

**LAKEWATCH Report for Money Bayou-1 in Gulf County  
Estuary and Estuary Segment: St. Joseph Bay St. Joseph Bay  
Using Data Downloaded 12/9/2022**

**Introduction for Estuaries**

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 averages and ranges and the final part are trend plots for nutrients, chlorophyll, and Secchi depth. **Plots were only made for systems with five or more years of data.**

The near shore Florida coastline is separated into estuary and estuary segments within the estuary. Deeper coastal waters are separated into coastal nutrient regions and coastal nutrient segments within the regions. Numeric nutrient criteria are established for all estuary segments, including criteria for total nitrogen, total phosphorus, and chlorophyll *a*. For open ocean coastal waters, numeric criteria are established for chlorophyll *a*, that is derived from satellite remote sensing techniques. For those locations without defined segments there are narrative nutrient criteria (e.g., Florida Keys Halo Zone).

The maps defining individual estuaries and coastal segments can be found at the following link:  
<https://www.flrules.org/Gateway/reference.asp?No=Ref-05420>

The individual nutrient criteria can be found at the following link:  
<https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.532>

**Base File Data for Estuaries: Definitions:**

- **County:** Name of county adjacent to the system.
- **Name:** System name that LAKEWATCH uses for the station.
- **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 1. Base File Data.**

County	Gulf
Name	Money Bayou-1
GNIS Number	287060
Water Body Type	Estuary
Period of Record (years, range)	7 (2016 to 2022)
Latitude	29.6946
Longitude	-85.2818

**Long-Term Data for Estuaries: 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):

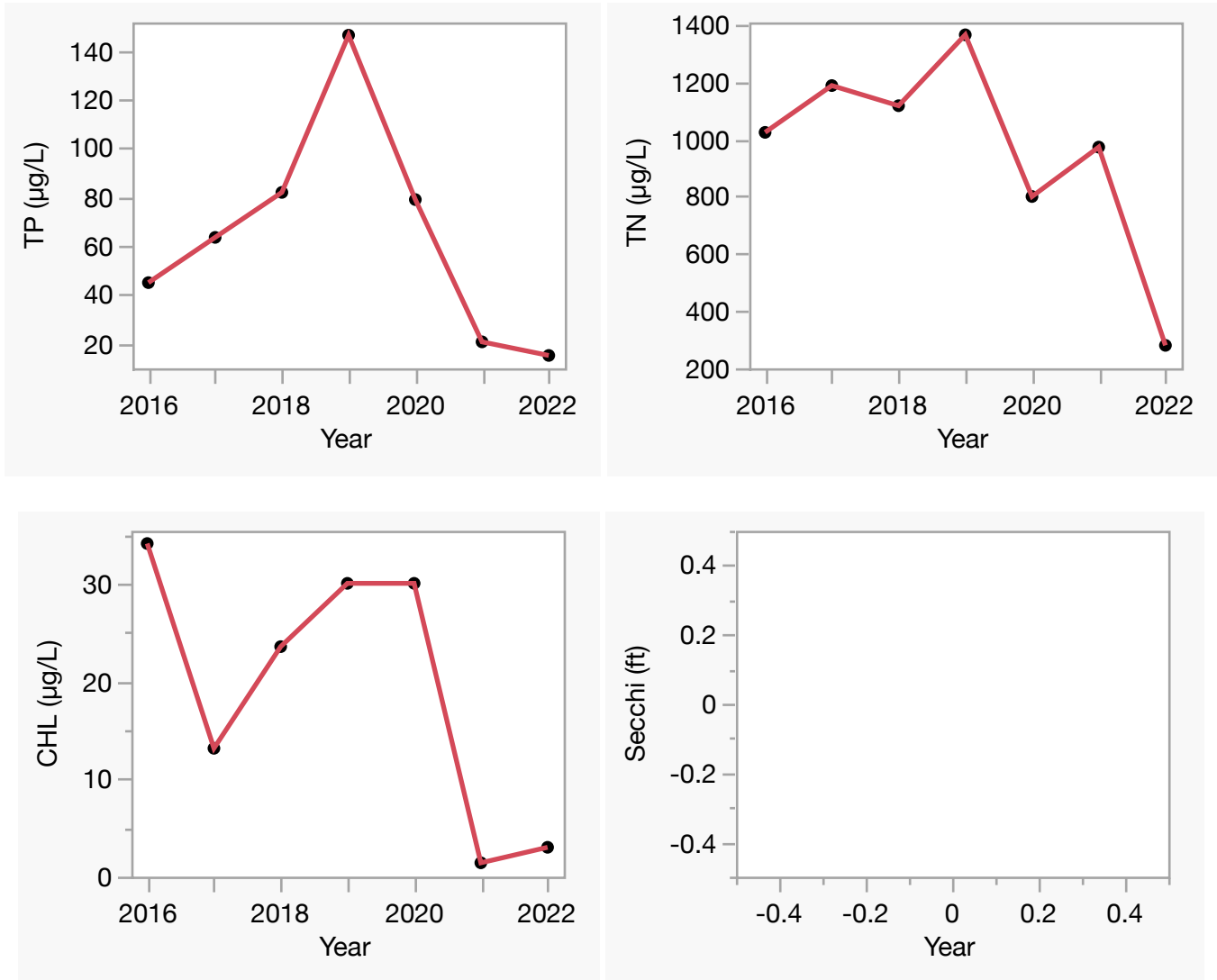
- **Total Phosphorus (µg/L):** Nutrient most often limiting growth of plant/algae.

- **Total Nitrogen ( $\mu\text{g/L}$ ):** Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algae.
- **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 filtered out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ), Salinity (ppt):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 2. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance/salinity (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	15 - 146	50 (7)
Total Nitrogen ( $\mu\text{g/L}$ )	280 - 1365	879 (7)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	1 - 34	12 (7)
Secchi (ft)	-	(0)
Secchi (m)	-	(0)
Color (Pt-Co Units)	22 - 526	99 (7)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	225 - 22407	6095 (7)
Salinity (ppt)	1 - 14	6 (6)

**Figure 2. Money Bayou-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,  $R^2 = 0.09$ ,  $p = 0.50$ ), total nitrogen (TN No Trend,  $R^2 = 0.43$ ,  $p = 0.11$ ), chlorophyll (CHL No Trend,  $R^2 = 0.40$ ,  $p = 0.13$ ) and Secchi depth (Secchi,  $R^2 = , p = )$ .**



**LAKEWATCH Report for Money Bayou-2 in Gulf County  
Estuary and Estuary Segment: St. Joseph Bay St. Joseph Bay  
Using Data Downloaded 12/9/2022**

**Introduction for Estuaries**

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 averages and ranges and the final part are trend plots for nutrients, chlorophyll, and Secchi depth. **Plots were only made for systems with five or more years of data.**

The near shore Florida coastline is separated into estuary and estuary segments within the estuary. Deeper coastal waters are separated into coastal nutrient regions and coastal nutrient segments within the regions. Numeric nutrient criteria are established for all estuary segments, including criteria for total nitrogen, total phosphorus, and chlorophyll *a*. For open ocean coastal waters, numeric criteria are established for chlorophyll *a*, that is derived from satellite remote sensing techniques. For those locations without defined segments there are narrative nutrient criteria (e.g., Florida Keys Halo Zone).

The maps defining individual estuaries and coastal segments can be found at the following link: <https://www.flrules.org/Gateway/reference.asp?No=Ref-05420>

The individual nutrient criteria can be found at the following link: <https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.532>

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- **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 1. Base File Data.**

County	Gulf
Name	Money Bayou-2
GNIS Number	287060
Water Body Type	Estuary
Period of Record (years, range)	2 (2020 to 2021)
Latitude	29.6975
Longitude	-85.2804

## Long-Term Data for Estuaries: 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 ( $\mu\text{g/L}$ ):** Nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algae.
- **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 filtered out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ), Salinity (ppt):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 2. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance/salinity (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	60 - 68	64 (2)
Total Nitrogen ( $\mu\text{g/L}$ )	940 - 1072	1004 (2)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	5 - 30	12 (2)
Secchi (ft)	-	(0)
Secchi (m)	-	(0)
Color (Pt-Co Units)	79 - 255	142 (2)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	355 - 11986	2063 (2)
Salinity (ppt)	7 - 7	7 (1)

**LAKEWATCH Report for Simmons Bayou-1 in Gulf County  
Estuary and Estuary Segment: St. Joseph Bay St. Joseph Bay  
Using Data Downloaded 12/9/2022**

**Introduction for Estuaries**

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 averages and ranges and the final part are trend plots for nutrients, chlorophyll, and Secchi depth. **Plots were only made for systems with five or more years of data.**

The near shore Florida coastline is separated into estuary and estuary segments within the estuary. Deeper coastal waters are separated into coastal nutrient regions and coastal nutrient segments within the regions. Numeric nutrient criteria are established for all estuary segments, including criteria for total nitrogen, total phosphorus, and chlorophyll *a*. For open ocean coastal waters, numeric criteria are established for chlorophyll *a*, that is derived from satellite remote sensing techniques. For those locations without defined segments there are narrative nutrient criteria (e.g., Florida Keys Halo Zone).

