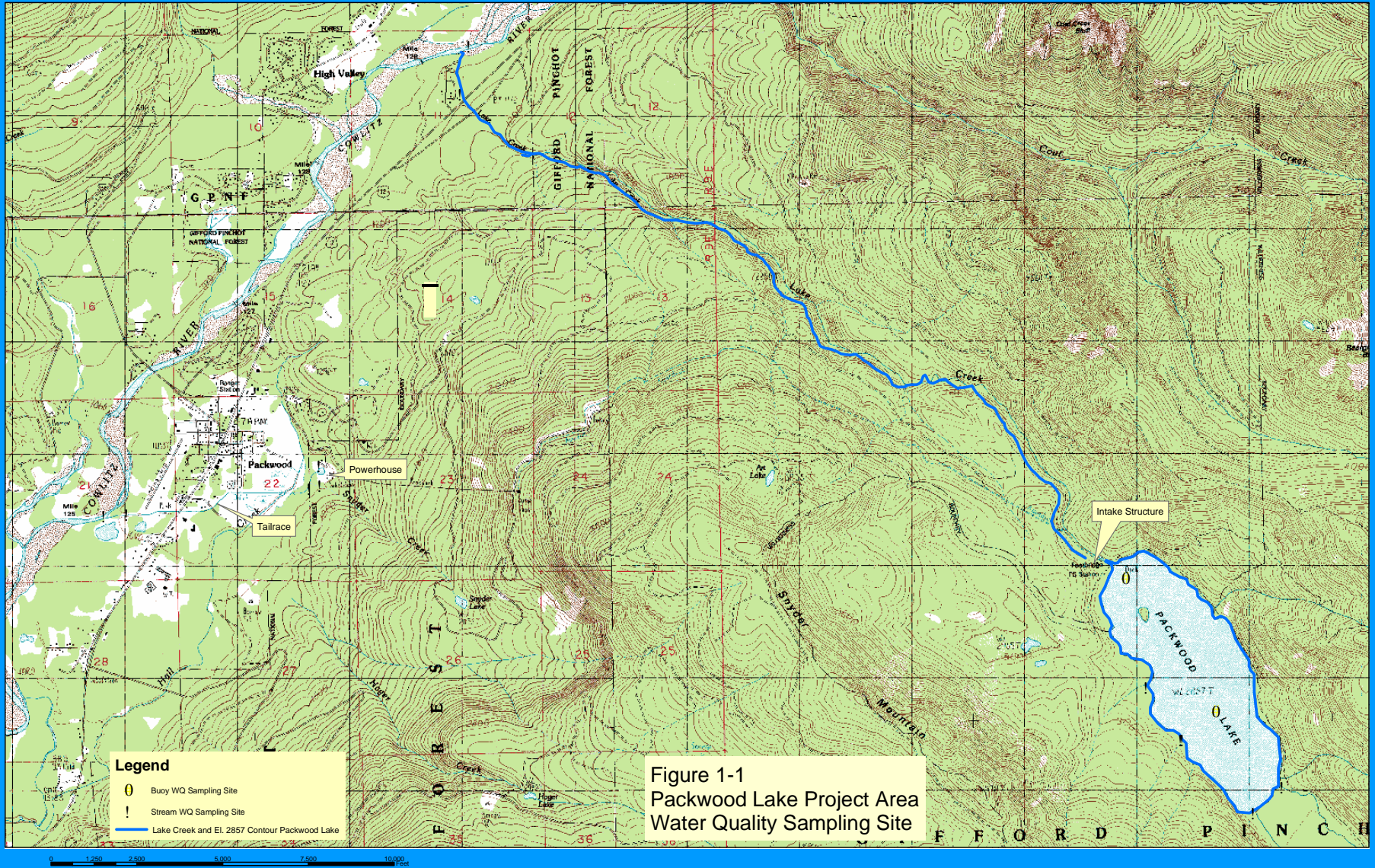


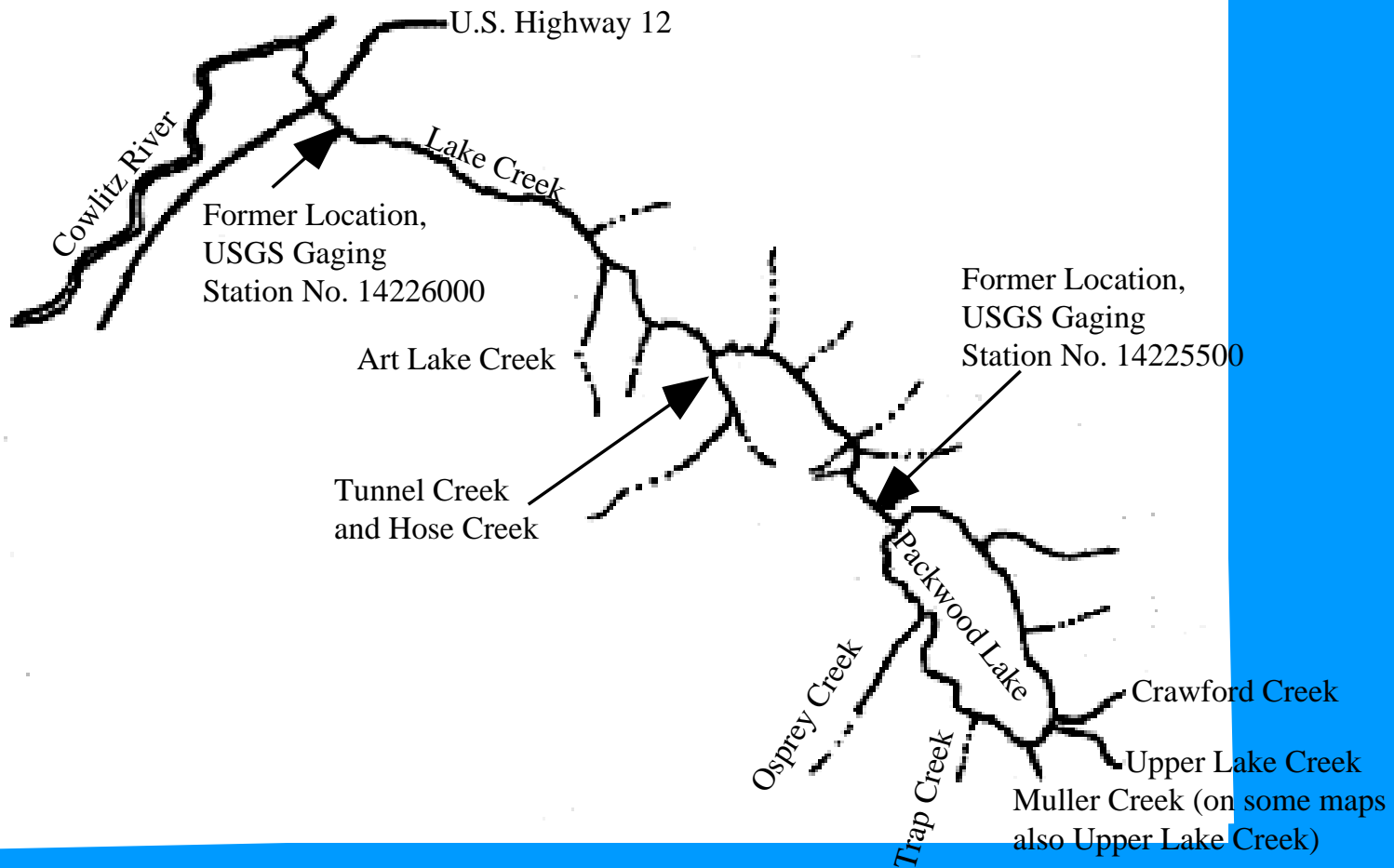
Packwood Lake Hydroelectric Project Water Quality Study Preliminary Results September 30 2004



