

As is typical of non-point source pollution, elevated copper concentrations were found as spikes, often occurring with rainfall and during the growing season (Novotny and Olem, 1993). One example was the total copper of 263 ug/L in Gargathy Creek at the Kegotank Landing in September 1996. Raccoon Creek and Queen's Bay at Chincoteague had consistently low (0 to 3 ug/L) copper found throughout the study and these watersheds were not impacted by agricultural activity. Copper concentrations throughout the growing season of 1997 rarely ventured above background levels due the low rainfall totals.

Figures 28 through 36 illustrated sampled parameters from the ISCO autosampler runs performed during the months of June and July 1997. Graphs of salinity, total suspended solids, total copper, and dissolved copper versus time were shown for each run. Zero values were indicated by a 0 above the month, whereas missing data were left blank. Rainfall for the three days of each autosampler run were indicated as well. Each rainfall measurement was a sum of the rainfall falling on that day and the two days previous. Dissolved copper was measured in all possible autosampler samples, but total copper was determined only if the dissolved copper was reasonably high (greater than three). If there were no high dissolved copper measurements, then at least one total copper was determined for each autosampling run.

Missing data were the result of either mechanical malfunction of the ISCO autosamplers or other equipment, or from donating the sample to the following project. A concurrent study tested water samples from the Eastern Shore for organic crop protectants, a process that used almost all the water sample and did not leave enough sample for total copper, or salinity/ total suspended solids analyses.

A definite salinity cycle existed in samples of estuarine water obtained by the autosamplers, indicating the ebb and flow of the tides. The total suspended solids generally showed the opposite trend. This implied that when the salinity was lowest, indicating low tide and low water level, the total suspended solids were generally the highest, showing the relationship between total suspended solids and the freshwater inputs to the creek. The autosamplers were deployed during rain events when rainfall was heavy enough to cause runoff, adding to the suspended solids load.

