

# Rocky Bayou State Park Aquatic Preserve

## SEACAR Water Quality Analysis

Last compiled on 10 July, 2025

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# Indicators

## Nutrients

### Total Nitrogen - Discrete

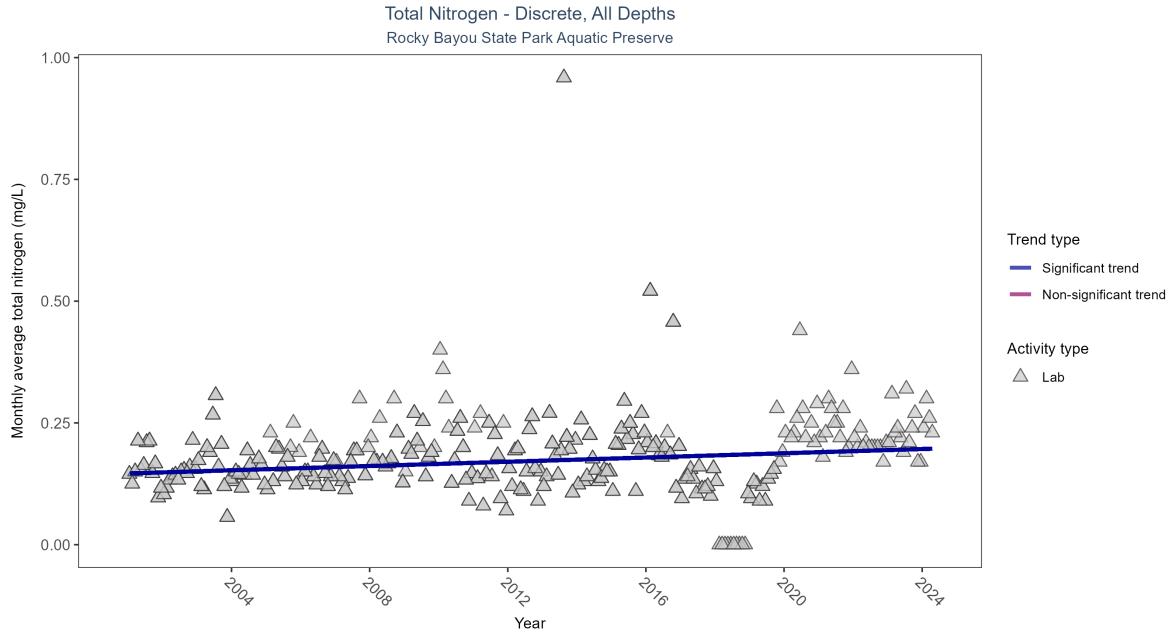


Figure 1: Scatter plot of monthly average total nitrogen over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only nitrogen values obtained from laboratory analyses (triangles) are included in the 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	Significantly increasing trend	635	24	2001 - 2024	0.2	0.16109	0.14624	0.00218	0.0002

Monthly average total nitrogen increased by less than 0.01 mg/L per year.

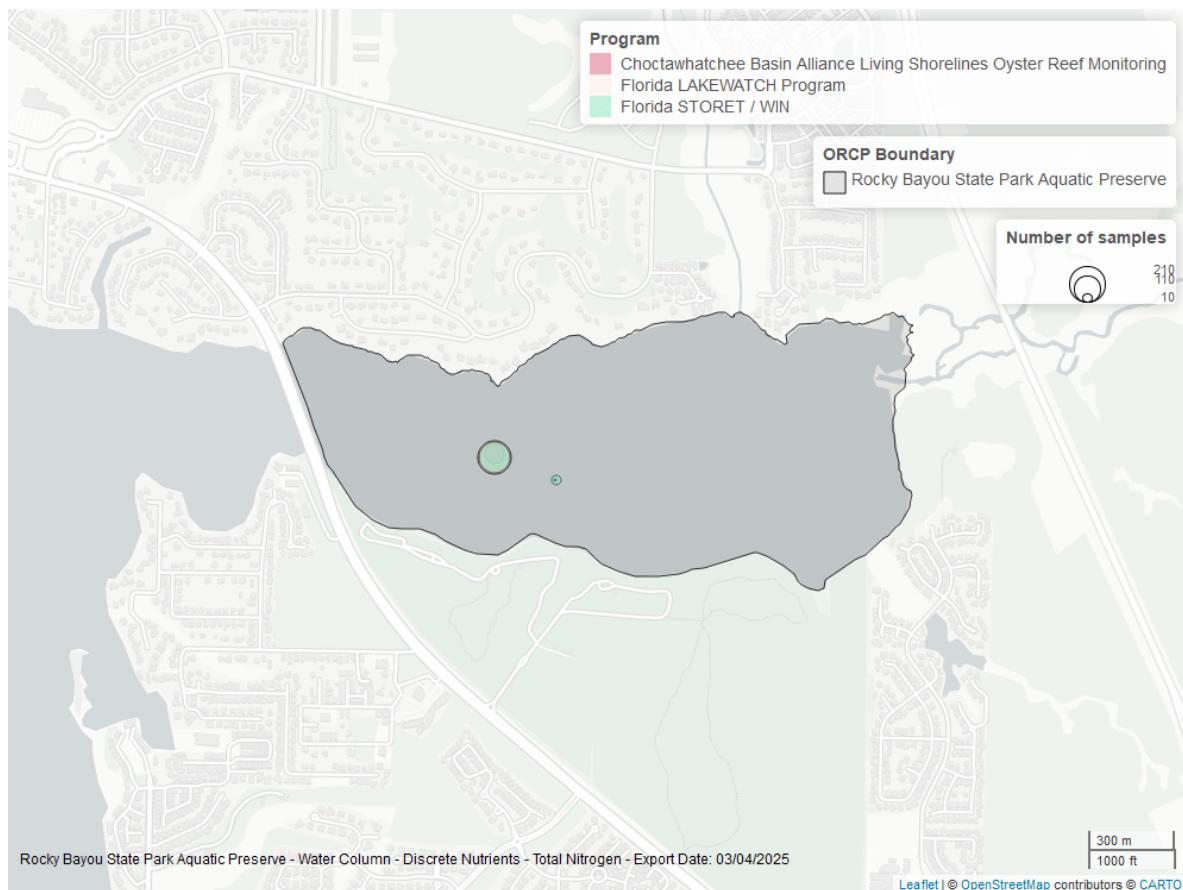


Figure 2: Map showing location of discrete water quality sampling locations within the boundaries of *Rocky Bayou State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

## Total Phosphorus - Discrete

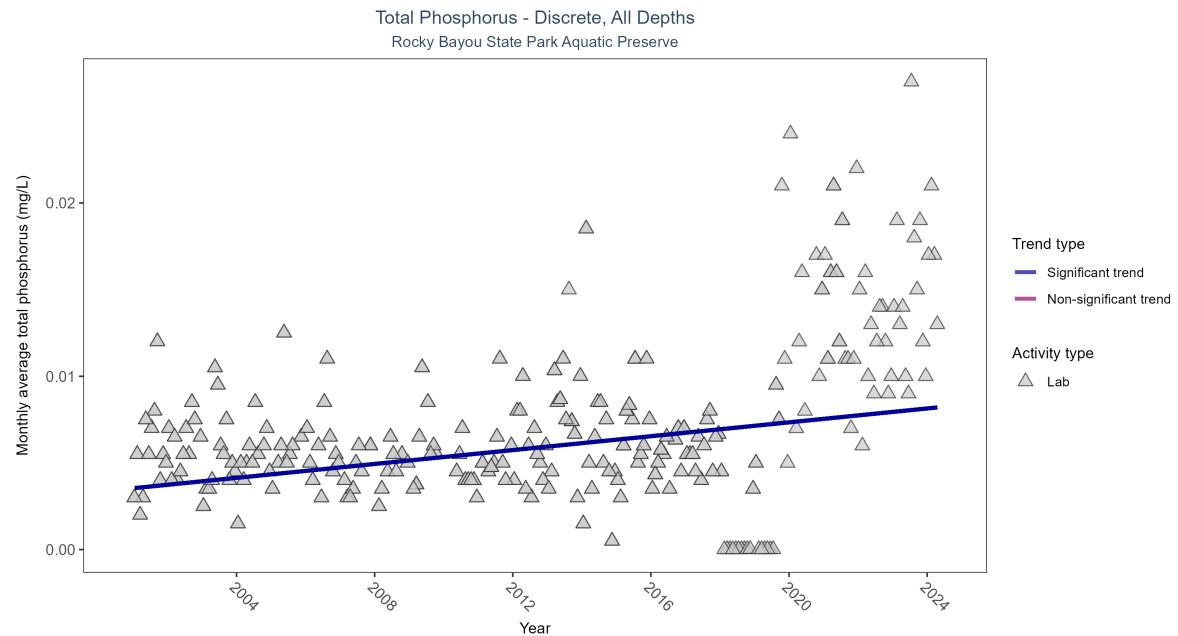


Figure 3: Scatter plot of monthly average total phosphorus over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only phosphorus values obtained from laboratory analyses (triangles) are included in 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	Significantly increasing trend	465	24	2001 - 2024	0.007	0.26224	0.00354	0.0002	0

Monthly average total phosphorus increased by less than 0.01 mg/L per year.

