

Sarasota Bay Condition Report for 2016

CAUTION



2 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 in Sarasota Bay degraded slightly in 2016, changing from the previous year. Chlorophyll *a* showed a clear increase, while phosphorus and nitrogen slightly decreased.

Water Quality: Two of the three water quality indicators (nitrogen and phosphorus) were rated as excellent (below their respective targets). However, chlorophyll *a* exceeded the target and threshold values. 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). Mean chlorophyll *a* concentration was 0.0067 mg/l, above the target value of 0.0052 mg/l and the threshold of 0.0061 mg/l. The mean concentration of total nitrogen decreased marginally to 0.3528 mg/l, still below its target value of 0.51 mg/l. Mean total phosphorus concentration increased marginally, but at 0.0639 mg/l was still well below its target value of 0.150 mg/l.

Biotic Indicator: A survey of the biotic indicator, seagrass, was performed in 2016 by the Southwest Florida Water Management District. In 2016, the total area of seagrass in the lower portion of Sarasota Bay (the area within Sarasota County) was estimated to be 3,639 acres, well above the target of 2,022 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.



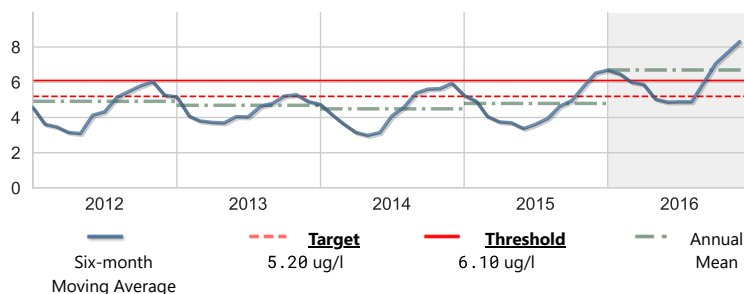
Bays included in this report: Bayou Louise, Brushy Bayou, Pansy Bayou, Sarasota Bay



Chlorophyll a

Score: Caution

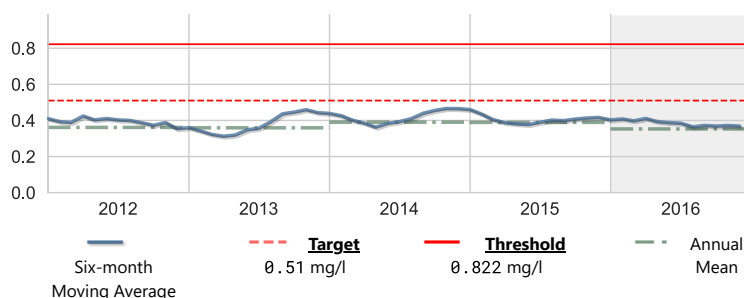
Units: ug/l	Year 2016	Historical period of record
High	43.40	49.00
Mean	6.70	4.90
Low	1.58	0.15
No. of Samples	199	5065



Nitrogen, Total

Score: Excellent

Units: mg/l	Year 2016	Historical period of record
High	0.695	1.870
Mean	0.353	0.338
Low	0.195	0.030
No. of Samples	198	4862



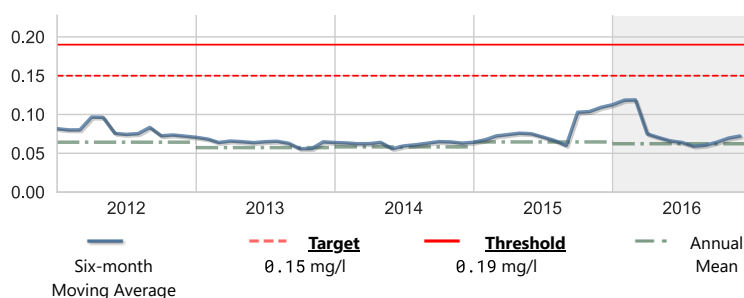
Targets and thresholds shown on this graph are advisory approximations computed by Sarasot recent data. Regulatory thresholds have not been established.



Phosphorus, Total

Score: Excellent

Units: mg/l	Year 2016	Historical period of record
High	0.330	4.400
Mean	0.062	0.085
Low	0.030	0.002
No. of Samples	231	5033

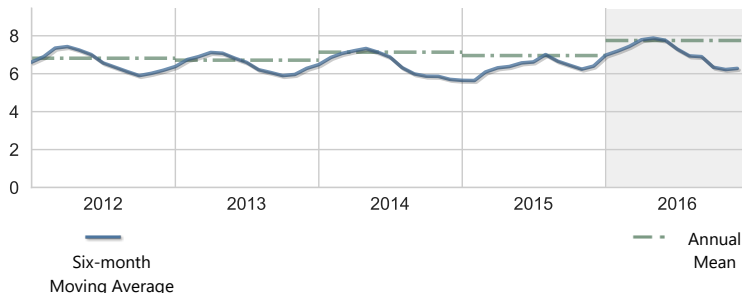


Other Measures of Bay Health

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.

