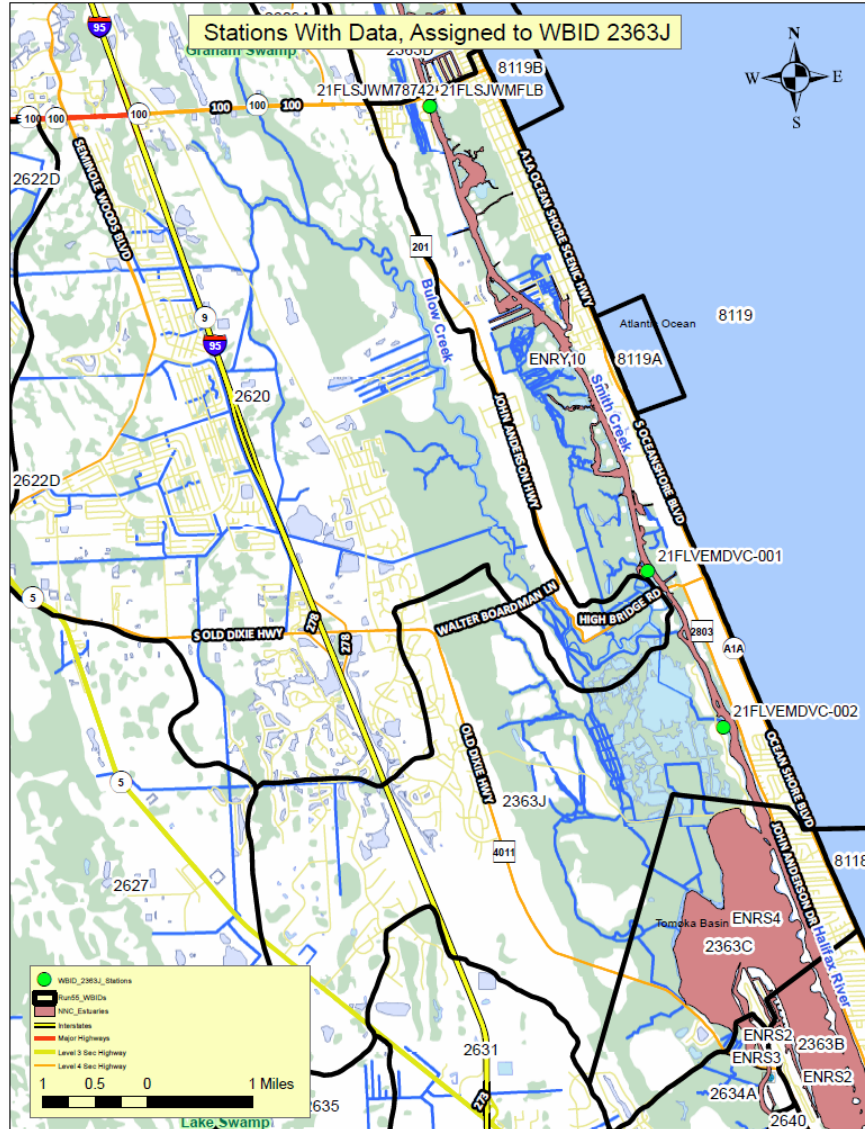


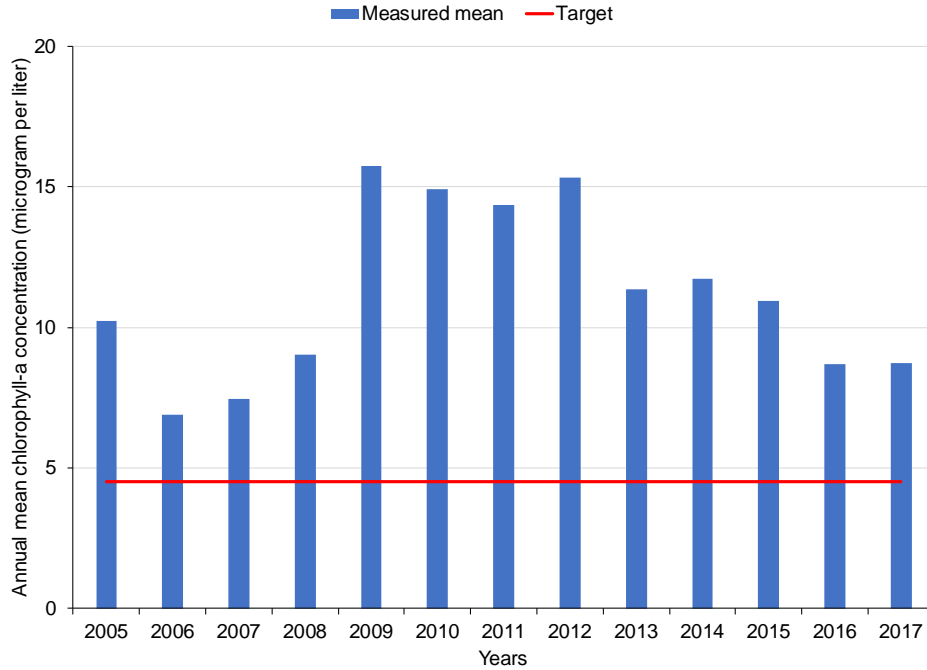
Impaired Water Quality

The waters in the area were declared impaired by the Florida Department of Environmental Protection (FDEP) in June 2018. The impairment is based on evaluating concentrations of chlorophyll-a, which correlate with the amounts of single-celled algae in the water. Data were collected at three sites in the area (see map below), with