The maps defining individual estuaries and coastal segments can be found at the following link:  
<https://www.flrules.org/Gateway/reference.asp?No=Ref-05420>

The individual nutrient criteria can be found at the following link:  
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**Base File Data for Estuaries: Definitions:**

- **County:** Name of county adjacent to the system.
- **Name:** System name that LAKEWATCH uses for the station.
- **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 1. Base File Data.**

County	Gulf
Name	Simmons Bayou-1
GNIS Number	
Water Body Type	Estuary
Period of Record (years, range)	7 (2016 to 2022)
Latitude	29.7538
Longitude	-85.3028

**Long-Term Data for Estuaries: Definitions**

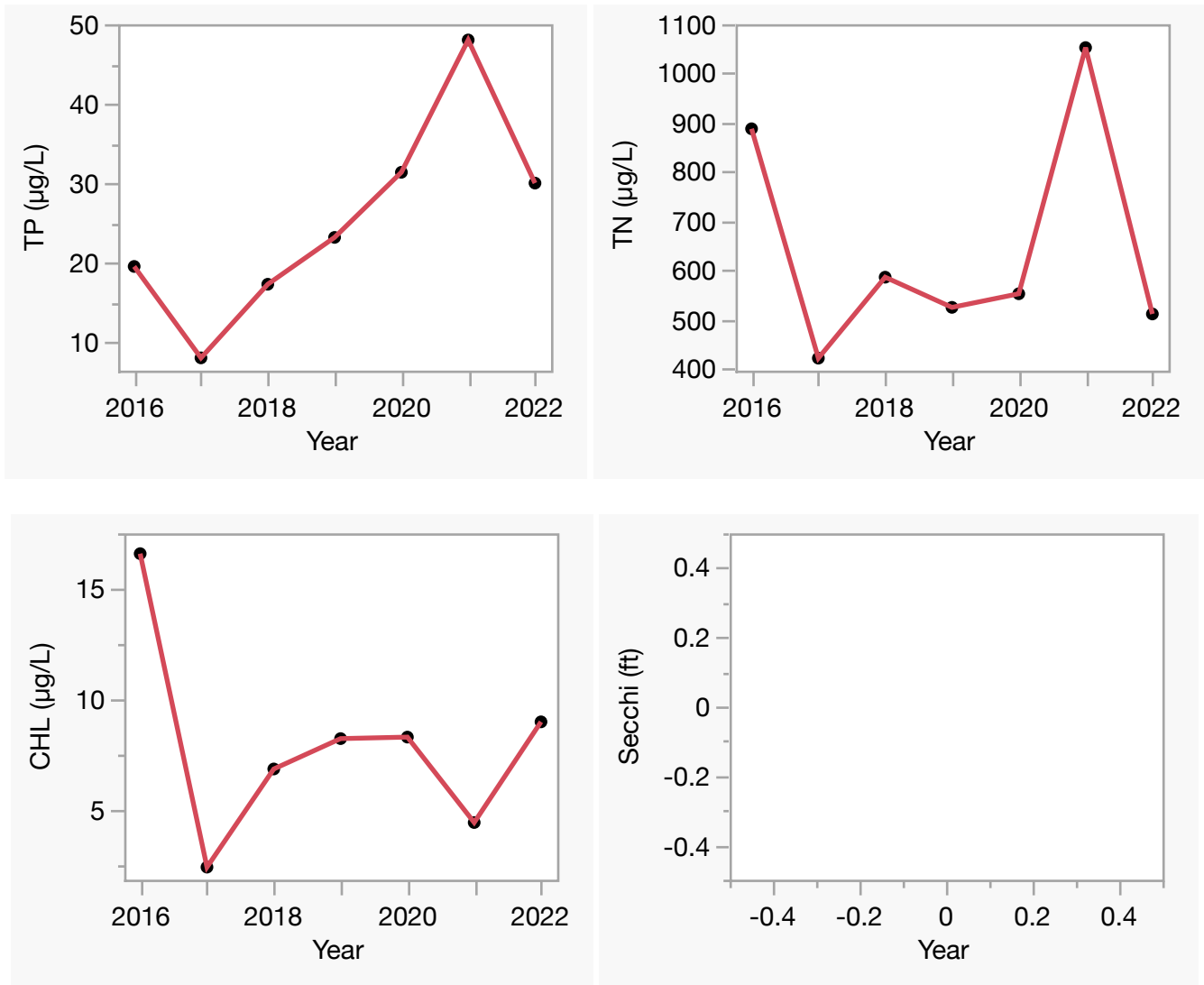
The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus ( $\mu\text{g/L}$ ):** Nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algae.
- **Secchi (ft), Secchi (m):** Secchi measurements are estimates of water clarity.
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- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ), Salinity (ppt):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 2. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance/salinity (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	8 - 48	22 (7)
Total Nitrogen ( $\mu\text{g/L}$ )	420 - 1052	616 (7)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	2 - 17	7 (7)
Secchi (ft)	-	(0)
Secchi (m)	-	(0)
Color (Pt-Co Units)	10 - 153	38 (7)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	3346 - 16000	9154 (7)
Salinity (ppt)	1 - 10	4 (7)

**Figure 2. Simmons Bayou-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 Increasing,  $R^2 = 0.58$ ,  $p = 0.05$ ), total nitrogen (TN No Trend,  $R^2 = 0.00$ ,  $p = 0.94$ ), chlorophyll (CHL No Trend,  $R^2 = 0.09$ ,  $p = 0.51$ ) and Secchi depth (Secchi ,  $R^2 = , p =$ ).**





**LAKEWATCH Report for St. Joseph Bay-1 in Gulf County  
Estuary and Estuary Segment: St. Joseph Bay St. Joseph Bay  
Using Data Downloaded 12/9/2022**

**Introduction for Estuaries**

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The individual nutrient criteria can be found at the following link:  
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**Base File Data for Estuaries: 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 1. Base File Data.**

County	Gulf
Name	St. Joseph Bay-1
GNIS Number	308428
Water Body Type	Estuary
Period of Record (years, range)	13 (2001 to 2022)
Latitude	29.6932
Longitude	-85.3205

