

# Nutrient loads and trends for several Florida Rivers

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Chris Sedlacek  
Jay Silvanima  
and  
Gail Sloane



Florida Department of Environmental Protection  
Division of Water Resource Management



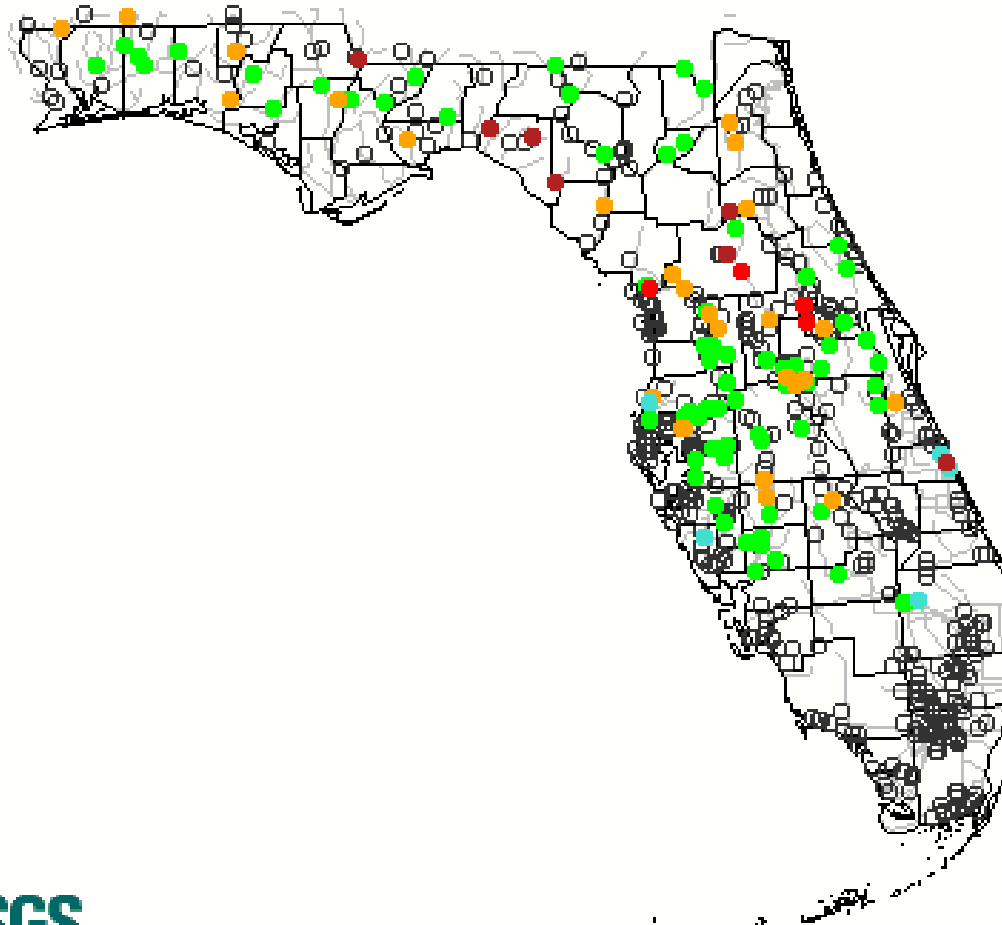
# Introduction

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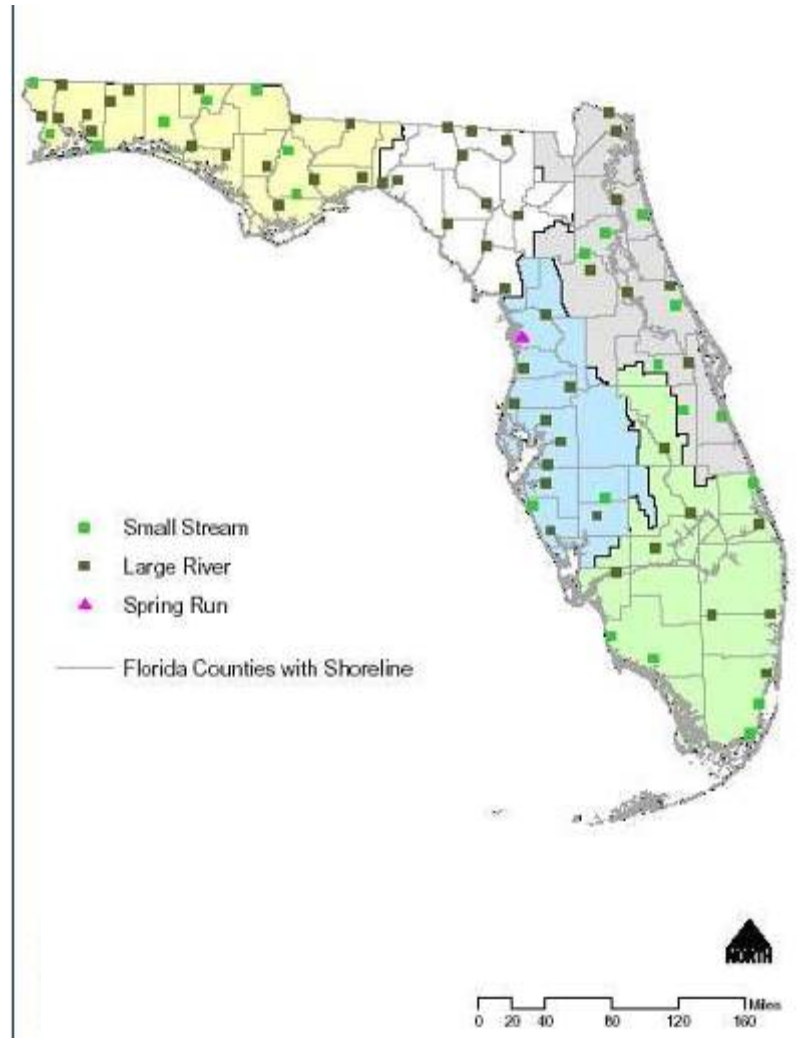
- ❑ Nutrients
  - ❑  $\text{NO}_{2-3}$ ,  $\text{NH}_3$ ,  $\text{PO}_4$
  - ❑ Eutrophication
- ❑ Surface Water Trend stations
  - ❑ 37 out of 75 stations
  - ❑ State and EPA funded program

