

2025 Tampa Bay Water Quality Assessments

A Tampa Bay Estuary Program Initiative to Maintain and Restore the Bay's Seagrass Resources



Historic results:

| | OTB | HB | MTB | LTB |
|------|-----|----|-----|-----|
| 1975 | R | R | R | G |
| 1976 | R | R | R | Y |
| 1977 | R | R | R | R |
| 1978 | R | R | R | Y |
| 1979 | R | R | R | R |
| 1980 | R | R | R | R |
| 1981 | R | R | R | R |
| 1982 | R | R | R | R |
| 1983 | R | Y | R | R |
| 1984 | R | G | R | Y |
| 1985 | R | R | R | Y |
| 1986 | R | Y | R | G |
| 1987 | R | Y | R | G |
| 1988 | Y | G | Y | G |
| 1989 | R | Y | R | Y |
| 1990 | R | G | R | Y |
| 1991 | G | Y | Y | Y |
| 1992 | Y | G | Y | Y |
| 1993 | Y | G | Y | Y |
| 1994 | Y | Y | R | R |
| 1995 | R | Y | R | Y |
| 1996 | Y | G | Y | G |
| 1997 | Y | G | R | Y |
| 1998 | R | R | R | R |
| 1999 | Y | G | Y | Y |
| 2000 | G | G | Y | Y |
| 2001 | Y | G | Y | Y |
| 2002 | Y | G | G | G |
| 2003 | R | Y | G | Y |
| 2004 | R | G | G | Y |
| 2005 | G | G | Y | Y |
| 2006 | G | G | G | G |
| 2007 | G | G | G | G |
| 2008 | Y | G | G | Y |
| 2009 | Y | Y | G | G |
| 2010 | G | G | G | G |
| 2011 | R | G | Y | G |
| 2012 | G | G | G | G |
| 2013 | G | G | G | G |
| 2014 | G | G | G | G |
| 2015 | Y | G | Y | G |
| 2016 | Y | G | G | G |
| 2017 | Y | G | G | G |
| 2018 | Y | G | G | G |
| 2019 | Y | G | G | G |
| 2020 | Y | G | G | G |
| 2021 | Y | G | G | G |
| 2022 | G | G | G | G |
| 2023 | G | G | G | G |
| 2024 | G | G | G | Y |
| 2025 | G | G | G | G |

*Incomplete data for 2025 estimated by five year average

Background

Light availability to seagrass is the guiding paradigm for TBEP's Nitrogen Management Strategy. Because excessive nitrogen loads to the bay generally lead to increased algae blooms (higher chlorophyll-a levels) (Figure 2) and reduced light penetration to seagrass, an evaluation method was developed to assess whether load reduction strategies are achieving desired water quality results (i.e. reduced chlorophyll-a concentrations and increased water clarity).

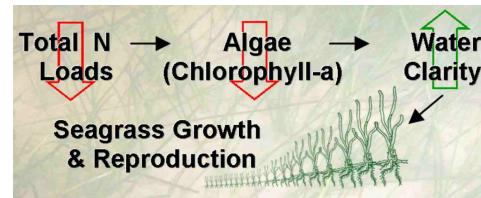


Figure 2: Seagrass restoration with N management.

Decision Support Approach

Year to year algae abundance (measured as chlorophyll-a concentrations) and visible light penetration through the water column (secchi disk depth visibility) have been identified as critical water quality indicators in Tampa Bay. Tracking the attainment of bay segment specific targets for these indicators provides the framework for developing and initiating bay management actions. TBEP management actions adopted in response to the annually-assessed decision support results are shown to the right.

| | |
|---|--|
| G | "Stay the Course" Continue planned projects. Report data via annual progress reports and Baywide Environmental Monitoring Report. |
| Y | "Caution" Review monitoring data and nitrogen loading estimates. Begin/continue TAC and Management Board development of specific management recommendations. |
| R | "On Alert" Finalize development and implement appropriate management actions to get back on track. |

2025 Decision Matrix Results

Water quality remained supportive of seagrass in most bay segments in comparison to prior years (Table 1, Figure 3). One tropical storm and two hurricanes affected the region in the fall. As a result, management targets for chlorophyll-a were exceeded in all bay segments except Hillsborough Bay (HB). Light attenuation targets were also exceeded in Lower Tampa Bay (LTB), causing this bay segment to receive a "Cautionary" outcome. Despite recent results, water quality conditions in OTB remain under investigation based on observations of significant decreases in seagrass coverage between 2016 and 2024.

