

Whitaker Bayou Condition Report for 2020



CAUTION



3 out of 4
indicators
were rated as
PASS.

All four indicators must pass for the creek to be rated as
PASS.

Size: 4,967 acres

Location: North Sarasota County, south Manatee County

Discharges into: Sarasota Bay

Whitaker Bayou is a highly urbanized basin that has changed in land use and hydrology since the mid-1900s. The Sarasota County 1847 General Land Office Survey indicates that Whitaker Bayou only extended about a quarter of a mile inland from the bay. The survey also displays a separate waterway that extends inland from 0.25 mile northeast of the head of Whitaker Bayou. Seasonal patterns in freshwater inflows have not changed significantly between historic and current conditions, indicating that changes in land use have not altered the intra-annual pattern of inflows to the bay. Land use has, however, affected the magnitude of total inflow to the bay, if not the relative contributions of individual sources (runoff, baseflow, irrigation, point sources). *For full basin details see: **Sarasota Bay Water Quality Management Plan (2012)***

Whitaker Bayou



Water Chemistry Ratings | Freshwater Portion of the Creek

Creek Conditions Ratings are based on comparing nitrogen, phosphorus, chlorophyll and dissolved oxygen to water quality guidelines or regulations. Florida law defines a maximum allowable concentration of nitrogen, phosphorus, and chlorophyll *a*, and a minimum allowable concentration of dissolved oxygen in these streams.

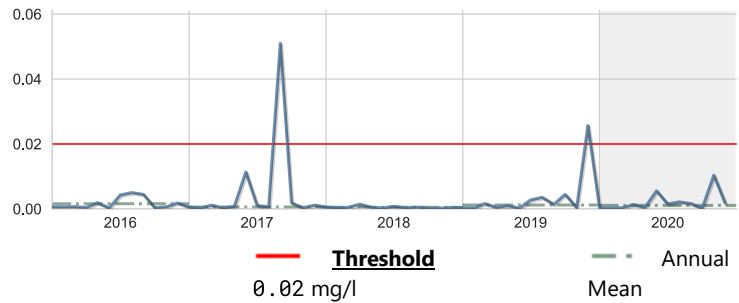


Chlorophyll a

Score: Pass

| Units: mg/l | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 0.0104 | 0.0595 |
| Mean | 0.0011 | 0.0016 |
| Low | 0.0002 | 0.00 |
| No. of Samples | 12 | 561 |

Five-year Rolling Average

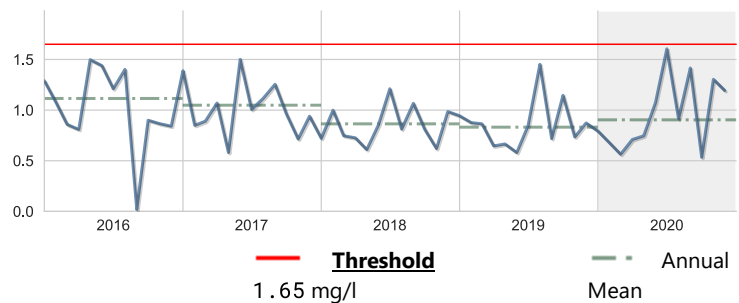


Nitrogen, Total

Score: Pass

| Units: mg/l | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 1.605 | 15.76 |
| Mean | 0.9038 | 0.8959 |
| Low | 0.534 | 0.0019 |
| No. of Samples | 12 | 524 |

Five-year Rolling Average



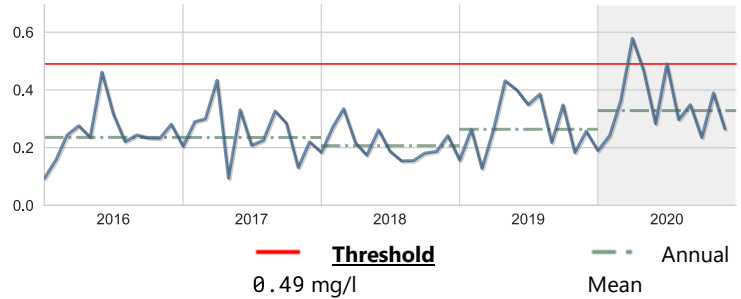
P

Phosphorus, Total

Score: Pass

| Units: mg/l | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 0.579 | 2.38 |
| Mean | 0.3284 | 0.2935 |
| Low | 0.19 | 0.082 |
| No. of Samples | 12 | 553 |

