North Creek Condition Report for 2016

CAUTION

Chl-a N P DO

2 out of 4 indicators were rated as **PASS**.

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

Size: 2,327 acres
Location: Central Sarasota County
Discharges into: Little Sarasota Bay

The surface water system in the North Creek Basin has undergone significant alteration over the past century. The 1847 General Land Office Survey shows North Creek extending from Little Sarasota Bay, east across the approximately 2½-mile-wide basin to what appears to be a pond. The 1959 USDA NRCS Soil Survey shows two north-south ditches leading to North Creek. The ditch to the south leads to an area in the west that appears to be a development. With the exception of the western boundary, U.S. 41, and some ditches, the basin was still fairly undeveloped by the 1970s. By 2000, roughly half of the basin was developed and about 1,930 people resided in the developed areas (U.S. Census Bureau, 2000). Today, about 75% of the basin is developed and laden with ditches and stormwater infrastructure, with half of the development residential. *For basin details see:* ***Little Sarasota Bay Water Quality Management Plan (2012)***

North Creek



Water Chemistry Ratings | Freshwater Portion of the Creek

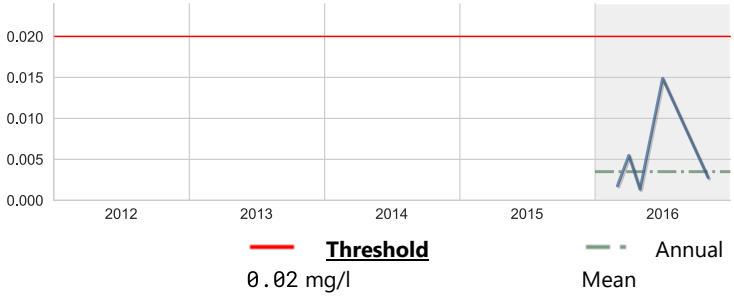
Creek Conditions Ratings are based on comparing nitrogen, phosphorus, chlorophyll and dissolved oxygen to water quality guidelines or regulations. Florida law defines a maximum allowable concentration of nitrogen, phosphorus, and chlorophyll *a*, and a minimum allowable concentration of dissolved oxygen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

Chl-a Chlorophyll a

Score: Pass

Units: mg/l	Year 2016	Historical period of record
High	0.03	0.032
Mean	0.0035	0.0028
Low	0.001	0.0009
No. of Samples	10	19

Five-year Rolling Average

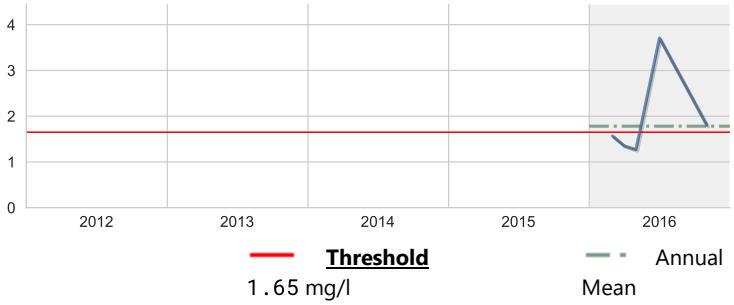


N Nitrogen, Total

Score: Caution

Units: mg/l	Year 2016	Historical period of record
High	3.71	3.71
Mean	1.7817	1.5288
Low	1.27	1.106
No. of Samples	5	14

Five-year Rolling Average

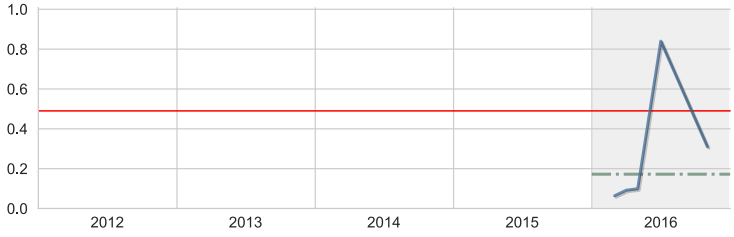


P Phosphorus, Total

Score: Pass

Units: mg/l	Year 2016	Historical period of record
High	0.84	2.70
Mean	0.1723	0.1657
Low	0.064	0.041
No. of Samples	5	18