**Long-Term Data for Estuaries: Definitions**

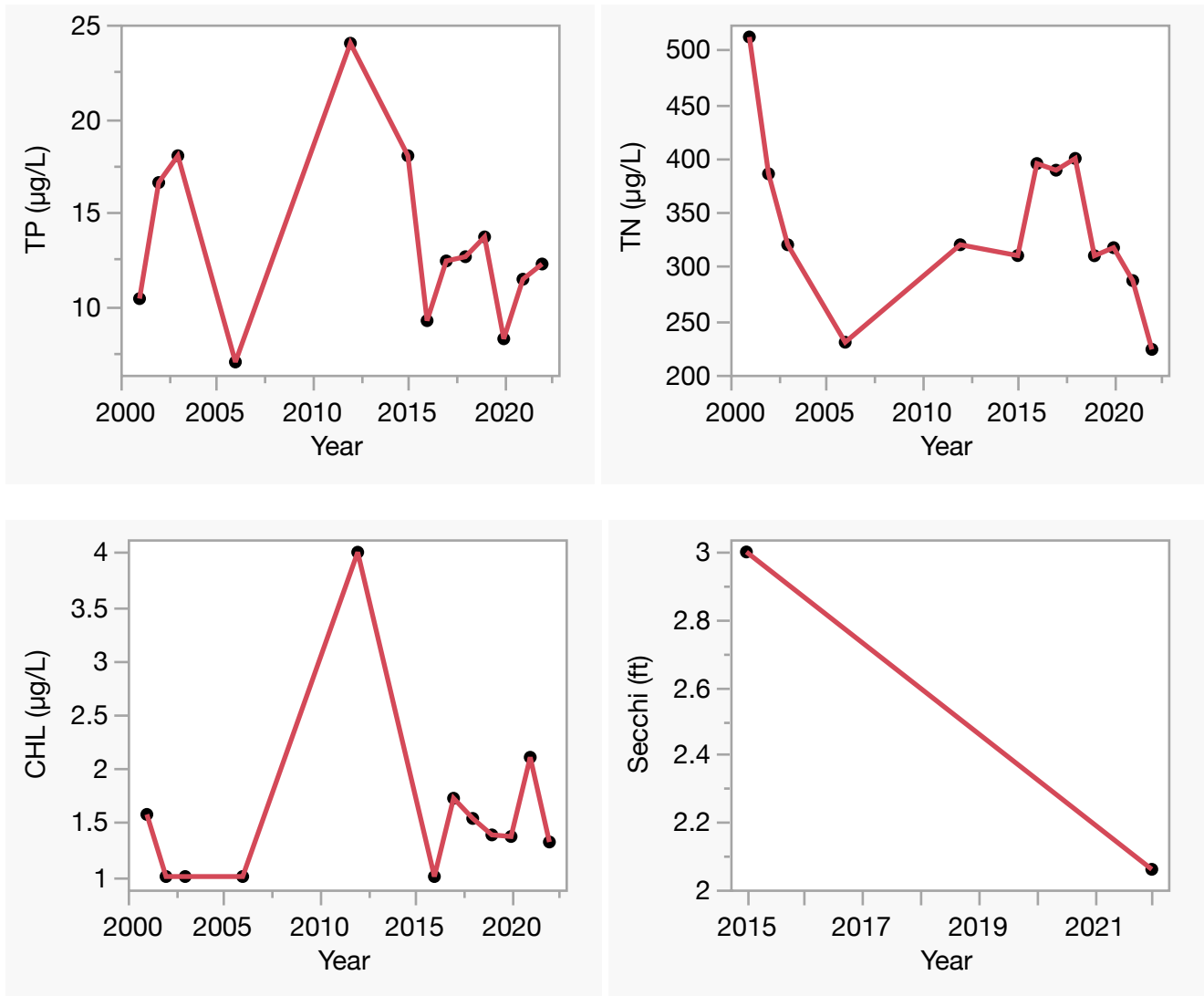
The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

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**Table 2. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance/salinity (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	7 - 24	13 (13)
Total Nitrogen ( $\mu\text{g/L}$ )	223 - 512	330 (13)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	1 - 4	1 (12)
Secchi (ft)	2.1 - 3.0	2.5 (2)
Secchi (m)	0.6 - 0.9	0.8 (2)
Color (Pt-Co Units)	5 - 14	9 (11)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	31401 - 49000	41008 (11)
Salinity (ppt)	19 - 31	25 (11)

**Figure 2. St. Joseph Bay-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,  $R^2 = 0.04$ ,  $p = 0.53$ ), total nitrogen (TN No Trend,  $R^2 = 0.15$ ,  $p = 0.19$ ), chlorophyll (CHL No Trend,  $R^2 = 0.03$ ,  $p = 0.62$ ) and Secchi depth (Secchi ,  $R^2 = 1.00$ ,  $p =$ ).**



**LAKEWATCH Report for St. Joseph Bay-2 in Gulf County  
Estuary and Estuary Segment: St. Joseph Bay St. Joseph Bay  
Using Data Downloaded 12/9/2022**

**Introduction for Estuaries**

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**Table 1. Base File Data.**

County	Gulf
Name	St. Joseph Bay-2
GNIS Number	308428
Water Body Type	Estuary
Period of Record (years, range)	22 (2001 to 2022)
Latitude	29.7190
Longitude	-85.3327

**Long-Term Data for Estuaries: Definitions**

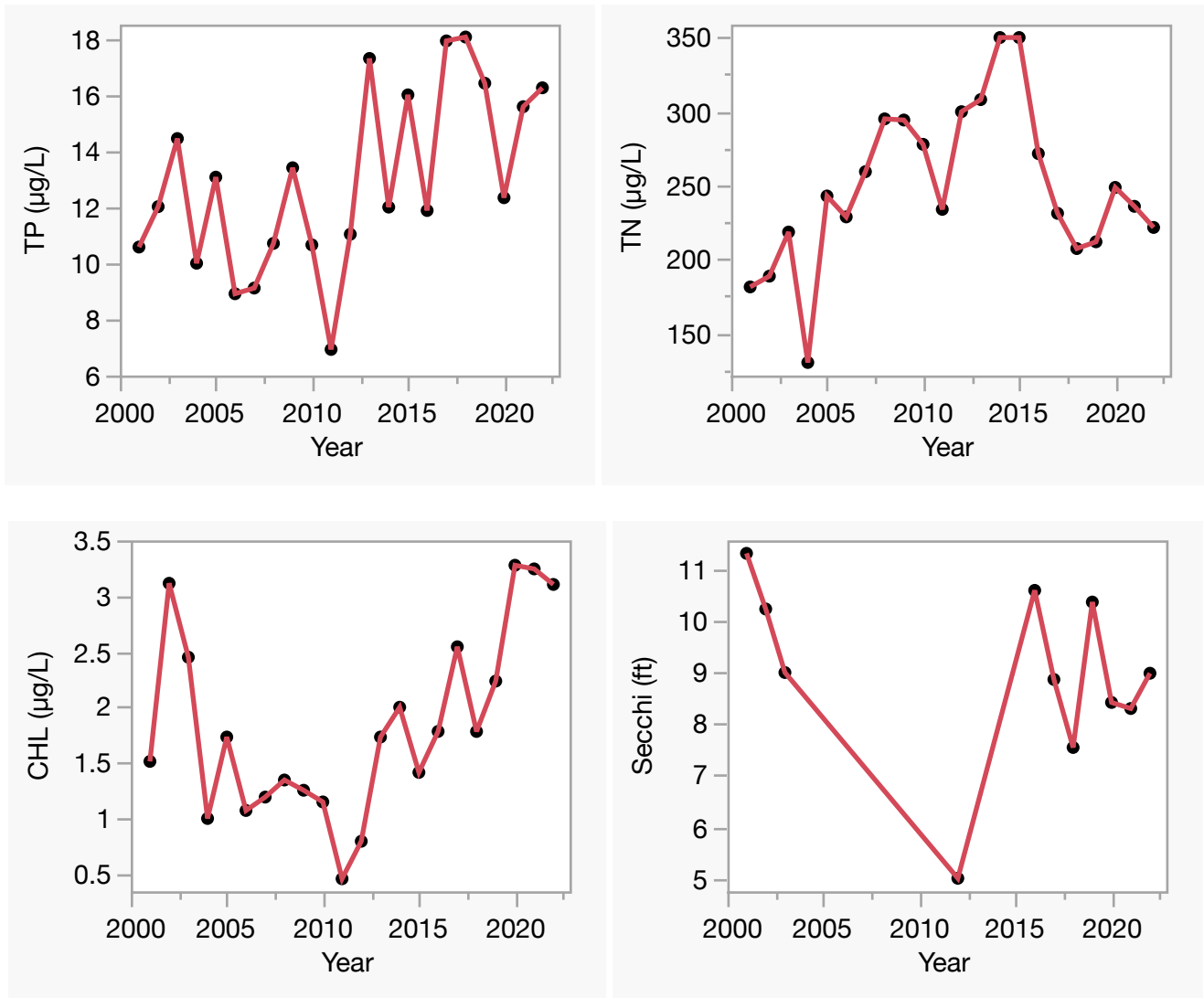
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**Table 2. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance/salinity (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	7 - 18	13 (22)
Total Nitrogen ( $\mu\text{g/L}$ )	130 - 350	243 (22)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	0 - 3	2 (22)
Secchi (ft)	5.0 - 11.3	8.8 (11)
Secchi (m)	1.5 - 3.4	2.7 (11)
Color (Pt-Co Units)	2 - 11	6 (20)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	25690 - 47497	38491 (20)
Salinity (ppt)	16 - 30	24 (20)

**Figure 2. St. Joseph Bay-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 Increasing,  $R^2 = 0.32$ ,  $p = 0.01$ ), total nitrogen (TN No Trend,  $R^2 = 0.07$ ,  $p = 0.22$ ), chlorophyll (CHL Increasing,  $R^2 = 0.18$ ,  $p = 0.05$ ) and Secchi depth (Secchi No Trend,  $R^2 = 0.09$ ,  $p = 0.37$ ).**