Five-year Rolling Average



DO

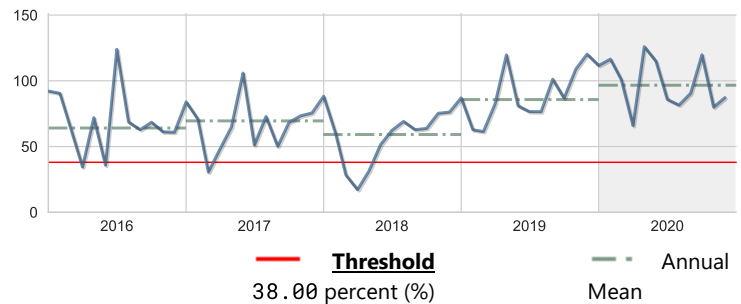
Dissolved Oxygen Saturation

Note: Low DO saturation also may be naturally influenced by inflows from nearby wetlands or groundwater sources.

Score: Pass

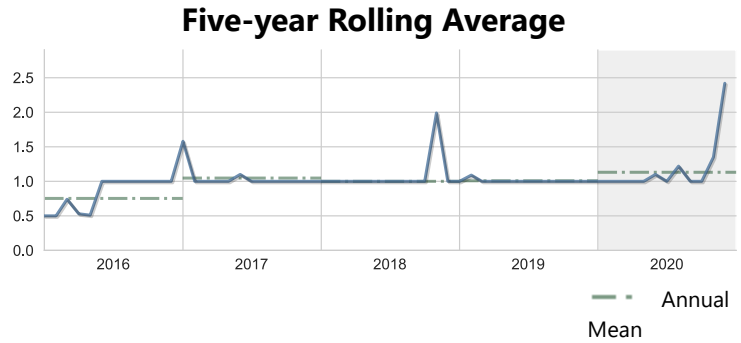
| Units: percent (%) | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 125.991 | 492.60 |
| Mean | 96.65 | 75.16 |
| Low | 65.9407 | 2.20 |
| No. of Samples | 12 | 587 |

Five-year Rolling Average



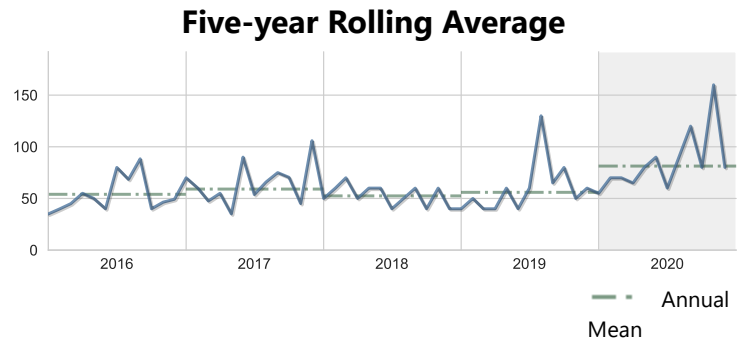
BOD, Biochemical oxygen demand

| Units: mg/l | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 2.42 | 175.00 |
| Mean | 1.13 | 0.92 |
| Low | 1.00 | 0.50 |
| No. of Samples | 12 | 492 |



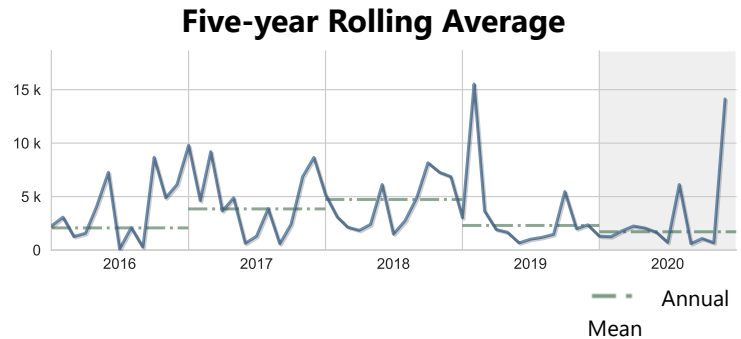
Color

| Units: PCU | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 160.00 | 330.00 |
| Mean | 81.32 | 69.21 |
| Low | 55.00 | 20.00 |
| No. of Samples | 12 | 634 |



