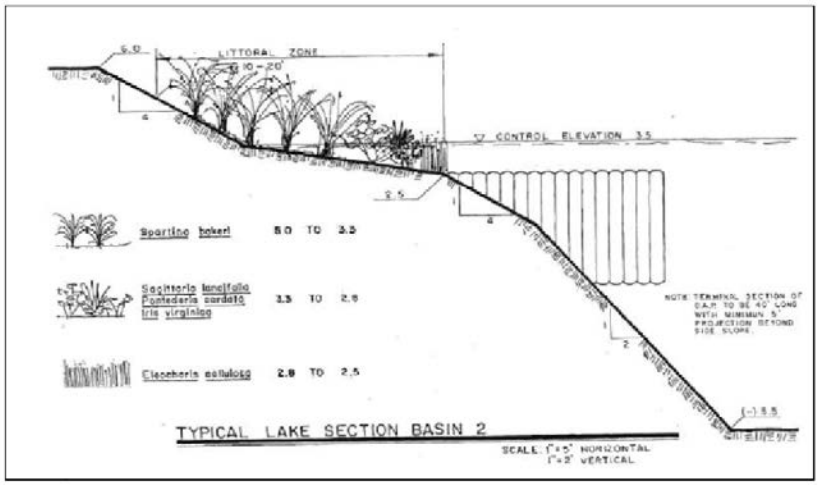


Figure 3. Typical Grand Harbor Lake Cross-Section and Littoral Zone Planting.

Pond Restoration Phases

Phase 1
Pond Number
10
11
12
13
14
15
17
18
19A
16A
16B
16C
1A
21A

Phase 2
Pond Number
6
20
22
23
26
19B
4A
4B
5A
5B
5C

Phase 3
Pond Number
2
3
7
8
9
24
25
28
16D
1B
21B
O1
R1
R2
R3

Prioritizing Criteria:

- Water volume loss
- Water flow to the IRL
- Littoral zone acreage loss
- Unsightly

Pilot Demonstration Pond Learnings

- Water volume
- Communication
- Supervision
- Expectations

Pond 18 Restoration

Eastern Shore

Before

Pond dredged, banks restored and stabilized, water flow to Pond 17 restored, littoral zone planted

After

Pond 17 Restoration

Western Shore

Before

Water flow and littoral zone restored

Golf course storm drain culvert unblocked

After

Priority Ponds for 2025

Pond	Description	Comments
12	Between Harmony & River 8	High visibility, down 38% capacity, water flow
14	North of Fountain Circle	Long narrow, silted, high visibility, unsightly
16A	SW Cove Pond 16	SW wing, water flow, unsightly, high visibility
16B	NW Cove Pond 16	NW wing, water flow, unsightly, high visibility