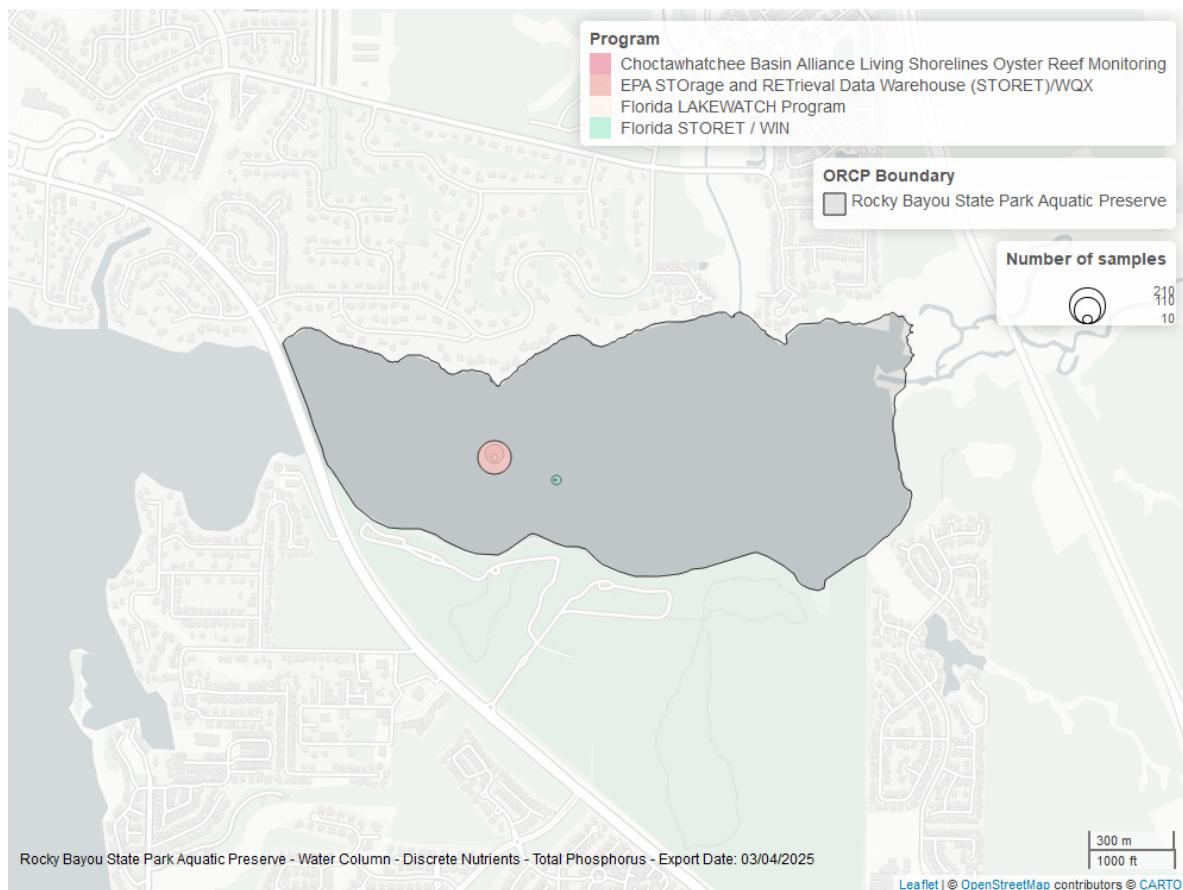


Figure 4: Map showing location of discrete water quality sampling locations within the boundaries of *Rocky Bayou State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

## Water Quality

### Dissolved Oxygen - Discrete

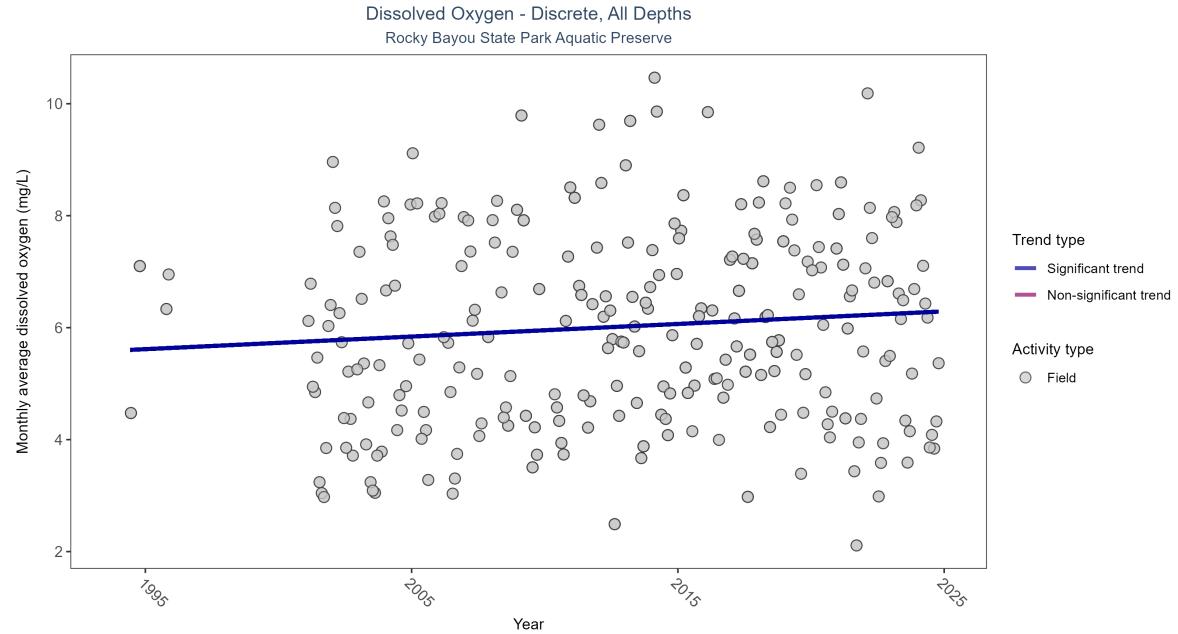


Figure 5: Scatter plot of monthly average dissolved oxygen over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only dissolved oxygen values measured in the field (circles) are included in the plot.

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 increasing trend	822	26	1994 - 2024	6.625	0.1142	5.59359	0.0225	0.0088

Monthly average dissolved oxygen increased by 0.02 mg/L per year.

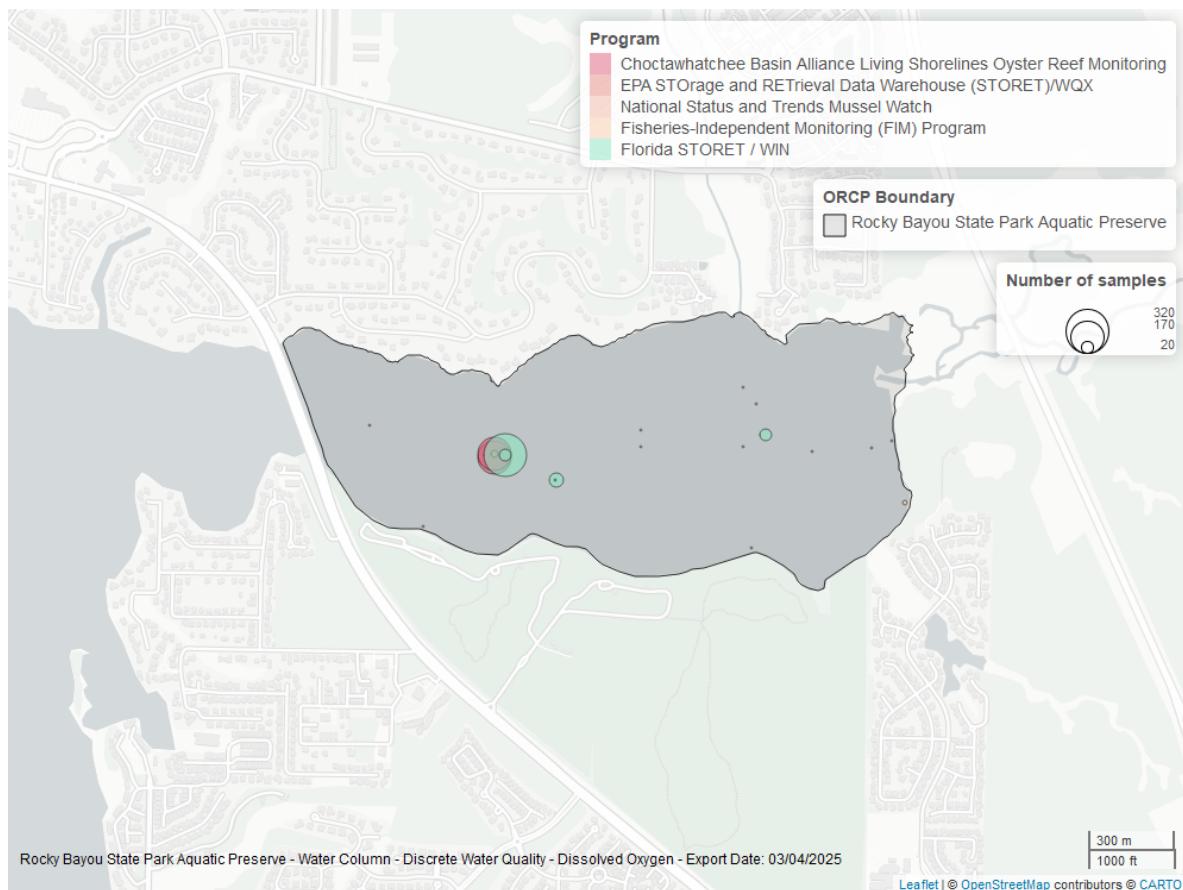


Figure 6: Map showing location of discrete water quality sampling locations within the boundaries of *Rocky Bayou State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

## Dissolved Oxygen Saturation - Discrete

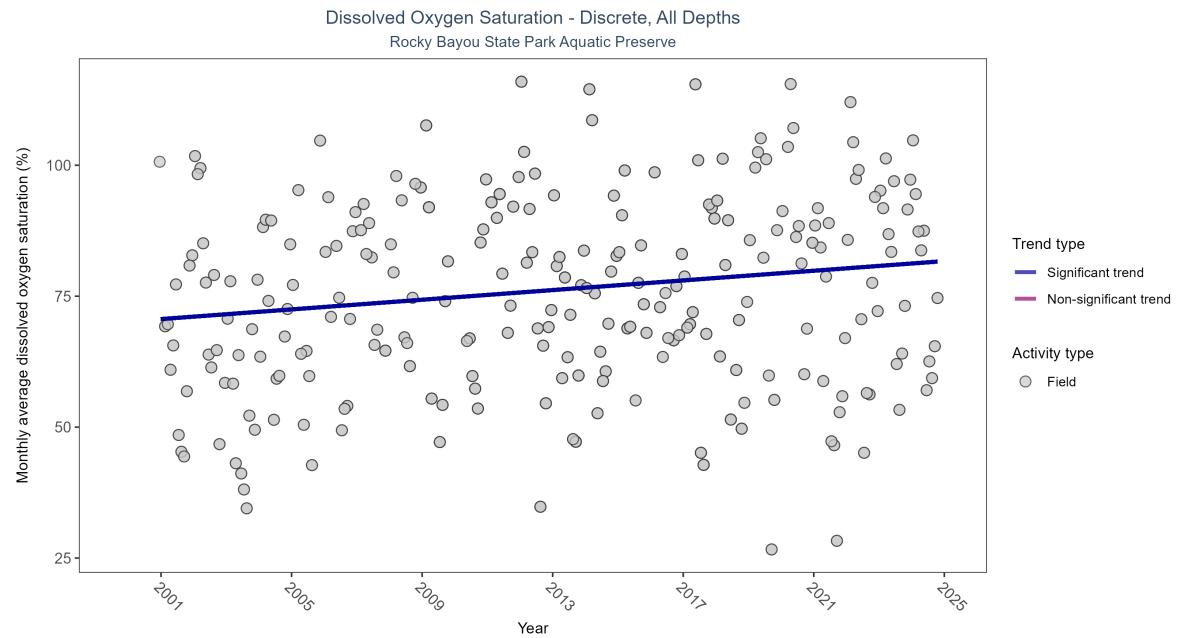


Figure 7: Scatter plot of monthly average dissolved oxygen saturation over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only dissolved oxygen saturation values measured in the field (circles) 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	Significantly increasing trend	735	25	2000 - 2024	89.3	0.15288	70.17167	0.46113	0.0008

Monthly average dissolved oxygen saturation increased by 0.46% per year.

