

**LAKEWATCH Report for Arbuckle Creek-1 in Highlands County**  
**Watershed Region: Peninsular**  
**Using Data Downloaded 12/9/22**

**Introduction for River/Streams**

This report summarizes data collected on systems that have been part of the LAKEWATCH program. Data are from the period of record for individual systems. The first part of this summary lists background data for each system, the second part lists the long-term data geometric means and ranges and the final part are the trend plots for nutrients, chlorophyll and Secchi depth. **Plots were only made for systems with five or more years of data.**

For decades Florida has had a narrative nutrient water quality criterion in place to protect Florida’s waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida’s waters. By 2015, almost all the remaining waters in Florida have numeric nutrient standards (see for FDEP Regulation Nutrient Criteria’s for: Streams, spring vents: <https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.531>).



**Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.**

**Table 1. The nutrient thresholds for streams are listed in table below along with the map showing zones.**

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold <sup>1</sup>	Total Nitrogen Nutrient Threshold <sup>1</sup>
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µg/L	1870 µg/L
Peninsular	120 µg/L	1540 µg/L
West Central	490 µg/L	1650 µg/L
South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

<sup>1</sup>These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year period.

## Base File Data for River/Streams: Definitions

- **County:** Name of county in which the system resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **GNIS Number:** Number created by USGS's Geographic Names Information System.
- **Water Body Type:** Four different types of systems; lakes, estuaries, river/streams and springs.
- **Period of Record (years):** Number of years a system has been in the LAKEWATCH program.
- **Latitude and Longitude:** Coordinates identifying the exact location of station 1 for each system.

**Table 2. Base File Data.**

County	Highlands
Name	Arbuckle Creek-1
GNIS Number	277930
Water Body Type	River/Stream
Period of Record (years, range)	22 (2001 to 2022)
Latitude	27.4462
Longitude	-81.3021

## Long-Term Data for River/Streams: Definitions

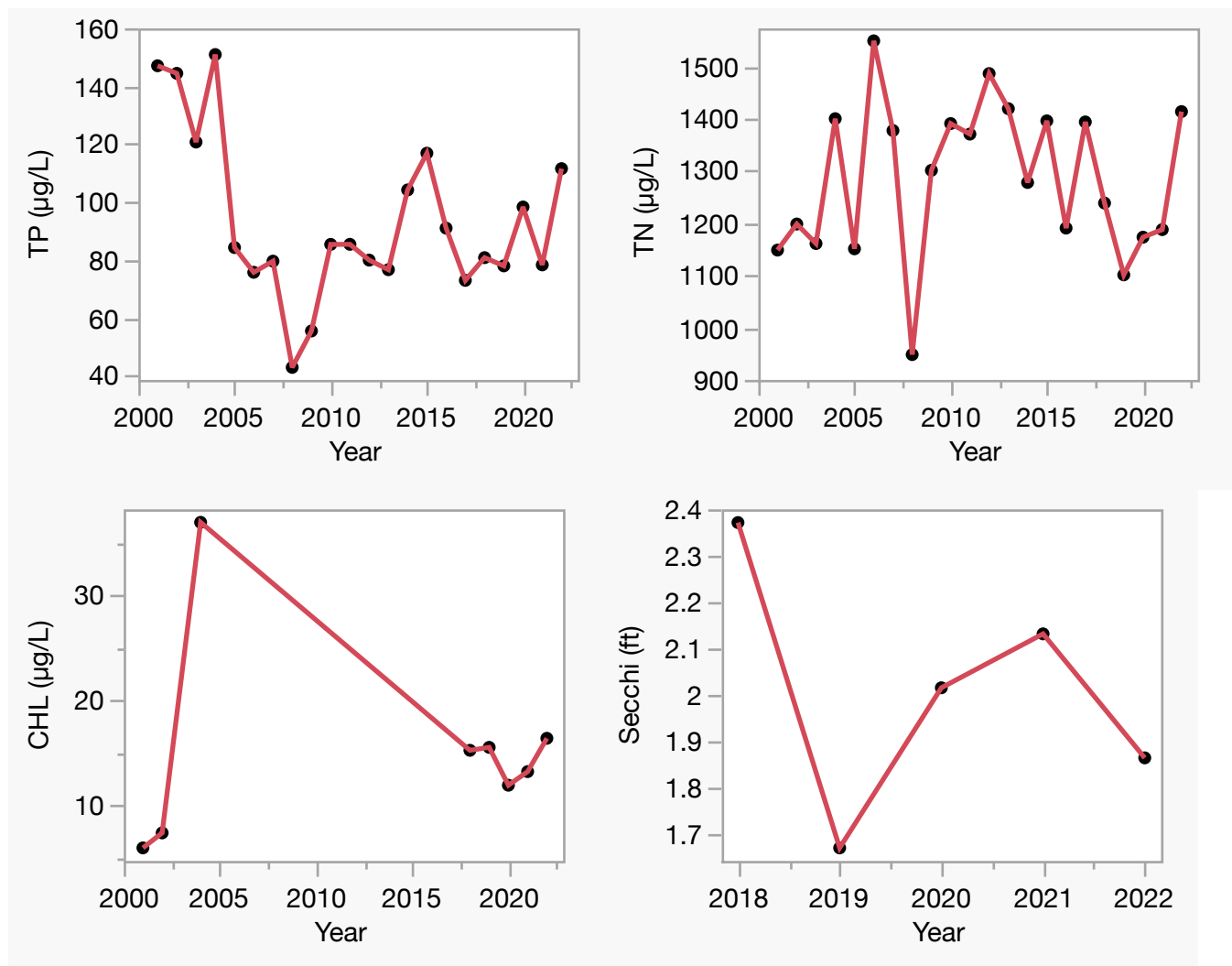
The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus ( $\mu\text{g/L}$ ):** The nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m):** Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 3. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	43 - 151	90 (22)
Total Nitrogen ( $\mu\text{g/L}$ )	948 - 1549	1277 (22)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	6 - 37	13 (8)
Secchi (ft)	1.7 - 2.4	2.0 (5)
Secchi (m)	0.5 -0.7	0.6 (5)
Color (Pt-Co Units)	56 - 336	133 (21)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	98 - 185	137 (16)

**Figure 2. Arbuckle Creek-1 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant ( $p < 0.05$  is significant). Total phosphorus (TP No Trend,  $R^2 = 0.12$ ,  $p = 0.11$ ), total nitrogen (TN No Trend,  $R^2 = 0.00$ ,  $p = 0.82$ ), chlorophyll (CHL No Trend,  $R^2 = 0.00$ ,  $p = 0.92$ ) and Secchi depth (Secchi No Trend,  $R^2 = 0.11$ ,  $p = 0.59$ ).**



**LAKEWATCH Report for Arbuckle Creek-2 in Highlands County**  
**Watershed Region: Peninsular**  
**Using Data Downloaded 12/9/22**

**Introduction for River/Streams**

This report summarizes data collected on systems that have been part of the LAKEWATCH program. Data are from the period of record for individual systems. The first part of this summary lists background data for each system, the second part lists the long-term data geometric means and ranges and the final part are the trend plots for nutrients, chlorophyll and Secchi depth. **Plots were only made for systems with five or more years of data.**

For decades Florida has had a narrative nutrient water quality criterion in place to protect Florida’s waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida’s waters. By 2015, almost all the remaining waters in Florida have numeric nutrient standards (see for FDEP Regulation Nutrient Criteria’s for: Streams, spring vents: <https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.531>).



**Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.**

**Table 1. The nutrient thresholds for streams are listed in table below along with the map showing zones.**

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold <sup>1</sup>	Total Nitrogen Nutrient Threshold <sup>1</sup>
Panhandle West	60 µg/L	670 µg/L
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South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

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- **Water Body Type:** Four different types of systems; lakes, estuaries, river/streams and springs.
- **Period of Record (years):** Number of years a system has been in the LAKEWATCH program.
- **Latitude and Longitude:** Coordinates identifying the exact location of station 1 for each system.

**Table 2. Base File Data.**

County	Highlands
Name	Arbuckle Creek-2
GNIS Number	277930
Water Body Type	River/Stream
Period of Record (years, range)	22 (2001 to 2022)
Latitude	27.5300
Longitude	-81.3628

## Long-Term Data for River/Streams: Definitions

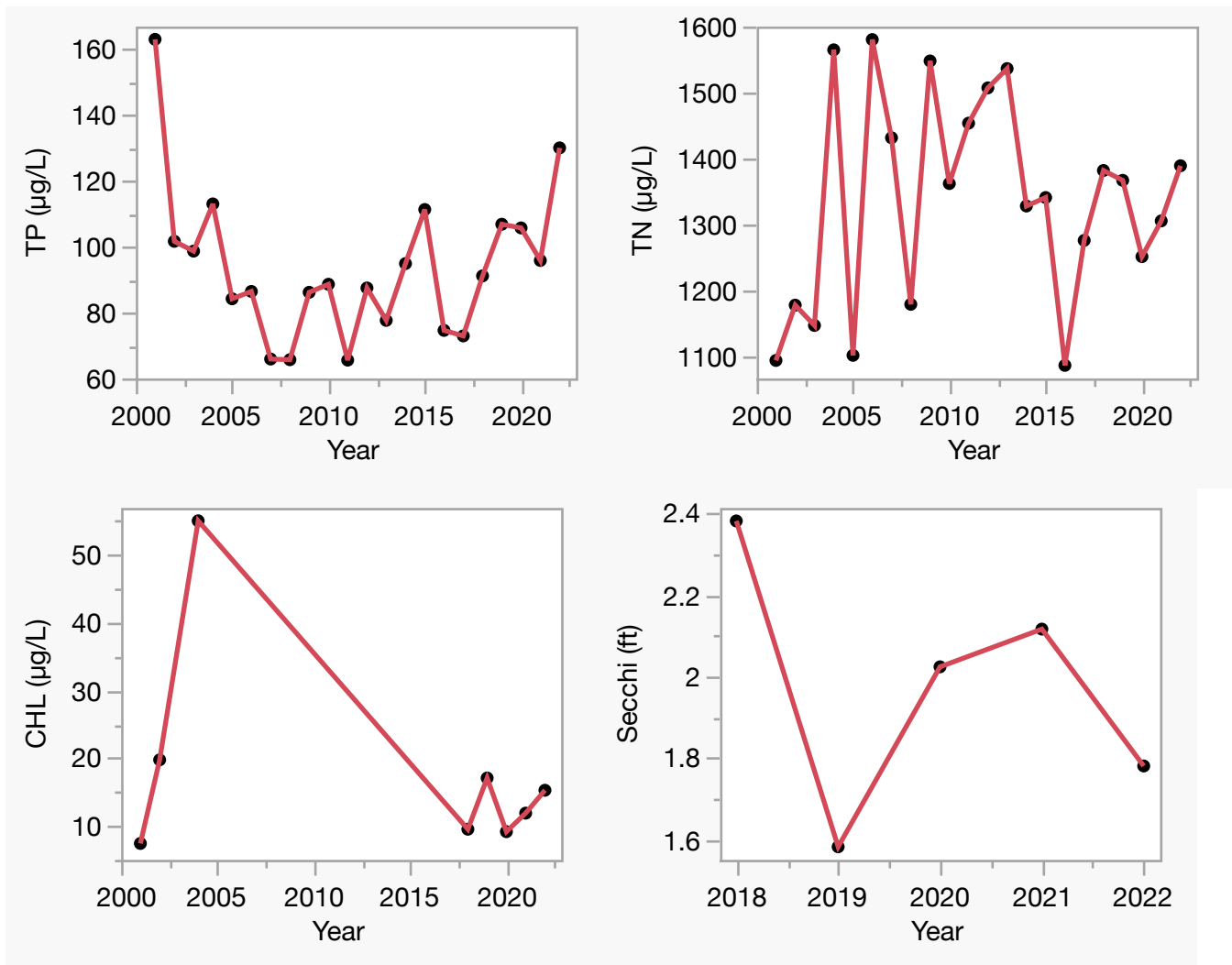
The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus ( $\mu\text{g/L}$ ):** The nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m):** Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 3. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	66 - 163	92 (22)
Total Nitrogen ( $\mu\text{g/L}$ )	1085 - 1580	1327 (22)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	7 - 55	15 (8)
Secchi (ft)	1.6 - 2.4	2.0 (5)
Secchi (m)	0.5 -0.7	0.6 (5)
Color (Pt-Co Units)	71 - 229	144 (20)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	64 - 188	130 (15)

**Figure 2. Arbuckle Creek-2 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant ( $p < 0.05$  is significant). Total phosphorus (TP No Trend,  $R^2 = 0.00$ ,  $p = 0.77$ ), total nitrogen (TN No Trend,  $R^2 = 0.01$ ,  $p = 0.59$ ), chlorophyll (CHL No Trend,  $R^2 = 0.17$ ,  $p = 0.32$ ) and Secchi depth (Secchi No Trend,  $R^2 = 0.12$ ,  $p = 0.57$ ).**



**LAKEWATCH Report for Arbuckle Creek-3 in Highlands County**  
**Watershed Region: Peninsular**  
**Using Data Downloaded 12/9/22**

**Introduction for River/Streams**

This report summarizes data collected on systems that have been part of the LAKEWATCH program. Data are from the period of record for individual systems. The first part of this summary lists background data for each system, the second part lists the long-term data geometric means and ranges and the final part are the trend plots for nutrients, chlorophyll and Secchi depth. **Plots were only made for systems with five or more years of data.**

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**Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.**

**Table 1. The nutrient thresholds for streams are listed in table below along with the map showing zones.**

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold <sup>1</sup>	Total Nitrogen Nutrient Threshold <sup>1</sup>
Panhandle West	60 µg/L	670 µg/L
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South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

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## Base File Data for River/Streams: Definitions

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- **Period of Record (years):** Number of years a system has been in the LAKEWATCH program.
- **Latitude and Longitude:** Coordinates identifying the exact location of station 1 for each system.