**LAKEWATCH Report for St. Joseph Bay-3 in Gulf County  
Estuary and Estuary Segment: St. Joseph Bay St. Joseph Bay  
Using Data Downloaded 12/9/2022**

**Introduction for Estuaries**

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The maps defining individual estuaries and coastal segments can be found at the following link:  
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The individual nutrient criteria can be found at the following link:  
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**Base File Data for Estuaries: Definitions:**

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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 1. Base File Data.**

County	Gulf
Name	St. Joseph Bay-3
GNIS Number	308428
Water Body Type	Estuary
Period of Record (years, range)	22 (2001 to 2022)
Latitude	29.6994
Longitude	-85.3632

**Long-Term Data for Estuaries: 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):

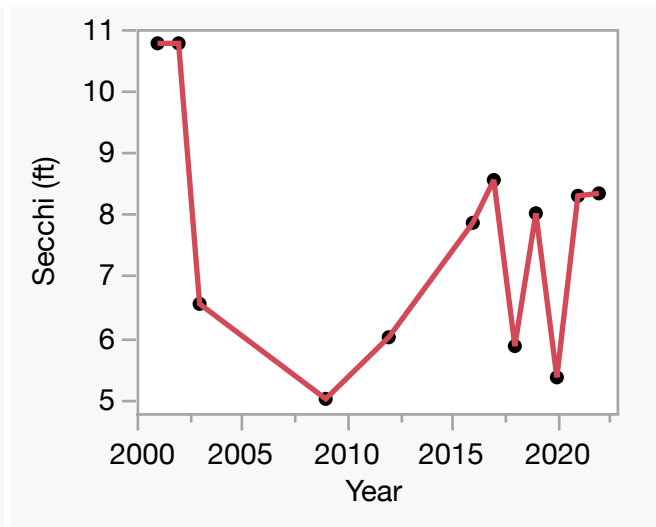
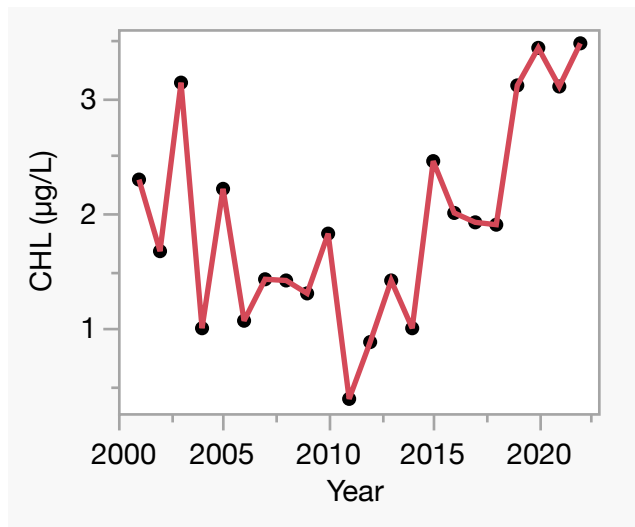
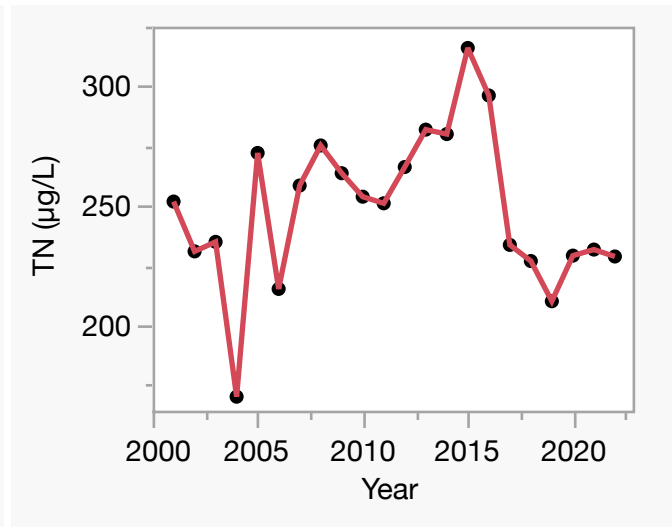
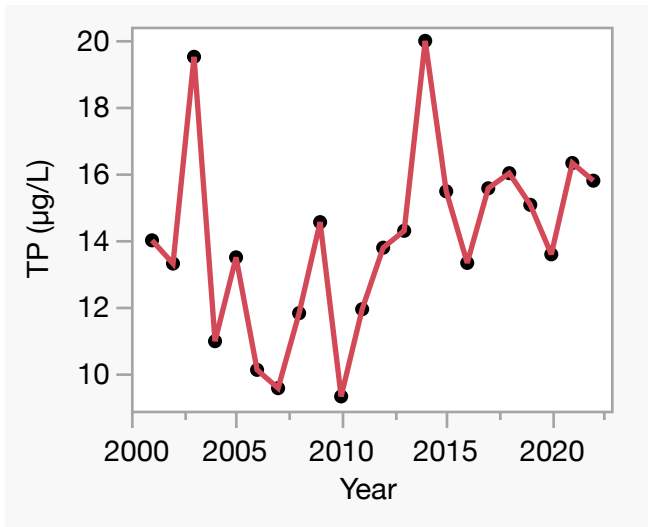
- **Total Phosphorus ( $\mu\text{g/L}$ ):** Nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algae.
- **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 filtered out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ), Salinity (ppt):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 2. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance/salinity (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	9 - 20	14 (22)
Total Nitrogen ( $\mu\text{g/L}$ )	170 - 316	247 (22)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	0 - 3	2 (22)
Secchi (ft)	5.0 - 10.8	7.4 (12)
Secchi (m)	1.5 - 3.3	2.3 (12)
Color (Pt-Co Units)	3 - 11	6 (20)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	24495 - 47497	40106 (20)
Salinity (ppt)	15 - 30	25 (20)



**Figure 2. St. Joseph Bay-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,  $R^2 = 0.11$ ,  $p = 0.13$ ), total nitrogen (TN No Trend,  $R^2 = 0.00$ ,  $p = 0.82$ ), chlorophyll (CHL Increasing,  $R^2 = 0.19$ ,  $p = 0.05$ ) and Secchi depth (Secchi No Trend,  $R^2 = 0.11$ ,  $p = 0.28$ ).**



**LAKEWATCH Report for St. Joseph Bay-4 in Gulf County  
Estuary and Estuary Segment: St. Joseph Bay St. Joseph Bay  
Using Data Downloaded 12/9/2022**

**Introduction for Estuaries**

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 averages and ranges and the final part are trend plots for nutrients, chlorophyll, and Secchi depth. **Plots were only made for systems with five or more years of data.**

The near shore Florida coastline is separated into estuary and estuary segments within the estuary. Deeper coastal waters are separated into coastal nutrient regions and coastal nutrient segments within the regions. Numeric nutrient criteria are established for all estuary segments, including criteria for total nitrogen, total phosphorus, and chlorophyll *a*. For open ocean coastal waters, numeric criteria are established for chlorophyll *a*, that is derived from satellite remote sensing techniques. For those locations without defined segments there are narrative nutrient criteria (e.g., Florida Keys Halo Zone).

The maps defining individual estuaries and coastal segments can be found at the following link:  
<https://www.flrules.org/Gateway/reference.asp?No=Ref-05420>

The individual nutrient criteria can be found at the following link:  
<https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.532>

**Base File Data for Estuaries: Definitions:**

- **County:** Name of county adjacent to the system.
- **Name:** System name that LAKEWATCH uses for the station.
- **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 1. Base File Data.**

County	Gulf
Name	St. Joseph Bay-4
GNIS Number	308428
Water Body Type	Estuary
Period of Record (years, range)	21 (2001 to 2022)
Latitude	29.7698
Longitude	-85.4021