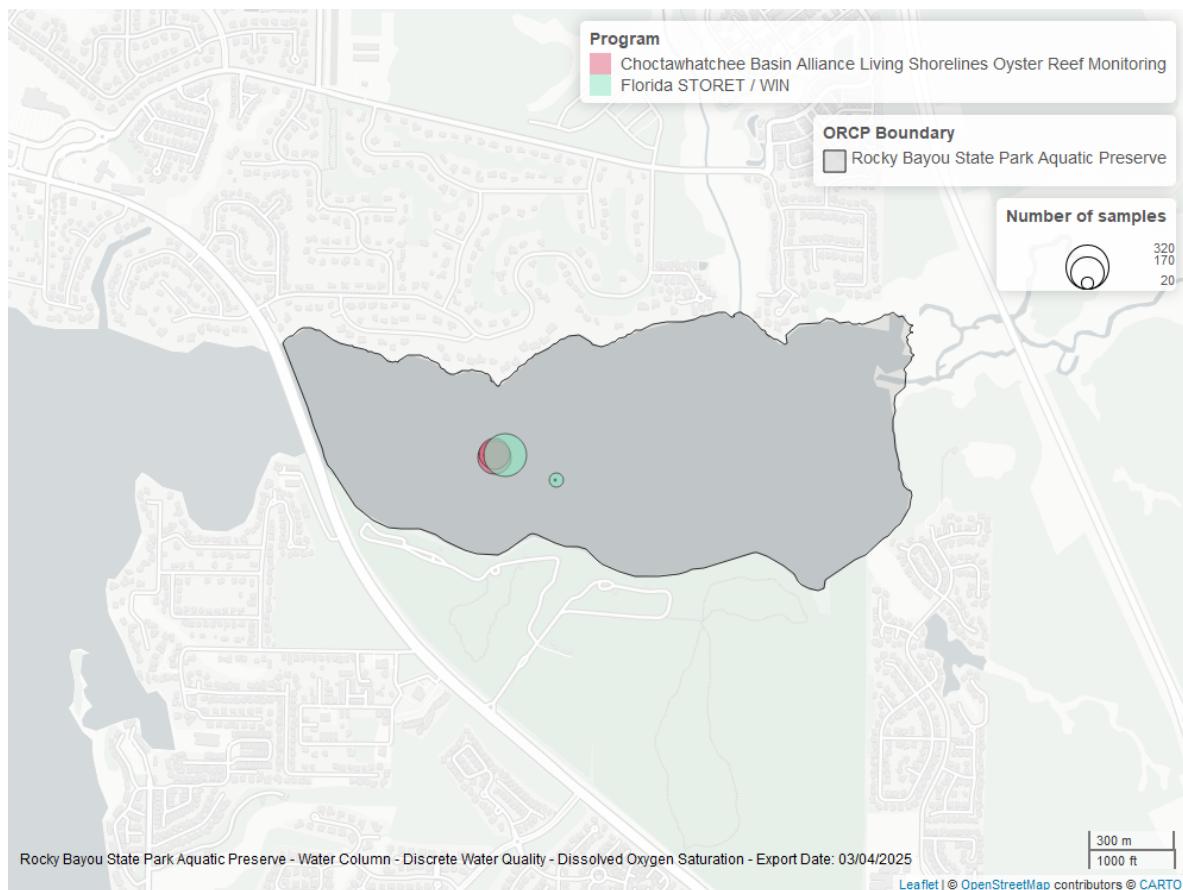


Figure 8: Map showing location of discrete water quality sampling locations within the boundaries of *Rocky Bayou State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

## Salinity - Discrete

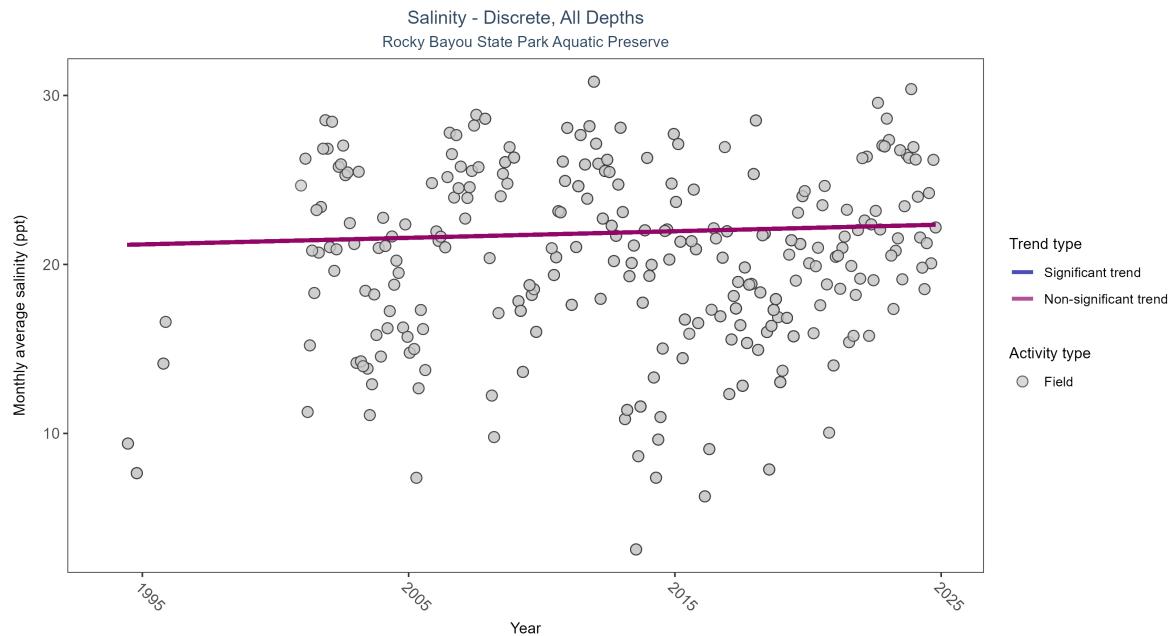


Figure 9: Scatter plot of monthly average salinity over time. If the time series included ten or more years of discrete observations, significant (blue) or non-significant (magenta) trend lines are also shown. Discrete salinity values derived from grab samples analyzed in the field (circles) or the laboratory (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	832	27	1994 - 2024	21.535	0.04877	21.14657	0.039	0.3053

Salinity showed no detectable trend between 1994 and 2024.

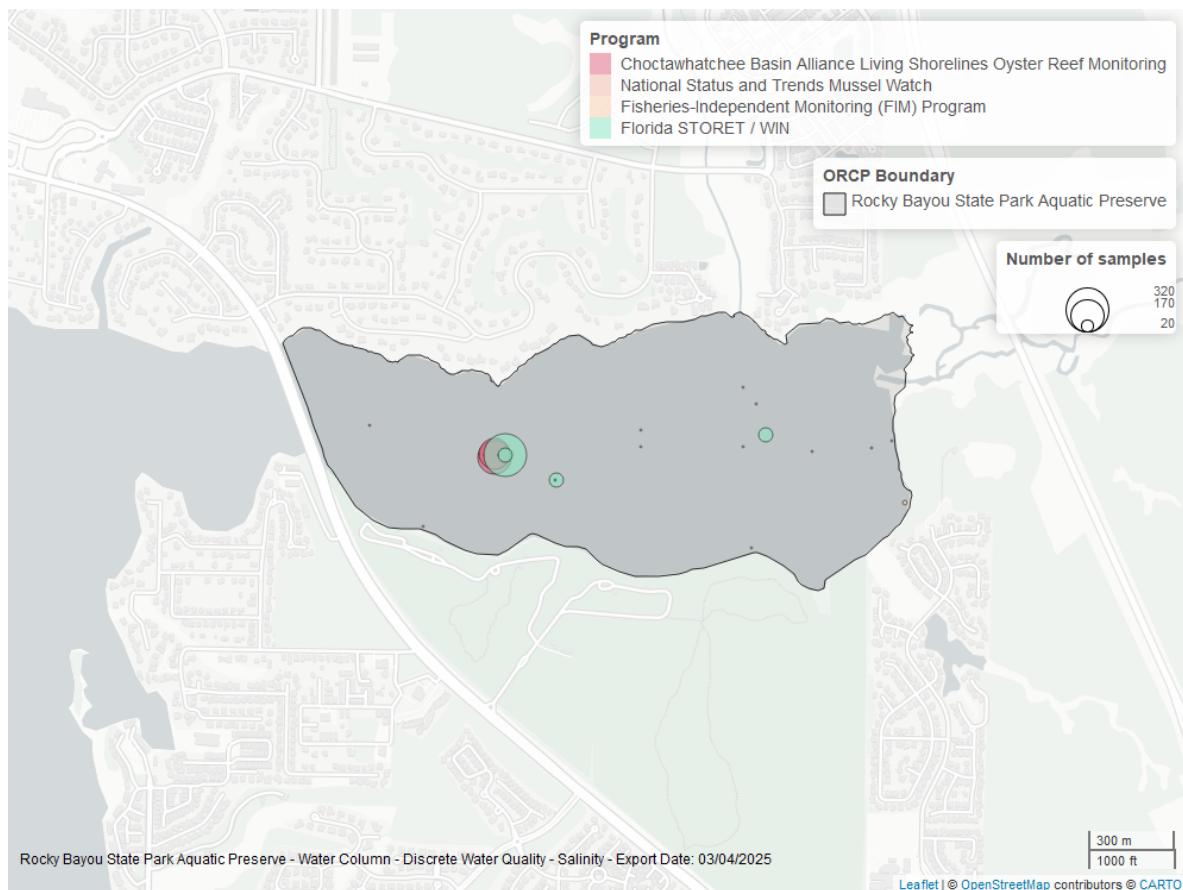


Figure 10: Map showing location of discrete water quality sampling locations within the boundaries of *Rocky Bayou State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

