



**Bridgeport**



**Cedar Creek**

# Eagle Mountain WASP Reservoir Model



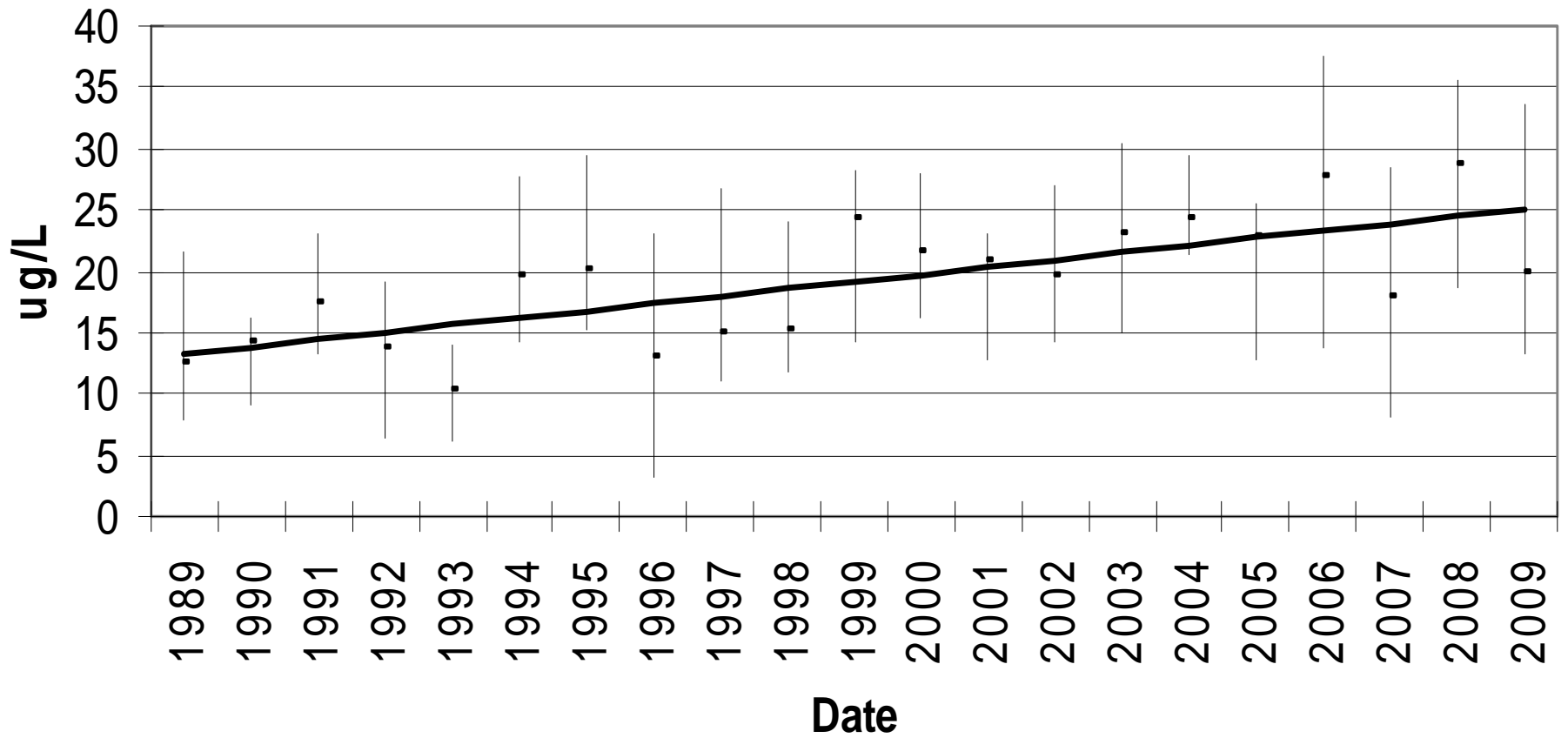
**Richland-Chambers**



**Eagle Mountain**

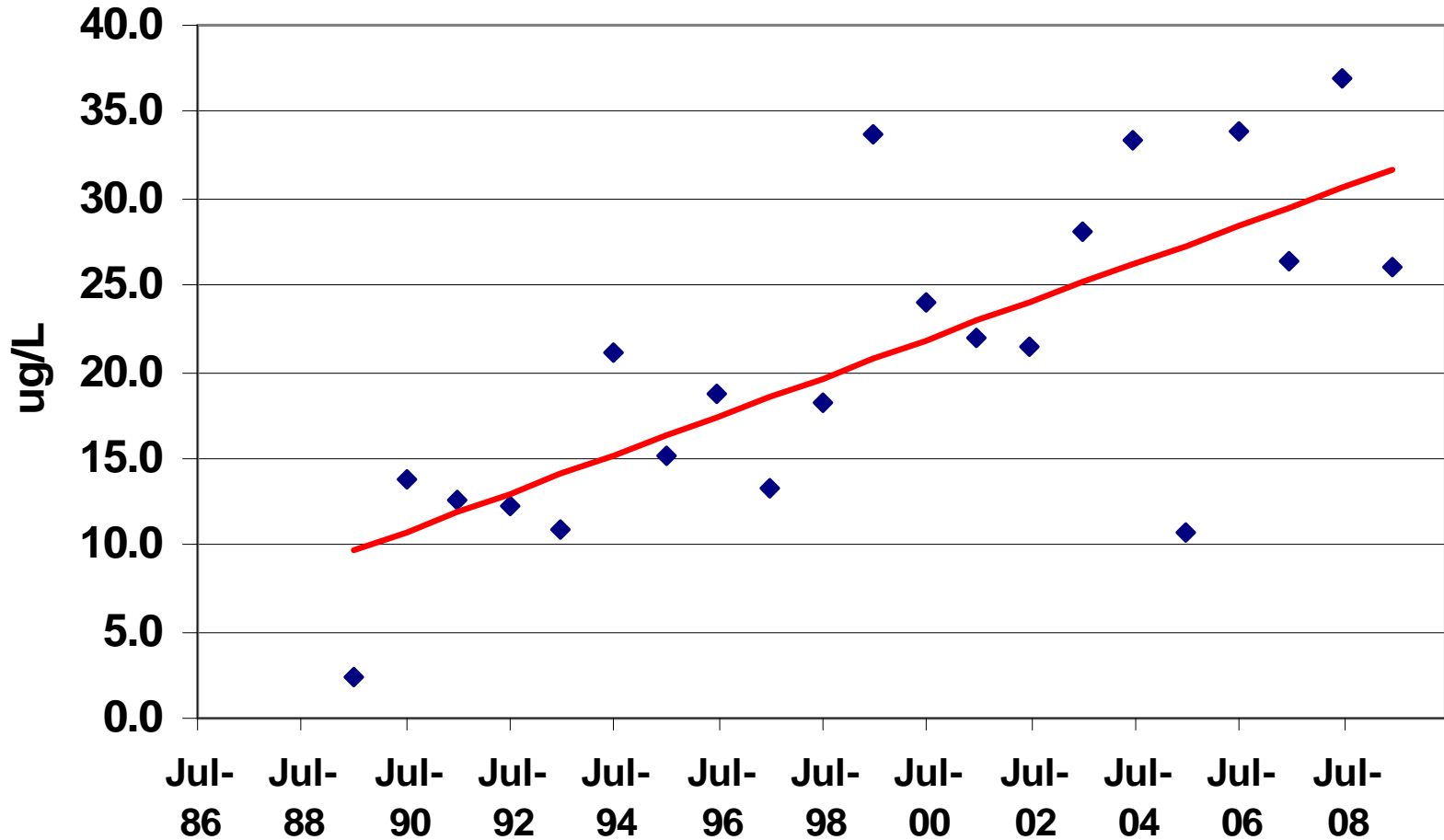