**Table 2. Base File Data.**

County	Highlands
Name	Arbuckle Creek-3
GNIS Number	277930
Water Body Type	River/Stream
Period of Record (years, range)	22 (2001 to 2022)
Latitude	27.6453
Longitude	-81.3585

## Long-Term Data for River/Streams: Definitions

The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

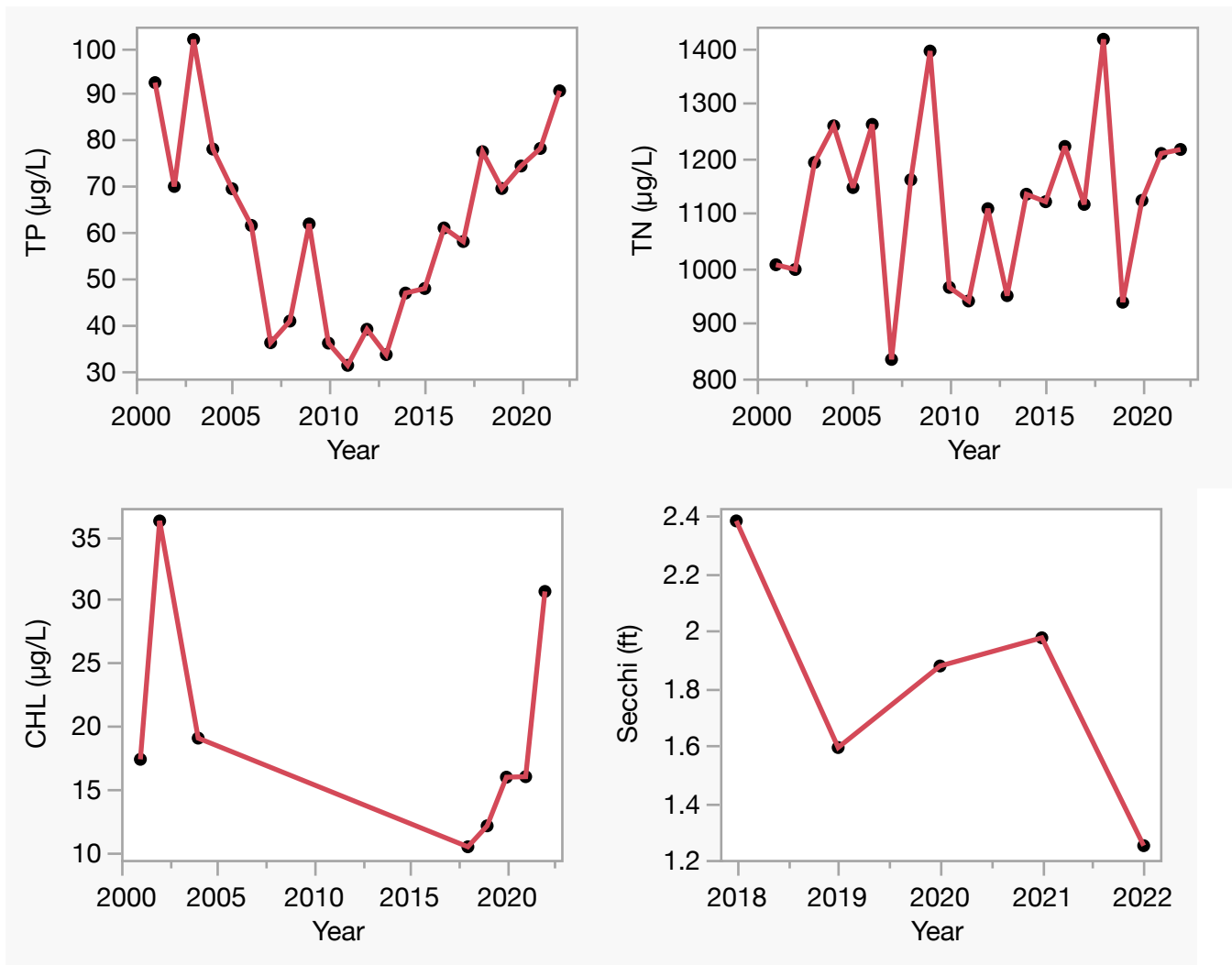
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**Table 3. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	31 - 102	58 (22)
Total Nitrogen ( $\mu\text{g/L}$ )	834 - 1415	1113 (22)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	10 - 36	18 (8)
Secchi (ft)	1.2 - 2.4	1.8 (5)
Secchi (m)	0.4 -0.7	0.5 (5)
Color (Pt-Co Units)	34 - 207	113 (20)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	96 - 208	146 (15)



**Figure 2. Arbuckle Creek-3 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant ( $p < 0.05$  is significant). Total phosphorus (TP No Trend,  $R^2 = 0.00$ ,  $p = 0.87$ ), total nitrogen (TN No Trend,  $R^2 = 0.02$ ,  $p = 0.49$ ), chlorophyll (CHL No Trend,  $R^2 = 0.11$ ,  $p = 0.41$ ) and Secchi depth (Secchi No Trend,  $R^2 = 0.49$ ,  $p = 0.19$ ).**



**LAKEWATCH Report for Catfish Creek-1 in Highlands County**  
**Watershed Region: Peninsular**  
**Using Data Downloaded 12/9/22**

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**Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.**

**Table 1. The nutrient thresholds for streams are listed in table below along with the map showing zones.**

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold <sup>1</sup>	Total Nitrogen Nutrient Threshold <sup>1</sup>
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South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

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**Table 2. Base File Data.**

County	Highlands
Name	Catfish Creek-1
GNIS Number	
Water Body Type	River/Stream
Period of Record (years, range)	25 (1998 to 2022)
Latitude	27.2771
Longitude	-81.3952

## Long-Term Data for River/Streams: Definitions

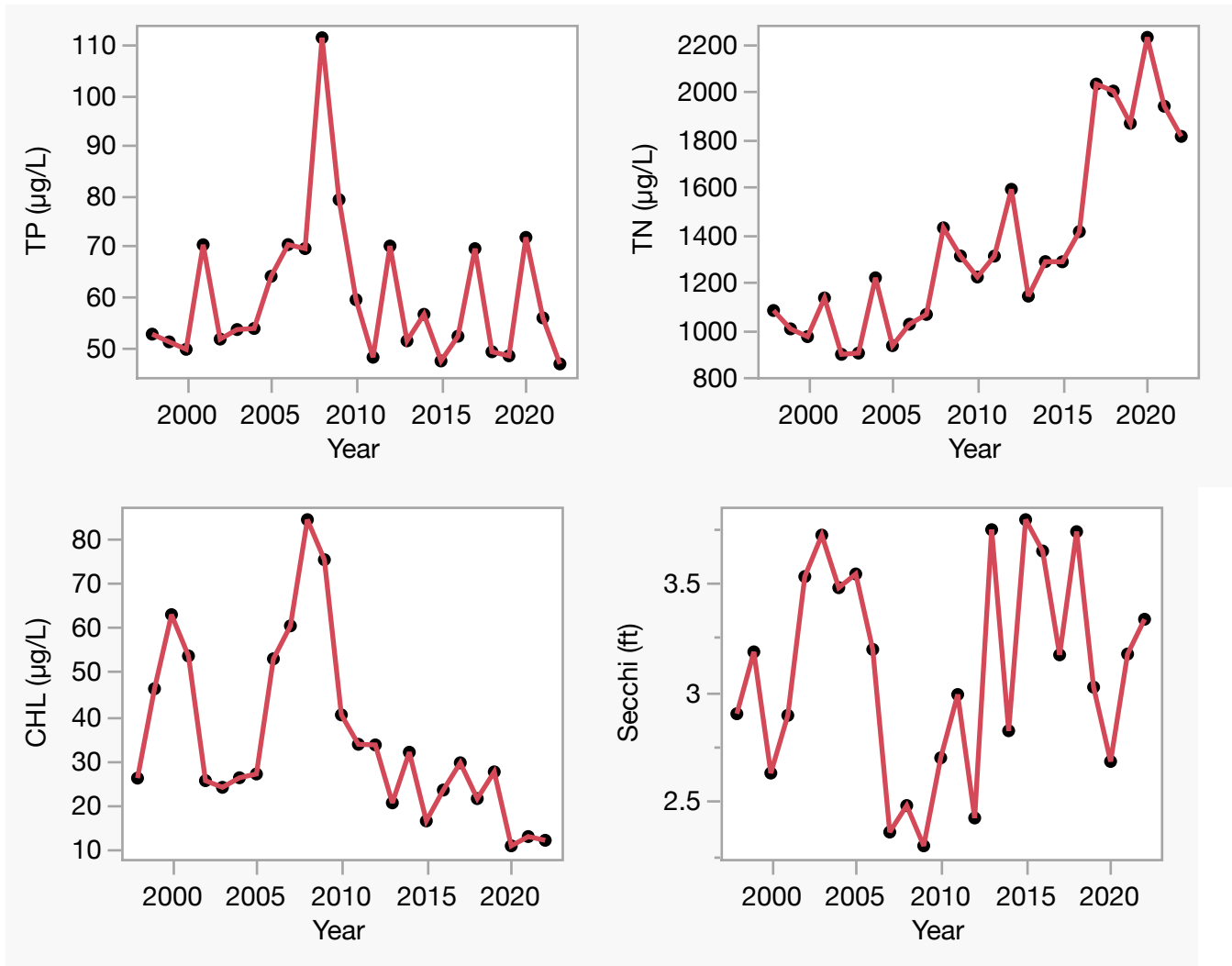
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**Table 3. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	47 - 111	59 (25)
Total Nitrogen ( $\mu\text{g/L}$ )	895 - 2228	1312 (25)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	11 - 84	30 (25)
Secchi (ft)	2.3 - 3.8	3.1 (25)
Secchi (m)	0.7 - 1.2	0.9 (25)
Color (Pt-Co Units)	35 - 97	63 (22)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	109 - 155	132 (16)

