




Blackburn Bay Condition Report for 2013




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 Blackburn Bay has remained in good condition with two out of three water quality parameters, chlorophyll *a* and phosphorus, below their associated target levels. Nitrogen concentration rose sharply in the latter part of 2013, pushing the annual mean above target levels.

Water Quality: All three water quality indicators (chlorophyll *a*, nitrogen, and phosphorus) were rated as pass (concentration 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 (per the Numeric Nutrient Criteria outlined in the Florida Administrative Code, section 62-302.532). The mean chlorophyll *a* level (0.0054 mg/l) in Blackburn Bay has decreased and was scored as excellent, below both the target (0.006 mg/l) and threshold (0.0082 mg/l) levels. The mean nitrogen level (0.4201 mg/l) has greatly increased but still retained its "Good" score as it is below the threshold level of 0.430 mg/l. Phosphorus concentrations in the bay have remain relatively



Bays included in this report:
Blackburn Bay

constant and low, with a mean of 0.0556 mg/l, below the target (0.1700 mg/l) and threshold (0.210 mg/l) levels and earning a score of "Excellent".

Biotic Indicator: Measurement of the biotic indicator, seagrass, is performed at two-year intervals and is due for monitoring again in 2014. When last assessed in 2012, total seagrass acreage in Blackburn Bay was 324 acres, below the target level of 447 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. An individual indicator receives an "Excellent" rating if its mean value is below the target, a "Good" rating if its mean value is above the target but does not exceed the threshold, and a "Caution" rating if the mean value exceeds the threshold.

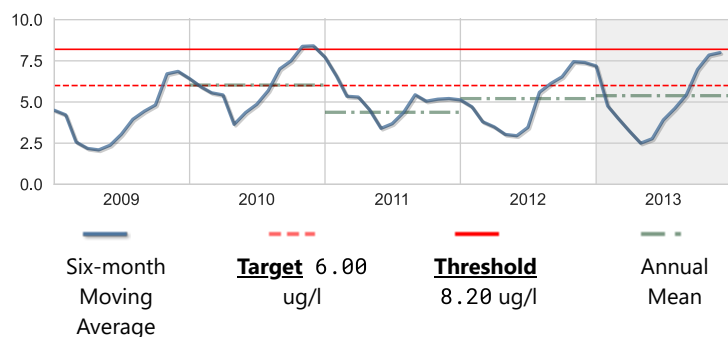
The charts below illustrate the general trend of water quality parameters. They show a six-month running average, which moderates high and low values in the data.



Chlorophyll a

Score: Excellent

Units: ug/l	Year 2013	Historical period of record
High	19.40	43.00
Mean	5.38	5.03
Low	1.35	0.20
No. of Samples	60	841

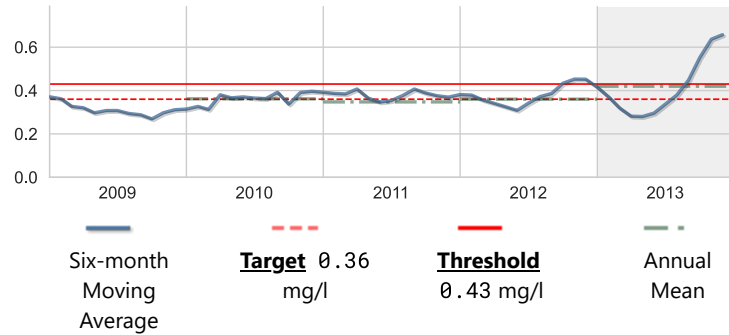


N

Nitrogen, Total

Score: Good

Units: mg/l	Year 2013	Historical period of record
High	2.205	2.205
Mean	0.420	
Low	0.185	0.055
No. of Samples	60	828