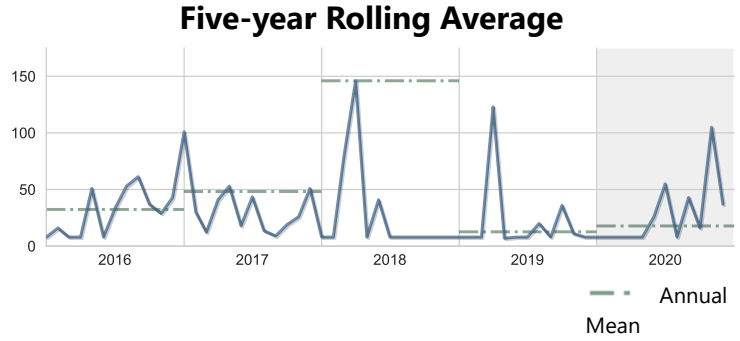
Escherichia coli

| Units: cfu/100ml | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 14136.00 | 15531.00 |
| Mean | 1707.83 | 2911.63 |
| Low | 602.00 | 97.00 |
| No. of Samples | 12 | 122 |



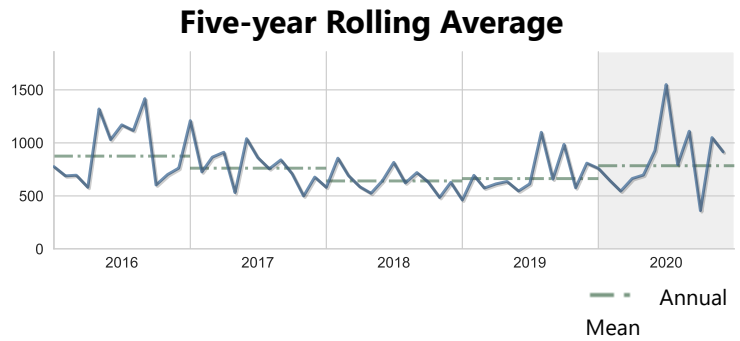
Nitrogen, Ammonia + Ammonium as N

| Units: ug/l | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 105.00 | 30060.00 |
| Mean | 17.79 | 18.06 |
| Low | 8.00 | 0.008 |
| No. of Samples | 12 | 628 |



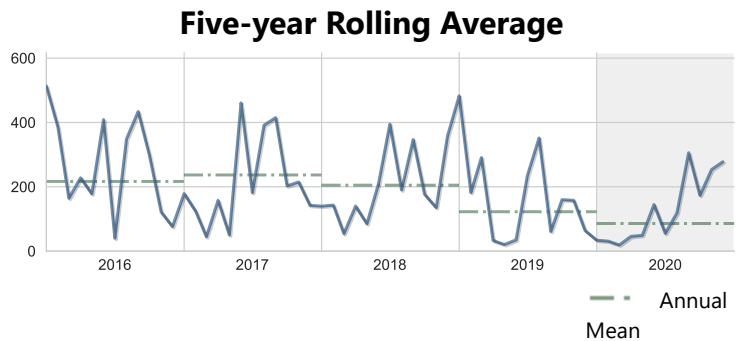
Nitrogen, Kjeldahl

| Units: ug/l | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 1550.00 | 15360.00 |
| Mean | 784.61 | 776.8 |
| Low | 361.00 | 200.00 |
| No. of Samples | 12 | 596 |



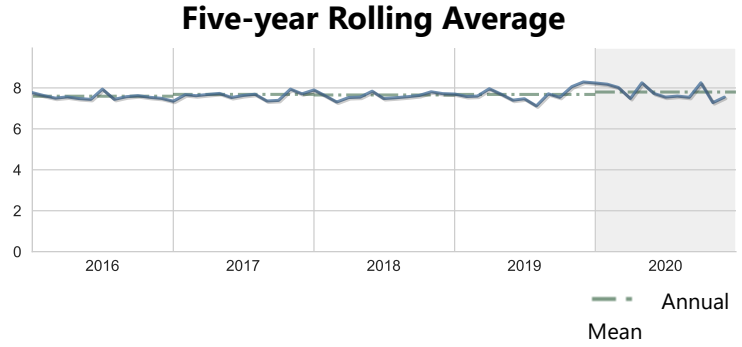
Nitrogen, Nitrite + Nitrate as N

| Units: ug/l | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 306.00 | 1020.00 |
| Mean | 85.84 | 84.97 |
| Low | 19.00 | 0.00 |
| No. of Samples | 12 | 568 |