**Figure 2. Catfish Creek-1 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant ( $p < 0.05$  is significant). Total phosphorus (TP No Trend,  $R^2 = 0.01$ ,  $p = 0.68$ ), total nitrogen (TN Increasing,  $R^2 = 0.72$ ,  $p = 0.00$ ), chlorophyll (CHL Decreasing,  $R^2 = 0.24$ ,  $p = 0.01$ ) and Secchi depth (Secchi No Trend,  $R^2 = 0.01$ ,  $p = 0.56$ ).**



**LAKEWATCH Report for Catfish Creek-2 in Highlands County**  
**Watershed Region: Peninsular**  
**Using Data Downloaded 12/9/22**

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**Table 2. Base File Data.**

County	Highlands
Name	Catfish Creek-2
GNIS Number	
Water Body Type	River/Stream
Period of Record (years, range)	25 (1998 to 2022)
Latitude	27.2743
Longitude	-81.3918

## Long-Term Data for River/Streams: Definitions

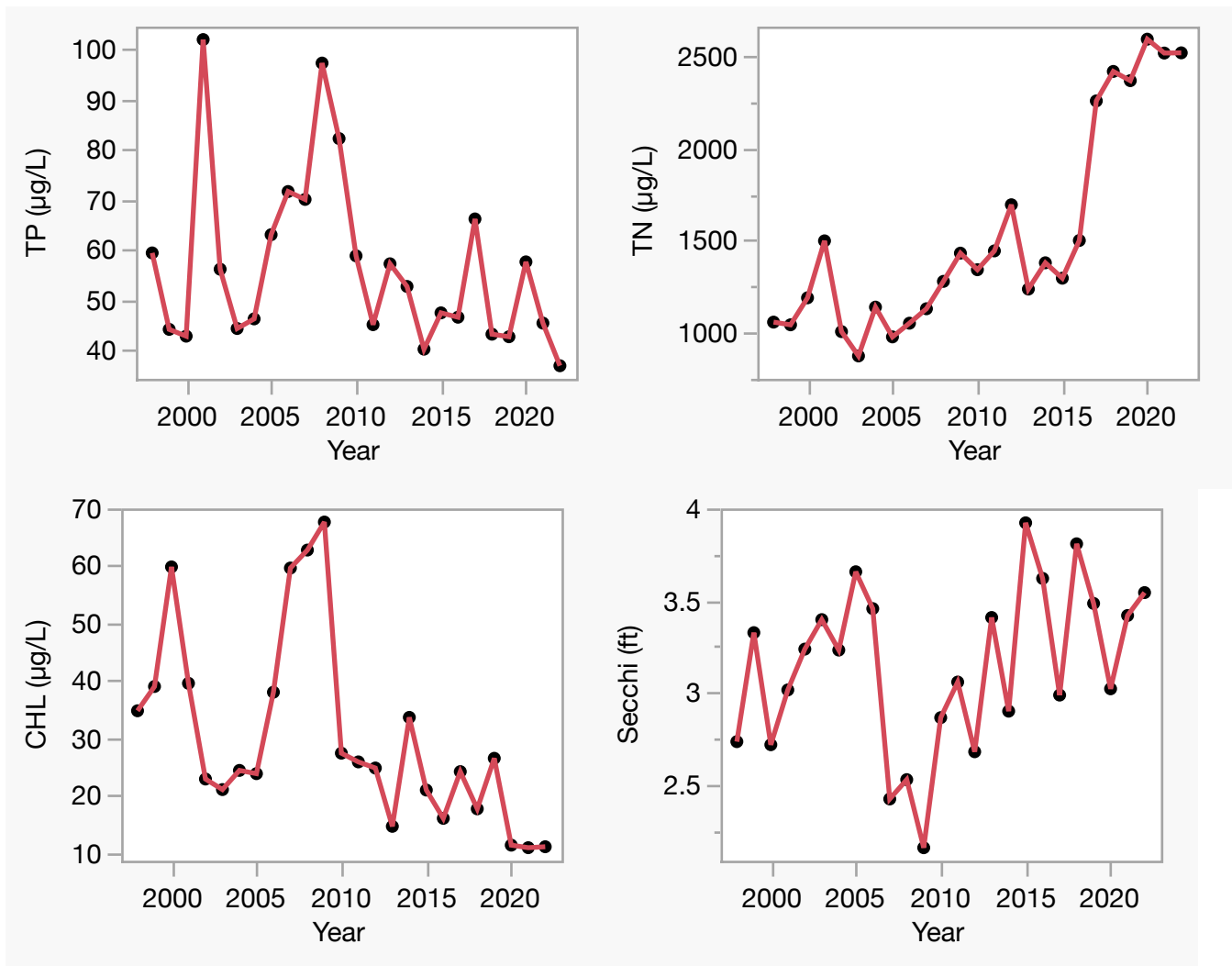
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Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	37 - 102	55 (25)
Total Nitrogen ( $\mu\text{g/L}$ )	874 - 2590	1442 (25)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	11 - 68	27 (25)
Secchi (ft)	2.2 - 3.9	3.1 (25)
Secchi (m)	0.7 - 1.2	0.9 (25)
Color (Pt-Co Units)	32 - 79	59 (21)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	83 - 150	122 (15)

**Figure 2. Catfish Creek-2 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant ( $p < 0.05$  is significant). Total phosphorus (TP No Trend,  $R^2 = 0.10$ ,  $p = 0.12$ ), total nitrogen (TN Increasing,  $R^2 = 0.70$ ,  $p = 0.00$ ), chlorophyll (CHL Decreasing,  $R^2 = 0.28$ ,  $p = 0.01$ ) and Secchi depth (Secchi No Trend,  $R^2 = 0.10$ ,  $p = 0.12$ ).**



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Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µg/L	1870 µg/L
Peninsular	120 µg/L	1540 µg/L
West Central	490 µg/L	1650 µg/L
South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

<sup>1</sup>These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year period.



## Base File Data for River/Streams: Definitions

- **County:** Name of county in which the system resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **GNIS Number:** Number created by USGS's Geographic Names Information System.
- **Water Body Type:** Four different types of systems; lakes, estuaries, river/streams and springs.
- **Period of Record (years):** Number of years a system has been in the LAKEWATCH program.
- **Latitude and Longitude:** Coordinates identifying the exact location of station 1 for each system.