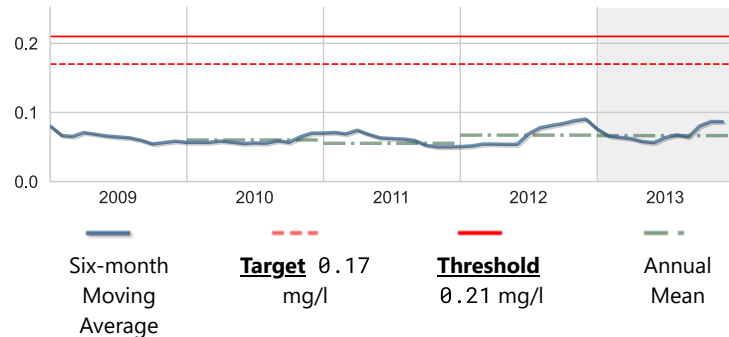


P

Phosphorus, Total

Score: Excellent

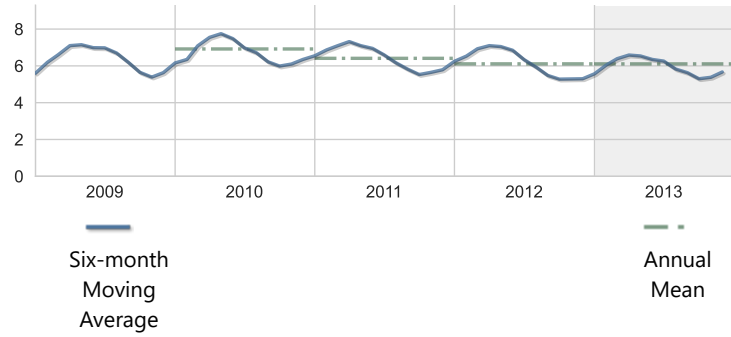
Units: mg/l	Year 2013	Historical period of record
High	0.160	0.530
Mean	0.067	0.105
Low	0.050	0.050
No. of Samples	60	854

**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.

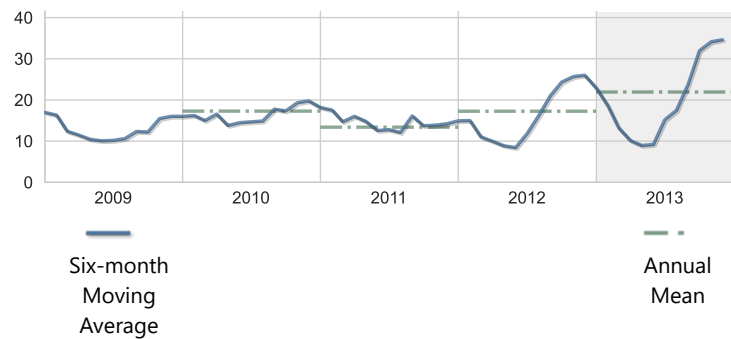
Dissolved Oxygen

Units: mg/l	Year 2013	Historical period of record
High	8.00	11.90
Mean	6.11	6.50
Low	4.70	1.60
No. of Samples	48	906



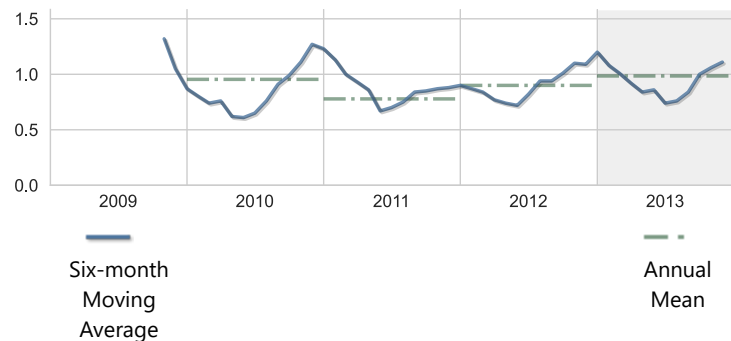
Apparent Color

Units: PCU	Year 2013	Historical period of record
High	80.00	250.00
Mean	21.92	19.46
Low	5.00	2.00
No. of Samples	60	854



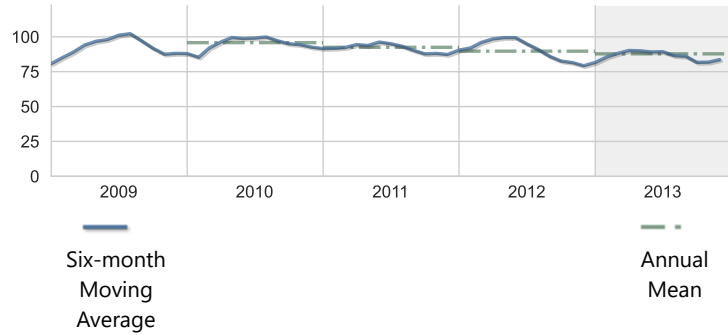
BOD, Biochemical oxygen demand

Units: mg/l	Year 2013	Historical period of record
High	2.60	7.10
Mean	0.99	1.10
Low	0.50	0.50
No. of Samples	60	743