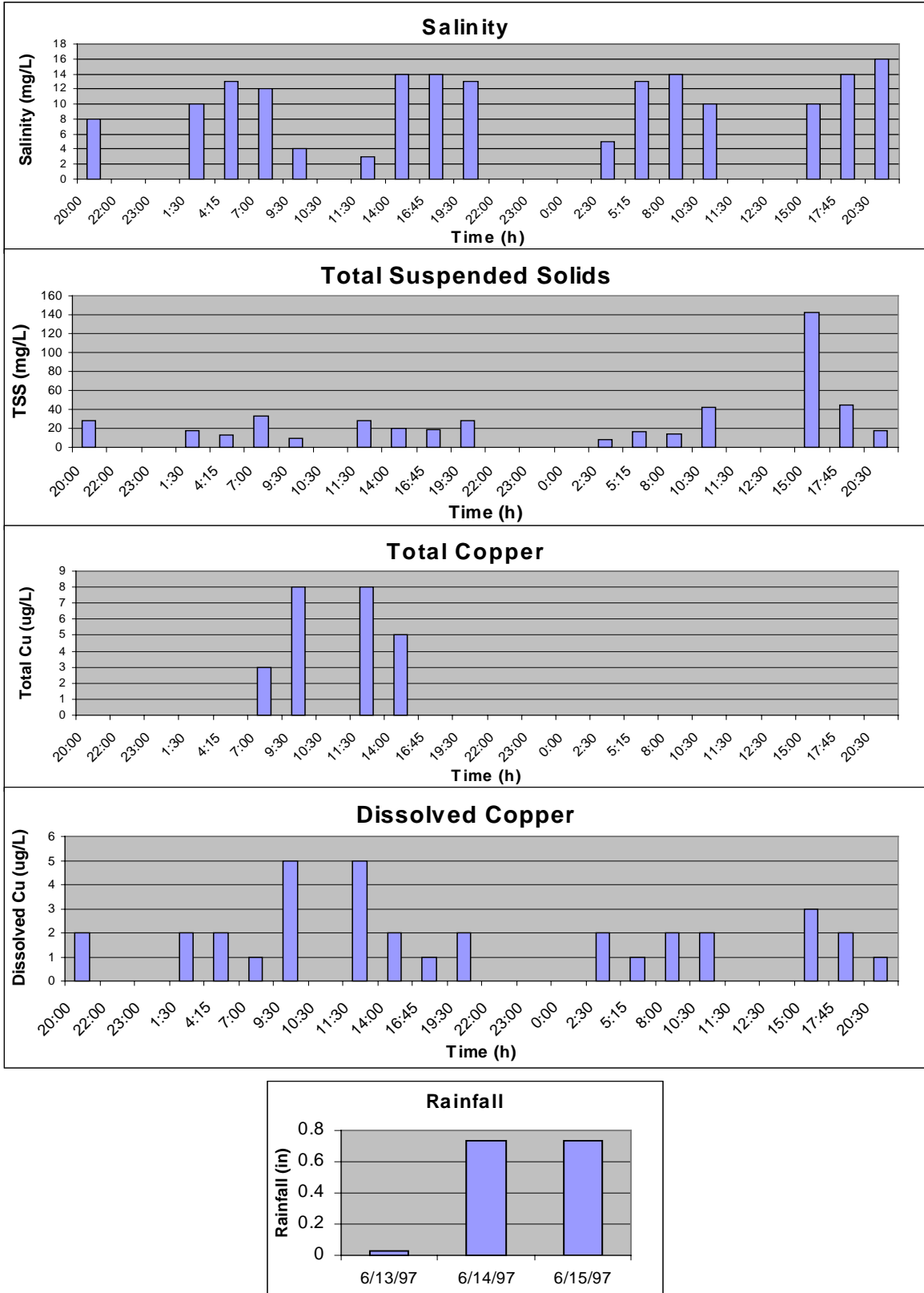


Figure 28. Water quality data for Gargathy Creek at the Headwaters taken by autosampler during the June 13-15 rainfall event.