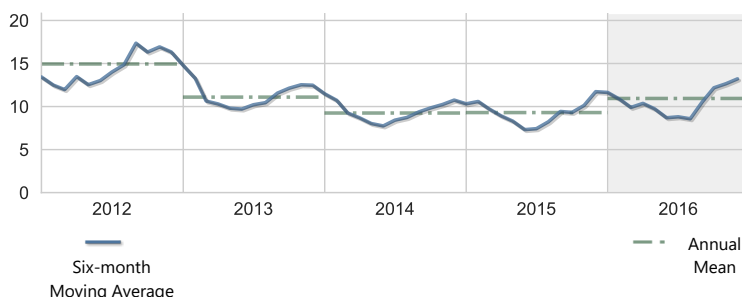
Dissolved Oxygen

Units: mg/l	Year 2016	Historical period of record
High	12.30	13.80
Mean	7.75	6.70
Low	4.40	0.10
No. of Samples	358	16519



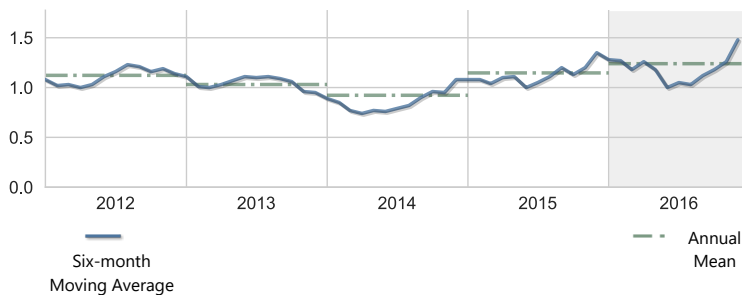
Apparent Color

Units: PCU	Year 2016	Historical period of record
High	80.00	98.00
Mean	10.94	12.99
Low	3.00	0.00
No. of Samples	199	4926



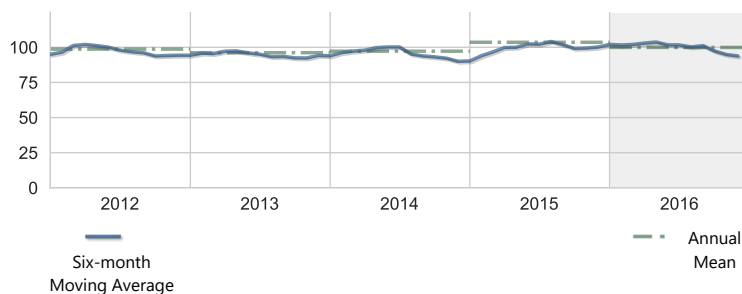
BOD, Biochemical oxygen demand

Units: mg/l	Year 2016	Historical period of record
High	6.40	9.20
Mean	1.24	1.17
Low	0.50	0.50
No. of Samples	199	3566



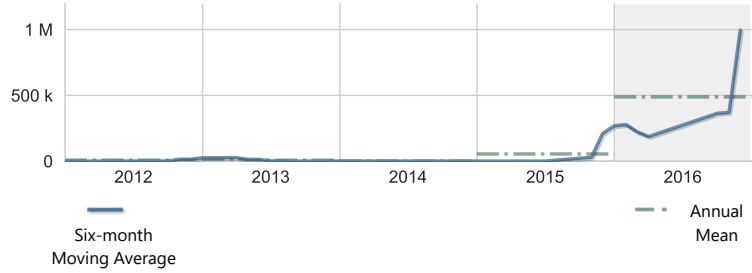
Dissolved oxygen saturation

Units: percent (%)	Year 2016	Historical period of record
High	134.00	214.71
Mean	99.90	97.84
Low	68.00	21.92
No. of Samples	213	15840