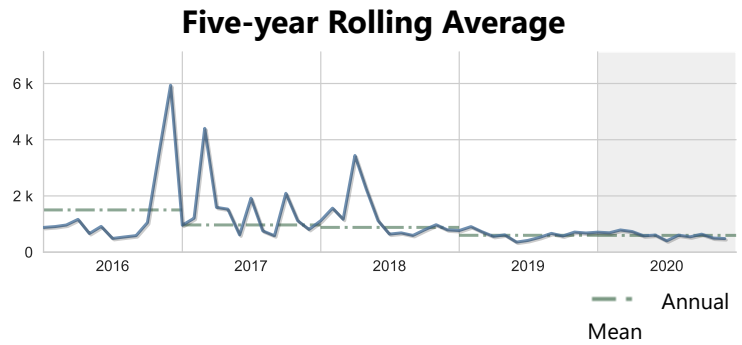
pH

| Units: None | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 8.25 | 11.77 |
| Mean | 7.8 | 7.65 |
| Low | 7.2799 | 6.10 |
| No. of Samples | 12 | 878 |



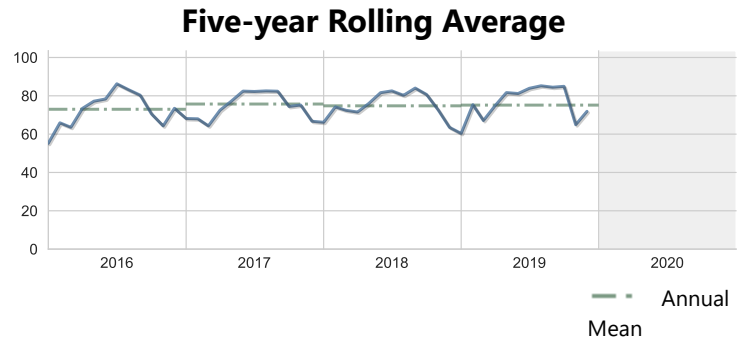
Specific conductance

| Units: umho | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 788.952 | 49645.00 |
| Mean | 596.57 | 701.51 |
| Low | 401.155 | 0.524 |
| No. of Samples | 12 | 889 |



Temperature, water

| Units: deg F | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | | 91.40 |
| Mean | | 69.65 |
| Low | | 14.018 |
| No. of Samples | 0 | 844 |



Water Chemistry Ratings | Tidal Portion of the Creek

Creek Conditions Ratings are based on comparing nitrogen, phosphorus, chlorophyll and dissolved oxygen to water quality guidelines or regulations. Florida law defines a maximum allowable concentration of chlorophyll *a* and a minimum allowable concentration of dissolved oxygen in these streams. Florida has no regulatory thresholds for nitrogen or phosphorus in tidal creeks so trends are used to rate the creeks.

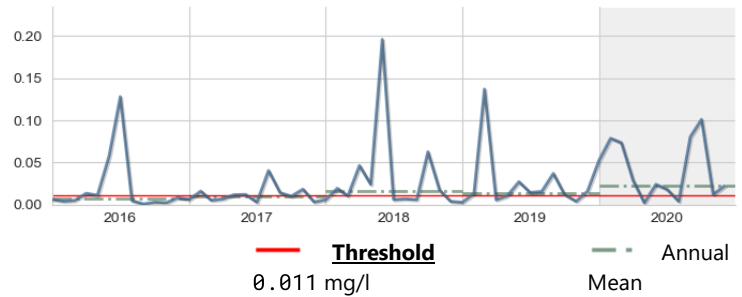


Chlorophyll a

Score: Caution

| Units: mg/l | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 0.1 | 0.2 |
| Mean | 0.0221 | 0.0122 |
| Low | 0.0017 | 0.0004 |
| No. of Samples | 18 | 236 |

Five-year Rolling Average

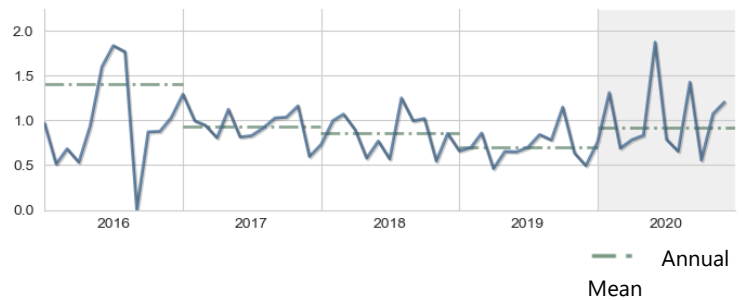


Nitrogen, Total

Score: Pass

| Units: mg/l | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 1.9 | 7.0 |
| Mean | 0.9247 | 0.9498 |
| Low | 0.557 | 0.0018 |
| No. of Samples | 15 | 239 |

