Sanibel Golf Course Fertilizer and Lake Management Recommendations
Report Card Program

Post-Hurricane Ian,
Debby, Helene, and Milton Update

Reporting Period:
October 2024-September 2025

Introduction

In October 2008, in an effort to improve the quality of water discharged from Sanibel's golf courses, City Council adopted a list of Nutrient Management Recommendations that were based on the Florida Department of Environmental Protection's *Best Management Practices (BMPs) for the Enhancement of Environmental Quality on Florida Golf Courses* (2008). These recommendations provide specific guidance for golf course managers on how to reduce fertilizer use and improve water quality within their respective golf course lakes. Since their adoption, City staff has worked closely with each golf course to provide technical assistance to help implement these recommendations. A report card is provided annually to each golf course to help track progress and guide implementation of the City's recommendations. The report card uses a point system to evaluate performance.

On September 28, 2022, Sanibel Island was devastated by Hurricane Ian's unprecedented storm surge and category 4/5 wind speeds. In 2024, the golf courses were once again impacted by storm surge during three different storm events: Debby, Helene, and Milton. To allow golf course staff to focus on their recovery, the Golf Course Report Card program has been put on hold for the last three reporting years (October 2022-September 2025). However, Natural Resources staff met with each golf course Superintendent to discuss the challenges each course has faced and observe the progress they have made during recovery. Additionally, Natural Resources staff informed the courses that over the next reporting year, the plan is to return to typical scoring format. Below is a summary of each site visit and the discussion with course staff.

The Dunes Golf & Tennis Club

Turf Management

- In 2024, The Dunes completed a turf grass renovation, changing from predominantly Bermuda grass to paspalum. Initially, Bermuda grass was to remain on the greens; however, the greens have now also been converted to paspalum. The change was made because paspalum has a higher salt tolerance compared to all other turf species and has a higher probability of survival when inundated by saline water.
- Paspalum also has lower nutrition (fertilizer) requirements. Since converting to paspalum, there has been no wall to wall fertilizer applications in over a year. This should undoubtedly have a positive impact on water quality.
- Soil tests continue to show elevated salt levels, which requires additional gypsum applications.

Irrigation Management

- Irrigation system repairs are now complete both on-site and off-site.
- Sodium content in the reuse water remains high and has resulted in issues with turf management. However, the sodium content is lower than the previous year.

Water Quality

- Immediately after the storms, The Dunes staff reported exceptional water clarity within the lakes. This phenomenon occurred island-wide as the saltwater storm surge killed off freshwater algae species that contribute to the turbidity of the water. This year, The Dunes staff reported that water clarity remains relatively clear, likely as a result of the additional surge events.
- No observable algae blooms were reported. Last year, water quality sampling through the Sanibel Communities for Clean Water (SCCW) program found Chl-a concentrations were on average 78.5 ug/L and 56.4 ug/L in lakes 5 and 4, respectively. This year Chl-a concentrations were on average 13.3 ug/L and 27.3 ug/l in lakes 5 and 4, respectively, which is a substantial improvement from the previous year.
- The Dunes staff observed a small fish kill in August 2025 in Lake 4 comprised mainly of tilapia. This was likely the result of a low dissolved oxygen event during a period of several cloudy days.
- Salinity in the lakes remains elevated at 12.1 PSU and 16.6 PSU for lakes 5 and 4, respectively, which is slightly lower than last year.
- The aeration system was a total loss following Hurricane Ian. The system has not yet been replaced, but The Dunes plans to install a new one. The Dunes has received quotes and may be partnering with the HOA to complete the project.

Other Items of Note

- As a result of recent storm events, The Dunes experienced multiple lake bank washouts. The Dunes is in the process of reducing the amount bulkhead around the course and recontouring the shorelines, which provides opportunity for future shoreline plantings.
- Dunes staff are working on long-term plans for failing cart paths, bulkheads, and lake berms.