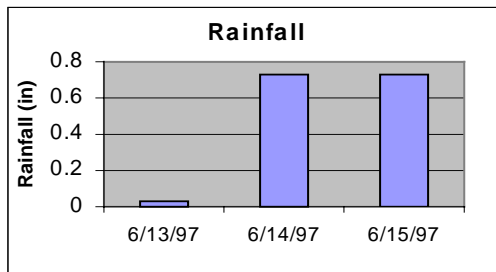
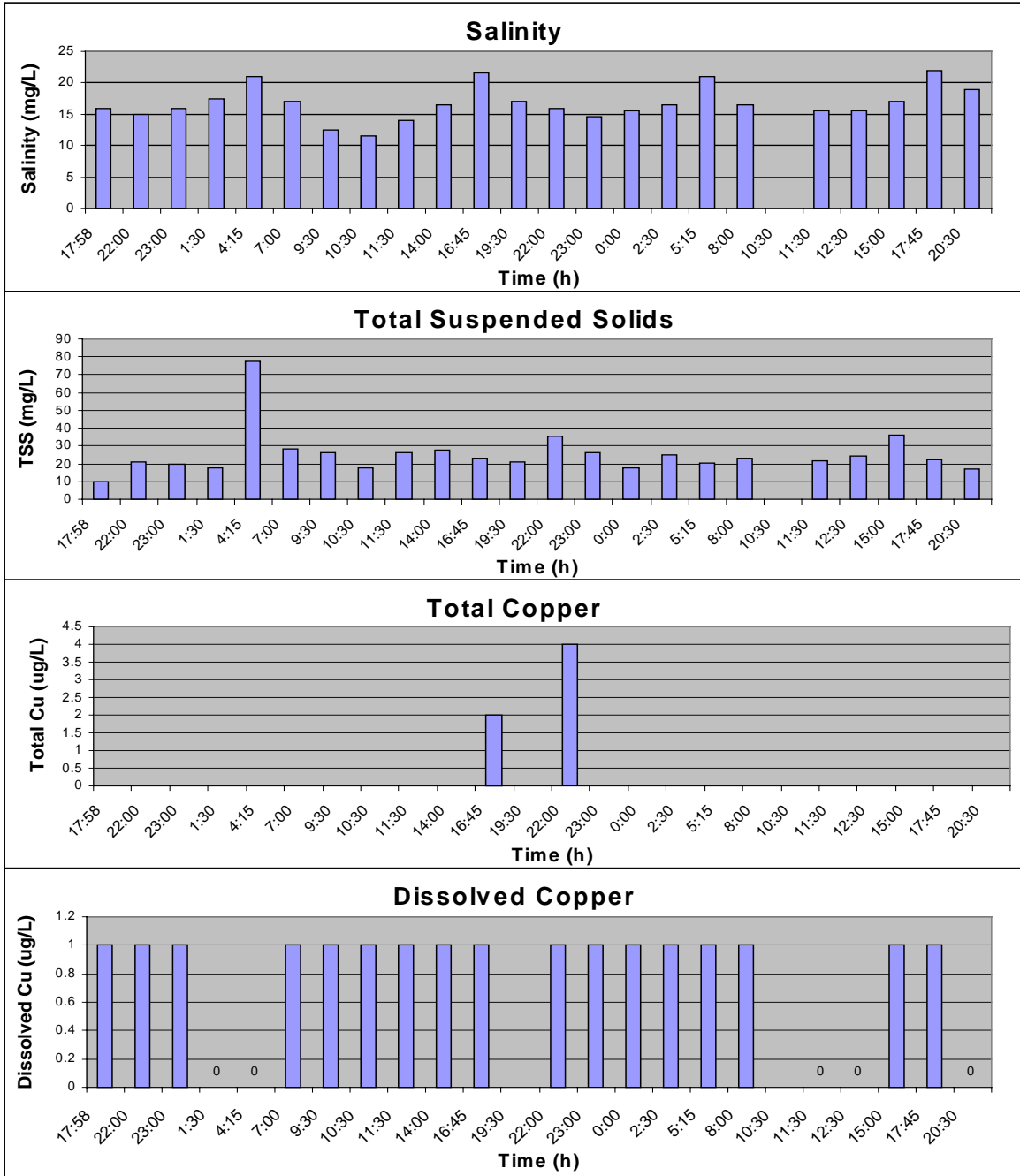


Figure 29. Water quality data for Gargathy Creek at the Midstream Dock taken by autosampler for the June 13-15 rainfall event.