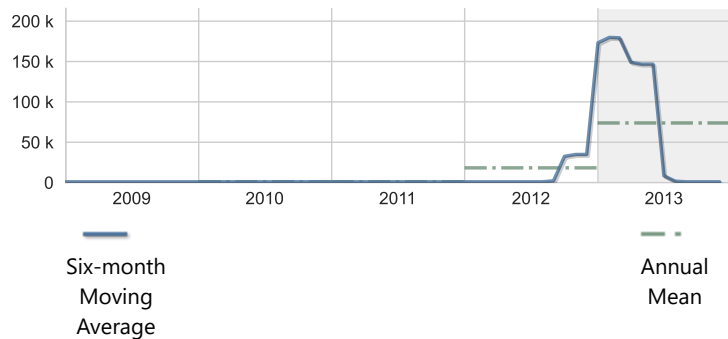
Dissolved oxygen saturation

Units: percent (%)	Year 2013	Historical period of record
High	122.00	198.00
Mean	87.79	95.08
Low	69.00	26.00
No. of Samples	48	908



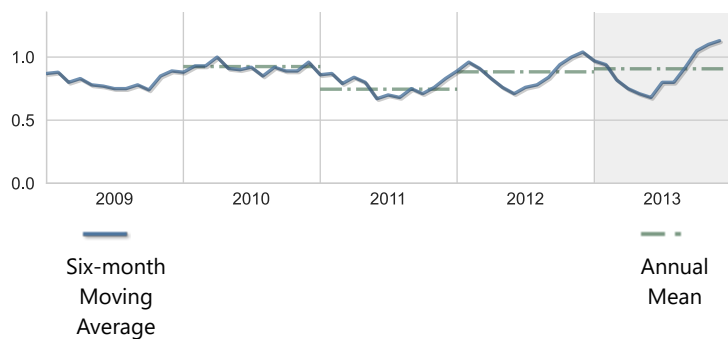
Karenia brevis ("red tide")

Units: #/l	Year 2013	Historical period of record
High	1195000.00	2280000.00
Mean	73883.33	39836.17
Low	1000.00	1000.00
No. of Samples	60	470



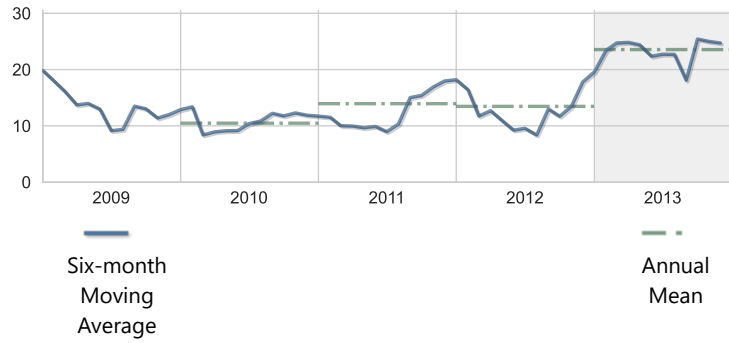
Light Attenuation

Units: K(1/m)	Year 2013	Historical period of record
High	1.88	5.03
Mean	0.91	0.87
Low	0.30	0.16
No. of Samples	48	747



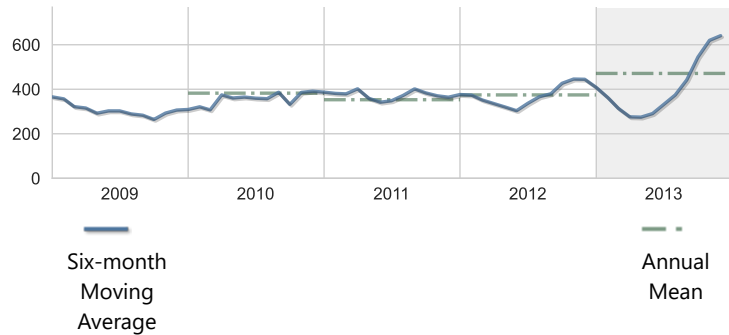
Nitrogen, Ammonia + Ammonium as N

Units: ug/l	Year 2013	Historical period of record
High	56.00	120.00
Mean	23.55	15.31
Low	5.00	5.00
No. of Samples	60	856