Water Quality Sampling Sites



Lake Creek Watershed



Water Quality Sample Parameters

Chemical:

- Total Phosphorus (TP)
- Ortho-phosphorus
- NH_4^+ -N
- TKN
- NO_2^- -N + NO_3^- -N
- Total Alkalinity
- pH
- Total Suspended Solids (TSS)
- Total Dissolved Solids (TDS)
- DO (water column)
- Total Dissolved Gasses
- Silica (Lake only)
- Conductivity
- Specific Conductance
- Hardness
- Carbonate
- Total Organic Carbon
- Fat, Oil, and Grease
- HCID

Water Quality Sample Parameters

Physical:

- Temperature
- Turbidity
- Secchi Transparency
- (Packwood Lake only)

Aesthetics³

Biological:

- Total Fecal Coliform
- (Packwood Lake only)
- Noxious/invasive Macrophytes and emergent plants
- Chlorophyll *a* (phytoplankton)
- (Packwood Lake only)
- Chlorophyll *a* (periphyton)
- Taxonomic (phytoplankton)
- Taxonomic (periphyton)

2004 Sample Dates

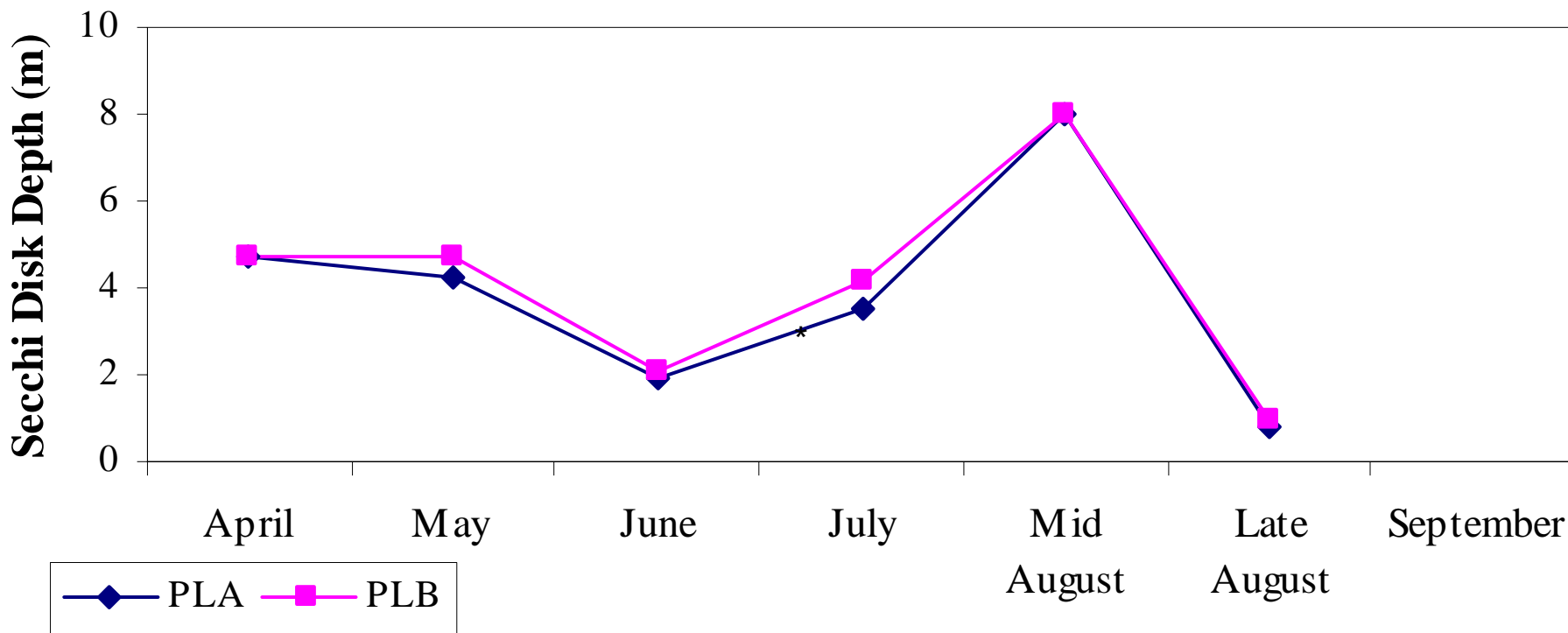
Grab Sampling

- April 27-28
- May 18-19
- June 23-24
- July 13-14
- August 10-11
- August 31

Continuous Monitoring

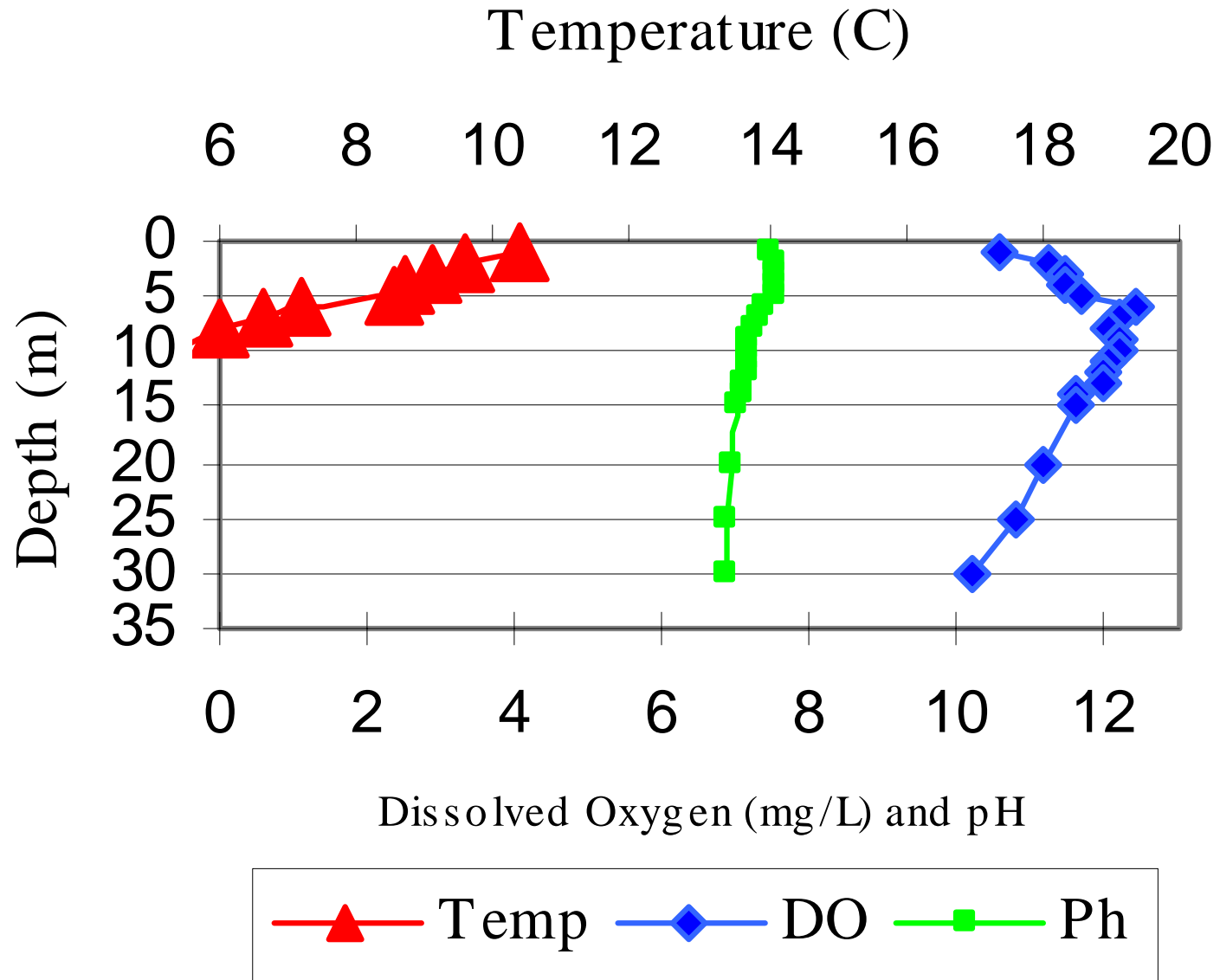
- July 14-27 Tailrace
- Aug 31 – Sept 1
Forebay and below drop structure
- September 1 – 2
Lower Lake Creek
- Sept 29 – Oct 4 Shutdown