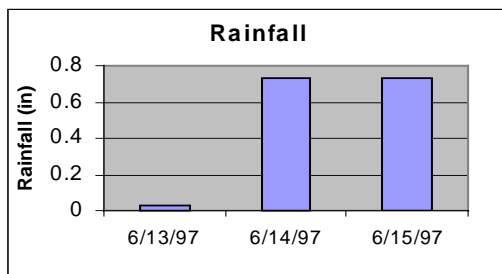
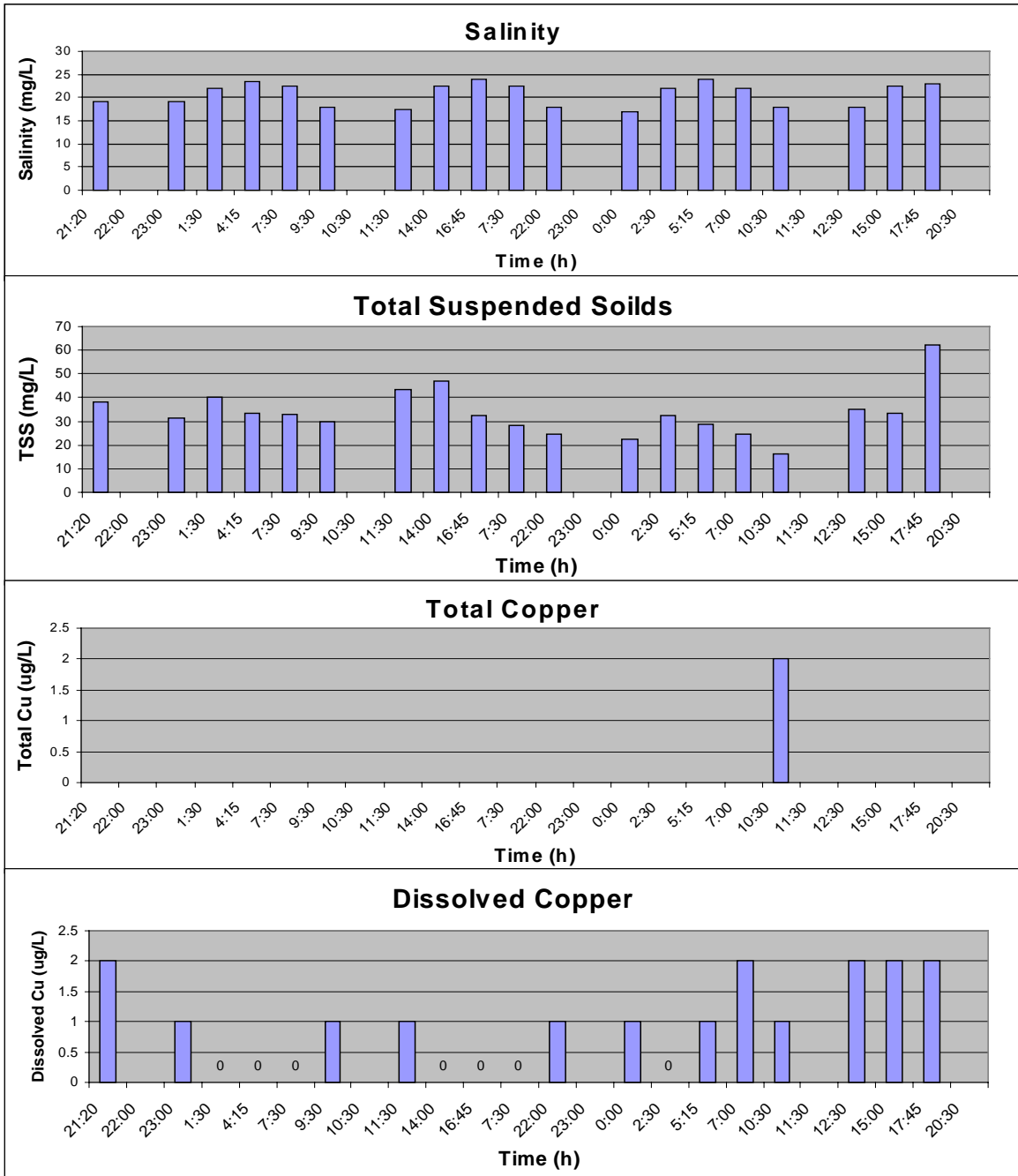


Figure 30. Water quality data from Gargathy Creek at the Clam Company taken by autosampler during the June 13-15 rainfall event.