# USGS gauging stations

Monday, April 28, 2008 13:30ET



# Surface Water trend stations



# Introduction

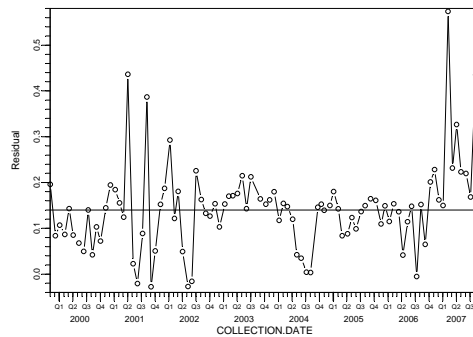
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- ❑ Nutrients
  - ❑  $\text{NO}_{2-3}$ ,  $\text{NH}_3$ ,  $\text{PO}_4$
  - ❑ Eutrophication
- ❑ Surface Water Trend stations
  - ❑ 37 out of 75 stations
  - ❑ State and EPA funded program
  - ❑ Calculation of load based on average flow and average analyte concentration
- ❑ Trend determination

# Trend analysis

Nitrate and Nitrite total as N

3513

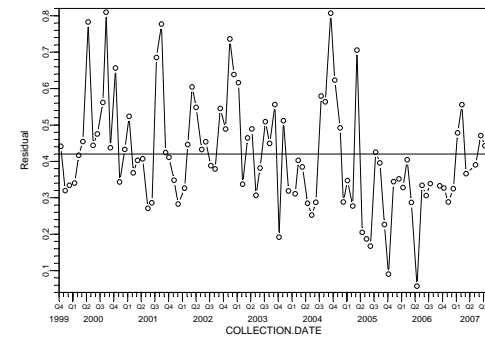


```
median(senslope)  
0.004970606  
"INCREASING TREND"
```

P-value = 0.03701004

Ammonia and Organic Nitrogen (Total as N)

3522

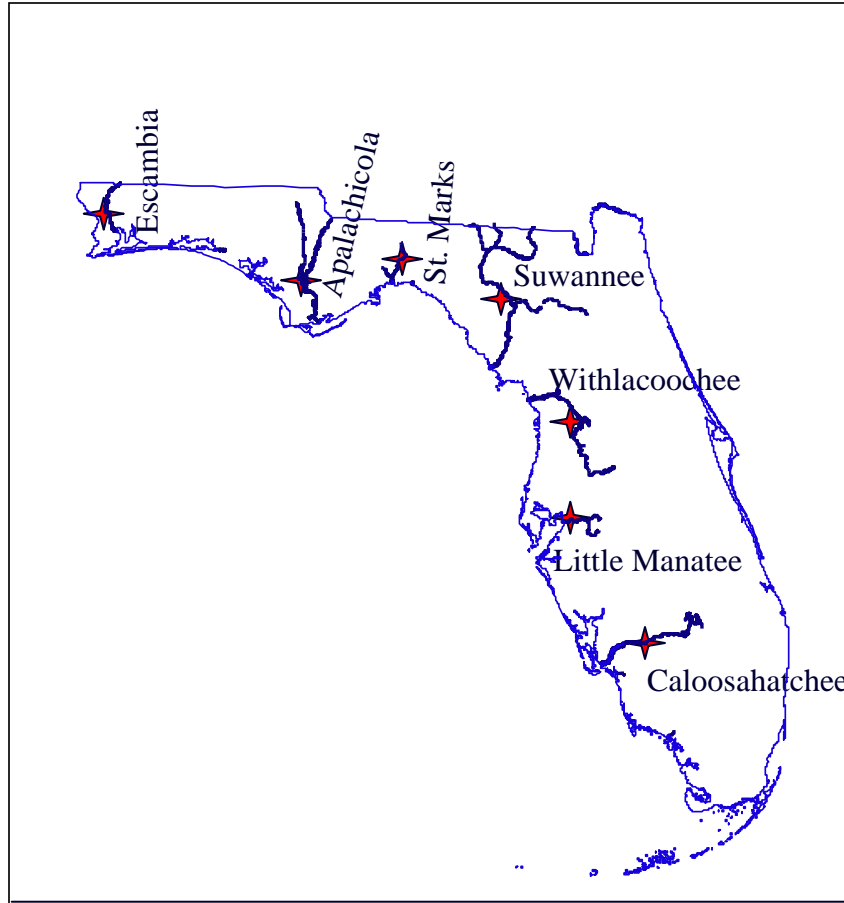


```
median(senslope)  
-0.009685982  
"DECREASING TREND"
```

P-value = 0.01953445

- Analysis is non-parametric
- Seasonality corrected
- Flow adjusted
- Sen slope is very small