**Table 2. Base File Data.**

County	Highlands
Name	Catfish Creek-3
GNIS Number	
Water Body Type	River/Stream
Period of Record (years, range)	25 (1998 to 2022)
Latitude	27.2714
Longitude	-81.3885

## Long-Term Data for River/Streams: Definitions

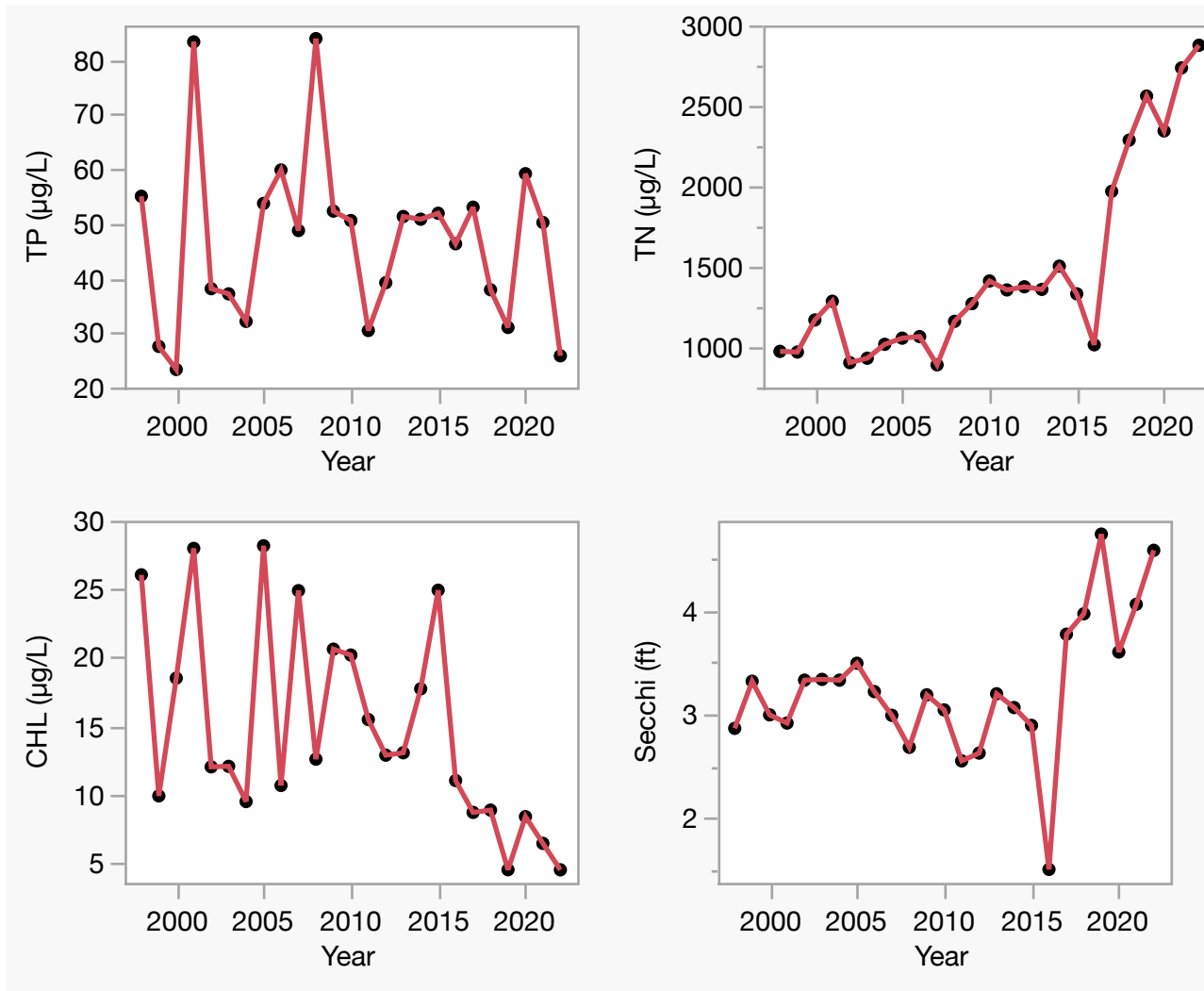
The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus ( $\mu\text{g/L}$ ):** The nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m):** Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 3. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	23 - 84	45 (25)
Total Nitrogen ( $\mu\text{g/L}$ )	890 - 2877	1373 (25)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	4 - 28	13 (25)
Secchi (ft)	1.5 - 4.7	3.2 (25)
Secchi (m)	0.5 - 1.4	1.0 (25)
Color (Pt-Co Units)	36 - 80	56 (21)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	84 - 153	111 (15)

**Figure 2. Catfish Creek-3 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the p value indicates if the relation is significant ( $p < 0.05$  is significant). Total phosphorus (TP No Trend,  $R^2 = 0.00$ ,  $p = 0.77$ ), total nitrogen (TN Increasing,  $R^2 = 0.68$ ,  $p = 0.00$ ), chlorophyll (CHL Decreasing,  $R^2 = 0.28$ ,  $p = 0.01$ ) and Secchi depth (Secchi No Trend,  $R^2 = 0.15$ ,  $p = 0.06$ ).**

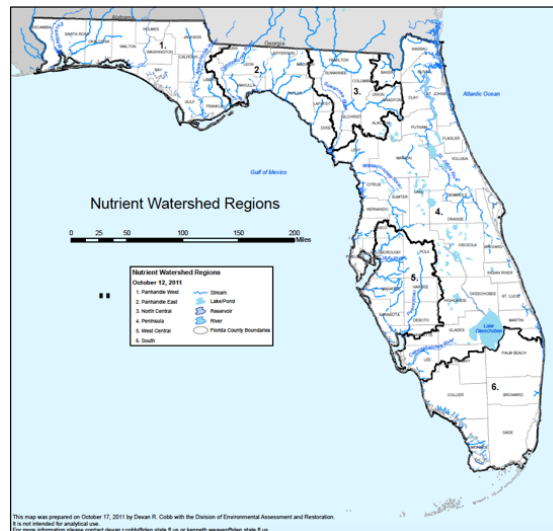


**LAKEWATCH Report for Kissimmee River Lorida-1 in Highlands County**  
**Watershed Region: Peninsular**  
**Using Data Downloaded 12/9/22**

**Introduction for River/Streams**

This report summarizes data collected on systems that have been part of the LAKEWATCH program. Data are from the period of record for individual systems. The first part of this summary lists background data for each system, the second part lists the long-term data geometric means and ranges and the final part are the trend plots for nutrients, chlorophyll and Secchi depth. **Plots were only made for systems with five or more years of data.**

For decades Florida has had a narrative nutrient water quality criterion in place to protect Florida’s waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida’s waters. By 2015, almost all the remaining waters in Florida have numeric nutrient standards (see for FDEP Regulation Nutrient Criteria’s for: Streams, spring vents: <https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.531>).



**Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.**

**Table 1. The nutrient thresholds for streams are listed in table below along with the map showing zones.**

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold <sup>1</sup>	Total Nitrogen Nutrient Threshold <sup>1</sup>
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µg/L	1870 µg/L
Peninsular	120 µg/L	1540 µg/L
West Central	490 µg/L	1650 µg/L
South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

<sup>1</sup>These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year period.