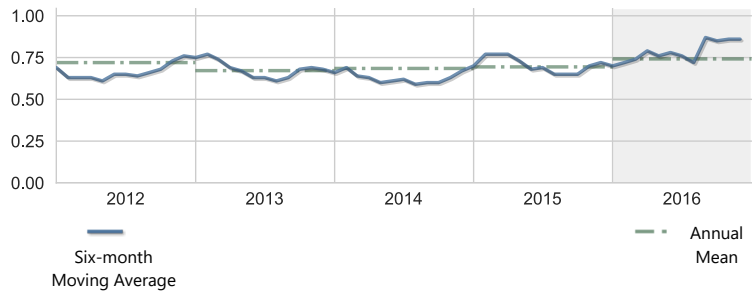
***Karenia brevis* ("red tide")**

Units: #/l	Year 2016	Historical period of record
High	8640000.00	8640000.00
Mean	488275.86	74195.47
Low	1000.00	1000.00
No. of Samples	116	2650



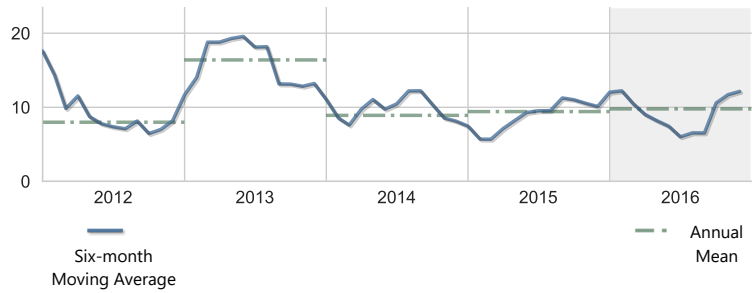
Light Attenuation

Units: K(1/m)	Year 2016	Historical period of record
High	4.02	5.68
Mean	0.74	0.69
Low	0.20	0.05
No. of Samples	169	3958



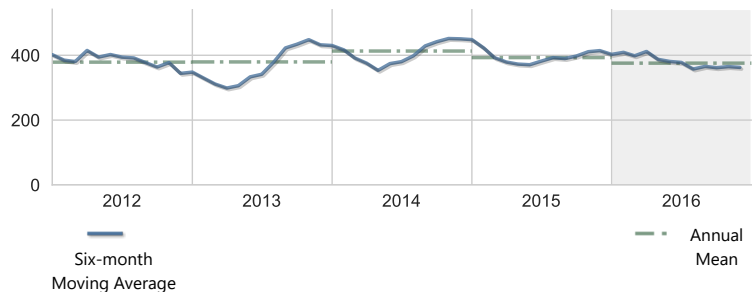
Nitrogen, Ammonia + Ammonium as N

Units: ug/l	Year 2016	Historical period of record
High	76.00	159.00
Mean	9.78	11.21
Low	5.00	5.00
No. of Samples	199	4081



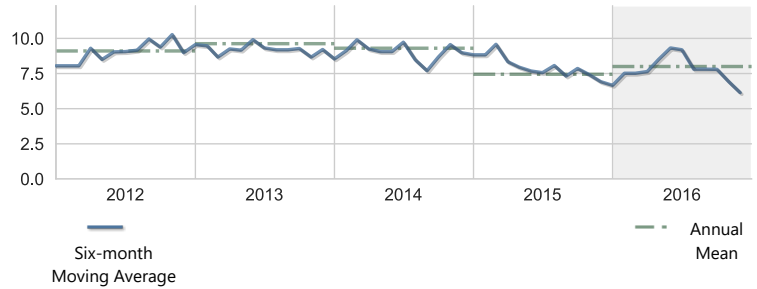
Nitrogen, Kjeldahl

Units: ug/l	Year 2016	Historical period of record
High	690.00	1850.00
Mean	375.69	372.22
Low	100.00	0.01
No. of Samples	232	5144



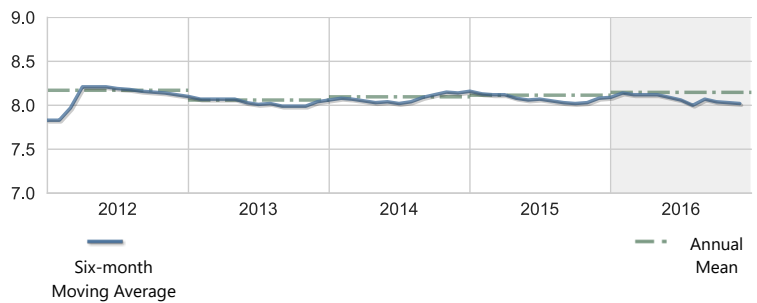
Nitrogen, Nitrite + Nitrate as N

Units: ug/l	Year 2016	Historical period of record
High	45.00	210.00
Mean	8.00	8.58
Low	5.00	1.00
No. of Samples	229	5991



