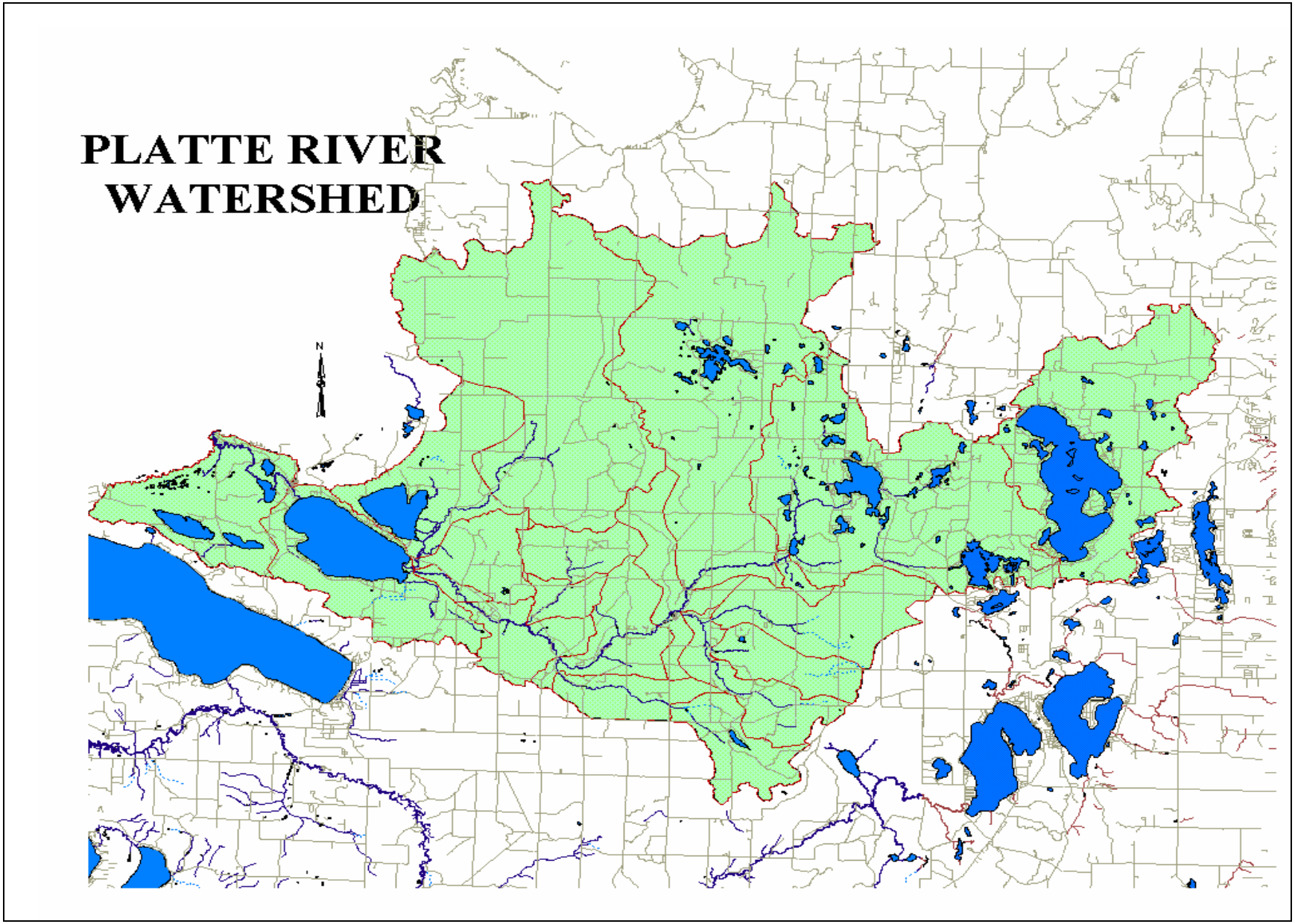


Figure 1. Map of Platte River Watershed.

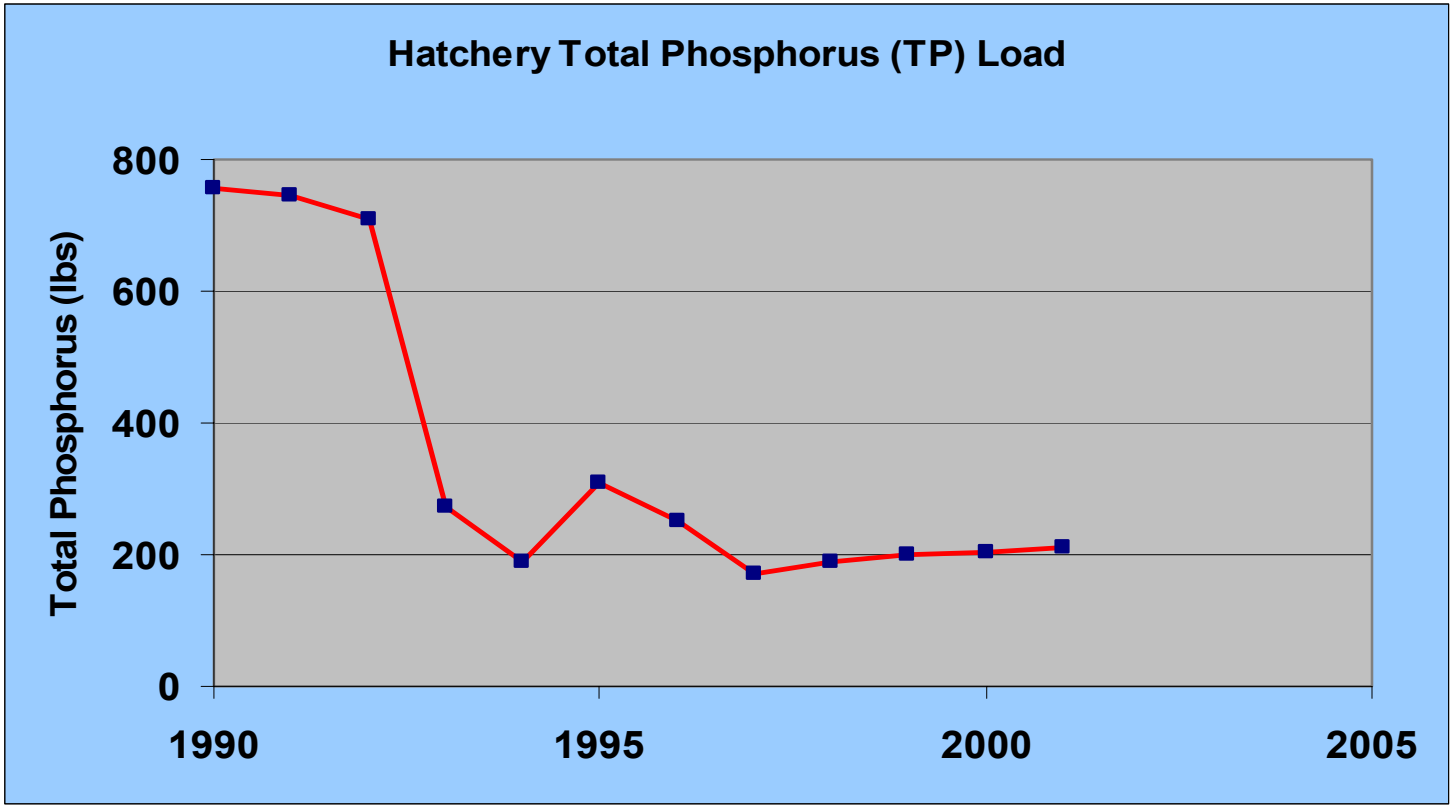


Figure 2. Long-Term Pattern of Hatchery Total Phosphorus Loads.

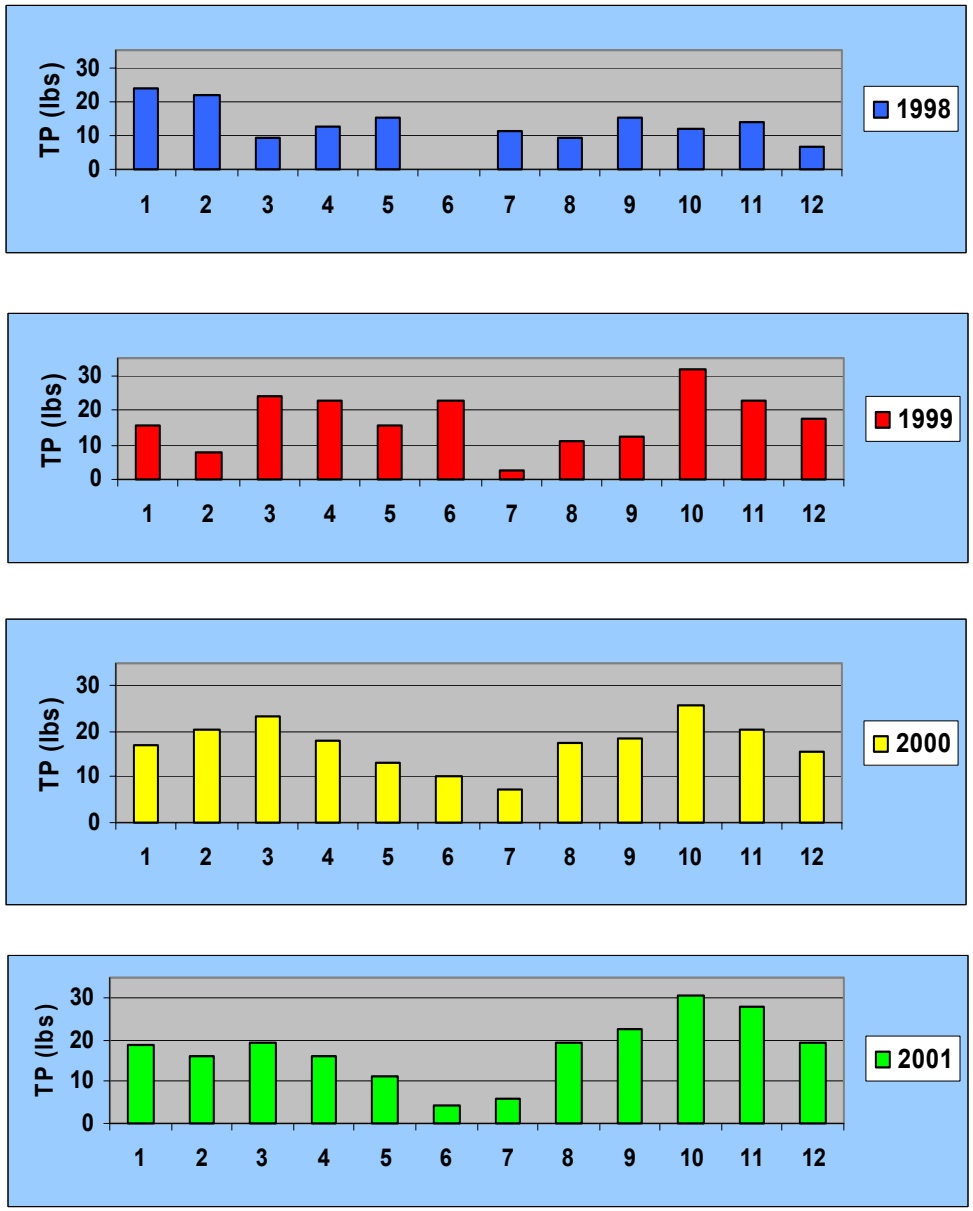


Figure 3. Monthly Hatchery Total Phosphorus Loads for 1998 to 2001.

