Cow Pen Slough Condition Report for 2017

PASS

Chl-a N P DO

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

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

Size: 47,518 acres
Location: North and central Sarasota County, south Manatee County
Discharges into: Dona Bay

The hydrologic boundary of the Cow Pen Slough Basin is indeterminate in many areas due to the flat topography and undefined drainageways. Drainage from the basin is conveyed through 14 miles of improved channel. There are two operational flood control structures on the channel which were designed to provide grade control and water conservation. At present the Cow Pen Slough Basin is primarily rural in nature, with the majority of the land uses being classified as rangeland, crop and pastureland, orchards and groves, and upland forests. There are localized areas that are primarily urban in nature around Bee Ridge and north of Venice, with the majority being classified as residential. *For basin details see:* ***Cow Pen Slough Basin Master Plan (USDA Report, 1997)***

Cow Pen Slough

Water Chemistry Ratings | Freshwater Portion of the Creek

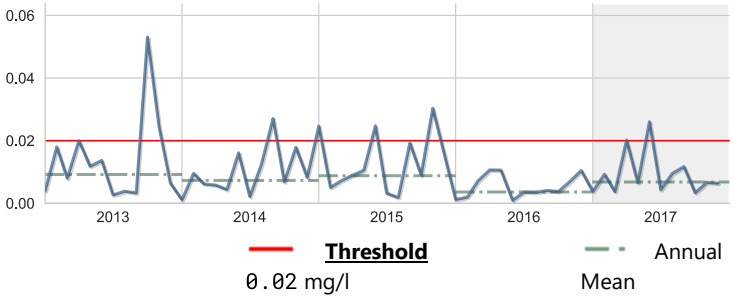
Creek Conditions Ratings are based on comparing nitrogen, phosphorus, chlorophyll and dissolved oxygen to water quality guidelines or regulations. Florida law defines a maximum allowable concentration of nitrogen, phosphorus, and chlorophyll *a*, and a minimum allowable concentration of dissolved oxygen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

Chl-a Chlorophyll a

Score: Pass

Units: mg/l	Year 2017	Historical period of record
High	0.0674	0.243
Mean	0.0068	0.0096
Low	0.001	0.0006
No. of Samples	33	743

Five-year Rolling Average

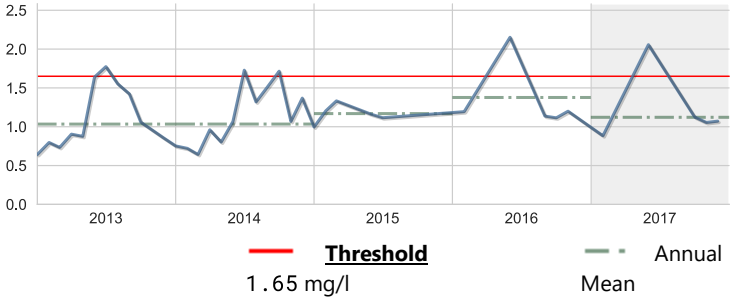


N Nitrogen, Total

Score: Pass

Units: mg/l	Year 2017	Historical period of record
High	2.057	2.73
Mean	1.1215	0.9948
Low	0.75	0.15
No. of Samples	13	413

Five-year Rolling Average

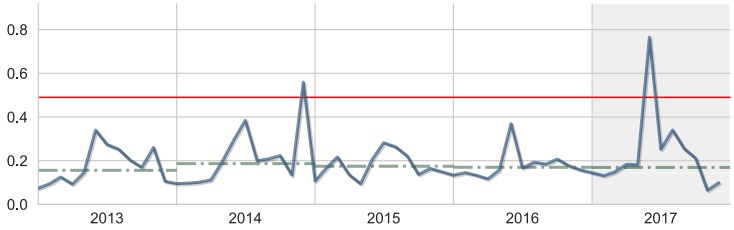


P Phosphorus, Total

Score: Pass

Units: mg/l	Year 2017	Historical period of record
High	0.765	1.19
Mean	0.1691	0.1784
Low	0.01	0.01
No. of Samples	25	778

