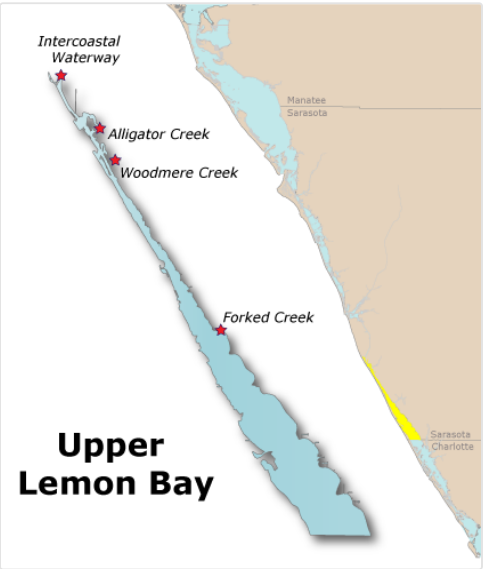
Upper Lemon Bay Condition Report for 2020

CAUTION

Chl-a N P

2 out of 3 indicators were rated as **PASS**.

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



Bays included in this report:
Lemon Bay

Summary:

Water quality in Upper Lemon Bay made incremental improvement in 2020. All water quality measures were better with the exception of ammonia, which increased slightly. The mean concentration of chlorophyll *a* dropped enough that its rating improved from "Caution" to "Good".

Note: Beginning in 2020, Sarasota County switched from measuring apparent color to true color. The latter will be added to Bay Conditions reports in the near future.

Water Chemistry Ratings

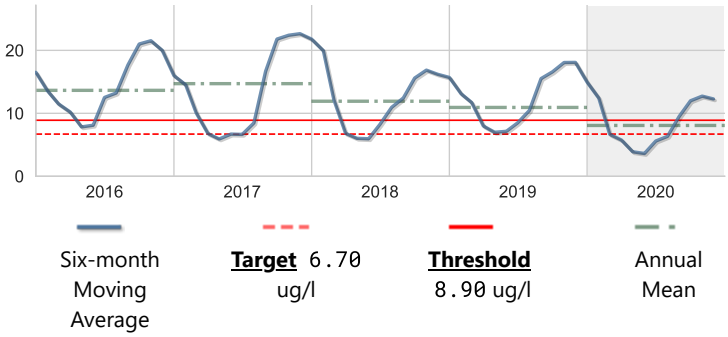
Total nitrogen, total phosphorus, and chlorophyll *a* levels are monitored carefully by water resource managers and used by regulatory authorities to determine whether a bay meets the water quality standards mandated by the Clean Water Act. The trend graphs for these indicators are shown below, along 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: Good

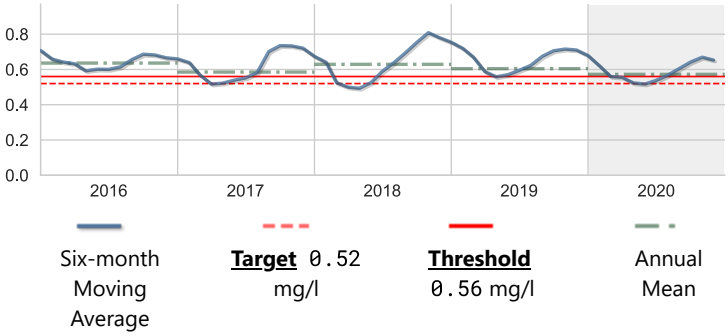
Units: ug/l	Year 2020	Historical period of record
High	32.37	85.01
Mean	8.07	9.73
Low	1.30	0.13
No. of Samples	74	2677