Table 1: Water quality outcomes for 2025.

| Segment | Chi-a (ug/L) | | Light Penetration (m ⁻¹) | |
|---------|--------------|--------|--------------------------------------|--------|
| | 2025 | target | 2025 | target |
| OTB | 7.5 | 8.5 | 0.73 | 0.83 |
| HB | 11.3 | 13.2 | 0.92 | 1.58 |
| MTB | 6.0 | 7.4 | 0.57 | 0.83 |
| LTB | 3.6 | 4.6 | 0.61 | 0.63 |

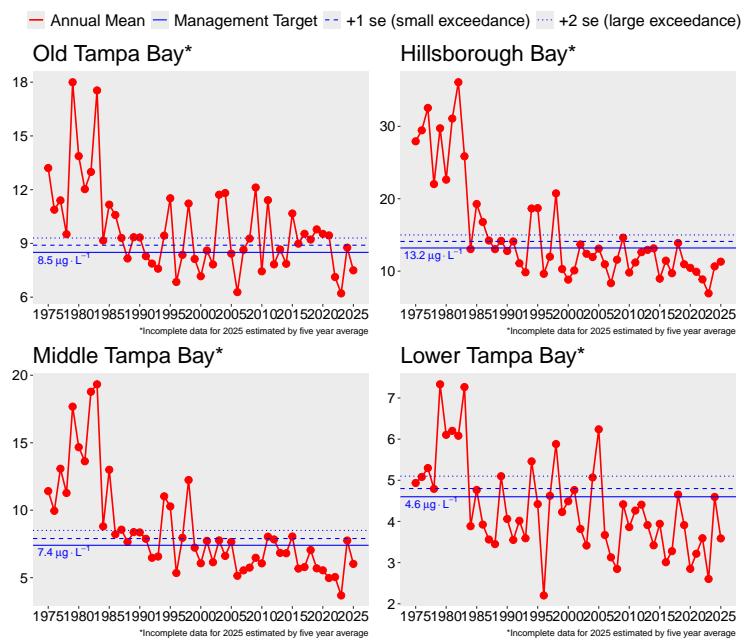


Figure 3: Historic chlorophyll-a annual averages for the four bay segments.

Note: Continuing water quality monitoring support provided by the Environmental Protection Commission of Hillsborough County. Full methods in Janicki et al. 2000. TBEP Technical Report #04-00. Points in map above show site-specific attainment of a bay segment target and are for reference only.

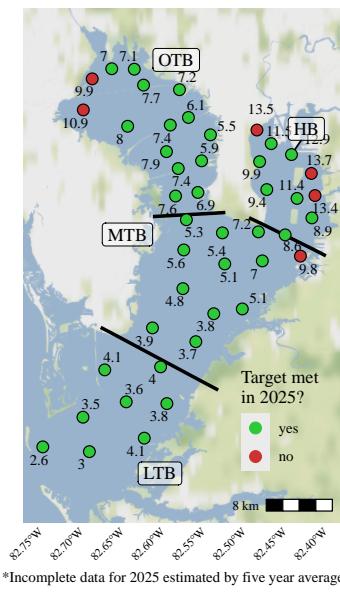


Figure 4: Chlorophyll-a attainment outcomes by site for 2025.

