

Fort Clinch State Park Aquatic Preserve

SEACAR Water Quality Analysis

Last compiled on 10 July, 2025

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Indicators

Nutrients

Total Nitrogen - Discrete

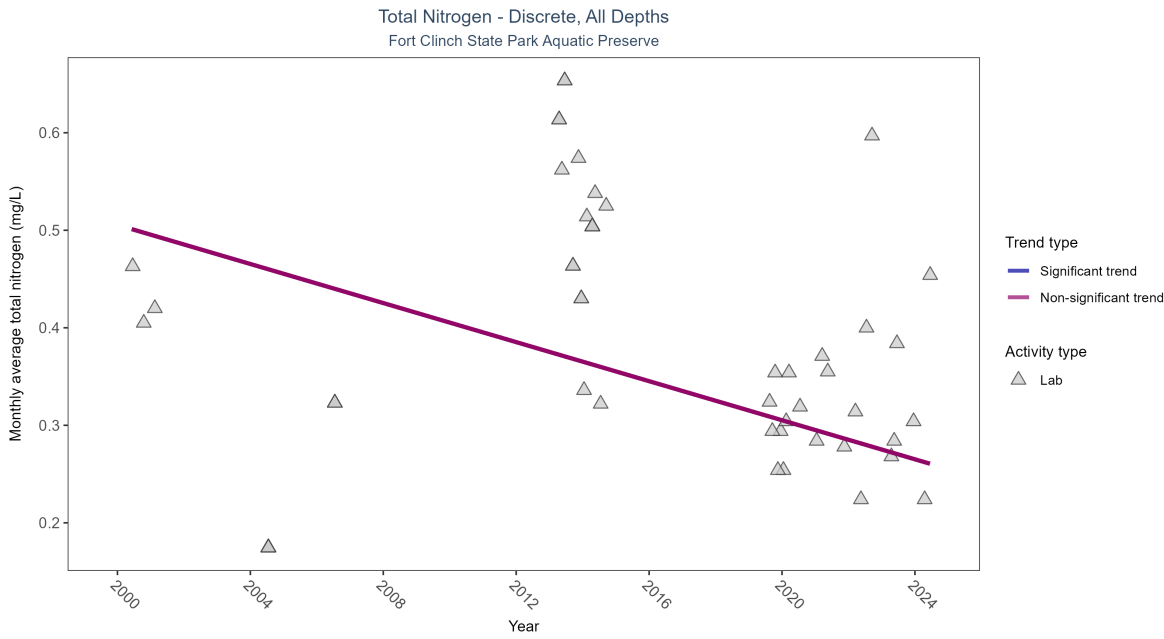


Figure 1: Scatter plot of monthly average total nitrogen over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only nitrogen values obtained from laboratory analyses (triangles) are included in the plot.

Table 1: Seasonal Kendall-Tau Results for - Total Nitrogen

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	No significant trend	55	12	2000 - 2024	0.354	-0.33333	0.50547	-0.01001	0.0908

Total nitrogen showed no detectable trend between 2000 and 2024.

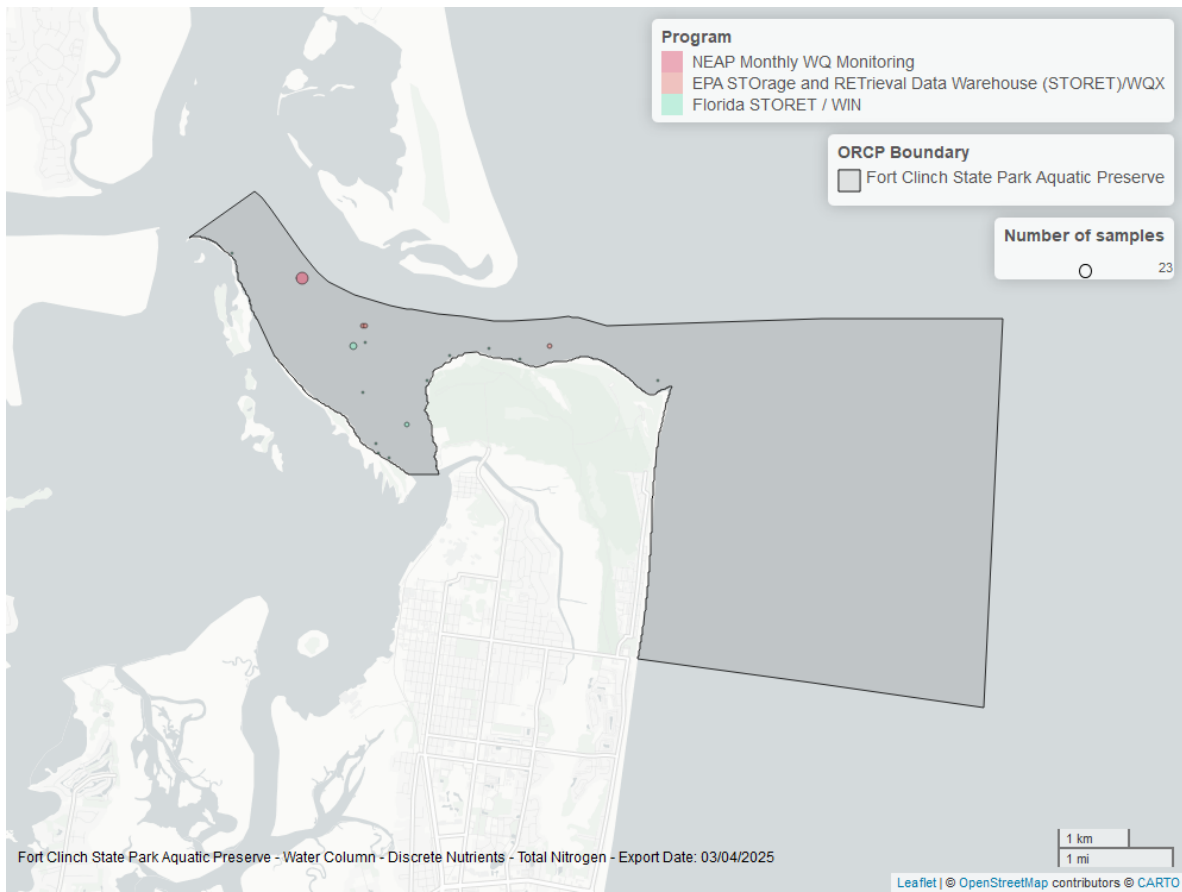


Figure 2: Map showing location of discrete water quality sampling locations within the boundaries of *Fort Clinch State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Total Phosphorus - Discrete

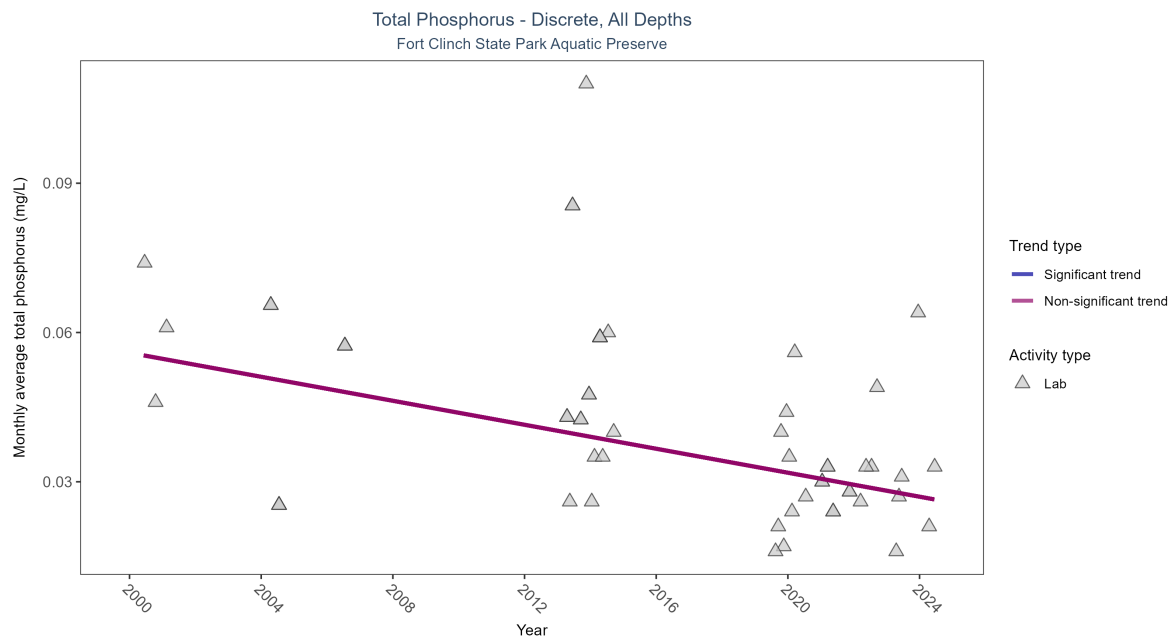


Figure 3: Scatter plot of monthly average total phosphorus over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only phosphorus values obtained from laboratory analyses (triangles) are included in the plot.

Table 2: Seasonal Kendall-Tau Results for - Total Phosphorus

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	No significant trend	58	12	2000 - 2024	0.034	-0.25833	0.05592	-0.0012	0.2374

Total phosphorus showed no detectable trend between 2000 and 2024.