# EM Chl'a' 1989-2009

n = 637, Median = 19.3, APR = 3.53%

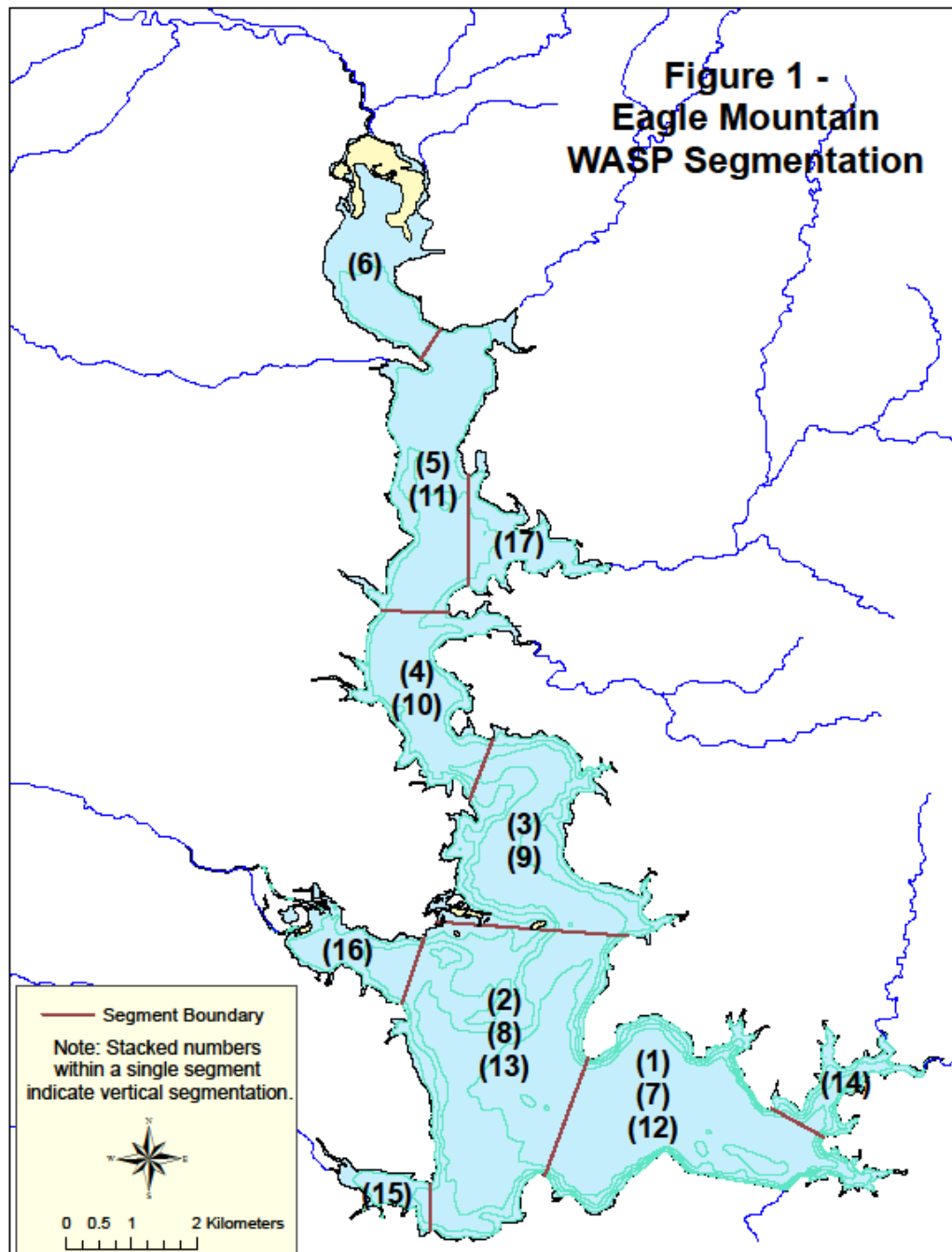


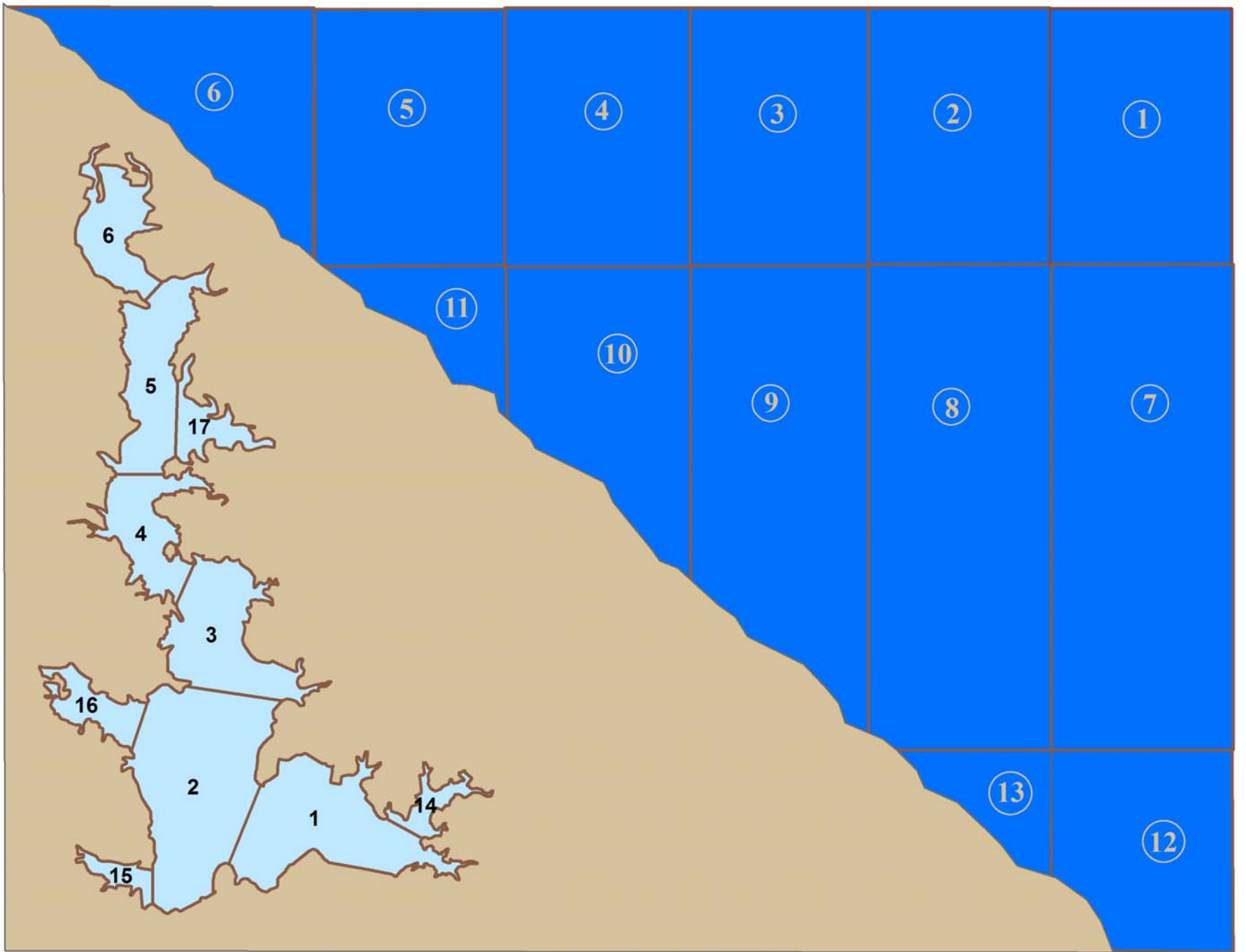
# Eagle Mountain Chl'a' Main Pool 3Q Top