## Base File Data for River/Streams: Definitions

- **County:** Name of county in which the system resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **GNIS Number:** Number created by USGS's Geographic Names Information System.
- **Water Body Type:** Four different types of systems; lakes, estuaries, river/streams and springs.
- **Period of Record (years):** Number of years a system has been in the LAKEWATCH program.
- **Latitude and Longitude:** Coordinates identifying the exact location of station 1 for each system.

**Table 2. Base File Data.**

County	Highlands
Name	Kissimmee River Lorida-1
GNIS Number	277644
Water Body Type	River/Stream
Period of Record (years, range)	7 (2013 to 2020)
Latitude	27.3627
Longitude	-81.0441

## Long-Term Data for River/Streams: Definitions

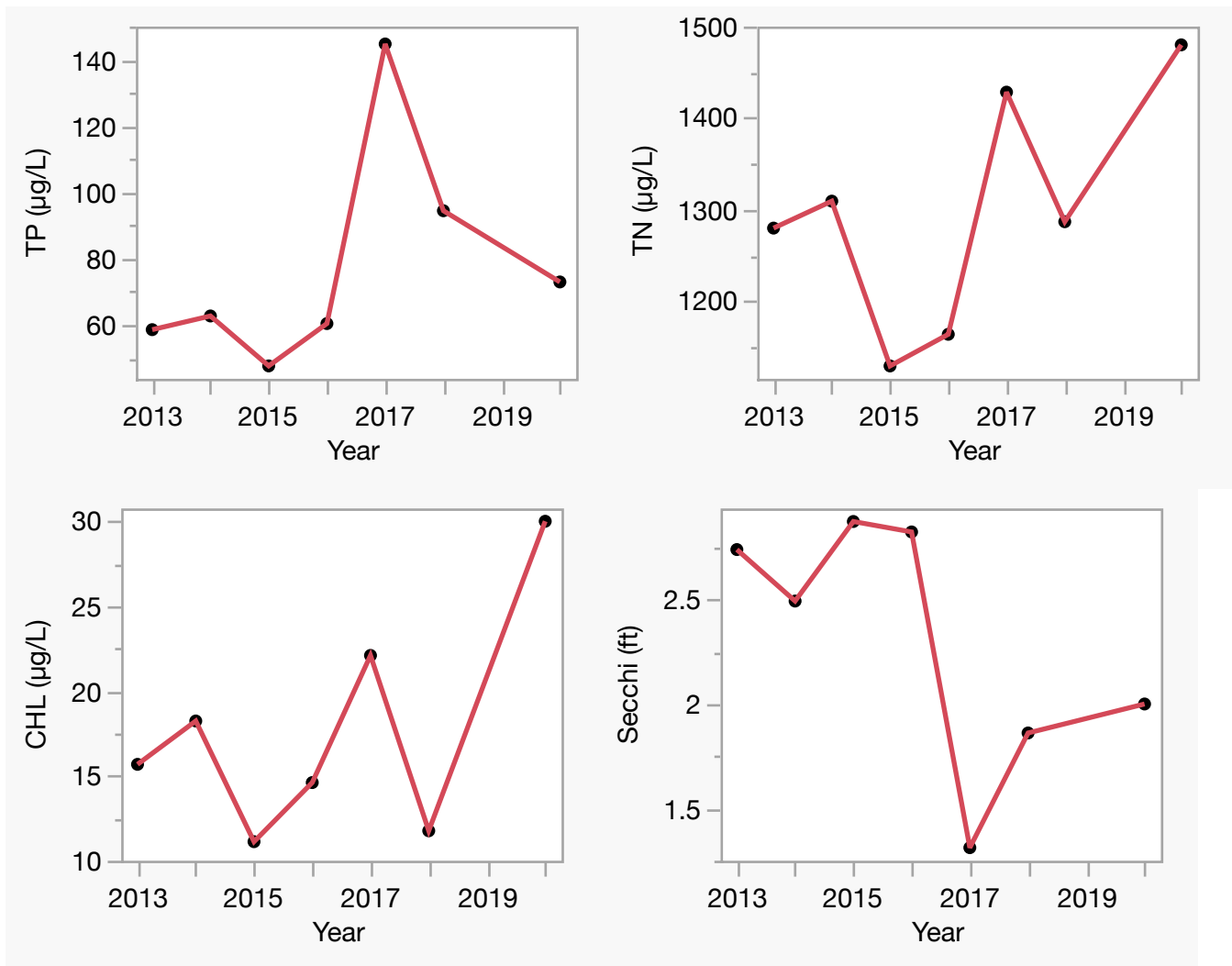
The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus ( $\mu\text{g/L}$ ):** The nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m):** Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 3. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	48 - 145	73 (7)
Total Nitrogen ( $\mu\text{g/L}$ )	1130 - 1480	1292 (7)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	11 - 30	17 (7)
Secchi (ft)	1.3 - 2.9	2.2 (7)
Secchi (m)	0.4 -0.9	0.7 (7)
Color (Pt-Co Units)	89 - 110	101 (6)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	116 - 160	135 (6)

**Figure 2. Kissimmee River Lorida-1 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the  $p$  value indicates if the relation is significant ( $p < 0.05$  is significant). Total phosphorus (TP No Trend,  $R^2 = 0.17$ ,  $p = 0.35$ ), total nitrogen (TN No Trend,  $R^2 = 0.32$ ,  $p = 0.19$ ), chlorophyll (CHL No Trend,  $R^2 = 0.31$ ,  $p = 0.19$ ) and Secchi depth (Secchi No Trend,  $R^2 = 0.39$ ,  $p = 0.13$ ).**

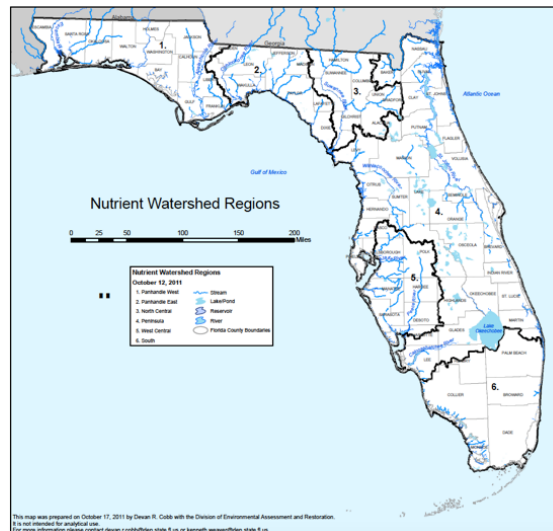


**LAKEWATCH Report for Kissimmee River Lorida-2 in Highlands County**  
**Watershed Region: Peninsular**  
**Using Data Downloaded 12/9/22**

**Introduction for River/Streams**

This report summarizes data collected on systems that have been part of the LAKEWATCH program. Data are from the period of record for individual systems. The first part of this summary lists background data for each system, the second part lists the long-term data geometric means and ranges and the final part are the trend plots for nutrients, chlorophyll and Secchi depth. **Plots were only made for systems with five or more years of data.**

For decades Florida has had a narrative nutrient water quality criterion in place to protect Florida’s waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida’s waters. By 2015, almost all the remaining waters in Florida have numeric nutrient standards (see for FDEP Regulation Nutrient Criteria’s for: Streams, spring vents: <https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.531>).



**Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.**

**Table 1. The nutrient thresholds for streams are listed in table below along with the map showing zones.**

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold <sup>1</sup>	Total Nitrogen Nutrient Threshold <sup>1</sup>
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µg/L	1870 µg/L
Peninsular	120 µg/L	1540 µg/L
West Central	490 µg/L	1650 µg/L
South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

<sup>1</sup>These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year period.