Nitrogen, Total

Score: Caution

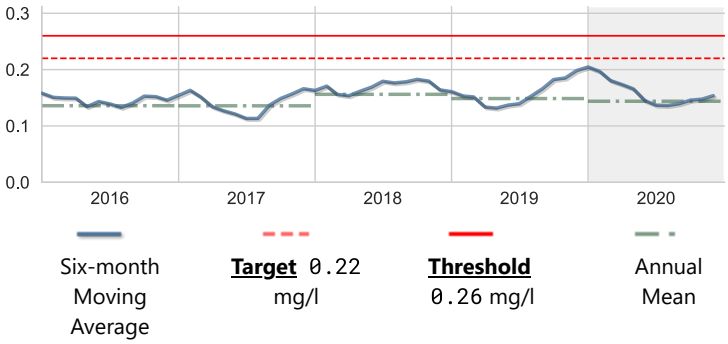
Units: mg/l	Year 2020	Historical period of record
High	1.052	1.465
Mean	0.572	0.543
Low	0.365	0.055
No. of Samples	67	1589



P Phosphorus, Total

Score: Excellent

Units: mg/l	Year 2020	Historical period of record
High	0.300	0.880
Mean	0.144	0.164
Low	0.050	0.050
No. of Samples	67	1602

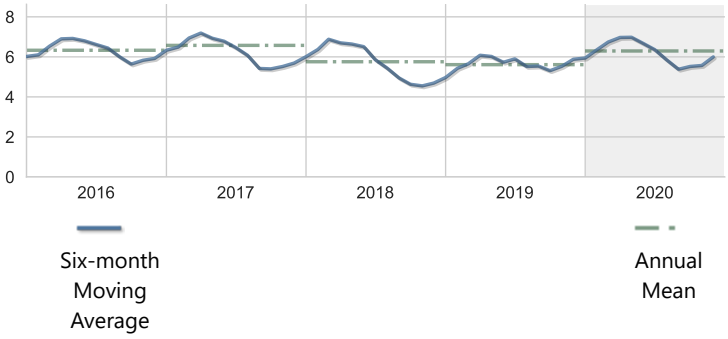


Other Measures of Bay Health

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

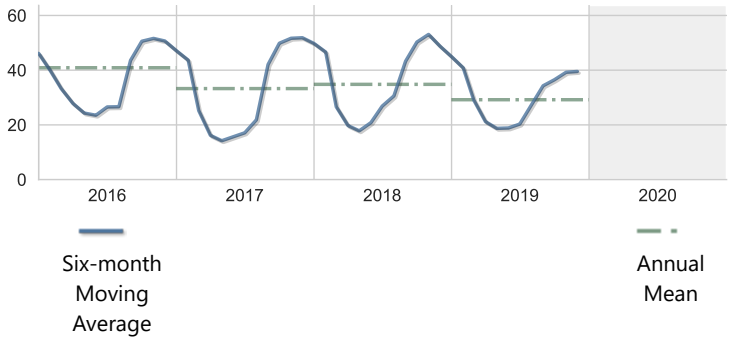
Units: mg/l	Year 2020	Historical period of record
High	8.89	12.00
Mean	6.29	6.21
Low	2.53	0.20
No. of Samples	66	3151



Apparent Color

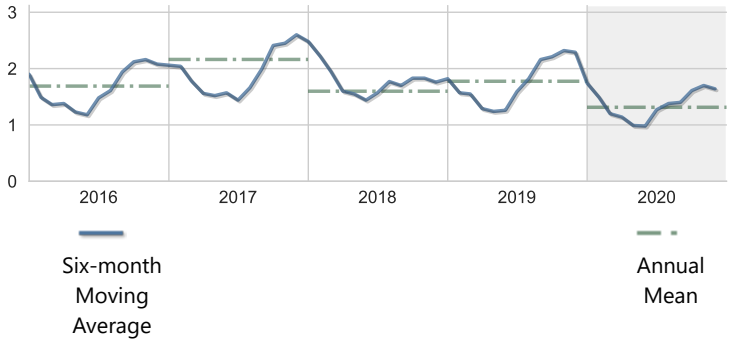
Note: The latest available sample for this parameter is from December 2019