## Water Temperature - Discrete

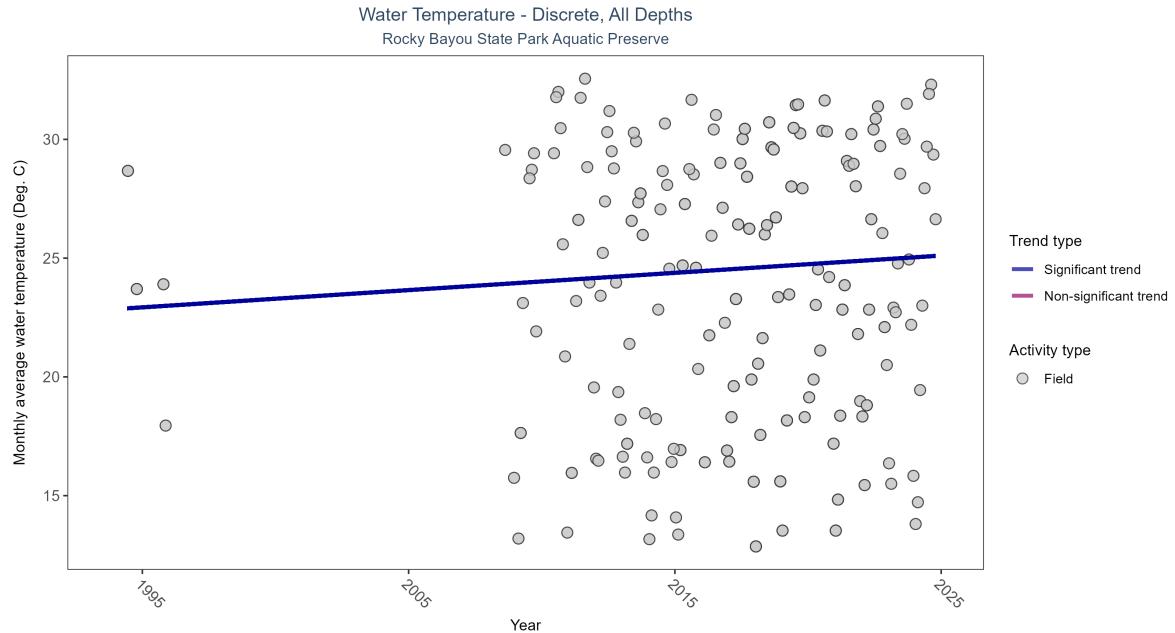


Figure 11: Scatter plot of monthly average water temperature over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only water temperature measurements taken in the field (circles) are included in 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	652	19	1994 - 2024	24.77778	0.16269	22.85482	0.07268	0.0027

Monthly average water temperature increased by  $0.07^{\circ}\text{C}$  per year.

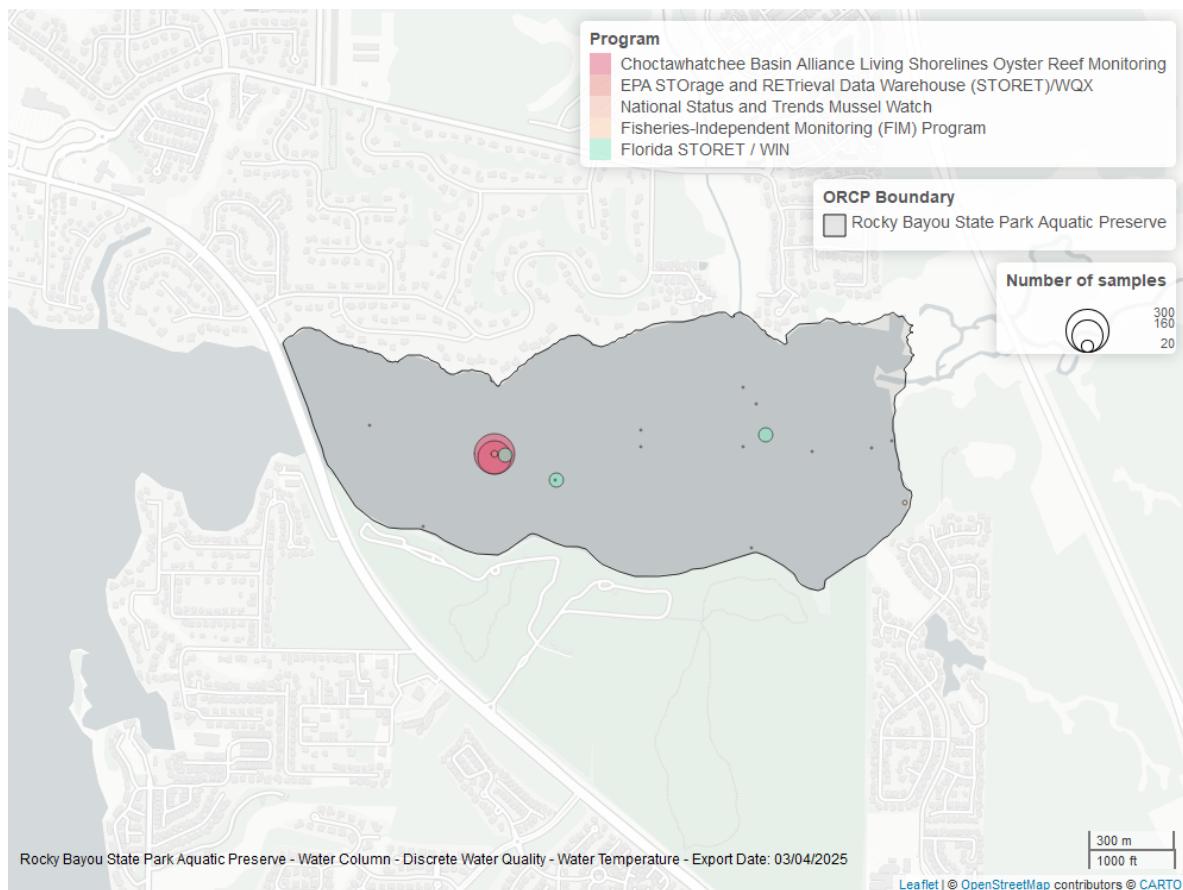


Figure 12: Map showing location of discrete water quality sampling locations within the boundaries of *Rocky Bayou State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

## pH - Discrete

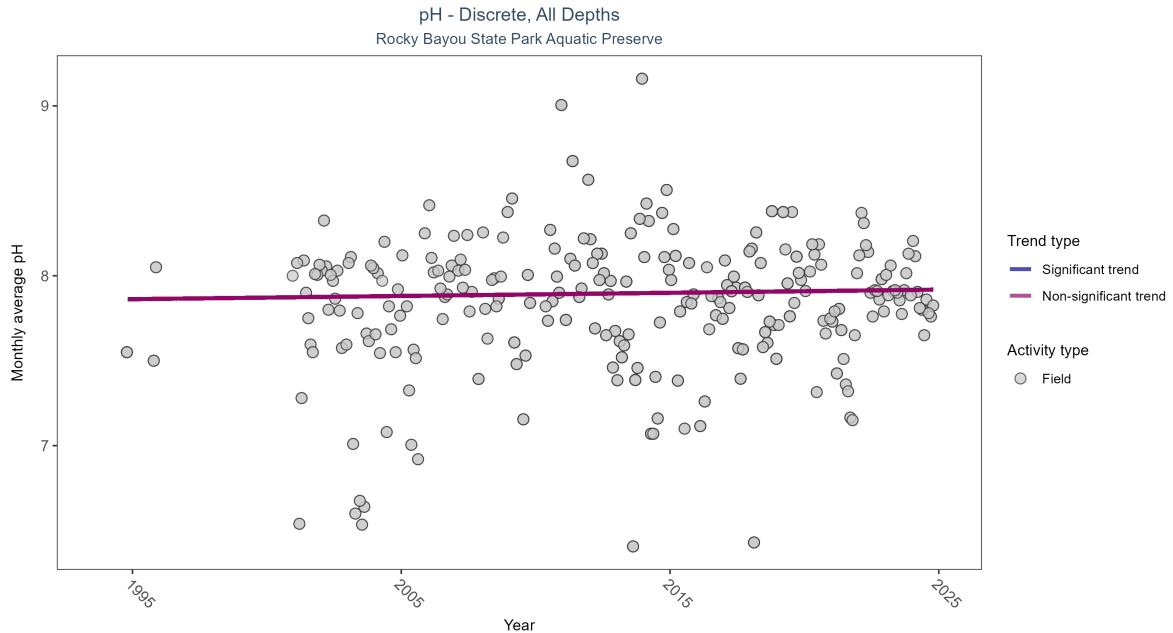


Figure 13: Scatter plot of monthly average pH over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only pH values measured in the field (circles) are included in the plot.

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	841	27	1994 - 2024	7.89	0.03186	7.86029	0.00187	0.4326

pH showed no detectable trend between 1994 and 2024.