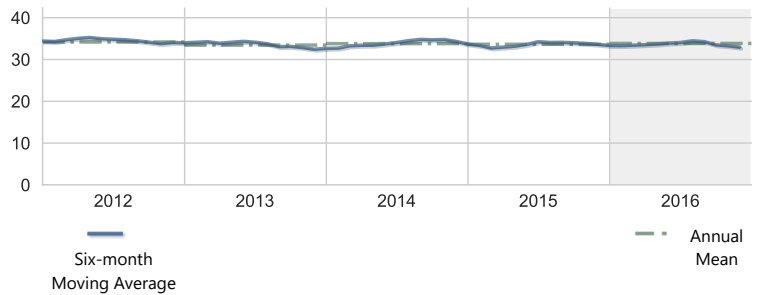
pH

Units: None	Year 2016	Historical period of record
High	8.60	9.62
Mean	8.15	8.07
Low	7.50	3.90
No. of Samples	388	13822



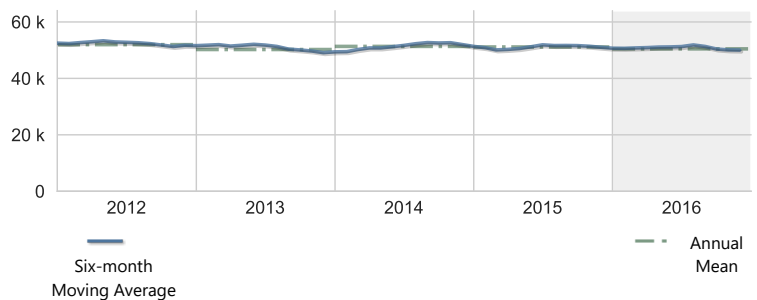
Salinity

Units: PSS	Year 2016	Historical period of record
High	38.90	68.20
Mean	33.84	33.26
Low	18.80	3.60
No. of Samples	350	18026



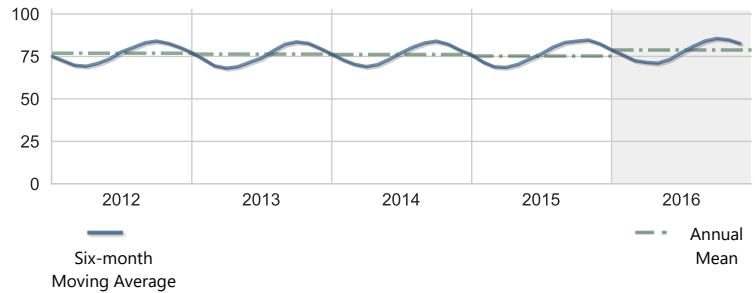
Specific conductance

Units: umho	Year 2016	Historical period of record
High	54830.00	94950.00
Mean	50459.07	51695.95
Low	33500.00	31.20
No. of Samples	214	5326



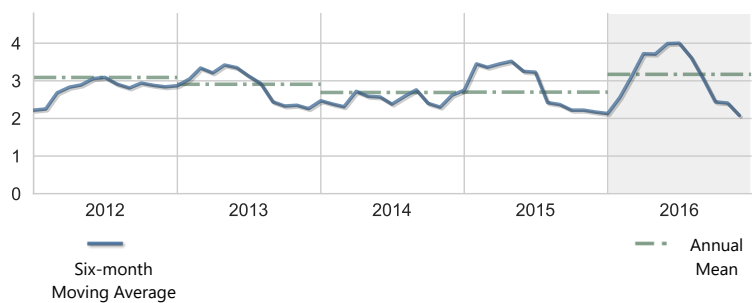
Temperature, water

Units: deg F	Year 2016	Historical period of record
High	92.84	100.40
Mean	78.78	76.98
Low	62.06	35.24
No. of Samples	390	18414



Turbidity

Units: NTU	Year 2016	Historical period of record
High	14.00	39.00
Mean	3.17	2.63
Low	0.55	0.03
No. of Samples	199	14572



Annual Averages

Indicator	Units	2012	2013	2014	2015	2016	Trend
Dissolved Oxygen	mg/l	6.82	6.71	7.14	6.96	7.75	
Dissolved oxygen saturation	percent (%)	98.69	96.16	97.22	103.56	99.90	
Light Attenuation	K(1/m)	0.72	0.67	0.68	0.69	0.74	
Salinity	PSS	34.19	33.45	33.80	33.64	33.84	
Turbidity	NTU	3.09	2.91	2.69	2.70	3.17	

