

LAKEWATCH Report for Arbuckle Creek-1 in Highlands County Using Data Downloaded 10/17/2016

Introduction Streams

For many 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 of the remaining waters in Florida have numeric nutrient standards (see for Florida Department of Environmental Regulation Nutrient Criteria's for: Streams, spring vents: <http://www.dep.state.fl.us/water/wqssp/nutrients/index.htm>).

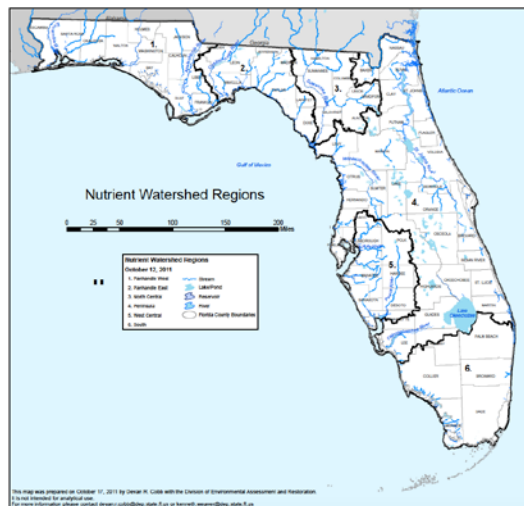


Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.

Base File Data: Definitions

The long-term data summary will include the following parameters listed with a definition after each one:

- **County:** Name of county in which the stream resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **Latitude and Longitude:** Coordinates identifying the exact location of station 1 for each system.
- **Water Body Type:** Four different types of systems; lakes, estuaries, streams and springs.
- **Period of Record (year):** Years a stream has been in the LAKEWATCH program.

County	Highlands
Name	Arbuckle Creek-1
Latitude	27.4462
Longitude	-81.331
Water Body Type	Stream
Period of Record (year)	2001 to 2015
Nutrient Watershed Region	Peninsular

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The nutrient thresholds for streams set forth by FDEP are listed in table below along with the map showing zones.

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold ¹	Total Nitrogen Nutrient Threshold ¹
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µ/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.

¹These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year periods.

Long-Term Data Summary Streams: Definitions

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- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance (µS/cm@25°C):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolve materials in water.

Long-Term Data Summary Streams: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	43 - 225	117 (15)
Total Nitrogen (µg/L)	953 - 1557	1327 (15)
Chlorophyll- uncorrected (µg/L)	6.0 - 37.0	16.8 (15)
Secchi (ft)	-	()
Secchi (m)	-	()
Color (Pt-Co Units)	56 - 336	157 (14)
Specific Conductance (µS/cm@25 C)	110 - 185	143 (9)

LAKEWATCH Report for Arbuckle Creek-1 in Highlands County Using Data Downloaded 10/17/2016

Trend Analyses Streams

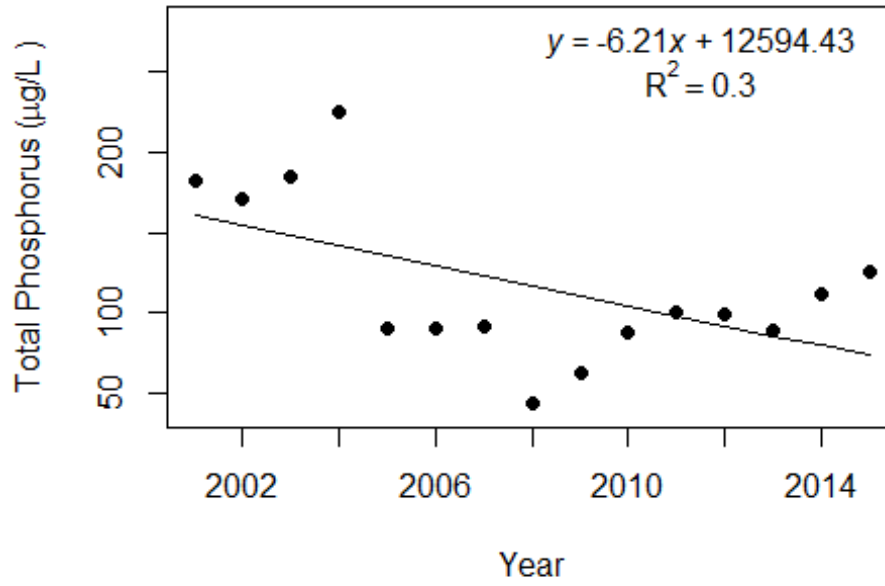
The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over time. These analyses define statistics based on the best fit line drawn through the data after plotting them with year on the horizontal line (x-axis) and the data value on the vertical line (y-axis). Figure 2 shows example plots with linear regression statistic of lakes that show significant total phosphorus increases, decreases and no change over time. The statistics that are listed include the following:

- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
- **Intercept (a):** This is the value on the y-axis that the fitted line would have cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R²):** This value is an indication of how much variance above and below the fitted line there is in the data. This value ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

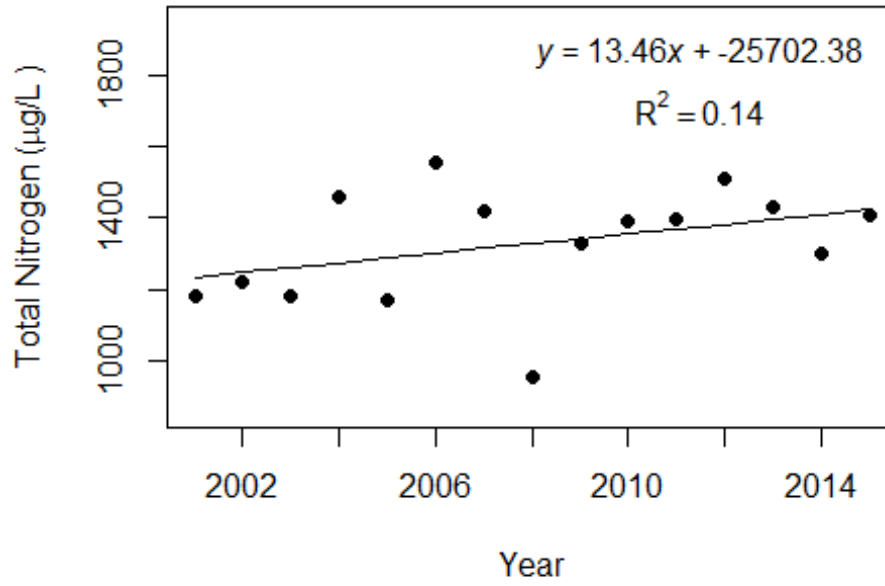
Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)	15	15	15	
Intercept (a)	12594	-25702	-21937	
Slope (b)	-6.21	13.46	10.96	
Coefficient of Determination (R ²)	0.30	0.14	0.92	
Probability of Significance (p)	0.04	0.17	0.19	
Potential Trend	Decreasing	No Trend	No Trend	

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Arbuckle Creek-1 in Highlands County. If there are no plots then there is less than five years of data, which is not enough for the analysis.

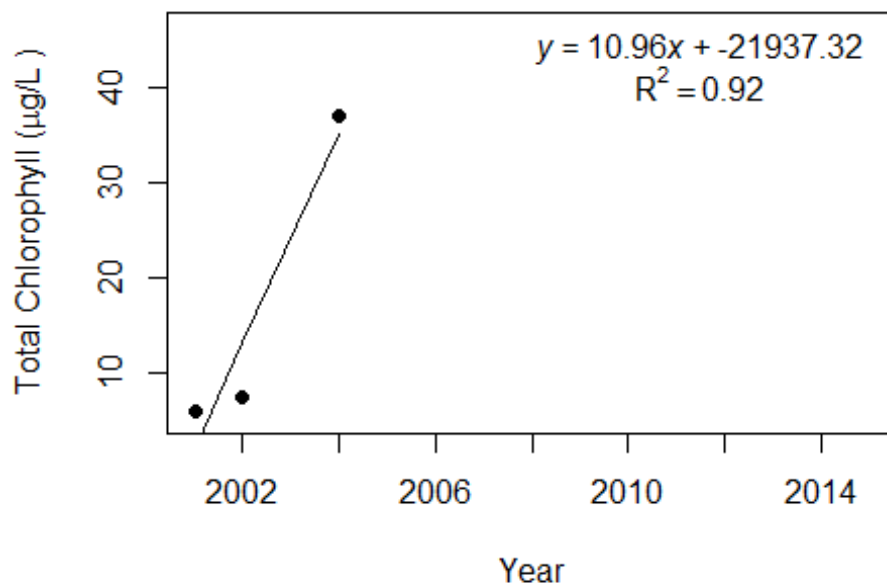
Arbuckle Creek-1 (Highlands)



Arbuckle Creek-1 (Highlands)



Arbuckle Creek-1 (Highlands)



LAKEWATCH Report for Arbuckle Creek-2 in Highlands County Using Data Downloaded 10/17/2016

Introduction Streams

For many 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 of the remaining waters in Florida have numeric nutrient standards (see for Florida Department of Environmental Regulation Nutrient Criteria's for: Streams, spring vents: <http://www.dep.state.fl.us/water/wqssp/nutrients/index.htm>).