Units: PCU	Year 2020	Historical period of record
High		280.00
Mean		31.97
Low		4.00
No. of Samples	0	1498



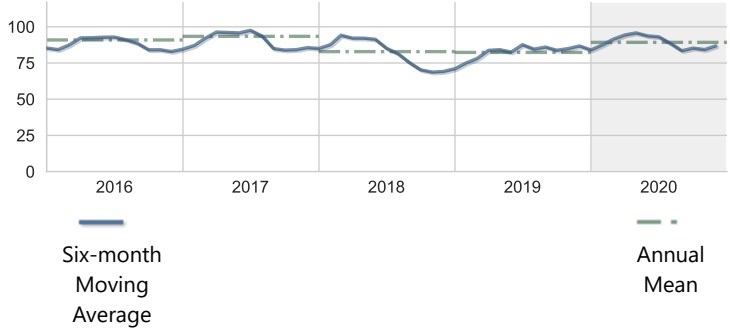
BOD, Biochemical oxygen demand

Units: mg/l	Year 2020	Historical period of record
High	4.50	7.60
Mean	1.31	1.76
Low	0.50	0.50
No. of Samples	60	1416



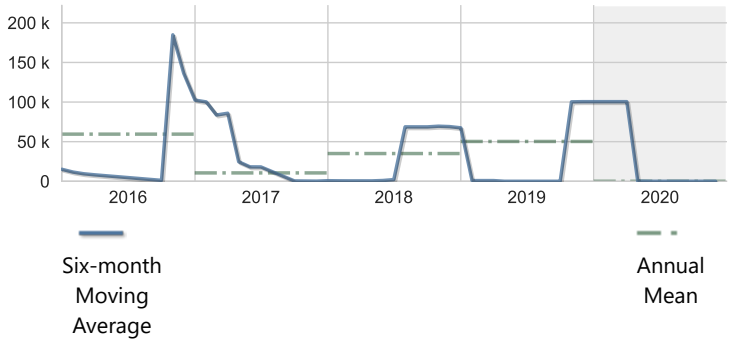
Dissolved oxygen saturation

Units: percent (%)	Year 2020	Historical period of record
High	129.00	180.07
Mean	89.25	89.17
Low	40.10	12.90
No. of Samples	66	3008



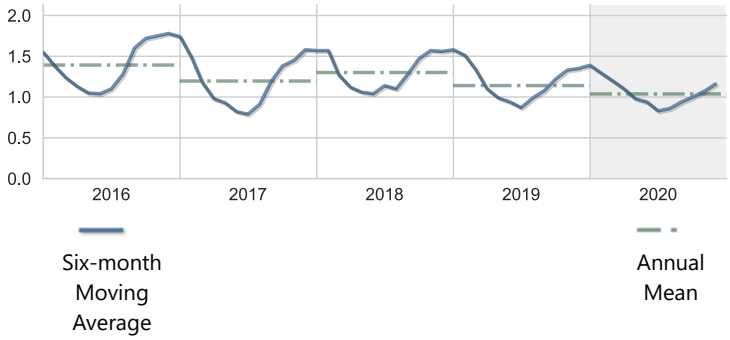
Karenia brevis ("red tide")

Units: #/l	Year 2020	Historical period of record
High	0.00	4480000.00
Mean	0.00	28640.53
Low	0.00	0.00
No. of Samples	60	982



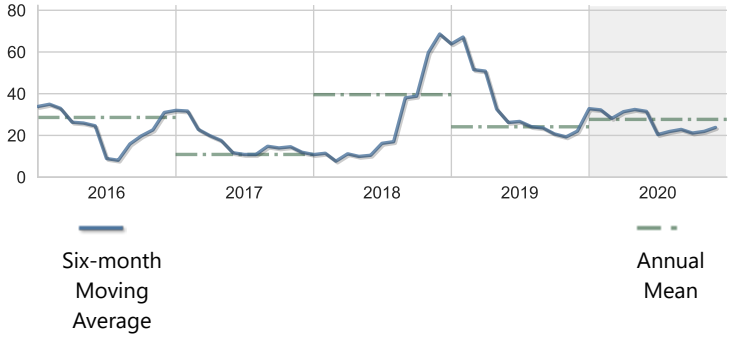
Light Attenuation

Units: K(1/m)	Year 2020	Historical period of record
High	2.53	3.85
Mean	1.04	1.14
Low	0.13	0.13
No. of Samples	57	1385