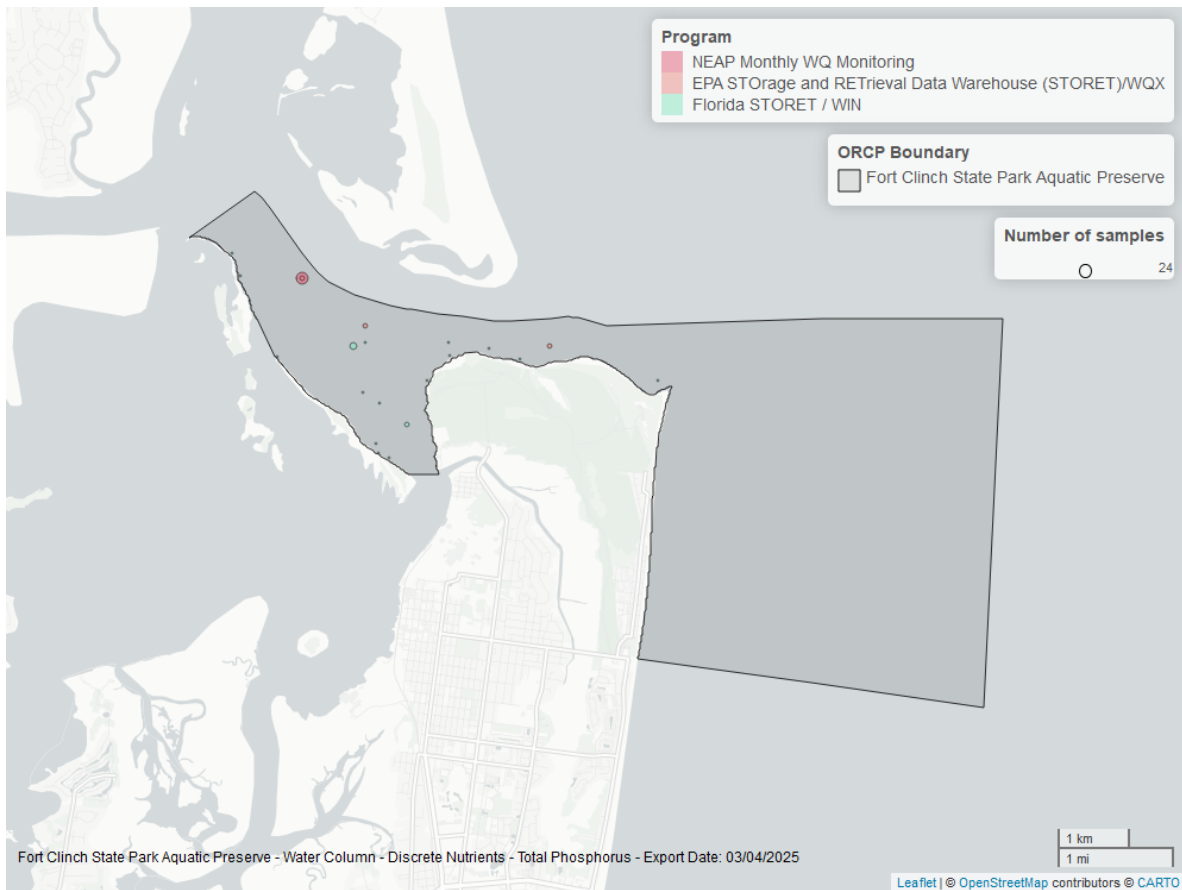


Figure 4: Map showing location of discrete water quality sampling locations within the boundaries of *Fort Clinch State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Water Quality

Dissolved Oxygen - Discrete

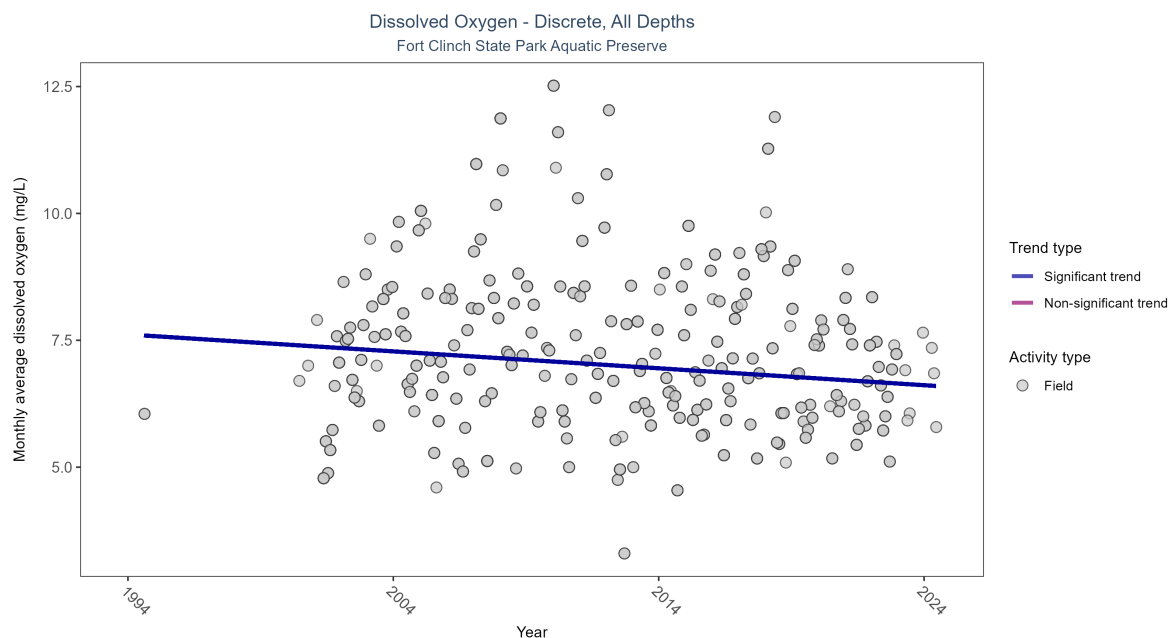


Figure 5: Scatter plot of monthly average dissolved oxygen over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only dissolved oxygen values measured in the field (circles) are included in the plot.

Table 3: Seasonal Kendall-Tau Results for - Dissolved Oxygen

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Field	Significantly decreasing trend	1641	26	1994 - 2024	7.1	-0.18465	7.61469	-0.03332	0

Monthly average dissolved oxygen decreased by 0.03 mg/L per year.

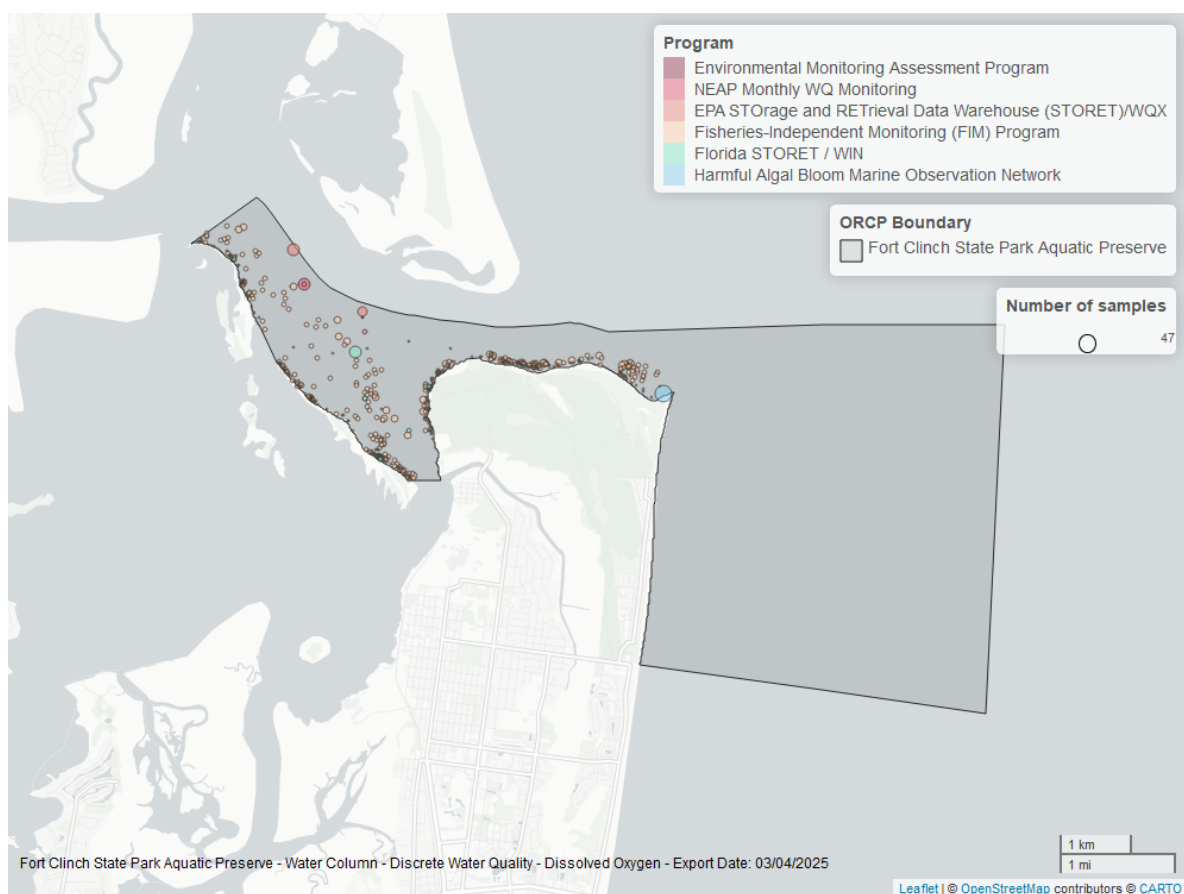


Figure 6: Map showing location of discrete water quality sampling locations within the boundaries of *Fort Clinch State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Dissolved Oxygen Saturation - Discrete