Packwood Lake 2004



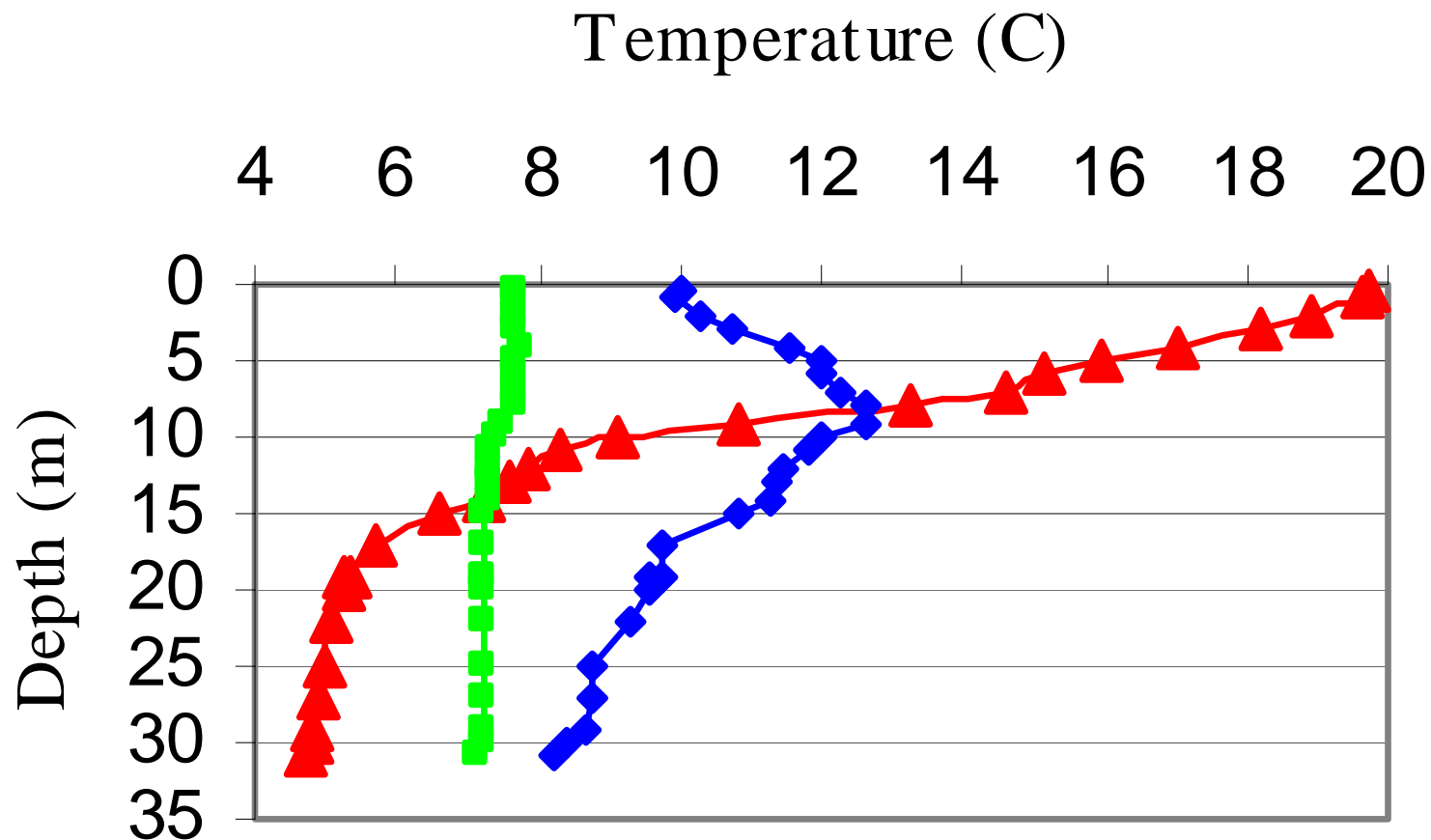
Unstratified; D.O. buldge function of temperature