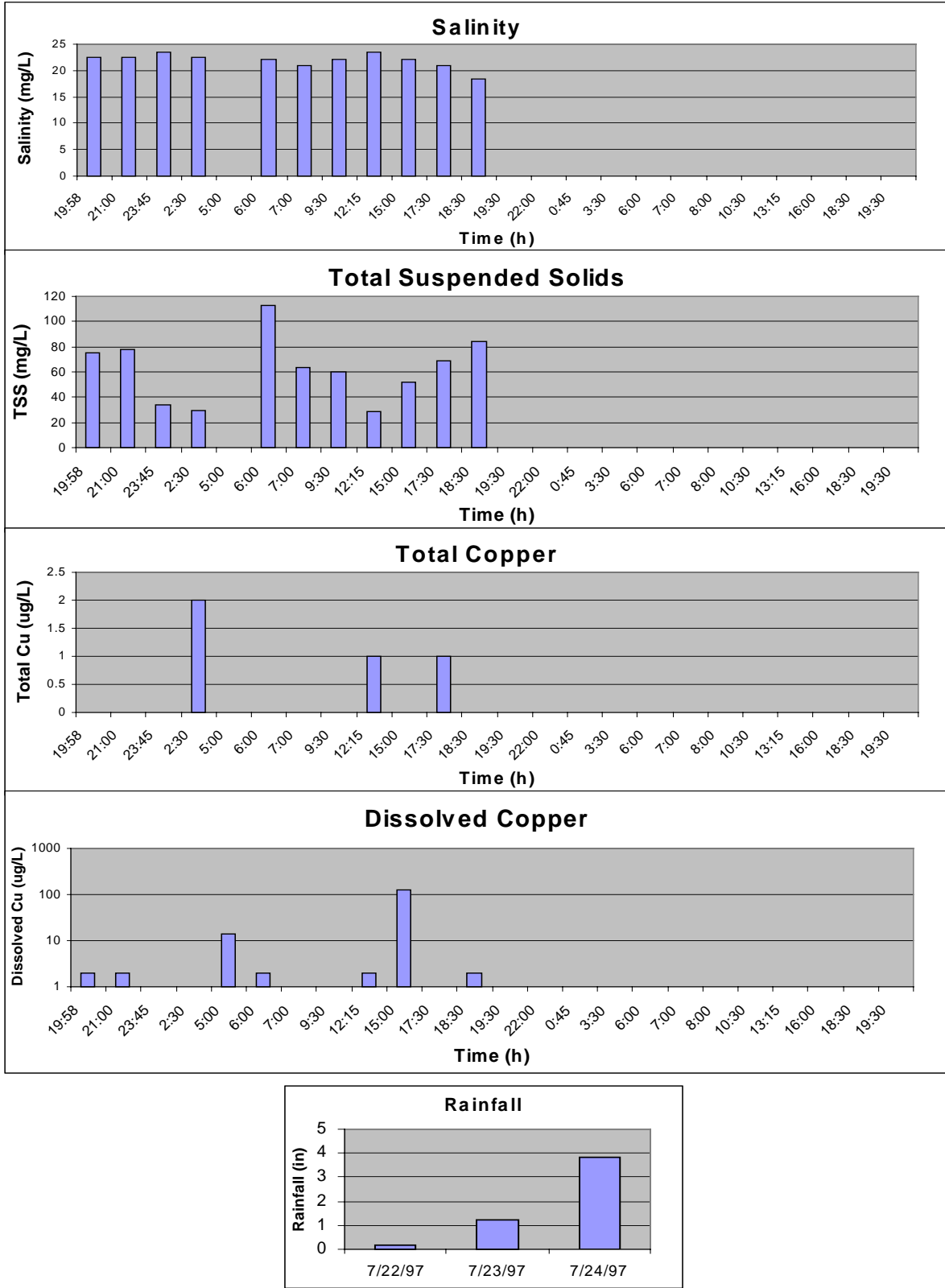


Figure 31. Water quality data from Gargathy Creek at the Gully Site taken by autosampler during the July 22-24 rainfall event.