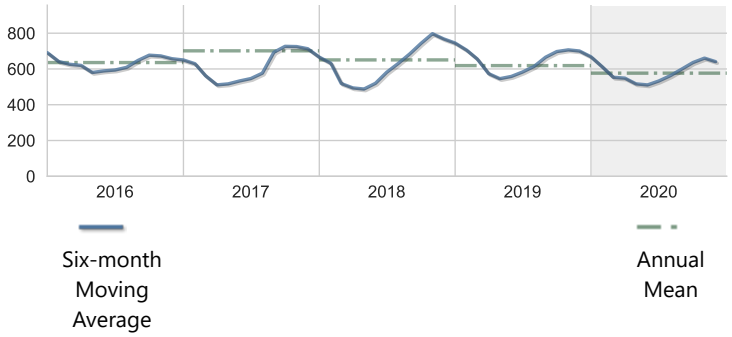
Nitrogen, Ammonia + Ammonium as N

Units: ug/l	Year 2020	Historical period of record
High	105.00	359.00
Mean	27.68	25.77
Low	7.00	5.00
No. of Samples	60	1560



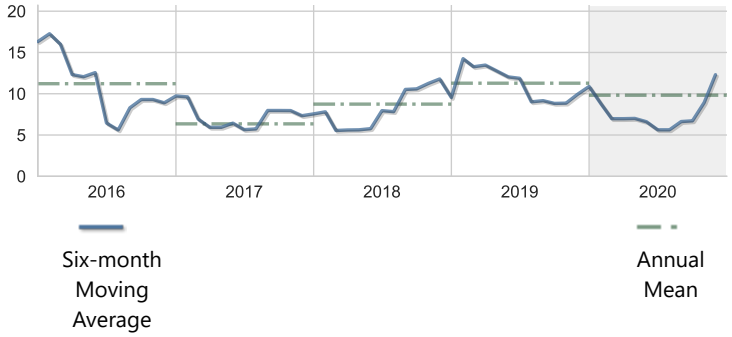
Nitrogen, Kjeldahl

Units: ug/l	Year 2020	Historical period of record
High	1010.00	1460.00
Mean	576.57	566.62
Low	360.00	50.00
No. of Samples	67	1602



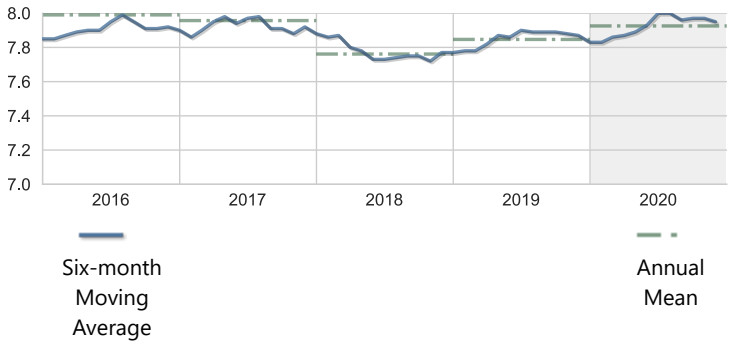
Nitrogen, Nitrite + Nitrate as N

Units: ug/l	Year 2020	Historical period of record
High	60.00	170.00
Mean	9.82	9.09
Low	4.00	4.00
No. of Samples	67	2033