Five-year Rolling Average



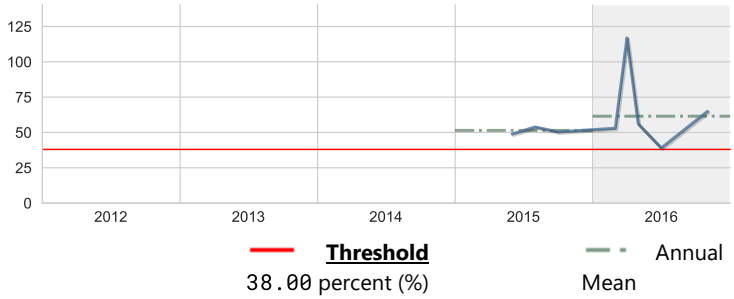
DO Dissolved Oxygen Saturation

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

Score: Pass

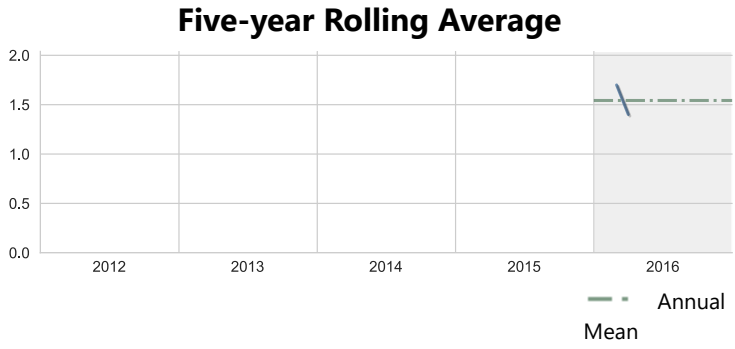
Units: percent (%)	Year 2016	Historical period of record
High	117.00	117.00
Mean	61.51	41.86
Low	39.00	10.70
No. of Samples	5	38

Five-year Rolling Average



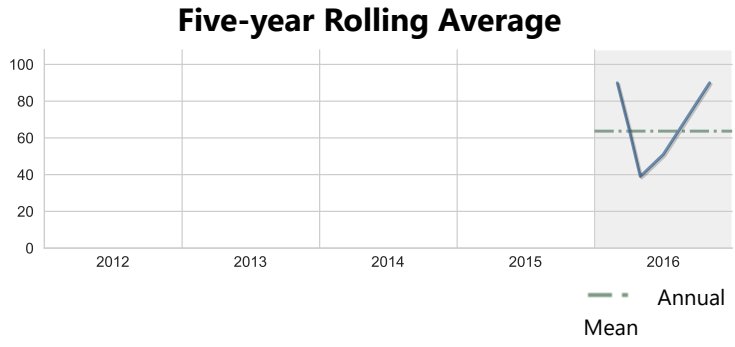
BOD, Biochemical oxygen demand

Units: mg/l	Year 2016	Historical period of record
High	1.70	1.70
Mean	1.54	1.54
Low	1.40	1.40
No. of Samples	2	2



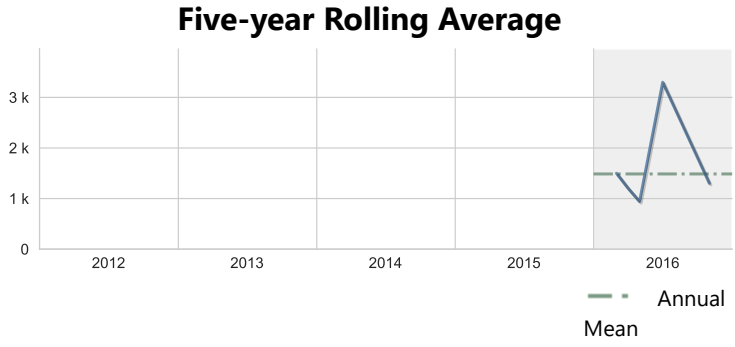
Nitrogen, Ammonia + Ammonium as N

Units: ug/l	Year 2016	Historical period of record
High	90.00	460.00
Mean	63.68	76.01
Low	39.00	18.00
No. of Samples	5	15