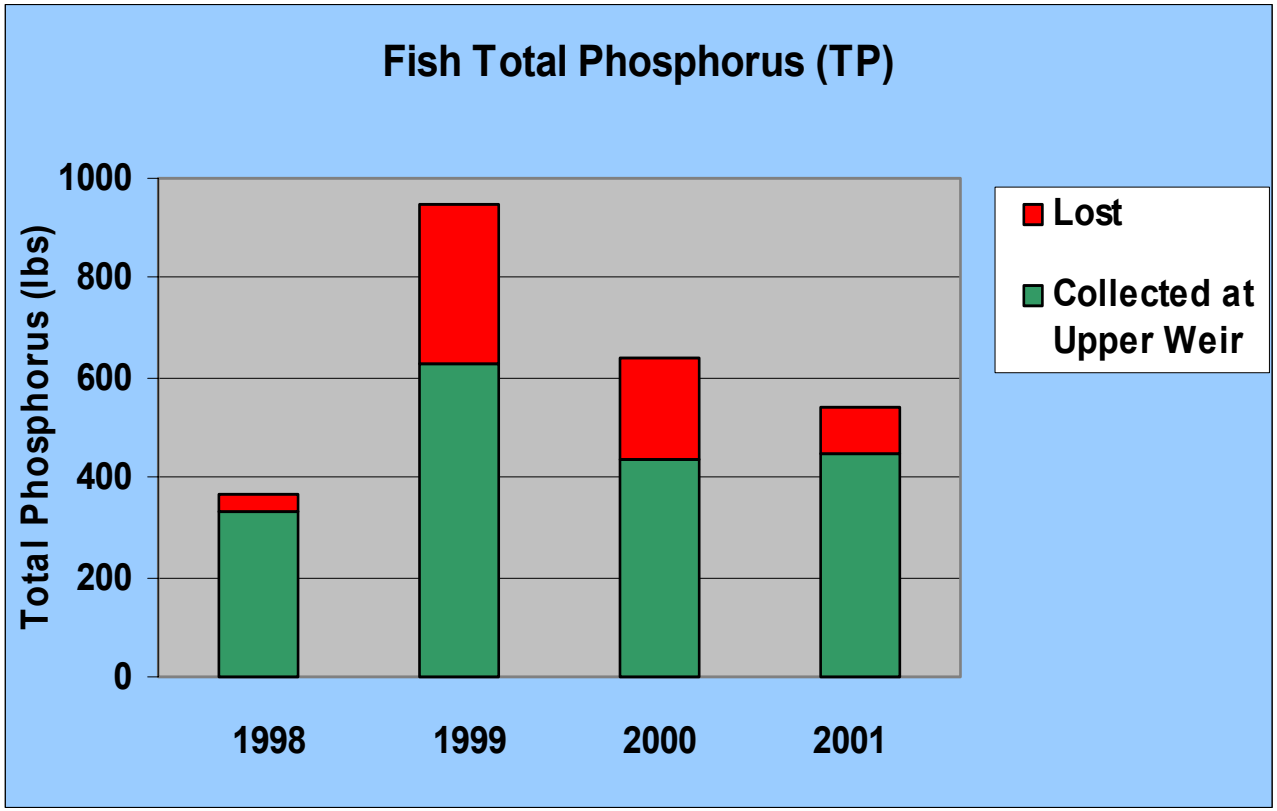
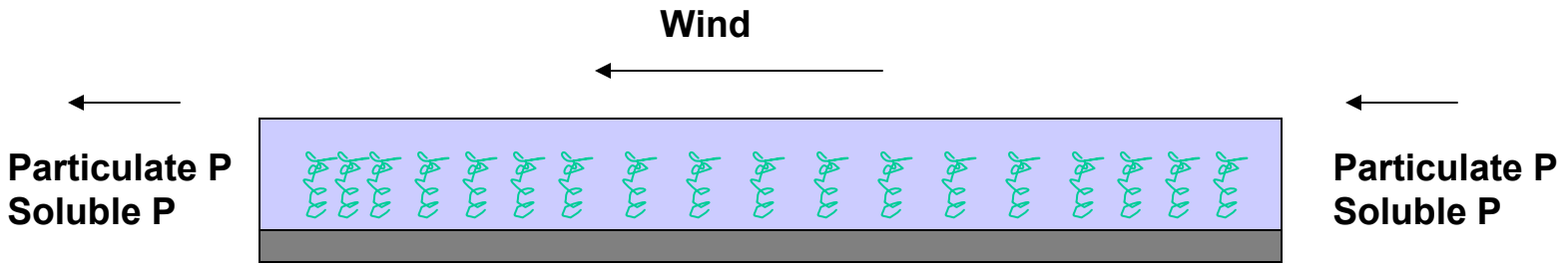


Figure 4. Phosphorus Associated with Salmon that Pass the Lower Weir for 1998 to 2001.

Kinetic Processes

Settling vs Resuspension
Hydrolysis vs Algal Uptake
Macrophyte Uptake and Growth vs Excretion and Sloughing
Sediment release



Measurements

Soluble and Total P	**Sediment TP**
Chlorophyll	**Macrophyte species, area, density, tissue P**
Dissolved Oxygen	**Wind velocity and temperature**
Turbidity	**Flow**

Figure 5. Processes that Effect Pond TP Removal Efficiency

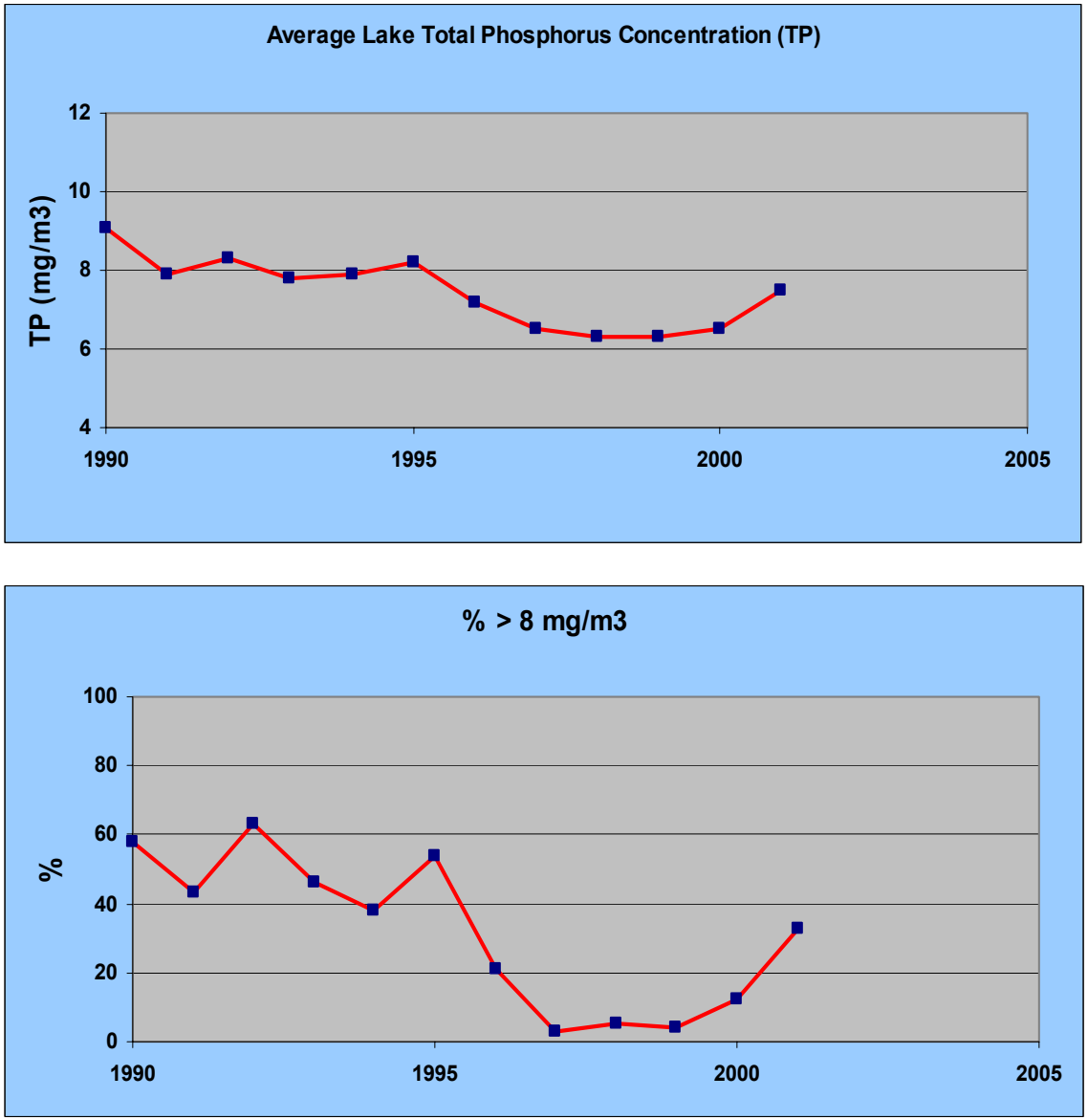


Figure 6. Long-Term Average TP and % > 8 mg/L in Big Platte Lake.

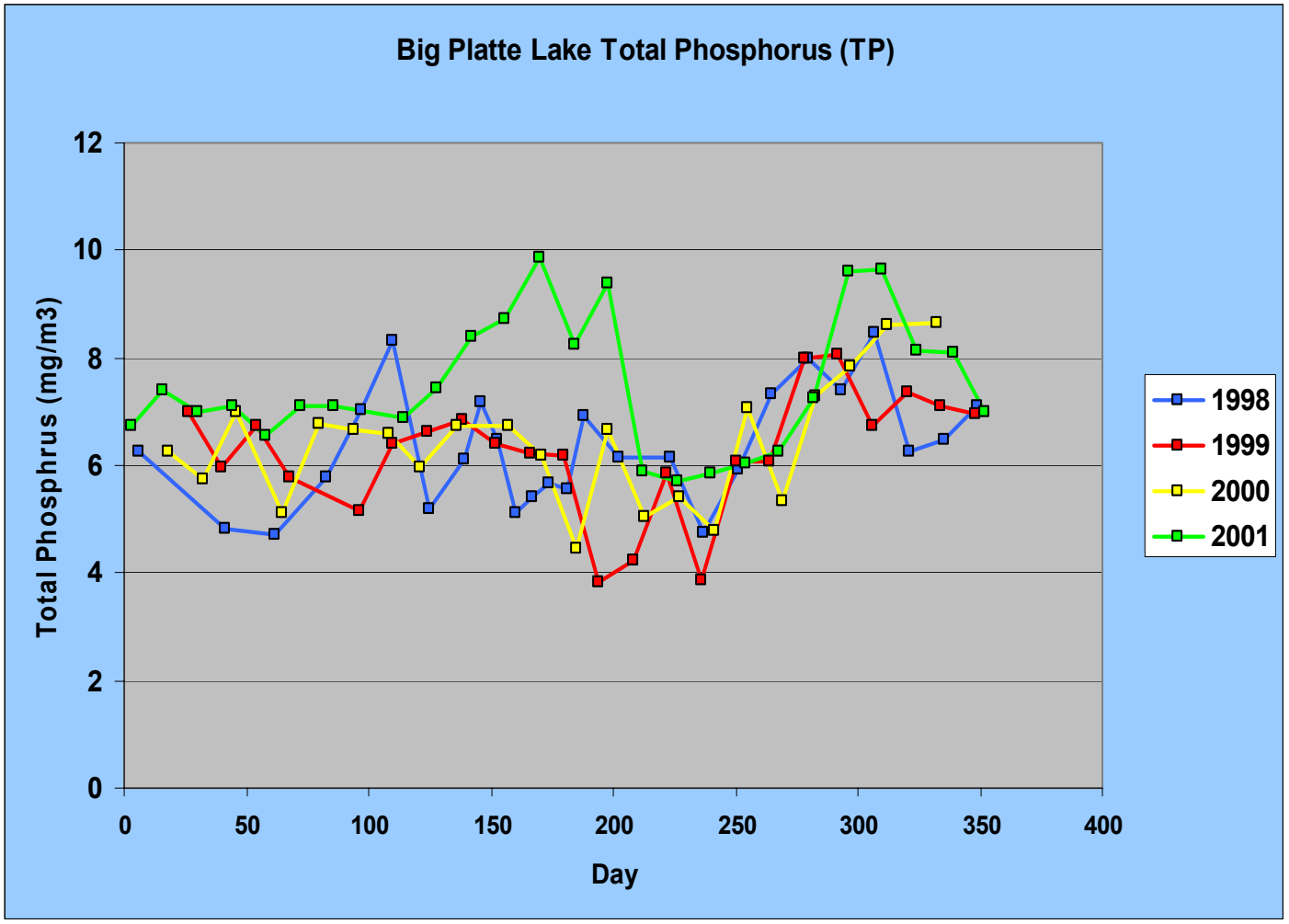
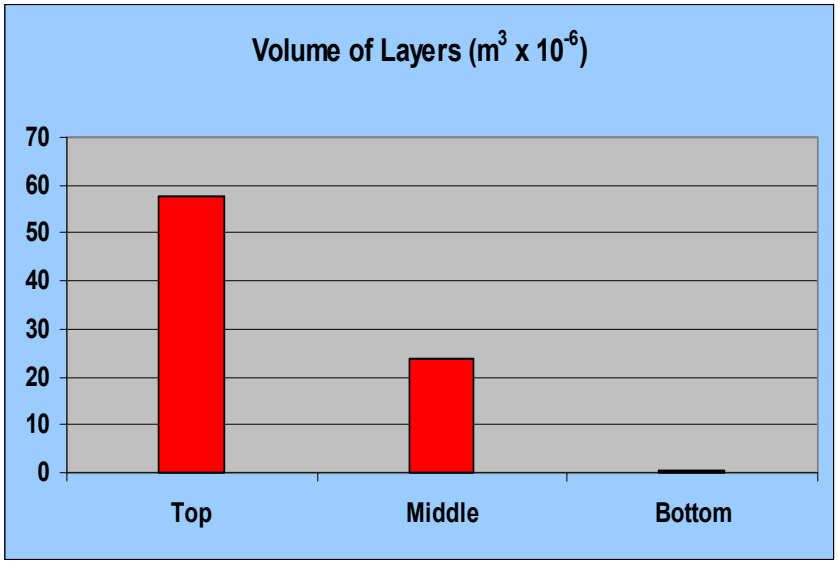
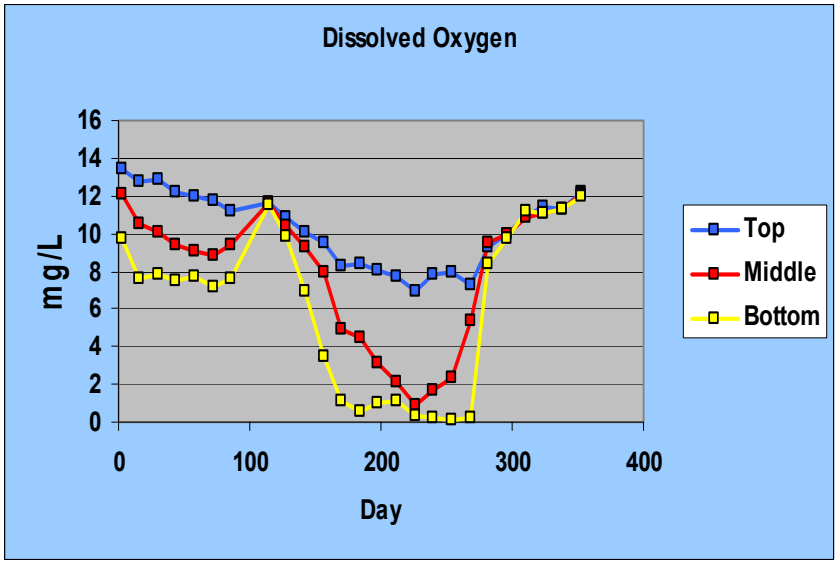
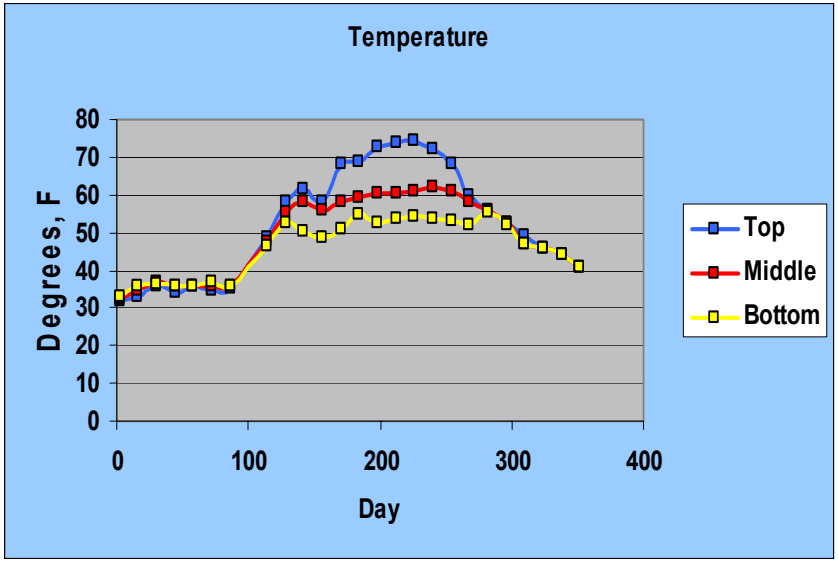