**Long-Term Data for Estuaries: Definitions**

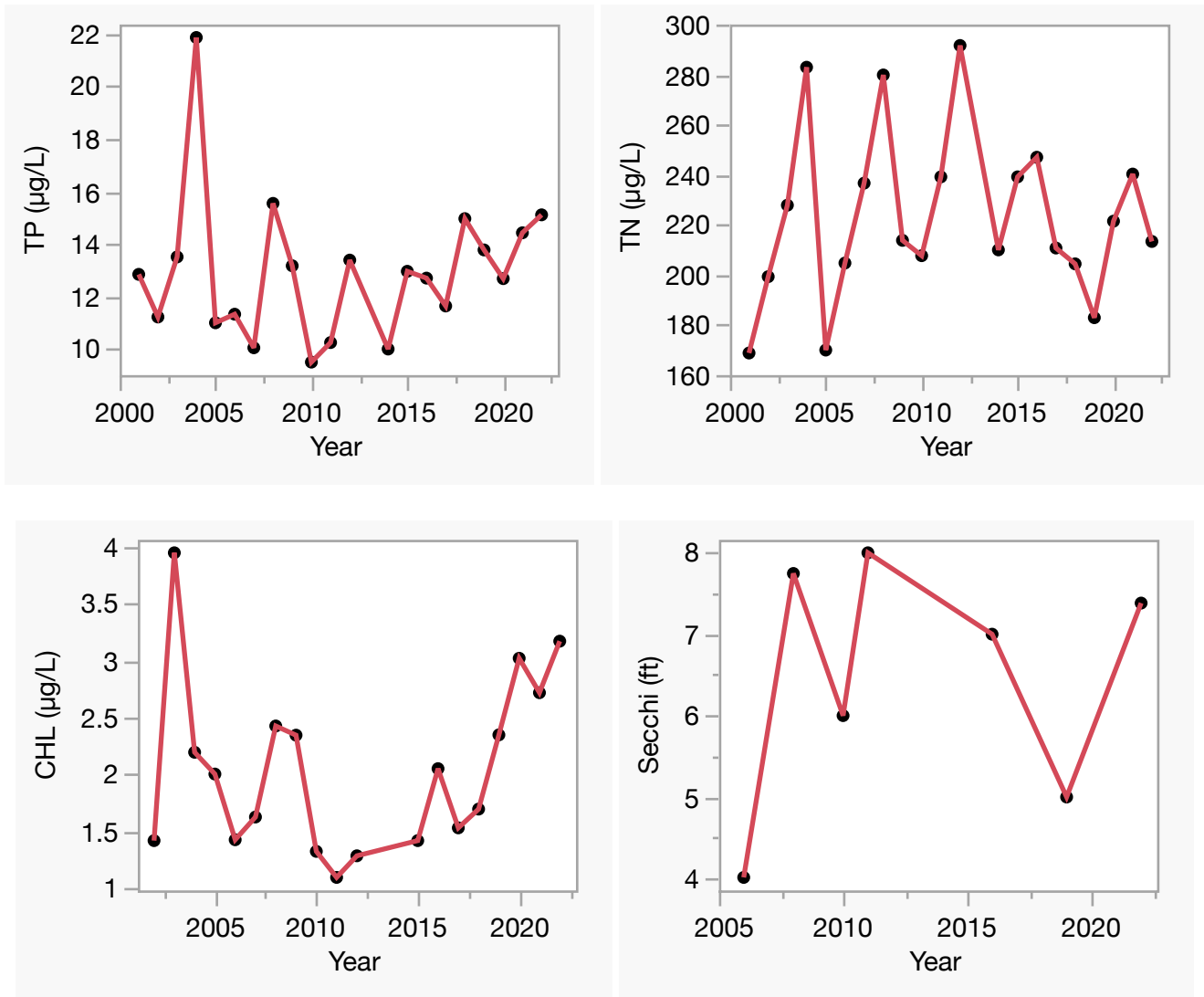
The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus ( $\mu\text{g/L}$ ):** Nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algae.
- **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 filtered out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ), Salinity (ppt):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 2. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance/salinity (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	10 - 22	13 (21)
Total Nitrogen ( $\mu\text{g/L}$ )	169 - 292	221 (21)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	1 - 4	2 (19)
Secchi (ft)	4.0 - 8.0	6.3 (7)
Secchi (m)	1.2 - 2.4	1.9 (7)
Color (Pt-Co Units)	2 - 10	5 (19)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	27982 - 48980	39556 (19)
Salinity (ppt)	17 - 31	25 (19)

**Figure 2. St. Joseph Bay-4 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,  $R^2 = 0.00$ ,  $p = 0.85$ ), total nitrogen (TN No Trend,  $R^2 = 0.00$ ,  $p = 0.81$ ), chlorophyll (CHL No Trend,  $R^2 = 0.03$ ,  $p = 0.50$ ) and Secchi depth (Secchi No Trend,  $R^2 = 0.04$ ,  $p = 0.68$ ).**



**LAKEWATCH Report for St. Joseph Bay-5 in Gulf County  
Estuary and Estuary Segment: St. Joseph Bay St. Joseph Bay  
Using Data Downloaded 12/9/2022**

**Introduction for Estuaries**

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 averages and ranges and the final part are trend plots for nutrients, chlorophyll, and Secchi depth. **Plots were only made for systems with five or more years of data.**

The near shore Florida coastline is separated into estuary and estuary segments within the estuary. Deeper coastal waters are separated into coastal nutrient regions and coastal nutrient segments within the regions. Numeric nutrient criteria are established for all estuary segments, including criteria for total nitrogen, total phosphorus, and chlorophyll *a*. For open ocean coastal waters, numeric criteria are established for chlorophyll *a*, that is derived from satellite remote sensing techniques. For those locations without defined segments there are narrative nutrient criteria (e.g., Florida Keys Halo Zone).

The maps defining individual estuaries and coastal segments can be found at the following link:  
<https://www.flrules.org/Gateway/reference.asp?No=Ref-05420>

The individual nutrient criteria can be found at the following link:  
<https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.532>

**Base File Data for Estuaries: Definitions:**

- **County:** Name of county adjacent to the system.
- **Name:** System name that LAKEWATCH uses for the station.
- **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 1. Base File Data.**

County	Gulf
Name	St. Joseph Bay-5
GNIS Number	308428
Water Body Type	Estuary
Period of Record (years, range)	20 (2001 to 2022)
Latitude	29.7585
Longitude	-85.3844

**Long-Term Data for Estuaries: Definitions**

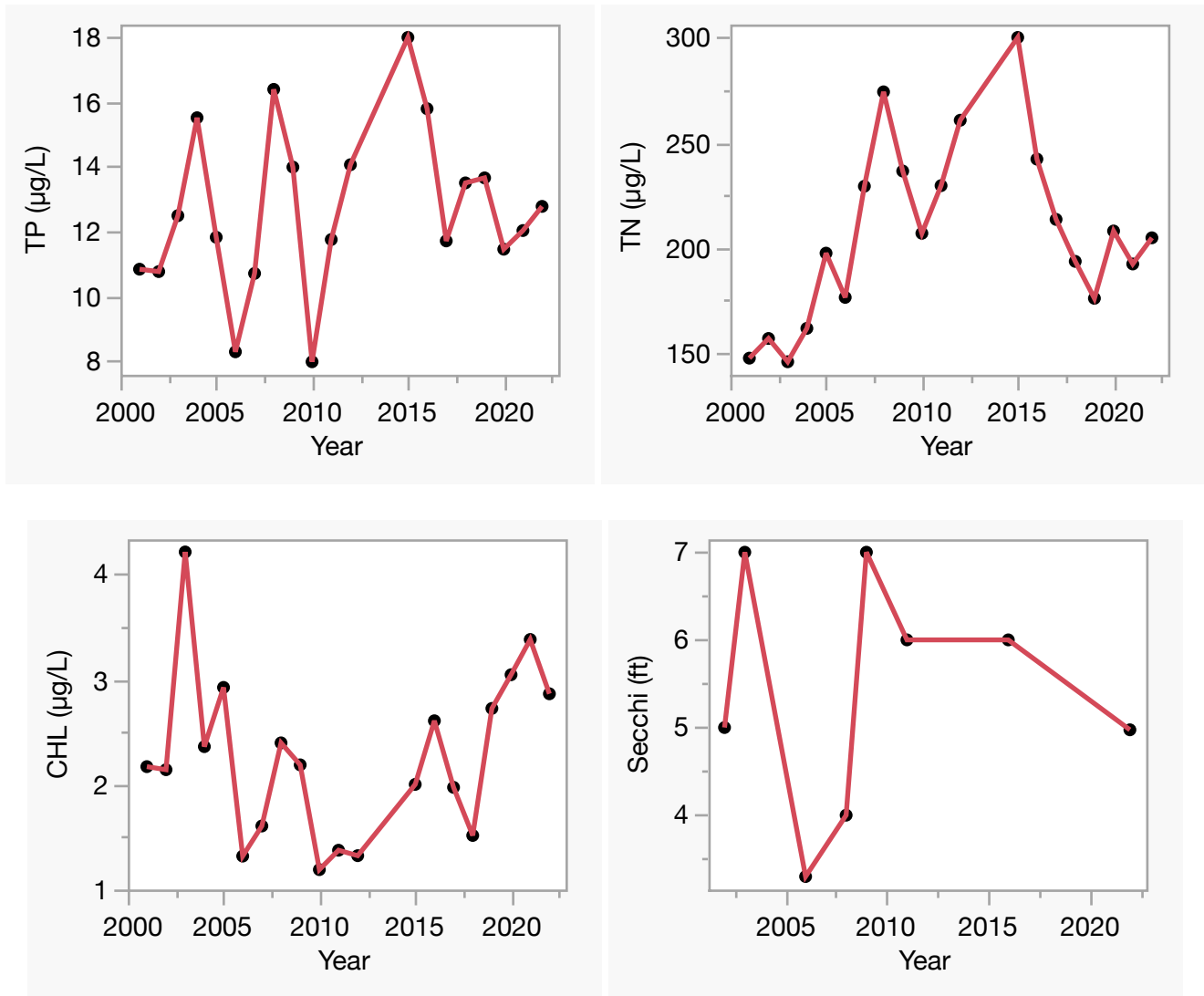
The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus ( $\mu\text{g/L}$ ):** Nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algae.
- **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 filtered out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ), Salinity (ppt):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 2. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance/salinity (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	8 - 18	12 (20)
Total Nitrogen ( $\mu\text{g/L}$ )	146 - 300	204 (20)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	1 - 4	2 (20)
Secchi (ft)	3.3 - 7.0	5.3 (8)
Secchi (m)	1.0 - 2.1	1.6 (8)
Color (Pt-Co Units)	3 - 8	5 (20)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	25324 - 46497	38632 (20)
Salinity (ppt)	16 - 29	24 (20)