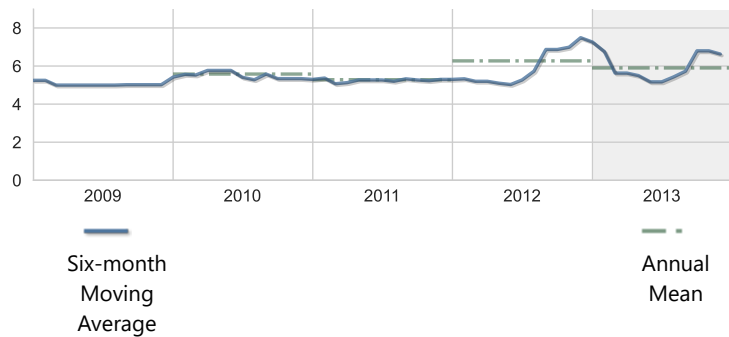
Nitrogen, Kjeldahl

Units: ug/l	Year 2013	Historical period of record
High	2200.00	2200.00
Mean	471.15	340.39
Low	180.00	0.05
No. of Samples	61	855



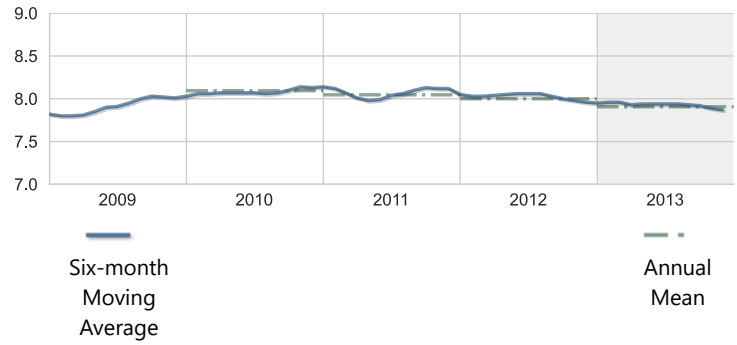
Nitrogen, Nitrite + Nitrate as N

Units: ug/l	Year 2013	Historical period of record
High	14.00	65.00
Mean	5.90	6.03
Low	5.00	5.00
No. of Samples	60	1176



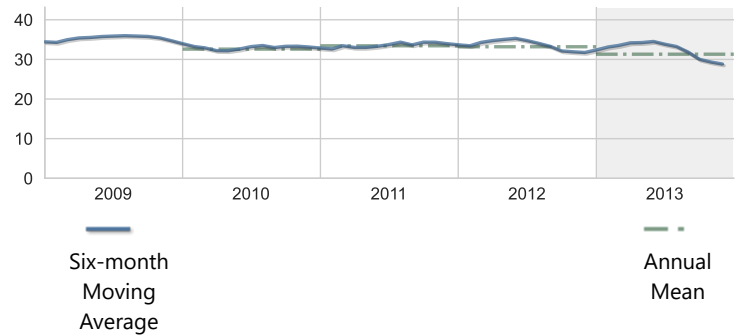
pH

Units: None	Year 2013	Historical period of record
High	8.10	8.40
Mean	7.91	7.94
Low	7.70	6.10
No. of Samples	48	908



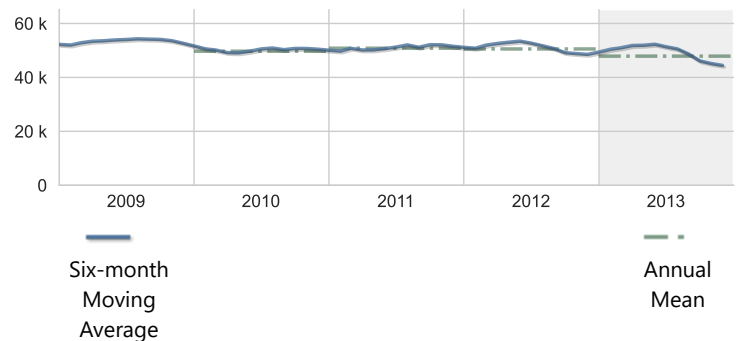
Salinity

Units: PSS	Year 2013	Historical period of record
High	36.00	39.30
Mean	31.31	33.24
Low	18.30	5.70
No. of Samples	48	900