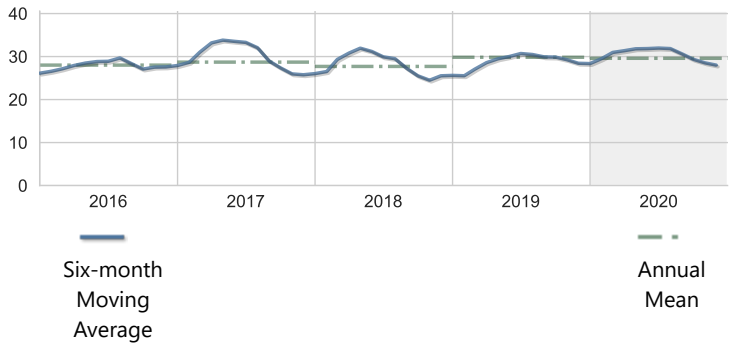
pH

Units: None	Year 2020	Historical period of record
High	8.65	8.90
Mean	7.93	7.96
Low	7.06	4.80
No. of Samples	66	2710



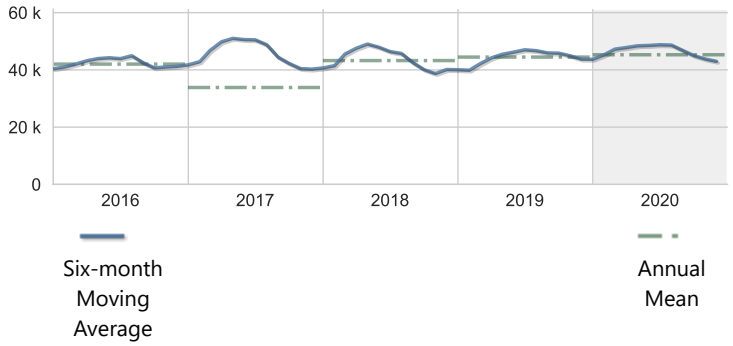
Salinity

Units: PSS	Year 2020	Historical period of record
High	35.80	40.60
Mean	29.60	29.73
Low	6.84	2.80
No. of Samples	72	3470



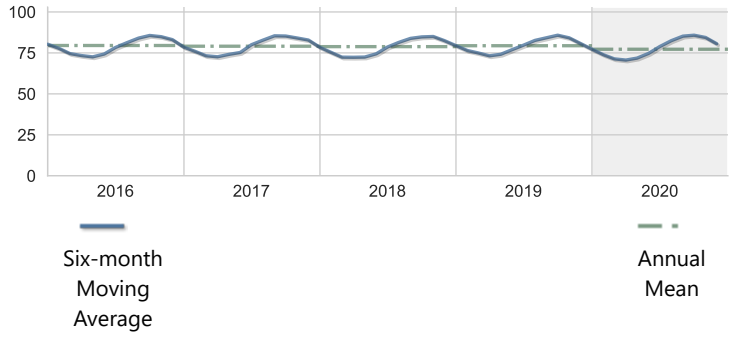
Specific conductance

Units: umho	Year 2020	Historical period of record
High	54000.00	60590.00
Mean	45286.67	45570.23
Low	12000.00	5800.00
No. of Samples	60	1563



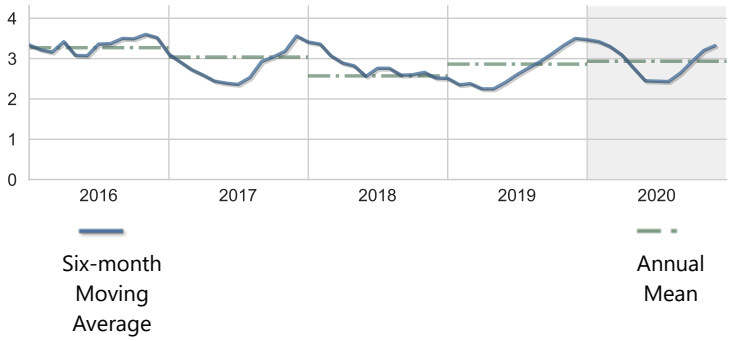
Temperature, water

Units: deg F	Year 2020	Historical period of record
High	91.22	107.60
Mean	77.23	77.95
Low	60.80	46.76
No. of Samples	66	3484



