



SCCF
SANIBEL-CAPTIVA
CONSERVATION FOUNDATION

To: Dana Souza, City Manager
Cc: Oisin Dolley, Holly Milbrandt

Purpose: Provide recommendations to the City of Sanibel for maintaining healthy ecosystems in the Sanibel interior wetlands and receiving waters of San Carlos Bay and Tarpon Bay. These recommendations are based on available water level data, slough weir gate openings, salinities, water quality, wildlife monitoring, and vegetation monitoring.

SCCF held a meeting with conservation partners, City and Ding Darling Refuge on October 10, 2025. Due to the federal government shutdown, representatives from the Refuge were not able to attend.

Recommendation: Proceed with caution when maintaining lower water levels within the interior wetland system to provide more capacity for higher volume rain events and other climate related changes. Raise water levels at the end of the wet season to provide adequate water levels to mimic the natural draw down of water levels during the dry period, especially for the west basin (Tarpon Bay weir) and prevent saltwater intrusion. A gradual dry season drawdown is critical to maintain prey for wading birds and habitat for other wildlife that depend on the interior wetlands.

List of considerations for holding water levels lower during the wet season

- 1) Decreased water quality in Tarpon Bay and east-end canal system (nutrient loading, algae blooms, fish kills)
- 2) Saltwater intrusion if levels are maintained too low at the start of the dry season (impacts to frogs, turtles and other water dependent species)
- 3) Habitat loss from long-term changes to vegetation at a landscape level (5-10 yrs)
- 4) Nonnative species outbreaks in conservation areas (Brazilian pepper, based on 1990s water level research by SCCF)
- 5) Changes to groundwater flows leaving island; specifically flows to east-end beaches (potential impacts to sea turtle hatchling biology and survival)
- 6) Wildfire risks (threats to property and life)

We support the goal of providing more seasonal capacity for large rain events when it is appropriate, without causing negative impacts to the ecology of the interior wetland system. Increased flexibility to lower water levels should also allow increased flexibility for holding water levels higher if there is a drought or if the 5-day forecast is predicting low rainfall.

We strongly recommend monitoring the system over a three-year period before any permanent changes are made in the weir management policy.

Questions for City: How will the newly implemented water level management be evaluated within the community? How do you know if you are accomplishing your goals for protecting developed areas? What specific changes are expected? How will you measure the success of these goals (flooding or complaints)? If the implemented changes do not accomplish the established goals, will the approach be abandoned?

Operational suggestions/notes:

- During the wet season when rain falls nearly daily, the lower water levels should not cause changes in the saturation of wetlands and soils but may change where ponding is occurring.
- The flexibility to release water within the current weir policy should flatten out the extremes but should be evaluated with some frequency to avoid long-term changes in the ecosystem including decreased water quality in the receiving water bodies, vegetation changes, habitat loss, salt water intrusion (habitat loss) and wildfires.
- October 1 should be a target to allow water within both basins to return to the weir crest to mimic the slow drawdown of water in the interior wetlands of a natural system. Many species depend on this in their foraging grounds (wading birds) and for their life histories (turtles, frogs).
- If there is a hurricane with Sanibel in the 5-day cone during hurricane season (June to November 30), water levels should be lowered in anticipation of storm impacts (surge, rainfall) unless it occurs outside of hurricane season.