Progress Towards Meeting Regulatory Goals

An Initiative of the Tampa Bay Nitrogen Management Consortium to Maintain and Restore the Bay's Resources



FDEP Criteria:

| | OTB | HB | MTB | LTB |
|------|-----|----|-----|-----|
| 1975 | R | R | R | G |
| 1976 | R | R | R | G |
| 1977 | R | R | R | R |
| 1978 | R | R | R | G |
| 1979 | R | R | R | R |
| 1980 | R | R | R | R |
| 1981 | R | R | R | R |
| 1982 | R | R | R | R |
| 1983 | R | R | R | R |
| 1984 | G | G | R | G |
| 1985 | R | R | R | G |
| 1986 | R | R | G | G |
| 1987 | R | G | R | G |
| 1988 | G | G | G | G |
| 1989 | R | G | G | G |
| 1990 | R | G | G | G |
| 1991 | G | G | G | G |
| 1992 | G | G | G | G |
| 1993 | G | G | G | G |
| 1994 | R | R | R | R |
| 1995 | R | R | R | G |
| 1996 | G | G | G | G |
| 1997 | G | G | G | G |
| 1998 | R | R | R | R |
| 1999 | G | G | G | G |
| 2000 | G | G | G | G |
| 2001 | G | G | G | G |
| 2002 | G | G | G | G |
| 2003 | R | G | G | G |
| 2004 | R | G | G | G |
| 2005 | G | G | G | R |
| 2006 | G | G | G | G |
| 2007 | G | G | G | G |
| 2008 | G | G | G | G |
| 2009 | R | G | G | G |
| 2010 | G | G | G | G |
| 2011 | R | G | G | G |
| 2012 | G | G | G | G |
| 2013 | G | G | G | G |
| 2014 | G | G | G | G |
| 2015 | R | G | G | G |
| 2016 | G | G | G | G |
| 2017 | R | G | G | G |
| 2018 | G | G | G | G |
| 2019 | R | G | G | G |
| 2020 | R | G | G | G |
| 2021 | R | G | G | G |
| 2022 | G | G | G | G |
| 2023 | G | G | G | G |
| 2024 | G | G | G | G |
| 2025 | G | G | G | G |

*Incomplete data for 2025 estimated by five year average

Figure 5: Bay segment attainment of chlorophyll-a criteria from 1975 to 2025 (April, May data missing for 2020).

Maintaining Reasonable Assurance & TMDL Compliance

On behalf of the Tampa Bay Nitrogen Management Consortium, TBEP submitted the 2022 Reasonable Assurance (RA) Update for the 2017-2021 period to FDEP in December 2022. FDEP concluded that the RA Update satisfies efforts to maintain water quality during the next five year period. During 2024, all bay segments met FDEP numeric nutrient criteria. Tampa Bay Nitrogen Management Consortium participants continue to implement actions that ensure water quality criteria are met for the current RA period from 2022-2026. The third RA annual assessment report for the 2022-2026 period will be submitted in April 2025.

2025 Chl-a Monthly Variation Compared to 1974-2024

Chlorophyll-a concentrations were elevated throughout the bay during late summer/fall months in 2025 due to the influence of several tropical storms on the region (Figure 6). Mixed-assemblage algae blooms were reported in Hillsborough Bay, Old Tampa Bay, and Middle Tampa Bay, while low concentrations of *Karenia brevis* continued to be observed in Lower Tampa Bay into the winter months. Although understanding and mitigating blooms of *Pyrodinium bahamense* in OTB continues to be a focus of research and management efforts, summer concentrations in Old Tampa Bay were lower compared to prior years and the chlorophyll-a criteria was met for the third consecutive year of the RA period.