# Selected rivers stations

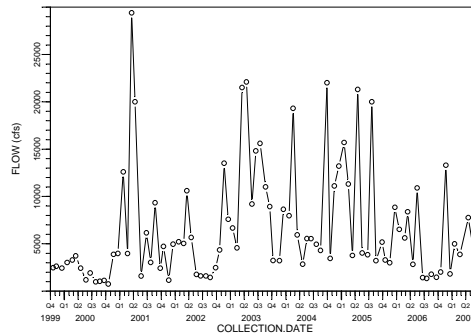


# Selected rivers stations

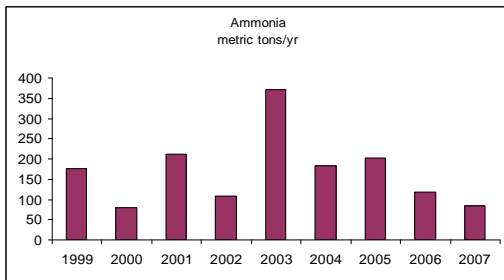


# Escambia River

Flow 3541



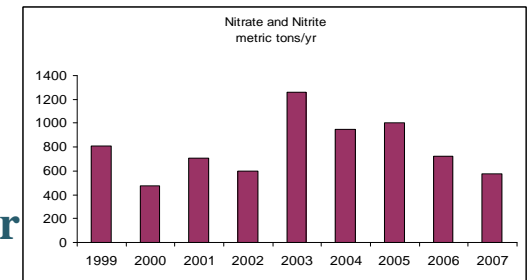
Ammonia, Total



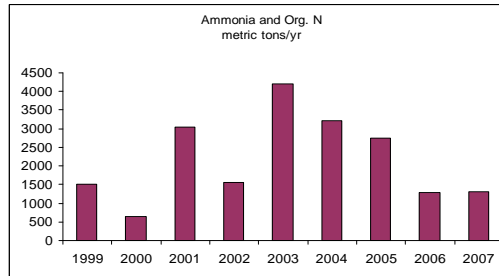
170 metric tons/yr

790 metric tons/yr

Nitrate and Nitrite



Ammonia+Org.N, Total

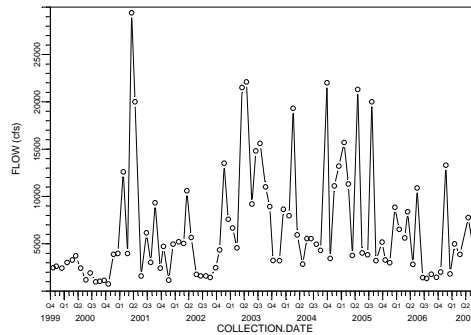


2,168 metric tons/yr

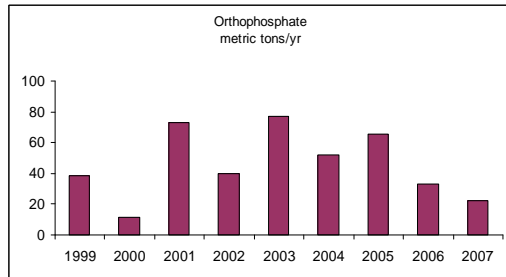


# Escambia River

Flow 3541

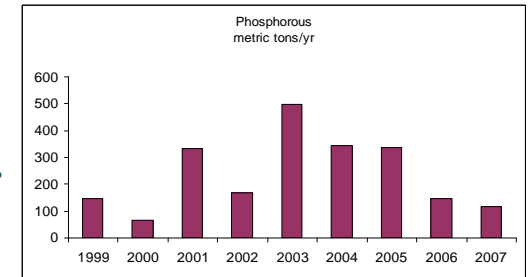


Orthophosphate

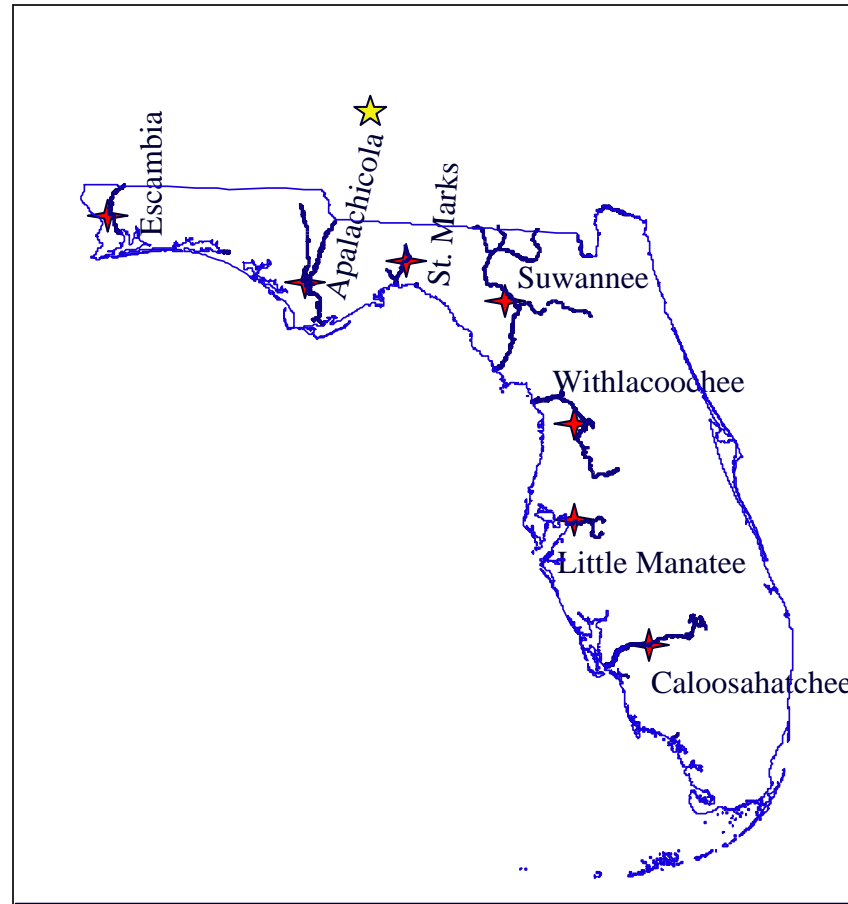


**239 metric tons/yr**  
**45 metric tons/yr**

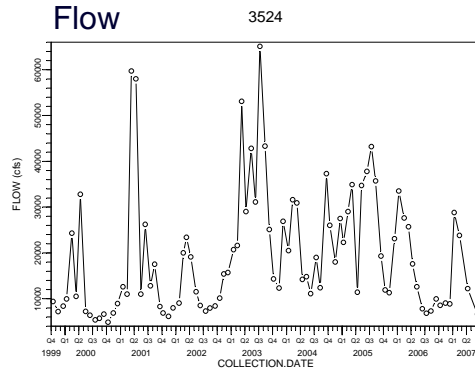
Phosphorous, Total



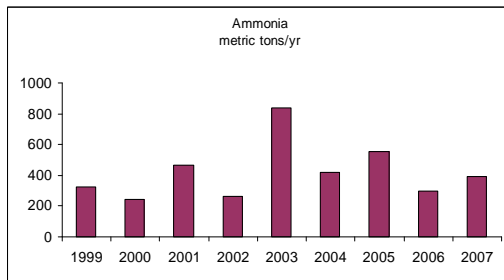
# Selected rivers stations



# Apalachicola River

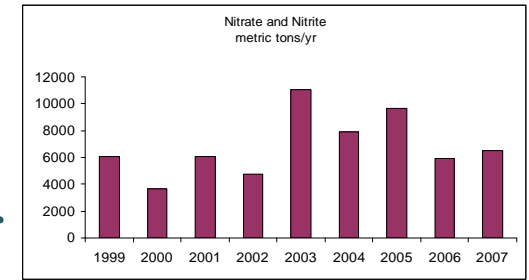


Ammonia, Total

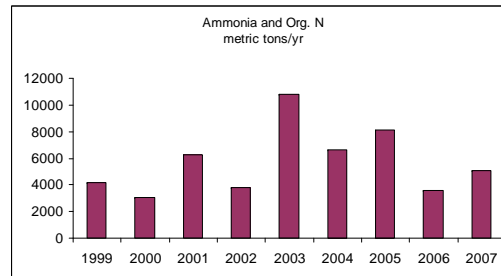