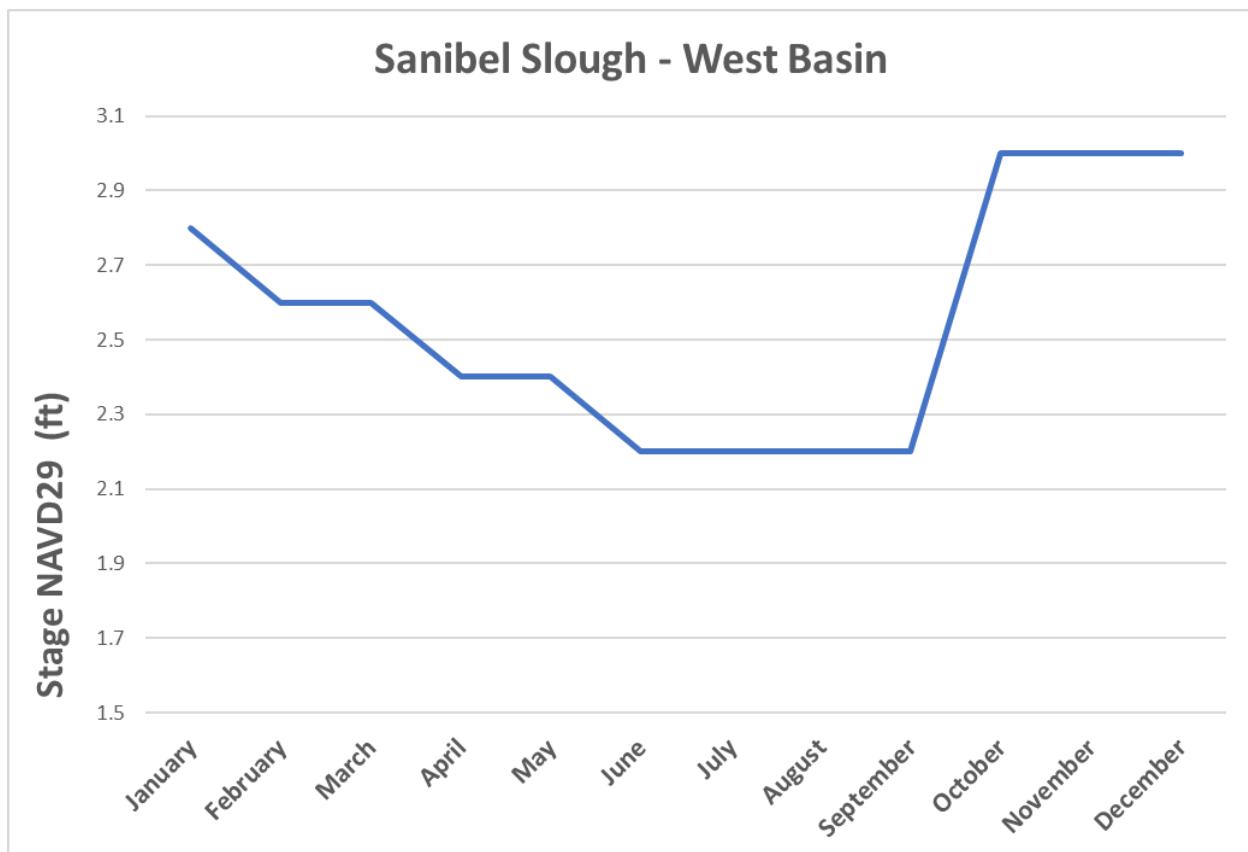


Figure 1. Water level declines during dry seasons mimic the historical and natural water levels. Lower water levels will be maintained in the wet period and will be raised prior to the water level draw down starting in November (dry)

Projects to evaluate the ecological response of managing water levels lower during the wet season:

Operation and maintenance of real-time water level sensors and flow sensors (City of Sanibel/SCCF, \$10K/yr).

Routine water quality monitoring of Tarpon Bay and East End canal system for Chlorophyll, DO, and nutrients (NH₃, NO_x, TN, TP, ortho-PO₄) to evaluate discharges to receiving water bodies of the FDEP impaired Sanibel Slough.

Landscape-level determination of vegetation types on conservation lands. GIS analysis of existing vegetation types and boundaries. Annual monitoring of vegetation from transects and elevations.

Frog call surveys and freshwater turtle trapping during the wet season coupled with saltwater intrusion studies (salinity monitoring).

Brazilian pepper monitoring on conservation lands.

Long-term groundwater level monitoring for east end beaches (for sea turtle nest temp and hatchling survival) plus 5-6 other sites across the islands

Currently efforts are ongoing to support Sanibel Island Rice Rat movement and hydrology (groundwater monitoring) related to water levels (funded by Ding Darling Wildlife Society)

Wading bird surveys during dry down months coupled with studies of prey abundance and availability. Target key inflection points where water levels are expected to change (e.g., Bailey Tract, Frannies Preserve, Center Tract). Rates of water recession for critical or valued species.