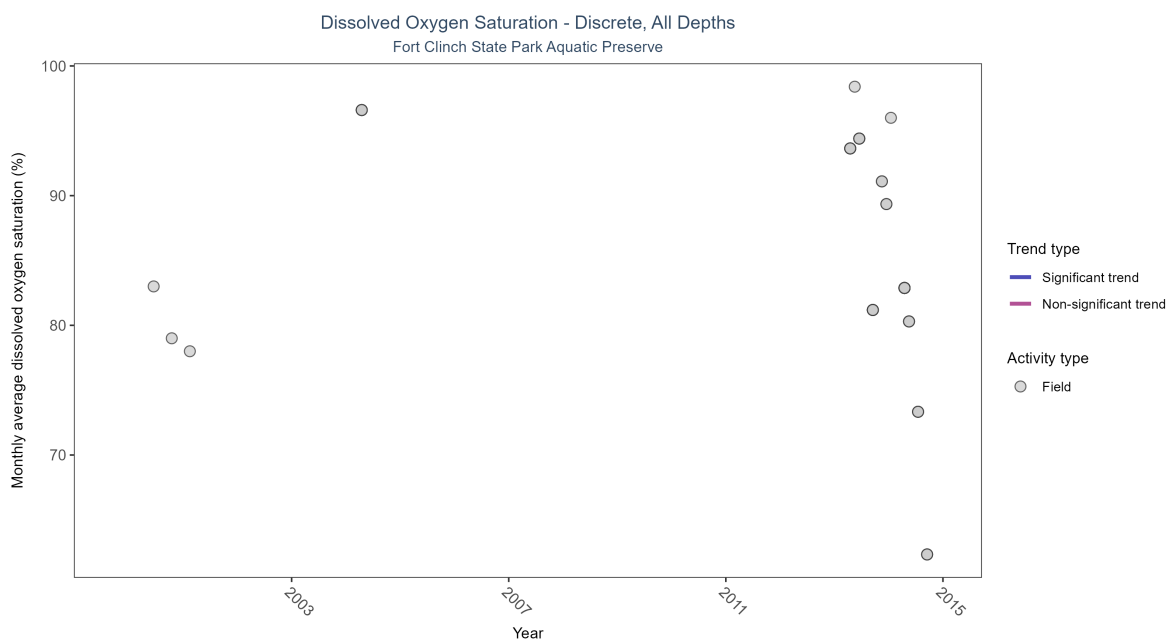


Figure 7: Scatter plot of monthly average dissolved oxygen saturation over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only dissolved oxygen saturation values measured in the field (circles) are included in the plot.

Table 4: Seasonal Kendall-Tau Results for - Dissolved Oxygen Saturation

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Field	Insufficient data to calculate trend	48	5	2000 - 2014	85.45	-	-	-	-

There was insufficient data to fit a model for dissolved oxygen saturation.

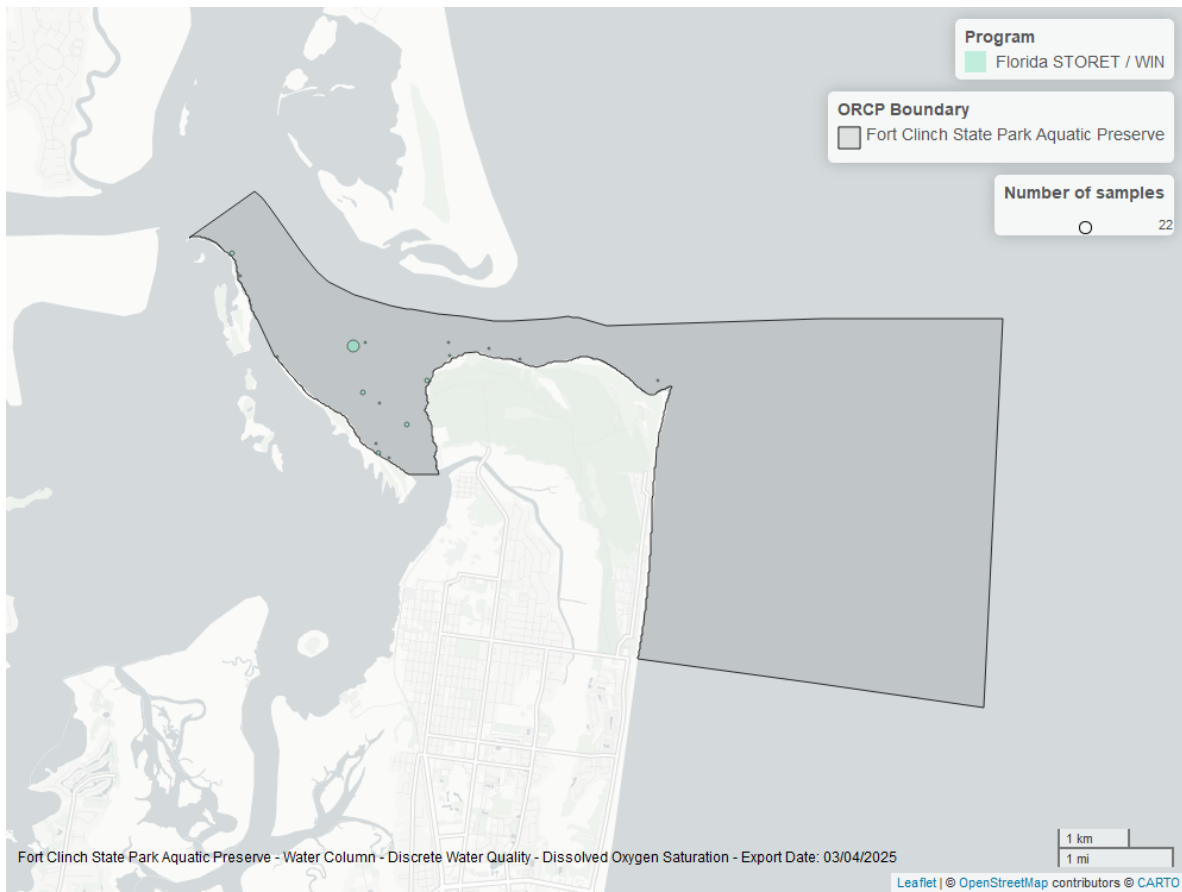


Figure 8: Map showing location of discrete water quality sampling locations within the boundaries of *Fort Clinch State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Salinity - Discrete

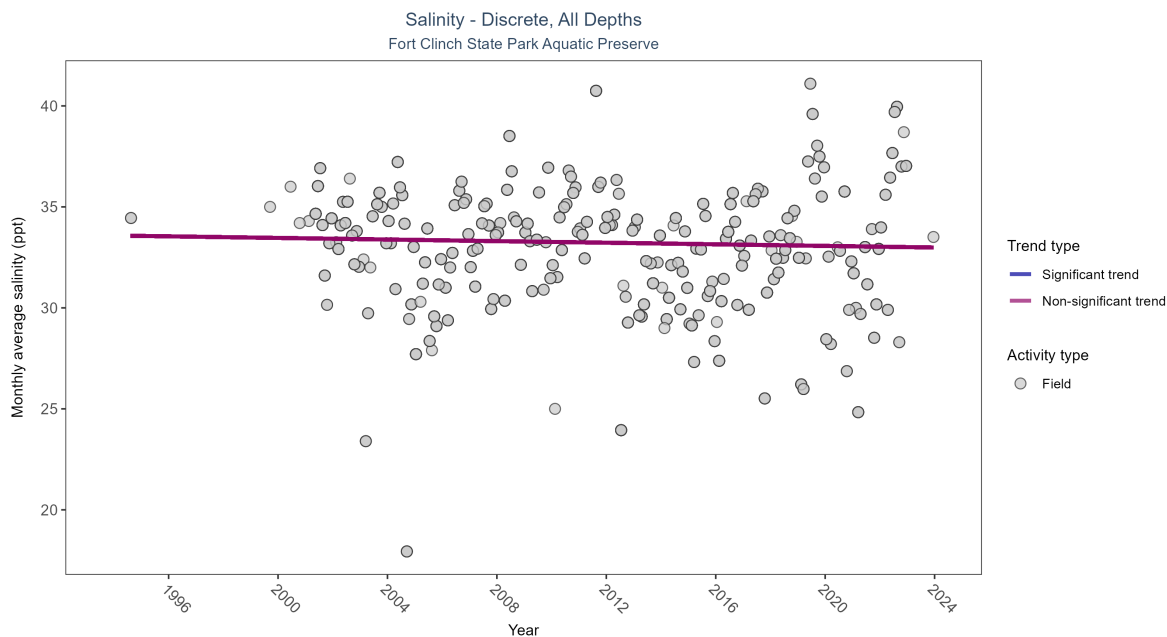


Figure 9: Scatter plot of monthly average salinity over time. If the time series included ten or more years of discrete observations, significant (blue) or non-significant (magenta) trend lines are also shown. Discrete salinity values derived from grab samples analyzed in the field (circles) or the laboratory (triangles) are both included in the plot.

Table 5: Seasonal Kendall-Tau Results for - Salinity

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
All	No significant trend	1638	26	1994 - 2023	33.5	-0.03841	33.58155	-0.01974	0.3912

Salinity showed no detectable trend between 1994 and 2023.