## Base File Data for River/Streams: Definitions

- **County:** Name of county in which the system resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **GNIS Number:** Number created by USGS's Geographic Names Information System.
- **Water Body Type:** Four different types of systems; lakes, estuaries, river/streams and springs.
- **Period of Record (years):** Number of years a system has been in the LAKEWATCH program.
- **Latitude and Longitude:** Coordinates identifying the exact location of station 1 for each system.

**Table 2. Base File Data.**

County	Highlands
Name	Kissimmee River Lorida-2
GNIS Number	277644
Water Body Type	River/Stream
Period of Record (years, range)	5 (2013 to 2020)
Latitude	27.3617
Longitude	-81.0376

## Long-Term Data for River/Streams: Definitions

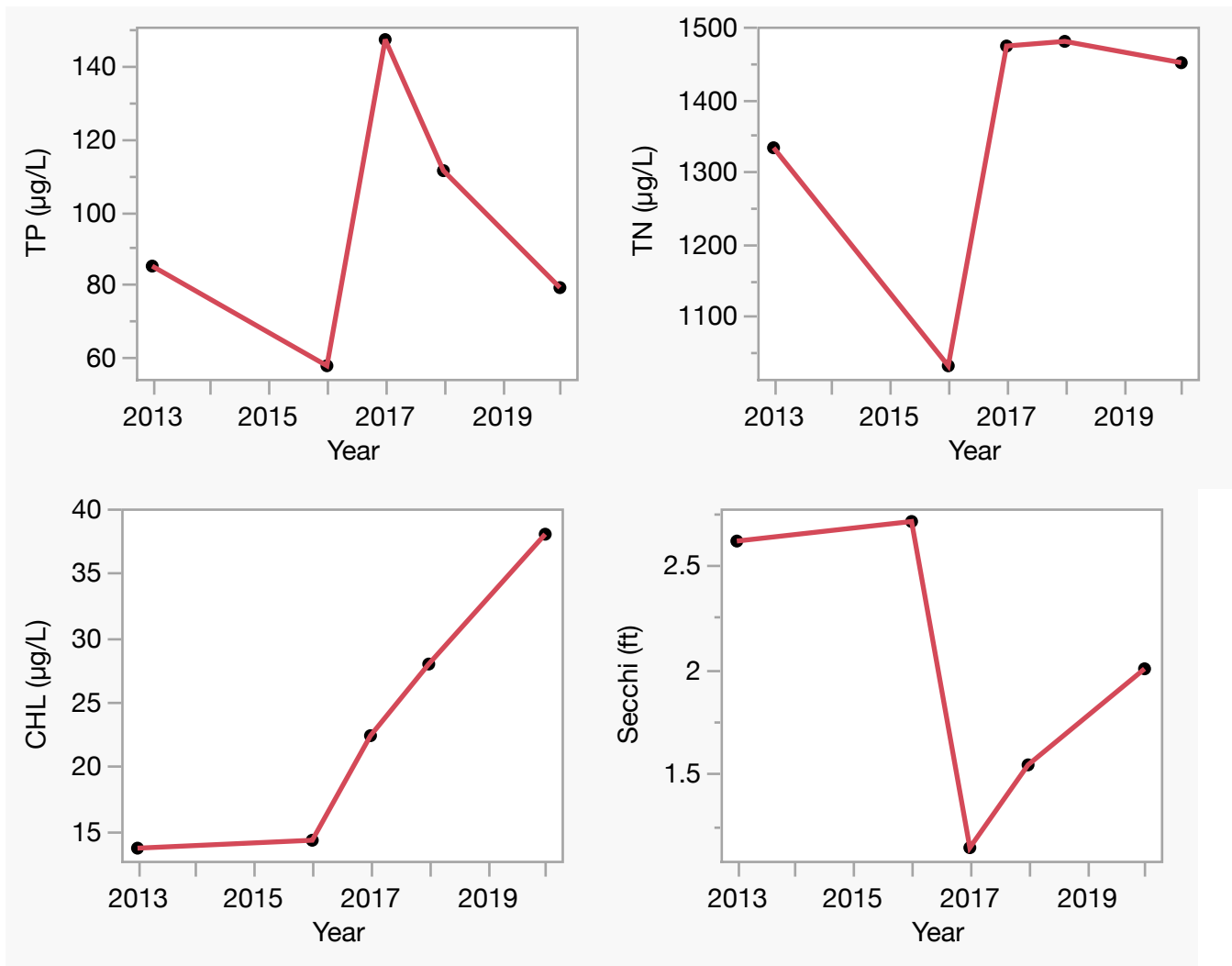
The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus ( $\mu\text{g/L}$ ):** The nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m):** Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 3. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	58 - 147	91 (5)
Total Nitrogen ( $\mu\text{g/L}$ )	1031 - 1479	1341 (5)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	14 - 38	22 (5)
Secchi (ft)	1.1 - 2.7	1.9 (5)
Secchi (m)	0.3 -0.8	0.6 (5)
Color (Pt-Co Units)	79 - 145	107 (4)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	118 - 141	133 (4)

**Figure 2. Kissimmee River Lorida-2 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the  $p$  value indicates if the relation is significant ( $p < 0.05$  is significant). Total phosphorus (TP No Trend,  $R^2 = 0.02$ ,  $p = 0.83$ ), total nitrogen (TN No Trend,  $R^2 = 0.18$ ,  $p = 0.48$ ), chlorophyll (CHL Increasing,  $R^2 = 0.84$ ,  $p = 0.03$ ) and Secchi depth (Secchi No Trend,  $R^2 = 0.27$ ,  $p = 0.37$ ).**





**LAKEWATCH Report for Kissimmee River Lorida-3 in Highlands County**  
**Watershed Region: Peninsular**  
**Using Data Downloaded 12/9/22**

**Introduction for River/Streams**

This report summarizes data collected on systems that have been part of the LAKEWATCH program. Data are from the period of record for individual systems. The first part of this summary lists background data for each system, the second part lists the long-term data geometric means and ranges and the final part are the trend plots for nutrients, chlorophyll and Secchi depth. **Plots were only made for systems with five or more years of data.**

For decades Florida has had a narrative nutrient water quality criterion in place to protect Florida’s waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida’s waters. By 2015, almost all the remaining waters in Florida have numeric nutrient standards (see for FDEP Regulation Nutrient Criteria’s for: Streams, spring vents: <https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.531>).



**Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.**

**Table 1. The nutrient thresholds for streams are listed in table below along with the map showing zones.**

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold <sup>1</sup>	Total Nitrogen Nutrient Threshold <sup>1</sup>
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µg/L	1870 µg/L
Peninsular	120 µg/L	1540 µg/L
West Central	490 µg/L	1650 µg/L
South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

<sup>1</sup>These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year period.

## Base File Data for River/Streams: Definitions

- **County:** Name of county in which the system resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **GNIS Number:** Number created by USGS's Geographic Names Information System.
- **Water Body Type:** Four different types of systems; lakes, estuaries, river/streams and springs.
- **Period of Record (years):** Number of years a system has been in the LAKEWATCH program.
- **Latitude and Longitude:** Coordinates identifying the exact location of station 1 for each system.