**Figure 2. St. Joseph Bay-5 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,  $R^2 = 0.05$ ,  $p = 0.34$ ), total nitrogen (TN No Trend,  $R^2 = 0.12$ ,  $p = 0.14$ ), chlorophyll (CHL No Trend,  $R^2 = 0.01$ ,  $p = 0.64$ ) and Secchi depth (Secchi No Trend,  $R^2 = 0.00$ ,  $p = 0.98$ ).**



**LAKEWATCH Report for St. Joseph Bay-6 in Gulf County  
Estuary and Estuary Segment: St. Joseph Bay St. Joseph Bay  
Using Data Downloaded 12/9/2022**

**Introduction for Estuaries**

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 averages and ranges and the final part are trend plots for nutrients, chlorophyll, and Secchi depth. **Plots were only made for systems with five or more years of data.**

The near shore Florida coastline is separated into estuary and estuary segments within the estuary. Deeper coastal waters are separated into coastal nutrient regions and coastal nutrient segments within the regions. Numeric nutrient criteria are established for all estuary segments, including criteria for total nitrogen, total phosphorus, and chlorophyll *a*. For open ocean coastal waters, numeric criteria are established for chlorophyll *a*, that is derived from satellite remote sensing techniques. For those locations without defined segments there are narrative nutrient criteria (e.g., Florida Keys Halo Zone).

The maps defining individual estuaries and coastal segments can be found at the following link:  
<https://www.flrules.org/Gateway/reference.asp?No=Ref-05420>

The individual nutrient criteria can be found at the following link:  
<https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.532>

**Base File Data for Estuaries: Definitions:**

- **County:** Name of county adjacent to the system.
- **Name:** System name that LAKEWATCH uses for the station.
- **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 1. Base File Data.**

County	Gulf
Name	St. Joseph Bay-6
GNIS Number	308428
Water Body Type	Estuary
Period of Record (years, range)	22 (2001 to 2022)
Latitude	29.7984
Longitude	-85.3047

**Long-Term Data for Estuaries: Definitions**



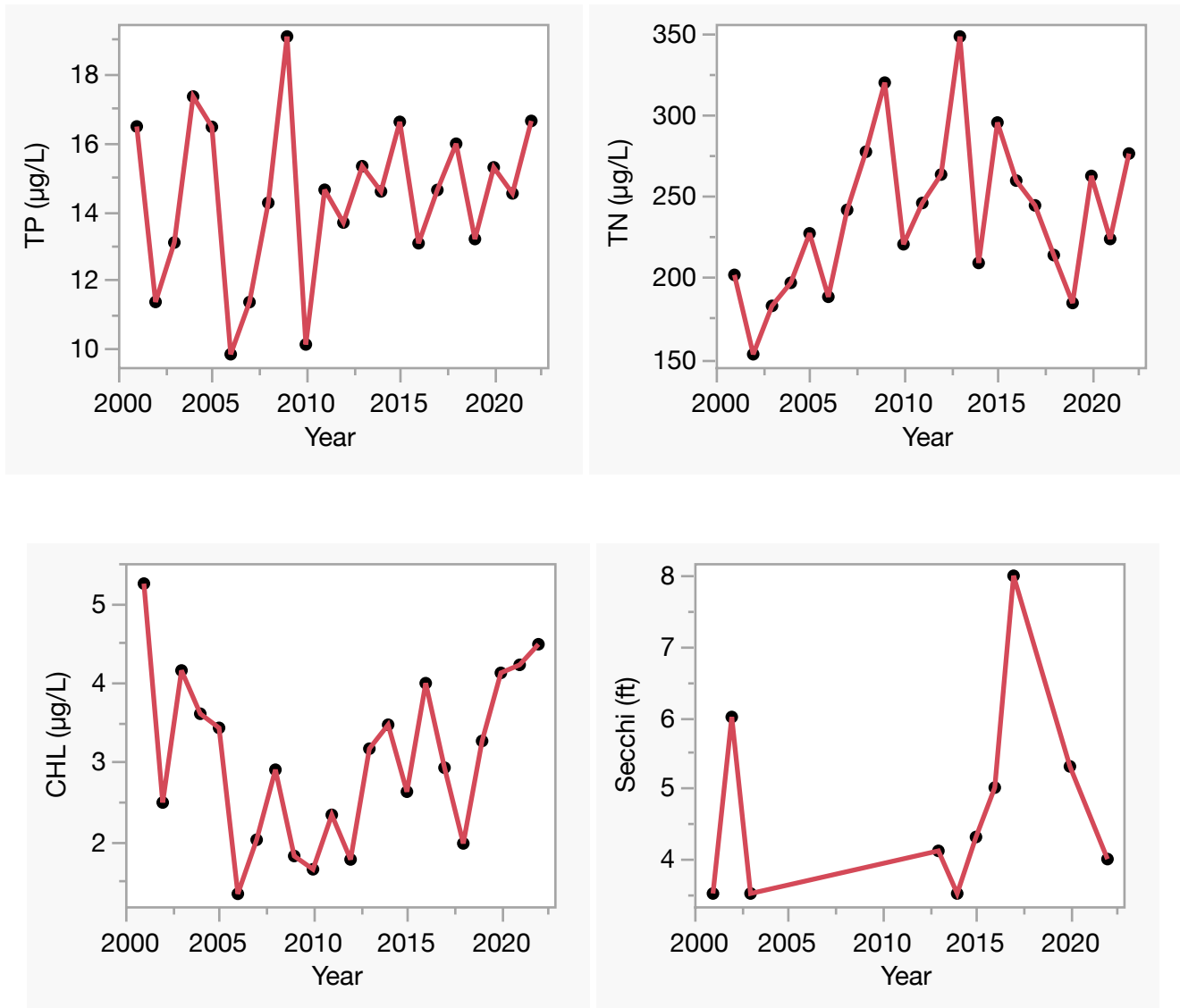
The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus ( $\mu\text{g/L}$ ):** Nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algae.
- **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 filtered out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ), Salinity (ppt):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 2. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance/salinity (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	10 - 19	14 (22)
Total Nitrogen ( $\mu\text{g/L}$ )	153 - 348	233 (22)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	1 - 5	3 (22)
Secchi (ft)	3.5 - 8.0	4.6 (10)
Secchi (m)	1.1 - 2.4	1.4 (10)
Color (Pt-Co Units)	4 - 20	8 (22)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	11997 - 48000	35409 (22)
Salinity (ppt)	16 - 30	23 (22)

**Figure 2. St. Joseph Bay-6 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,  $R^2 = 0.03$ ,  $p = 0.45$ ), total nitrogen (TN No Trend,  $R^2 = 0.13$ ,  $p = 0.10$ ), chlorophyll (CHL No Trend,  $R^2 = 0.02$ ,  $p = 0.56$ ) and Secchi depth (Secchi No Trend,  $R^2 = 0.05$ ,  $p = 0.53$ ).**



**LAKEWATCH Report for St. Joseph Bay-7 in Gulf County  
Estuary and Estuary Segment: St. Joseph Bay St. Joseph Bay  
Using Data Downloaded 12/9/2022**

**Introduction for Estuaries**

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 averages and ranges and the final part are trend plots for nutrients, chlorophyll, and Secchi depth. **Plots were only made for systems with five or more years of data.**

The near shore Florida coastline is separated into estuary and estuary segments within the estuary. Deeper coastal waters are separated into coastal nutrient regions and coastal nutrient segments within the regions. Numeric nutrient criteria are established for all estuary segments, including criteria for total nitrogen, total phosphorus, and chlorophyll *a*. For open ocean coastal waters, numeric criteria are established for chlorophyll *a*, that is derived from satellite remote sensing techniques. For those locations without defined segments there are narrative nutrient criteria (e.g., Florida Keys Halo Zone).