n=42, Median 19.7, APR 6.96%



**Figure 1 -  
Eagle Mountain  
WASP Segmentation**



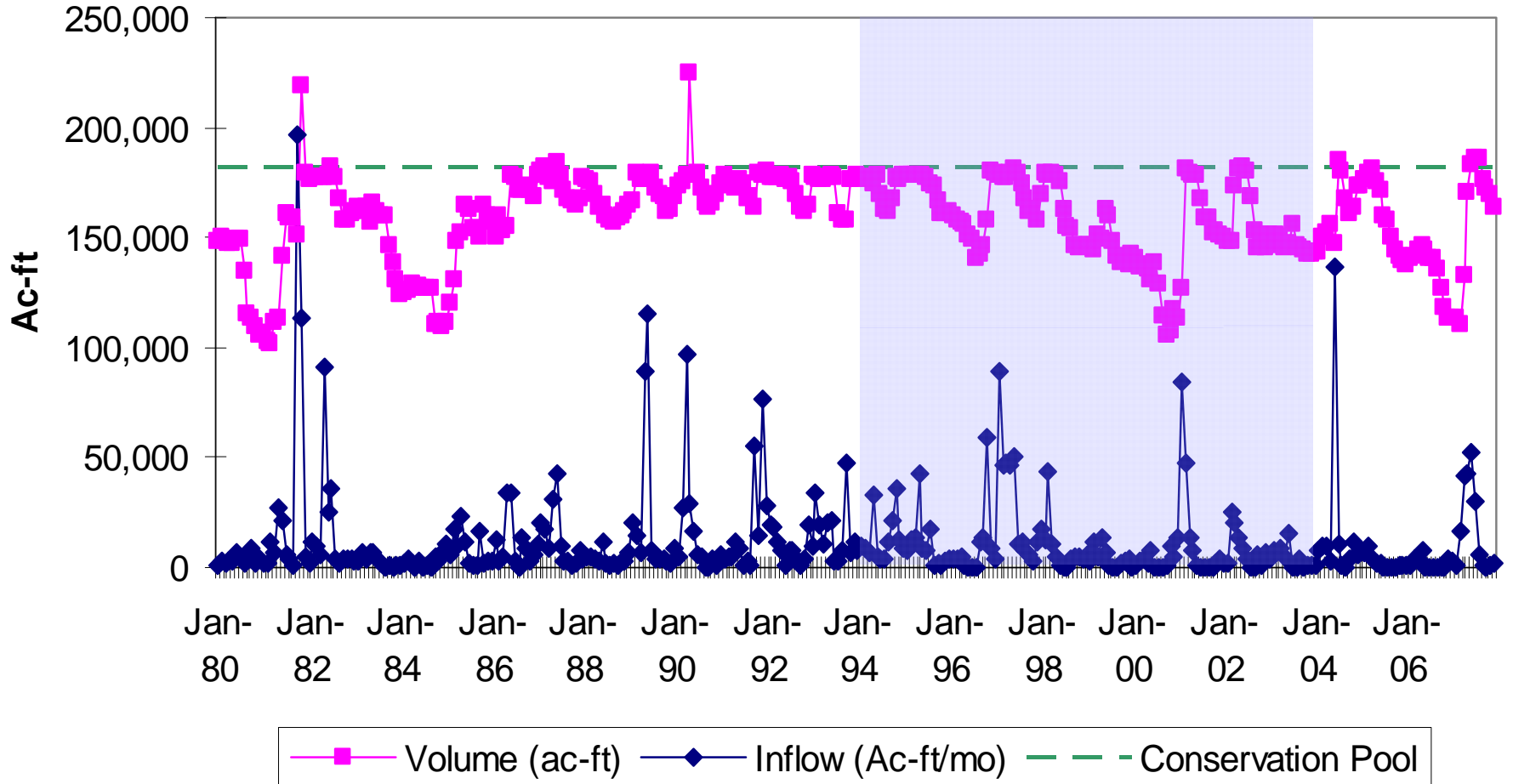


# Flow Balance

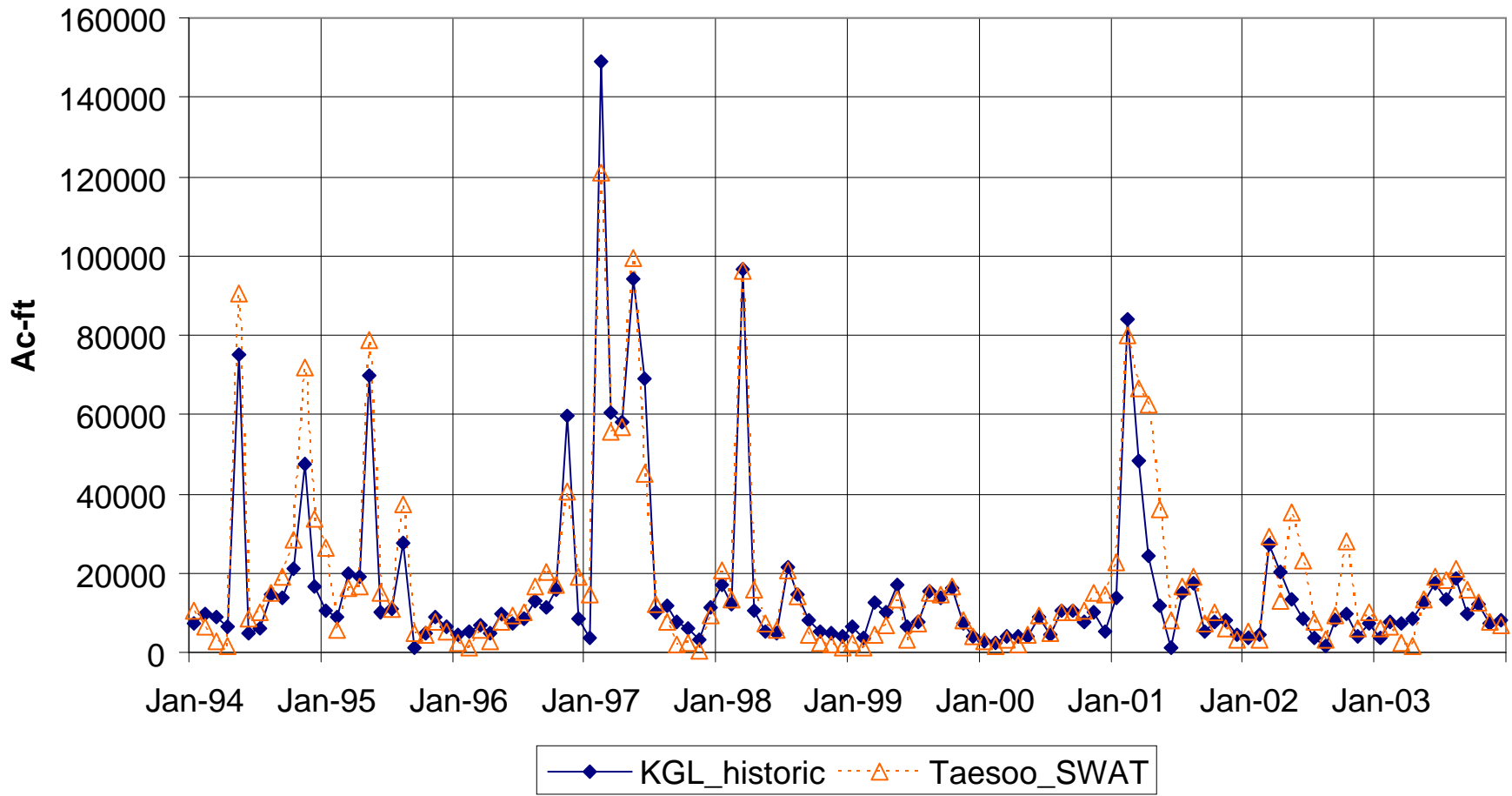
- Surface Inflows from SWAT
  - Tributary Inflows
  - Runoff from areas adjacent to lake
- Precipitation
- Evaporation
- Customer Water Use
- Spills/Releases

