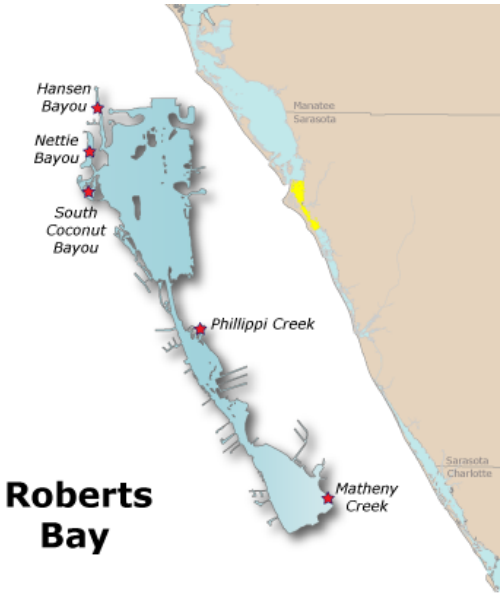
Roberts Bay Condition Report for 2012

PASS

Chl-a N P

3 out of 3 indicators were rated as PASS.

All three indicators must pass for the bay to be rated as PASS.



Summary:

The overall health of Roberts Bay has improved since 2010 with all water quality parameters below the threshold levels, the caution alert for chlorophyll *a* has been removed. However, levels of seagrass still remain below the target level.

Water quality: All three water quality indicators (chlorophyll *a*, nitrogen, and phosphorus) were rated as pass (below the threshold). The mean for chlorophyll *a* was calculated as an arithmetic mean and the means for nitrogen and phosphorus were calculated as geometric means (Numeric Nutrient Criteria Recommendations).The mean chlorophyll *a* level in Roberts Bay has improved since 2010 (0.0098 mg/l) and was scored as "Good" (scored as "Caution" in 2010), below the threshold (0.011 mg/l). The nitrogen level has increased, although the mean nitrogen level was below the threshold (0.540 mg/l), it exceeds the target level (0.450 mg/l) and was scored as "Good". The phosphorus level has slightly increased, however the mean level (0.0923 mg/l) was still below the target level (0.190 mg/l) and was scored as "Excellent".

Biotic Indicator: The total acreage of seagrass has remained relatively constant since 1988 but in 2010 the average level of seagrass (283 acres) was still below the target of 348 acres.

Water Chemistry Ratings

Total nitrogen, total phosphorus, and chlorophyll *a* levels are monitored carefully by water resource managers and used by regulatory authorities to determine whether a bay meets the water quality standards mandated by the Clean Water Act. The trend graphs for these indicators are shown below, along with their target and threshold values. A target value is a desirable goal to be attained, while a threshold is an undesirable level which is to be avoided.

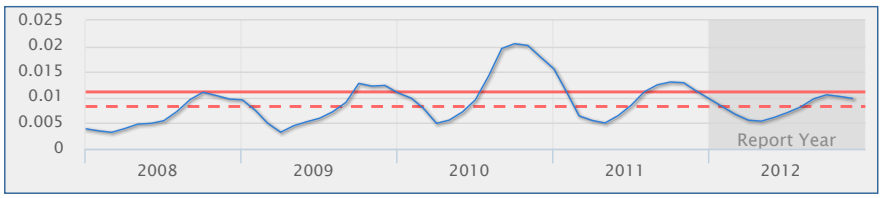
The Five-year Trend Graphs below illustrate the general trend of water quality parameters. They show a six-month running average, which moderates high and low values in the data.

Chlorophyll a

Score: Excellent

Units: mg/l	Year 2012	Historical period of record
High	0.0185	0.0484
Mean	0.0078	0.0078
Low	0.0016	0.0003
No. of Samples	62	947

Five-year Trend Graph



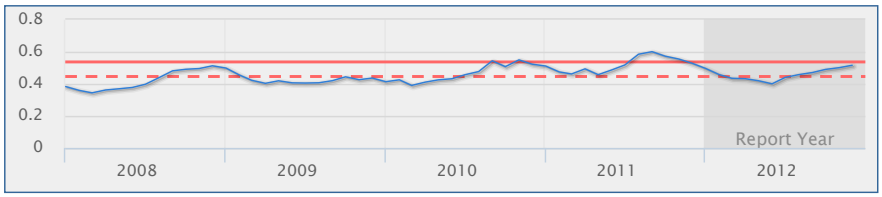
Target 0.0082 mg/l | Threshold 0.011 mg/l | Method Detection Limit 0.0005 mg/l