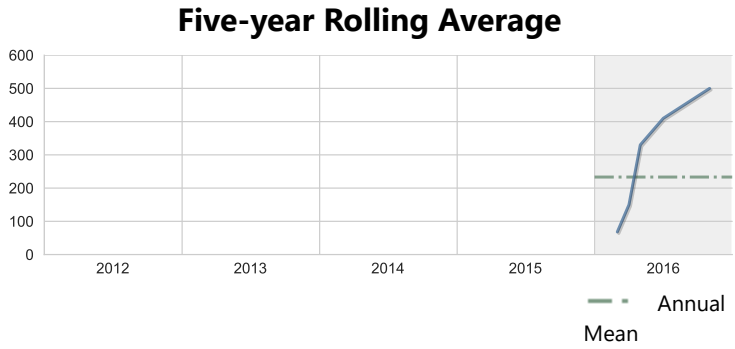
Nitrogen, Kjeldahl

Units: ug/l	Year 2016	Historical period of record
High	3300.00	27000.00
Mean	1486.52	1692.76
Low	940.00	940.00
No. of Samples	5	15



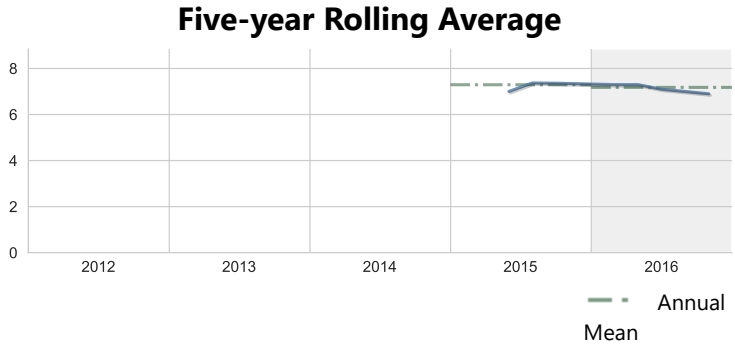
Nitrogen, Nitrite + Nitrate as N

Units: ug/l	Year 2016	Historical period of record
High	500.00	500.00
Mean	233.22	48.17
Low	68.00	4.00
No. of Samples	5	15



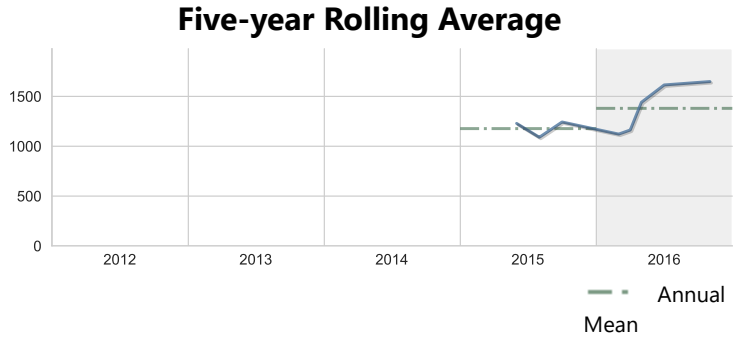
pH

Units: None	Year 2016	Historical period of record
High	7.30	7.51
Mean	7.18	7.25
Low	6.90	6.80
No. of Samples	5	38



Specific conductance

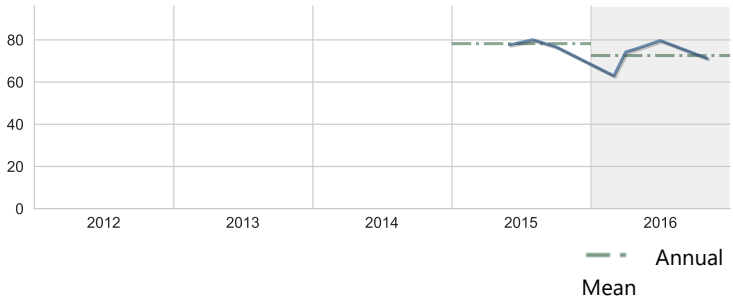
Units: umho	Year 2016	Historical period of record
High	1649.00	24590.00
Mean	1380.15	1272.71
Low	1122.00	328.00
No. of Samples	5	38



Temperature, water

Units: deg F	Year 2016	Historical period of record
High	79.70	85.028
Mean	72.6	75.05
Low	62.96	55.94
No. of Samples	5	38