# Eagle Mountain Hydrology 1980 - 2007

Calibration Period  
1994-2003



# Inflow Volume Comparison





# 8 State Variables

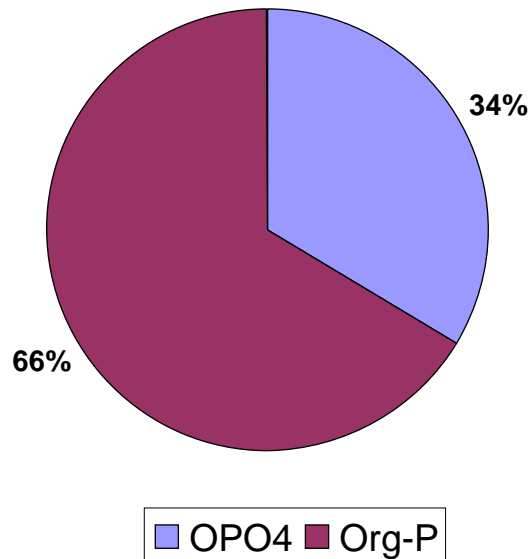
- Ammonia ( $\text{NH}_3$ )
- Nitrate+Nitrite ( $\text{NO}_x$ )
- Organic Nitrogen (ON)
- Ortho-Phosphorus ( $\text{OPO}_4$ )
- Organic Phosphorus (OP)
- Chlorophyll-a (Chl-a)
- Biological Oxygen Demand (BOD)
- Dissolved Oxygen (DO)

# Nutrient Loading to WASP

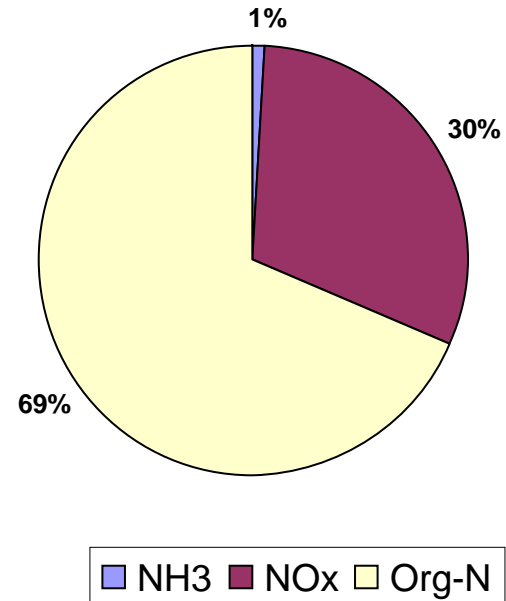
- SWAT Watershed Loads
  - NPS Loads
  - Watershed WWTP Loads
- 2 WWTP Directly to Lake
- Atmospheric Deposition
- Flux Releases

# SWAT Generated Watershed Loads

## Total P Tributary Inflow Speciation

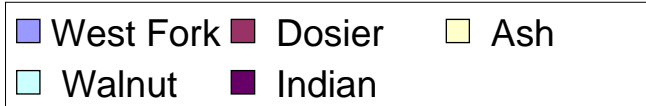
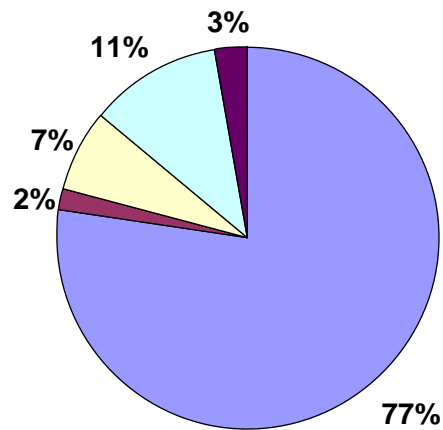


## Total N Tributary Inflow Speciation

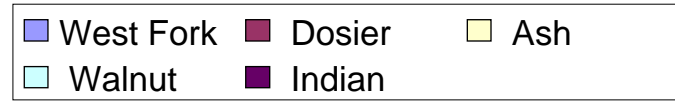
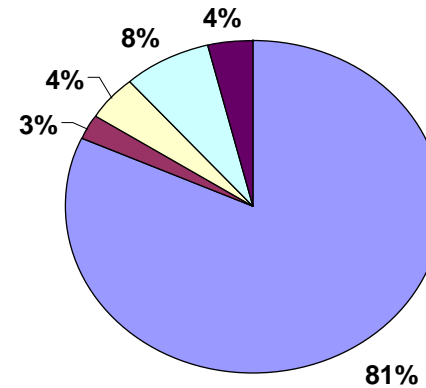