Nitrogen, Total

Score: Excellent

Units: mg/l	Year 2012	Historical period of record
High	0.705	1.376
Mean	0.4415	n/a
Low	0.235	0.065
No. of Samples	62	938

Five-year Trend Graph



Target 0.45 mg/l

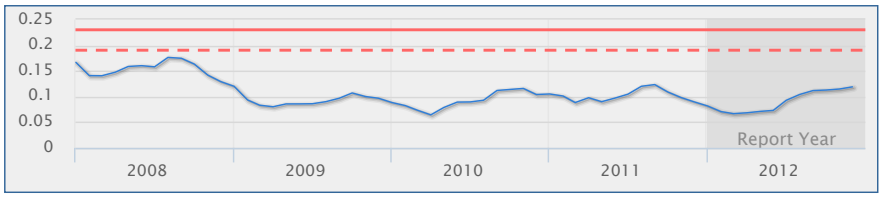
Threshold 0.54 mg/l

Phosphorus, Total

Score: Excellent

Units: mg/l	Year 2012	Historical period of record
High	0.20	0.48
Mean	0.0896	n/a
Low	0.05	0.05
No. of Samples	61	927

Five-year Trend Graph



Target 0.19 mg/l

Threshold 0.23 mg/l

Method Detection Limit 0.0001 mg/l

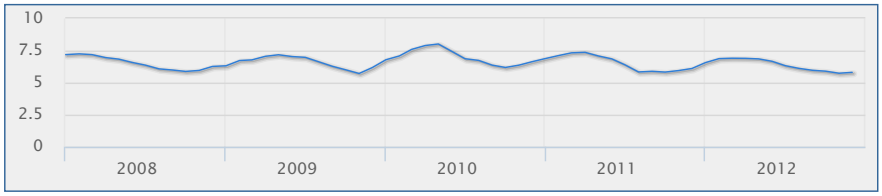
Other Measures of Bay Health

In addition to nutrient levels and chlorophyll concentration, dissolved oxygen levels, and water clarity are also objective indicators of bay health. These have complex interactive cycles which are affected by rainfall, temperature, and tidal action, as well as other factors. High nutrient levels (nitrogen and phosphorus) can stimulate excessive growth of marine algae (indicated by chlorophyll *a* level), resulting in reduced water clarity (and increased light attenuation) and depleted oxygen levels. Both plants and animals in a bay need oxygen to survive, and the seagrasses which provide food and cover for bay creatures need light for photosynthesis.

Dissolved Oxygen

Units: mg/l	Year 2012	Historical period of record
High	8.20	11.40
Mean	6.23	6.46
Low	5.00	3.60
No. of Samples	60	1,081

Five-year Trend Graph

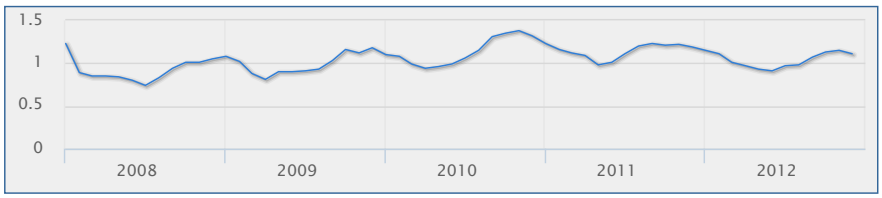


Method Detection Limit 0.20 mg/l

Light Attenuation

Units: K(1/m)	Year 2012	Historical period of record
High	1.73	3.56
Mean	1.01	1.02
Low	0.33	0.19
No. of Samples	60	887

Five-year Trend Graph

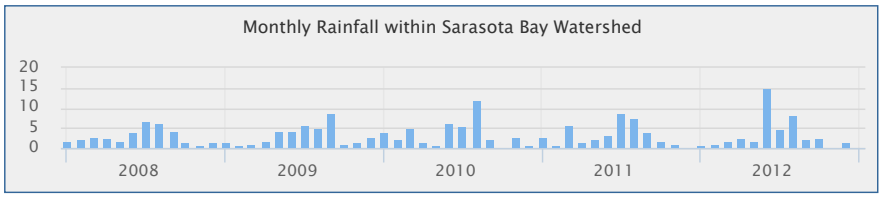


Method Detection Limit 0.05 K(1/m)