Paspalum replacement on greens



Shoreline buffers



Bulkhead removal and recontouring of shoreline

The Sanctuary Golf Club

Turf Management

- The Sanctuary has removed turf grass on multiple holes throughout the course that have been difficult to manage following the storm events, including 2,000 sqft on Hole 1, 12,000 sqft on Hole 3, and 6,000 sqft on Hole 4. These areas were replaced with bunkers or waste areas with native plantings. This will reduce the amount of fertilizer applied to the course.
- Soil tests found high salt content in areas where storm surge sat for an extended period of time and have required the use of gypsum to reduce salt levels.

Irrigation Management

- No reported issues regarding irrigation.

- The Sanctuary is in the process of replacing the entire irrigation system with state of the art technology. The new system is wireless and can be manipulated through an app, which runs a daily diagnostic test to identify any issues. The system is hurricane proof since all receivers can be unplugged and brought in when storms are approaching.
- Interestingly, the course is also having a Campbell Scientific weather station installed that can be integrated into the irrigation system. Parameters can be set to shut off the irrigation system after a certain amount of rainfall. The weather station also has the ability to generate recommendations for irrigation quantity and timing utilizing a formula that uses the weather parameters from the course. In particular, it will measure evapotranspiration rates of the turf grass. Staff hopes that the new system will improve upon irrigation water usage at the course.

Water Quality

- Two small-scale algae blooms were reported on Lake 1 in March 2025 and Lake 4 in February 2025.
- Last year, water quality sampling as part of the SCCW program revealed a Chl-a concentration of 38.3 ug/L and 74.4 ug/L in lakes 4 and 7, respectively. Recent sampling revealed an average Chl-a concentration of 41.0 ug/L and 34.7 ug/L in lakes 4 and 7, respectively.
- Lake salinity remains elevated at 10.7 PSU and 8.3 PSU in lakes 4 and 7, respectively.
- The Sanctuary's aeration system is fully back online. The purchase of the new system was a cost-share between the golf course and HOA.
- The lakes experienced washouts along some portions of the bank in addition to shoreline and littoral vegetation loss. Course staff has restored the eroded banks and has installed approximately 5,000 native plants.
- No fish kills were reported.

Other Items of Note

- Following the surge events, Sanctuary staff believed some of the standing water may be result of the stormwater system falling into disrepair. The Sanctuary hired a firm that assisted them in rehabilitating the course's stormwater system and repairs are now complete.



Irrigation replacement





Turf removal areas





Turf removal areas





New shoreline plantings

Sanibel Island Golf Club

Turf Management

- Sanibel Island Golf Club (SIGC) uses paspalum turf; however, there are a significant number of low-lying areas on the course that held saltwater storm surge for weeks to months following Hurricane Ian, but also more recently with Debby, Helene, and Milton. The course experienced significant turf loses in these areas and continues to struggle to restore them. The course is currently undergoing a large-scale renovation that includes resodding tees and greens and resprigging the fairways with paspalum.
- Due to budget constraints, minimal fertilization is occurring on the course. Course staff is administering less expensive soil microbial blends and humates to offset fertility deficits.

Irrigation Management

- Since Hurricane Ian, course staff has replaced 36 irrigation boxes. Following Hurricane Milton, the course started to experience electrical issues, so irrigation has been inconsistent. SIGC staff are planning to replace the irrigation system in the summer of 2026.
- Salinity in the reuse pond has dropped significantly to 3.5 PSU (freshwater is 0-2 PSU).

Water Quality

- Course staff did not report any observable algae blooms. Last year, average Chlorophyll a concentration at this course was 88.4 ug/L. This past year, Chl-a was on average 37.3 ug/L, substantially lower than the previous year.
- No fish kills were reported.

Other Items of Note

- The course changed ownership in September 2025. City staff had the opportunity to meet with the new owners and superintendent and to explain the Golf Course Report Card Program. The meeting was productive, and the new owners were receptive to the program.
- Staff reported a significant number of sapling invasive trees sprouting around the course, Australian pines in particular.





Paspalum resprigging areas





Paspalum replacement areas