Five-year Rolling Average



Threshold 0.49 mg/l

Annual Mean

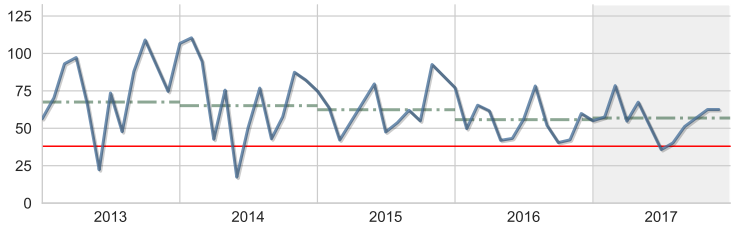
DO Dissolved Oxygen Saturation

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

Score: Pass

Units: percent (%)	Year 2017	Historical period of record
High	98.20	227.16
Mean	56.83	70.18
Low	24.30	2.381
No. of Samples	26	981

Five-year Rolling Average

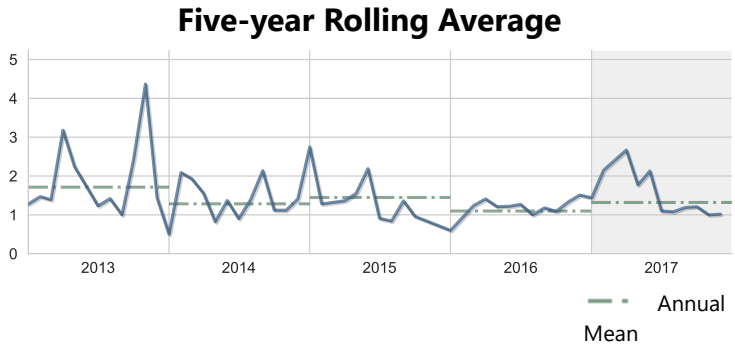


Threshold 38.00 percent (%)

Annual Mean

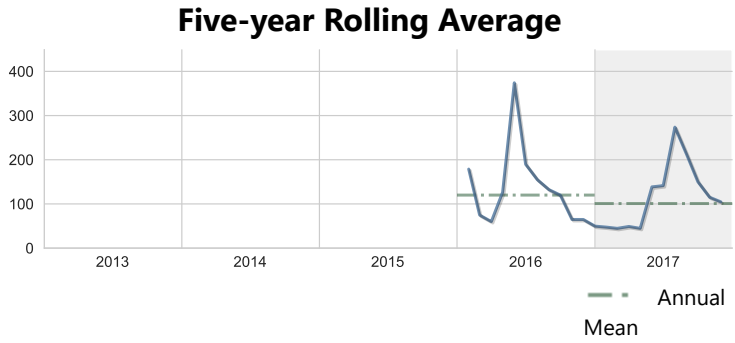
BOD, Biochemical oxygen demand

Units: mg/l	Year 2017	Historical period of record
High	4.74	13.90
Mean	1.32	1.61
Low	1.00	0.00
No. of Samples	31	735



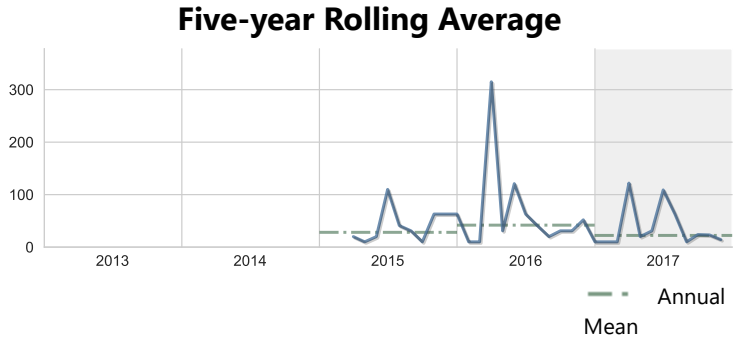
Color

Units: PCU	Year 2017	Historical period of record
High	300.00	650.00
Mean	100.89	89.2
Low	30.00	10.00
No. of Samples	33	329



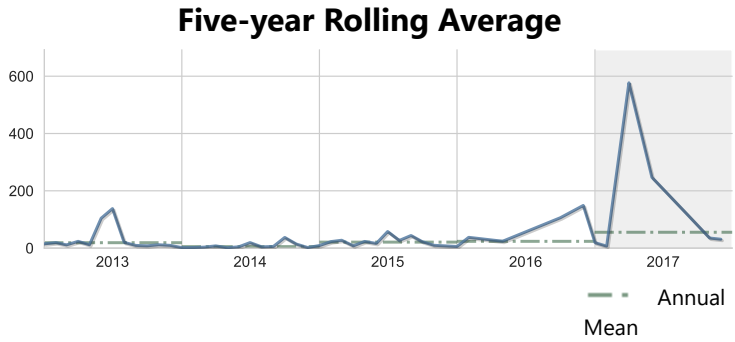
Escherichia coli

Units: cfu/100ml	Year 2017	Historical period of record
High	122.00	315.00
Mean	22.27	29.95
Low	10.00	10.00
No. of Samples	21	50