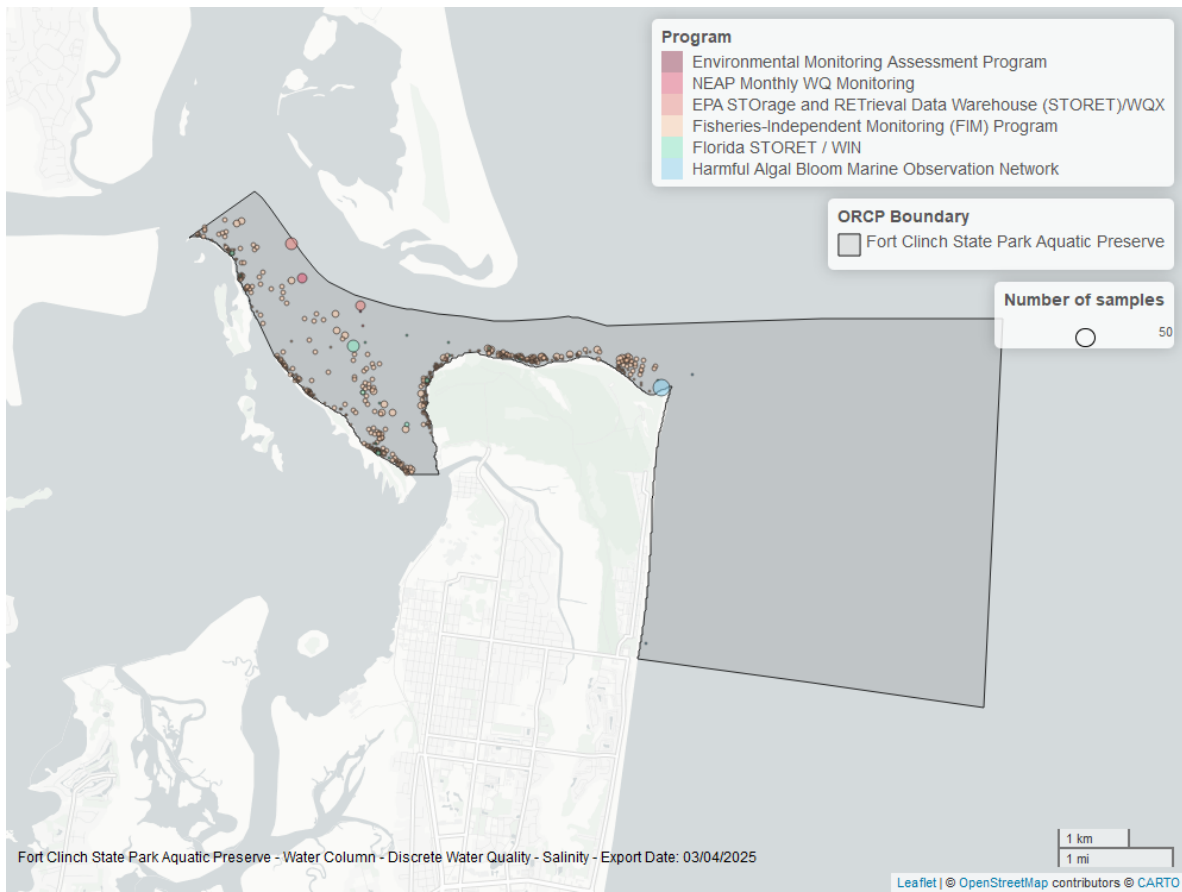


Figure 10: Map showing location of discrete water quality sampling locations within the boundaries of *Fort Clinch State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Water Temperature - Discrete

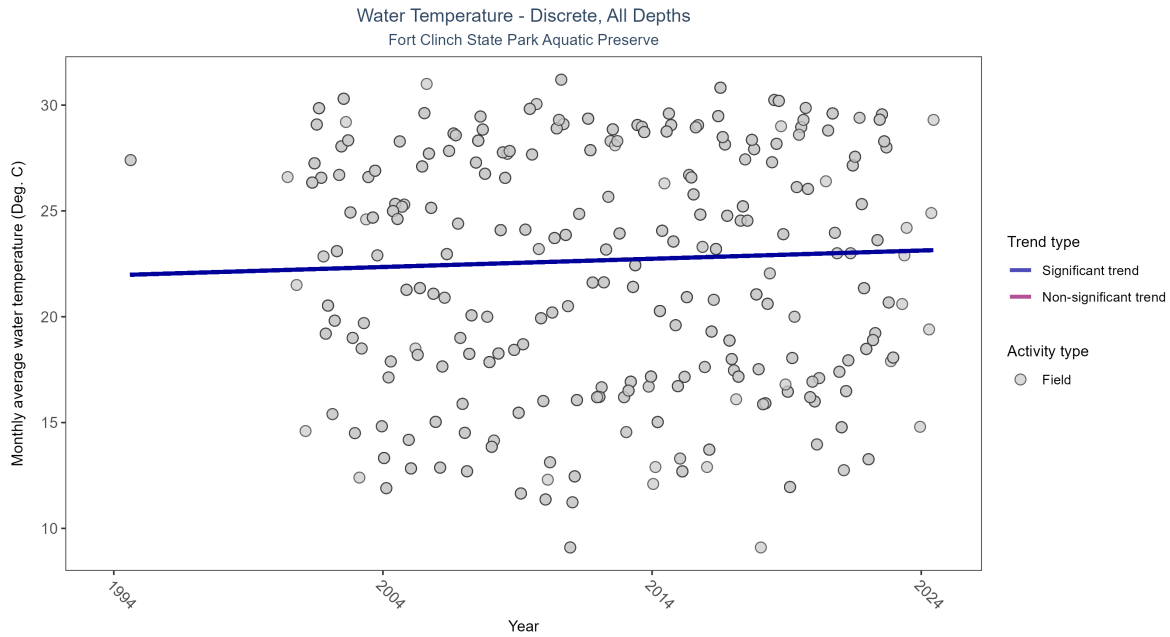


Figure 11: Scatter plot of monthly average water temperature over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only water temperature measurements taken in the field (circles) are included in the plot.

Table 6: Seasonal Kendall-Tau Results for - Water Temperature

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Field	Significantly increasing trend	1662	26	1994 - 2024	23.2	0.08897	21.96099	0.03893	0.0395

Monthly average water temperature increased by 0.04°C per year.

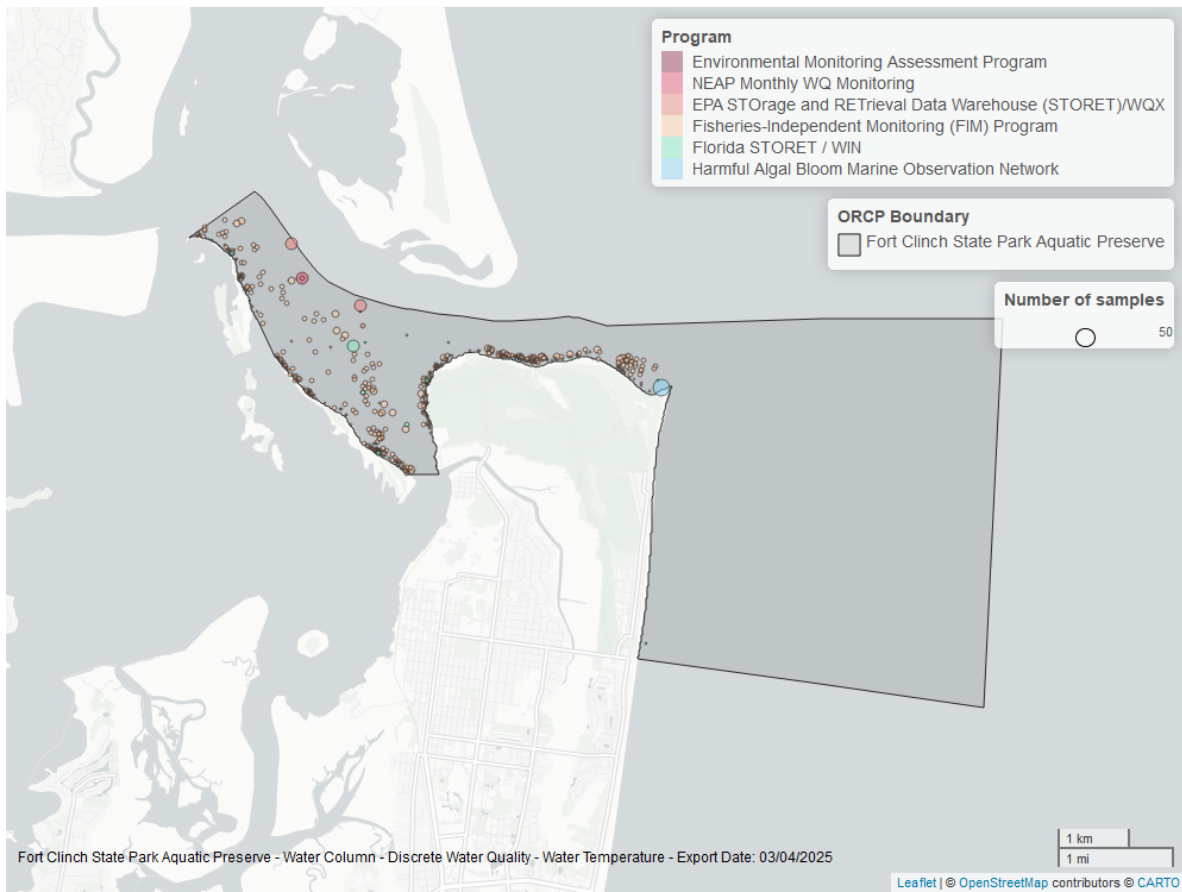


Figure 12: Map showing location of discrete water quality sampling locations within the boundaries of *Fort Clinch State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