Rainfall

Units: inches/yr	Year 2012	Historical period of record
High	42.06	54.47
Mean		33.48
Low		12.56
No. of Samples	356	4,020

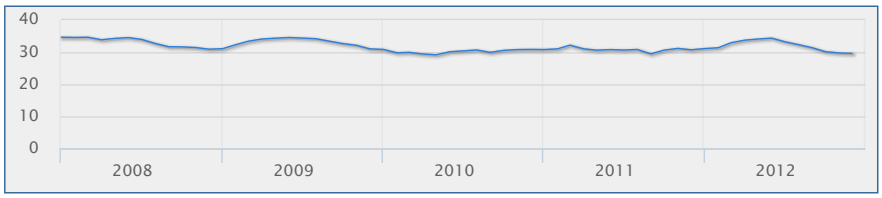
Five-year Trend Graph



Salinity

Units: PSS	Year 2012	Historical period of record
High	36.60	38.80
Mean	32.0	30.75
Low	24.40	1.80
No. of Samples	60	1,083

Five-year Trend Graph

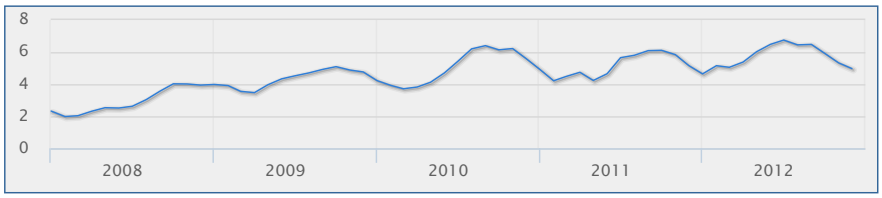


Method Detection Limit
0.10 PSS

Turbidity

Units: NTU	Year 2012	Historical period of record
High	11.00	24.00
Mean	5.67	4.28
Low	1.30	0.85
No. of Samples	61	941

Five-year Trend Graph



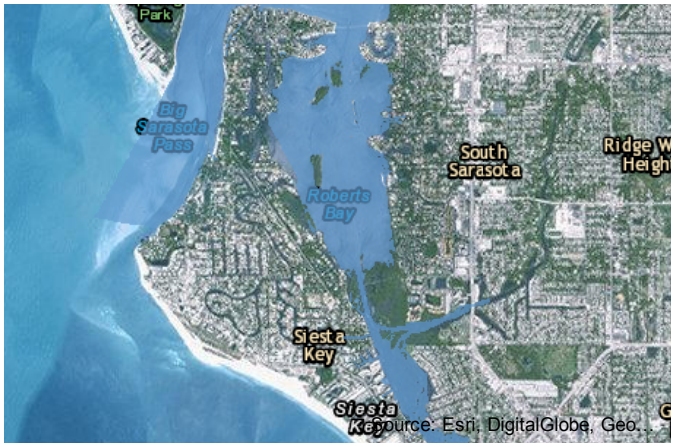
Method Detection Limit
0.20 NTU

Bay Contour Maps

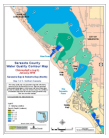
Contour mapping is one of the best ways to visualize spatial differences in coastal water quality. The interactive map shown below presents monthly data for one selected water quality indicator atop an aerial view of the bay. Choose a different water quality parameter from the list at the top to change the map.

Showing Monthly Contour Maps for: Chlorophyll a

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec



Visit the **Water Quality Contour Mapping Tool** to view and compare monthly water quality contour maps for ten different water quality indicators. In addition, you can generate your own custom maps.