the two northern sites being essentially the same as where the stakeholders' consultant collected water (see 1:29:00-1:29:16 in the video from the meeting on November 7, 2018, <https://www.sjrwmd.com/facts/flagler-wetland-restoration-project/#narrative-construction-methods>).

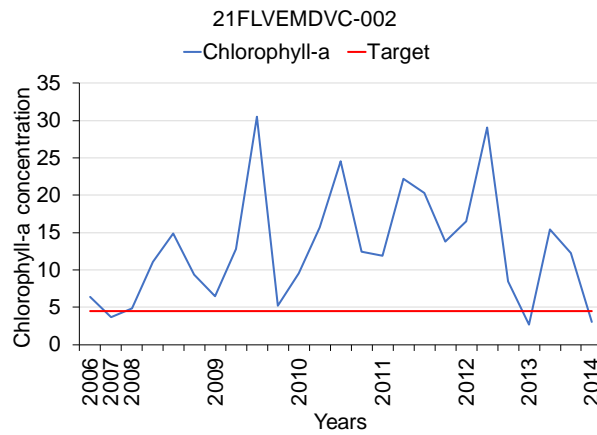
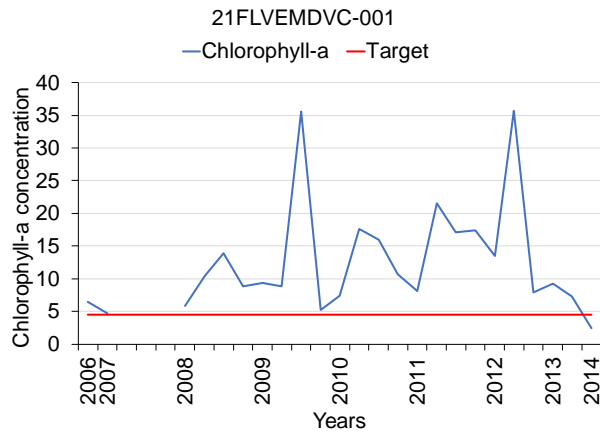
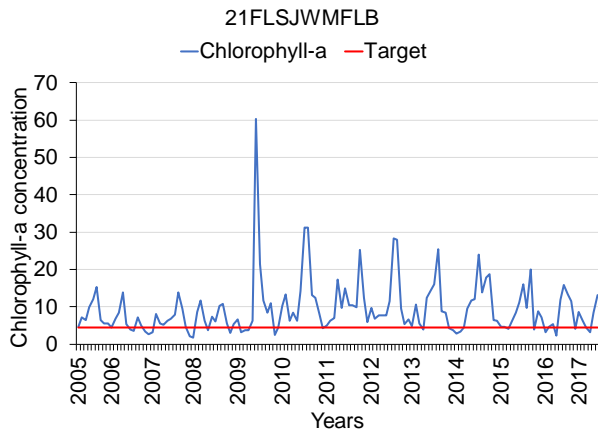


Sampling stations shown as green dots.