Five-year Rolling Average



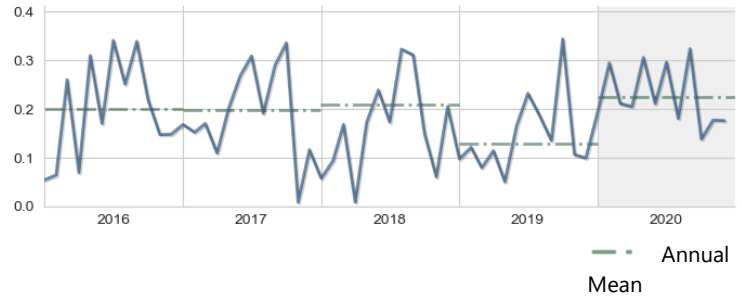


Phosphorus, Total

Score: Pass

| Units: mg/l | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 0.4 | 2.0 |
| Mean | 0.2246 | 0.215 |
| Low | 0.112 | 0.008 |
| No. of Samples | 15 | 280 |

Five-year Rolling Average



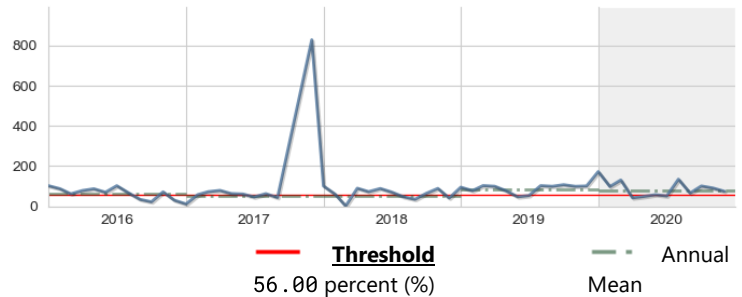
Dissolved Oxygen Saturation

Note: Low DO saturation also may be naturally influenced by inflows from nearby wetlands or groundwater sources

Score: Pass

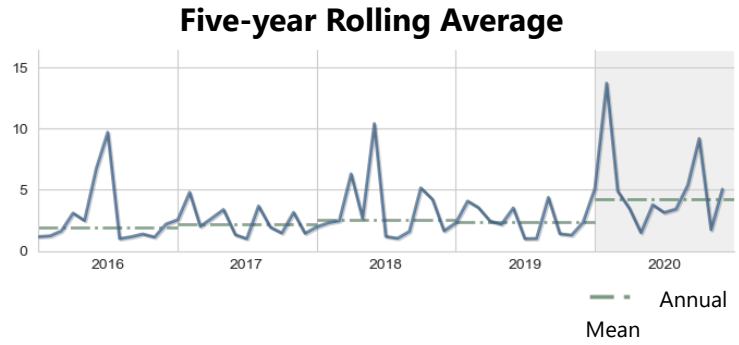
| Units: percent (%) | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 214.5 | 827.0 |
| Mean | 80.41 | 63.32 |
| Low | 19.70 | 0.00 |
| No. of Samples | 19 | 629 |

Five-year Rolling Average



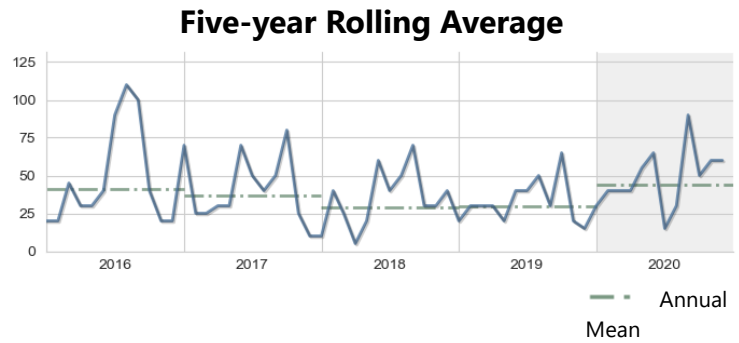
BOD, Biochemical oxygen demand

| Units: mg/l | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 13.7 | 13.7 |
| Mean | 4.2 | 2.51 |
| Low | 1.49 | 0.543 |
| No. of Samples | 12 | 218 |