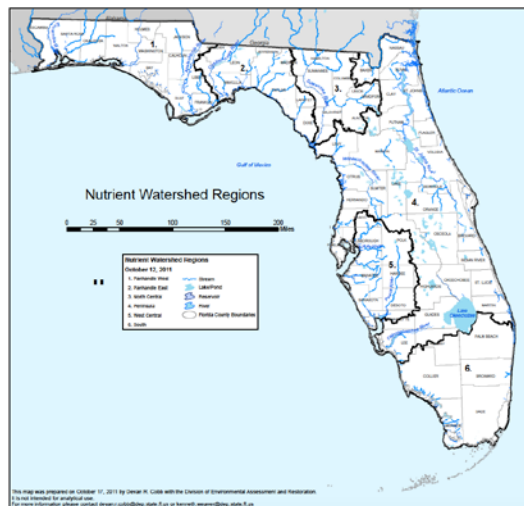


Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.

Base File Data: Definitions

The long-term data summary will include the following parameters listed with a definition after each one:

- **County:** Name of county in which the stream resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **Latitude and Longitude:** Coordinates identifying the exact location of station 1 for each system.
- **Water Body Type:** Four different types of systems; lakes, estuaries, streams and springs.
- **Period of Record (year):** Years a stream has been in the LAKEWATCH program.

County	Highlands
Name	Arbuckle Creek-2
Latitude	27.53
Longitude	-81.3628
Water Body Type	Stream
Period of Record (year)	2001 to 2015
Nutrient Watershed Region	Peninsular

LAKEWATCH Report for Arbuckle Creek-2 in Highlands County Using Data Downloaded 10/17/2016

The nutrient thresholds for streams set forth by FDEP are listed in table below along with the map showing zones.

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold ¹	Total Nitrogen Nutrient Threshold ¹
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µ/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.

¹These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year periods.

Long-Term Data Summary 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 (µg/L):** The nutrient most often limiting growth of plant/algae in Florida's fresh and saltwater environments.
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- **Specific Conductance (µS/cm@25°C):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolve materials in water.

Long-Term Data Summary Streams: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	66 - 186	103 (15)
Total Nitrogen (µg/L)	1142 - 1633	1385 (15)
Chlorophyll- uncorrected (µg/L)	8.0 - 55.0	27.8 (15)
Secchi (ft)	-	()
Secchi (m)	-	()
Color (Pt-Co Units)	77 - 233	171 (14)
Specific Conductance (µS/cm@25 C)	64 - 188	135 (9)

LAKEWATCH Report for Arbuckle Creek-2 in Highlands County Using Data Downloaded 10/17/2016

Trend Analyses Streams

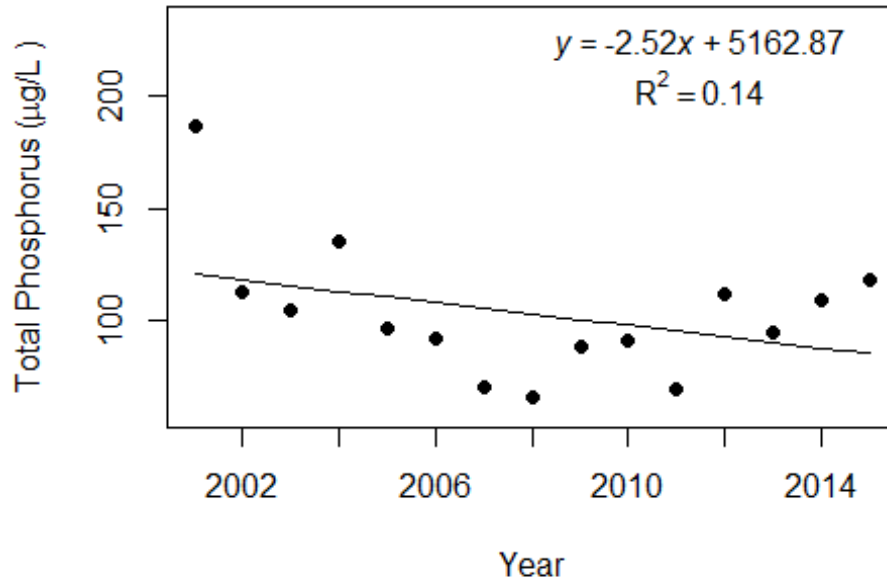
The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over time. These analyses define statistics based on the best fit line drawn through the data after plotting them with year on the horizontal line (x-axis) and the data value on the vertical line (y-axis). Figure 2 shows example plots with linear regression statistic of lakes that show significant total phosphorus increases, decreases and no change over time. The statistics that are listed include the following:

- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
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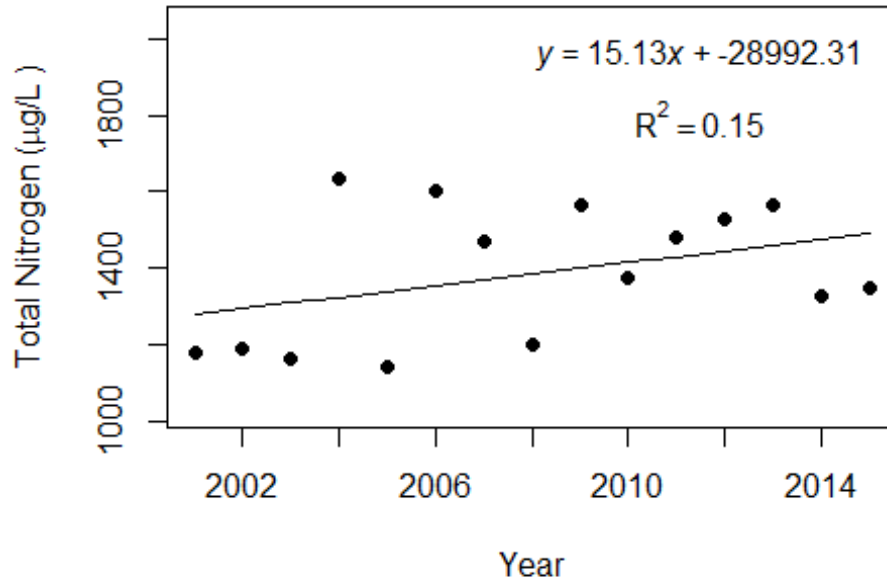
Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)	15	15	15	
Intercept (a)	5163	-28992	-31795	
Slope (b)	-2.52	15.13	15.89	
Coefficient of Determination (R ²)	0.14	0.15	0.99	
Probability of Significance (p)	0.17	0.16	0.05	
Potential Trend	No Trend	No Trend	Increasing	

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Arbuckle Creek-2 in Highlands County. If there are no plots then there is less than five years of data, which is not enough for the analysis.

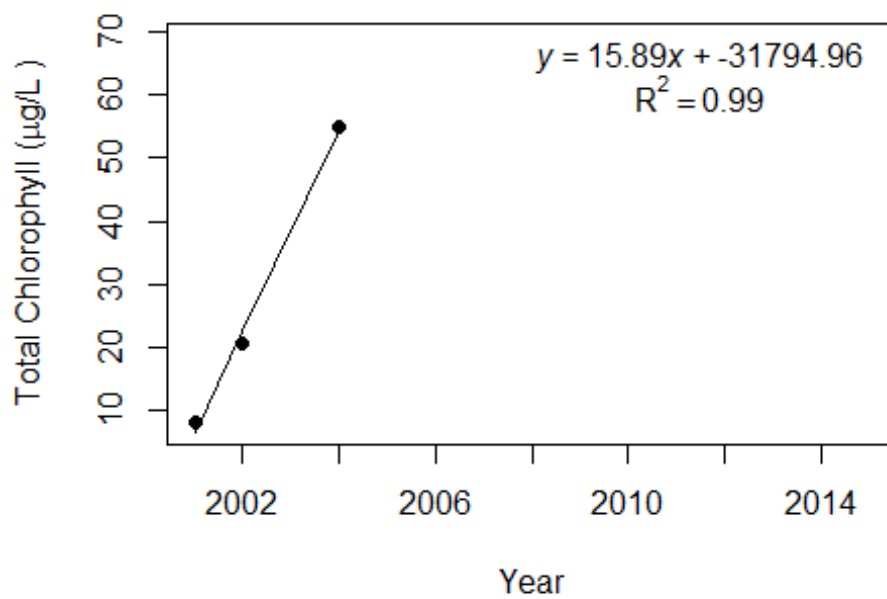
Arbuckle Creek-2 (Highlands)



Arbuckle Creek-2 (Highlands)



Arbuckle Creek-2 (Highlands)



LAKEWATCH Report for Arbuckle Creek-3 in Highlands County Using Data Downloaded 10/17/2016

Introduction Streams

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- **Period of Record (year):** Years a stream has been in the LAKEWATCH program.