# Nutrient Contributions by Watershed Location

## TP Contribution by Tributary

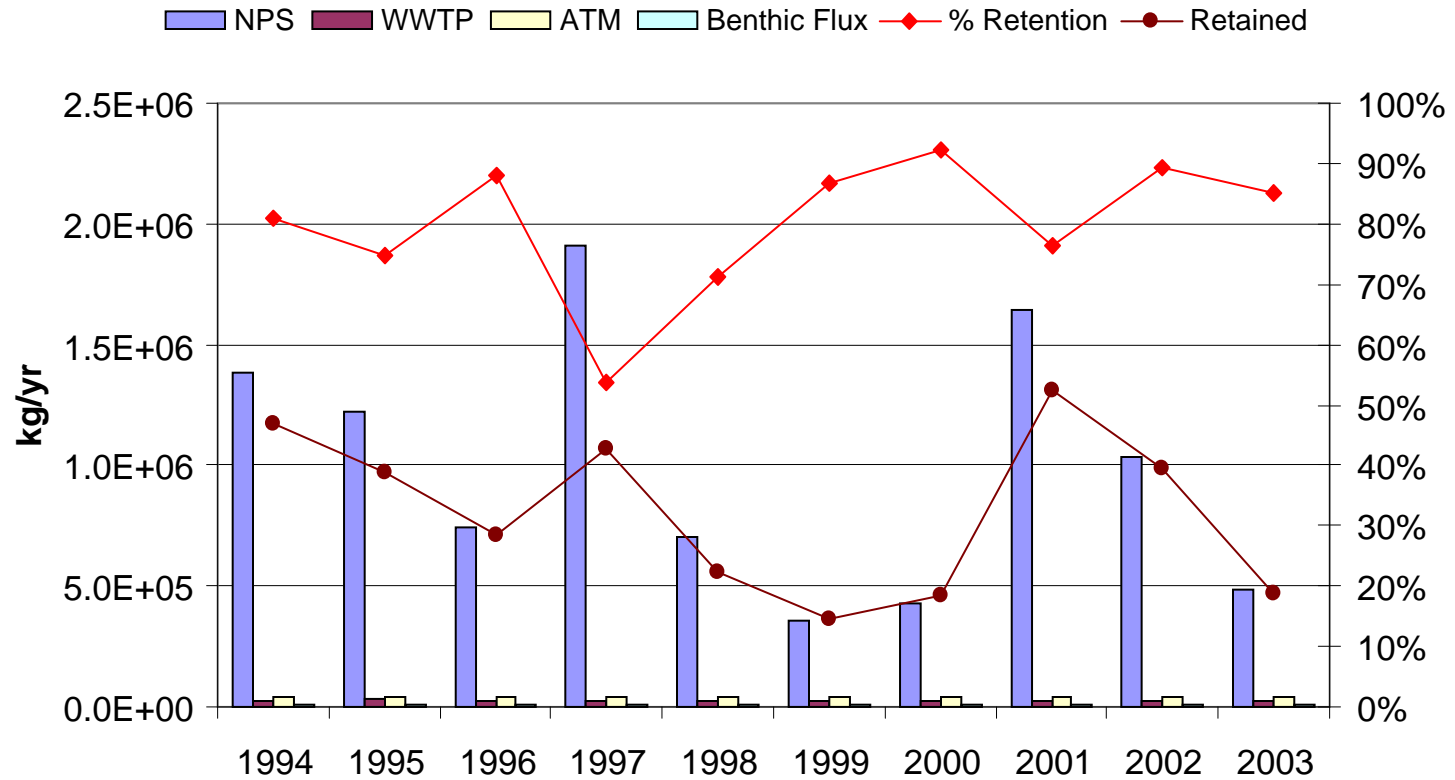


## TN Contribution by Tributary



# Annual TN Loads Partitioned by Source

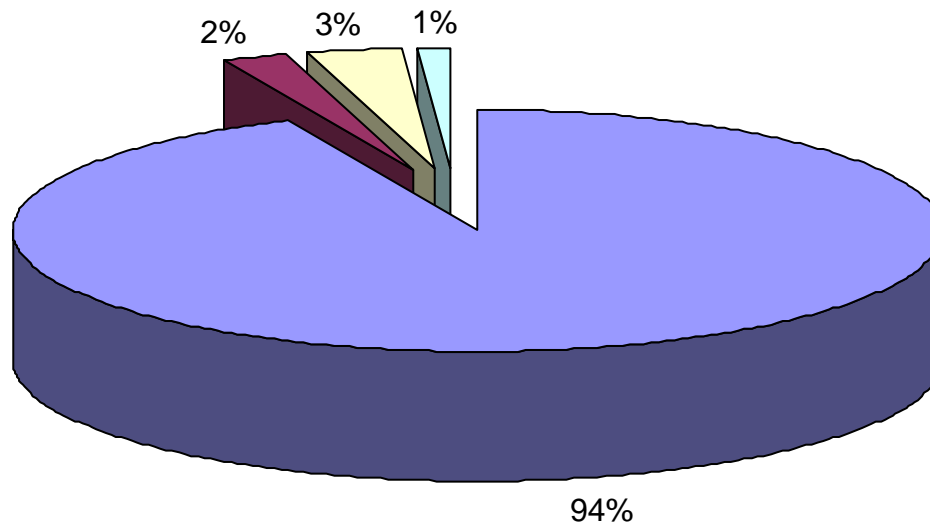
## Eagle Mountain Total Nitrogen Budget



# WASP TN Loading Budget

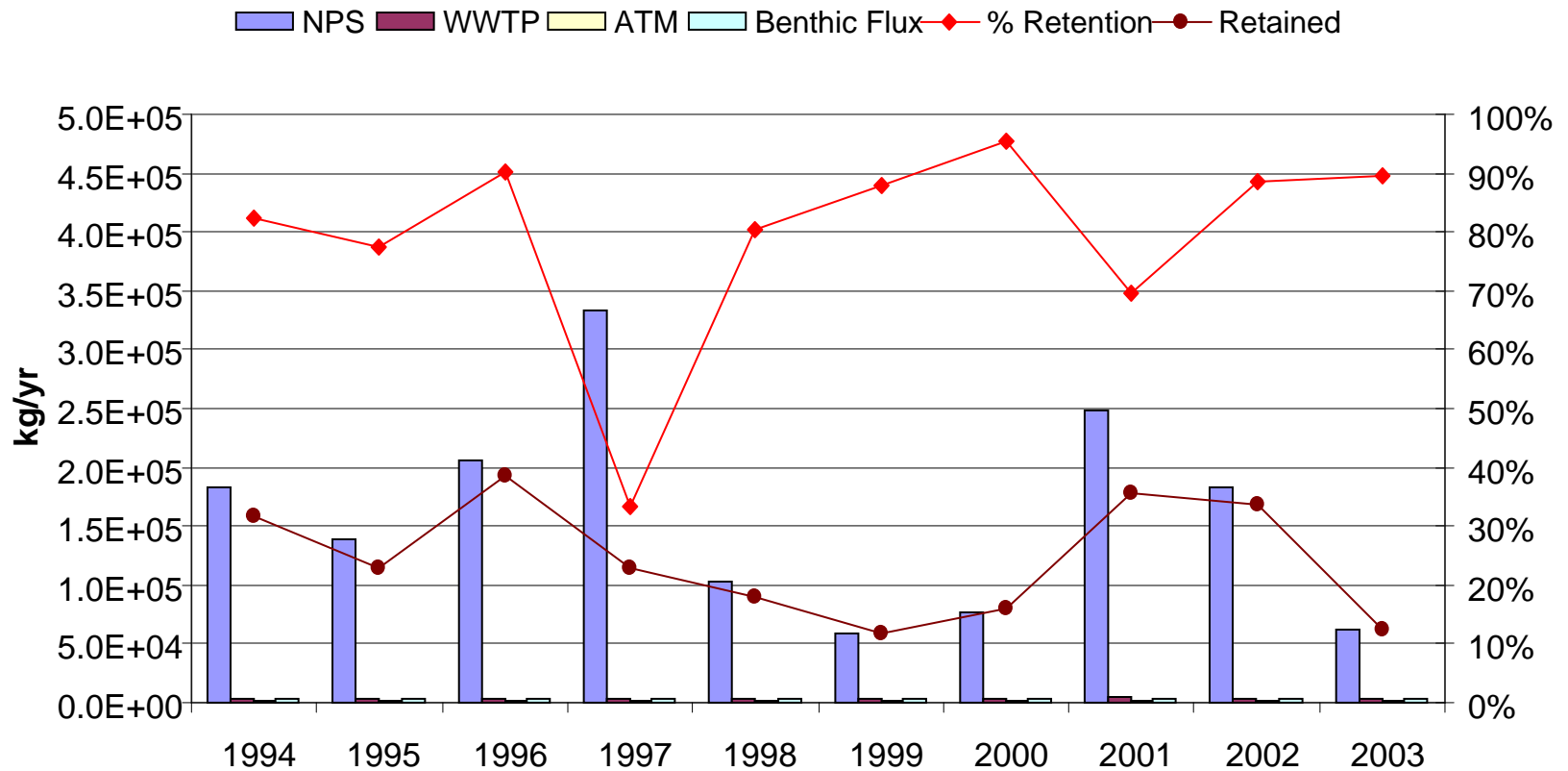
**Eagle Mountain 10 Yr Average TN Budget**  
**Average Annual Load 1,062,406 kg/yr**

■ NPS ■ WWTP ■ Atmosphere □ Flux



# Annual TP Loads Partitioned by Source

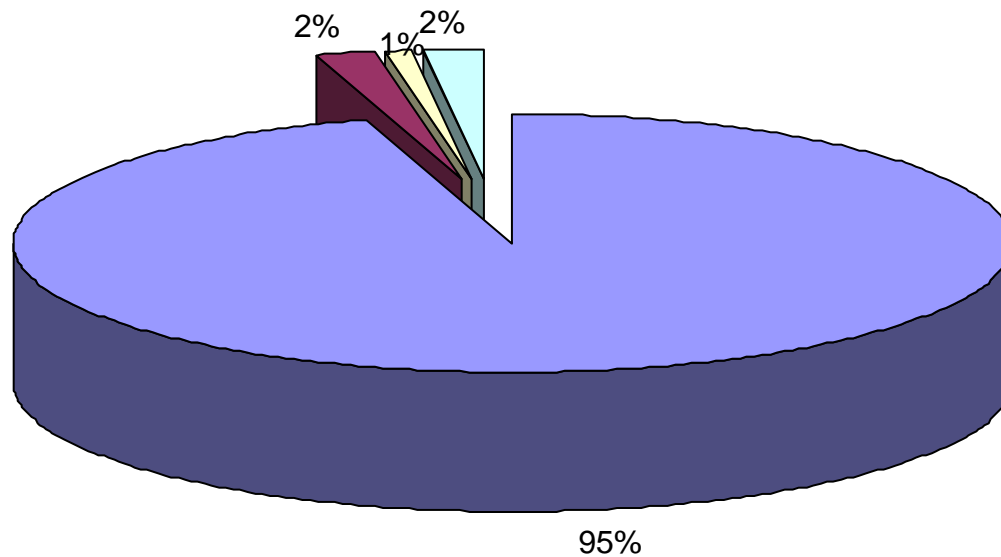
## Eagle Mountain Total Phosphorus Budget