Figure 7. Annual Variation of Volume-Weighted TP in Big Platte Lake for 1998 to 2001.







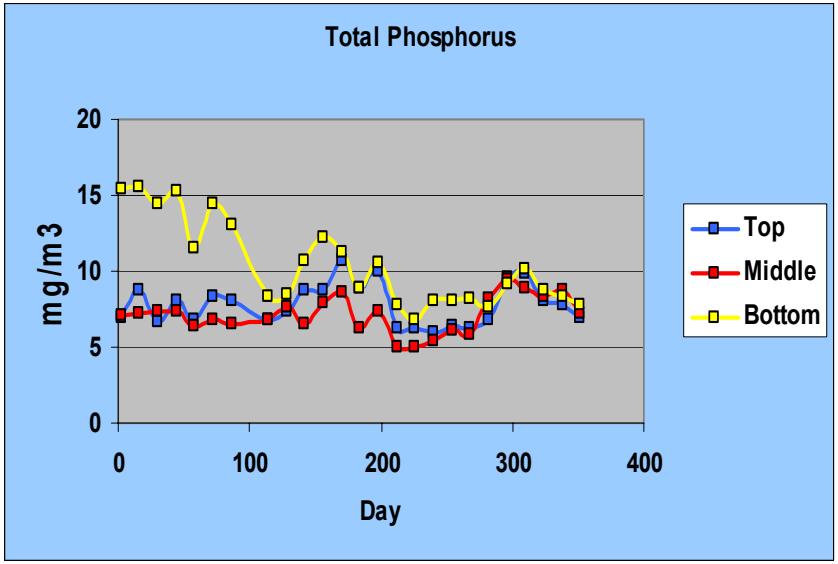


Figure 8. Measurements summarized into Three Layers for 2001.

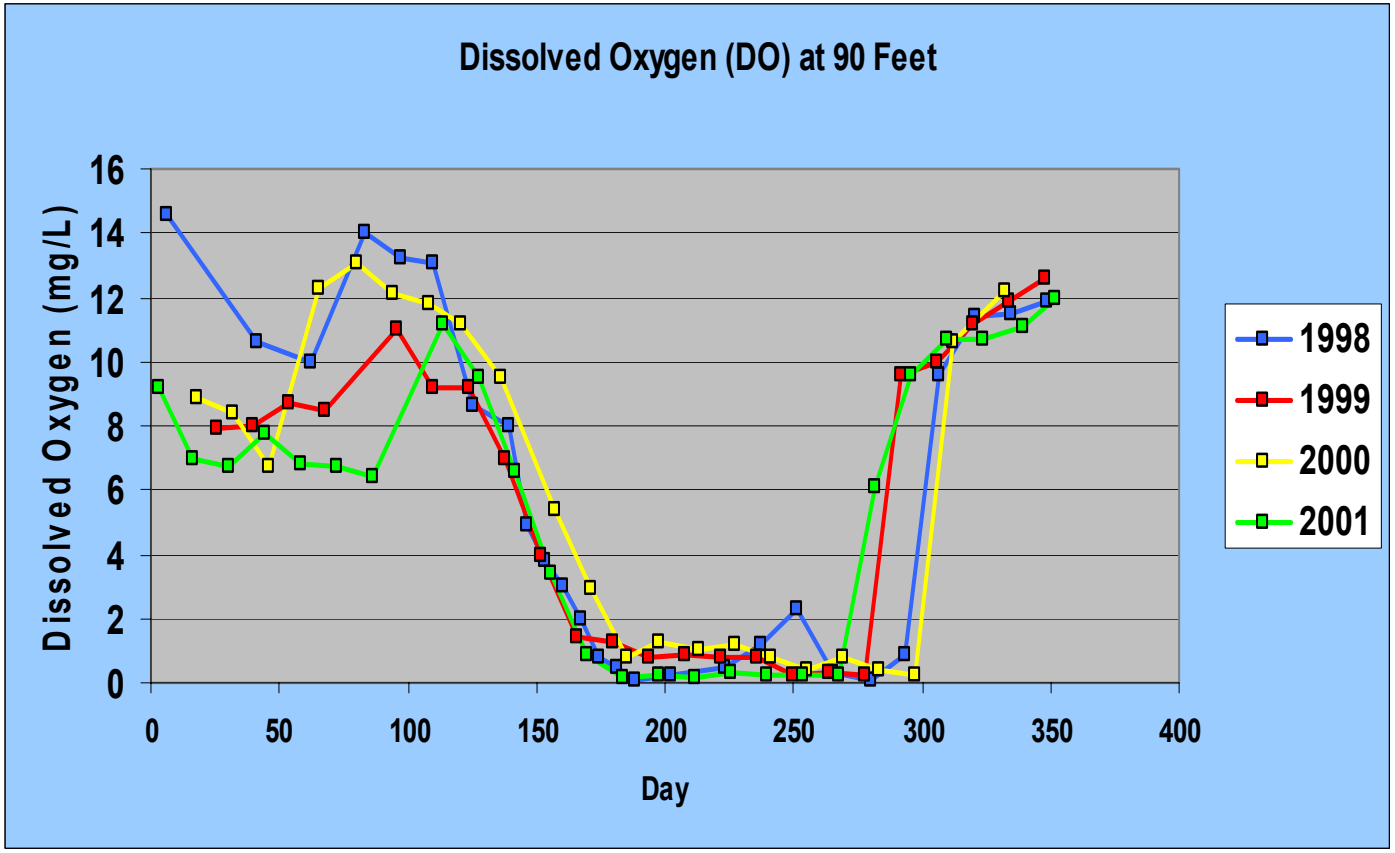


Figure 9. Annual Variation of Dissolved Oxygen at 90 Feet in Big Platte Lake for 1998 to 2001.

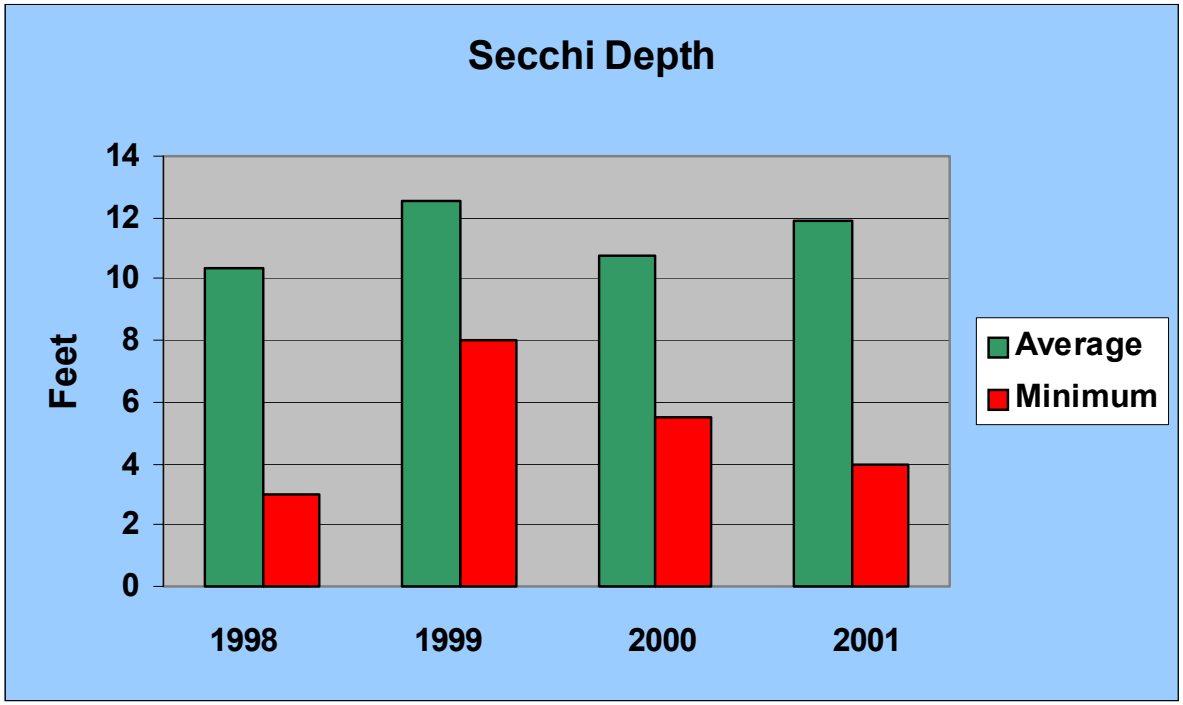


Figure 10. Average and Minimum Secchi Depth (PLIA) in Big Platte Lake for 1998 to 2001.