**421 metric tons/yr**  
**6,841 metric tons/yr**

Nitrate and Nitrite



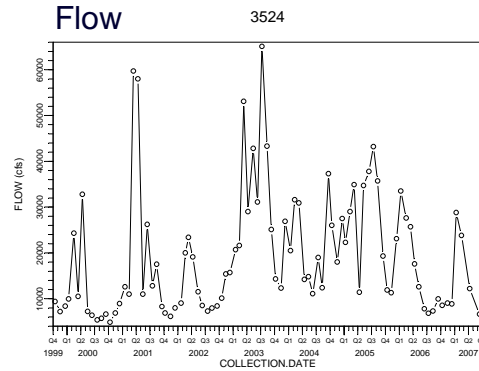
Ammonia+Org.N, Total



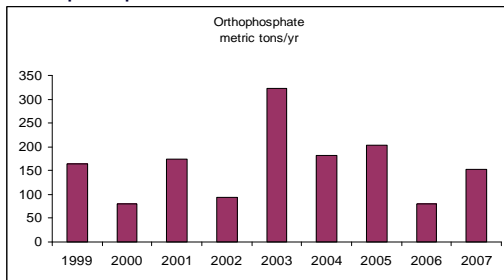
**5,723 metric tons/yr**



# Apalachicola River



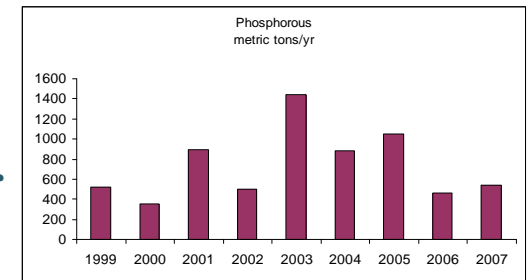
Orthophosphate



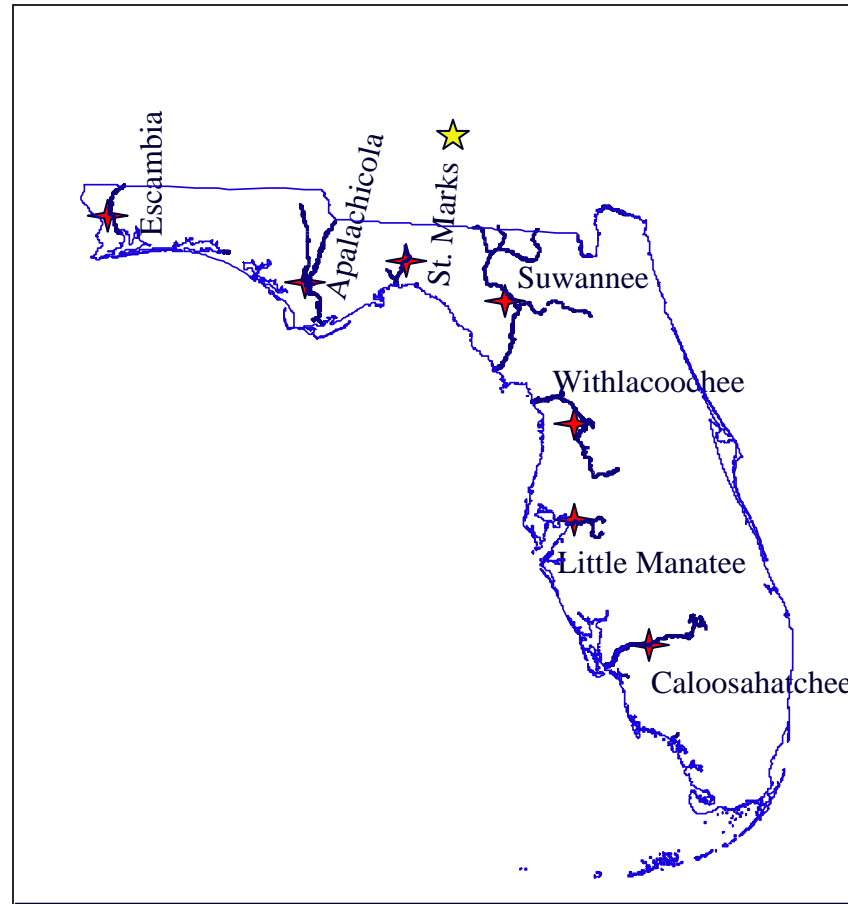
161 metric tons/yr

738 metric tons/yr

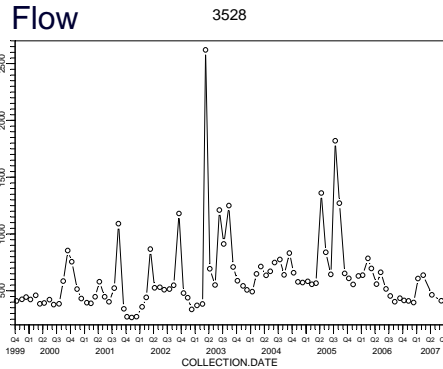
Phosphorous, Total



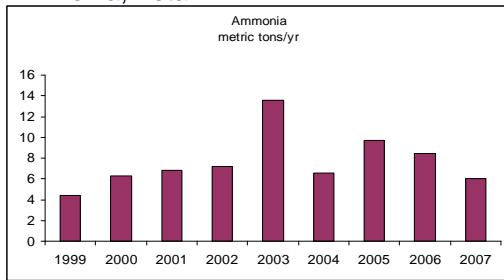
# Selected rivers stations



# St. Marks River

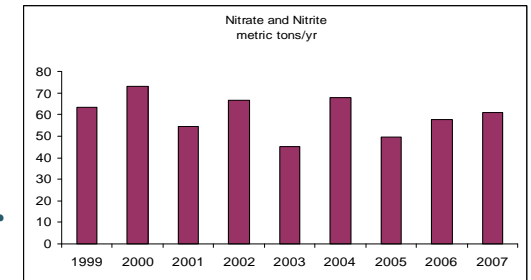


Ammonia, Total



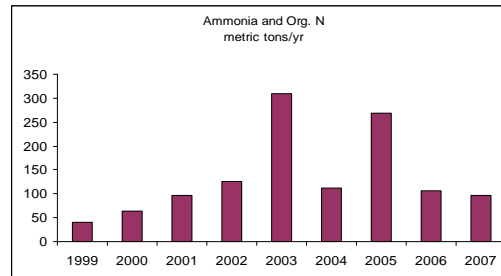
**7 metric tons/yr**

Nitrate and Nitrite



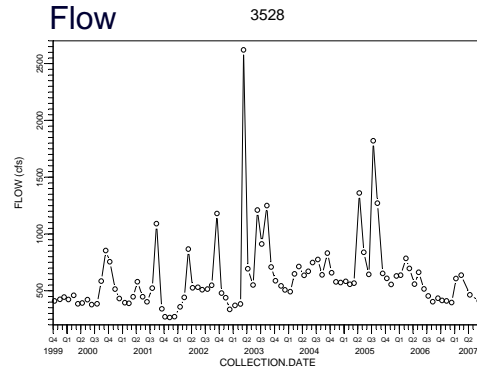
**59 metric tons/yr**

Ammonia+Org.N, Total

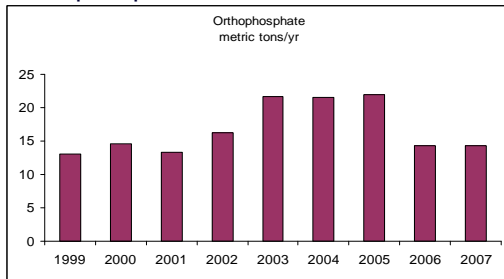


**135 metric tons/yr**

# St. Marks River



Orthophosphate

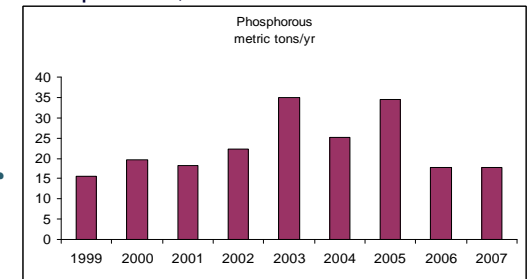


16 metric tons/yr