pH - Discrete

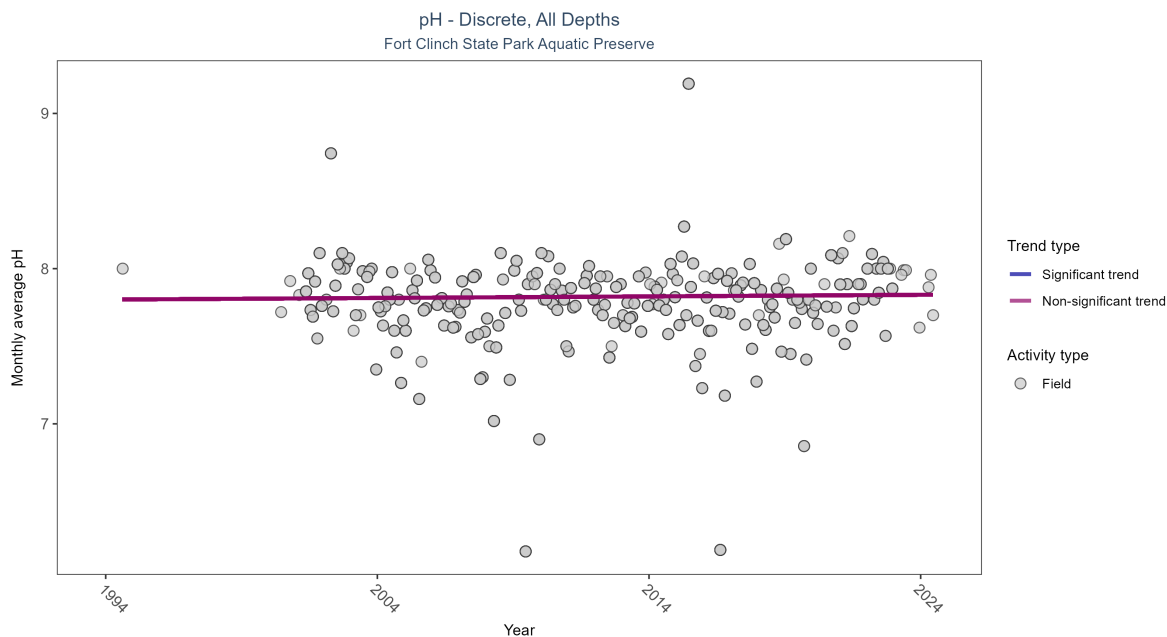


Figure 13: Scatter plot of monthly average pH over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only pH values measured in the field (circles) are included in the plot.

Table 7: Seasonal Kendall-Tau Results for - pH

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Field	No significant trend	1631	26	1994 - 2024	7.8	0.0303	7.80065	0.00102	0.5561

pH showed no detectable trend between 1994 and 2024.

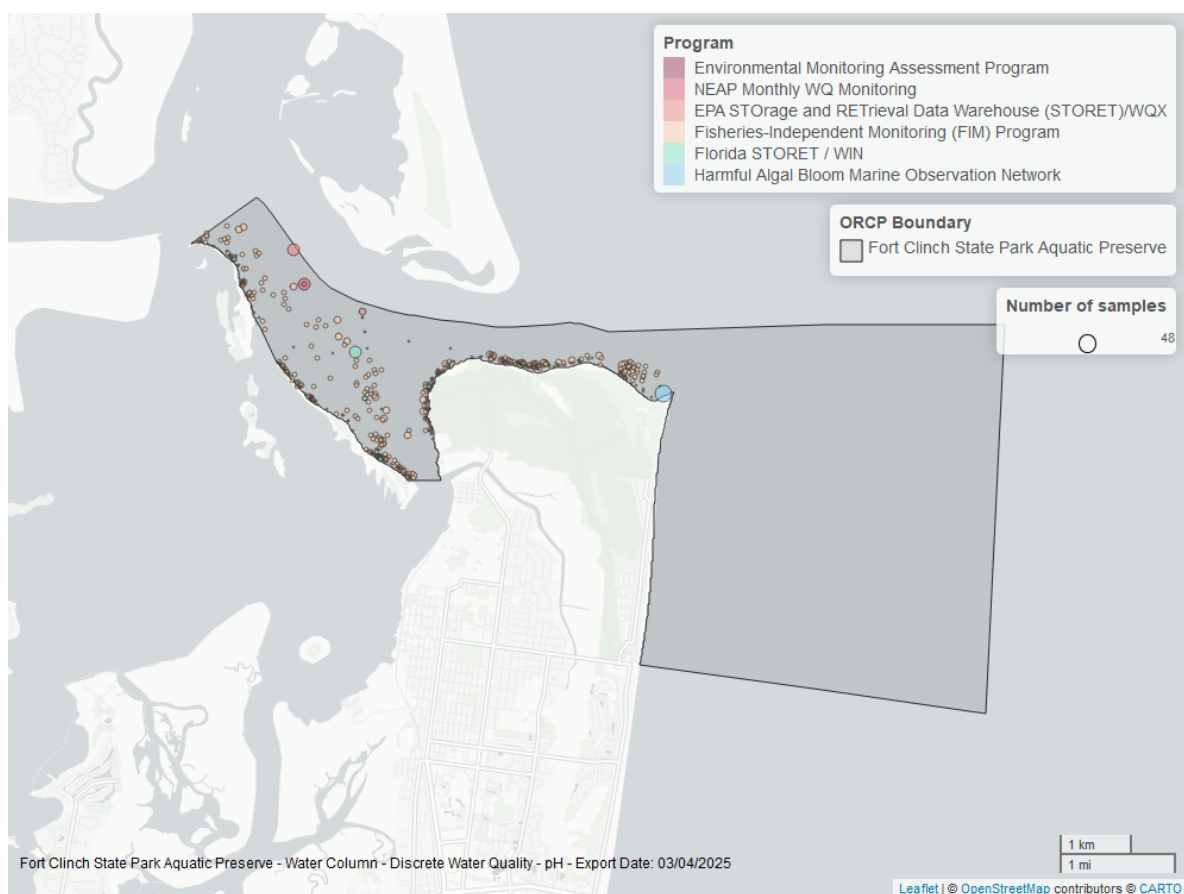


Figure 14: Map showing location of discrete water quality sampling locations within the boundaries of *Fort Clinch State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Water Clarity

Turbidity - Discrete

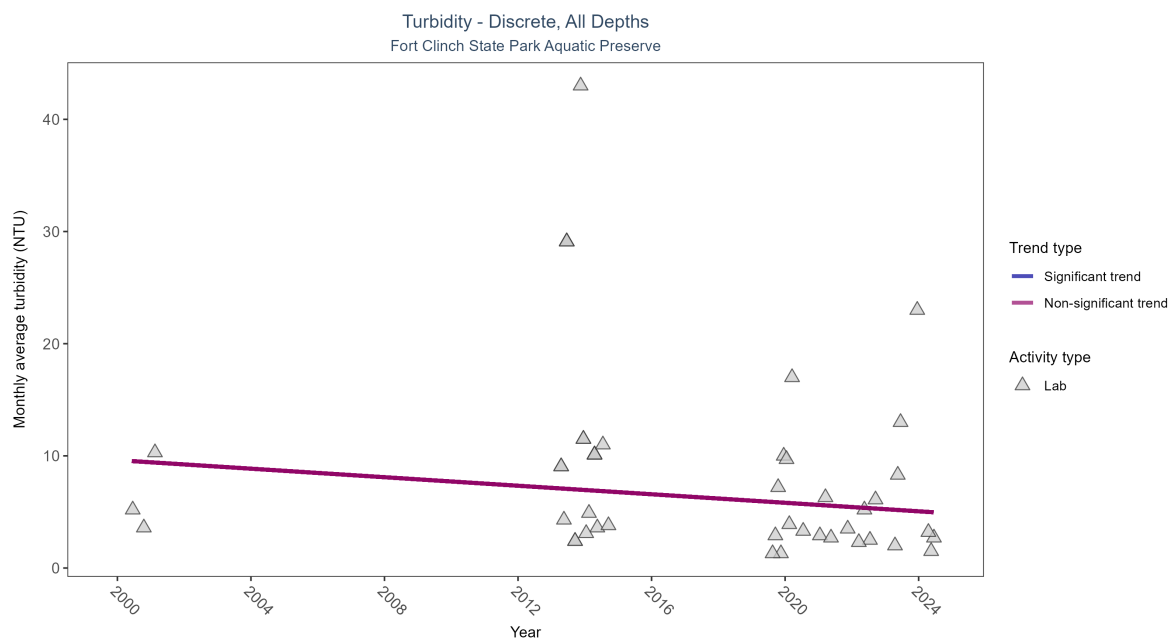


Figure 15: Scatter plot of monthly average turbidity over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only turbidity values measured in the laboratory (triangles) are included in the plot.

Table 8: Seasonal Kendall-Tau Results for - Turbidity

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	No significant trend	49	10	2000 - 2024	5	-0.22105	9.61579	-0.19	0.3061

Turbidity showed no detectable trend between 2000 and 2024.