Five-year Rolling Average



Water Chemistry Ratings | Tidal Portion of the Creek

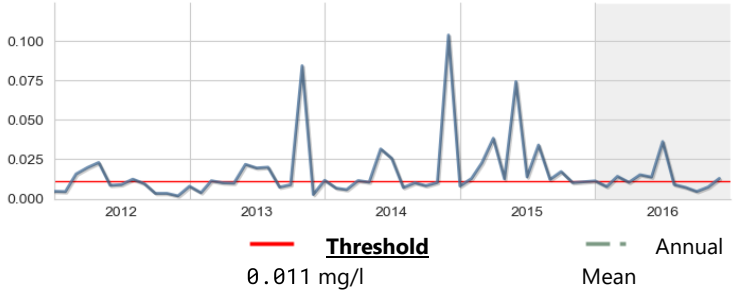
Creek Conditions Ratings are based on comparing nitrogen, phosphorus, chlorophyll and dissolved oxygen to water quality guidelines or regulations. Florida law defines a maximum allowable concentration of chlorophyll *a* and a minimum allowable concentration of dissolved oxygen in these streams. Florida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

Chlorophyll a

Score: Pass

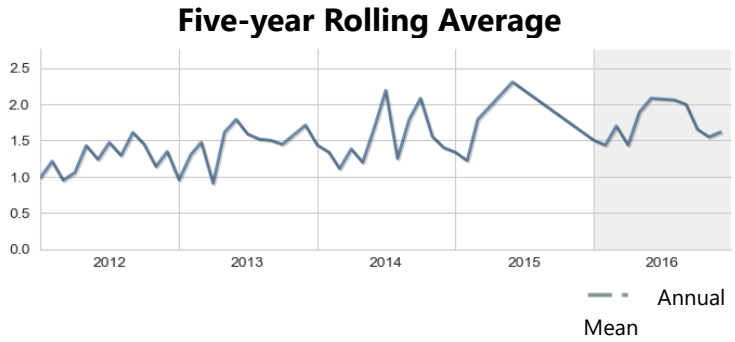
Units: mg/l	Year 2016	Historical period of record
High	0.0	0.1
Mean	0.0109	0.0109
Low	0.0046	0.0009
No. of Samples	13	302

Five-year Rolling Average



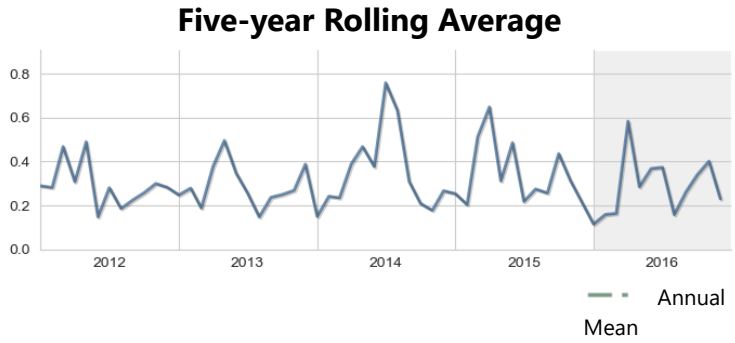
Nitrogen, Total

Units: mg/l	Year 2016	Historical period of record
High	2.1	2.3
Mean	1.709	1.2991
Low	1.438	0.16
No. of Samples	11	187



Phosphorus, Total

Units: mg/l	Year 2016	Historical period of record
High	0.6	0.9
Mean	0.2418	0.284
Low	0.114	0.08
No. of Samples	13	346



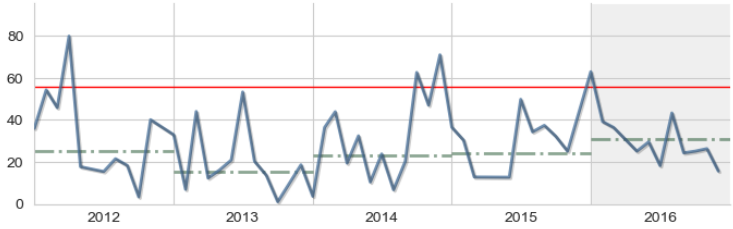
Dissolved Oxygen Saturation

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

Score: Caution

Units: percent (%)	Year 2016	Historical period of record
High	63.0	157.4
Mean	30.83	33.6
Low	14.80	1.00
No. of Samples	13	407