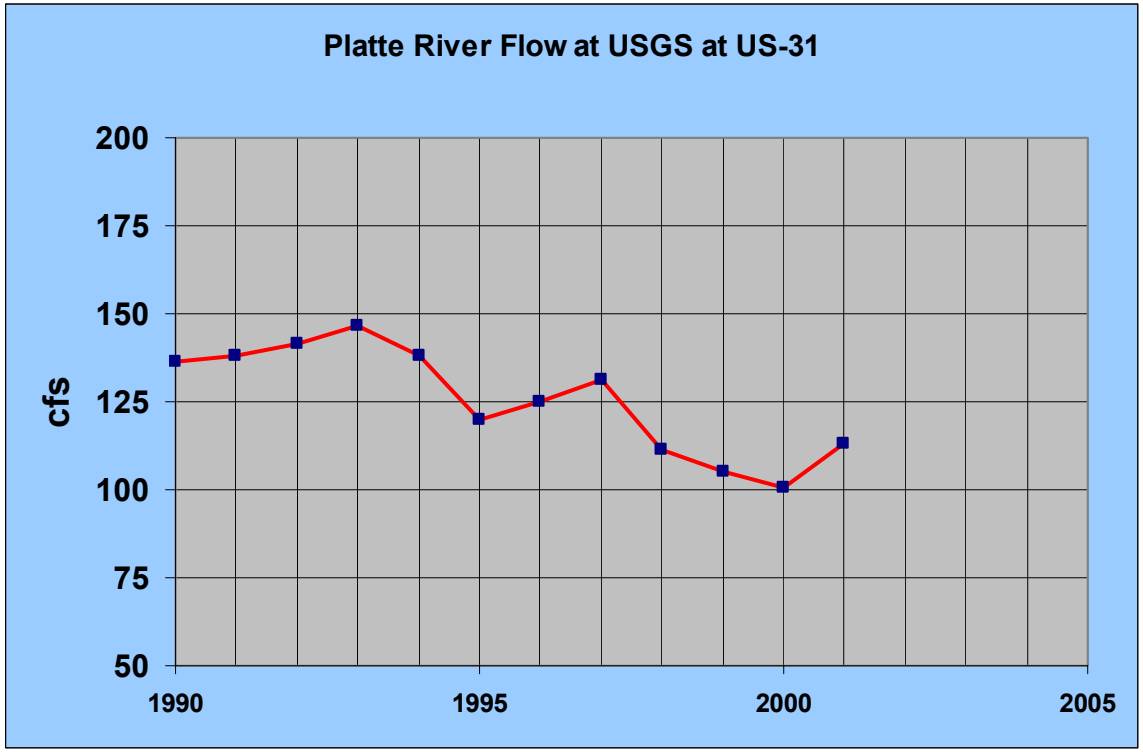


Figure 11. Mean Annual Discharge at USGS Station at US-31.

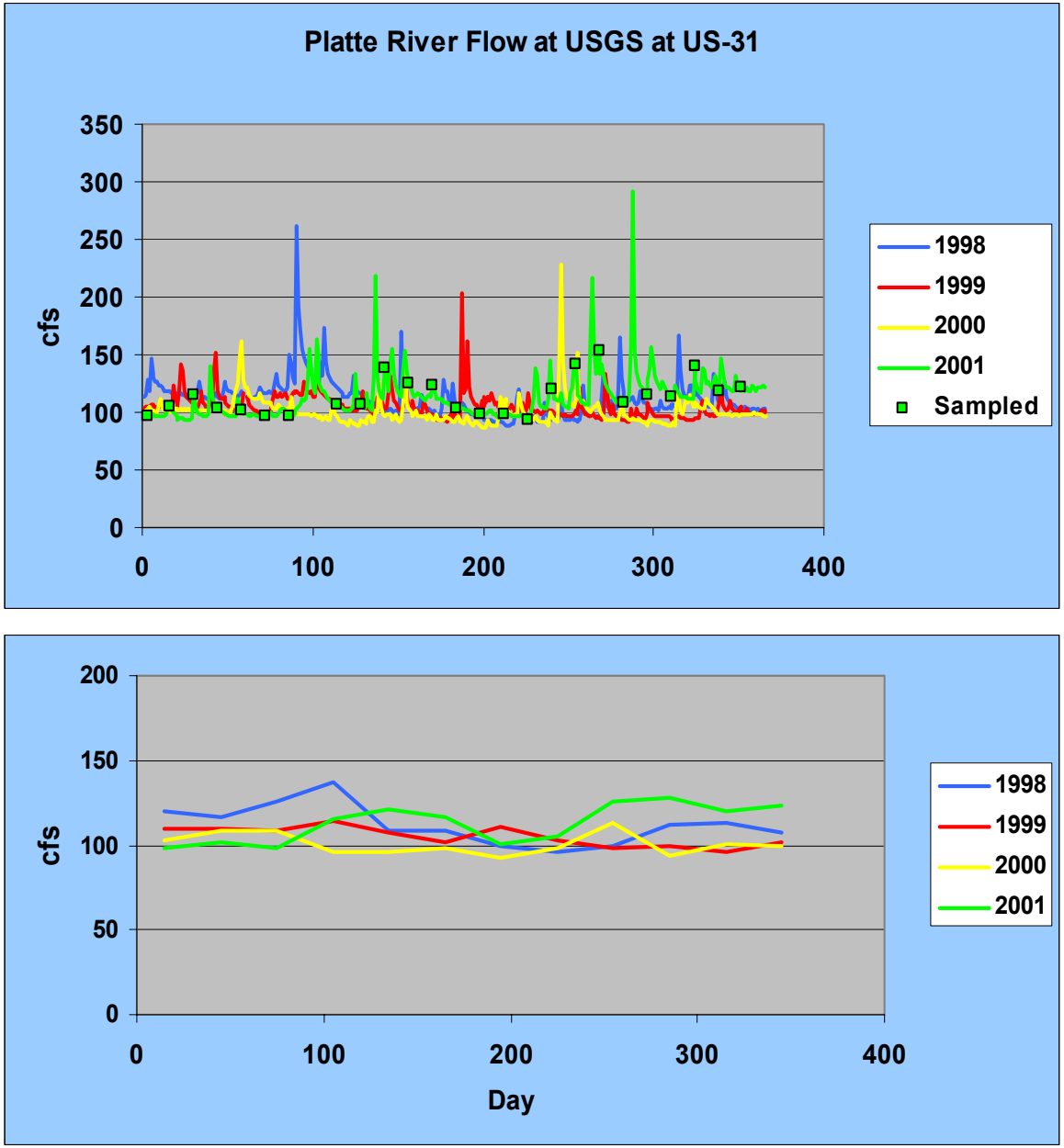


Figure 12. Daily and Monthly Flows of Platte River at USGS Station at US-31 for 1998 to 2001.

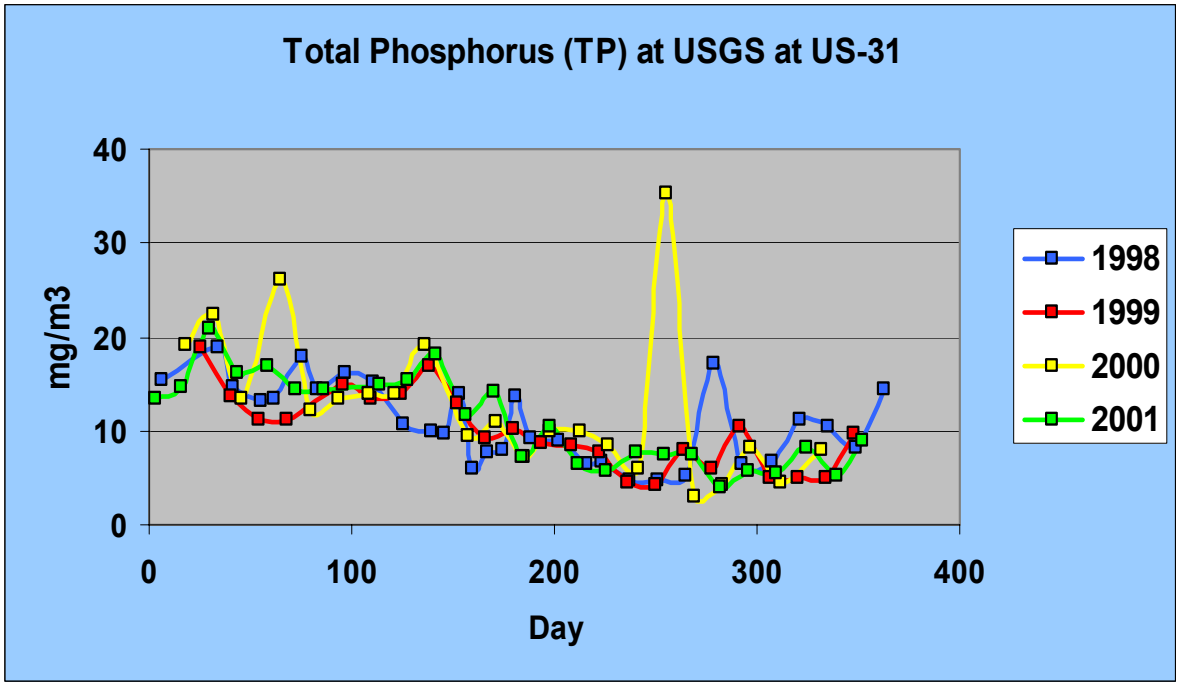


Figure 13. Measured Total Phosphorus (TP) at USGS Station at US-31 for 1998 to 2001.

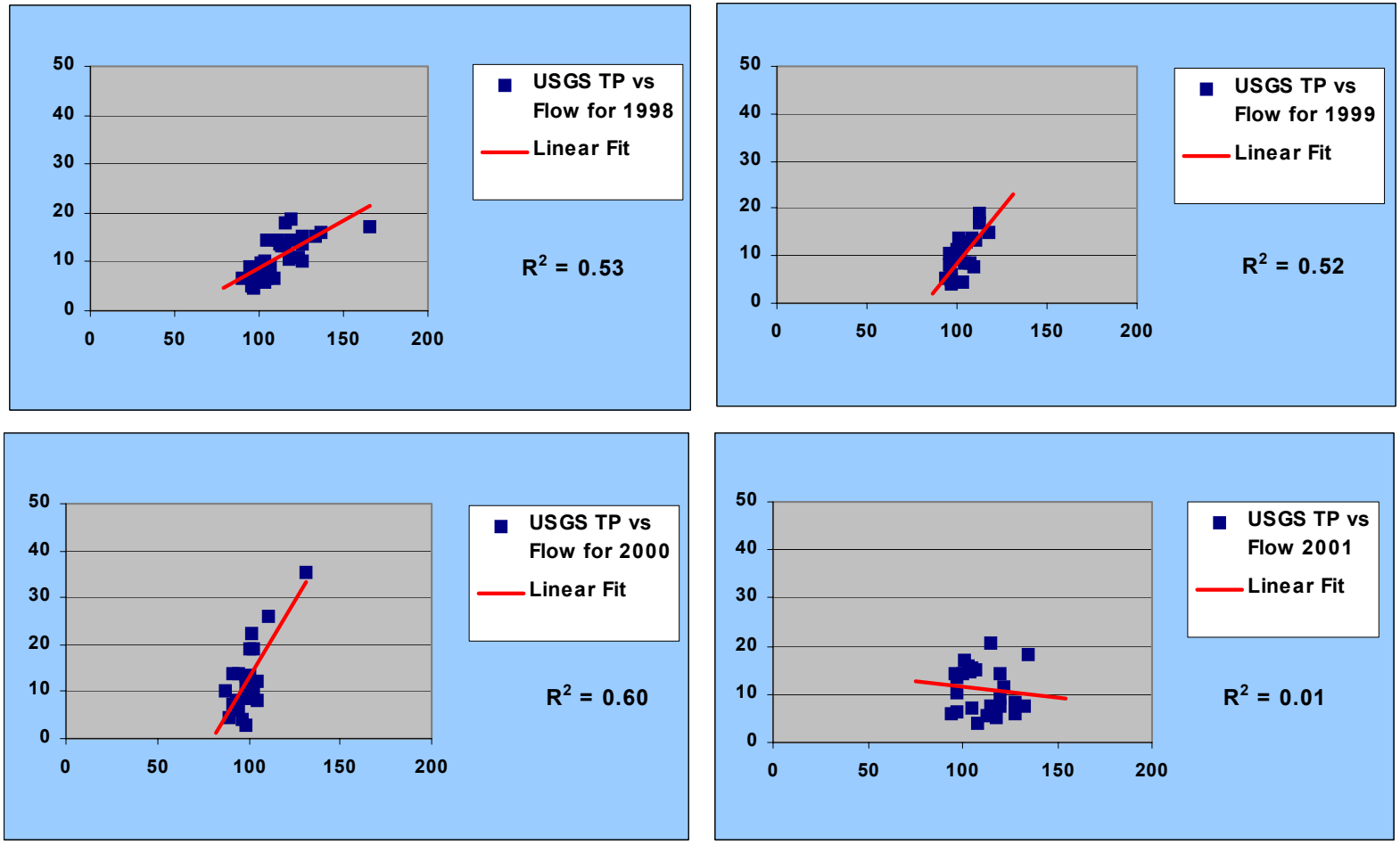


Figure 14. USGS Flow at US-31 Correlation with Total Phosphorus (TP) for 1998 to 2001.