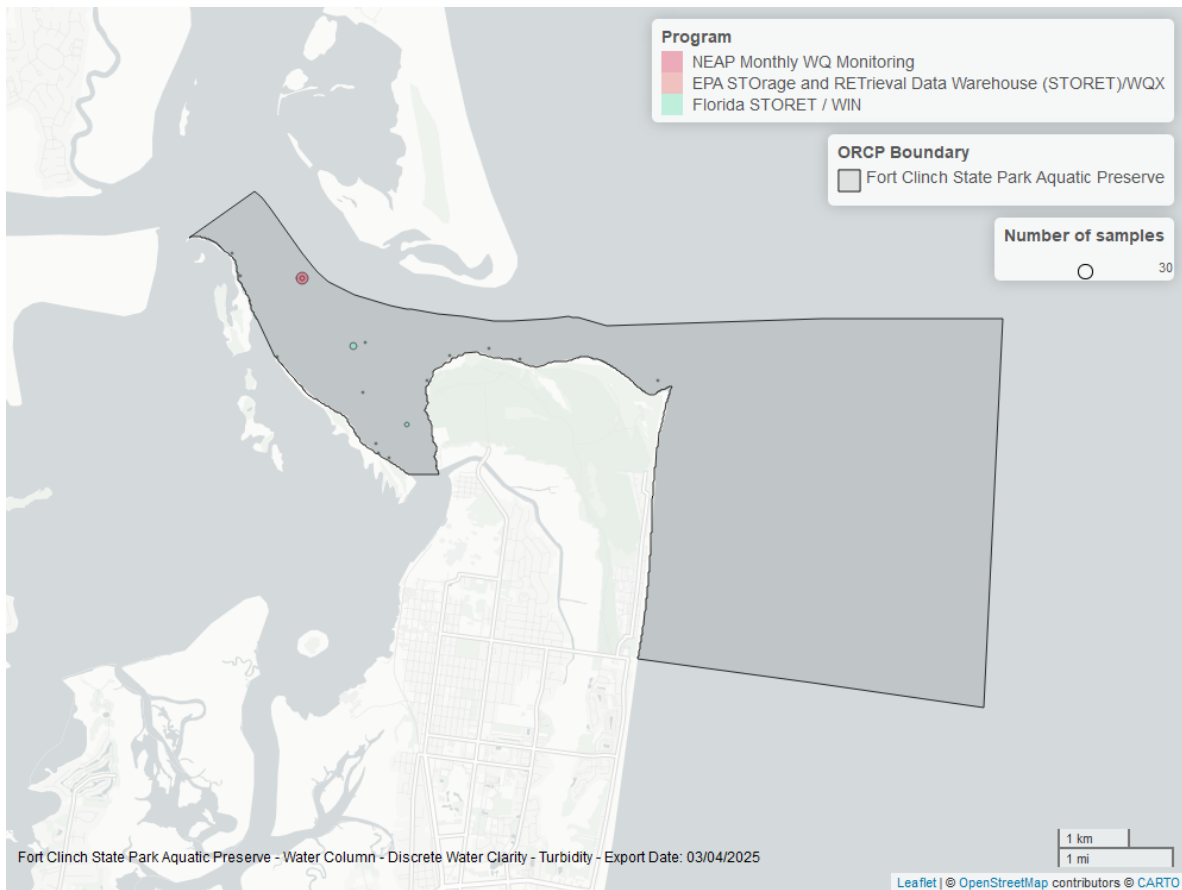


Figure 16: Map showing location of discrete water quality sampling locations within the boundaries of *Fort Clinch State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Total Suspended Solids - Discrete

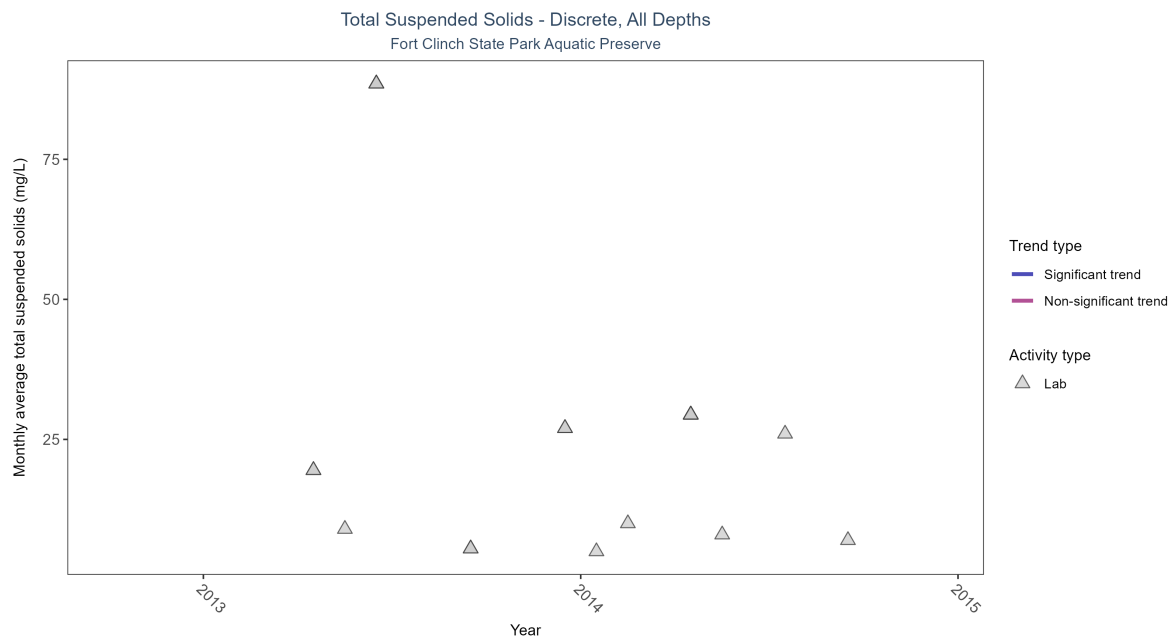


Figure 17: Scatter plot of monthly average total suspended solids (TSS) over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only TSS values obtained from laboratory analyses (triangles) are included in the plot.

Table 9: Seasonal Kendall-Tau Results for - Total Suspended Solids

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	Insufficient data to calculate trend	22	2	2013 - 2014	17.5	-	-	-	-

There was insufficient data to fit a model for total suspended solids.

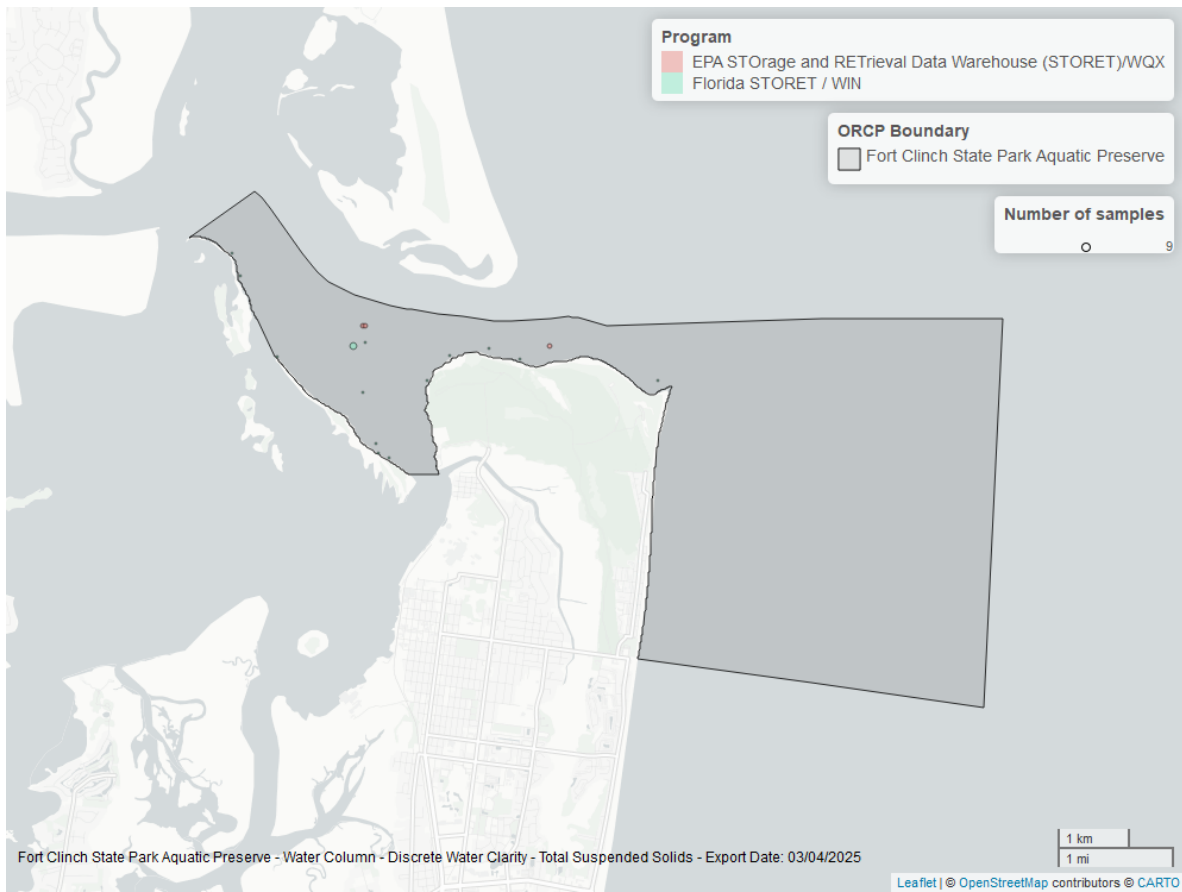


Figure 18: Map showing location of discrete water quality sampling locations within the boundaries of *Fort Clinch State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Chlorophyll a, Uncorrected for Pheophytin - Discrete