- Little blue heron (*Egretta caerulea*) - State-designated Threatened
- Roseate spoonbill (*Platalea ajaja*)- State-designated Threatened
- Tricolored heron (*Egretta tricolor*) - State-designated Threatened
- Wood stork (*Mycteria americana*) - Federally-designated Threatened

Supporting Tables and Figures

Pre-2025, water levels were kept near the weir crests and releases were made after rain events to drain flooded developed areas. In 2025, the amount of time reported in days above 2.2 ft NAVD29 at Tarpon Bay were reduced to 55 (January to Sept) (Table 1; pre 2025; 120-180 days above). East basin levels were more similar to pre-2025 at 141 (Table 1; pre 2025; 120-180 days). The 2024 year had extremely high numbers of days above 2.2 ft because of multiple storm surge events.

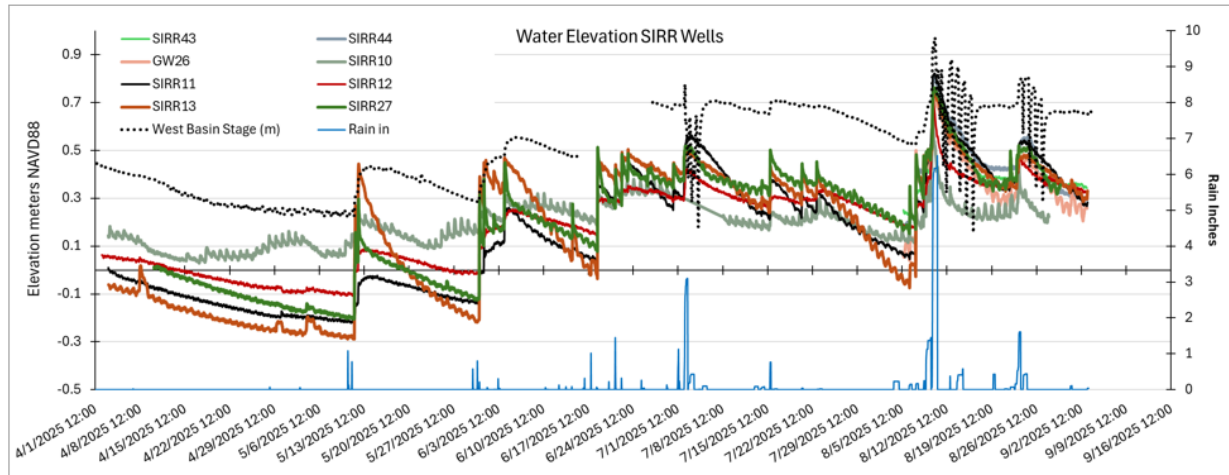
The W. basin (Tarpon Bay weir) should be managed for higher water levels entering the dry season as close to the weir crest as possible. Historically wet season water levels on Sanibel were between 3.5 and 4.5 ft. and the goal should be to mimic the natural recession rates and prevent over drying of the interior wetlands.

Table 1. Total time in days when water levels were above 2.2 ft NAVD29.

Year	Beach Road (2.7 ft crest)	Tarpon Bay (3.2 feet crest)
2016	175	160
2017	164	138
2018	0*	40*
2019	70*	33*
2020	216	203
2021	140	186
2022	180	139
2023	92	124
2024	259	214
2025	141	55

* Data gaps as the system was taken offline for upgrades.

Groundwater levels respond very quickly to rain events suggesting that keeping water levels lower if it is raining several times per day or per week will not impact soil and wetland saturation during the rainy period but may change where water is ponding.



Water quality is impacted by discharges from the slough in Tarpon Bay and San Carlos bay. Slough weir openings to lower interior water levels have been documented to cause environmental damage to receiving waters. They can cause fish kills, algae blooms, and low dissolved oxygen events have been documented. Dark water can block light and low salinities can cause seagrass habitat losses



At three water quality monitoring sites in Tarpon Bay there was a significant increase in chlorophyll to bloom levels after the March 2024 discharge event. The red line is chlorophyll at SCCF/USFWS monitoring site “NWR03” plotted monthly from October 2023 to April 2024. Slough water levels (TB Weir stage ft) and discharges are shown in the black line. The state standard for chlorophyll (algal biomass) for Florida estuaries is represented by the dotted line.