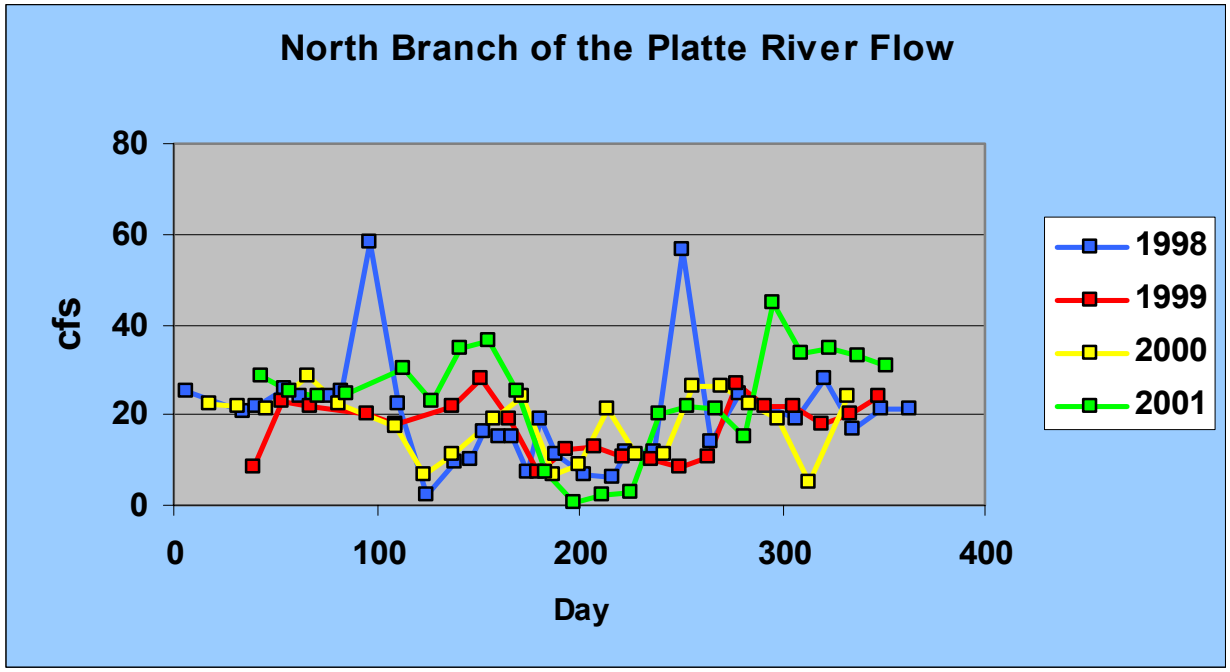


Figure 15. Measured Flow of the North Branch of the Platte River for 1998 to 2001.

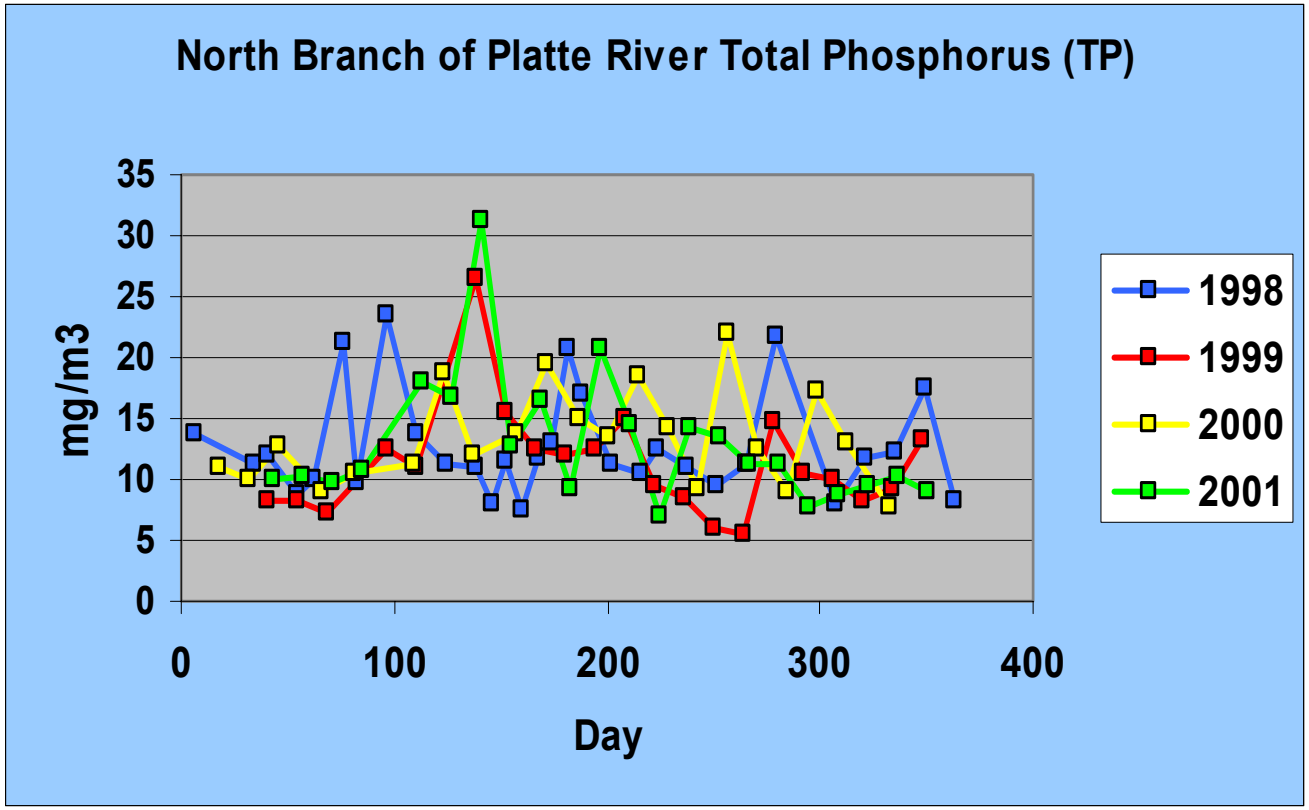
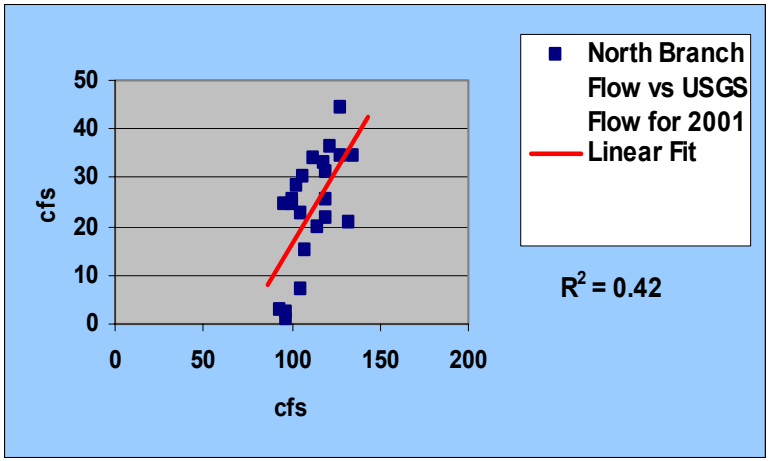


Figure 16. Measured Total Phosphorus (TP) of North Branch of Platte River for 1998 to 2001.



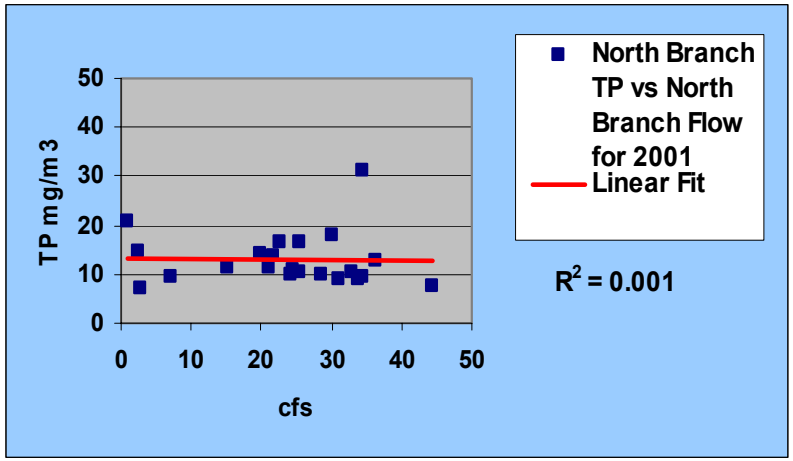


Figure 17. North Branch of Platte River Correlations for 2001.

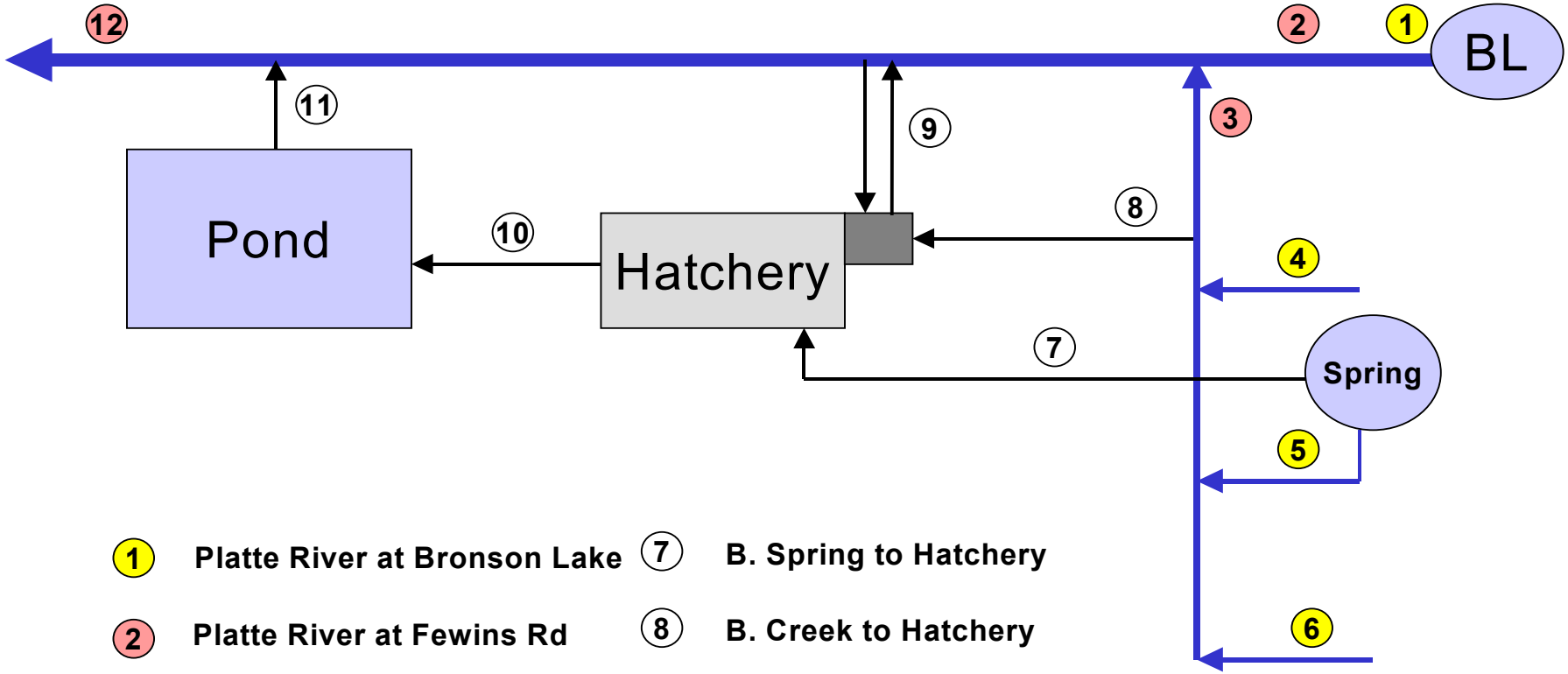
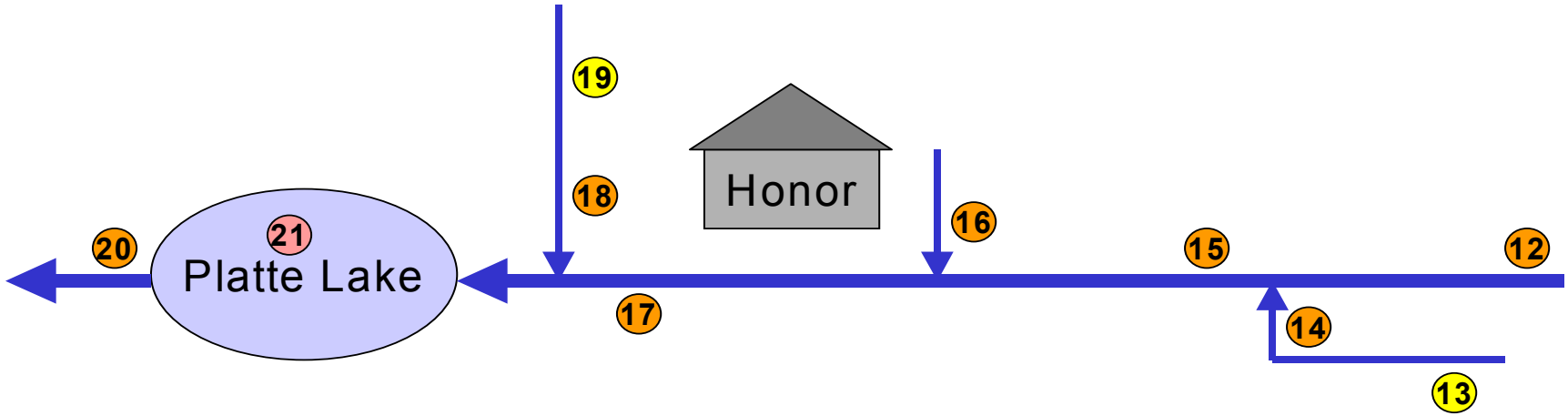