County	Highlands
Name	Arbuckle Creek-3
Latitude	27.6453
Longitude	-81.3585
Water Body Type	Stream
Period of Record (year)	2001 to 2015
Nutrient Watershed Region	Peninsular

LAKEWATCH Report for Arbuckle Creek-3 in Highlands County Using Data Downloaded 10/17/2016

The nutrient thresholds for streams set forth by FDEP are listed in table below along with the map showing zones.

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold ¹	Total Nitrogen Nutrient Threshold ¹
Panhandle West	60 µg/L	670 µg/L
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- **Specific Conductance (µS/cm@25°C):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolve materials in water.

Long-Term Data Summary Streams: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	32 - 109	59 (15)
Total Nitrogen (µg/L)	841 - 1445	1123 (15)
Chlorophyll- uncorrected (µg/L)	18.5 - 40.0	25.8 (15)
Secchi (ft)	-	()
Secchi (m)	-	()
Color (Pt-Co Units)	35 - 209	124 (14)
Specific Conductance (µS/cm@25 C)	96 - 211	154 (9)

LAKEWATCH Report for Arbuckle Creek-3 in Highlands County Using Data Downloaded 10/17/2016

Trend Analyses Streams

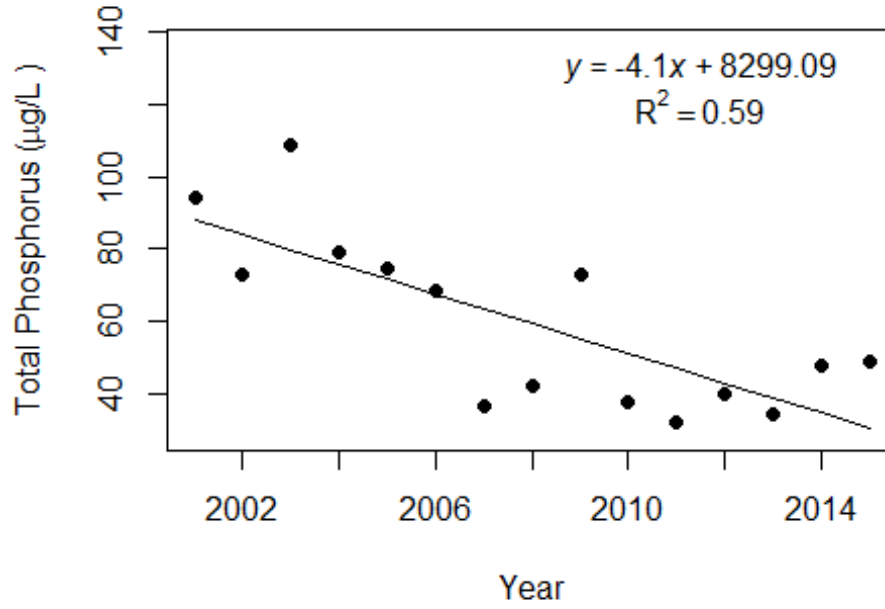
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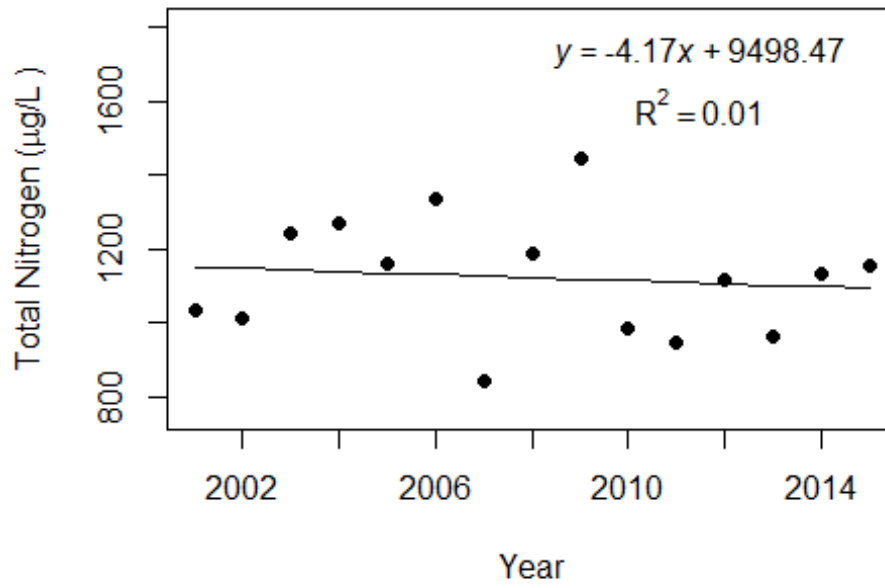
Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)	15	15	15	
Intercept (a)	8299	9498	2743	
Slope (b)	-4.10	-4.17	-1.36	
Coefficient of Determination (R ²)	0.59	0.01	0.03	
Probability of Significance (p)	0.00	0.68	0.89	
Potential Trend	Decreasing	No Trend	No Trend	

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Arbuckle Creek-3 in Highlands County. If there are no plots then there is less than five years of data, which is not enough for the analysis.

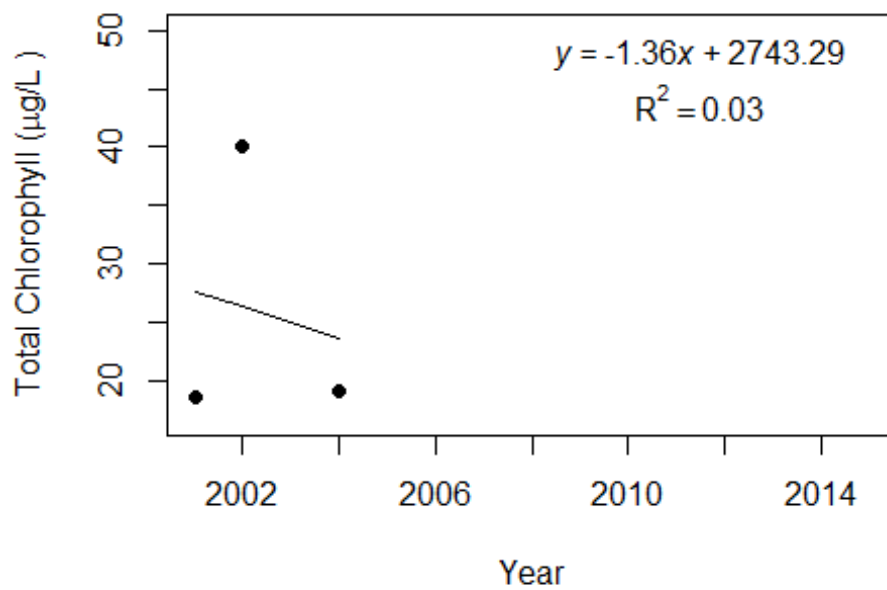
Arbuckle Creek-3 (Highlands)



Arbuckle Creek-3 (Highlands)



Arbuckle Creek-3 (Highlands)



LAKEWATCH Report for Catfish Creek-1 in Highlands County Using Data Downloaded 10/17/2016

Introduction Streams

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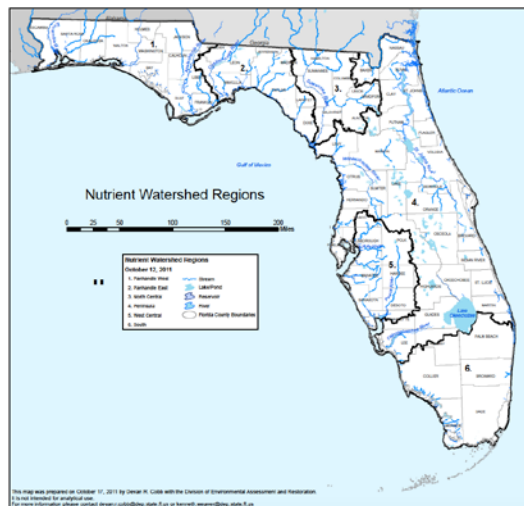


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- **Period of Record (year):** Years a stream has been in the LAKEWATCH program.

County	Highlands
Name	Catfish Creek-1
Latitude	27.2697
Longitude	-81.3951
Water Body Type	Stream
Period of Record (year)	1998 to 2016
Nutrient Watershed Region	Peninsular

LAKEWATCH Report for Catfish Creek-1 in Highlands County Using Data Downloaded 10/17/2016

The nutrient thresholds for streams set forth by FDEP are listed in table below along with the map showing zones.