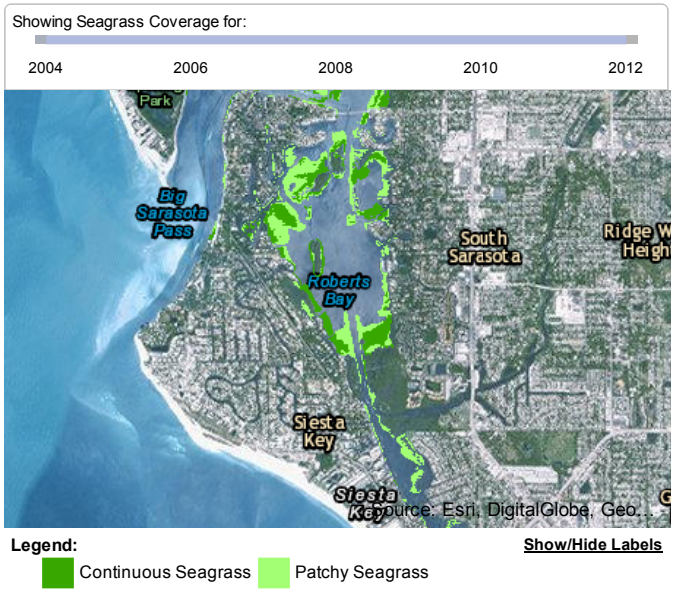


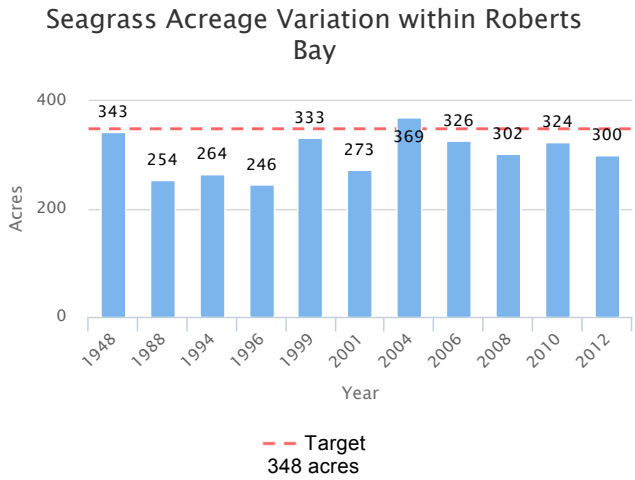
Contour Legend:

- Less than 1 mg/l
- 1.0 - 5.9 mg/l
- 6.0 - 10.9 mg/l
- 11.0 - 17.9 mg/l
- Greater than 18 mg/l

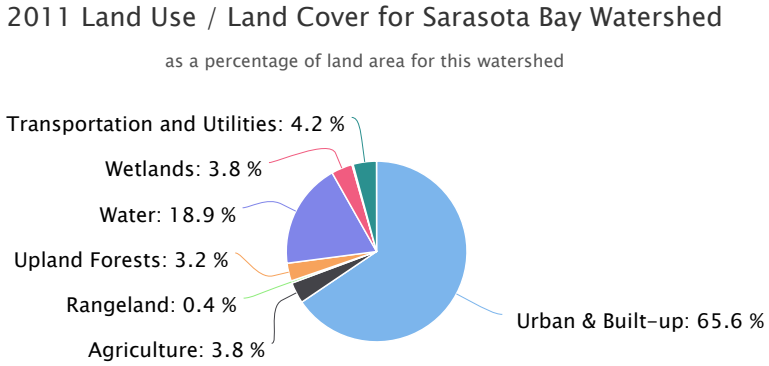
Seagrasses

Among the most important habitats in Florida's estuarine environments, seagrass beds are indispensable for the role they play in cycling nutrients, supplying food for wildlife, stabilizing sediments, and providing habitat for juvenile and adult finfish and shellfish. Use the interactive map below to observe the size, density and location of seagrass beds from year to year. The graph shows how the total amount of seagrass in the bay has changed over time.





Land Use / Land Cover

Land use within a bay's watershed has a major effect on its water quality. In general, less development means better water quality. Land Cover/Land Use classifications categorize land in terms of its observed physical surface characteristics (upland or wetland, e.g.), and also reflect the types of activity that are taking place on it (agriculture, urban/built-up, utilities, etc.). Florida uses as its standard a set of statewide classifications which were developed by the Florida Department of Transportation.

Roberts Bay is located within the Sarasota Bay Watershed. The chart below shows the land use / land cover characteristics for Sarasota Bay Watershed within the boundary of this Water Atlas. **View details about the Sarasota Bay Watershed »**