Figure 18. Proposed Hatchery and Tributary Sampling Stations for 2002.



12	Platte River at US - 31	17	Platte River at USGS
13	Upstream Carter Creek	18	North Branch at Deadstream
14	Carter Creek at mouth	19	North Branch at Hooker Rd
15	Platte River at Pioneer Rd	20	Lake Outlet at M - 22
16	Collison Creek	21	Platte Lake at Center - Deep

Figure 19. Proposed Lake and Tributary Sampling Stations for 2002.

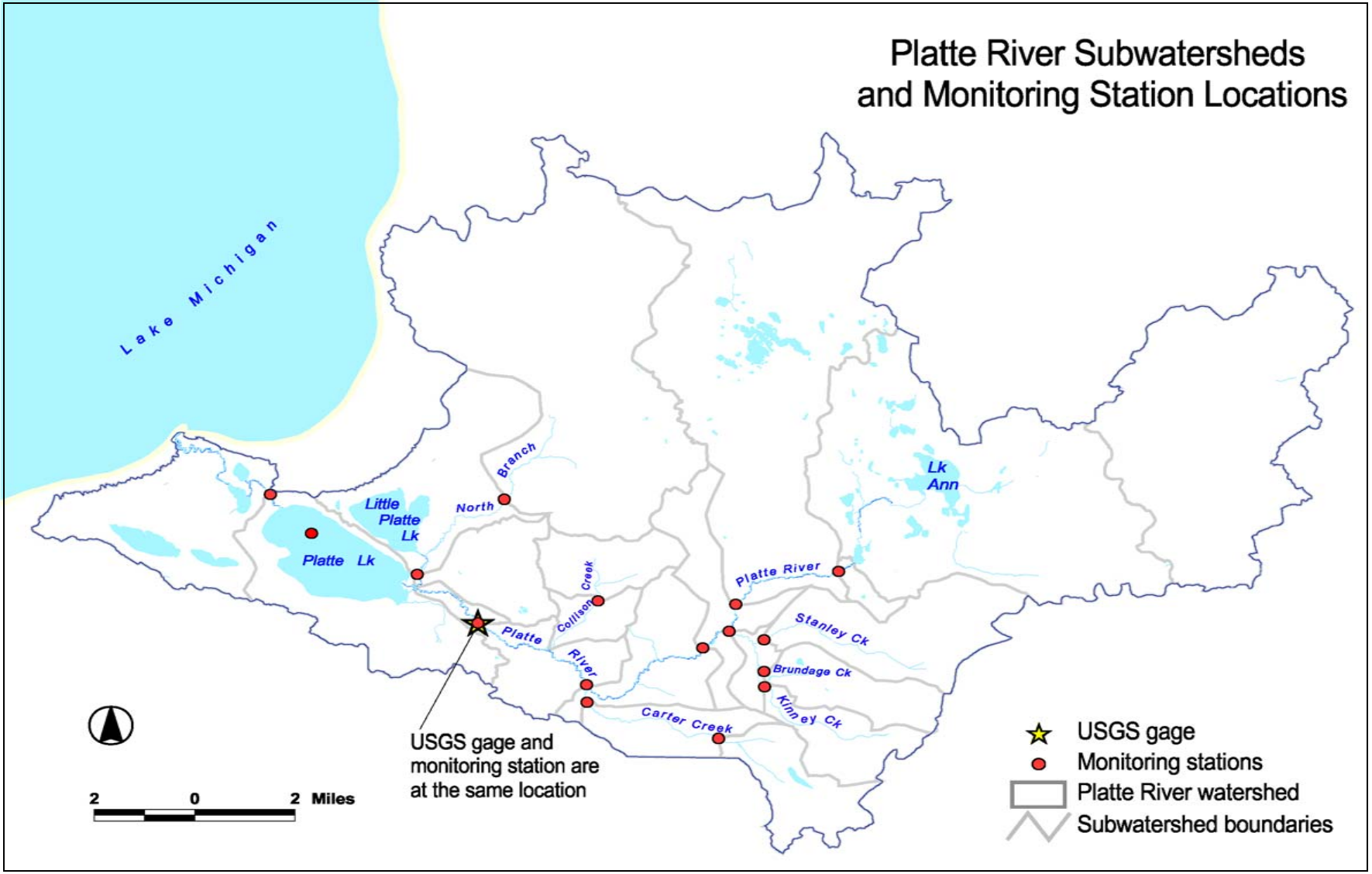


Figure 20. GIS Map of Sub-Watersheds and Proposed Sampling Stations (LTI).

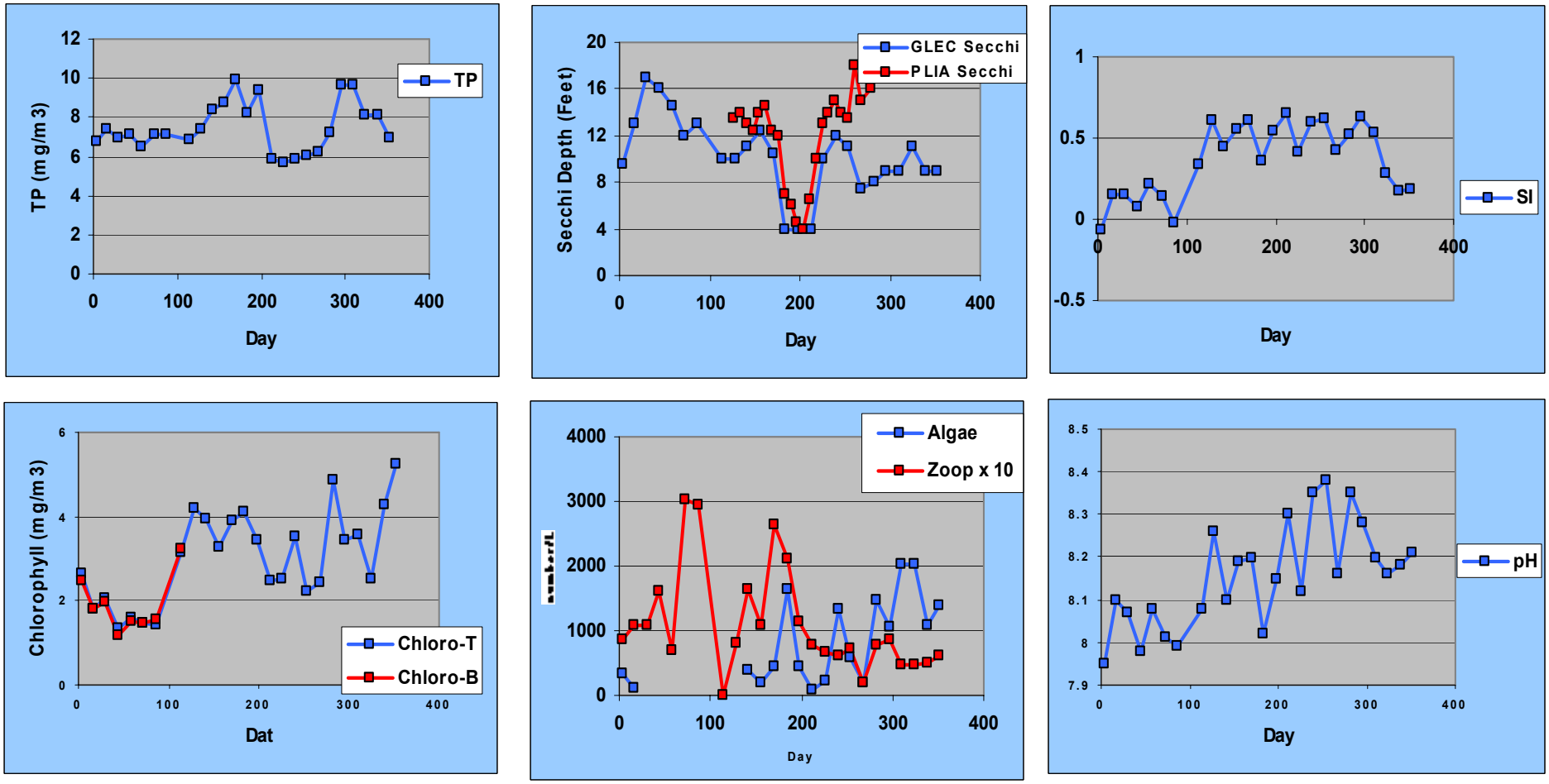


Figure 21. Annual Variation of Total Phosphorus (TP), Secchi Depth, Saturation Index (SI), Chlorophyll, Algae and Zooplankton Numbers, and pH for 2001.