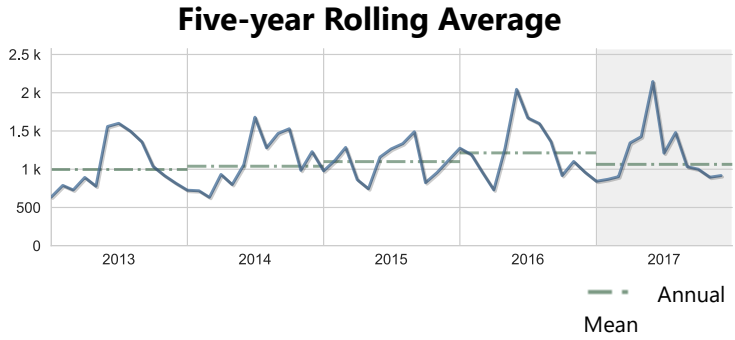
Nitrogen, Ammonia + Ammonium as N

Units: ug/l	Year 2017	Historical period of record
High	577.00	605.00
Mean	55.3	15.99
Low	7.00	0.00
No. of Samples	8	862



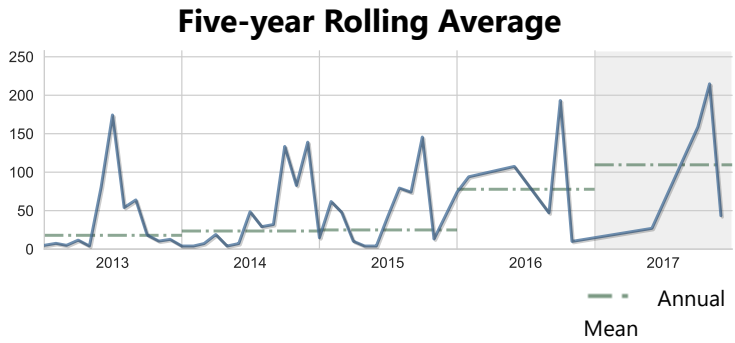
Nitrogen, Kjeldahl

Units: ug/l	Year 2017	Historical period of record
High	3060.00	8400.00
Mean	1063.69	1008.36
Low	590.00	0.00
No. of Samples	34	874



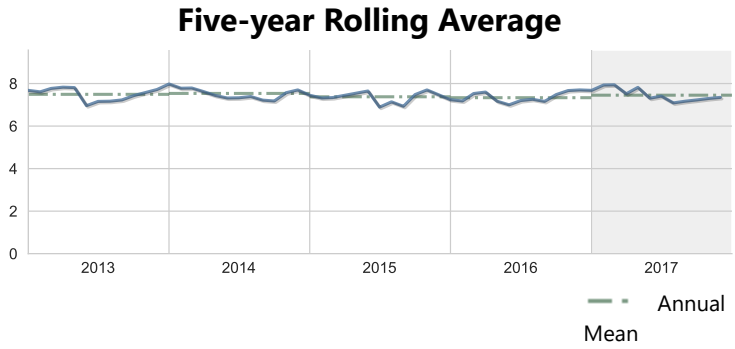
Nitrogen, Nitrite + Nitrate as N

Units: ug/l	Year 2017	Historical period of record
High	455.00	2210.00
Mean	109.56	21.34
Low	1.00	0.00
No. of Samples	12	746



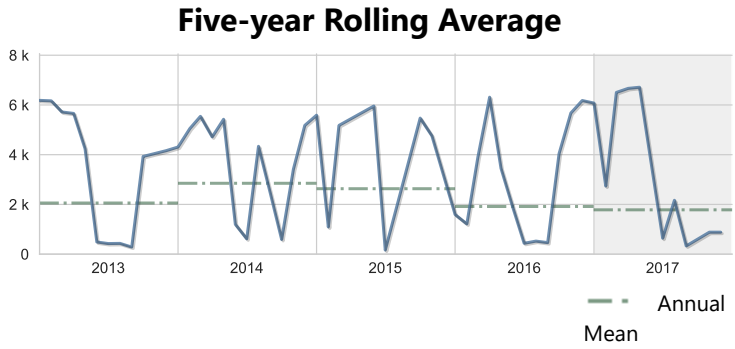
pH

Units: None	Year 2017	Historical period of record
High	8.60	11.50
Mean	7.45	7.58
Low	6.60	5.80
No. of Samples	60	4,119