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Long-Term Data Summary Streams: Data

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Total Phosphorus (µg/L)	48 - 114	64 (19)
Total Nitrogen (µg/L)	913 - 1613	1185 (19)
Chlorophyll- uncorrected (µg/L)	20.6 - 99.8	46.7 (19)
Secchi (ft)	2.3 - 3.9	3.2 (19)
Secchi (m)	0.7 - 1.2	1.0 (19)
Color (Pt-Co Units)	35 - 88	65 (16)
Specific Conductance (µS/cm@25 C)	108 - 132	124 (10)

LAKEWATCH Report for Catfish Creek-1 in Highlands County Using Data Downloaded 10/17/2016

Trend Analyses Streams

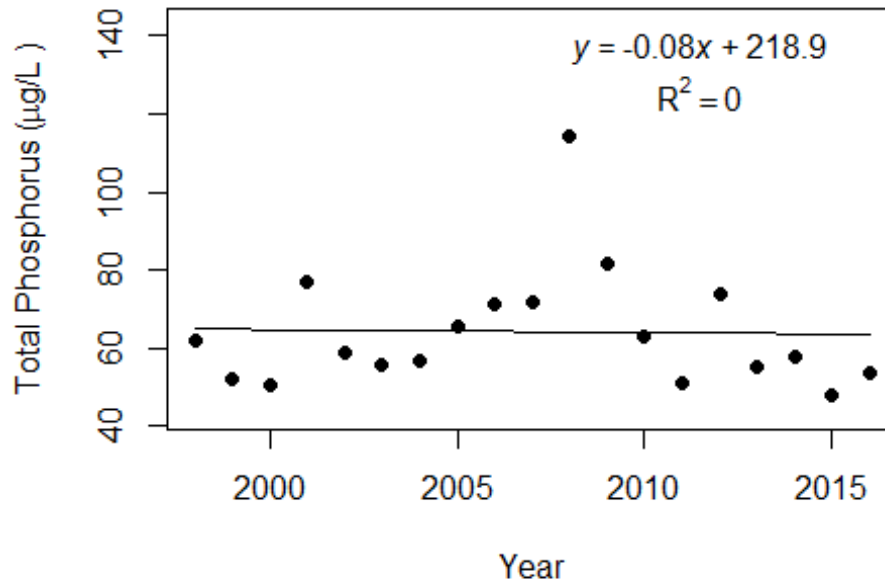
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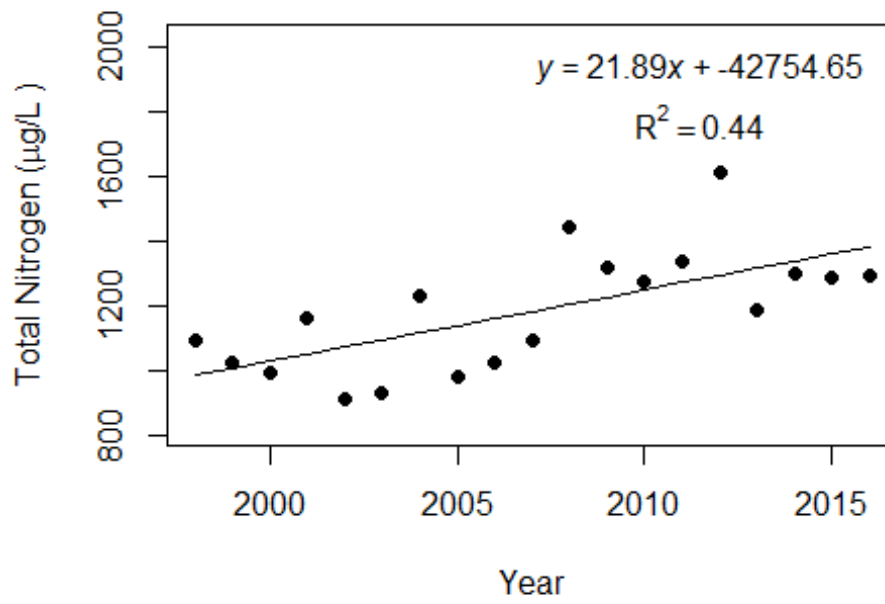
Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)	19	19	19	19
Intercept (a)	219	-42755	1454	-11
Slope (b)	-0.08	21.89	-0.70	0.01
Coefficient of Determination (R ²)	0.00	0.44	0.03	0.01
Probability of Significance (p)	0.91	0.00	0.48	0.75
Potential Trend	No Trend	Increasing	No Trend	No Trend

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Catfish Creek-1 in Highlands County. If there are no plots then there is less than five years of data, which is not enough for the analysis.

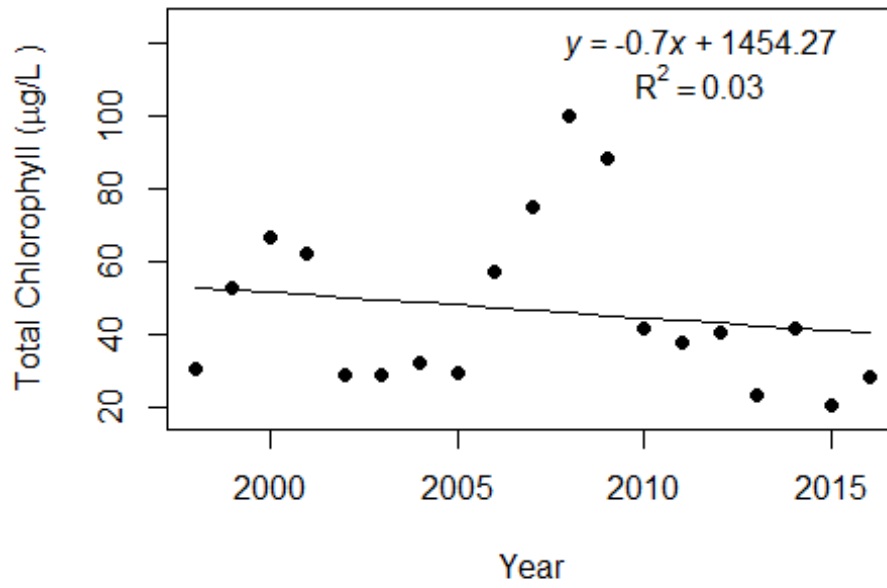
Catfish Creek-1 (Highlands)



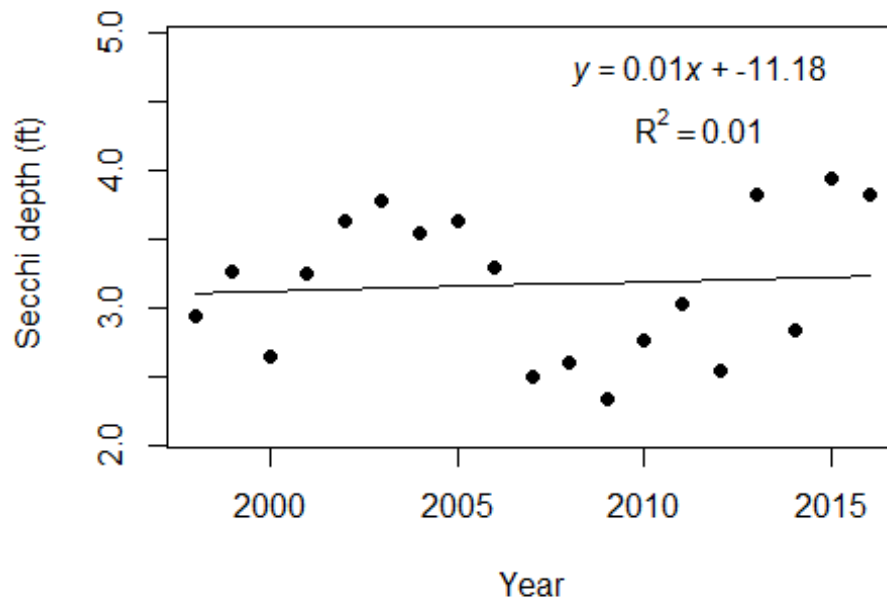
Catfish Creek-1 (Highlands)



Catfish Creek-1 (Highlands)



Catfish Creek-1 (Highlands)



LAKEWATCH Report for Catfish Creek-2 in Highlands County Using Data Downloaded 10/17/2016

Introduction Streams

For many 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 of the remaining waters in Florida have numeric nutrient standards (see for Florida Department of Environmental Regulation Nutrient Criteria’s for: Streams, spring vents: <http://www.dep.state.fl.us/water/wqssp/nutrients/index.htm>).