# WASP TP Loading Budget

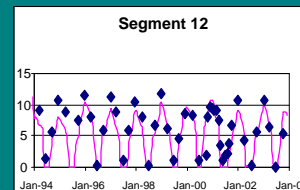
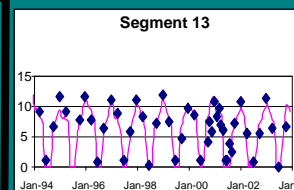
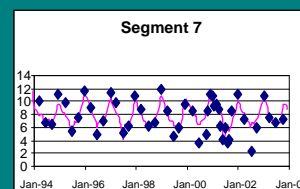
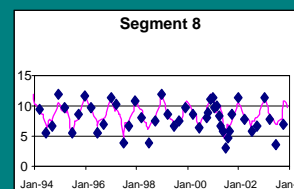
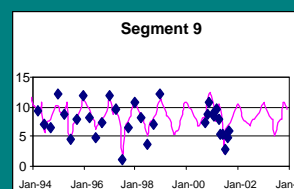
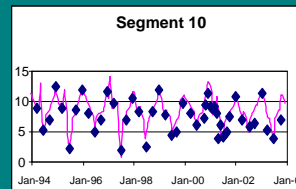
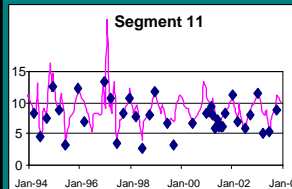
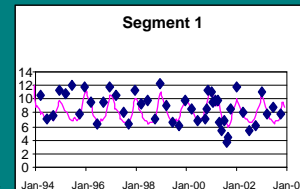
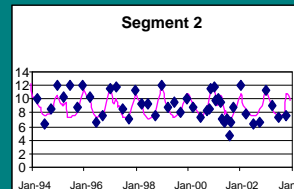
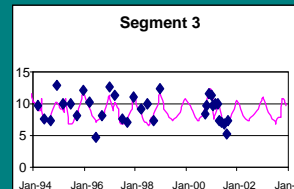
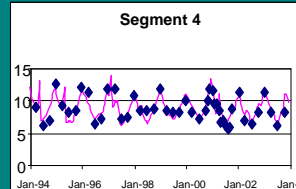
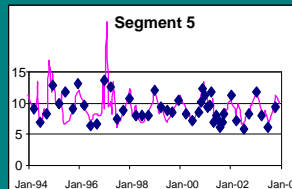
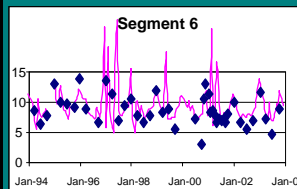
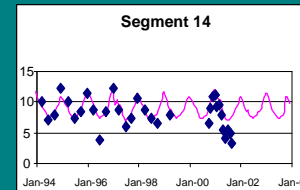
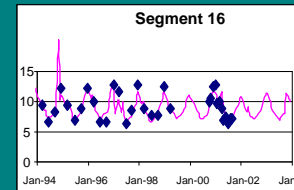
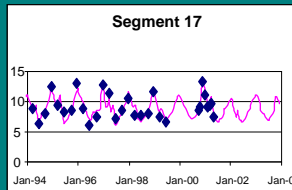
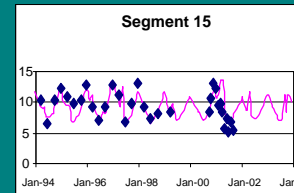
**Eagle Mountain 10 Yr Average TP Budget**  
**Average Annual Load 167,459 kg/yr**