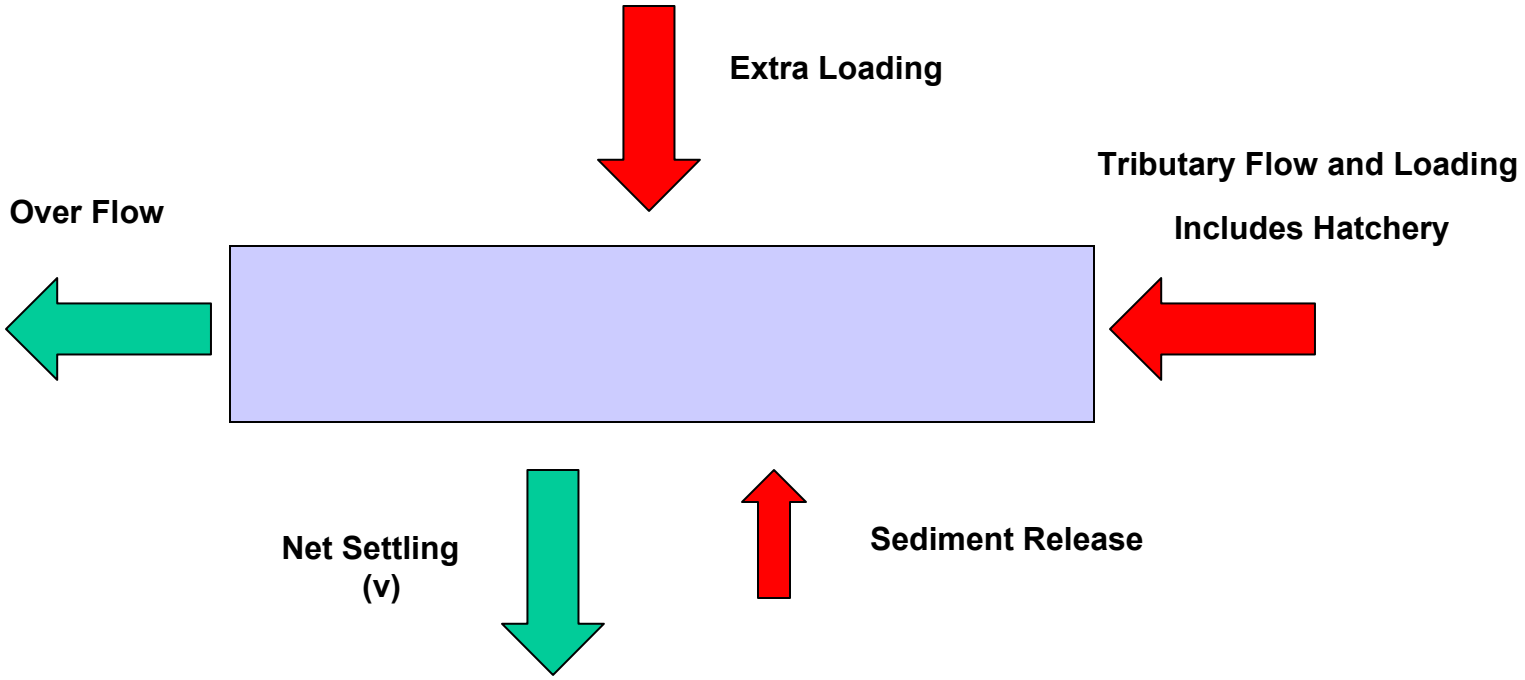
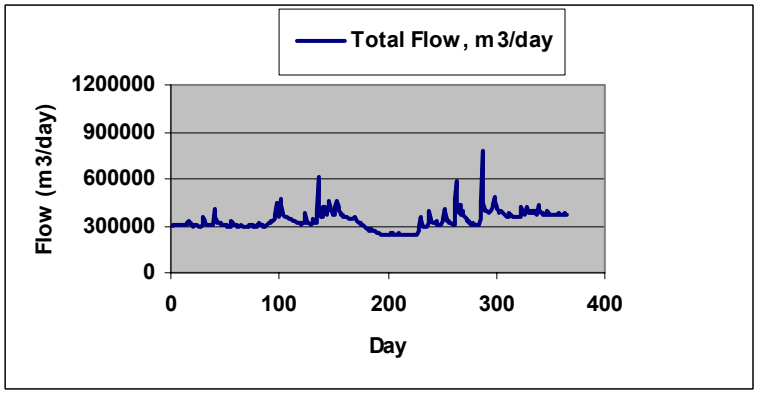
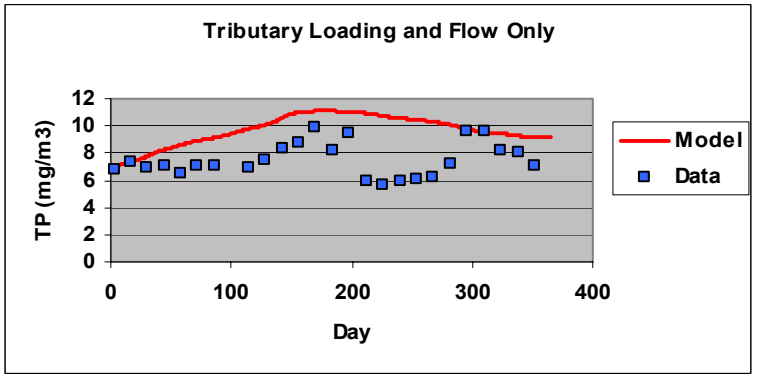
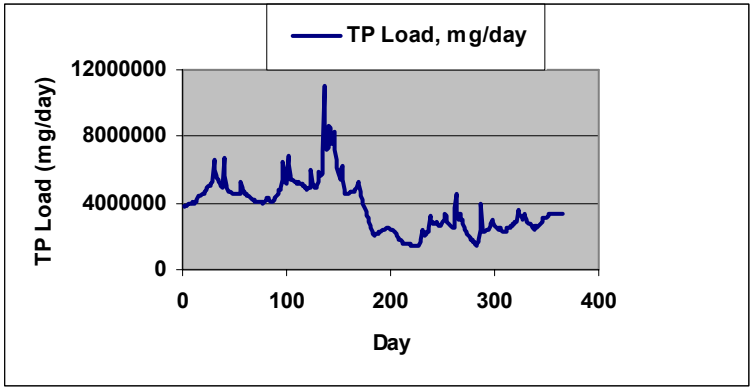


Figure 22. One Layer Model Mechanisms







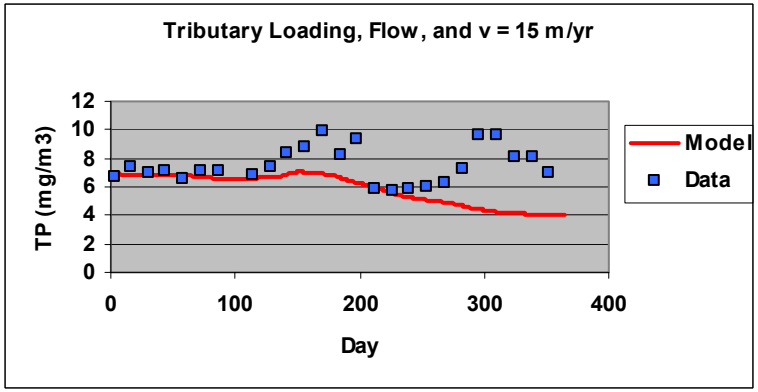
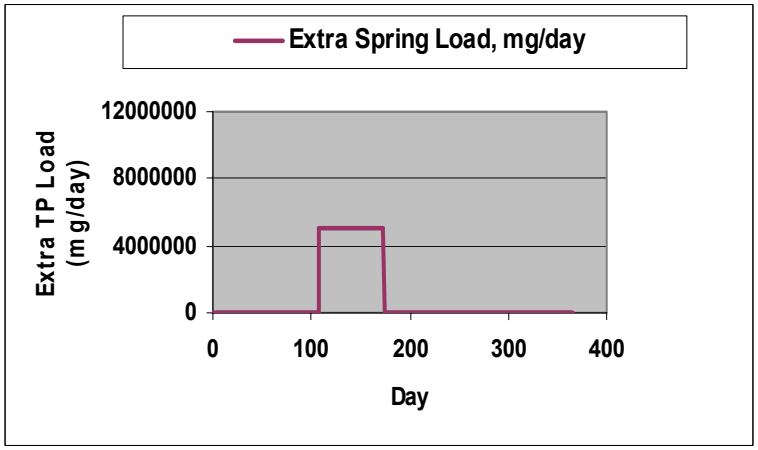
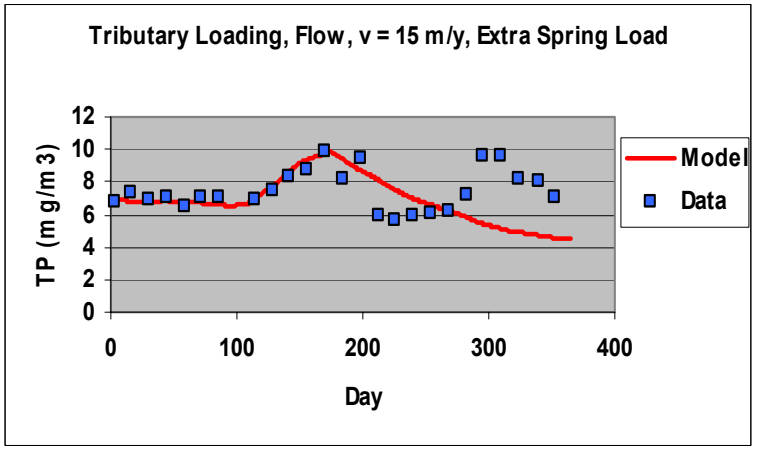
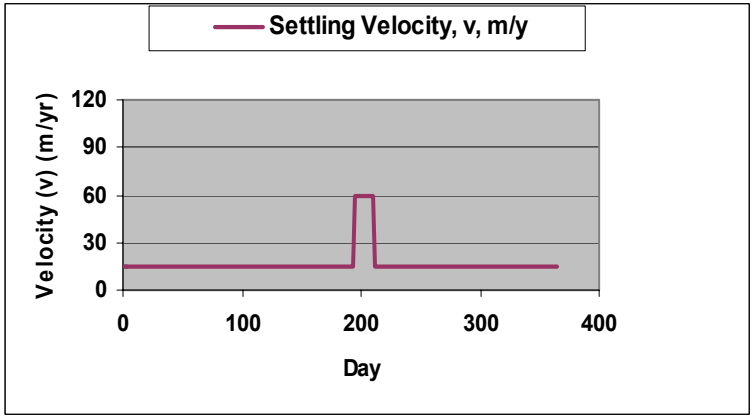


Figure 23. Model Results for Lake TP with Tributary Loads, Flow, and Constant Settling.







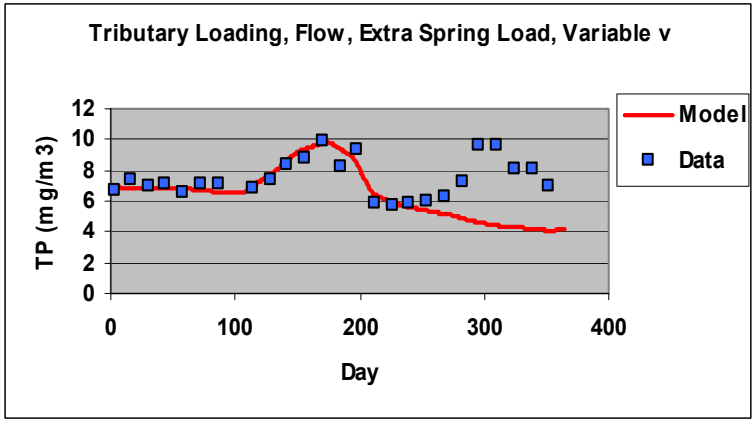
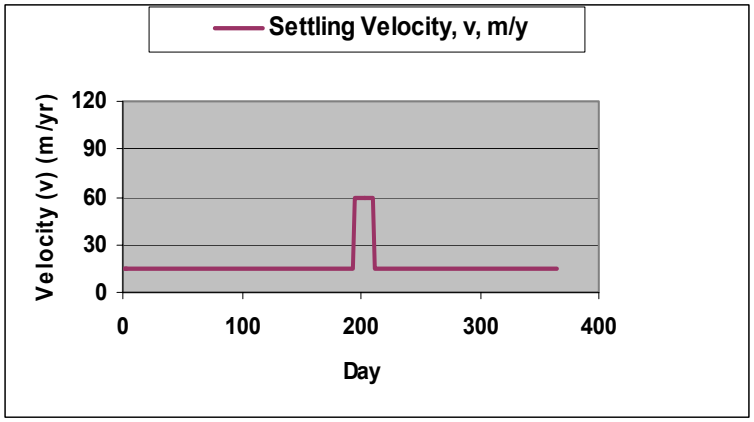
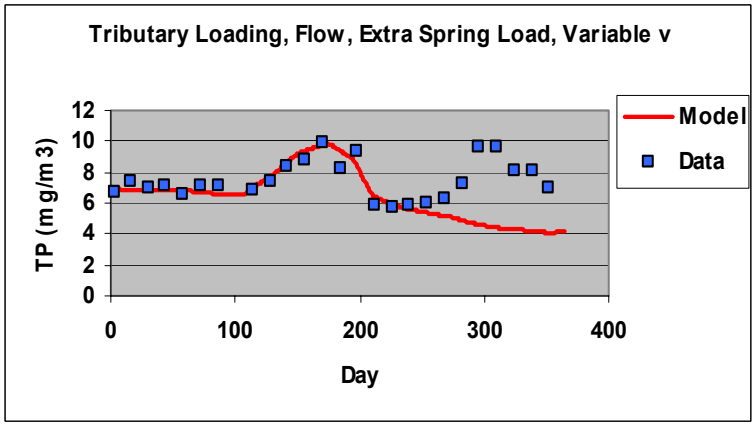
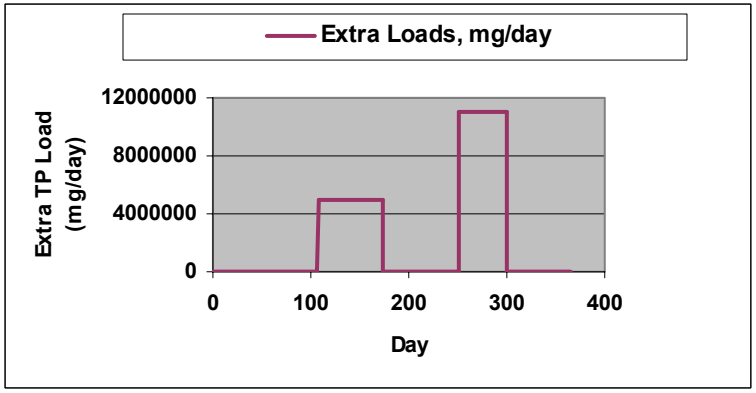


Figure 24. Model Results for Lake TP with Tributary Loads, Flow, Extra Spring Load, and Variable Settling.