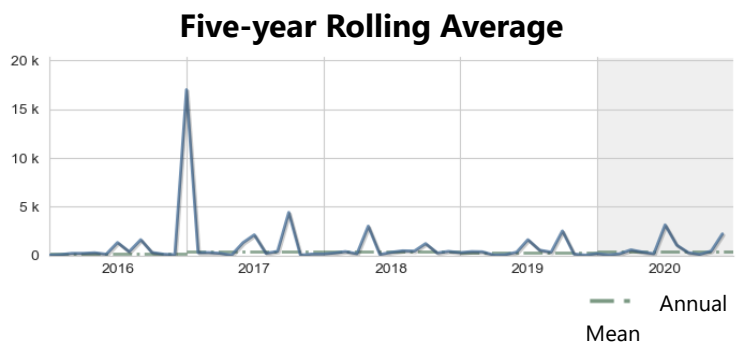
Color

| Units: PCU | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 90.0 | 200.0 |
| Mean | 43.81 | 39.92 |
| Low | 15.00 | 5.00 |
| No. of Samples | 12 | 335 |



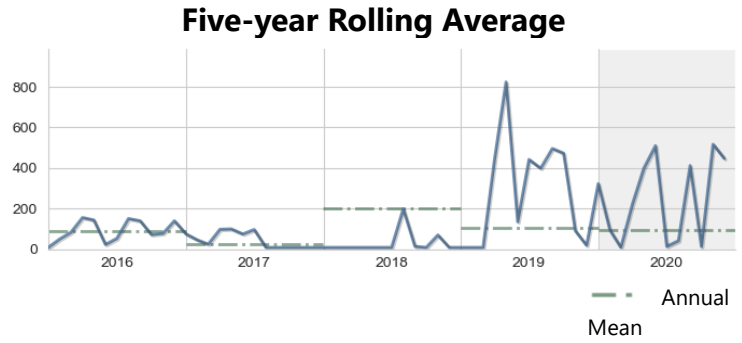
Enterococcus Group Bacteria

| Units: cfu/100ml | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 12,033.0 | 17,000.0 |
| Mean | 385.12 | 315.2 |
| Low | 10.00 | 10.00 |
| No. of Samples | 18 | 119 |



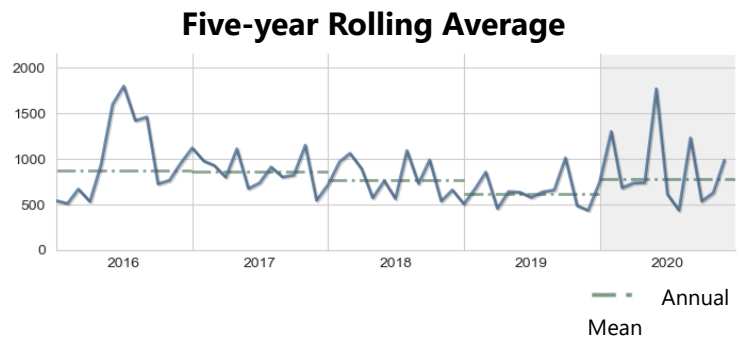
Nitrogen, Ammonia + Ammonium as N

| Units: ug/l | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 1,240.0 | 1,930.0 |
| Mean | 92.45 | 18.28 |
| Low | 7.00 | 0.00 |
| No. of Samples | 15 | 336 |



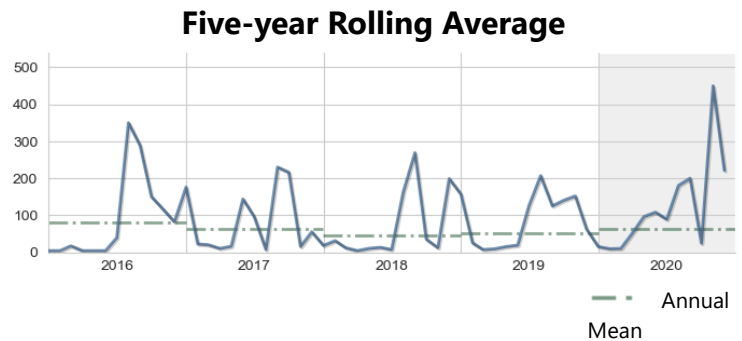
Nitrogen, Kjeldahl

| Units: ug/l | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 1,770.0 | 6,291.0 |
| Mean | 778.2 | 881.06 |
| Low | 318.00 | 50.00 |
| No. of Samples | 15 | 323 |