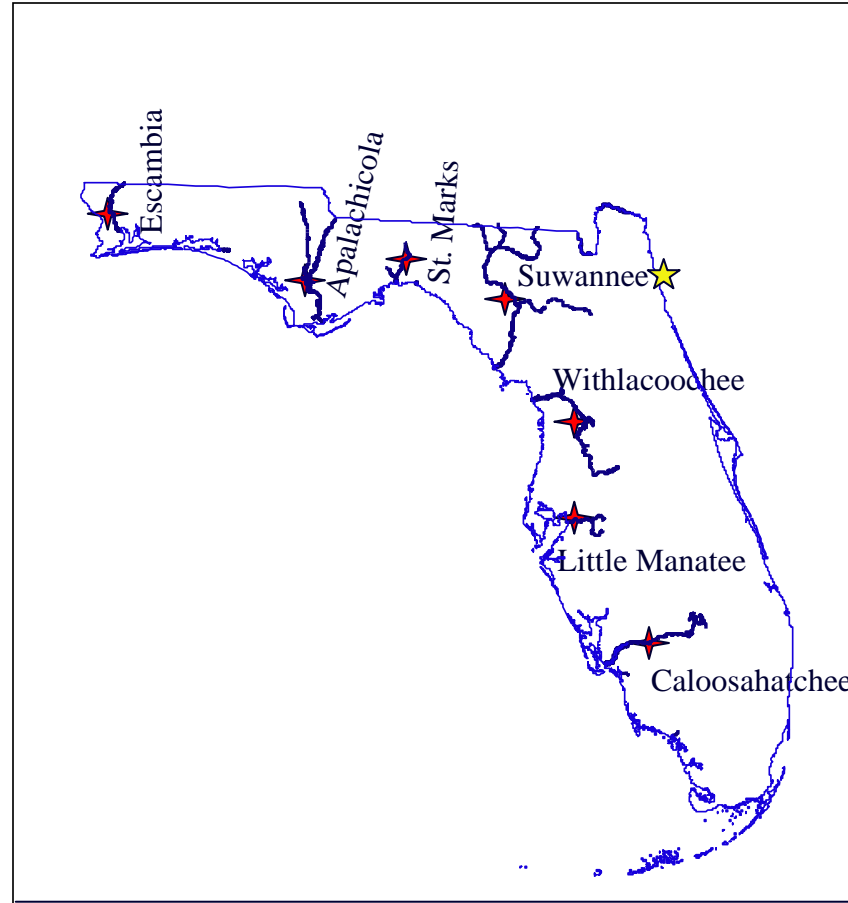
22 metric tons/yr



Phosphorous, Total

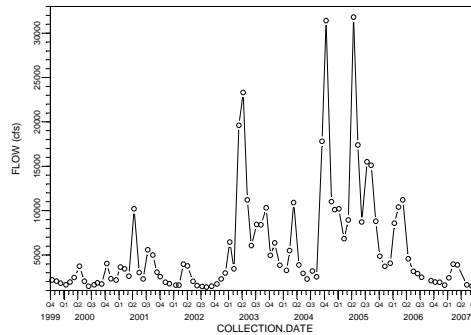


# Selected rivers stations

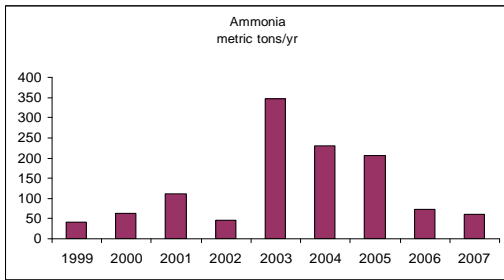


# Suwannee River

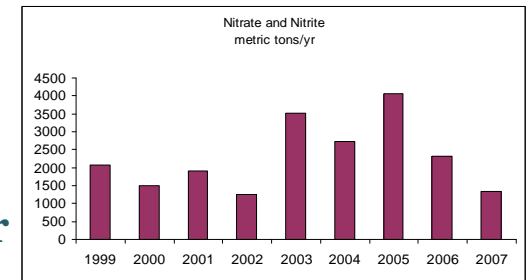
Flow 3522



Ammonia, Total



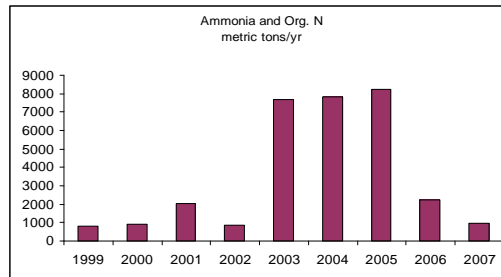
Nitrate and Nitrite



130 metric tons/yr

2,299 metric tons/yr

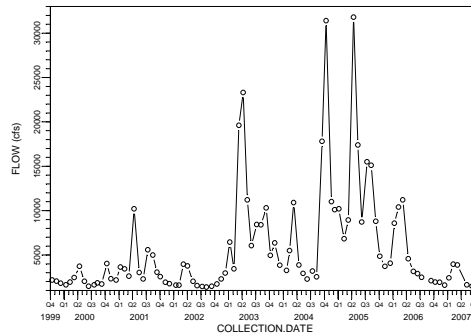
Ammonia+Org.N, Total



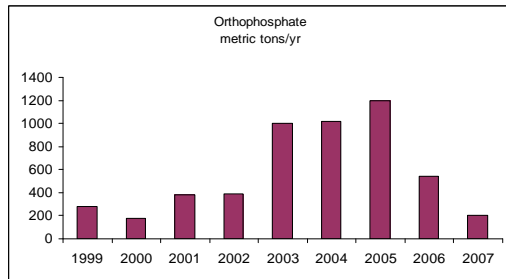
3,503 metric tons/yr

# Suwannee River

Flow 3522

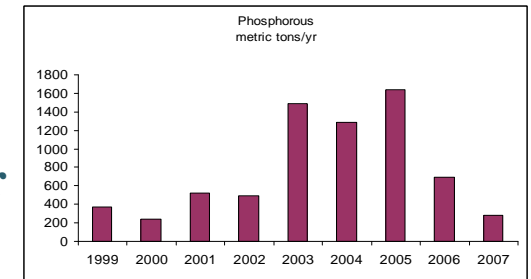


Orthophosphate

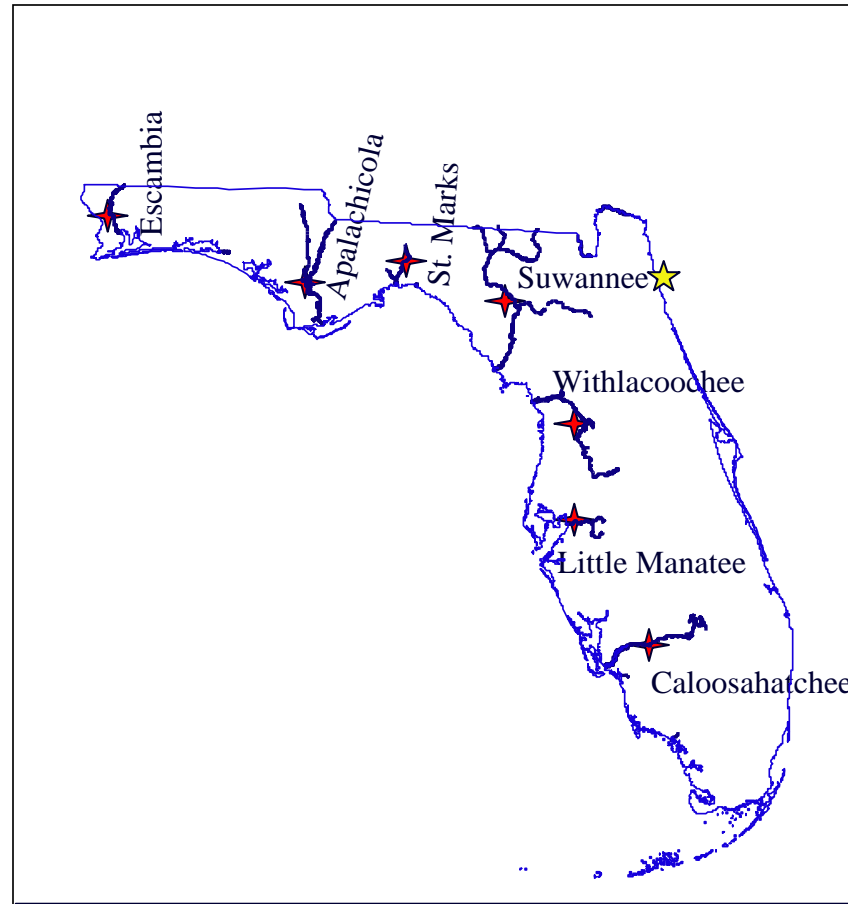


**778 metric tons/yr**  
**576 metric tons/yr**

Phosphorous, Total



# Selected rivers stations

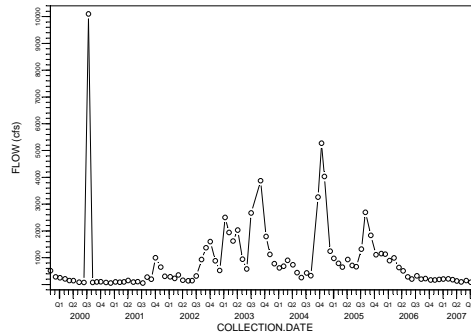


# Selected rivers stations

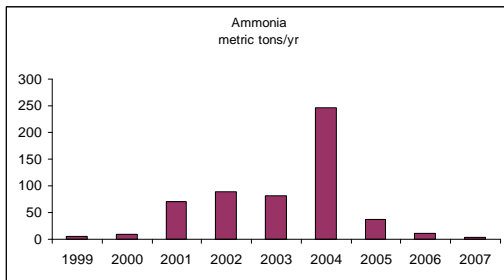


# Withlacoochee River

Flow 3513

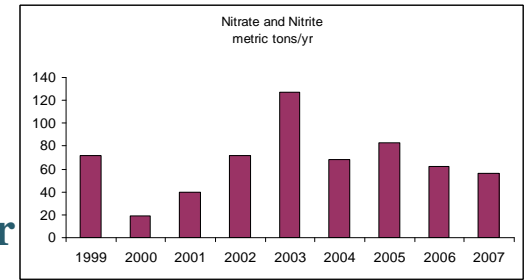