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

Base File Data: Definitions

The long-term data summary will include the following parameters listed with a definition after each one:

- **County:** Name of county in which the stream resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **Latitude and Longitude:** Coordinates identifying the exact location of station 1 for each system.
- **Water Body Type:** Four different types of systems; lakes, estuaries, streams and springs.
- **Period of Record (year):** Years a stream has been in the LAKEWATCH program.

County	Highlands
Name	Catfish Creek-2
Latitude	27.2665
Longitude	-81.3872
Water Body Type	Stream
Period of Record (year)	1998 to 2016
Nutrient Watershed Region	Peninsular

LAKEWATCH Report for Catfish Creek-2 in Highlands County Using Data Downloaded 10/17/2016

The nutrient thresholds for streams set forth by FDEP are listed in table below along with the map showing zones.

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold ¹	Total Nitrogen Nutrient Threshold ¹
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µ/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.

¹These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year periods.

Long-Term Data Summary 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 (µg/L):** The nutrient most often limiting growth of plant/algae in Florida's fresh and saltwater environments.
- **Total Nitrogen (µg/L):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected (µg/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 (how far one can see into the water) and are listed with English and metric units.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance (µS/cm@25°C):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolve materials in water.

Long-Term Data Summary Streams: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	45 - 335	76 (19)
Total Nitrogen (µg/L)	899 - 2475	1314 (19)
Chlorophyll- uncorrected (µg/L)	17.5 - 73.8	40.2 (19)
Secchi (ft)	2.2 - 3.8	3.1 (19)
Secchi (m)	0.7 - 1.2	0.9 (19)
Color (Pt-Co Units)	32 - 95	64 (16)
Specific Conductance (µS/cm@25 C)	88 - 131	114 (10)

LAKEWATCH Report for Catfish Creek-2 in Highlands County Using Data Downloaded 10/17/2016

Trend Analyses Streams

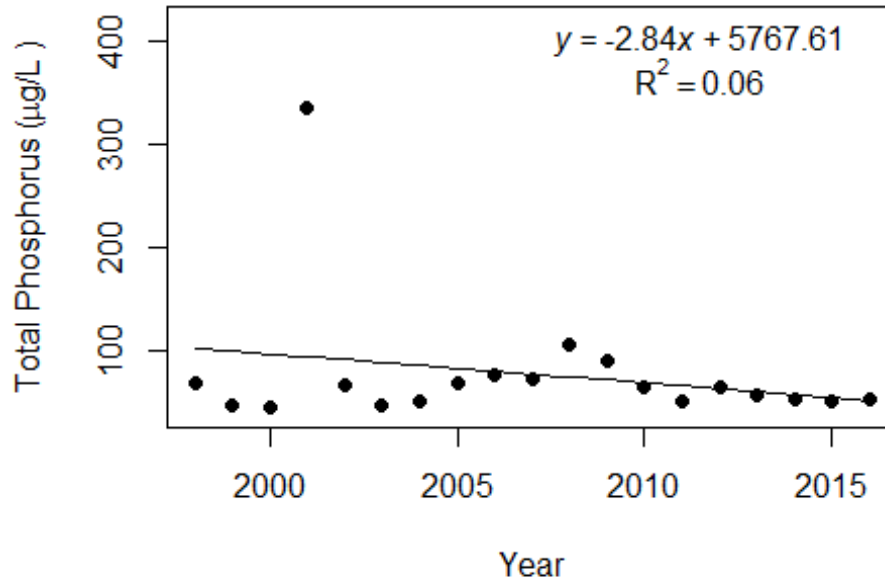
The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over time. These analyses define statistics based on the best fit line drawn through the data after plotting them with year on the horizontal line (x-axis) and the data value on the vertical line (y-axis). Figure 2 shows example plots with linear regression statistic of lakes that show significant total phosphorus increases, decreases and no change over time. The statistics that are listed include the following:

- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
- **Intercept (a):** This is the value on the y-axis that the fitted line would have cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R²):** This value is an indication of how much variance above and below the fitted line there is in the data. This value ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

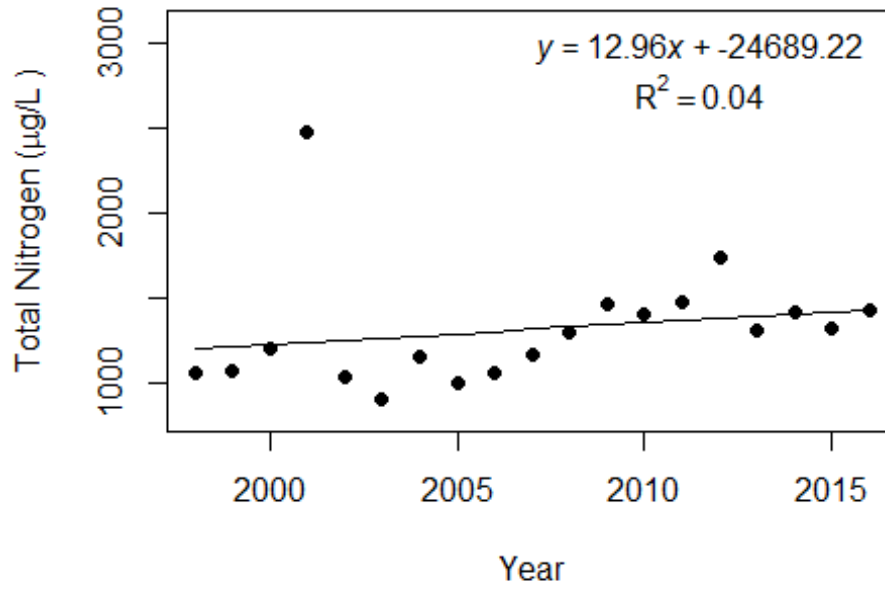
Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)	19	19	19	19
Intercept (a)	5768	-24689	1902	1
Slope (b)	-2.84	12.96	-0.93	0.00
Coefficient of Determination (R ²)	0.06	0.04	0.09	0.00
Probability of Significance (p)	0.31	0.39	0.21	0.96
Potential Trend	No Trend	No Trend	No Trend	No Trend

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Catfish Creek-2 in Highlands County. If there are no plots then there is less than five years of data, which is not enough for the analysis.

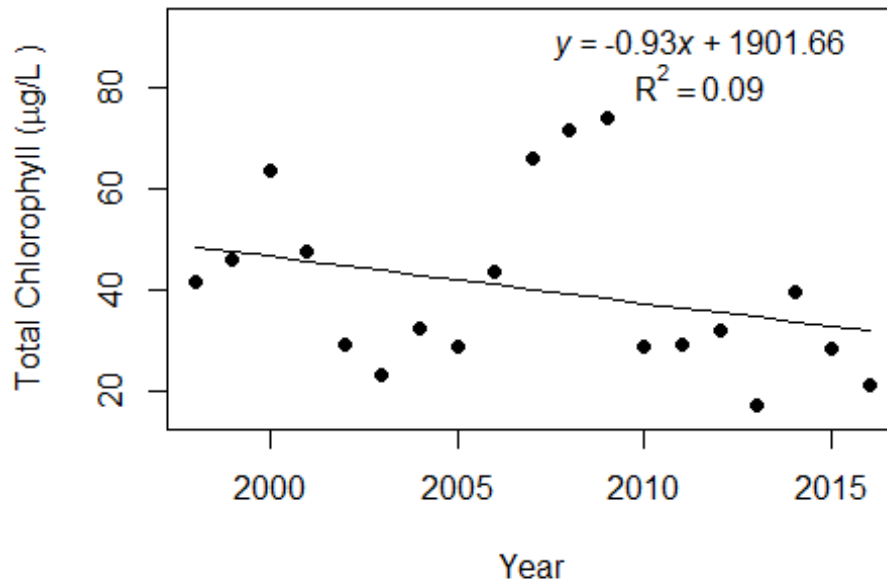
Catfish Creek-2 (Highlands)



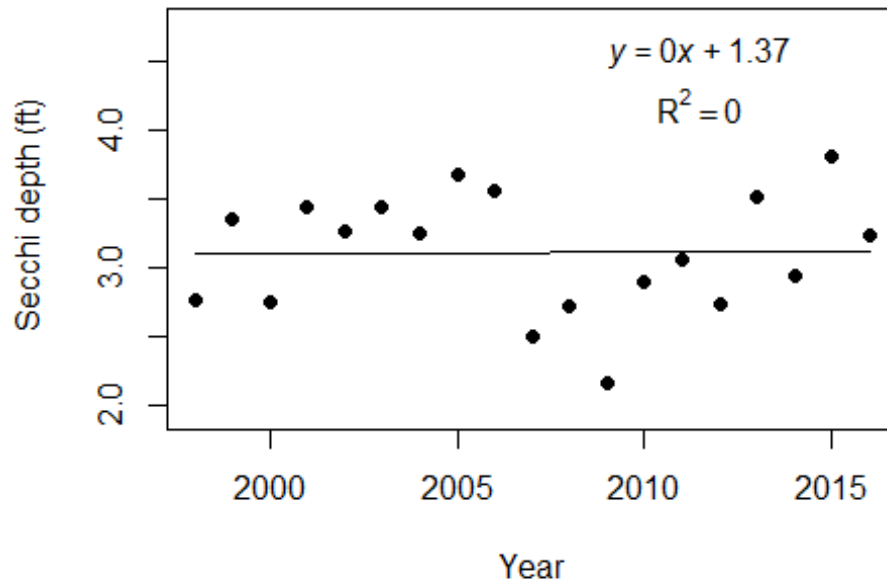
Catfish Creek-2 (Highlands)



Catfish Creek-2 (Highlands)



Catfish Creek-2 (Highlands)



LAKEWATCH Report for Catfish Creek-3 in Highlands County Using Data Downloaded 10/17/2016

Introduction Streams

For many 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 of the remaining waters in Florida have numeric nutrient standards (see for Florida Department of Environmental Regulation Nutrient Criteria's for: Streams, spring vents: <http://www.dep.state.fl.us/water/wqssp/nutrients/index.htm>).