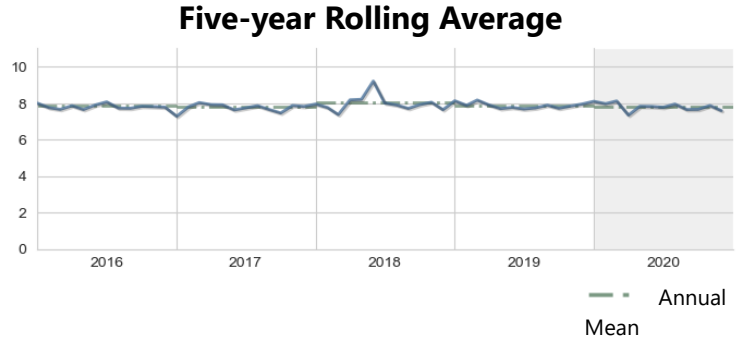
Nitrogen, Nitrite + Nitrate as N

| Units: ug/l | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 450.0 | 3,275.0 |
| Mean | 62.34 | 57.23 |
| Low | 4.00 | 4.00 |
| No. of Samples | 15 | 286 |



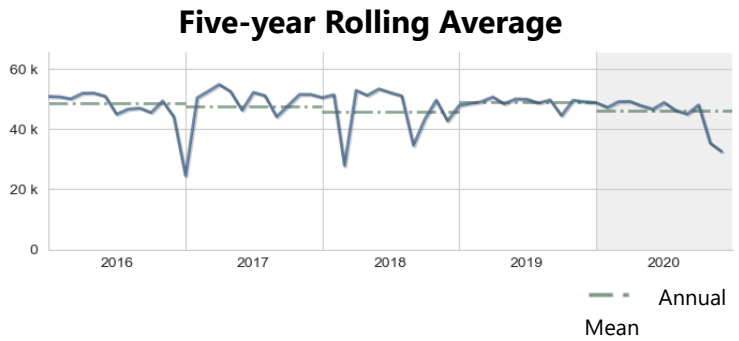
pH

| Units: None | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 8.1 | 9.6 |
| Mean | 7.83 | 7.62 |
| Low | 7.34 | 4.90 |
| No. of Samples | 19 | 2,931 |



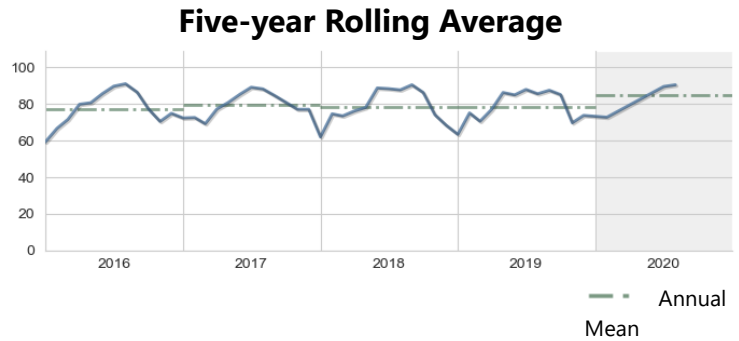
Specific conductance

| Units: umho | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 52,330.0 | 55,760.0 |
| Mean | 46053.8 | 7481.33 |
| Low | 32648.80 | 320.00 |
| No. of Samples | 19 | 2,745 |



Temperature, water

| Units: deg F | Year 2020 | Historical period of record |
|-----------------------|-----------|-----------------------------|
| High | 90.7 | 95.5 |
| Mean | 84.57 | 74.66 |
| Low | 72.32 | 49.10 |
| No. of Samples | 7 | 3,104 |



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.