April 28 2004

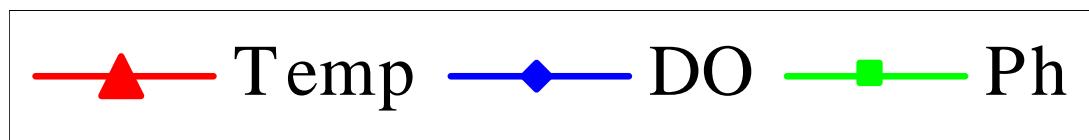


Weakly stratified; D.O. bulge lower photic zone

August 11 2004

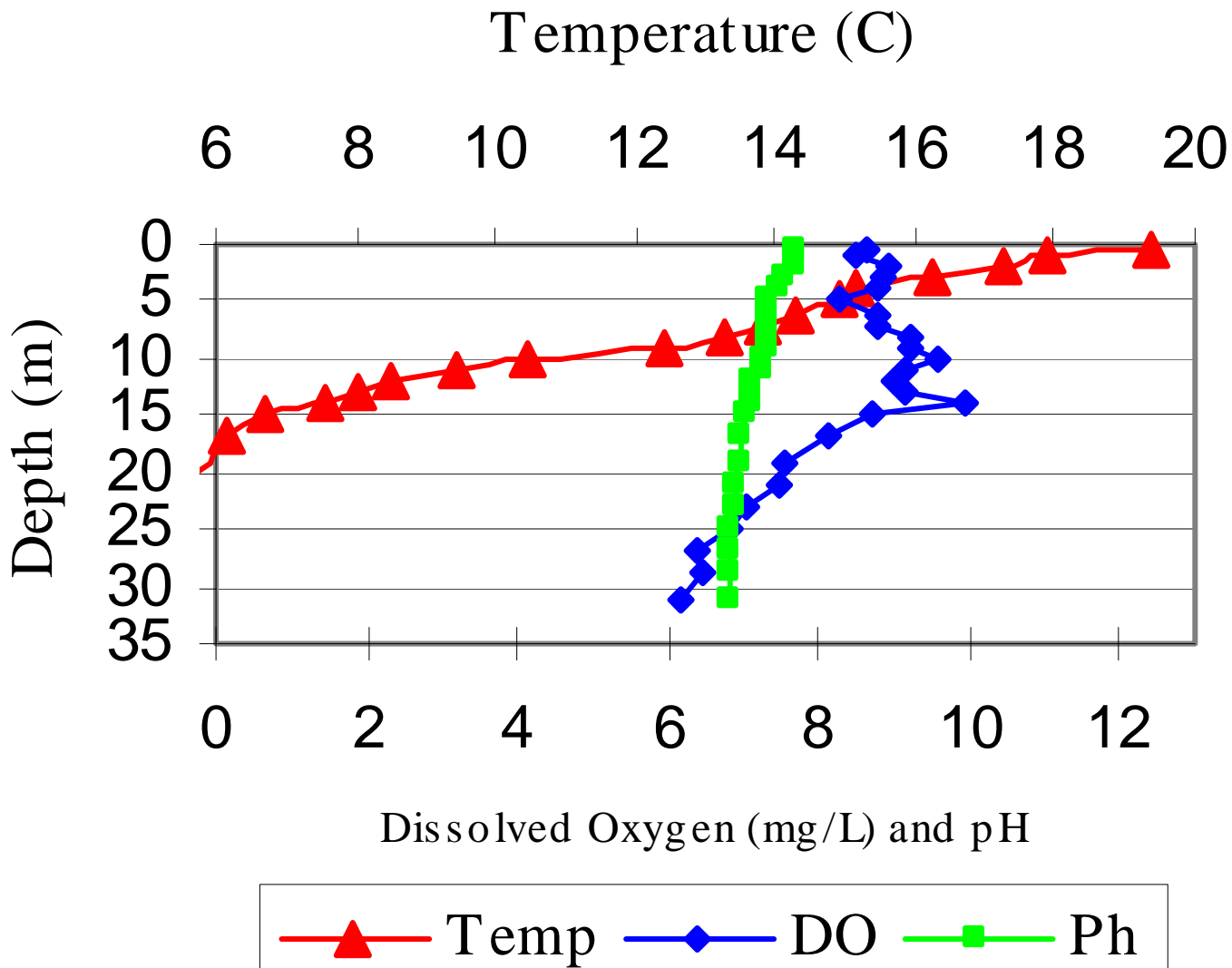


Dissolved Oxygen (mg/L) and pH



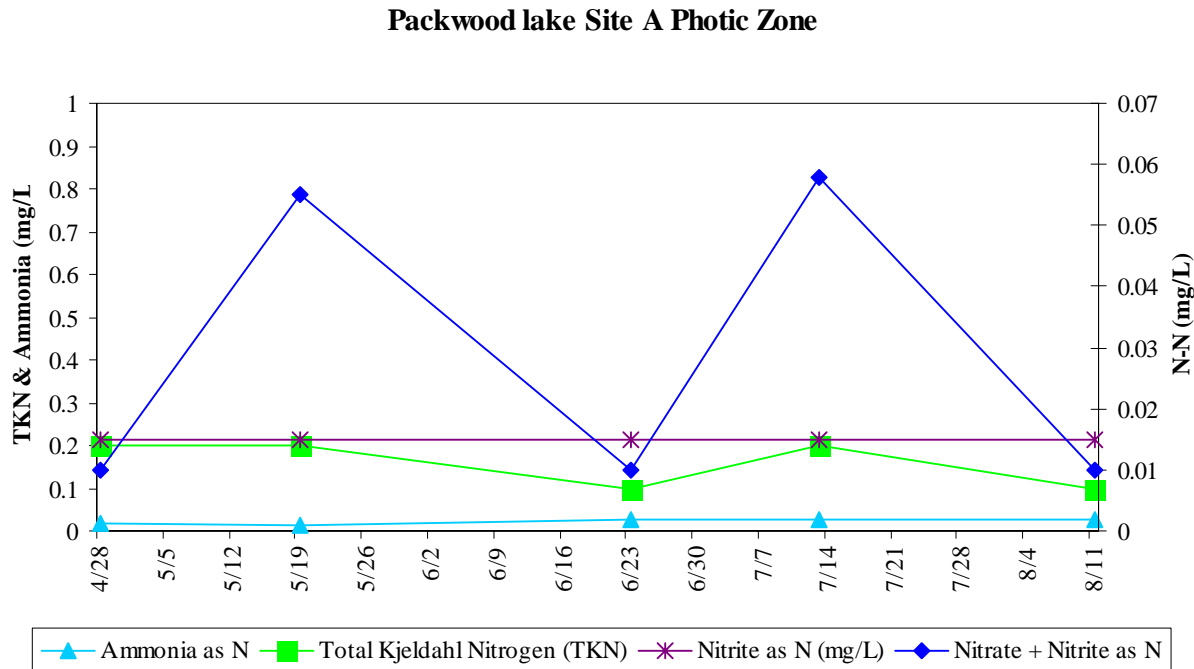
Un-Stratified following storm event; D.O. buldge persists