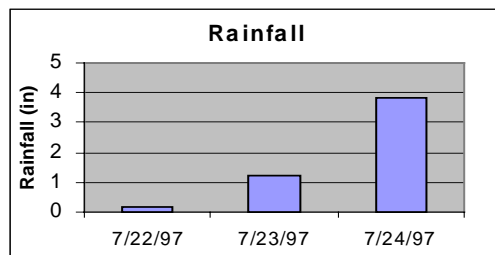
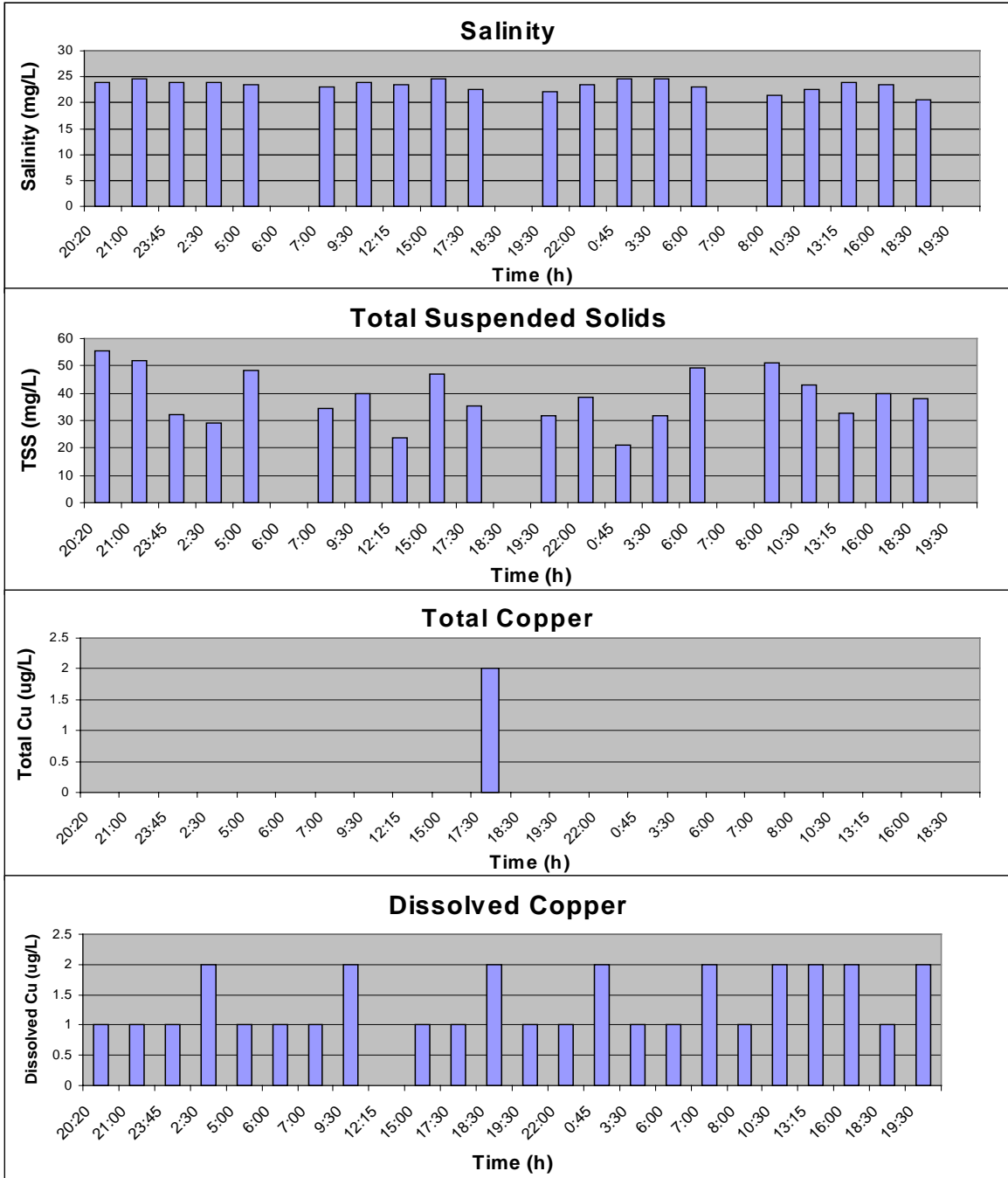


Figure 32. Water Quality data from Gargathy Creek at the Clam Company taken by autosampler during the July 22-24 rainfall event.