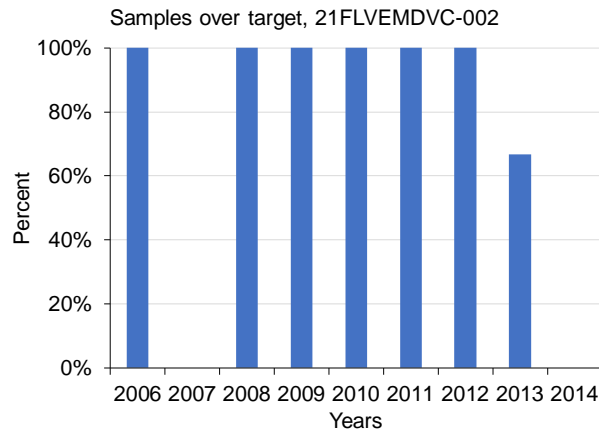
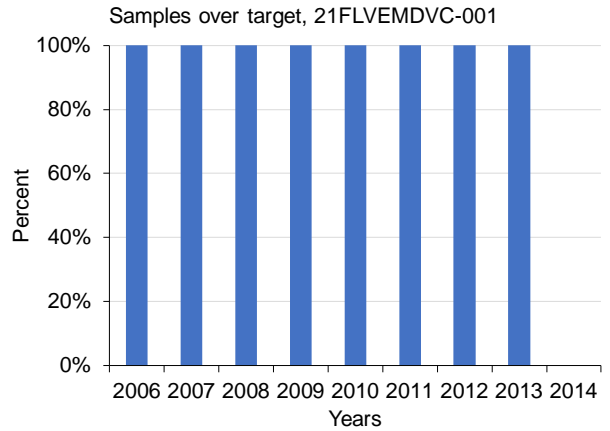
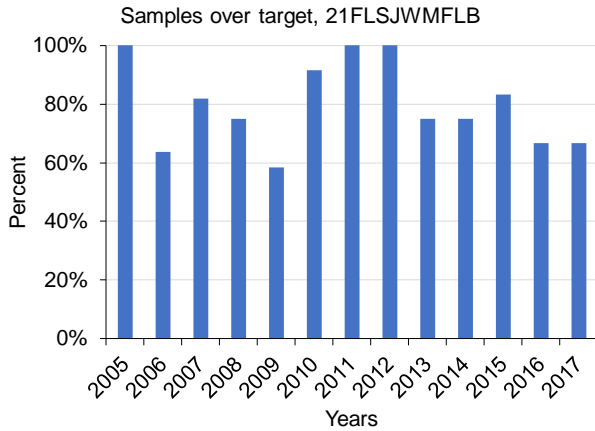
Average concentrations of chlorophyll-a in the water exceeded the target concentration by approximately 2-3 times over the last 13 years (see first figure below). Some stakeholders have misinterpreted the annual averages as an indication of an improving trend in chlorophyll concentrations. When FDEP applied the appropriate analyses, they found no statistically significant trend, and support for this finding comes from examination of the time series for the three sites and the percent of samples that exceeded the target (see figures below).



Annual mean chlorophyll concentrations.



Time series for chlorophyll concentrations.



Percent of samples exceeding the target.

Algae require nutrients, so the impairment can be attributed to nitrogen and phosphorus from wastewater discharges, stormwater runoff, leachate from septic tanks, and other sources. The impairment will be reassessed in the next five-year cycle. Eventually, local stakeholders, such as the city of Flagler Beach and Flagler County, may participate in development and adoption of one or more total maximum daily loads (TMDLs), which represent the loads of contaminants that the system can assimilate without showing signs of impairment. A plan to achieve nutrient reductions, termed a Basin Management Action Plan (BMAP), also will be developed and adopted. Restored wetlands add to these efforts to improve water quality by taking up nutrients that cause the impairment. Ultimately, the best choice is not to restore wetlands or address sources of nutrients but rather to restore wetlands and address source of nutrients.