August 30 2004

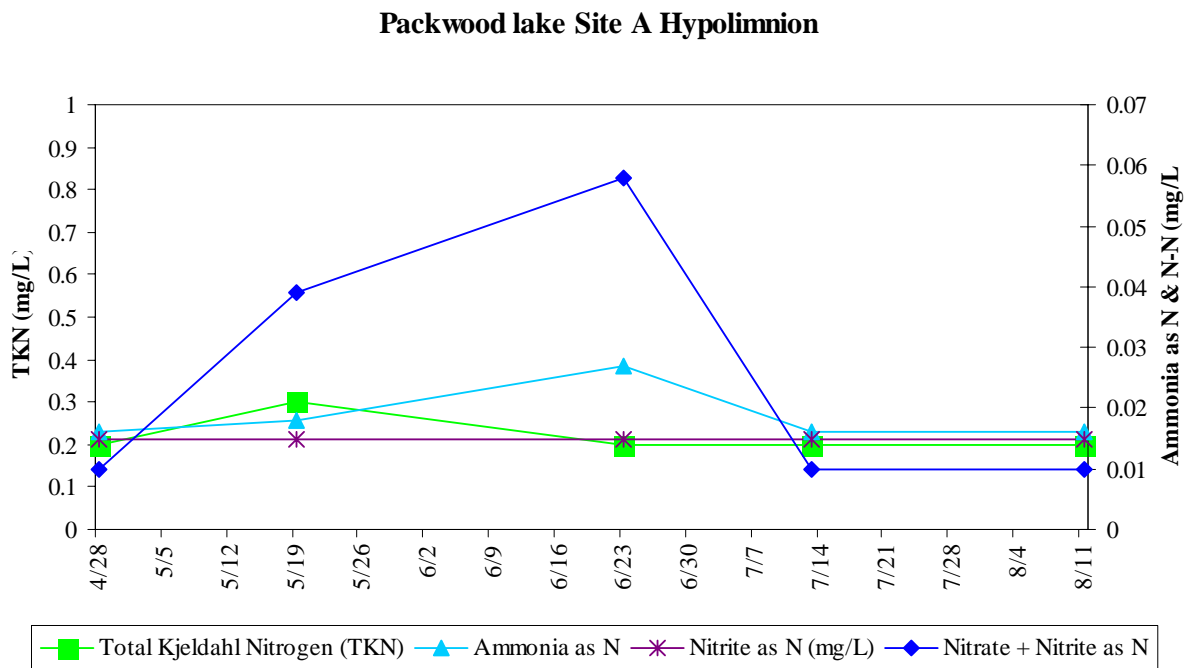


Nitrogen Profile Packwood Lake

Photic Zone PLA

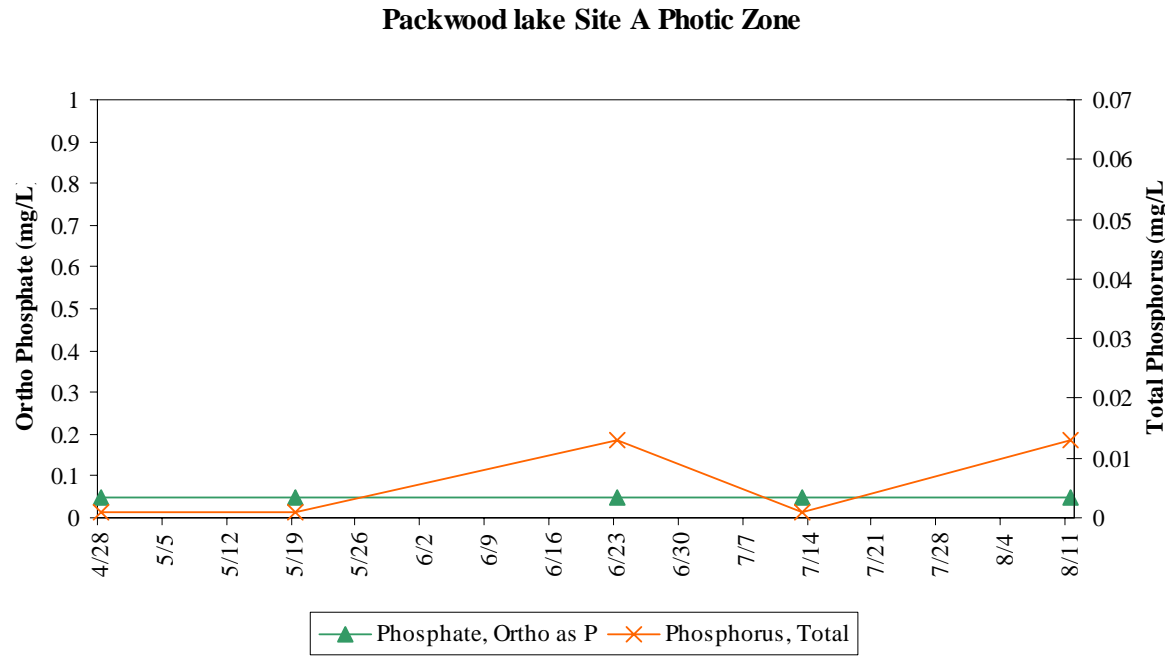


Hypolimnion PLA

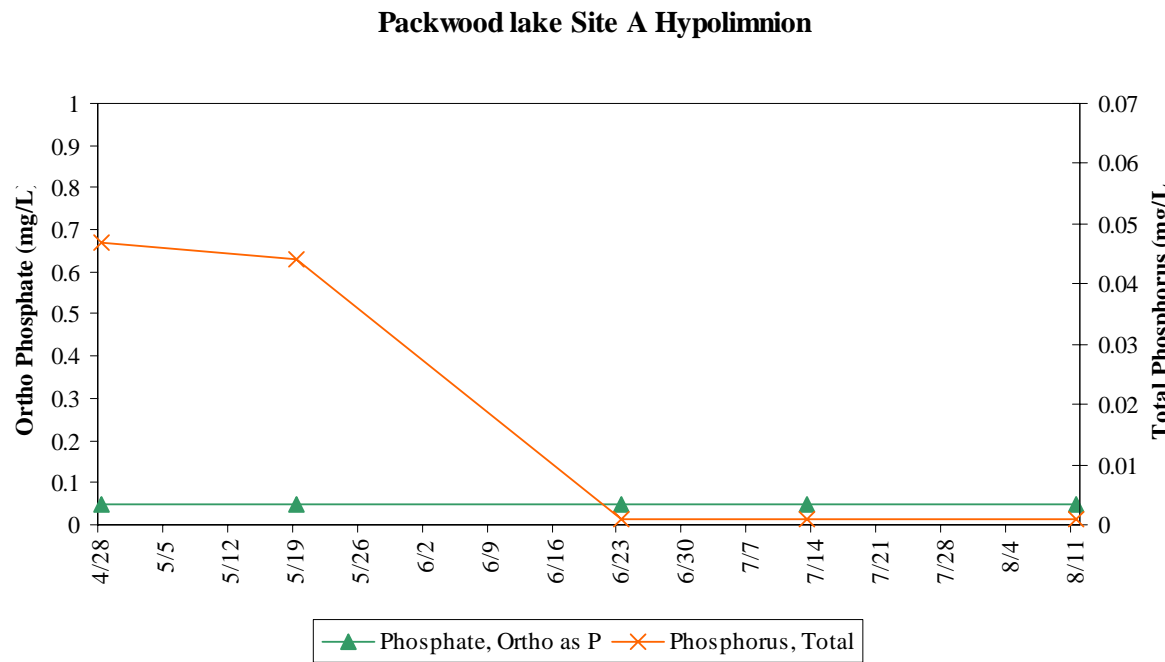


Phosphorus Profile Packwood Lake