The maps defining individual estuaries and coastal segments can be found at the following link:  
<https://www.flrules.org/Gateway/reference.asp?No=Ref-05420>

The individual nutrient criteria can be found at the following link:  
<https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.532>

**Base File Data for Estuaries: Definitions:**

- **County:** Name of county adjacent to the system.
- **Name:** System name that LAKEWATCH uses for the station.
- **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 1. Base File Data.**

County	Gulf
Name	St. Joseph Bay-7
GNIS Number	308428
Water Body Type	Estuary
Period of Record (years, range)	22 (2001 to 2022)
Latitude	29.7436
Longitude	-85.3274

**Long-Term Data for Estuaries: Definitions**

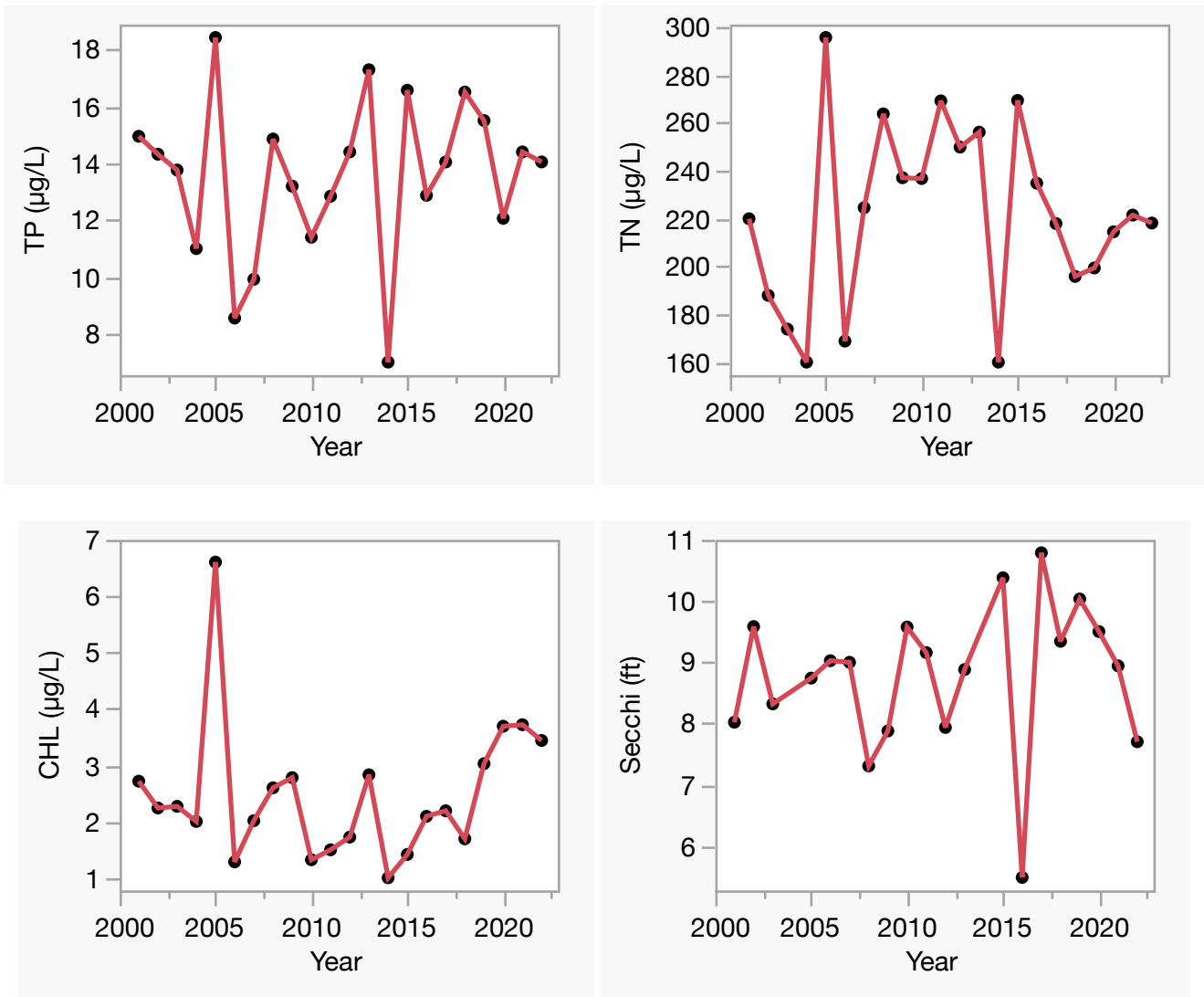
The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus ( $\mu\text{g/L}$ ):** Nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algae.
- **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 filtered out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ), Salinity (ppt):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 2. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance/salinity (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	7 - 18	13 (22)
Total Nitrogen ( $\mu\text{g/L}$ )	160 - 296	219 (22)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	1 - 7	2 (22)
Secchi (ft)	5.5 - 10.8	8.7 (20)
Secchi (m)	1.7 - 3.3	2.7 (20)
Color (Pt-Co Units)	2 - 8	6 (20)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	26981 - 48000	39542 (19)
Salinity (ppt)	17 - 30	25 (19)

**Figure 2. St. Joseph Bay-7 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,  $R^2 = 0.01$ ,  $p = 0.62$ ), total nitrogen (TN No Trend,  $R^2 = 0.01$ ,  $p = 0.69$ ), chlorophyll (CHL No Trend,  $R^2 = 0.00$ ,  $p = 0.82$ ) and Secchi depth (Secchi No Trend,  $R^2 = 0.02$ ,  $p = 0.59$ ).**



**LAKEWATCH Report for St. Joseph Bay-8 in Gulf County  
Estuary and Estuary Segment: St. Joseph Bay St. Joseph Bay  
Using Data Downloaded 12/9/2022**

**Introduction for Estuaries**

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 averages and ranges and the final part are trend plots for nutrients, chlorophyll, and Secchi depth. **Plots were only made for systems with five or more years of data.**

The near shore Florida coastline is separated into estuary and estuary segments within the estuary. Deeper coastal waters are separated into coastal nutrient regions and coastal nutrient segments within the regions. Numeric nutrient criteria are established for all estuary segments, including criteria for total nitrogen, total phosphorus, and chlorophyll *a*. For open ocean coastal waters, numeric criteria are established for chlorophyll *a*, that is derived from satellite remote sensing techniques. For those locations without defined segments there are narrative nutrient criteria (e.g., Florida Keys Halo Zone).