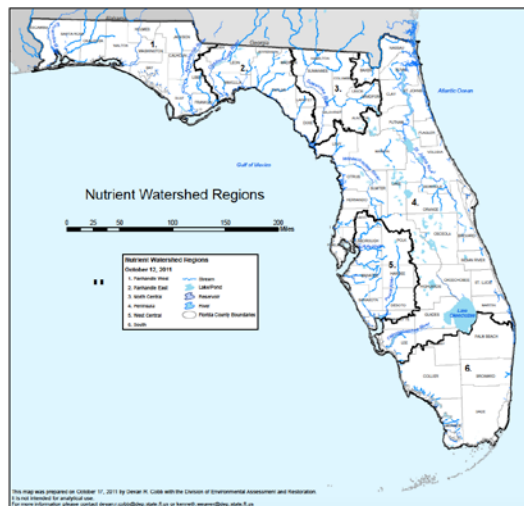


Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.

Base File Data: Definitions

The long-term data summary will include the following parameters listed with a definition after each one:

- **County:** Name of county in which the stream resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **Latitude and Longitude:** Coordinates identifying the exact location of station 1 for each system.
- **Water Body Type:** Four different types of systems; lakes, estuaries, streams and springs.
- **Period of Record (year):** Years a stream has been in the LAKEWATCH program.

County	Highlands
Name	Catfish Creek-3
Latitude	27.2636
Longitude	-81.388
Water Body Type	Stream
Period of Record (year)	1998 to 2016
Nutrient Watershed Region	Peninsular

LAKEWATCH Report for Catfish Creek-3 in Highlands County Using Data Downloaded 10/17/2016

The nutrient thresholds for streams set forth by FDEP are listed in table below along with the map showing zones.

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold ¹	Total Nitrogen Nutrient Threshold ¹
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µ/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.

¹These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year periods.

Long-Term Data Summary 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 (µg/L):** The nutrient most often limiting growth of plant/algae in Florida's fresh and saltwater environments.
- **Total Nitrogen (µg/L):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected (µg/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 (how far one can see into the water) and are listed with English and metric units.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance (µS/cm@25°C):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolve materials in water.

Long-Term Data Summary Streams: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	27 - 124	57 (19)
Total Nitrogen (µg/L)	914 - 1531	1204 (19)
Chlorophyll- uncorrected (µg/L)	10.4 - 51.6	24.5 (19)
Secchi (ft)	1.5 - 3.6	3.1 (19)
Secchi (m)	0.5 - 1.1	0.9 (19)
Color (Pt-Co Units)	39 - 96	63 (16)
Specific Conductance (µS/cm@25 C)	91 - 126	105 (10)

LAKEWATCH Report for Catfish Creek-3 in Highlands County Using Data Downloaded 10/17/2016

Trend Analyses Streams

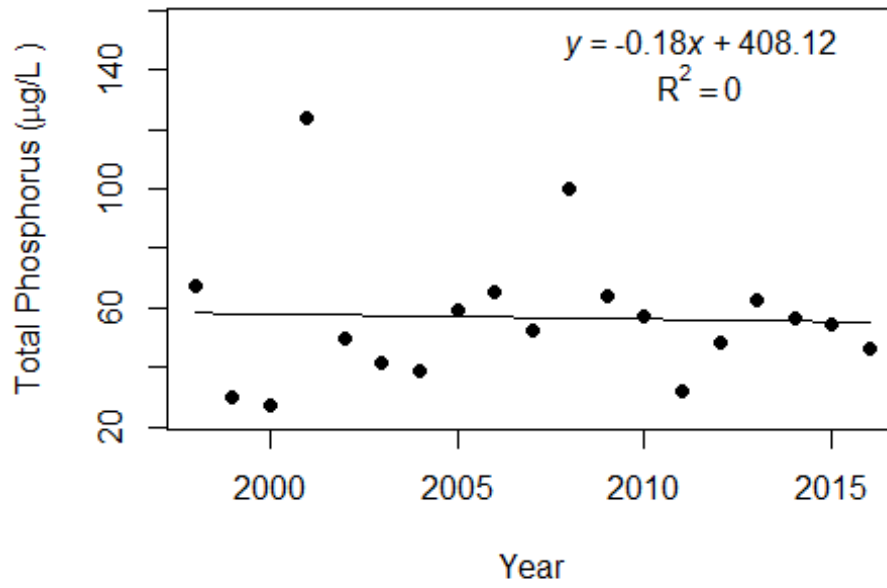
The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over time. These analyses define statistics based on the best fit line drawn through the data after plotting them with year on the horizontal line (x-axis) and the data value on the vertical line (y-axis). Figure 2 shows example plots with linear regression statistic of lakes that show significant total phosphorus increases, decreases and no change over time. The statistics that are listed include the following:

- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
- **Intercept (a):** This is the value on the y-axis that the fitted line would have cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R²):** This value is an indication of how much variance above and below the fitted line there is in the data. This value ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

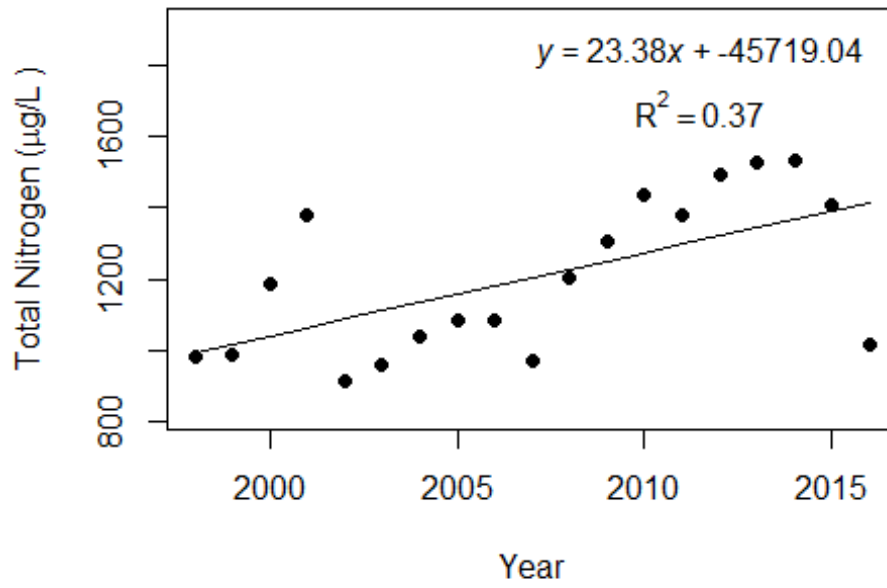
Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)	19	19	19	19
Intercept (a)	408	-45719	378	82
Slope (b)	-0.18	23.38	-0.18	-0.04
Coefficient of Determination (R ²)	0.00	0.37	0.01	0.24
Probability of Significance (p)	0.86	0.01	0.72	0.03
Potential Trend	No Trend	Increasing	No Trend	Decreasing

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Catfish Creek-3 in Highlands County. If there are no plots then there is less than five years of data, which is not enough for the analysis.