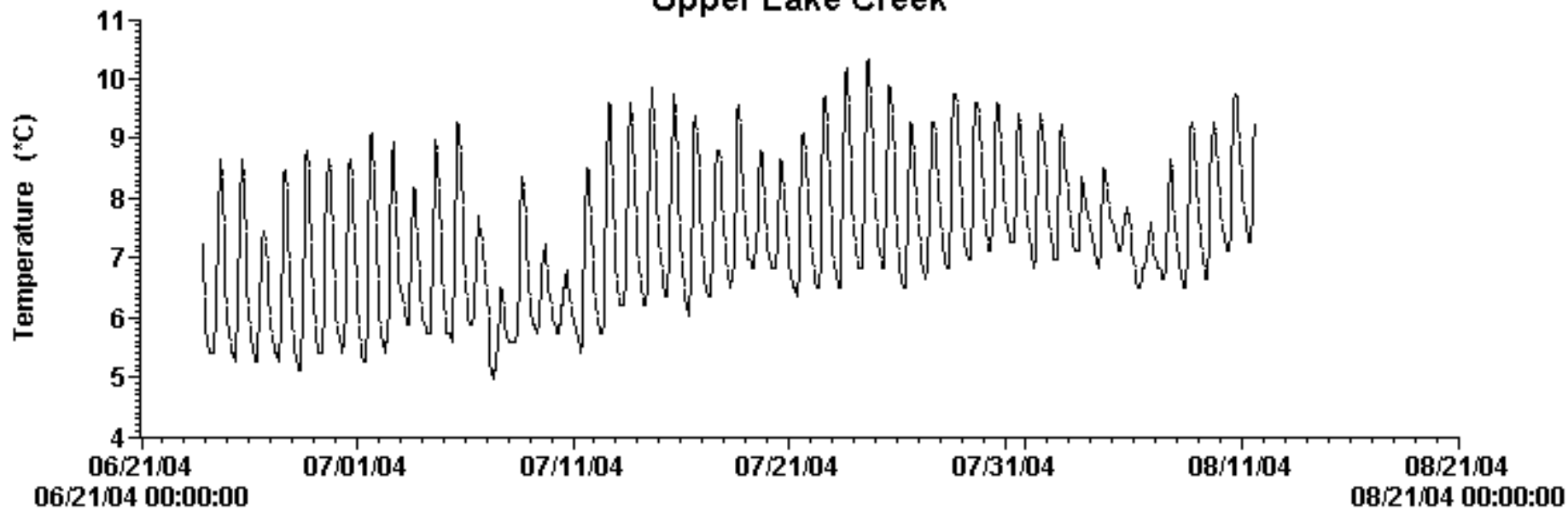
Photic Zone PLA



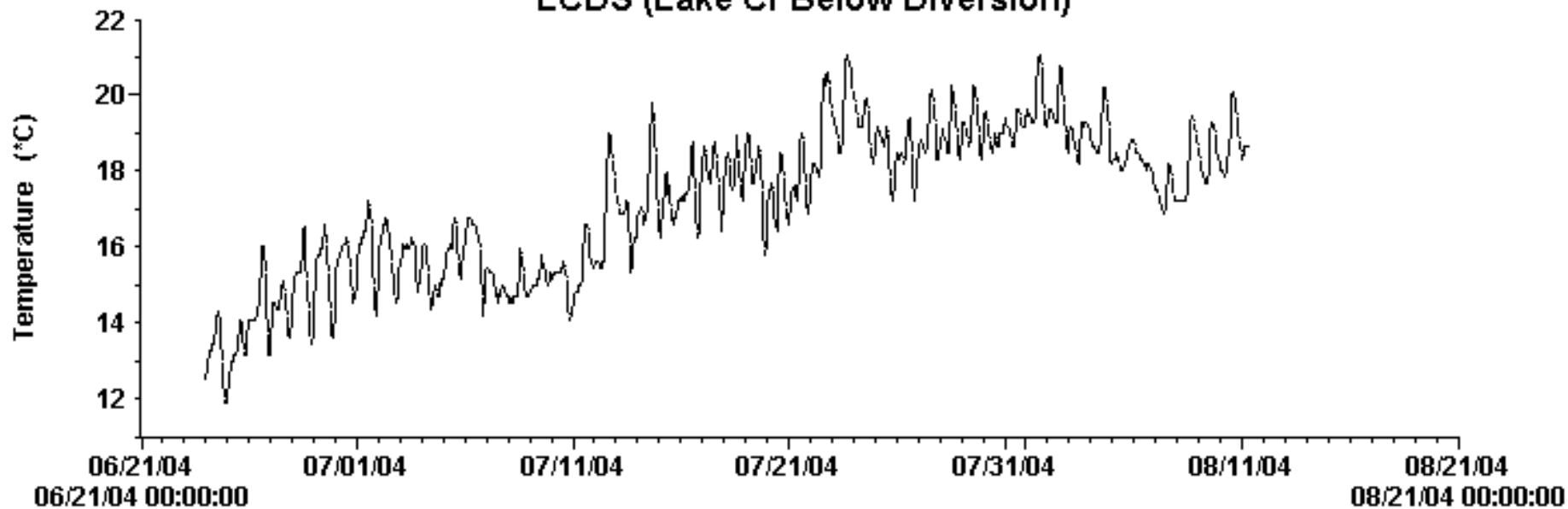
Hypolimnion PLA

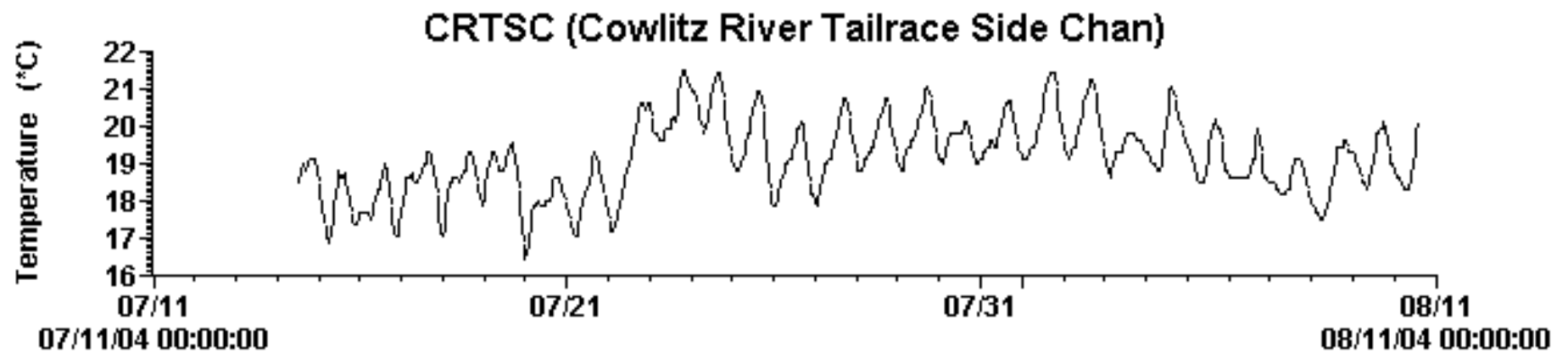
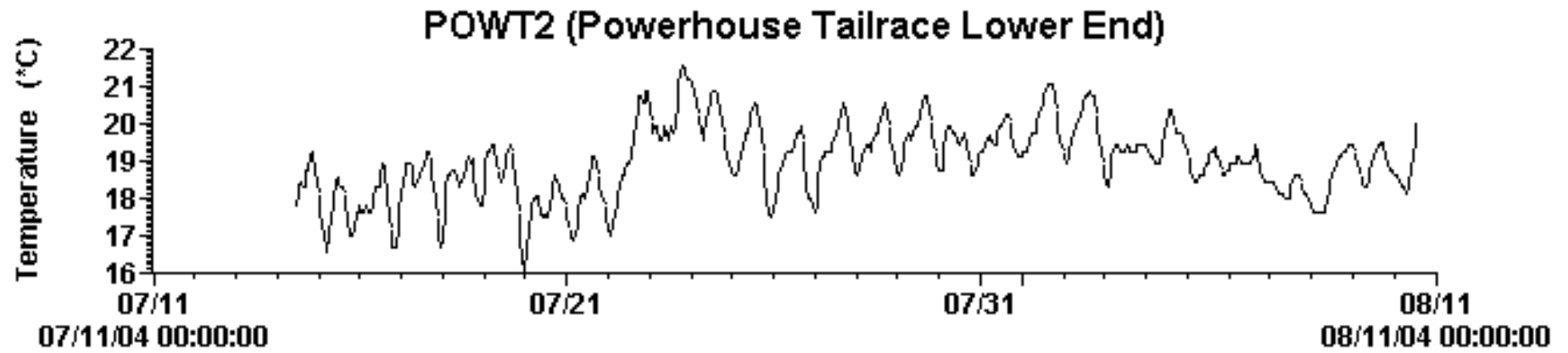
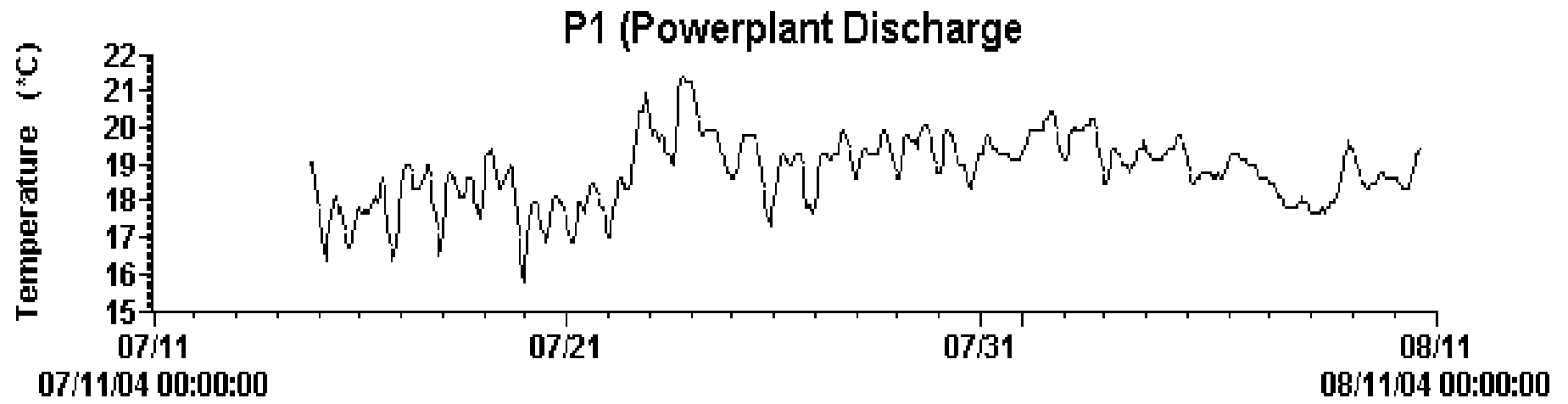