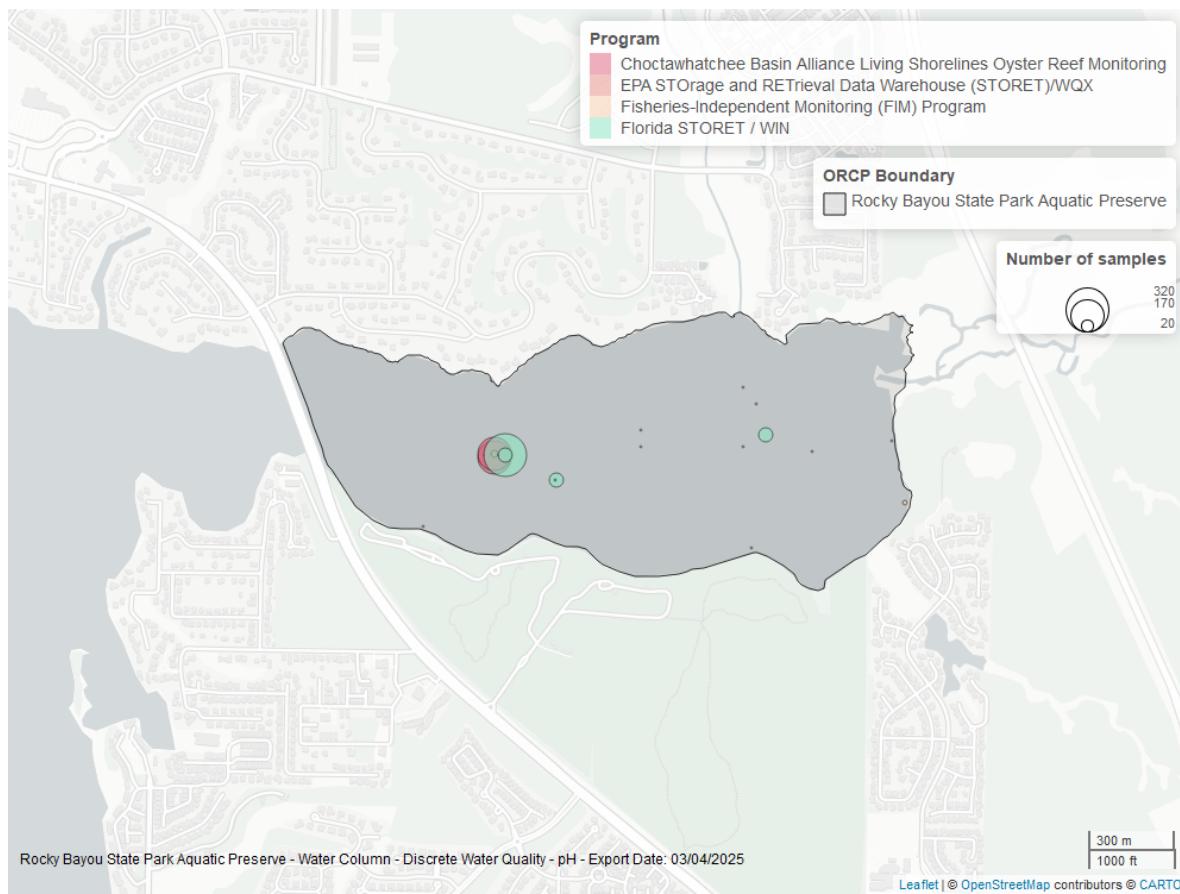


Figure 14: Map showing location of discrete water quality sampling locations within the boundaries of *Rocky Bayou State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

## Water Clarity

### Turbidity - Discrete

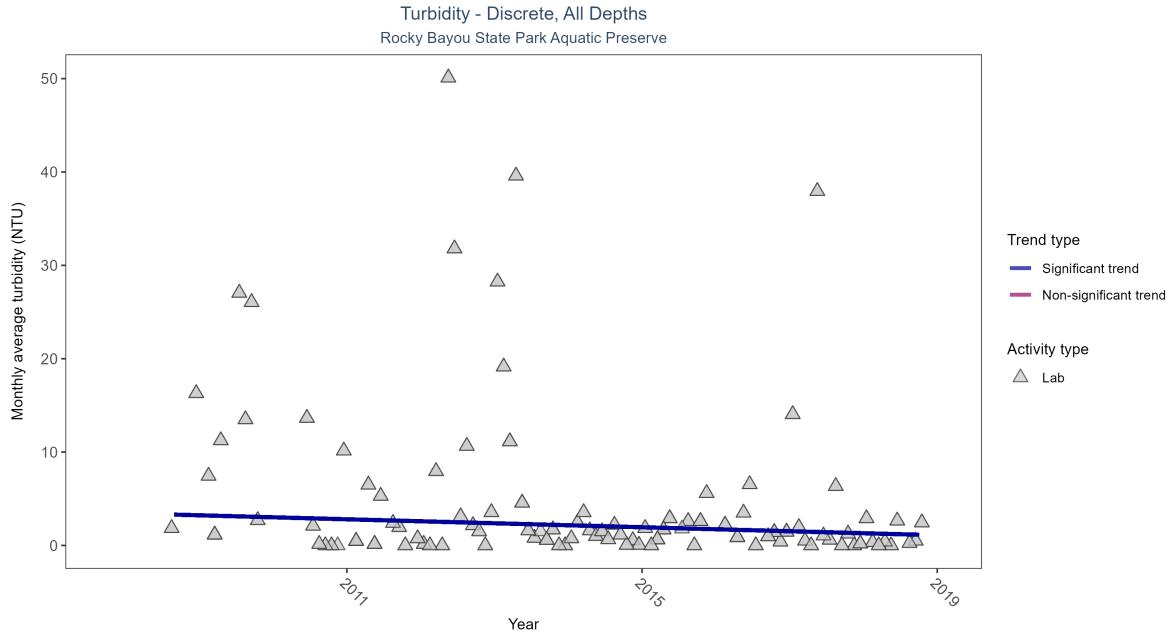


Figure 15: Scatter plot of monthly average turbidity over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only turbidity values measured in the laboratory (triangles) are included in the plot.

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	Significantly decreasing trend	222	11	2008 - 2018		1	-0.2377	3.44167	-0.21339 0.0034

Monthly average turbidity decreased by 0.21 NTU per year, indicating an increase in water clarity.

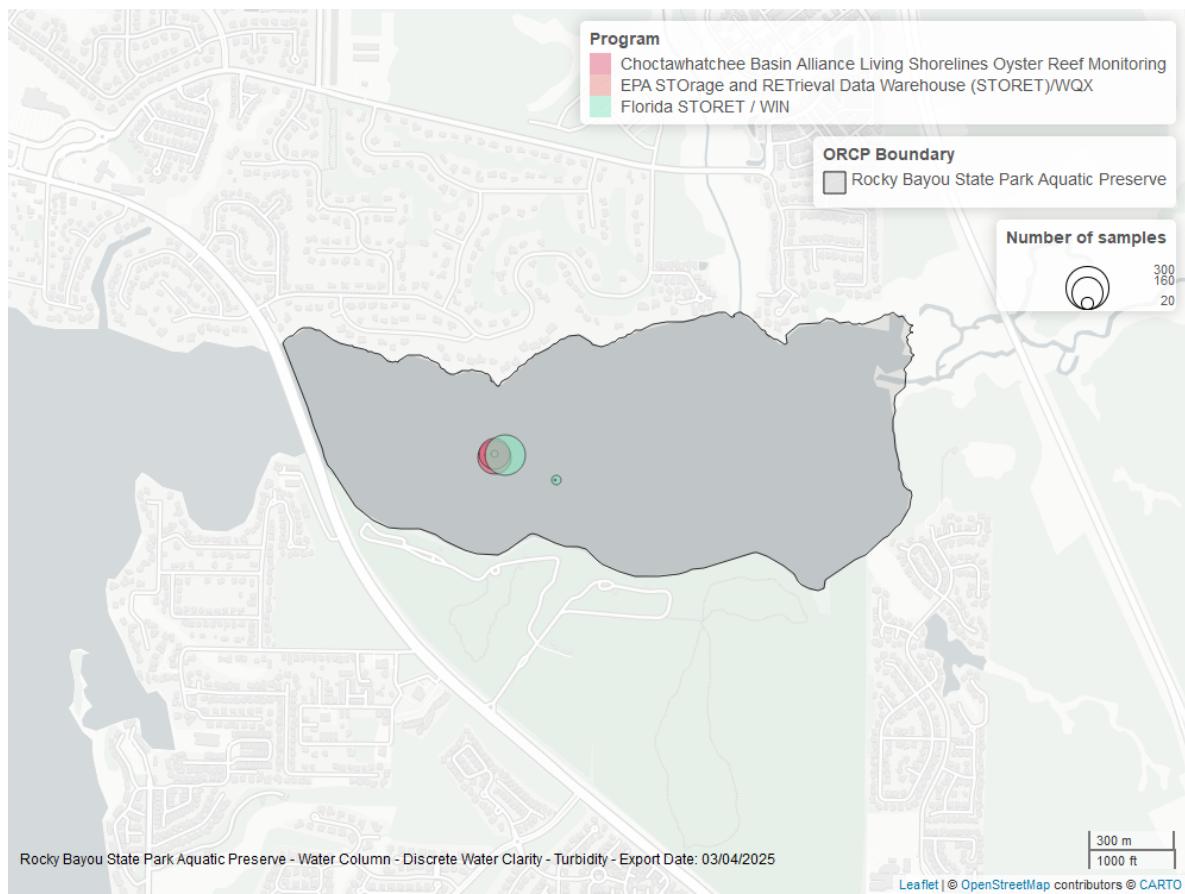


Figure 16: Map showing location of discrete water quality sampling locations within the boundaries of *Rocky Bayou State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