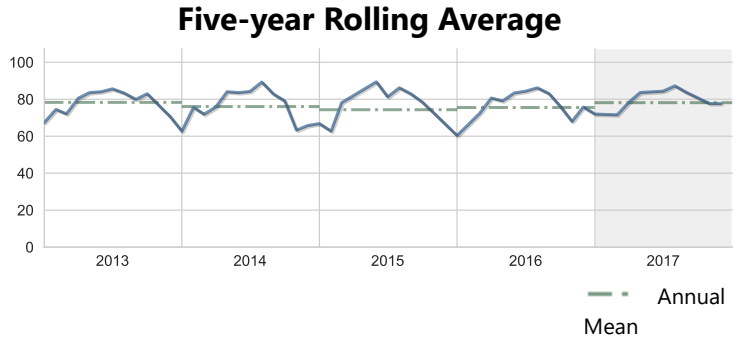
Specific conductance

Units: umho	Year 2017	Historical period of record
High	52033.00	59844.40
Mean	1781.9	16824.78
Low	210.00	0.512
No. of Samples	28	4,127



Temperature, water

Units: deg F	Year 2017	Historical period of record
High	87.98	92.426
Mean	78.13	77.43
Low	69.80	47.372
No. of Samples	27	3,862



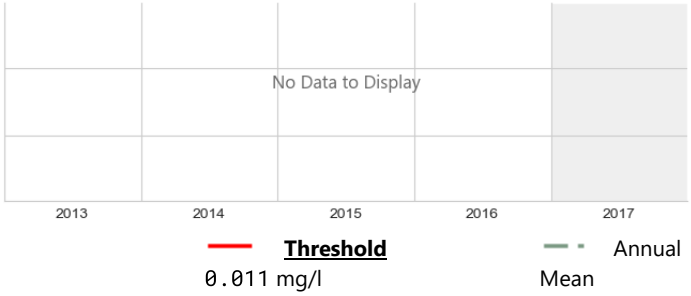
Water Chemistry Ratings | Tidal Portion of the Creek

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

Units: mg/l	Year 2017	Historical period of record
High		0.0
Mean		0.0104
Low		0.004
No. of Samples	0	15

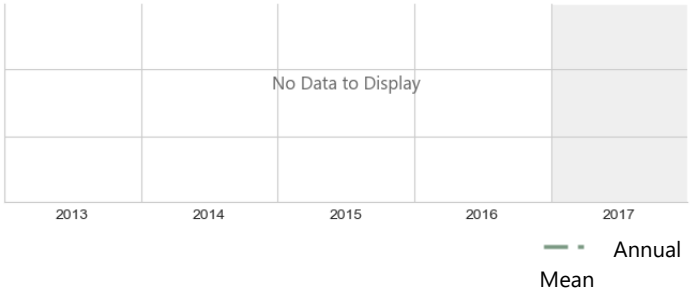
Five-year Rolling Average



Nitrogen, Total

Units: mg/l	Year 2017	Historical period of record
High		2.2
Mean		1.0972
Low		0.16
No. of Samples	0	42

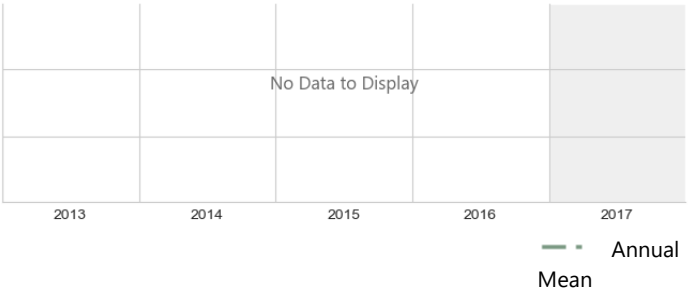
Five-year Rolling Average



Phosphorus, Total

Units: mg/l	Year 2017	Historical period of record
High		0.6
Mean		0.1913
Low		0.043
No. of Samples	0	39