Upper Lake Creek

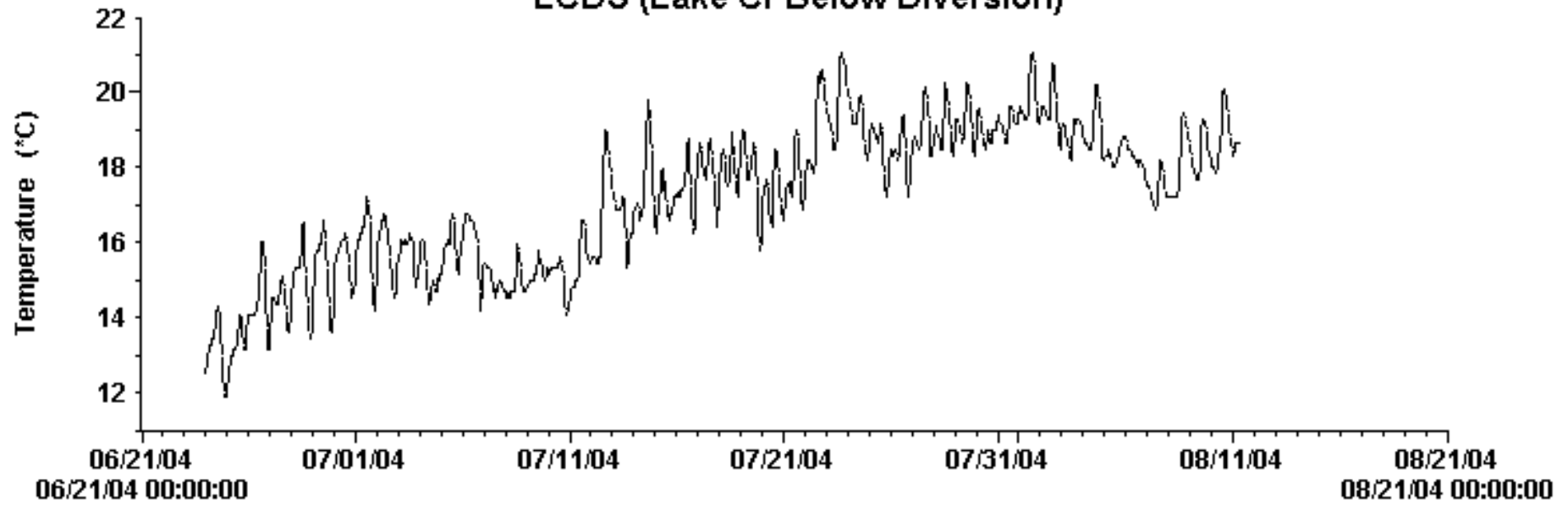


LCDS (Lake Cr Below Diversion)