Turbidity

Units: NTU	Year 2020	Historical period of record
High	9.00	22.00
Mean	2.93	2.96
Low	0.70	0.21
No. of Samples	67	2824



Annual Averages

Indicator	Units	2016	2017	2018	2019	2020	Trend
Dissolved Oxygen	**mg/l**	6.33	6.57	5.76	5.61	6.29	
Dissolved oxygen saturation	**percent (%)**	90.90	93.40	82.85	82.33	89.25	
Light Attenuation	**K(1/m)**	1.39	1.20	1.30	1.14	1.04	
Salinity	**PSS**	28.01	28.71	27.70	29.84	29.60	
Turbidity	**NTU**	3.27	3.04	2.57	2.86	2.93	

Bay Contour Maps (2020)

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 2020 Monthly Contour Maps for: Chlorophyll a

January

Contour Legend:

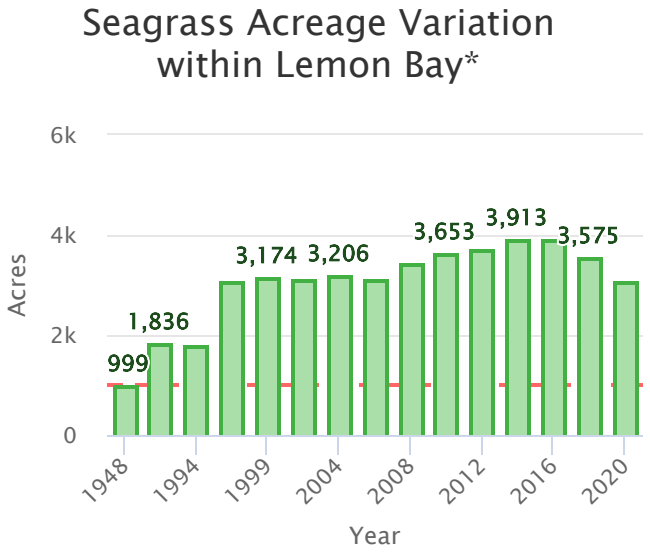
- Less than 1 mg/l
- 1.0 - 5.9 mg/l
- 6.0 - 10.9 mg/l
- 11.0 - 17.9 mg/l
- Greater than 18 mg/l