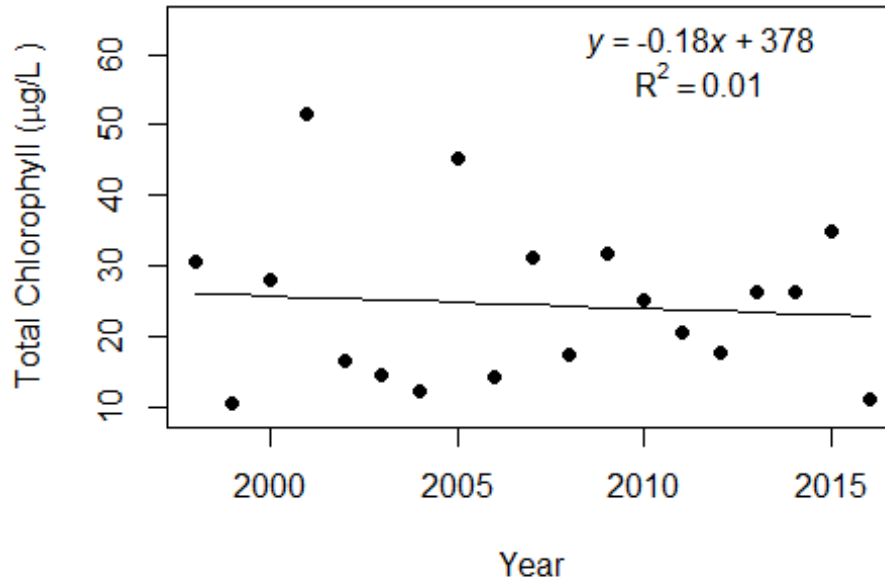
Catfish Creek-3 (Highlands)



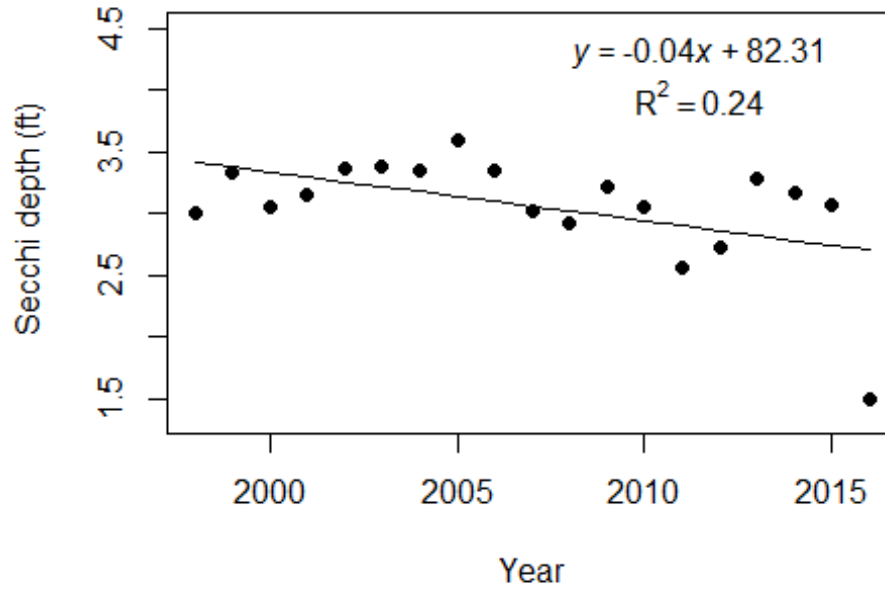
Catfish Creek-3 (Highlands)



Catfish Creek-3 (Highlands)



Catfish Creek-3 (Highlands)



LAKEWATCH Report for Kissimmee River Lorida-1 in Highlands County Using Data Downloaded 10/17/2016

Introduction Streams

For many 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 of the remaining waters in Florida have numeric nutrient standards (see for Florida Department of Environmental Regulation Nutrient Criteria’s for: Streams, spring vents: <http://www.dep.state.fl.us/water/wqssp/nutrients/index.htm>).



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

Base File Data: Definitions

The long-term data summary will include the following parameters listed with a definition after each one:

- **County:** Name of county in which the stream resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **Latitude and Longitude:** Coordinates identifying the exact location of station 1 for each system.
- **Water Body Type:** Four different types of systems; lakes, estuaries, streams and springs.
- **Period of Record (year):** Years a stream has been in the LAKEWATCH program.

County	Highlands
Name	Kissimmee River Lorida-1
Latitude	27.3627
Longitude	-81.0441
Water Body Type	Stream
Period of Record (year)	2013 to 2016
Nutrient Watershed Region	Peninsular

LAKEWATCH Report for Kissimmee River Lorida-1 in Highlands County Using Data Downloaded 10/17/2016

The nutrient thresholds for streams set forth by FDEP are listed in table below along with the map showing zones.

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold ¹	Total Nitrogen Nutrient Threshold ¹
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µ/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.

¹These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year periods.

Long-Term Data Summary 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 (µg/L):** The nutrient most often limiting growth of plant/algae in Florida's fresh and saltwater environments.
- **Total Nitrogen (µg/L):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected (µg/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 (how far one can see into the water) and are listed with English and metric units.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance (µS/cm@25°C):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolve materials in water.

Long-Term Data Summary Streams: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	50 - 67	61 (4)
Total Nitrogen (µg/L)	1134 - 1334	1263 (4)
Chlorophyll- uncorrected (µg/L)	12.5 - 20.3	16.6 (4)
Secchi (ft)	2.6 - 3.0	2.8 (4)
Secchi (m)	0.8 - 0.9	0.9 (4)
Color (Pt-Co Units)	98 - 108	104 (4)
Specific Conductance (µS/cm@25 C)	124 - 161	144 (4)

LAKEWATCH Report for Kissimmee River Lorida-1 in Highlands County Using Data Downloaded 10/17/2016

Trend Analyses Streams

The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over time. These analyses define statistics based on the best fit line drawn through the data after plotting them with year on the horizontal line (x-axis) and the data value on the vertical line (y-axis). Figure 2 shows example plots with linear regression statistic of lakes that show significant total phosphorus increases, decreases and no change over time. The statistics that are listed include the following:

- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
- **Intercept (a):** This is the value on the y-axis that the fitted line would have cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R²):** This value is an indication of how much variance above and below the fitted line there is in the data. This value ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)				
Intercept (a)				
Slope (b)				
Coefficient of Determination (R ²)				
Probability of Significance (p)				
Potential Trend				

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Kissimmee River Lorida-1 in Highlands County. If there are no plots then there is less than five years of data, which is not enough for the analysis.

LAKEWATCH Report for Kissimmee River Lorida-2 in Highlands County Using Data Downloaded 10/17/2016

Introduction Streams

For many 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 of the remaining waters in Florida have numeric nutrient standards (see for Florida Department of Environmental Regulation Nutrient Criteria’s for: Streams, spring vents: <http://www.dep.state.fl.us/water/wqssp/nutrients/index.htm>).

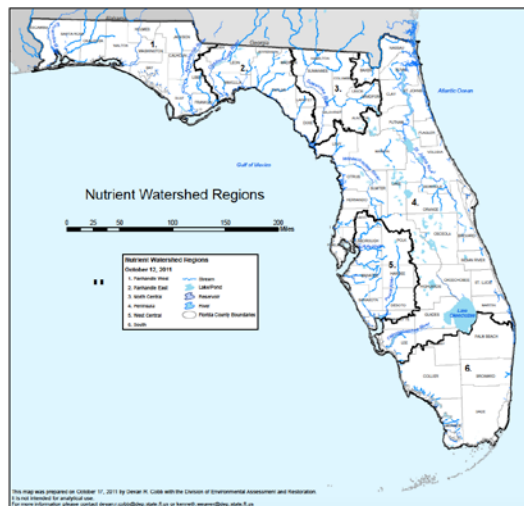


Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.

Base File Data: Definitions

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- **Name:** Stream name that LAKEWATCH uses for the system.
- **Latitude and Longitude:** Coordinates identifying the exact location of station 1 for each system.
- **Water Body Type:** Four different types of systems; lakes, estuaries, streams and springs.
- **Period of Record (year):** Years a stream has been in the LAKEWATCH program.

County	Highlands
Name	Kissimmee River Lorida-2
Latitude	27.3617
Longitude	-81.0376
Water Body Type	Stream
Period of Record (year)	2013 to 2013
Nutrient Watershed Region	Peninsular

LAKEWATCH Report for Kissimmee River Lorida-2 in Highlands County Using Data Downloaded 10/17/2016

The nutrient thresholds for streams set forth by FDEP are listed in table below along with the map showing zones.

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold ¹	Total Nitrogen Nutrient Threshold ¹
Panhandle West	60 µg/L	670 µg/L
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Long-Term Data Summary Streams: Definitions

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- **Specific Conductance (µS/cm@25°C):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolve materials in water.