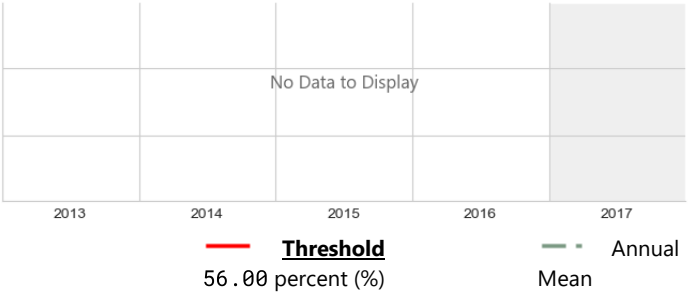
Five-year Rolling Average



Dissolved Oxygen Saturation

Units: percent (%)	Year 2017	Historical period of record
High		122.5
Mean		73.4
Low		48.1012
No. of Samples	0	128

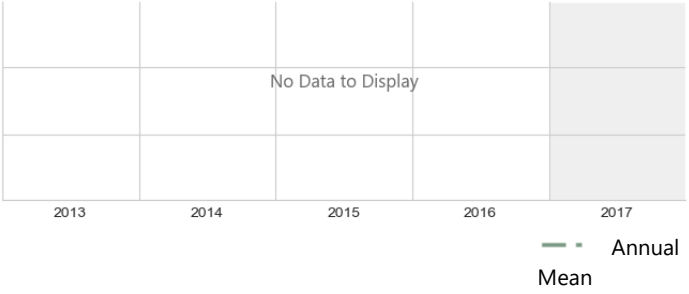
Five-year Rolling Average



BOD, Biochemical oxygen demand

Units: mg/l	Year 2017	Historical period of record
High		1.2
Mean		1.2
Low		1.20
No. of Samples	0	1

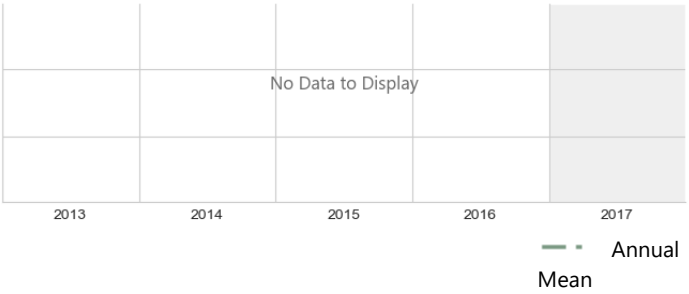
Five-year Rolling Average



Color

Units: PCU	Year 2017	Historical period of record
High		300.0
Mean		72.04
Low		10.00
No. of Samples	0	112

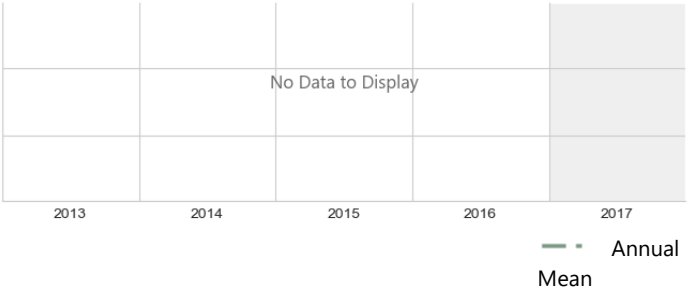
Five-year Rolling Average



Nitrogen, Ammonia + Ammonium as N

Units: ug/l	Year 2017	Historical period of record
High		203.0
Mean		1.03
Low		0.00
No. of Samples	0	85