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

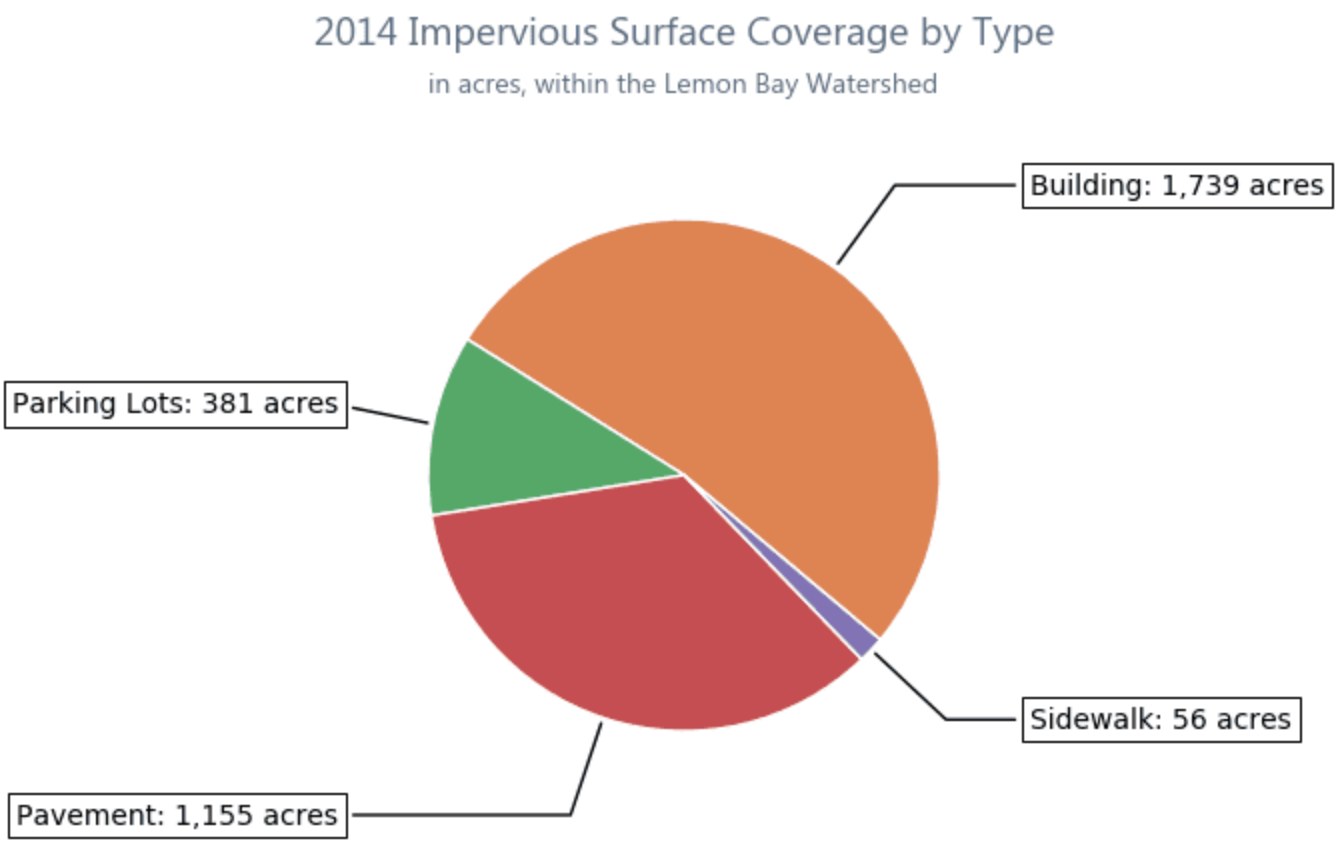


***Note**: Seagrass acreage values shown above are for Lemon Bay in its entirety. The target for seagrass acreage for Upper Lemon Bay is 1,010 acres; for Lower Lemon Bay it is 2,880 acres.

Impervious Features

Rain that falls on land that is in a natural state is absorbed and filtered by soils and vegetation as it makes it 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.

10% of the land area within the **Lemon Bay Watershed** is covered by impervious surfaces