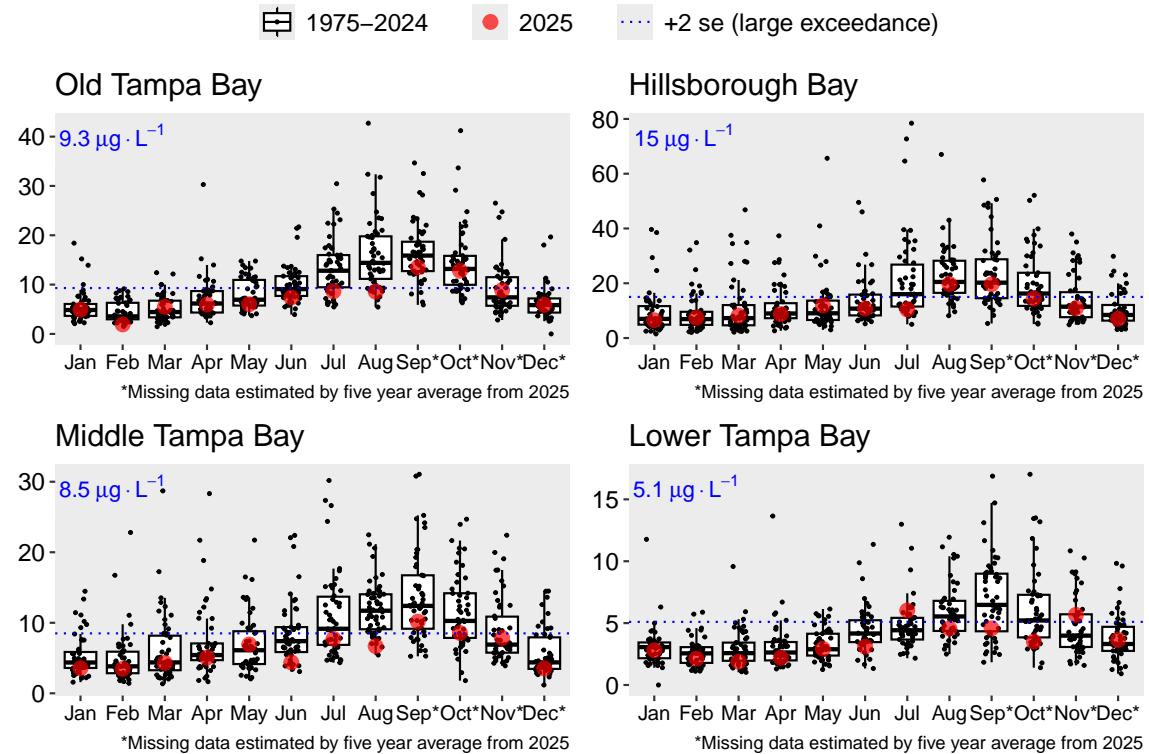


Figure 6: Chlorophyll-a monthly averages from 1975-2024 for the four bay segments. The monthly averages for 2025 are shown in red.

Tampa Bay Seagrass Recovery

Tampa Bay's total seagrass coverage remains below the 40,000 acre recovery goal defined in the [Habitat Master Plan](#). The 2024 baywide estimate was 31,563 acres, representing a slight increase of 1,426 acres since 2022 (Figure 7). Gains were observed in all bay segments, except Old Tampa Bay, which continues to experience declines in seagrass coverage. These estimates were derived from aerial photographs acquired prior to Hurricanes Debby, Helene, and Milton. More information on the bay's seagrass trends using transect monitoring data can be found at <https://shiny.tbep.org/seagrasstransect-dash/> and using the coverage estimates can be found at <https://shiny.tbep.org/seagrass-analysis/>.

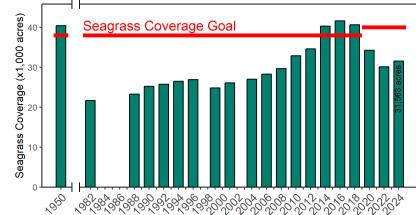


Figure 7: Seagrass estimates from 1950-2024 (Source: TBEP & SWFWMD)

Note: 2024 nutrient management compliance assessment available from Beck, M.W., Burke, M., Sherwood, E. 2025. TBEP Technical Report #04-25. Please cite this document as Beck, M.W., Burke, M., Sherwood, E. 2025. 2024 Tampa Bay Water Quality Assessment. TBEP Technical Report #03-25, St. Petersburg, FL.