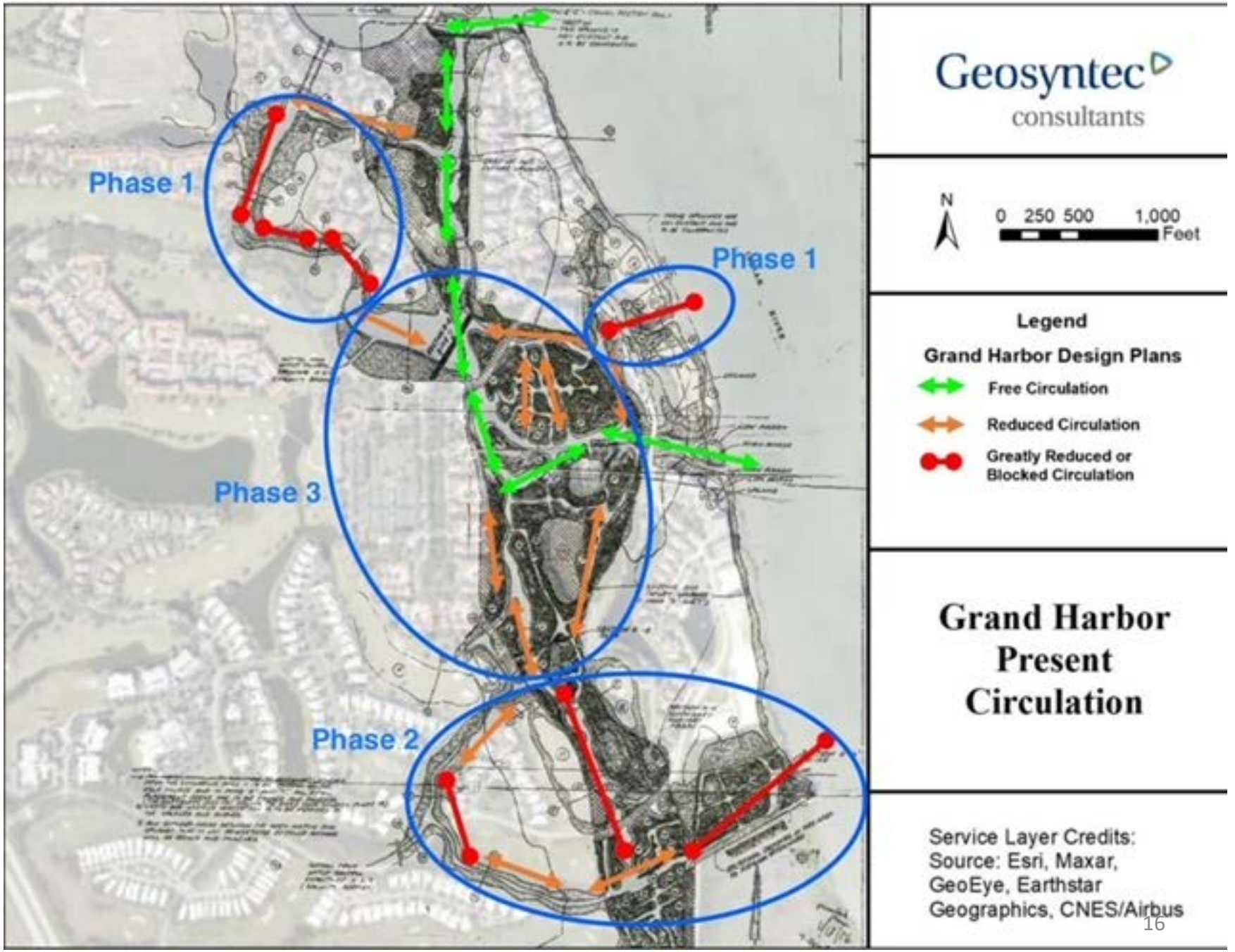
Prioritizing Criteria:

- Water volume loss – flooding, irrigation
- Water flow to the Indian River
- Littoral zone acreage loss
- Unsightly

Estuary Plan Phases

Stage Work into Phases to Improve Water Flow

- Flushing channels
- Culverts
- Mangroves
- Waterways



Pond and Estuary Phasing

- Phase our work
  - Funding
  - Manage disruption to community
  - Capacity to perform work during off season

- Phases
  - Pilot Demonstrations
  - Priority Ponds
  - Priority Estuary Sections
  - Balance of work in stages
  - Ongoing Monitoring and Maintenance

Costs and Funding

Year	Ponds	Estuary	Funding
2024	363,000	0	363,000
2025	650,000	50,000	700,000
2026	1,200,000	800,000	2,000,000
2027	1,200,000	800,000	2,000,000
2028	1,200,000	800,000	2,000,000
2029	1,400,000	600,000	2,000,000
2030	1,500,000	500,000	2,000,000
2031	1,137,000	0	1,137,000
TOTAL	**8,650,000**	**3,550,000**	**12,200,000**

NOTES:

- Proposed funding needed to complete project in 2031 ($12-14M)
- Total amounts and splits between ponds and estuary subject to change
- Pond estimates assume $120/LF remains constant
- Estuary estimates subject to revision after further studies and pilot project
- Increases monthly assessment by approximately $65 for 6 years

Challenges and Recommendations

- Funding
  - Loans
  - Grants
  - Assessments
- Mitigate community disruption
  - Homeowners
  - Golf club
- Cooperation with regulatory agencies

Our Team

- Spencer Joyner
- John Smith
- Halley Moriyama
- Harold Reheis
- Bob Joy
- Lance Hall
- Alan Romano - Ex Officio

THANK YOU