Long-Term Data Summary Streams: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	124 - 124	124 (1)
Total Nitrogen (µg/L)	1396 - 1396	1396 (1)
Chlorophyll- uncorrected (µg/L)	18.8 - 18.8	18.8 (1)
Secchi (ft)	2.8 - 2.8	2.8 (1)
Secchi (m)	0.9 - 0.9	0.9 (1)
Color (Pt-Co Units)	103 - 103	103 (1)
Specific Conductance (µS/cm@25 C)	143 - 143	143 (1)

LAKEWATCH Report for Kissimmee River Lorida-2 in Highlands County Using Data Downloaded 10/17/2016

Trend Analyses Streams

The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over time. These analyses define statistics based on the best fit line drawn through the data after plotting them with year on the horizontal line (x-axis) and the data value on the vertical line (y-axis). Figure 2 shows example plots with linear regression statistic of lakes that show significant total phosphorus increases, decreases and no change over time. The statistics that are listed include the following:

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- **Coefficient of determination (R²):** This value is an indication of how much variance above and below the fitted line there is in the data. This value ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)				
Intercept (a)				
Slope (b)				
Coefficient of Determination (R ²)				
Probability of Significance (p)				
Potential Trend				

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Kissimmee River Lorida-2 in Highlands County. If there are no plots then there is less than five years of data, which is not enough for the analysis.

LAKEWATCH Report for Kissimmee River Lorida-3 in Highlands County Using Data Downloaded 10/17/2016

Introduction Streams

For many 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 of the remaining waters in Florida have numeric nutrient standards (see for Florida Department of Environmental Regulation Nutrient Criteria's for: Streams, spring vents: <http://www.dep.state.fl.us/water/wqssp/nutrients/index.htm>).



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

Base File Data: Definitions

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

County	Highlands
Name	Kissimmee River Lorida-3
Latitude	27.3589
Longitude	-81.0347
Water Body Type	Stream
Period of Record (year)	2013 to 2016
Nutrient Watershed Region	Peninsular

LAKEWATCH Report for Kissimmee River Lorida-3 in Highlands County Using Data Downloaded 10/17/2016

The nutrient thresholds for streams set forth by FDEP are listed in table below along with the map showing zones.

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold ¹	Total Nitrogen Nutrient Threshold ¹
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µ/L	1870 µg/L
Peninsular	120 µg/L	1540 µg/L
West Central	490 µg/L	1650 µg/L
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Long-Term Data Summary 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 (µg/L):** The nutrient most often limiting growth of plant/algae in Florida's fresh and saltwater environments.
- **Total Nitrogen (µg/L):** Another nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10.
- **Chlorophyll-uncorrected (µg/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 (how far one can see into the water) and are listed with English and metric units.
- **Color (Pt-Co Units):** LAKEWATCH measures true color, which is the color of the water after particles have been filter out.
- **Specific Conductance (µS/cm@25°C):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolve materials in water.

Long-Term Data Summary Streams: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	87 - 115	97 (4)
Total Nitrogen (µg/L)	1140 - 1380	1252 (4)
Chlorophyll- uncorrected (µg/L)	9.0 - 18.9	14.5 (4)
Secchi (ft)	2.8 - 3.3	3.1 (4)
Secchi (m)	0.9 - 1.0	0.9 (4)
Color (Pt-Co Units)	103 - 110	107 (4)
Specific Conductance (µS/cm@25 C)	142 - 156	148 (4)

LAKEWATCH Report for Kissimmee River Lorida-3 in Highlands County Using Data Downloaded 10/17/2016

Trend Analyses Streams

The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over time. These analyses define statistics based on the best fit line drawn through the data after plotting them with year on the horizontal line (x-axis) and the data value on the vertical line (y-axis). Figure 2 shows example plots with linear regression statistic of lakes that show significant total phosphorus increases, decreases and no change over time. The statistics that are listed include the following:

- **Number of years (n):** This is simply the number of years of data that were used to calculate annual means.
- **Intercept (a):** This is the value on the y-axis that the fitted line would have cross if the x-axis where zero.
- **Slope (b):** This is the rate at which the fitted line increases (positive number) or decreases (negative number).
- **Coefficient of determination (R²):** This value is an indication of how much variance above and below the fitted line there is in the data. This value ranges from 0 to 1. A high value means a tight fit and a low value means a loose fit.
- **Probability of Significance (p):** For most statistical analyses a p-value of less than 0.05 means the statistic is significant and analyses with p-values greater than 0.05 are not significant.

Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)				
Intercept (a)				
Slope (b)				
Coefficient of Determination (R ²)				
Probability of Significance (p)				
Potential Trend				

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Kissimmee River Lorida-3 in Highlands County. If there are no plots then there is less than five years of data, which is not enough for the analysis.

LAKEWATCH Report for Kissimmee River Lorida-4 in Highlands County Using Data Downloaded 10/17/2016

Introduction Streams

For many 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 of the remaining waters in Florida have numeric nutrient standards (see for Florida Department of Environmental Regulation Nutrient Criteria's for: Streams, spring vents: <http://www.dep.state.fl.us/water/wqssp/nutrients/index.htm>).

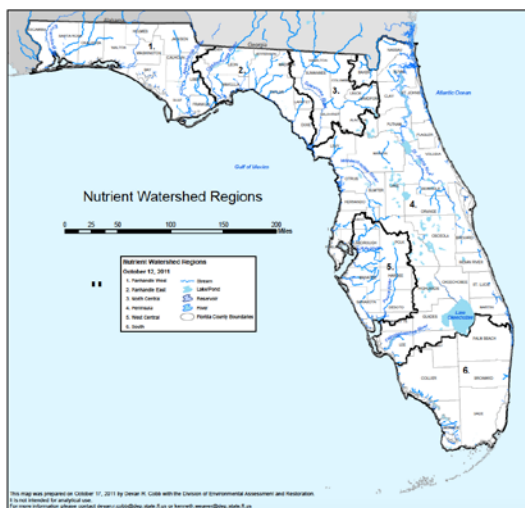


Figure 1. Map showing nutrient thresholds areas for streams set forth by FDEP.

Base File Data: Definitions

The long-term data summary will include the following parameters listed with a definition after each one:

- **County:** Name of county in which the stream resides.
- **Name:** Stream name that LAKEWATCH uses for the system.
- **Latitude and Longitude:** Coordinates identifying the exact location of station 1 for each system.
- **Water Body Type:** Four different types of systems; lakes, estuaries, streams and springs.
- **Period of Record (year):** Years a stream has been in the LAKEWATCH program.

County	Highlands
Name	Kissimmee River Lorida-4
Latitude	27.3542
Longitude	-81.0331
Water Body Type	Stream
Period of Record (year)	2013 to 2016
Nutrient Watershed Region	Peninsular

LAKEWATCH Report for Kissimmee River Lorida-4 in Highlands County Using Data Downloaded 10/17/2016

The nutrient thresholds for streams set forth by FDEP are listed in table below along with the map showing zones.

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold ¹	Total Nitrogen Nutrient Threshold ¹
Panhandle West	60 µg/L	670 µg/L
Panhandle East	180 µg/L	1030 µg/L
North Central	300 µ/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.

¹These values are annual geometric mean concentrations not to be exceeded more than once in any three calendar year periods.

Long-Term Data Summary 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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- **Specific Conductance (µS/cm@25°C):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolve materials in water.

Long-Term Data Summary Streams: Data

Parameter	Minimum and Maximum Annual Means	Mean of Annual Means (Sampling years)
Total Phosphorus (µg/L)	148 - 215	184 (4)
Total Nitrogen (µg/L)	1180 - 1318	1247 (4)
Chlorophyll- uncorrected (µg/L)	1.0 - 9.2	5.1 (4)
Secchi (ft)	2.9 - 4.0	3.3 (4)
Secchi (m)	0.9 - 1.2	1.0 (4)
Color (Pt-Co Units)	124 - 142	132 (4)
Specific Conductance (µS/cm@25 C)	134 - 270	202 (4)

LAKEWATCH Report for Kissimmee River Lorida-4 in Highlands County Using Data Downloaded 10/17/2016

Trend Analyses Streams

The following data are for linear regression statistics derived by plotting annual average total phosphorus, total nitrogen, chlorophyll, and Secchi data by year of data collection. Linear regression analysis is a common statistical approach used to determine if significant trends are occurring over time. These analyses define statistics based on the best fit line drawn through the data after plotting them with year on the horizontal line (x-axis) and the data value on the vertical line (y-axis). Figure 2 shows example plots with linear regression statistic of lakes that show significant total phosphorus increases, decreases and no change over time. The statistics that are listed include the following:

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Statistic	Total Phosphorus	Total Nitrogen	Chlorophyll	Secchi
Number of Years (n)				
Intercept (a)				
Slope (b)				
Coefficient of Determination (R ²)				
Probability of Significance (p)				
Potential Trend				

The following graphs on the next two pages are trend analyses examining regression between year and annual means of total phosphorus, total nitrogen, chlorophyll, and Secchi depth for Kissimmee River Lorida-4 in Highlands County. If there are no plots then there is less than five years of data, which is not enough for the analysis.