■ NPS ■ WWTP ■ Atmosphere ■ Flux



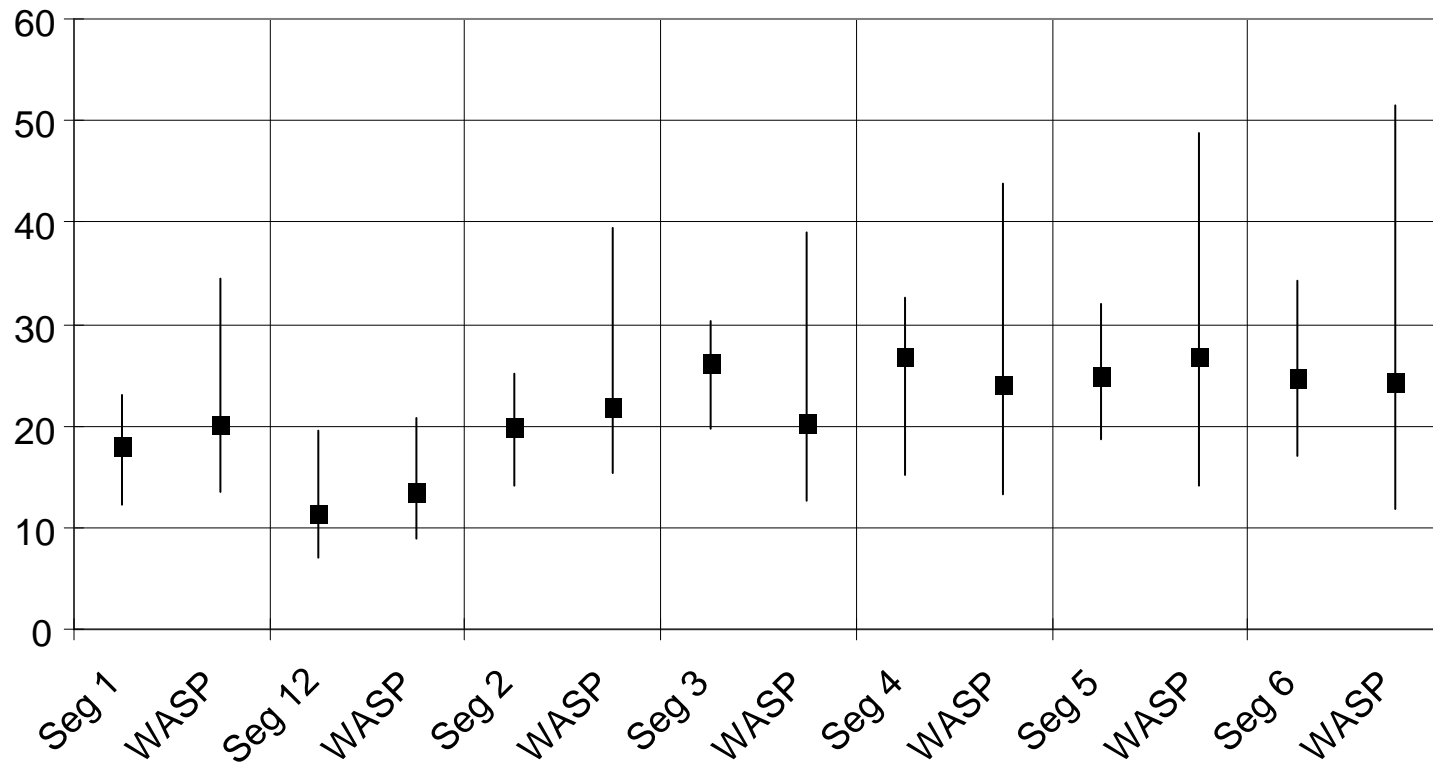


# EM Calibration - DO

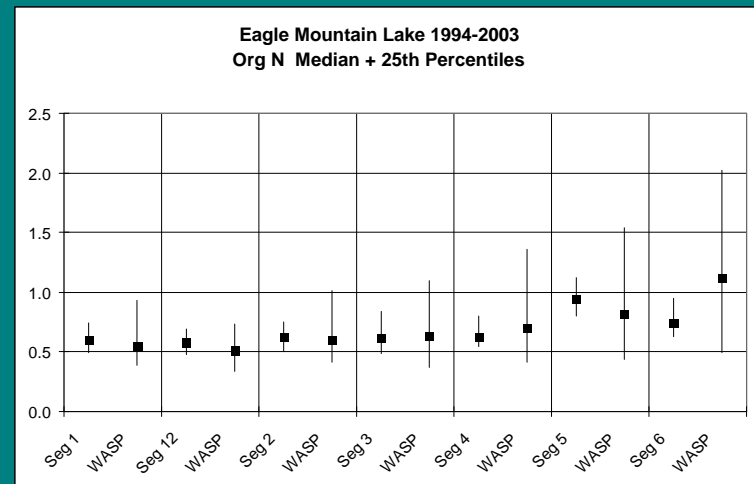
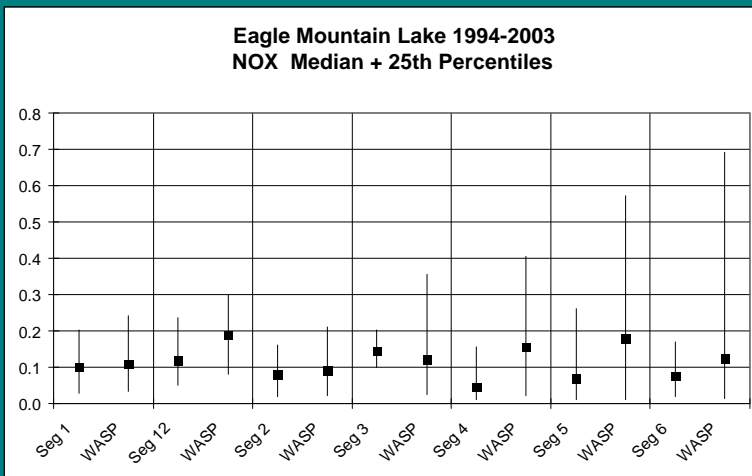
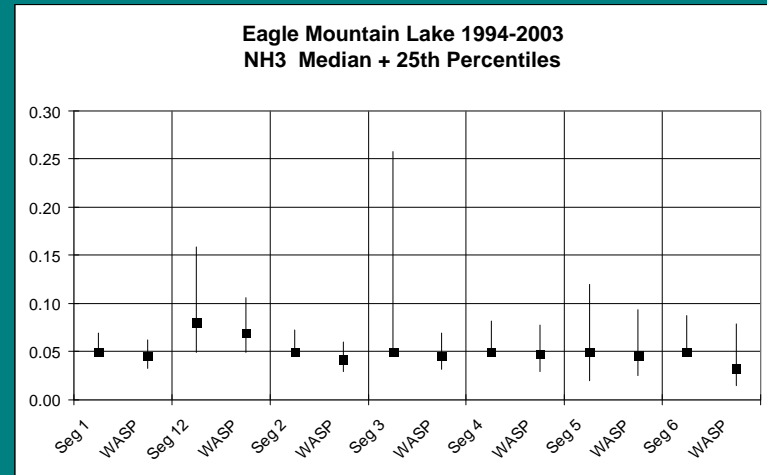
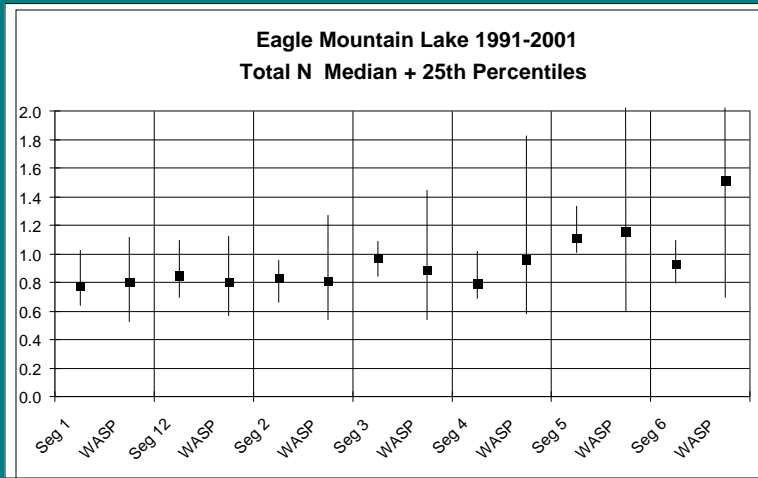


# EM Chl-a Calibration

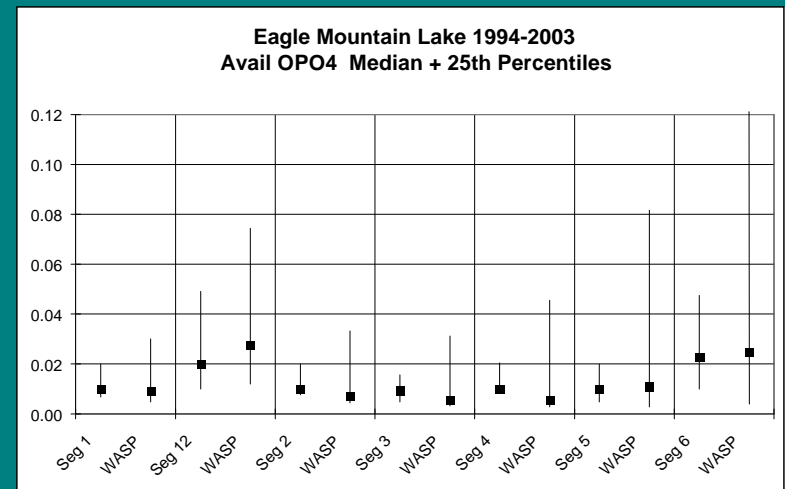
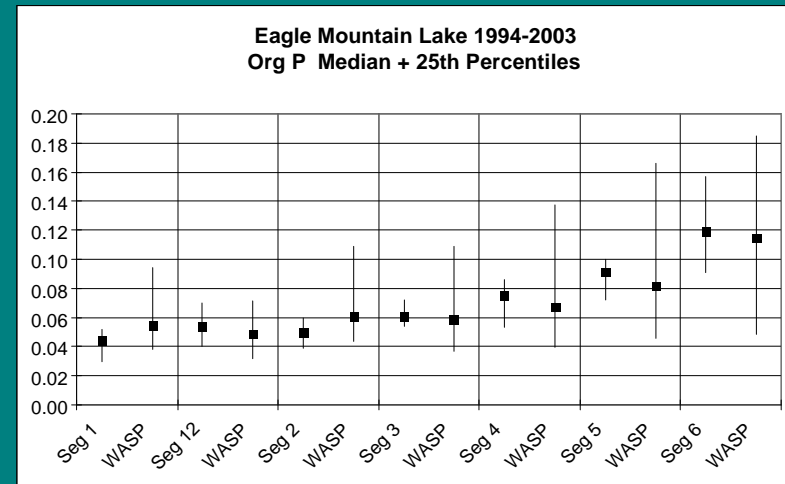
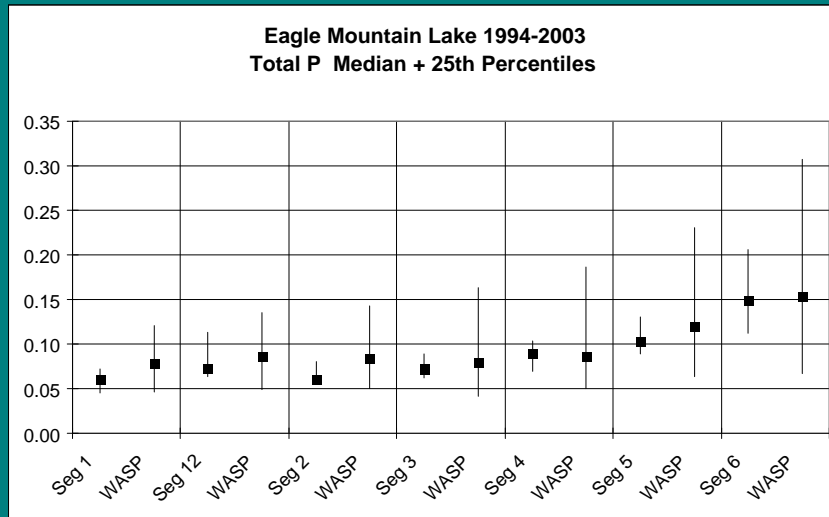
Eagle Mountain Lake 1994-2003  
Chl'a' Median + 25th Percentiles