Five-year Rolling Average



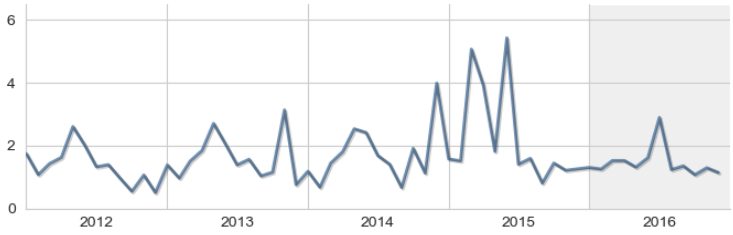
Threshold
56.00 percent (%)

Annual Mean

BOD, Biochemical oxygen demand

Units: mg/l	Year 2016	Historical period of record
High	2.9	8.9
Mean	1.4	1.65
Low	1.07	0.50
No. of Samples	13	283

Five-year Rolling Average

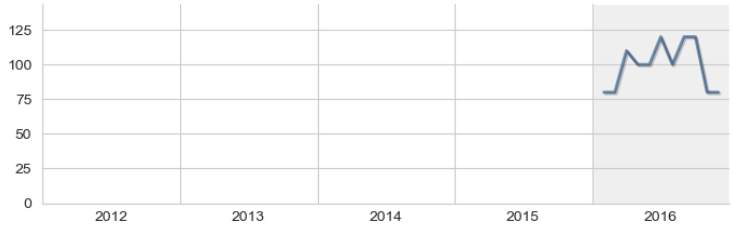


Annual Mean

Color

Units: PCU	Year 2016	Historical period of record
High	120.0	300.0
Mean	97.75	65.28
Low	80.00	5.00
No. of Samples	11	144

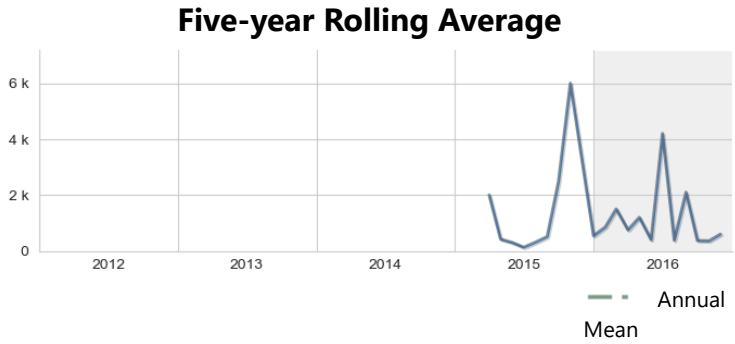
Five-year Rolling Average



Annual Mean

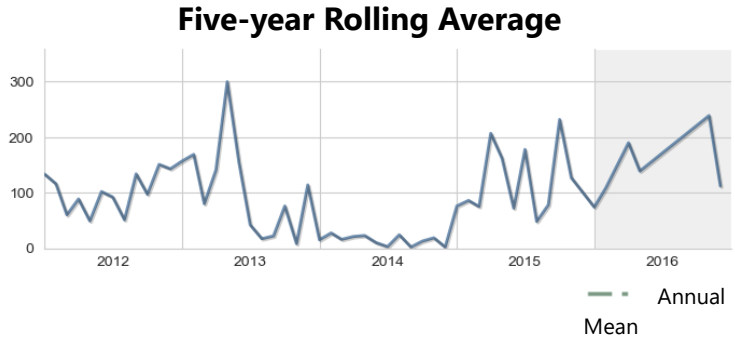
Enterococcus Group Bacteria

Units: cfu/100ml	Year 2016	Historical period of record
High	4,200.0	6,000.0
Mean	774.12	661.77
Low	360.00	130.00
No. of Samples	13	27



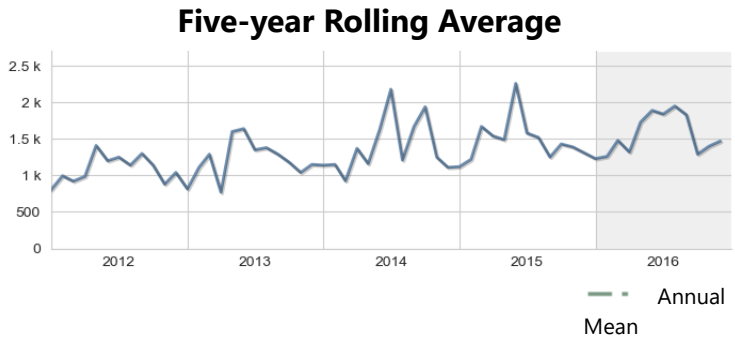
Nitrogen, Ammonia + Ammonium as N

Units: ug/l	Year 2016	Historical period of record
High	239.0	550.0
Mean	133.66	26.42
Low	74.00	0.008
No. of Samples	6	400