Ammonia, Total



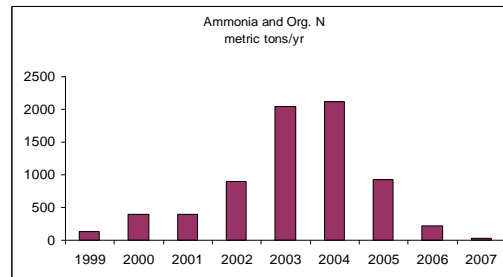
61 metric tons/yr

Nitrate and Nitrite



66 metric tons/yr

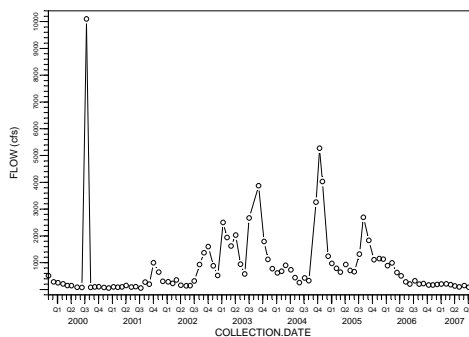
Ammonia+Org.N, Total



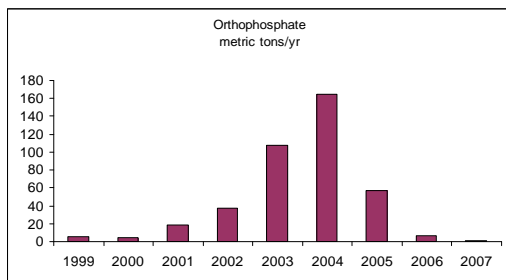
797 metric tons/yr

# Withlacoochee River

Flow 3513



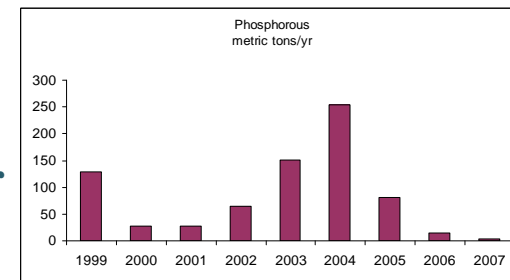
Orthophosphate



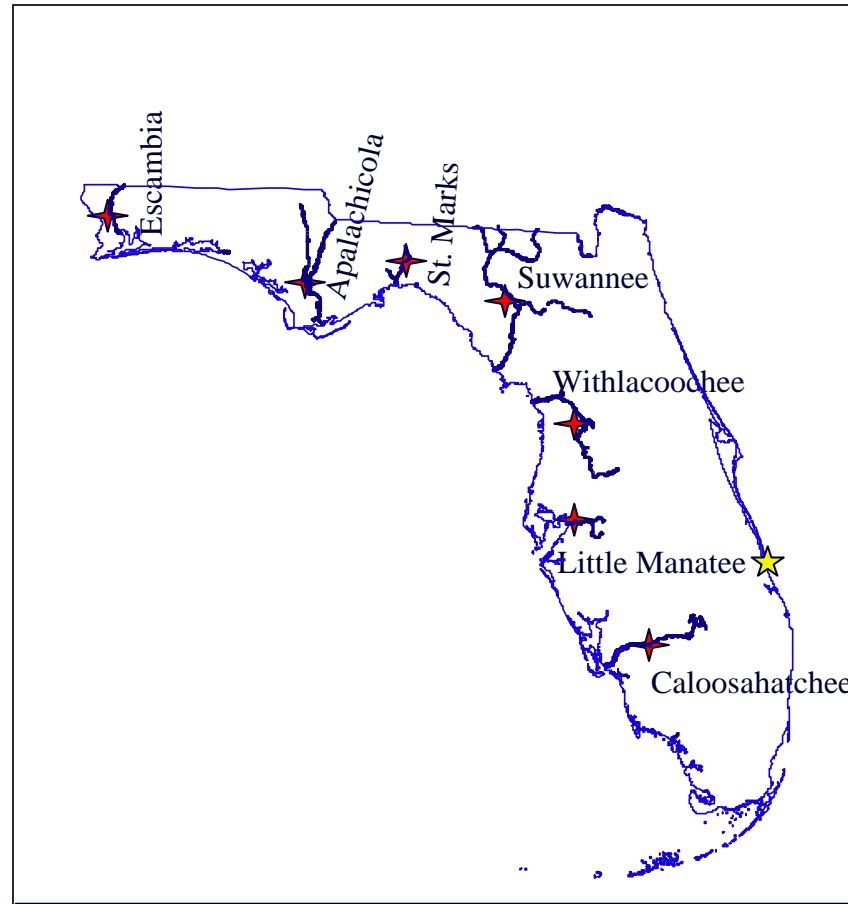
44 metric tons/yr

83 metric tons/yr

Phosphorous, Total

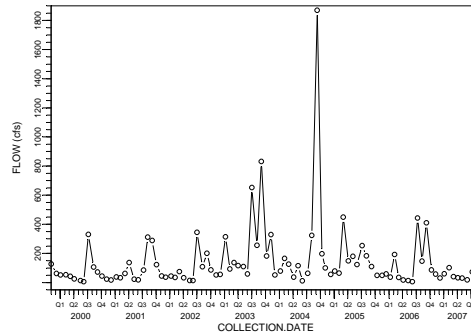


# Selected rivers stations

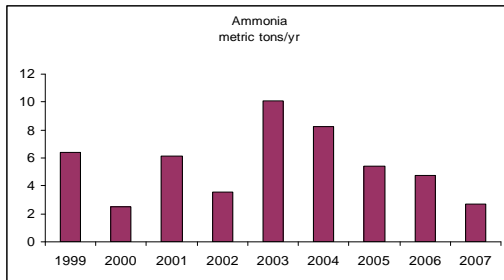


# Little Manatee River

Flow 3555

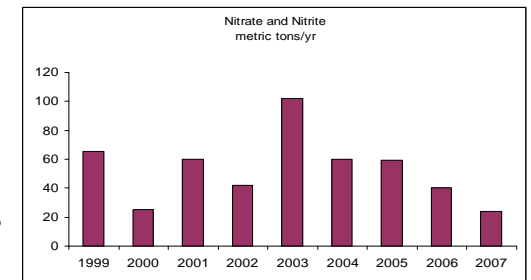


Ammonia, Total



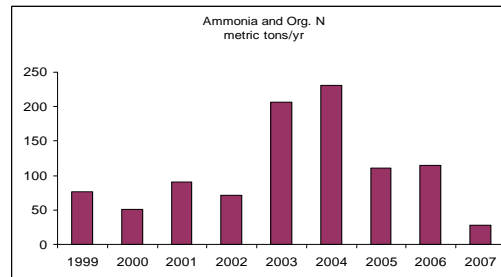
5 metric tons/yr

Nitrate and Nitrite



53 metric tons/yr

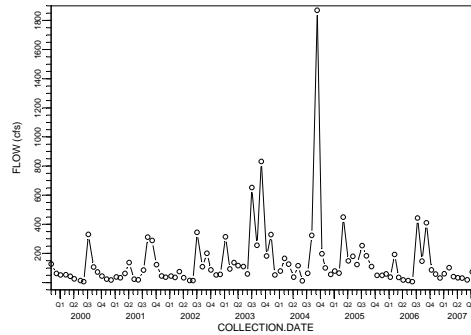
Ammonia+Org.N, Total



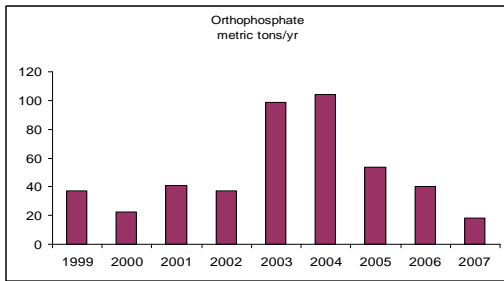
108 metric tons/yr

# Little Manatee River

Flow 3555