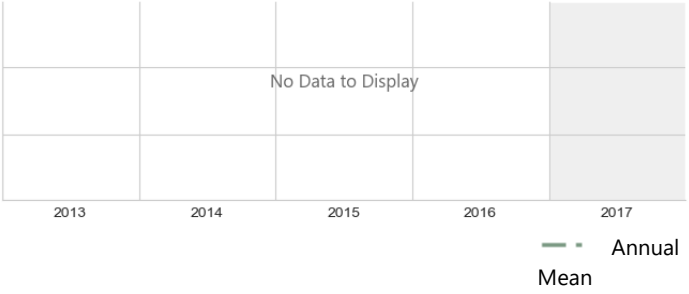
Five-year Rolling Average



Nitrogen, Kjeldahl

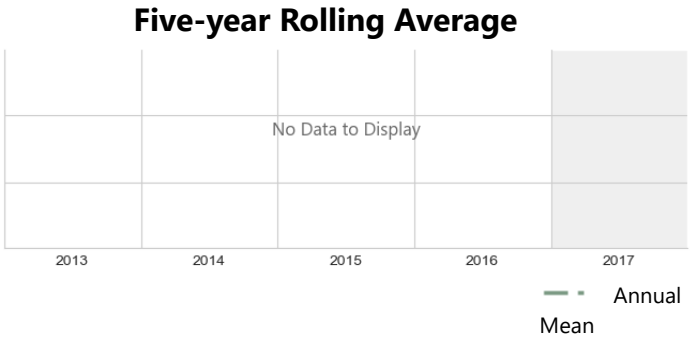
Units: ug/l	Year 2017	Historical period of record
High		2,163.0
Mean		1032.51
Low		50.00
No. of Samples	0	75

Five-year Rolling Average



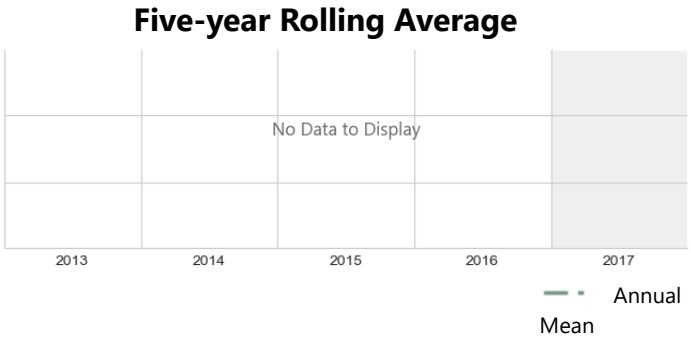
Nitrogen, Nitrite + Nitrate as N

Units: ug/l	Year 2017	Historical period of record
High		250.0
Mean		46.62
Low		0.00
No. of Samples	0	45



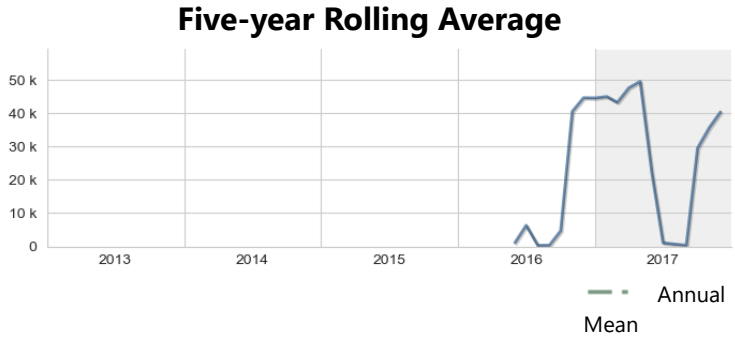
pH

Units: None	Year 2017	Historical period of record
High		8.6
Mean		7.61
Low		6.80
No. of Samples	0	160



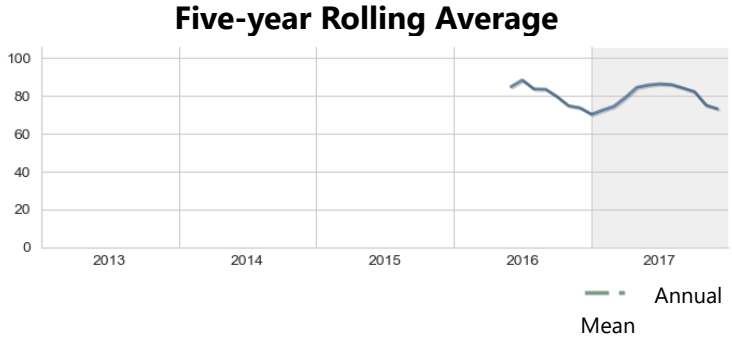
Specific conductance

Units: umho	Year 2017	Historical period of record
High		51,300.0
Mean		14280.55
Low		19.00
No. of Samples	0	335