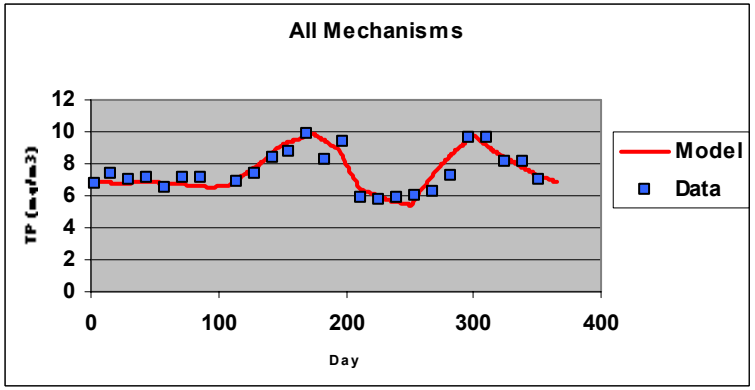


Figure 25. Model Results for Lake TP with Tributary Loads, Flow, Extra Spring and Fall Loads, and Variable Settling.

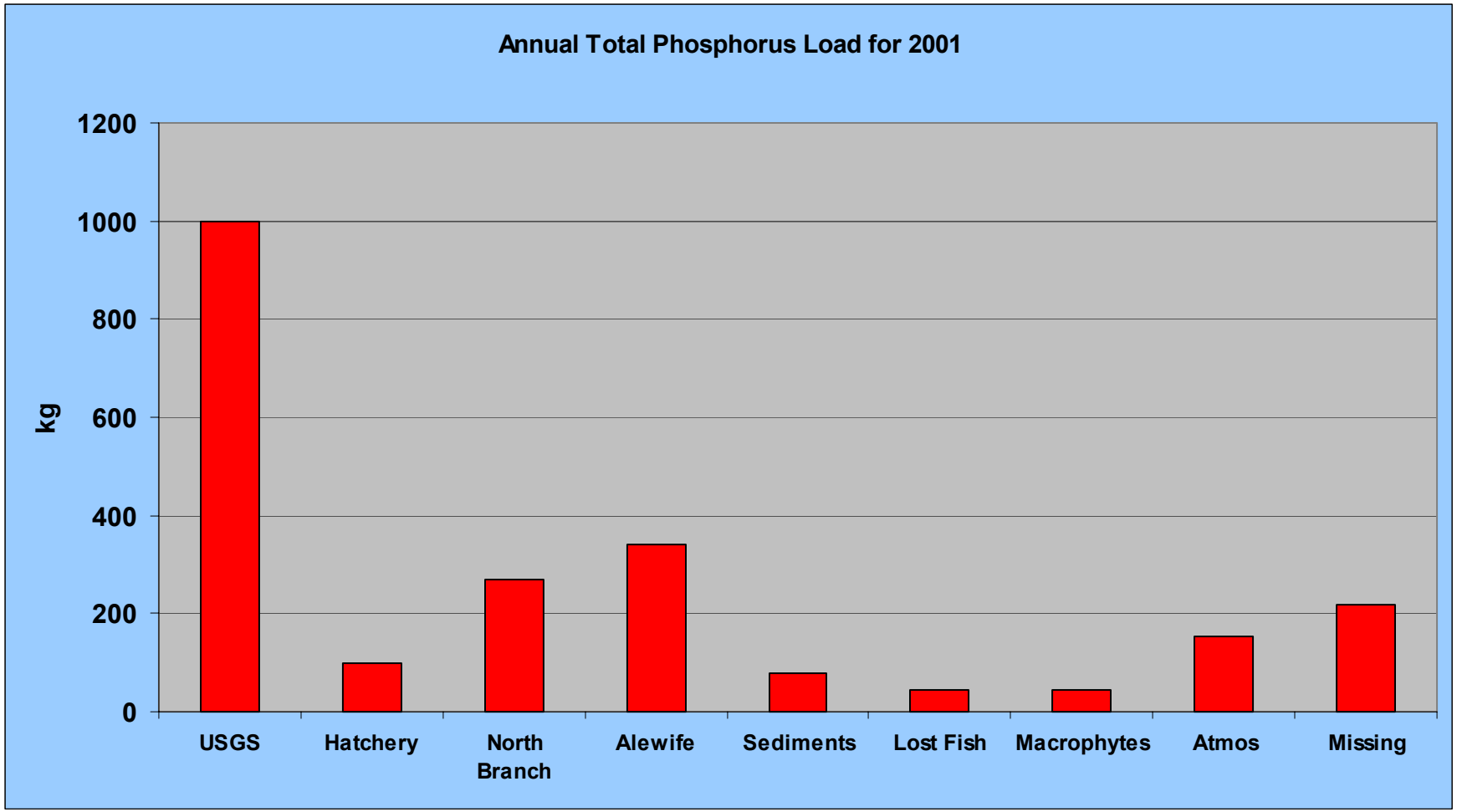
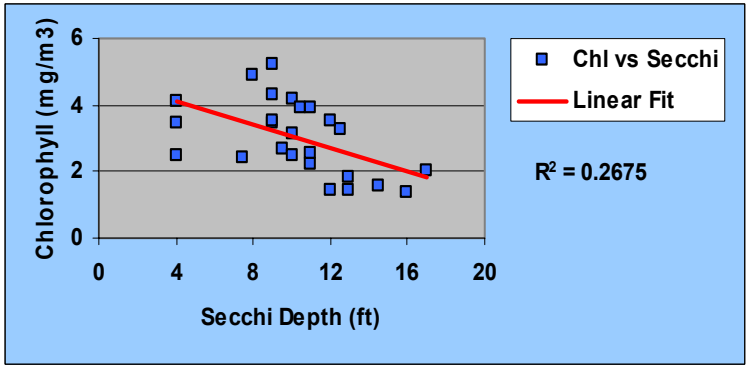
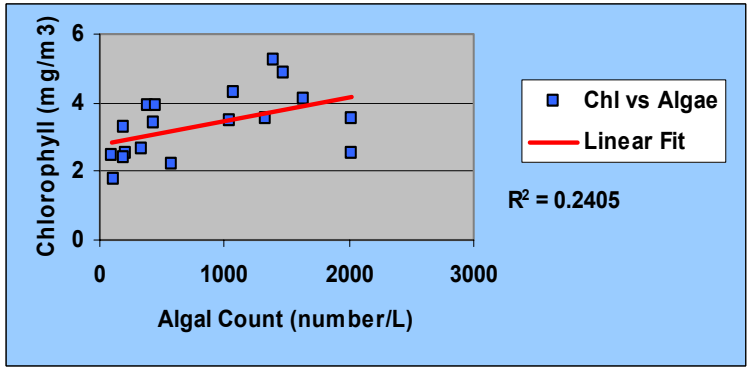
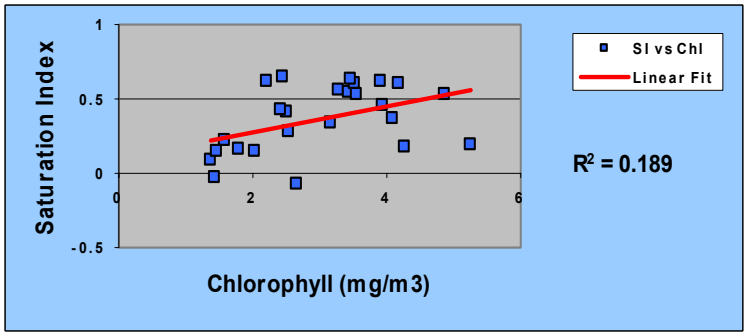


Figure 26. Components of the Total Phosphorus (TP) Loading to Big Platte Lake for 2001.







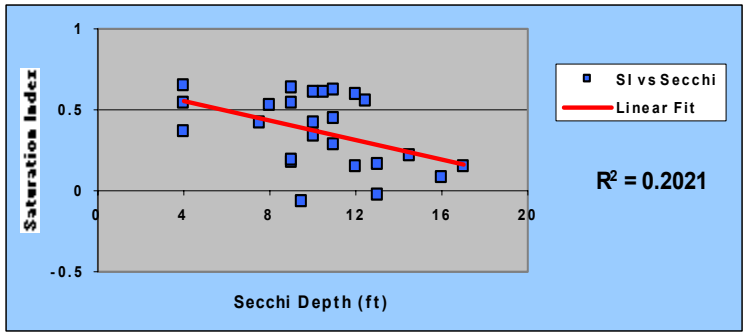
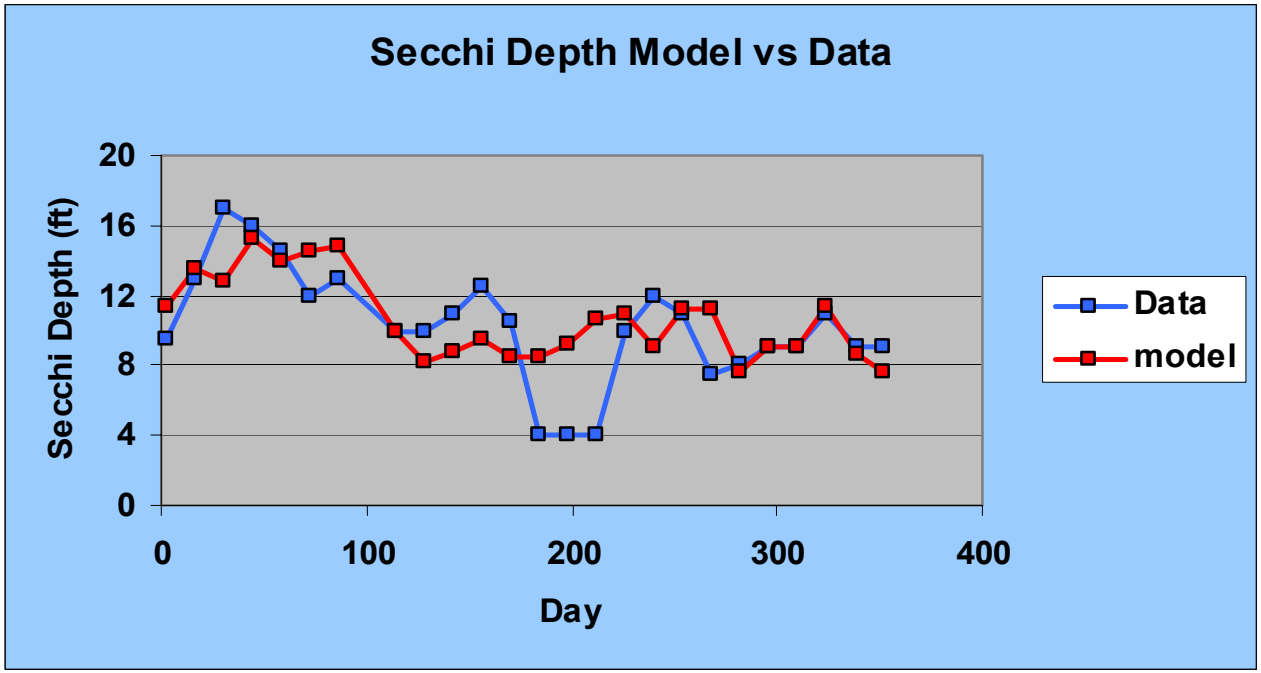


Figure 27. Correlation among Various Big Platte Lake Measurements for 2001.



$$Ke = 0.1 + 0.025\,(Chl) + 0.05\,(SI) \quad \text{And} \quad SD = 1.8/Ke$$

Where: Ke = Extinction Coefficient (1/ft) SI = Saturation Index

Chl = Chlorophyll (mg/m3) SD = Secchi Depth (ft)

Figure 28. Preliminary Model for Secchi Depth vs 2001 Big Platte Lake Measurements.