Bay Contour Maps (2016)

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 2016 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

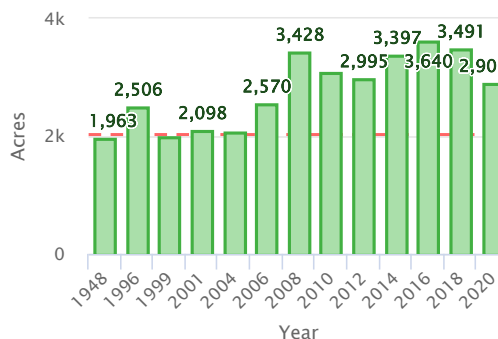
Among the most important habitats in Florida's estuarine environments, seagrass beds are indispensable for the role they play in cycling nutrients, supplying food for wildlife, stabilizing sediments, and providing habitat for juvenile and adult finfish and shellfish. Use the interactive map below to 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:



- Legend:**
- Continuous Seagrass
 - Patchy Seagrass

Seagrass Acreage Variation within Sarasota Bay



--- Target 2, 022 acres

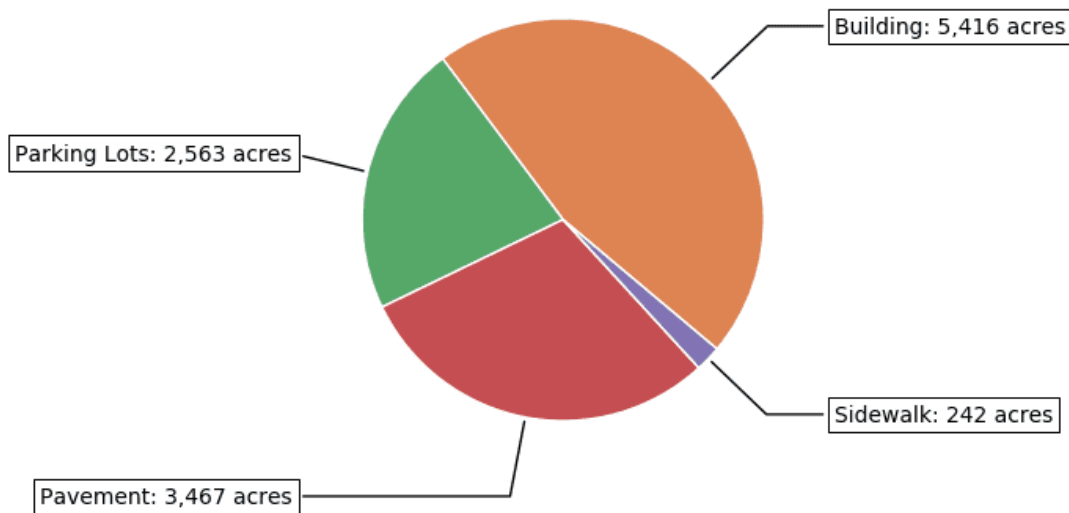
Impervious Features

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.

 **19%** of the land area within the **Sarasota Bay Watershed** is covered by impervious surfaces

2014 Impervious Surface Coverage by Type

in acres, within the 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.

Sarasota 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 »**](#)

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

2016 Bay Conditions Report for Sarasota Bay

Land Use Classification	1990	2005	2011	2014	2017	2020	Trend
Urban & Built-up	32,908 53.3%	37,844 61.3%	38,343 62.1%	37,987 61.6%	38,749 62.8%	56,970 59.1%	
Agriculture	6,338 10.3%	2,497 4%	2,215 3.6%	2,309 3.7%	1,822 3%	2,986 3.1%	
Rangeland	547 0.9%	199 0.3%	225 0.4%	430 0.7%	208 0.3%	261 0.3%	
Upland Forests	3,588 5.8%	2,109 3.4%	1,874 3%	1,923 3.1%	1,756 2.8%	2,075 2.2%	
Water	13,350 21.6%	14,227 23.1%	14,278 23.1%	14,131 22.9%	14,255 23.1%	25,360 26.3%	
Wetlands	2,870 4.7%	2,227 3.6%	2,229 3.6%	2,372 3.8%	2,327 3.8%	4,889 5.1%	
Barren Land	29 0%	9 0%	99 0.2%	109 0.2%	100 0.2%	76 0.1%	
Transportation and Utilities	1,845 3%	2,602 4.2%	2,452 4%	2,453 4%	2,511 4.1%	3,783 3.9%	

2020 Land Use / Land Cover for Sarasota Bay Watershed

as a percentage of land area for this watershed