Temperature, water

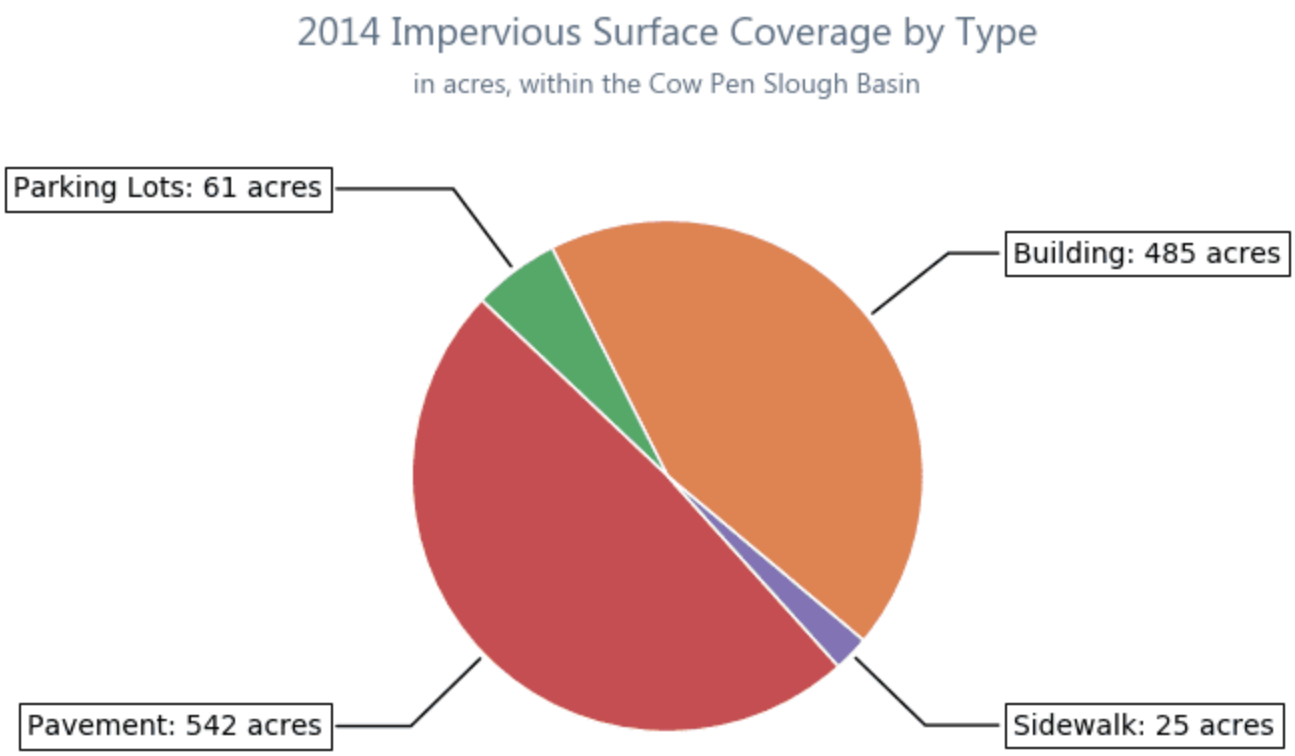
Units: deg F	Year 2017	Historical period of record
High		93.2
Mean		75.64
Low		51.80
No. of Samples	0	248



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.

2% of the land area within the **Cow Pen Slough Basin** is covered by impervious surfaces