The maps defining individual estuaries and coastal segments can be found at the following link:  
<https://www.flrules.org/Gateway/reference.asp?No=Ref-05420>

The individual nutrient criteria can be found at the following link:  
<https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.532>

**Base File Data for Estuaries: Definitions:**

- **County:** Name of county adjacent to the system.
- **Name:** System name that LAKEWATCH uses for the station.
- **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 1. Base File Data.**

County	Gulf
Name	St. Joseph Bay-8
GNIS Number	308428
Water Body Type	Estuary
Period of Record (years, range)	12 (2007 to 2022)
Latitude	29.8285
Longitude	-85.3287

**Long-Term Data for Estuaries: Definitions**

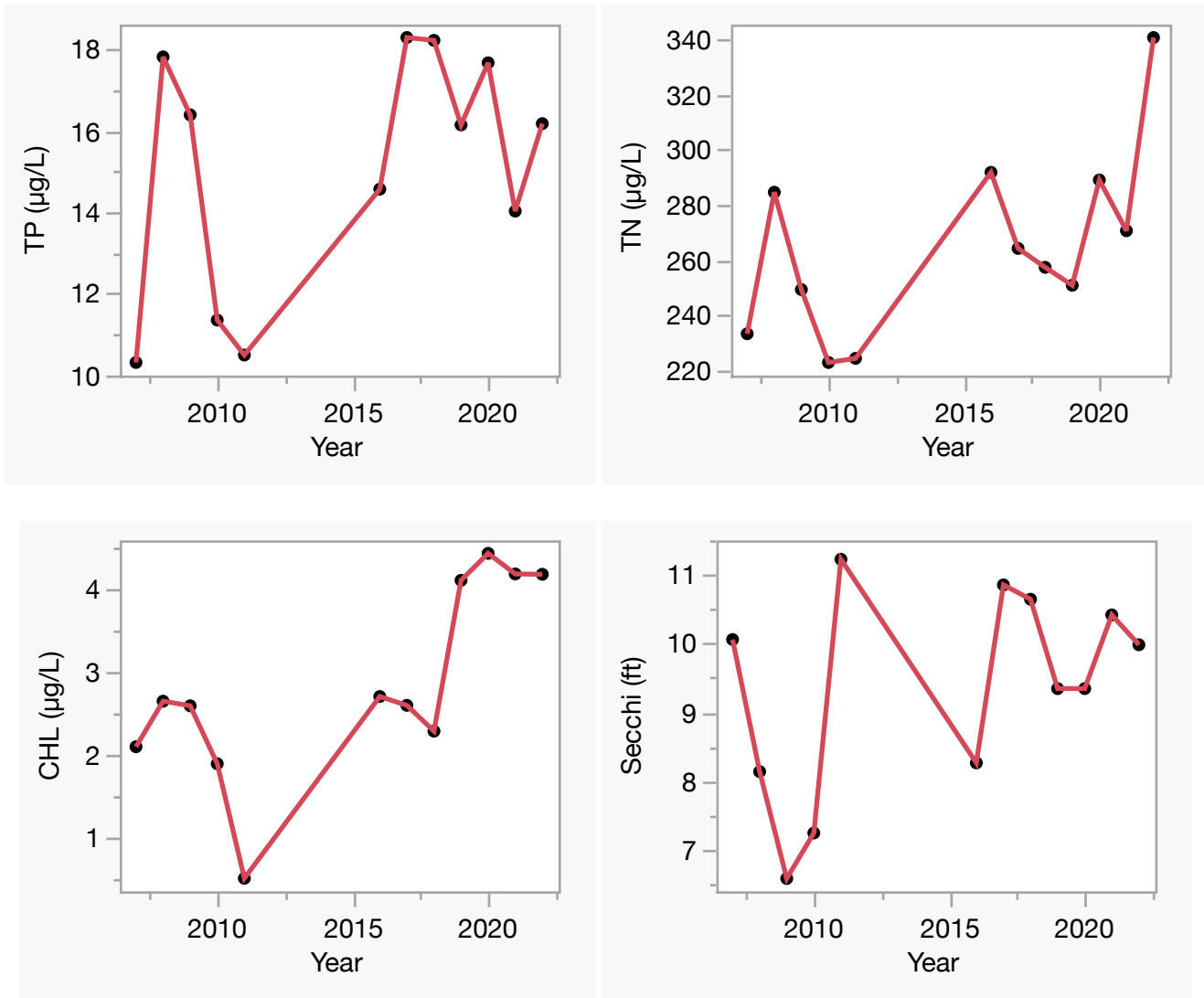
The following long-term data are the primary trophic state parameters collected by LAKEWATCH volunteers and classification variables color and specific conductance (LAKEWATCH recently began analyzing samples quarterly for color and specific conductance):

- **Total Phosphorus ( $\mu\text{g/L}$ ):** Nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algae.
- **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 filtered out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ), Salinity (ppt):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 2. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance/salinity (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	10 - 18	15 (12)
Total Nitrogen ( $\mu\text{g/L}$ )	223 - 341	263 (12)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	1 - 4	3 (12)
Secchi (ft)	6.6 - 11.2	9.2 (12)
Secchi (m)	2.0 - 3.4	2.8 (12)
Color (Pt-Co Units)	4 - 22	10 (12)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	19065 - 43689	28440 (12)
Salinity (ppt)	12 - 27	18 (12)

**Figure 2. St. Joseph Bay-8 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,  $R^2 = 0.21$ ,  $p = 0.13$ ), total nitrogen (TN Increasing,  $R^2 = 0.36$ ,  $p = 0.04$ ), chlorophyll (CHL Increasing,  $R^2 = 0.52$ ,  $p = 0.01$ ) and Secchi depth (Secchi No Trend,  $R^2 = 0.19$ ,  $p = 0.16$ ).**





**LAKEWATCH Report for St. Joseph Bay-9 in Gulf County  
Estuary and Estuary Segment: St. Joseph Bay St. Joseph Bay  
Using Data Downloaded 12/9/2022**

**Introduction for Estuaries**

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 averages and ranges and the final part are trend plots for nutrients, chlorophyll, and Secchi depth. **Plots were only made for systems with five or more years of data.**

The near shore Florida coastline is separated into estuary and estuary segments within the estuary. Deeper coastal waters are separated into coastal nutrient regions and coastal nutrient segments within the regions. Numeric nutrient criteria are established for all estuary segments, including criteria for total nitrogen, total phosphorus, and chlorophyll *a*. For open ocean coastal waters, numeric criteria are established for chlorophyll *a*, that is derived from satellite remote sensing techniques. For those locations without defined segments there are narrative nutrient criteria (e.g., Florida Keys Halo Zone).

The maps defining individual estuaries and coastal segments can be found at the following link:  
<https://www.flrules.org/Gateway/reference.asp?No=Ref-05420>

The individual nutrient criteria can be found at the following link:  
<https://www.flrules.org/gateway/RuleNo.asp?title=SURFACE%20WATER%20QUALITY%20STANDARDS&ID=62-302.532>

**Base File Data for Estuaries: Definitions:**

- **County:** Name of county adjacent to the system.
- **Name:** System name that LAKEWATCH uses for the station.
- **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 1. Base File Data.**

County	Gulf
Name	St. Joseph Bay-9
GNIS Number	308428
Water Body Type	Estuary
Period of Record (years, range)	11 (2012 to 2022)
Latitude	29.7357
Longitude	-85.3849

## Long-Term Data for Estuaries: 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 ( $\mu\text{g/L}$ ):** Nutrient most often limiting growth of plant/algae.
- **Total Nitrogen ( $\mu\text{g/L}$ ):** Nutrient needed for aquatic plant/algae growth but only limiting when nitrogen to phosphorus ratios are generally less than 10 (by mass).
- **Chlorophyll-uncorrected ( $\mu\text{g/L}$ ):** Chlorophyll concentrations are used to measure relative abundances of open water algae.
- **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 filtered out.
- **Specific Conductance ( $\mu\text{S/cm@25}^\circ\text{C}$ ), Salinity (ppt):** Measurement of the ability of water to conduct electricity and can be used to estimate the amount of dissolved materials in water.

**Table 2. Long-term trophic state data collected monthly by LAKEWATCH volunteers and color and specific conductance/salinity (collected quarterly).**

Parameter	Minimum and Maximum Annual Geometric Means	Grand Geometric Mean (Sampling years)
Total Phosphorus ( $\mu\text{g/L}$ )	9 - 17	13 (11)
Total Nitrogen ( $\mu\text{g/L}$ )	182 - 316	232 (11)
Chlorophyll- uncorrected ( $\mu\text{g/L}$ )	1 - 3	2 (11)
Secchi (ft)	4.4 - 8.0	5.4 (4)
Secchi (m)	1.4 - 2.4	1.7 (4)
Color (Pt-Co Units)	4 - 10	7 (10)
Specific Conductance ( $\mu\text{S/cm@25 C}$ )	36701 - 47664	42566 (10)
Salinity (ppt)	23 - 30	26 (10)

**Figure 2. St. Joseph Bay-9 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,  $R^2 = 0.00$ ,  $p = 0.96$ ), total nitrogen (TN No Trend,  $R^2 = 0.34$ ,  $p = 0.06$ ), chlorophyll (CHL Increasing,  $R^2 = 0.43$ ,  $p = 0.03$ ) and Secchi depth (Secchi No Trend,  $R^2 = 0.03$ ,  $p = 0.82$ ).**