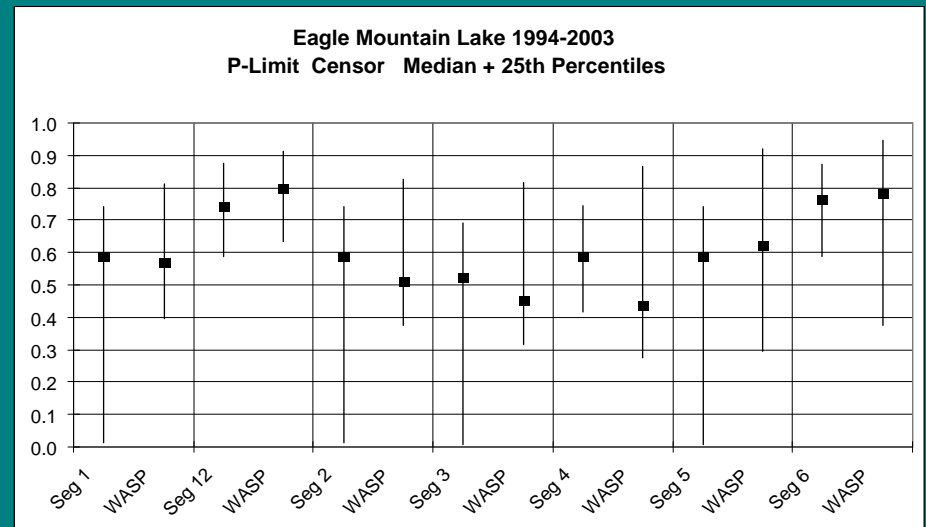
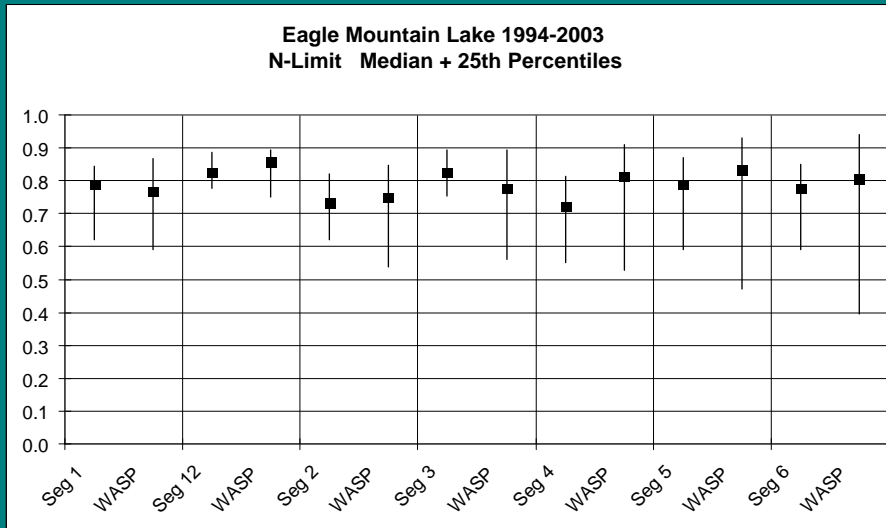
# EM Nitrogen Calibration



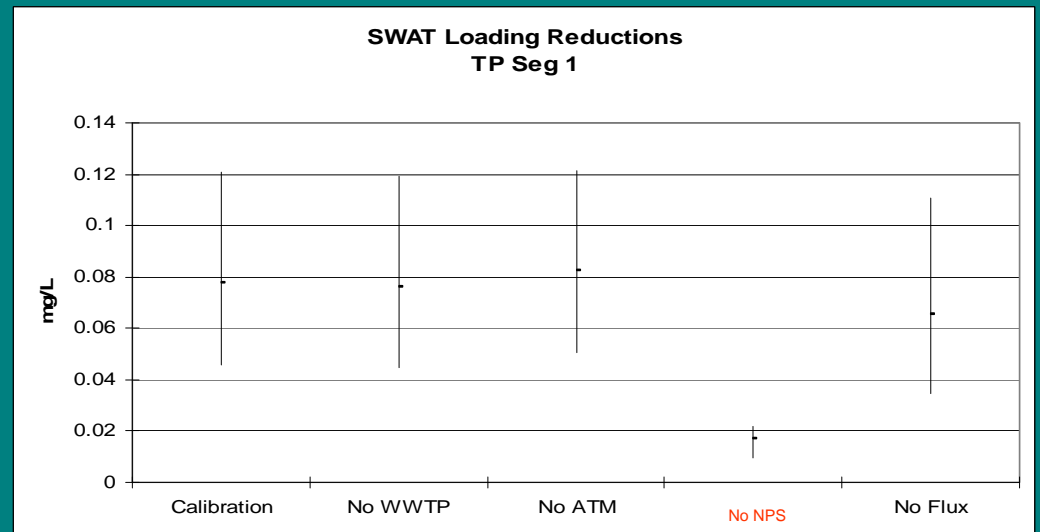
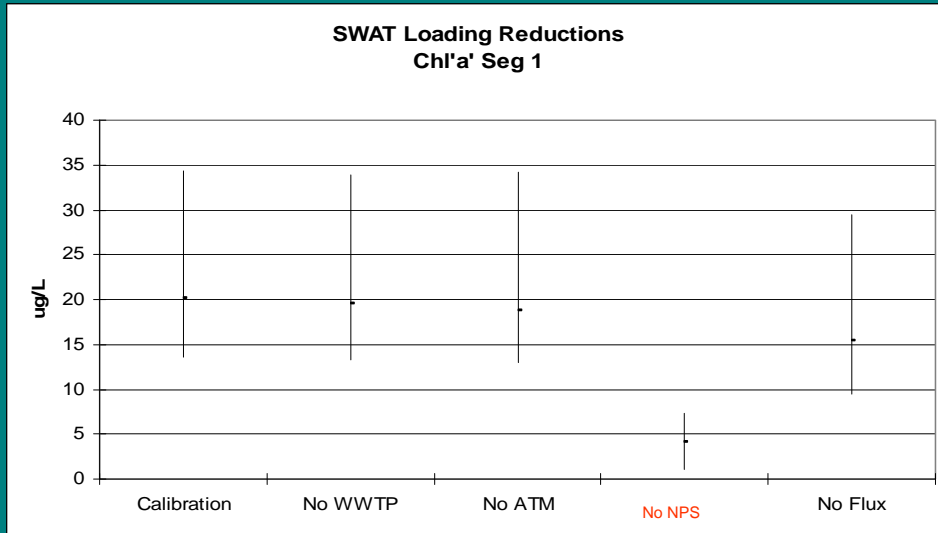
# EM Phosphorus Calibration



# EM Nutrient Limitations



# Source Load Sensitivity



# NPS Incremental Load Reductions