## Total Suspended Solids - Discrete

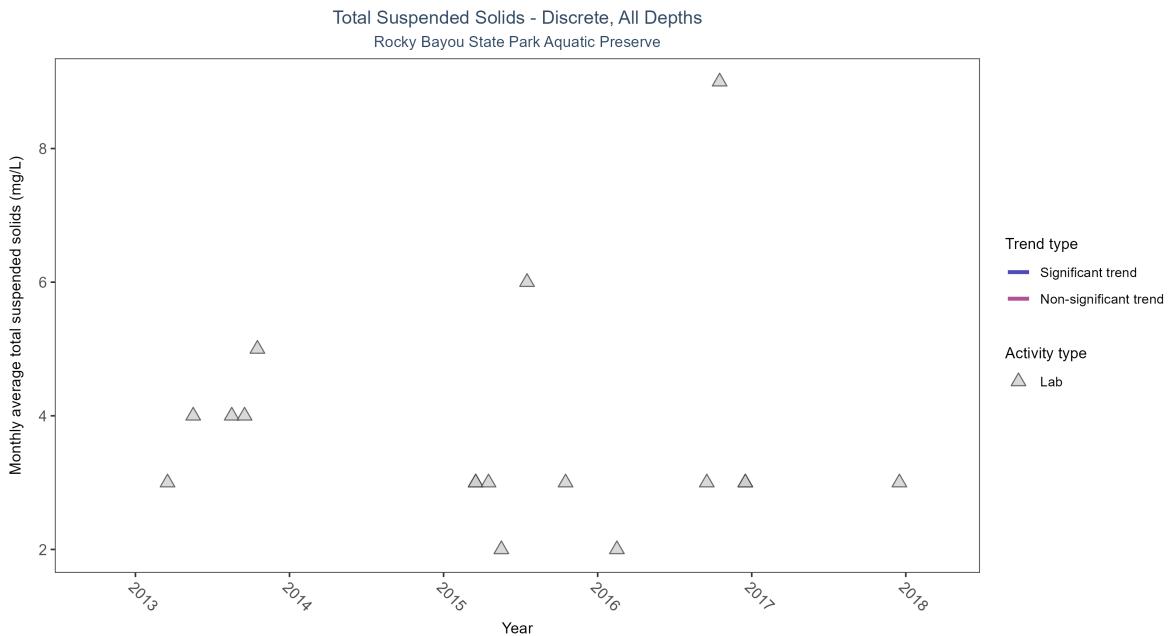


Figure 17: Scatter plot of monthly average total suspended solids (TSS) over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only TSS values obtained from laboratory analyses (triangles) are included 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	17	4	2013 - 2017	3	-	-	-	-

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

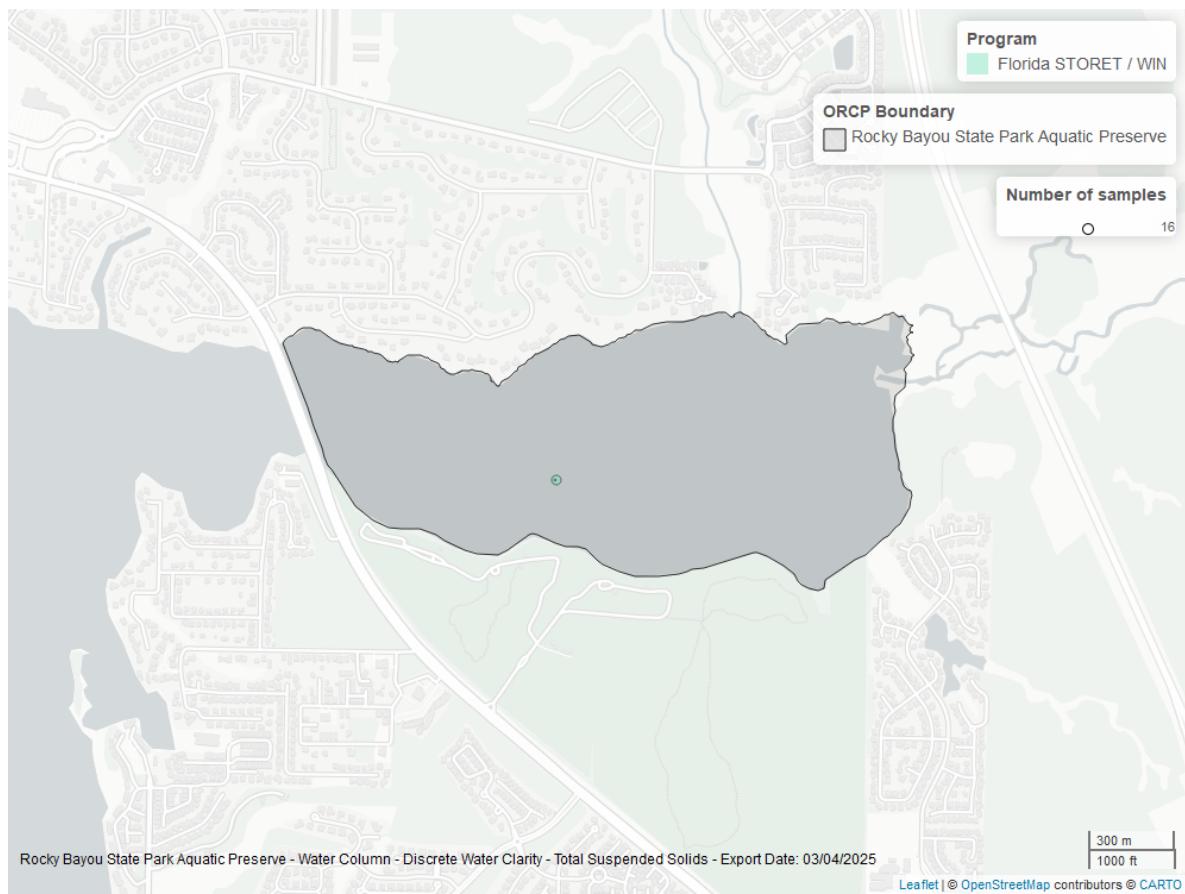


Figure 18: Map showing location of discrete water quality sampling locations within the boundaries of *Rocky Bayou State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

## Chlorophyll a, Uncorrected for Pheophytin - Discrete

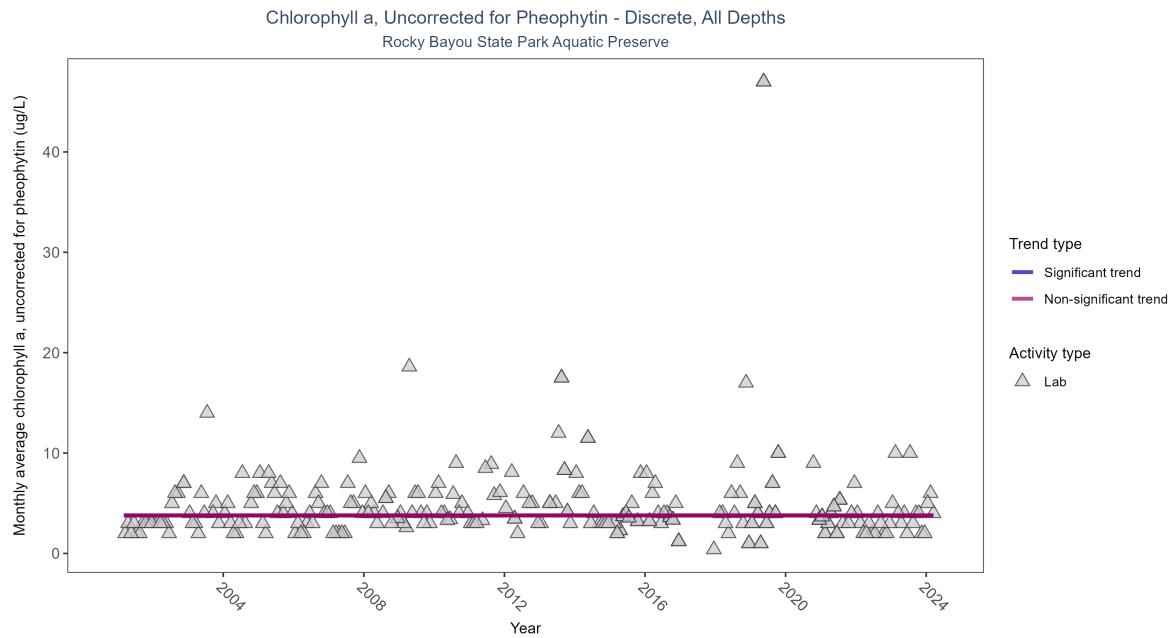


Figure 19: Scatter plot of monthly average levels of chlorophyll a, uncorrected for pheophytin, over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only laboratory-analyzed chlorophyll a (triangles) 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	No significant trend	269	24	2001 - 2024	4	-0.00177	3.79167	0	0.9007

Chlorophyll a, uncorrected for pheophytin, showed no detectable trend between 2001 and 2024.

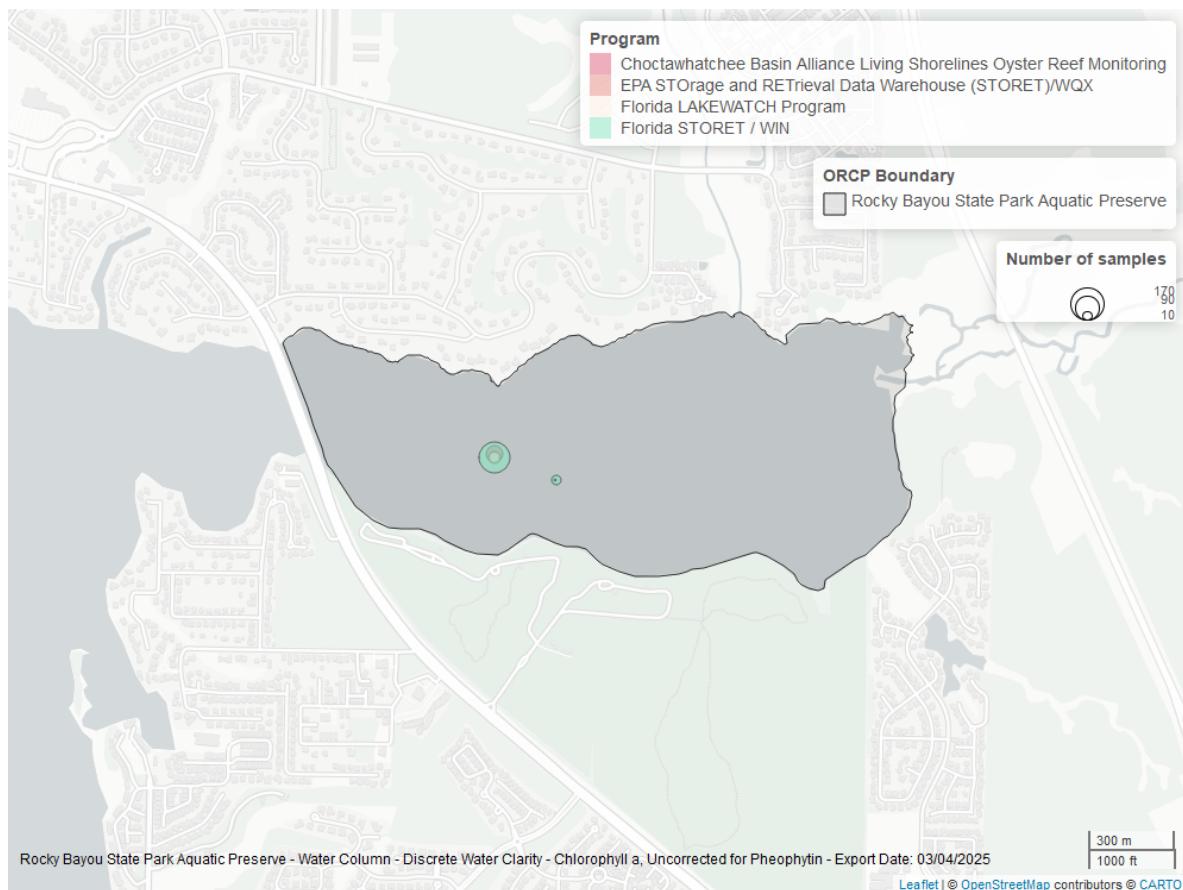


Figure 20: Map showing location of discrete water quality sampling locations within the boundaries of *Rocky Bayou State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