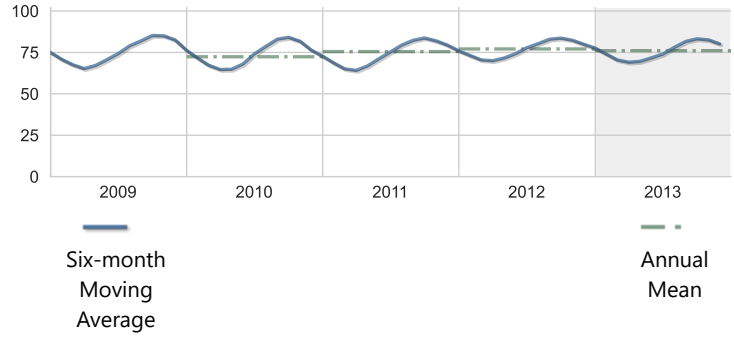
Specific conductance

Units: umho	Year 2013	Historical period of record
High	54240.00	58760.00
Mean	47884.17	50575.67
Low	29600.00	10130.00
No. of Samples	48	908



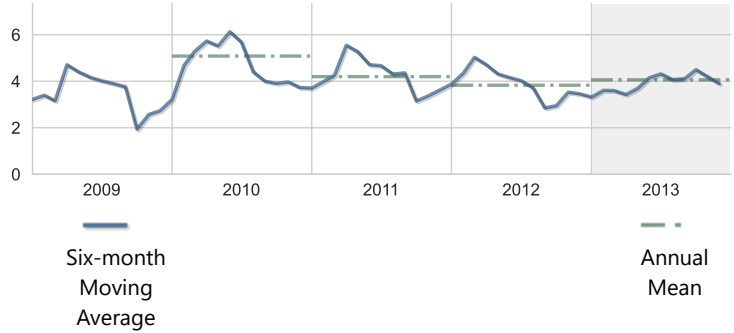
Temperature, water

Units: deg F	Year 2013	Historical period of record
High	87.98	92.84
Mean	76.06	76.41
Low	61.88	47.84
No. of Samples	48	908



Turbidity

Units: NTU	Year 2013	Historical period of record
High	9.50	39.00
Mean	4.06	3.97
Low	1.80	0.20
No. of Samples	59	833



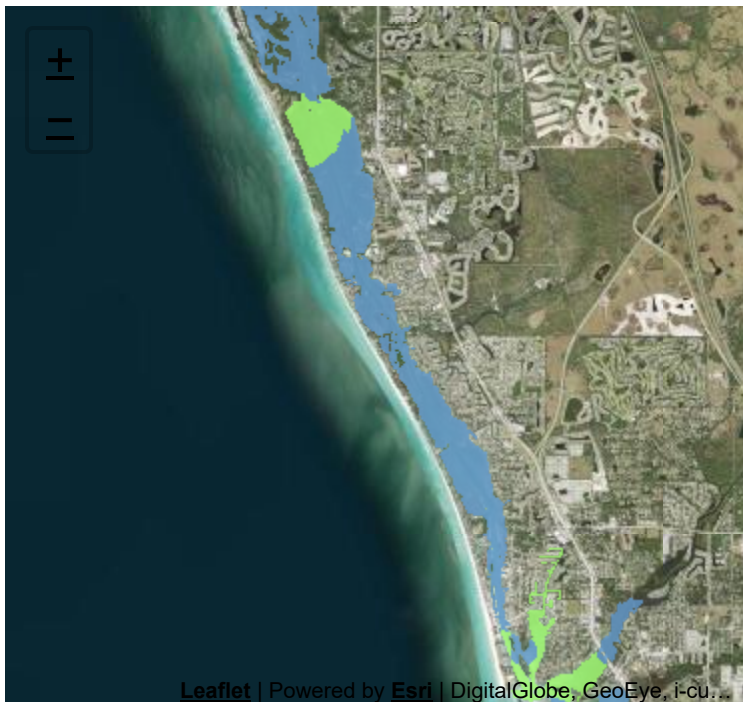
Annual Averages

Indicator	Units	2009	2010	2011	2012	2013	Trend
Dissolved Oxygen	mg/l		6.92	6.41	6.11	6.11	
Dissolved oxygen saturation	percent (%)		95.81	92.48	89.71	87.79	
Light Attenuation	K(1/m)		0.92	0.75	0.88	0.91	
Salinity	PSS		32.60	33.44	33.19	31.31	
Turbidity	NTU		5.08	4.20	3.83	4.06	