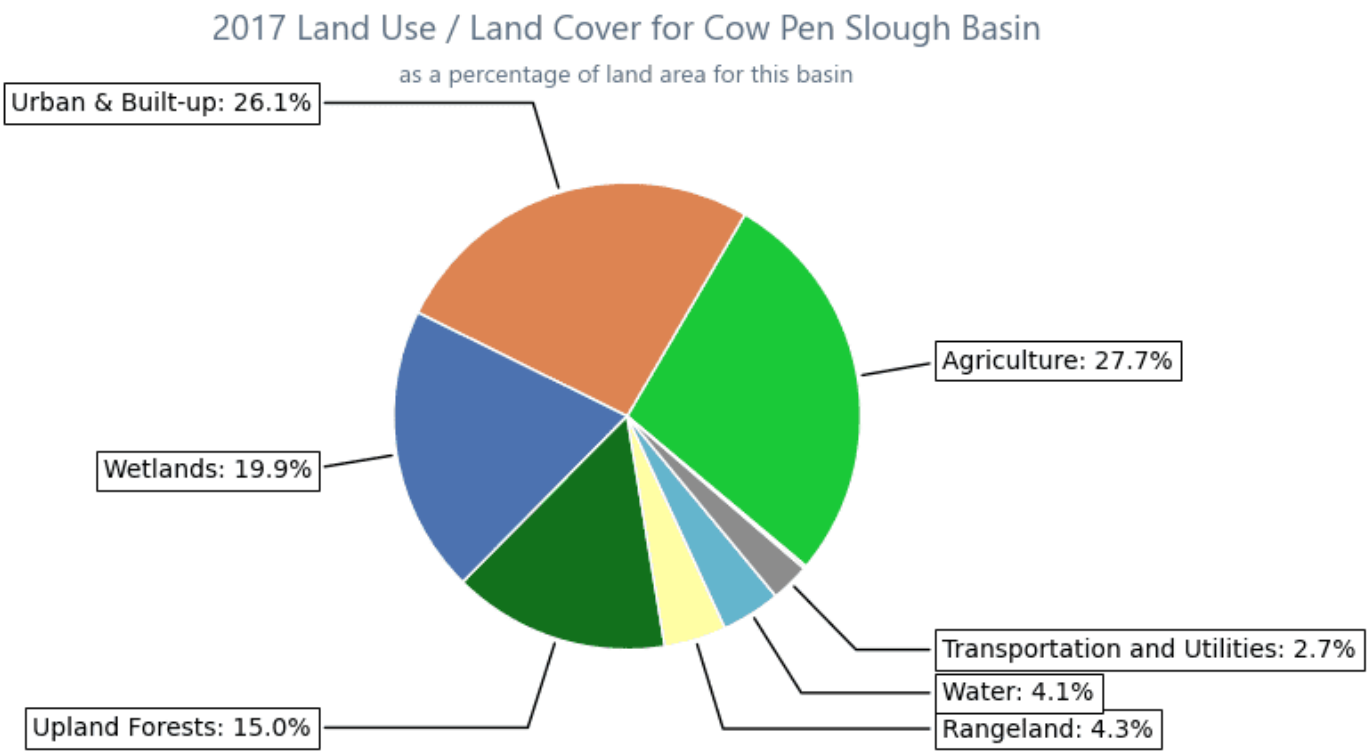


Land Use / Land Cover

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 Cow Pen Slough Basin

Land Use Classification	1990	1995	1999	2005	2011	2014	2017	Trend
Urban & Built-up	4,508 **9.5%**	6,038 **12.7%**	8,975 **18.9%**	11,001 **23.2%**	11,730 **24.7%**	11,974 **25.2%**	12,400 **26.1%**	
Agriculture	13,320 **28%**	14,164 **29.8%**	14,112 **29.7%**	14,347 **30.2%**	13,512 **28.4%**	13,227 **27.8%**	13,184 **27.7%**	
Rangeland	7,041 **14.8%**	6,168 **13%**	4,056 **8.5%**	2,448 **5.2%**	2,307 **4.9%**	2,488 **5.2%**	2,050 **4.3%**	
Upland Forests	11,445 **24.1%**	10,059 **21.2%**	8,503 **17.9%**	7,483 **15.7%**	7,376 **15.5%**	7,309 **15.4%**	7,131 **15%**	
Water	816 **1.7%**	1,345 **2.8%**	1,521 **3.2%**	1,644 **3.5%**	1,763 **3.7%**	1,817 **3.8%**	1,941 **4.1%**	
Wetlands	10,035 **21.1%**	9,310 **19.6%**	9,367 **19.7%**	9,471 **19.9%**	9,507 **20%**	9,397 **19.8%**	9,441 **19.9%**	
Barren Land	16 **0%**	5 **0%**	2 **0%**	49 **0.1%**	110 **0.2%**	77 **0.2%**	82 **0.2%**	
Transportation and Utilities	337 **0.7%**	430 **0.9%**	982 **2.1%**	1,075 **2.3%**	1,213 **2.6%**	1,230 **2.6%**	1,288 **2.7%**	


2017 Land Use / Land Cover for Cow Pen Slough Basin
as a percentage of land area for this basin
Urban & Built-up: 26.1%
Agriculture: 27.7%
Wetlands: 19.9%
Transportation and Utilities: 2.7%
Water: 4.1%
Rangeland: 4.3%
Upland Forests: 15.0%