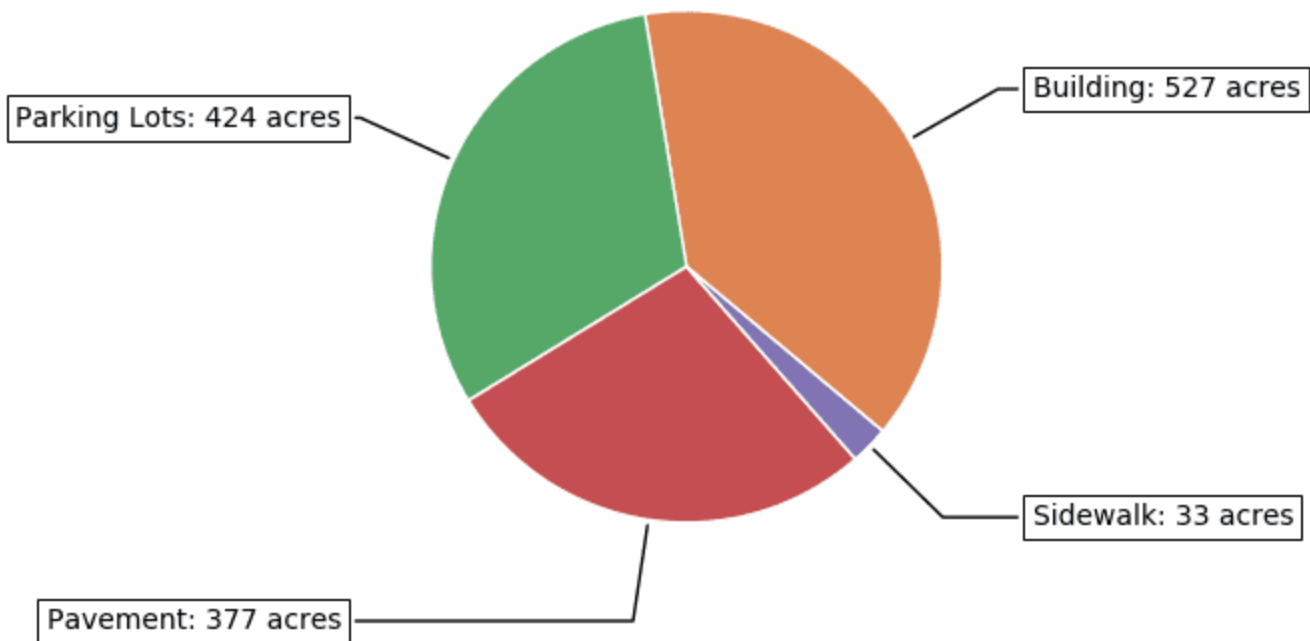


27% of the land area within the **Whitaker Bayou Basin** is covered by impervious

surfaces

2014 Impervious Surface Coverage by Type

in acres, within the Whitaker Bayou Basin



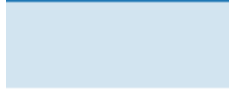


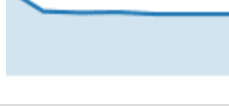

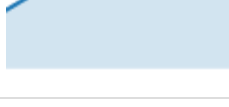


Land Use / Land Cover

Land use within a creek'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 (e.g. upland or wetland), 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.

Acreeage and Percentage within each Land Use / Land Cover Category for Whitaker Bayou Basin

2020 Creek Conditions Report for Whitaker Bayou

| Land Use Classification | 1990 | 1995 | 1999 | 2005 | 2011 | 2014 | 2017 | Trend |
|-------------------------------------|----------------|----------------|----------------|----------------|----------------|--------------|----------------|---|
| Urban & Built-up | 3,830 77.1% | 3,834 77.2% | 3,831 77.1% | 3,903 78.6% | 3,952 79.6% | 3,921 79% | 3,951 79.6% |  |
| Agriculture | 214 4.3% | 182 3.7% | 188 3.8% | 181 3.6% | 181 3.6% | 181 3.6% | 178 3.6% |  |
| Rangeland | 4 0.1% | 4 0.1% | 4 0.1% | 4 0.1% | 4 0.1% | 4 0.1% | 4 0.1% |  |
| Upland Forests | 235 4.7% | 249 5% | 249 5% | 195 3.9% | 164 3.3% | 195 3.9% | 164 3.3% |  |
| Water | 130 2.6% | 137 2.7% | 140 2.8% | 126 2.5% | 88 1.8% | 88 1.8% | 89 1.8% |  |
| Wetlands | 315 6.4% | 232 4.7% | 227 4.6% | 229 4.6% | 222 4.5% | 222 4.5% | 222 4.5% |  |
| Barren Land | 0 0% | 0 0% | 0 0% | 0 0% | 0 0% | 0 0% | 3 0.1% |  |
| Transportation and Utilities | 238 4.8% | 329 6.6% | 329 6.6% | 328 6.6% | 356 7.2% | 356 7.2% | 355 7.2% |  |

2017 Land Use / Land Cover for Whitaker Bayou Basin