Bay Contour Maps (2013)

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 2013 Monthly Contour Maps for: Chlorophyll a
January



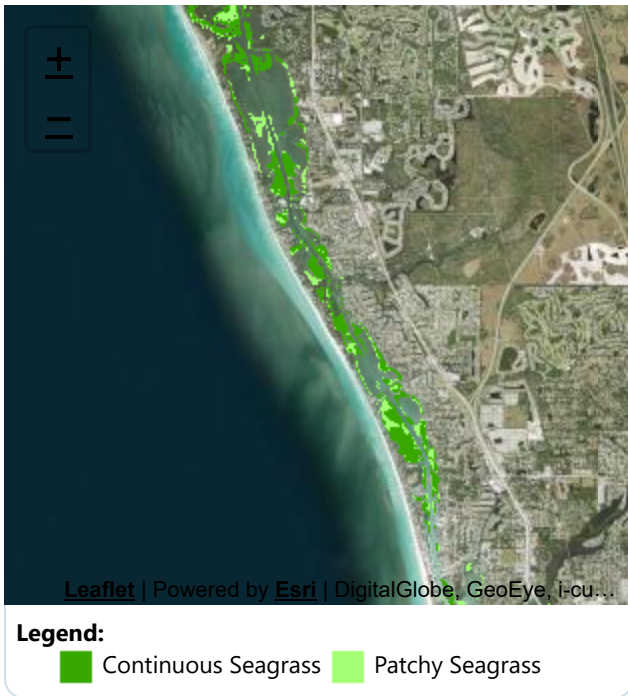
Contour Legend:

- 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

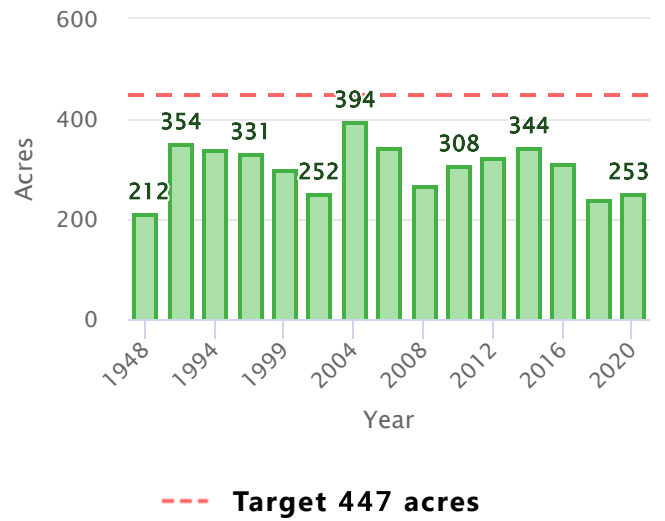
Seagrasses

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. Seagrass calculations are aggregates of patchy and continuous seagrass measurements only. Recordings of attached algae are not included in these summaries.

Showing Seagrass Coverage for 2020:



Seagrass Acreage Variation within Blackburn Bay



Impervious Features

Rain that falls on land that is in a natural state is absorbed and filtered by soils and vegetation as it makes its way into underground aquifers. However, in developed areas, "impervious surfaces" impede this process and contribute to polluted urban runoff entering surface waters. These surfaces include human infrastructure like roads, sidewalks, driveways and parking lots that are covered by impenetrable materials such as asphalt, concrete, brick and stone, as well as buildings and other permanent structures. Soils that have been disturbed and compacted by urban development are often impervious as well.