## Chlorophyll a, Corrected for Pheophytin - Discrete

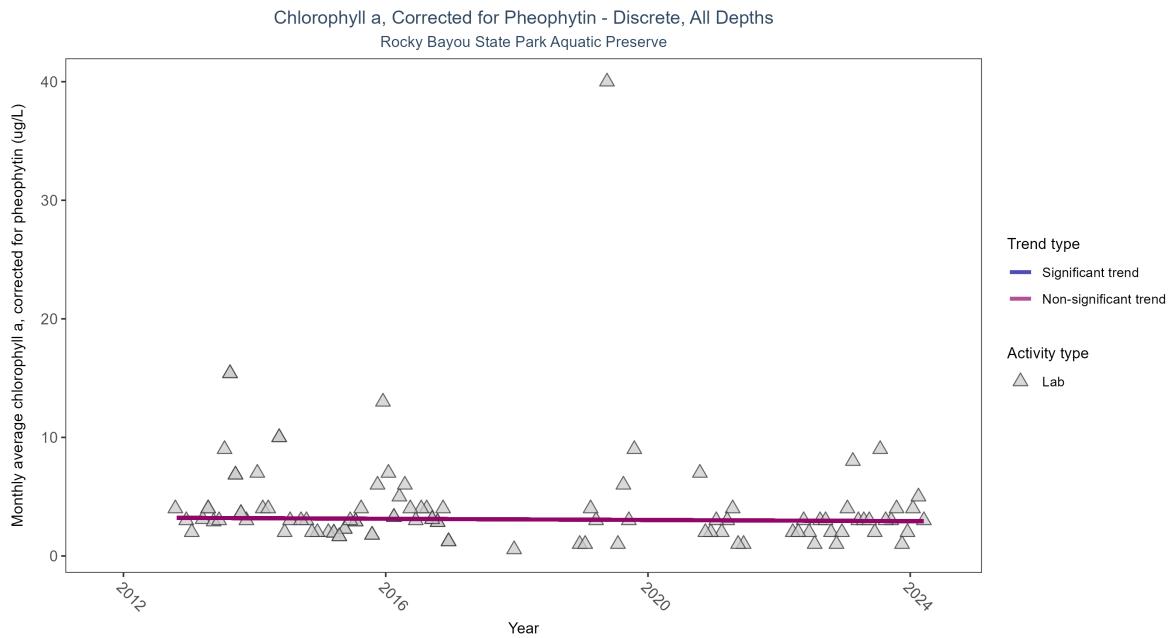


Figure 21: Scatter plot of monthly average levels of chlorophyll a, corrected for pheophytin, over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only laboratory-analyzed chlorophyll a (triangles) 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	No significant trend	103	13	2012 - 2024	3	-0.1845	3.23571	-0.025	0.0504

Chlorophyll a, corrected for pheophytin, showed no detectable trend between 2012 and 2024.

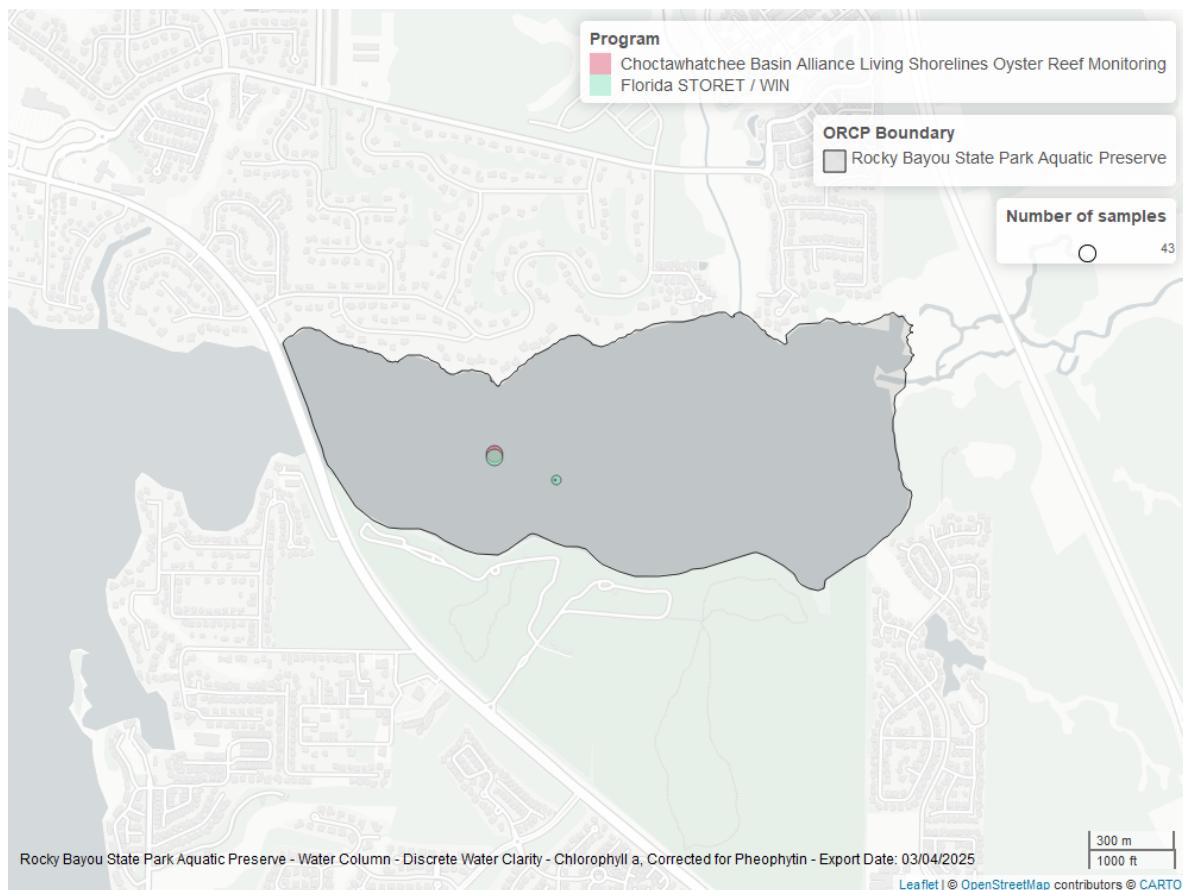


Figure 22: Map showing location of discrete water quality sampling locations within the boundaries of *Rocky Bayou State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

## Secchi Depth - Discrete

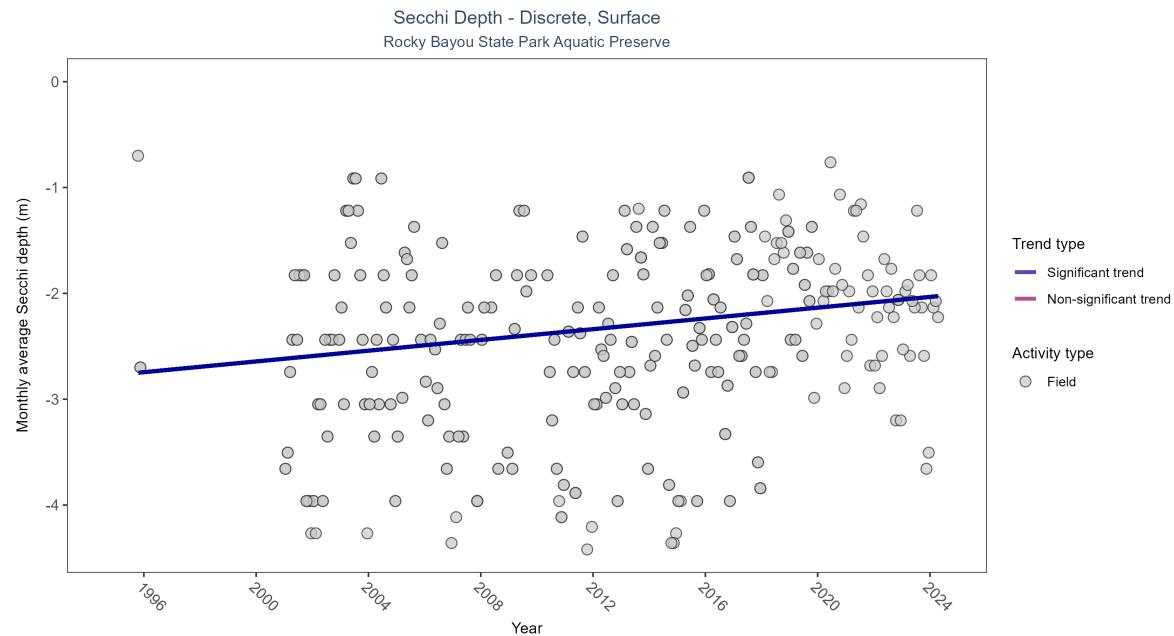


Figure 23: Scatter plot of monthly average Secchi depth over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Secchi depth is only measured in the field (circles).