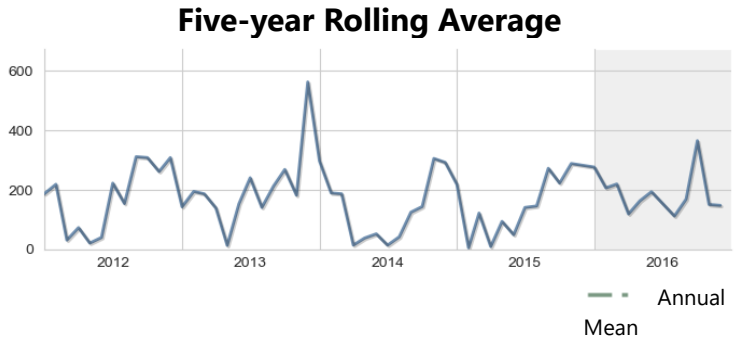
Nitrogen, Kjeldahl

Units: ug/l	Year 2016	Historical period of record
High	1,950.0	2,260.0
Mean	1510.04	1164.1
Low	1230.00	50.00
No. of Samples	13	393



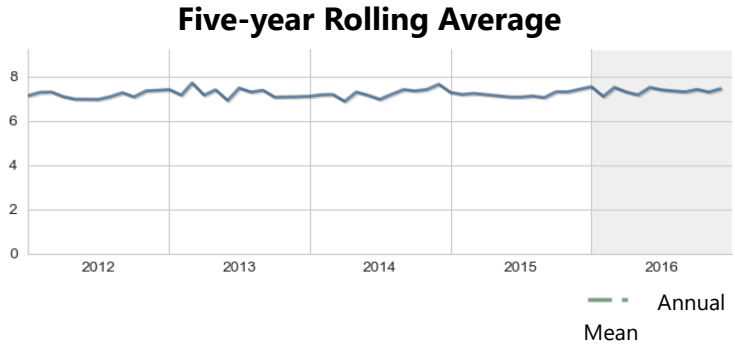
Nitrogen, Nitrite + Nitrate as N

Units: ug/l	Year 2016	Historical period of record
High	365.0	563.0
Mean	187.62	91.67
Low	111.00	0.00
No. of Samples	12	350



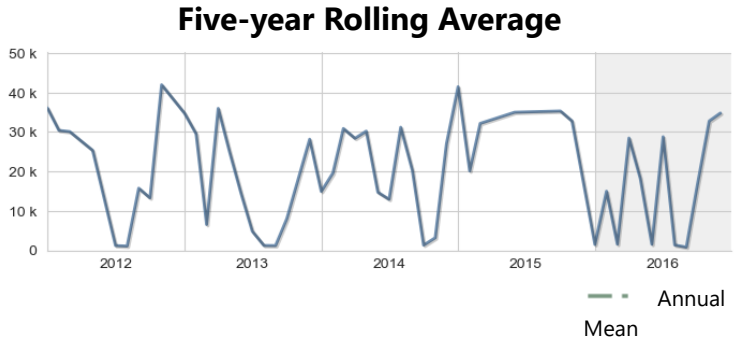
pH

Units: None	Year 2016	Historical period of record
High	7.7	8.8
Mean	7.37	7.42
Low	6.70	5.40
No. of Samples	26	404



Specific conductance

Units: umho	Year 2016	Historical period of record
High	34,800.0	650,900.0
Mean	6268.41	12734.51
Low	796.00	25.058
No. of Samples	13	458



Temperature, water

Units: deg F	Year 2016	Historical period of record
High	90.5	96.8
Mean	76.24	77.25
Low	55.886	48.56
No. of Samples	12	330

