



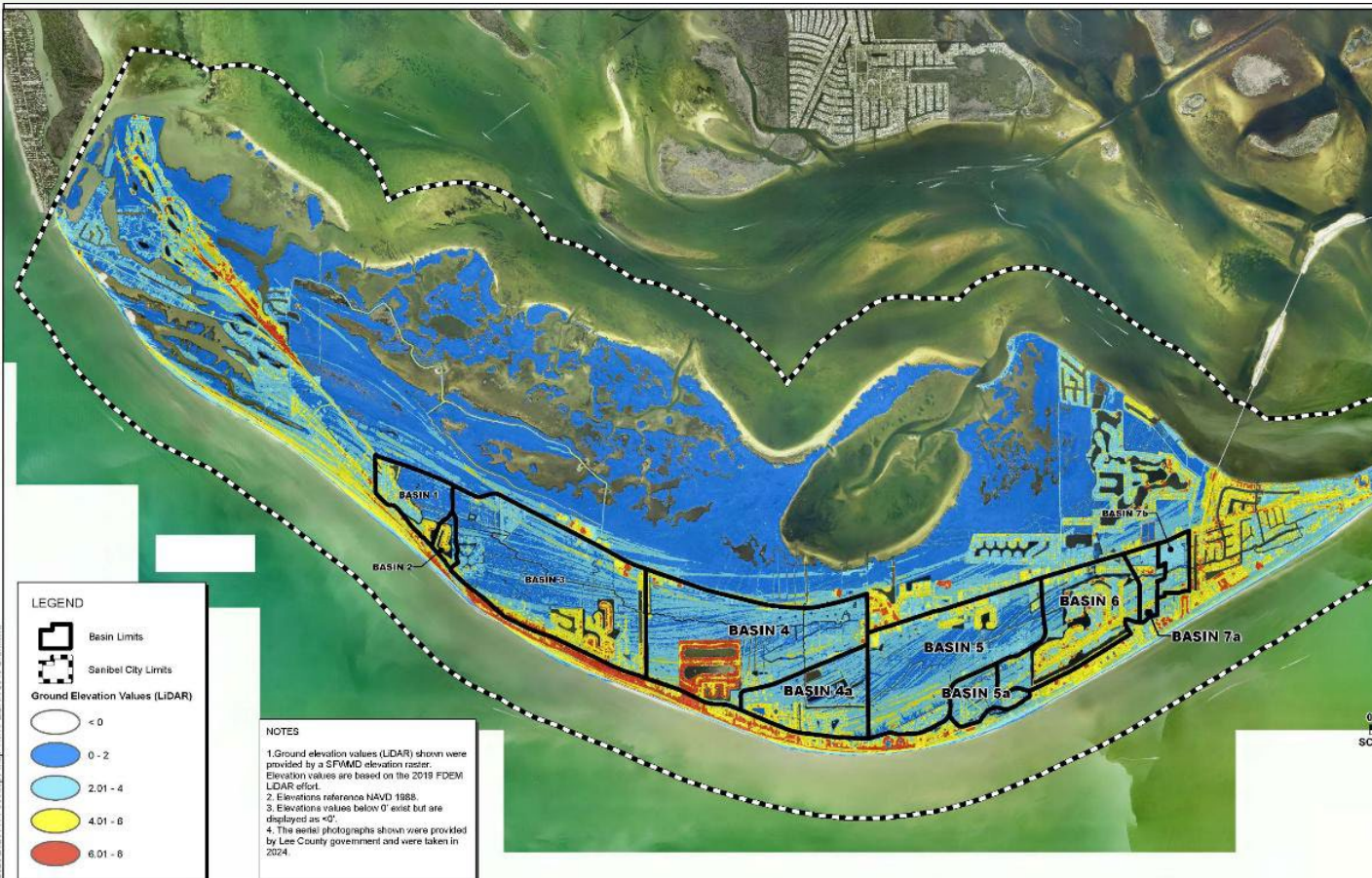
Surface Water Management Master Plan

Post Hurricane Ian Update

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Summary of Masterplan



1. Stormwater system handles rainfall events as designed by utilizing island's low lying wetlands as retention.
2. Wet season water table levels are similar to records from 1977.
3. Vegetation loss caused major reductions in evapotranspiration which led to more standing water in dry season.
4. Expansion of GIS mapping and public education were valuable parts of the plan update.
5. Long term resiliency measures are focused on sea level rise to manage high tide impacts.
6. Major flooding impacts of recent years were mainly storm surge related
7. FDEP grant funded substantial stormwater restoration work along with some hurricane related capital projects

For Review
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City of Sanibel
Lee County, Florida

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— An Apex Company —

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Topographic Map

DATE	PROJECT NO.	FILE NO.	SCALE
Jan 2025	20240101-001	—	As Shown

Significance of Freshwater Lens



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Goal of Surface Water Management for Sanibel is to maintain as much fresh water on island as possible to benefit the island's Interior Wetland System, so long as developed areas are not adversely impacted.

Benefits to Maintaining Sanibel's Freshwater Environment

- Unique wetland conditions
- Fire and Mosquito Control
- Combat Salt Water Intrusion
- Controls Invasive Vegetation
- Water Quality Benefits

For every foot the fresh water table is elevated above mean sea level, the salt water underlying it is depressed by 40 feet.