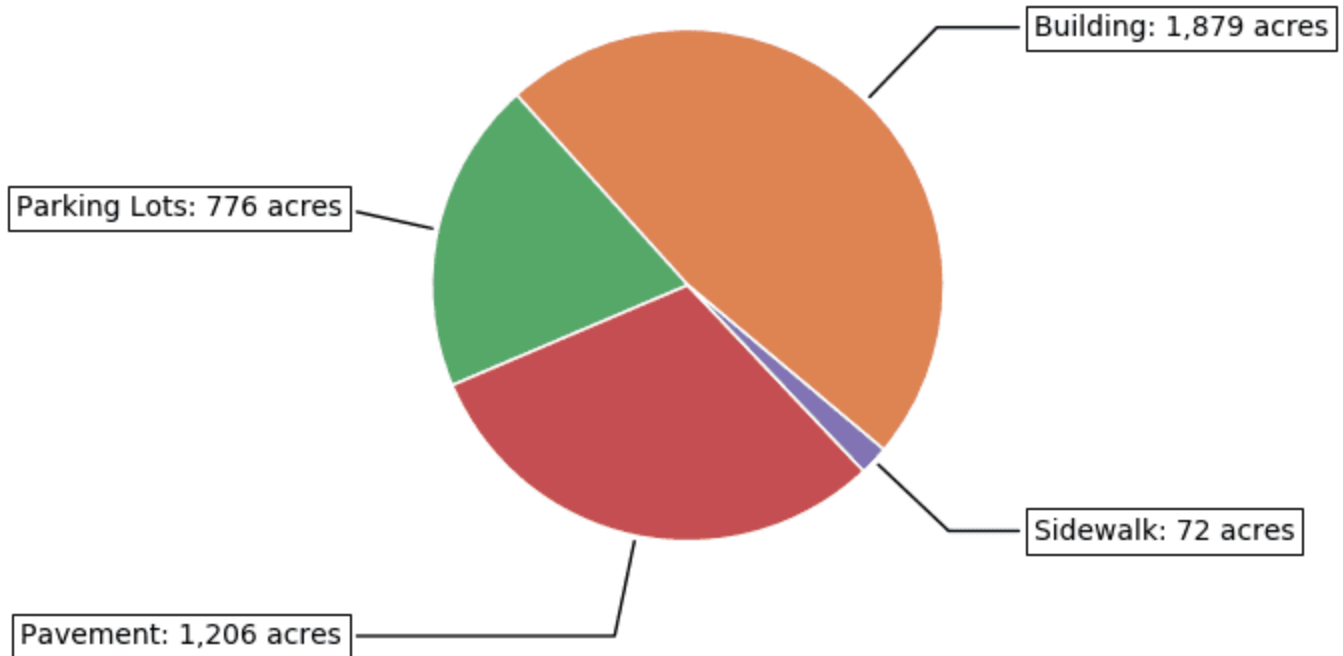


14% of the land area within the **Little Sarasota Bay Watershed** is covered by

impervious surfaces

2014 Impervious Surface Coverage by Type

in acres, within the Little Sarasota Bay Watershed








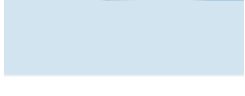

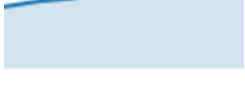
Land Use / Land Cover

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.

Blackburn Bay is located within the Little Sarasota Bay Watershed. The chart below shows the land use / land cover characteristics for Little Sarasota Bay Watershed within the boundary of this Water Atlas. **[View details about the Little Sarasota Bay Watershed »](#)**

Acreege and Percentage within each Land Use / Land Cover Category for Little Sarasota Bay Watershed

2013 Bay Conditions Report for Blackburn Bay

Land Use Classification	1990	2005	2011	2014	2017	2020	Trend
Urban & Built-up	8,943 31.9%	11,834 42.2%	12,102 43.1%	12,162 43.3%	12,777 45.5%	13,343 47.5%	
Agriculture	3,550 12.6%	3,228 11.5%	3,258 11.6%	4,223 15%	3,124 11.1%	2,837 10.1%	
Rangeland	825 2.9%	1,822 6.5%	1,474 5.3%	579 2.1%	1,233 4.4%	877 3.1%	
Upland Forests	7,098 25.3%	3,066 10.9%	2,981 10.6%	2,725 9.7%	2,687 9.6%	2,603 9.3%	
Water	3,429 12.2%	4,123 14.7%	4,147 14.8%	4,175 14.9%	4,227 15.1%	4,337 15.5%	
Wetlands	3,490 12.4%	3,133 11.2%	3,191 11.4%	3,227 11.5%	3,121 11.1%	3,120 11.1%	
Barren Land	62 0.2%	18 0.1%	19 0.1%	20 0.1%	6 0%	6 0%	
Transportation and Utilities	675 2.4%	841 3%	892 3.2%	952 3.4%	898 3.2%	948 3.4%	

2020 Land Use / Land Cover for Little Sarasota Bay Watershed

as a percentage of land area for this watershed