Five-year Rolling Average

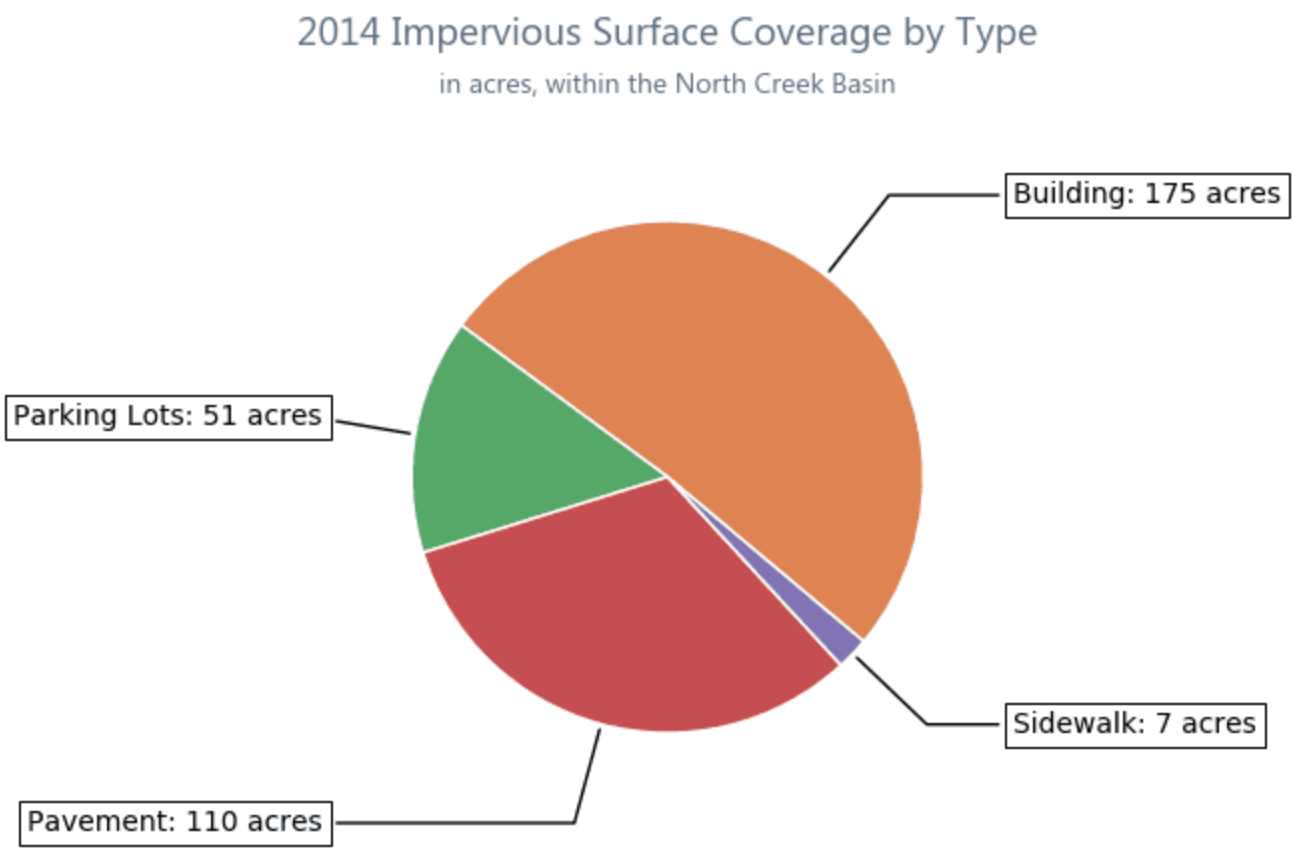


Impervious Features

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.



15% of the land area within the **North Creek Basin** is covered by impervious surfaces