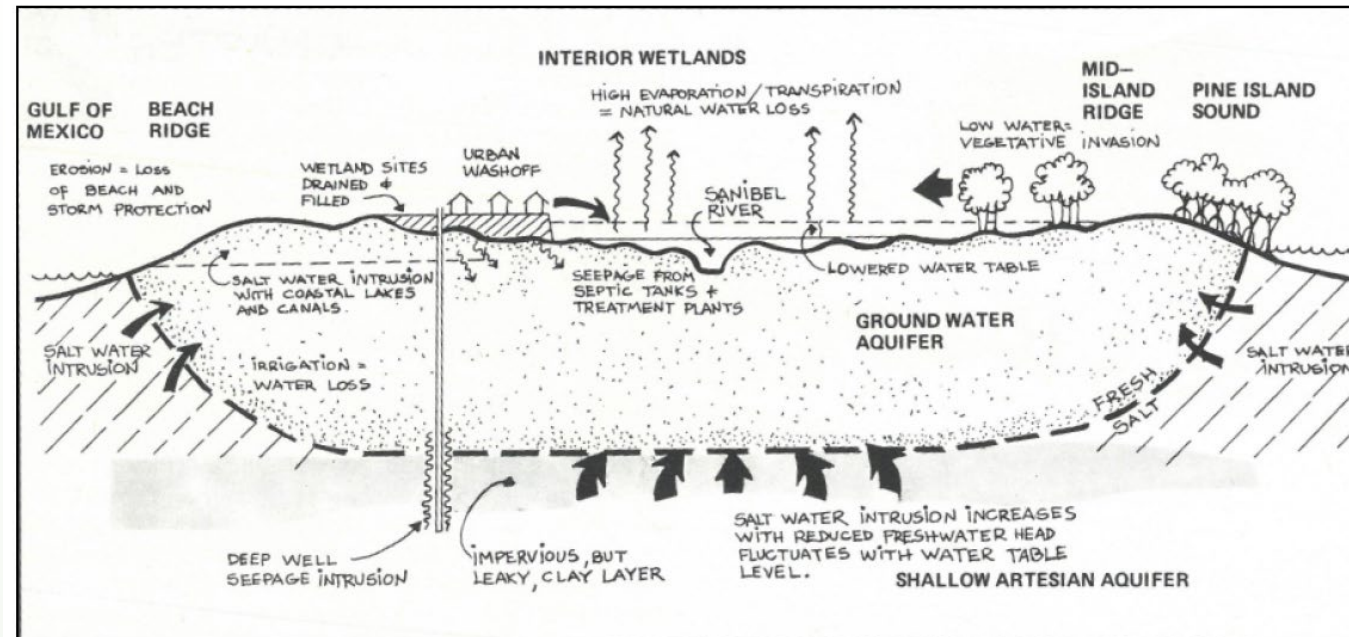


Figure 1. Graphical representation of the water budget of the freshwater basins on Sanibel, taken from The Sanibel Report (1976).

Weir Policy Evaluation

The primary objective of the City's Weir Control Policy should be to continue retaining as much freshwater on the island as practical.

- There are not stormwater issues as a result of basins being full (2.0/1.6 NAVD)
- To account for dry season evapotranspiration losses, need 1 foot above Mean Sea Level (MSL) on May 1.
- Options for Operational Flexibility
 - Under high salinity conditions a lowering levels at the beginning of the wet season may be beneficial to flush salt water from the system.
 - Under certain conditions, there may be some flexibility in early/mid wet season to keep levels lower than full to help with capacity for high intensity rain events
 - Crucial to coordinate with the partners to ensure no adverse impacts to the freshwater lens.

Table 5. Monthly average total rainfall, atmospheric outflows, surplus/deficit, and mean sea level on Sanibel.

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Avg. Rainfall	3.7	1.8	2.1	3.0	1.5	1.2	1.9	2.5	6.9	7.9	9.1	8.8
Avg. Evap. & ET	3.7	3.1	2.9	3.2	3.1	4.5	5.1	5.8	4.9	5.2	4.8	3.9
Surplus (+) / Deficit (-)	0.0	-1.3	-0.9	-0.2	-1.6	-3.3	-3.3	-3.4	2.0	2.7	4.3	5.0
Cumulative Deficit	0.0	-1.3	-2.2	-2.3	-4.0	-7.3	-10.6	-13.9	-11.9	-9.2	-5.0	0.0
Mean Sea Level	0.4	0.2	-0.1	-0.3	-0.3	-0.2	0.0	0.0	0.2	0.1	0.3	0.5
Min. Basin WL to Overcome MSL	2.2	2.1	2.0	2.0	1.9	1.6	1.3	1.0	N/A	N/A	N/A	N/A

Recommendations



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SHORT TERM

- *Sanibel Slough Dredging*
- *Flap Gate Modifications*
- *Box Culvert Replacements*
- *Beach Road Weir Rehab*

LONG TERM

- *Assessment of Stormwater Ponds*
- *Road Elevation (4.3 NAVD)*

Weir System Improvements

- *Automation of Weir Gates*
- *Pump stations*