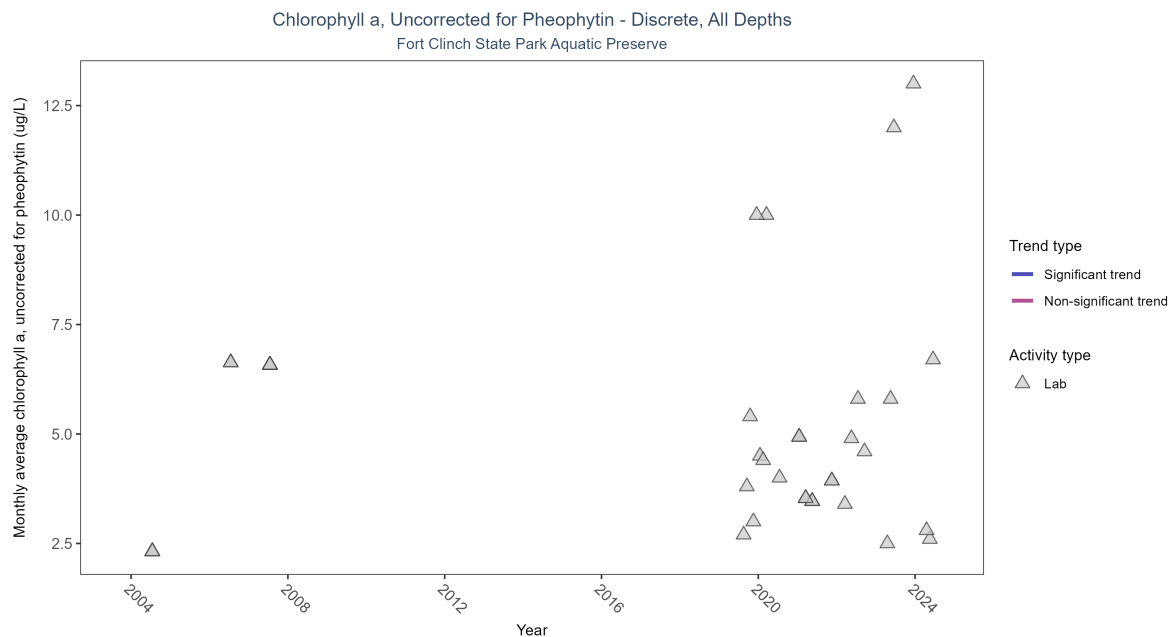


Figure 19: Scatter plot of monthly average levels of chlorophyll a, uncorrected for pheophytin, over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only laboratory-analyzed chlorophyll a (triangles) is included in the plot.

Table 10: Seasonal Kendall-Tau Results for - Chlorophyll a, Uncorrected for Pheophytin

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	Insufficient data to calculate trend	56	9	2004 - 2024	4.95419	-	-	-	-

There was insufficient data to fit a model for chlorophyll a, uncorrected for pheophytin.

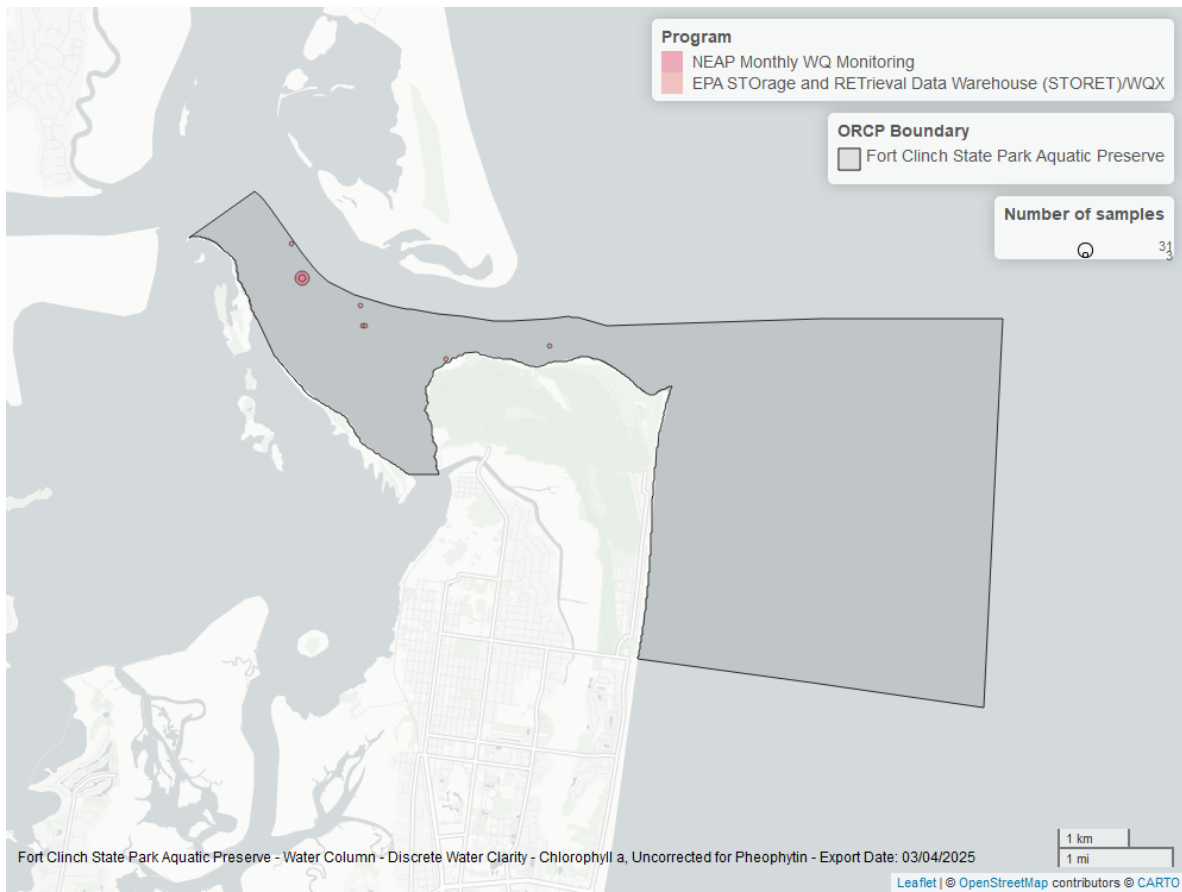


Figure 20: Map showing location of discrete water quality sampling locations within the boundaries of *Fort Clinch State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Chlorophyll a, Corrected for Pheophytin - Discrete

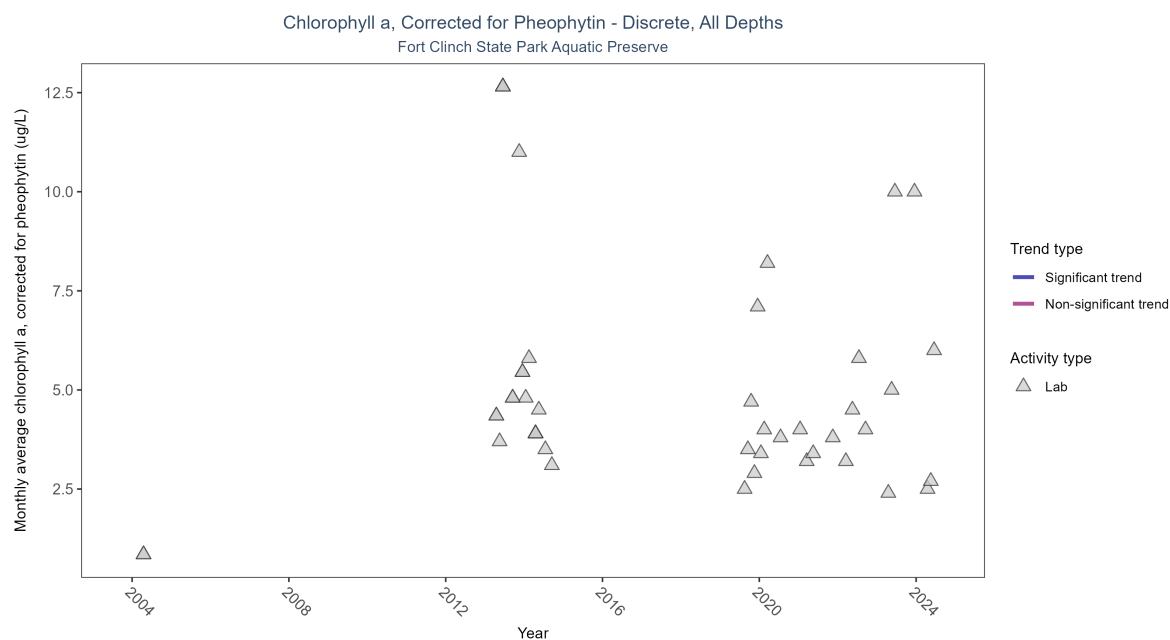


Figure 21: Scatter plot of monthly average levels of chlorophyll a, corrected for pheophytin, over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only laboratory-analyzed chlorophyll a (triangles) is included in the plot.

Table 11: Seasonal Kendall-Tau Results for - Chlorophyll a, Corrected for Pheophytin

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	Insufficient data to calculate trend	48	9	2004 - 2024	4.1	-	-	-	-

There was insufficient data to fit a model for chlorophyll a, corrected for pheophytin.