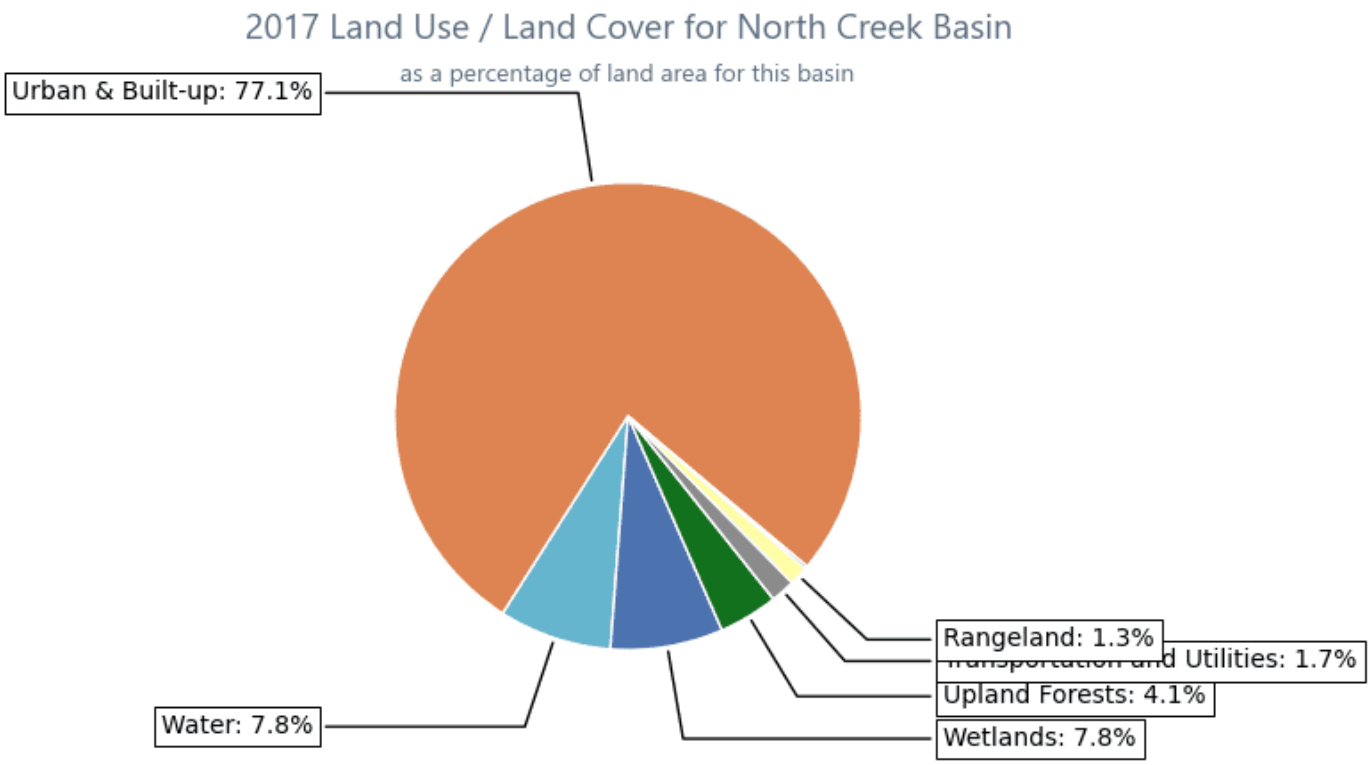


Land Use / Land Cover

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.

Acreage and Percentage within each Land Use / Land Cover Category for North Creek Basin

Land Use Classification	1990	1995	1999	2005	2011	2014	2017	Trend
Urban & Built-up	1,074 46.2%	1,584 68.1%	1,652 71%	1,702 73.2%	1,699 73%	1,679 72.2%	1,795 77.1%	
Agriculture	79 3.4%	86 3.7%	18 0.8%	9 0.4%	4 0.2%	122 5.2%	4 0.2%	
Rangeland	0 0%	0 0%	0 0%	75 3.2%	74 3.2%	20 0.9%	30 1.3%	
Upland Forests	845 36.3%	275 11.8%	277 11.9%	142 6.1%	141 6.1%	97 4.2%	94 4.1%	
Water	77 3.3%	161 6.9%	180 7.8%	180 7.7%	177 7.6%	177 7.6%	182 7.8%	
Wetlands	216 9.3%	201 8.6%	179 7.7%	178 7.7%	191 8.2%	191 8.2%	182 7.8%	
Barren Land	17 0.7%	0 0%	0 0%	0 0%	1 0%	0 0%	0 0%	
Transportation and Utilities	18 0.8%	20 0.8%	20 0.8%	40 1.7%	40 1.7%	40 1.7%	40 1.7%	


2017 Land Use / Land Cover for North Creek Basin
as a percentage of land area for this basin
Urban & Built-up: 77.1%
Rangeland: 1.3%
Utilities: 1.7%
Upland Forests: 4.1%
Wetlands: 7.8%
Water: 7.8%