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	Significantly increasing trend	458	25	1995 - 2024	-2.4384	0.16783	-2.77026	0.0254	0.0003

Monthly average Secchi depth became shallower by 0.03 m per year, indicating a decrease in water clarity.

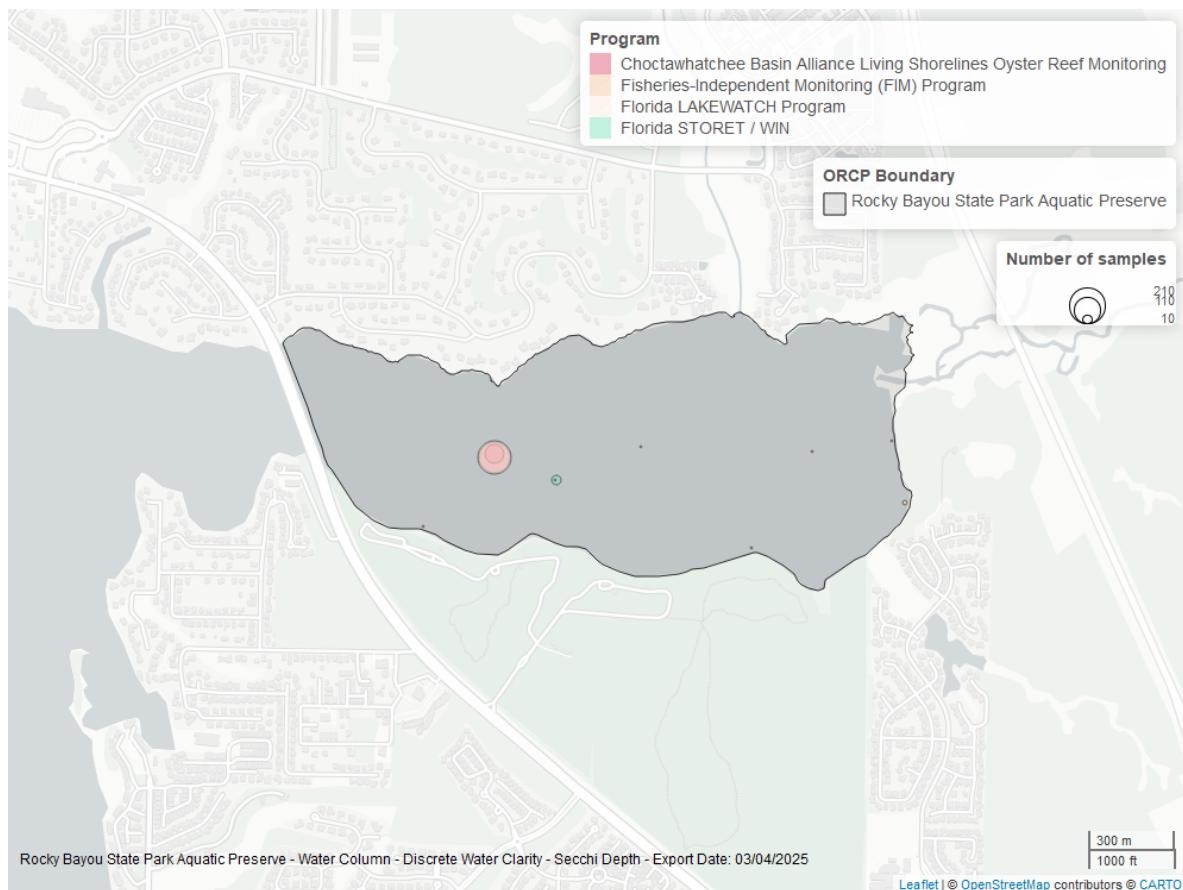


Figure 24: Map showing location of discrete water quality sampling locations within the boundaries of *Rocky Bayou State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

## Colored Dissolved Organic Matter - Discrete

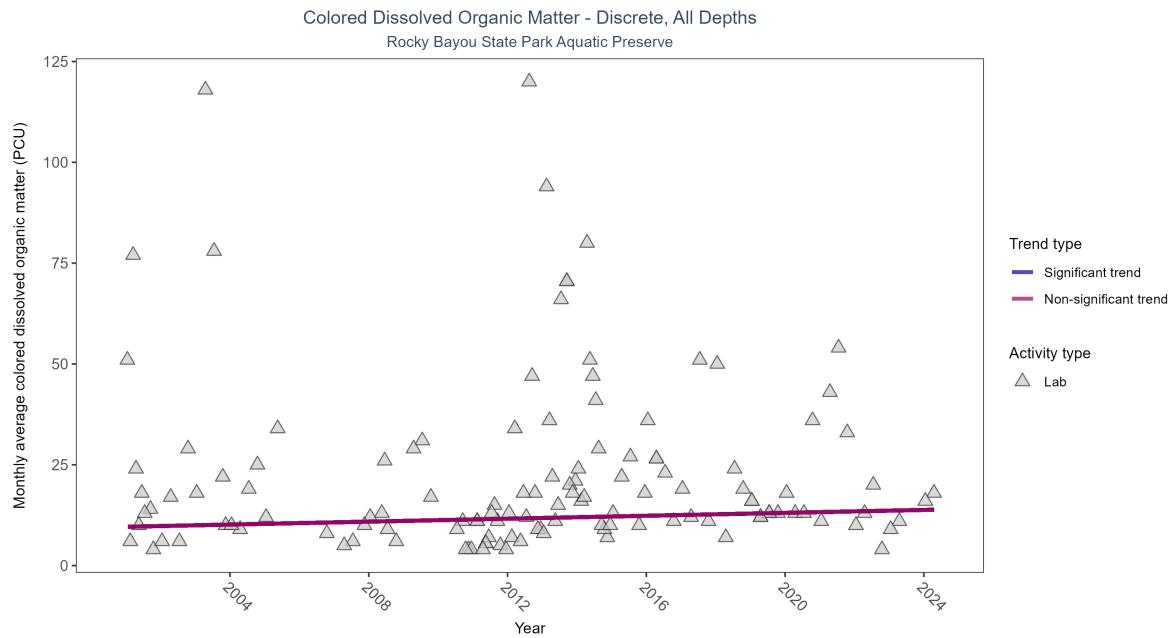


Figure 25: Scatter plot of monthly average colored dissolved organic matter (CDOM) over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only laboratory-analyzed CDOM (triangles) is included in the plot.

Table 13: Seasonal Kendall-Tau Results for - Colored Dissolved Organic Matter

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	128	24	2001 - 2024	13.5	0.09159	9.62163	0.18182	0.3155

Colored dissolved organic matter showed no detectable trend between 2001 and 2024.

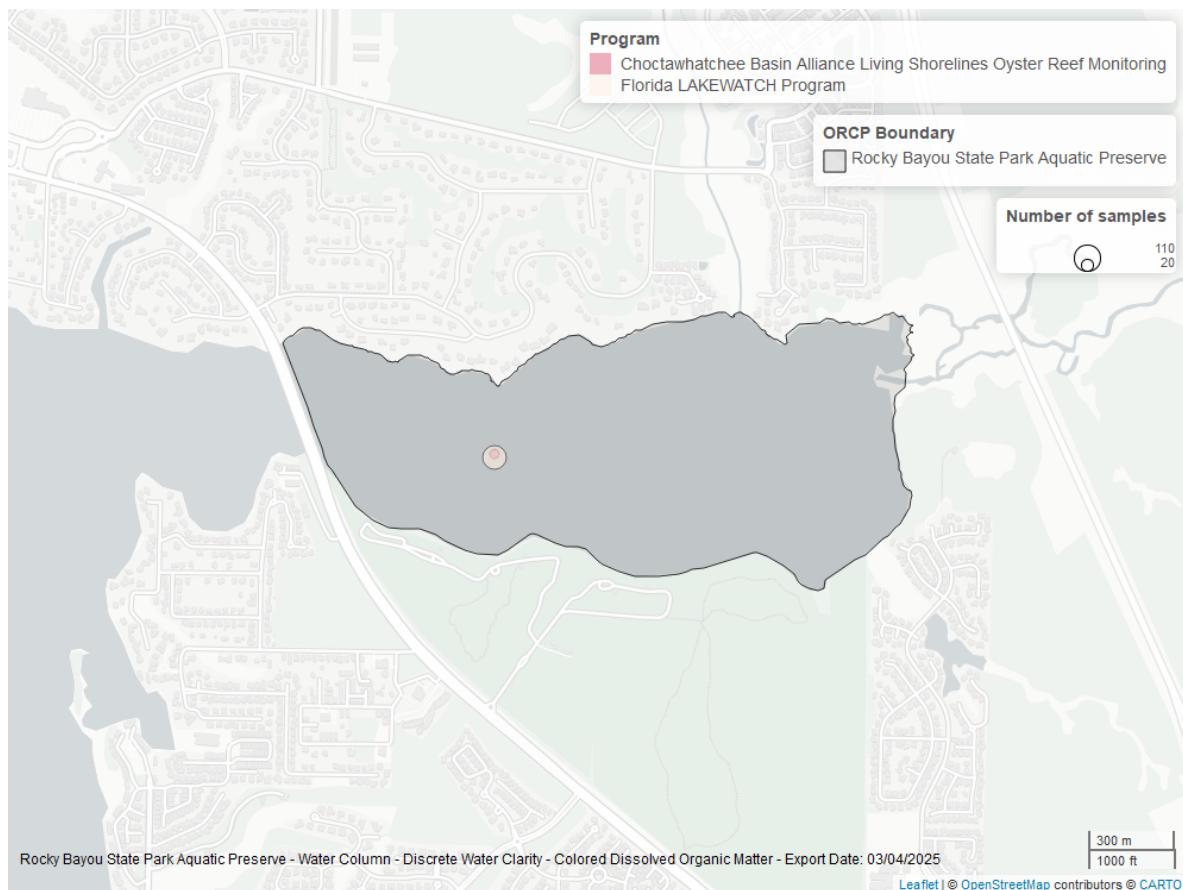


Figure 26: Map showing location of discrete water quality sampling locations within the boundaries of *Rocky Bayou State Park Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.