**Table 2. Base File Data.**

County	Highlands
Name	Kissimmee River Lorida-3
GNIS Number	277644
Water Body Type	River/Stream
Period of Record (years, range)	7 (2013 to 2020)
Latitude	27.3589
Longitude	-81.0347

## Long-Term Data for River/Streams: Definitions

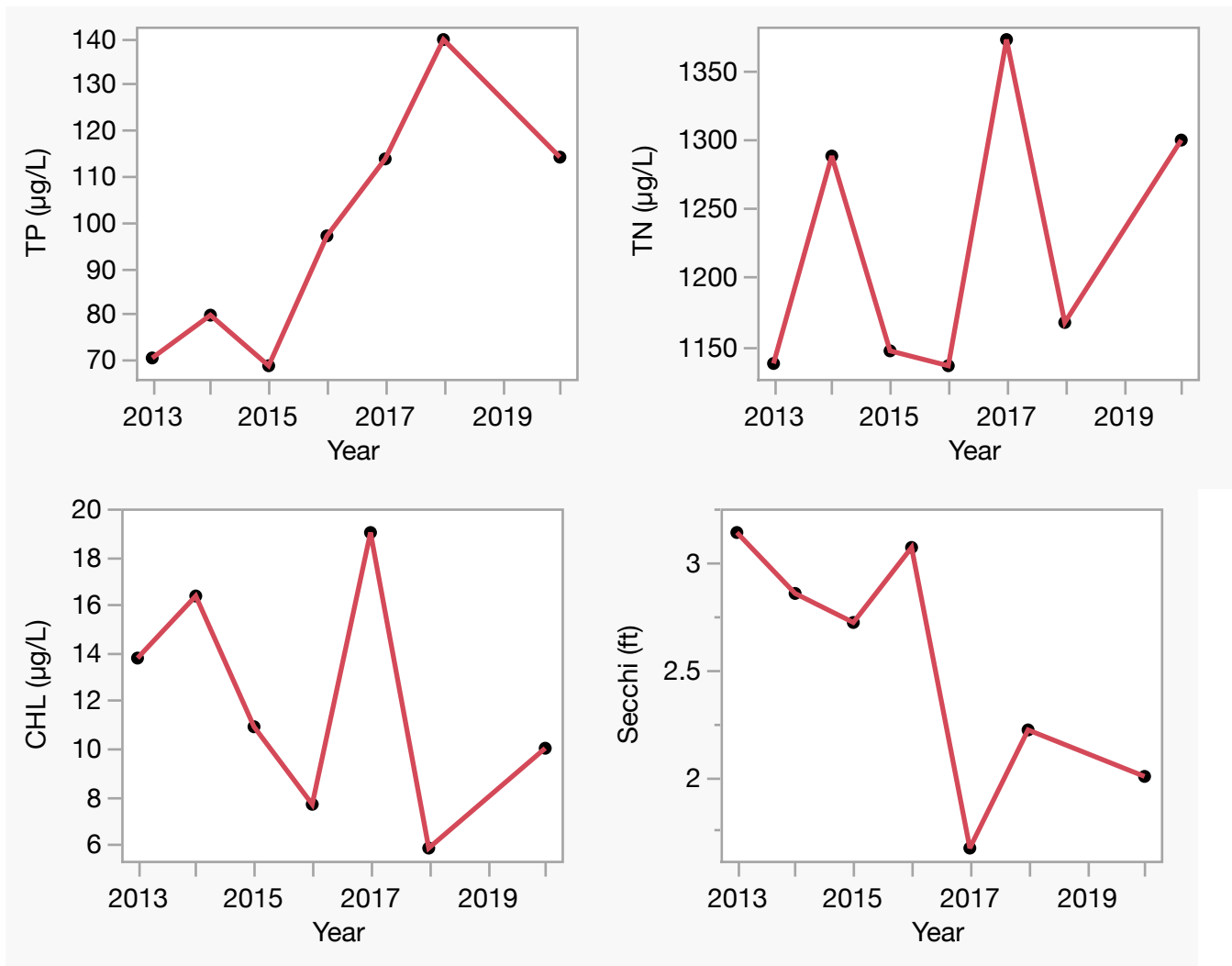
The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus ( $\mu\text{g/L}$ ):** The nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m):** Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 3. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	69 - 140	95 (7)
Total Nitrogen ( $\mu\text{g/L}$ )	1135 - 1373	1218 (7)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	6 - 19	11 (7)
Secchi (ft)	1.7 - 3.1	2.5 (7)
Secchi (m)	0.5 -1.0	0.8 (7)
Color (Pt-Co Units)	90 - 155	109 (6)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	121 - 153	140 (6)

**Figure 2. Kissimmee River Lorida-3 trend plots of year by average. The  $R^2$  value indicates the strength of the relations (ranges from 0.0 to 1.0; higher the  $R^2$  the stronger the relation) and the  $p$  value indicates if the relation is significant ( $p < 0.05$  is significant). Total phosphorus (TP Increasing,  $R^2 = 0.67$ ,  $p = 0.02$ ), total nitrogen (TN No Trend,  $R^2 = 0.15$ ,  $p = 0.38$ ), chlorophyll (CHL No Trend,  $R^2 = 0.15$ ,  $p = 0.40$ ) and Secchi depth (Secchi Decreasing,  $R^2 = 0.58$ ,  $p = 0.05$ ).**



**LAKEWATCH Report for Kissimmee River Lorida-4 in Highlands County**  
**Watershed Region: Peninsular**  
**Using Data Downloaded 12/9/22**

**Introduction for River/Streams**

This report summarizes data collected on systems that have been part of the LAKEWATCH program. Data are from the period of record for individual systems. The first part of this summary lists background data for each system, the second part lists the long-term data geometric means and ranges and the final part are the trend plots for nutrients, chlorophyll and Secchi depth. **Plots were only made for systems with five or more years of data.**

For decades Florida has had a narrative nutrient water quality criterion in place to protect Florida’s waters against nutrient over-enrichment. In 2009, the Florida Department of Environmental Protection (FDEP) initiated rulemaking and, by 2011, adopted what would be the first set of statewide numeric nutrient standards for Florida’s waters. By 2015, almost all the remaining waters in Florida have numeric nutrient standards (see for FDEP Regulation Nutrient Criteria’s for: Streams, spring vents: <https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.531>).



**Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.**

**Table 1. The nutrient thresholds for streams are listed in table below along with the map showing zones.**

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold <sup>1</sup>	Total Nitrogen Nutrient Threshold <sup>1</sup>
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µg/L	1870 µg/L
Peninsular	120 µg/L	1540 µg/L
West Central	490 µg/L	1650 µg/L
South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

<sup>1</sup>These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year period.

## Base File Data for River/Streams: Definitions

- **County:** Name of county in which the system resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **GNIS Number:** Number created by USGS's Geographic Names Information System.
- **Water Body Type:** Four different types of systems; lakes, estuaries, river/streams and springs.
- **Period of Record (years):** Number of years a system has been in the LAKEWATCH program.
- **Latitude and Longitude:** Coordinates identifying the exact location of station 1 for each system.

**Table 2. Base File Data.**

County	Highlands
Name	Kissimmee River Lorida-4
GNIS Number	277644
Water Body Type	River/Stream
Period of Record (years, range)	4 (2013 to 2016)
Latitude	27.3542
Longitude	-81.0331

## Long-Term Data for River/Streams: Definitions

The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus ( $\mu\text{g/L}$ ):** The nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algal population.
- **Secchi (ft), Secchi (m):** Secchi measurements are estimates of water clarity.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 3. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	127 - 199	163 (4)
Total Nitrogen ( $\mu\text{g/L}$ )	1180 - 1311	1234 (4)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	1 - 6	2 (4)
Secchi (ft)	2.8 - 4.0	3.2 (4)
Secchi (m)	0.9 -1.2	1.0 (4)
Color (Pt-Co Units)	124 - 129	126 (4)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	134 - 250	190 (4)