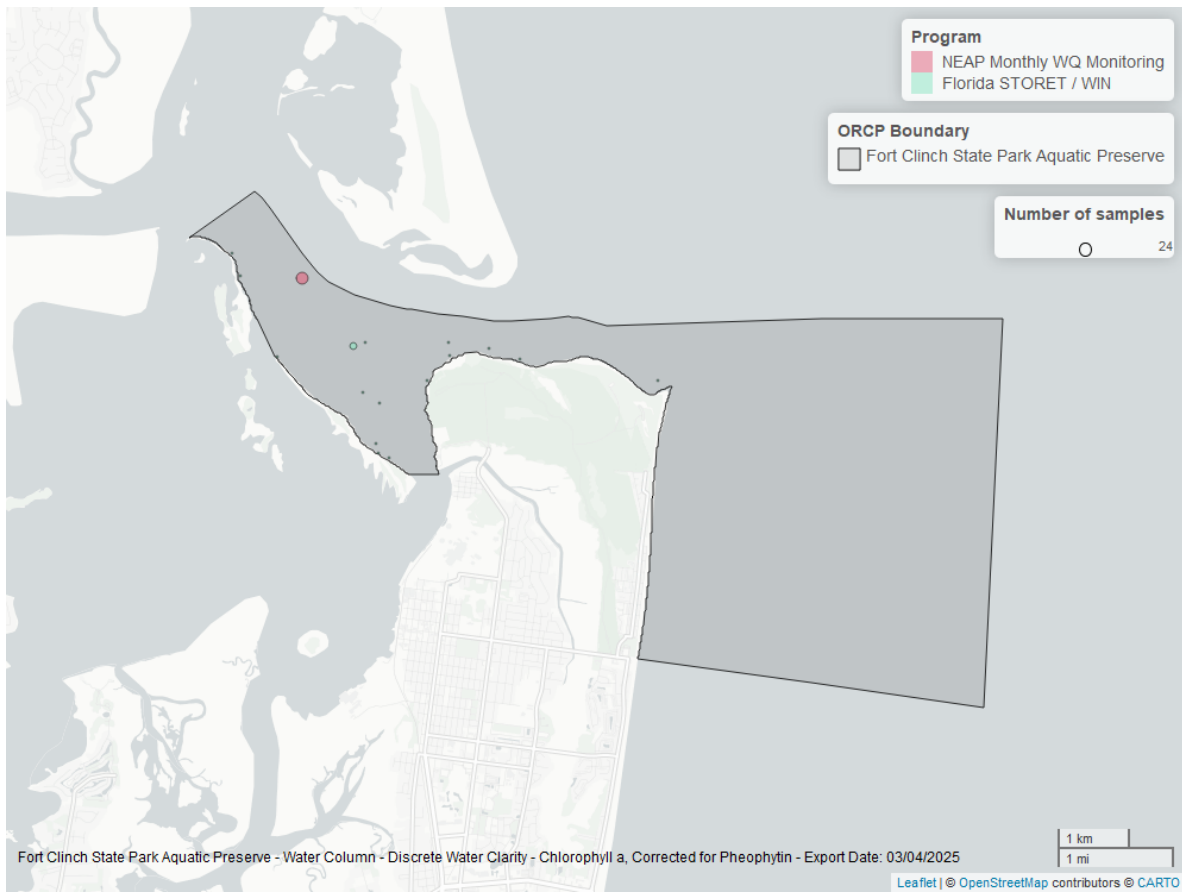


Figure 22: Map showing location of discrete water quality sampling locations within the boundaries of *Fort Clinch State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Secchi Depth - Discrete

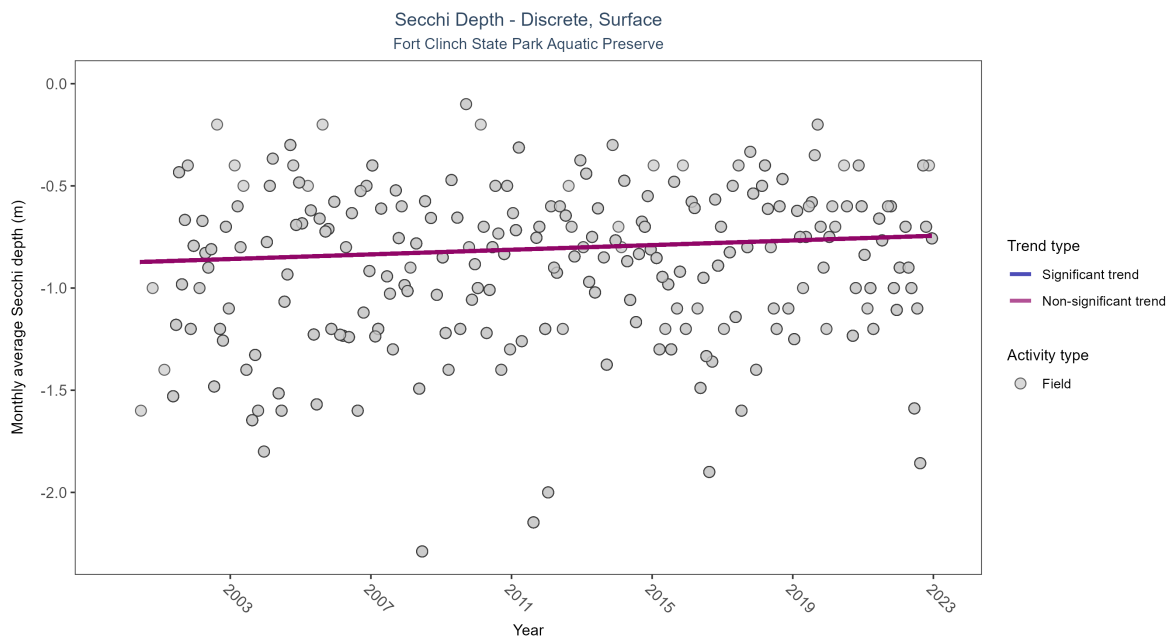


Figure 23: Scatter plot of monthly average Secchi depth over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Secchi depth is only measured in the field (circles).

Table 12: Seasonal Kendall-Tau Results for - Secchi Depth

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Field	No significant trend	1511	23	2000 - 2022	-0.9	0.06468	-0.875	0.00568	0.1556

Secchi depth showed no detectable trend between 2000 and 2022.

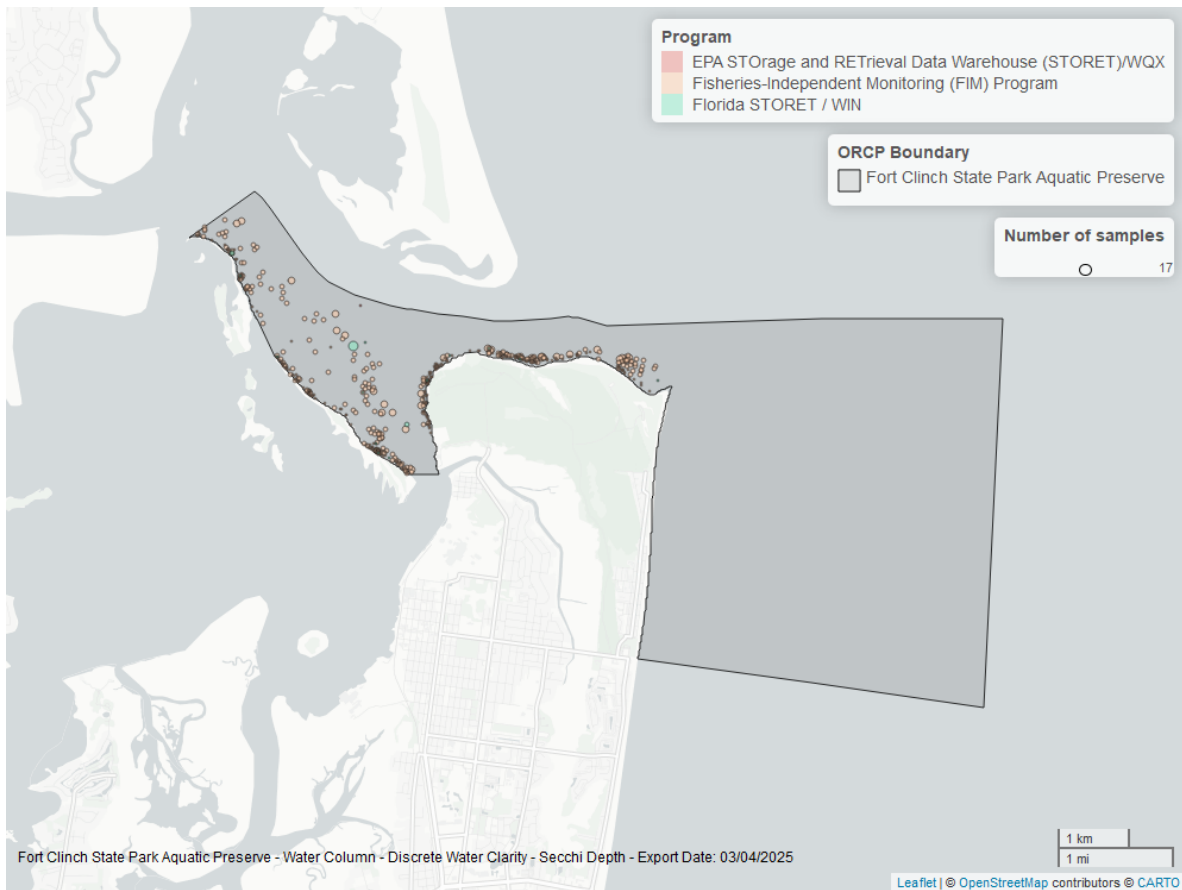


Figure 24: Map showing location of discrete water quality sampling locations within the boundaries of *Fort Clinch State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.