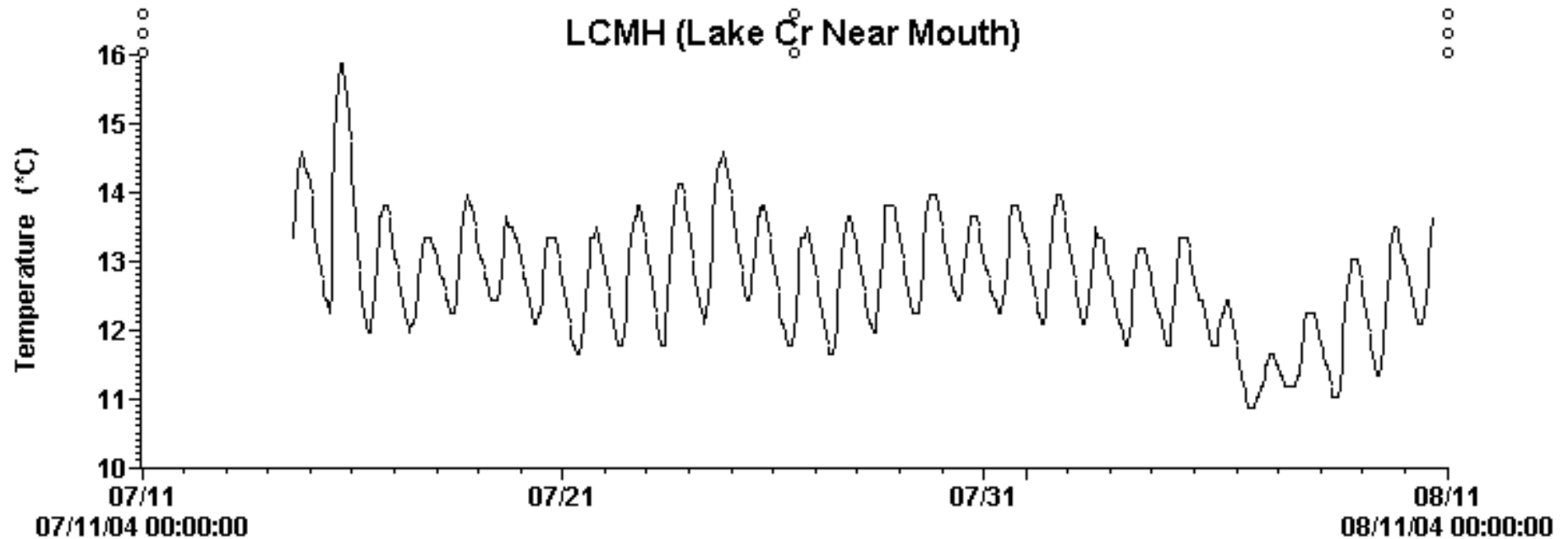




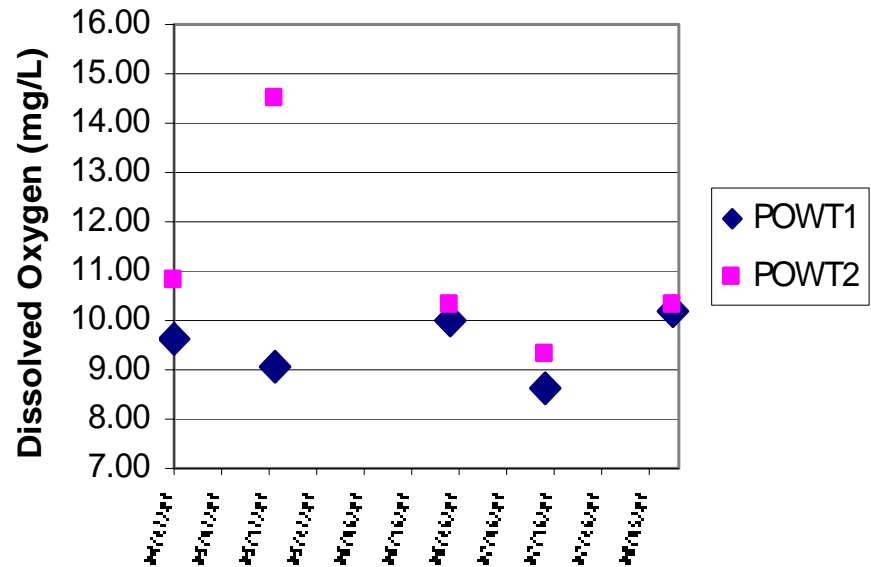
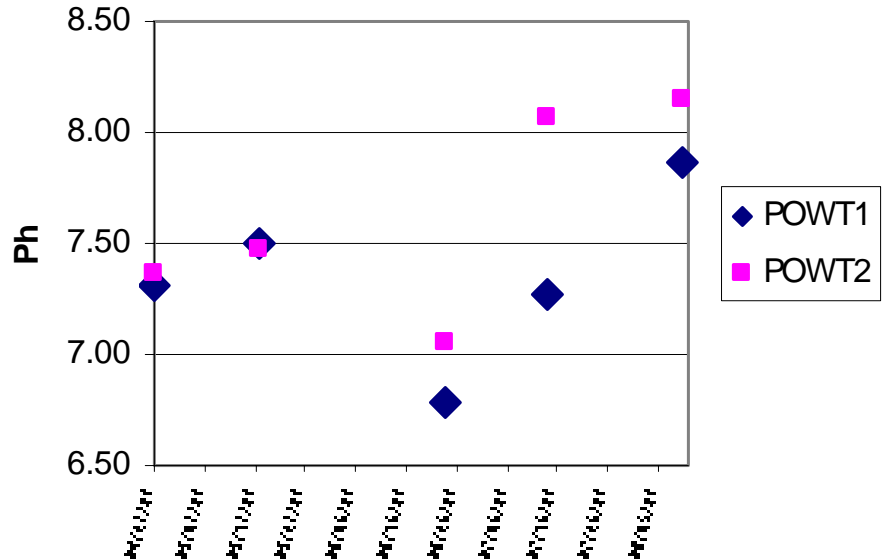
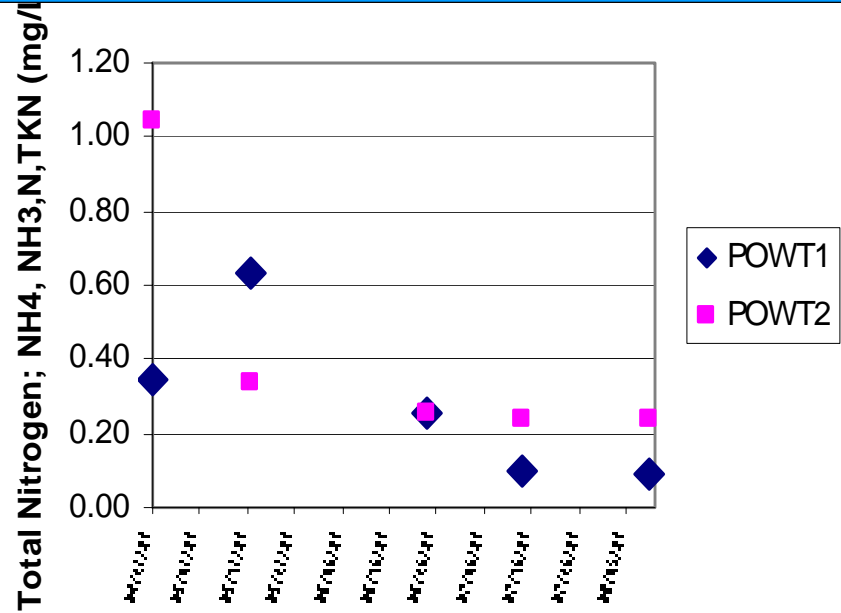
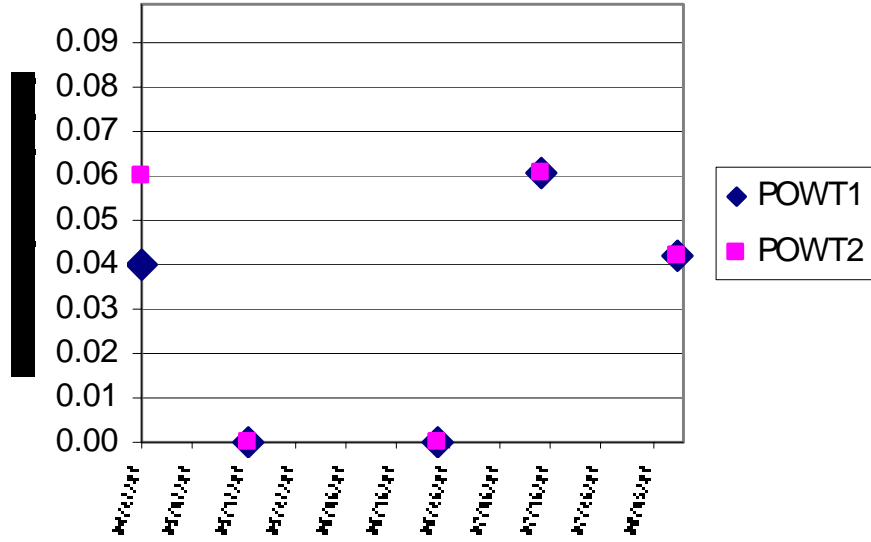
LCDS (Lake Cr Below Diversion)



LCMH (Lake Cr Near Mouth)



Tailrace



Lake Creek