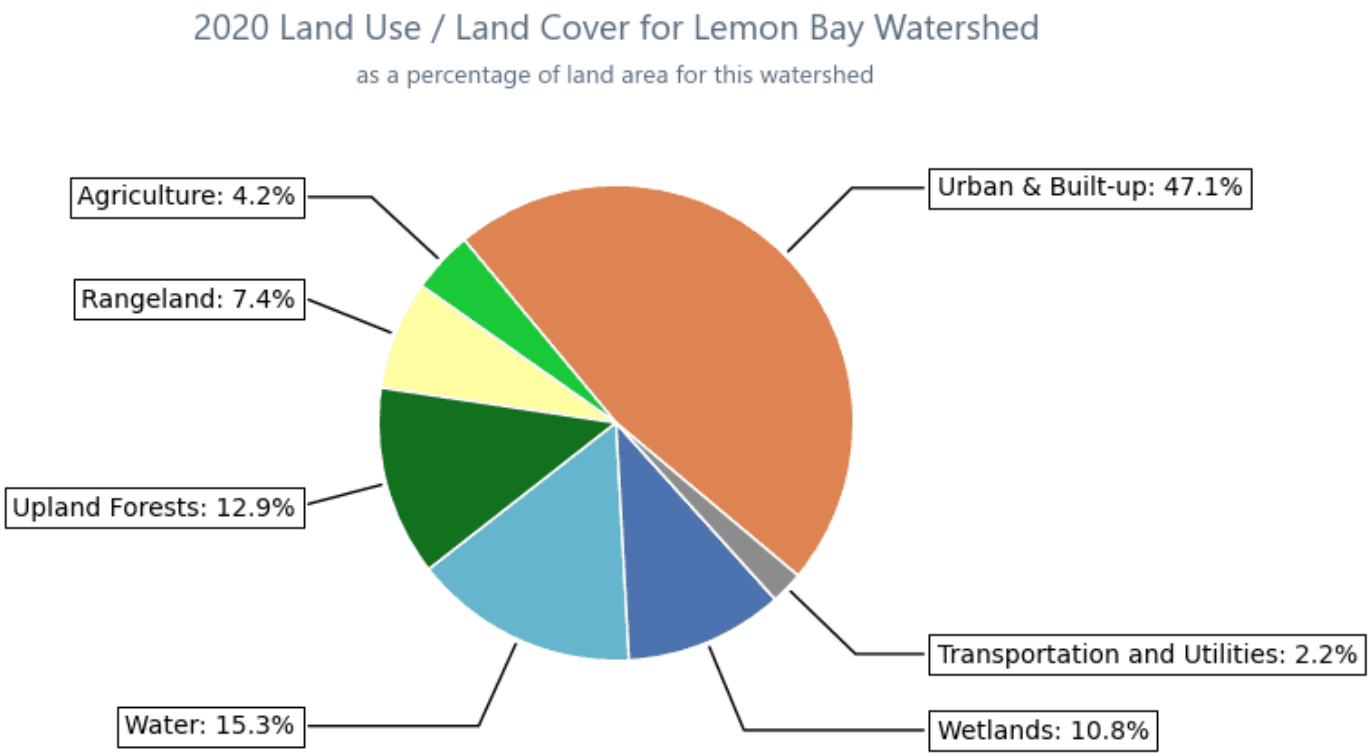
Land Use / Land Cover

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.

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

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

Land Use Classification	1990	2005	2011	2014	2017	2020	Trend
Urban & Built-up	11,331 **33.6%**	12,872 **38.2%**	13,589 **40.4%**	13,589 **40.4%**	14,050 **41.7%**	22,467 **47.1%**	
Agriculture	2,515 **7.5%**	2,325 **6.9%**	2,255 **6.7%**	2,255 **6.7%**	2,075 **6.2%**	2,023 **4.2%**	
Rangeland	2,209 **6.6%**	4,479 **13.3%**	4,115 **12.2%**	4,115 **12.2%**	3,662 **10.9%**	3,544 **7.4%**	
Upland Forests	9,360 **27.8%**	5,637 **16.7%**	5,109 **15.2%**	5,109 **15.2%**	5,231 **15.5%**	6,168 **12.9%**	
Water	3,104 **9.2%**	3,437 **10.2%**	3,501 **10.4%**	3,501 **10.4%**	3,586 **10.6%**	7,284 **15.3%**	
Wetlands	4,689 **13.9%**	4,265 **12.7%**	4,375 **13%**	4,375 **13%**	4,355 **12.9%**	5,144 **10.8%**	
Barren Land	29 **0.1%**	0 **0%**	0 **0%**	0 **0%**	0 **0%**	6 **0%**	
Transportation and Utilities	443 **1.3%**	655 **1.9%**	726 **2.2%**	726 **2.2%**	723 **2.1%**	1,071 **2.2%**	


2020 Land Use / Land Cover for Lemon Bay Watershed
as a percentage of land area for this watershed
Agriculture: 4.2%
Urban & Built-up: 47.1%
Rangeland: 7.4%
Upland Forests: 12.9%
Transportation and Utilities: 2.2%
Water: 15.3%
Wetlands: 10.8%