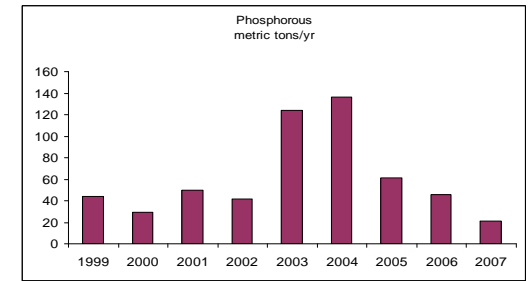
Orthophosphate



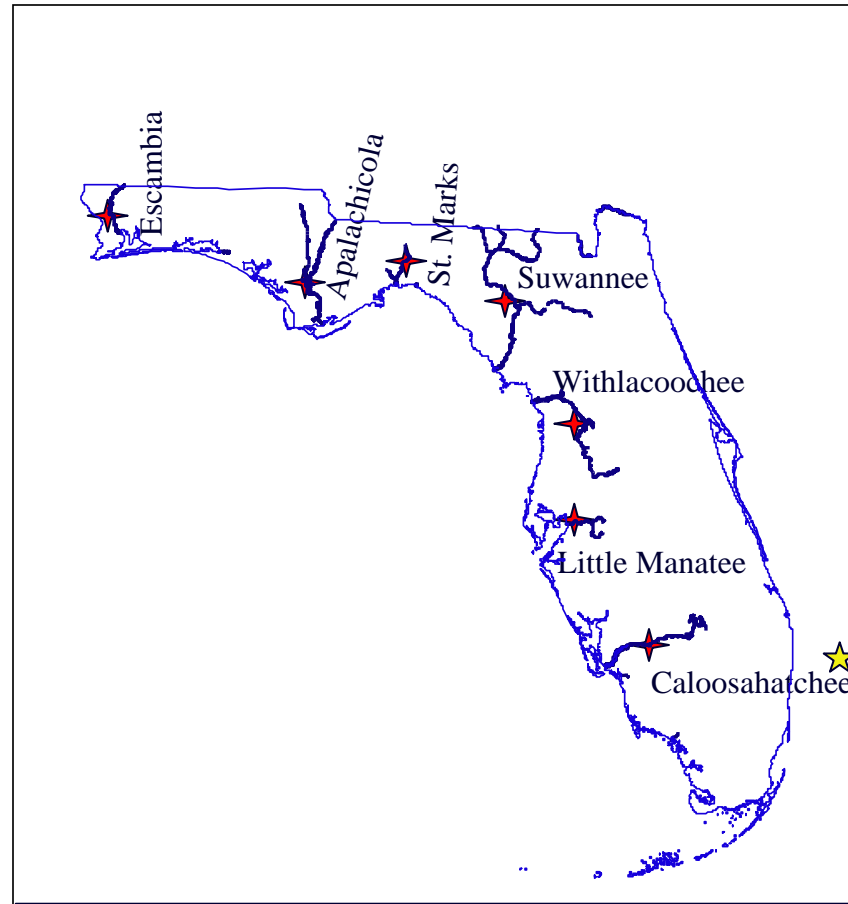
50 metric tons/yr

61 metric tons/yr

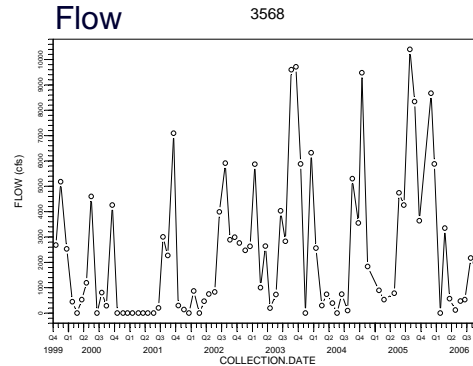
Phosphorous, Total



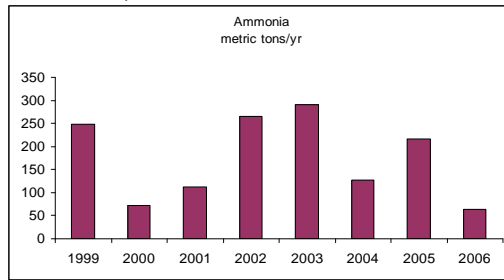
# Selected rivers stations



# Caloosahatchee River



Ammonia, Total

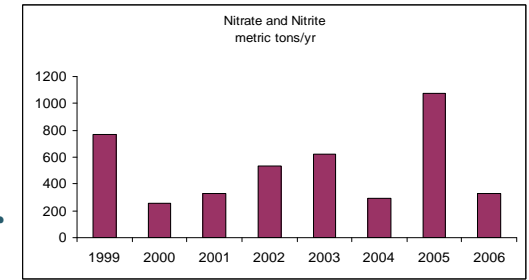


174 metric tons/yr

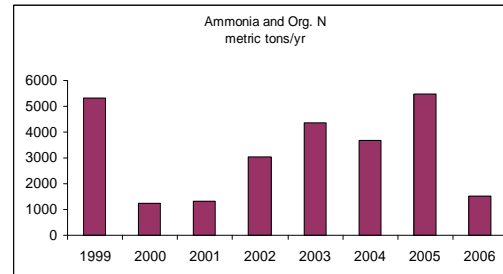


526 metric tons/yr

Nitrate and Nitrite

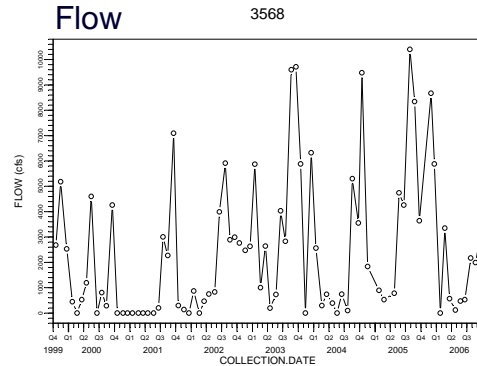


Ammonia+Org.N, Total

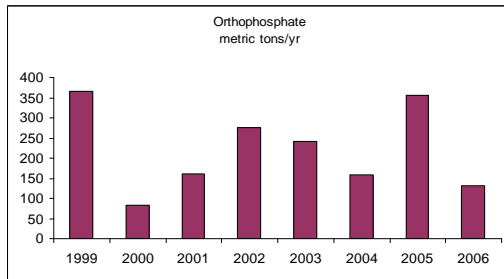


3,246 metric tons/yr

# Caloosahatchee River



Orthophosphate

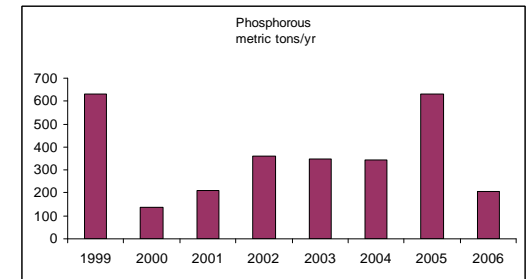


358 metric tons/yr

221 metric tons/yr



Phosphorous, Total





# Summary

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- ❑ Large data set available
- ❑ Loading and trends are variable
- ❑ Enhancement of monitoring network

Chris Sedlacek  
Watershed Monitoring Section  
Florida Department of Environmental Protection  
2600 Blair Stone Rd.  
Tallahassee, FL 32399-2400  
Phone: (850)245-5027  
Christopher.Sedlacek@dep.state.fl.us



# Web sites

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## **Water Resource Management**

**<http://www.dep.state.fl.us/water/default.htm>**

## **Surface Water Quality**

**<http://www.dep.state.fl.us/water/wqssp/surface.htm>**

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Watershed Monitoring Section  
Florida Department of Environmental Protection  
2600 Blair Stone Rd.  
Tallahassee, FL 32399-2400  
Phone: (850)245-5027  
Christopher.Sedlacek@dep.state.fl.us

# Questions



Chris Sedlacek  
Watershed Monitoring Section  
Florida Department of Environmental Protection  
2600 Blair Stone Rd.  
Tallahassee, FL 32399-2400  
Phone: (850)245-5027  
Christopher.Sedlacek@dep.state.fl.us