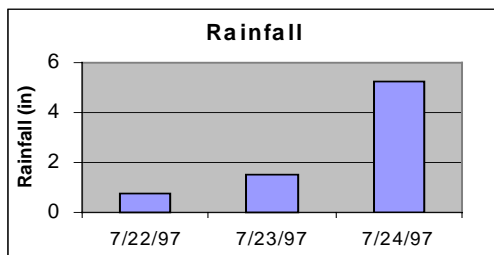
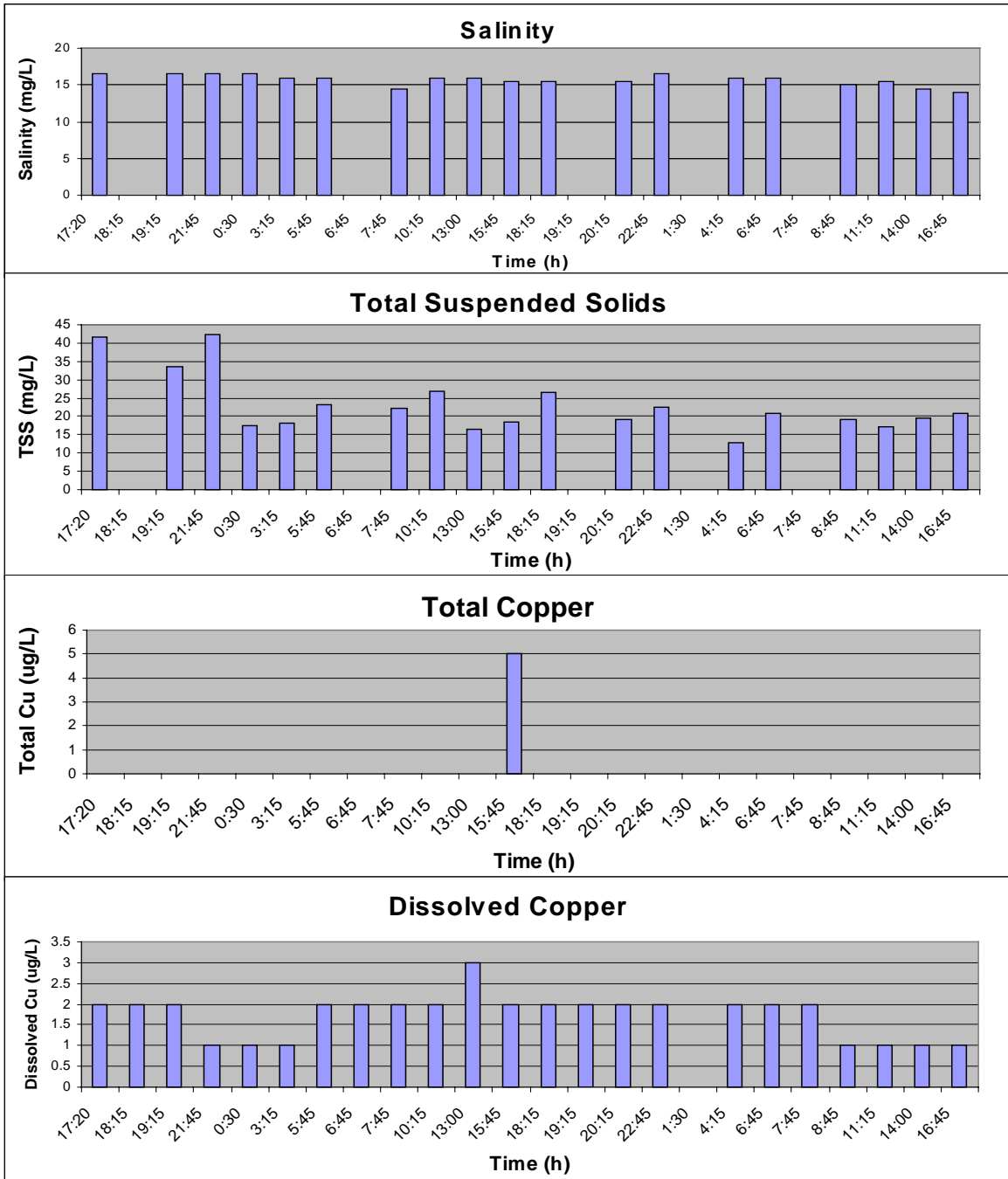


Figure 33. Water quality data from The Gulf at the Dam Site taken by autosampler during the July 22-24 rainfall event.

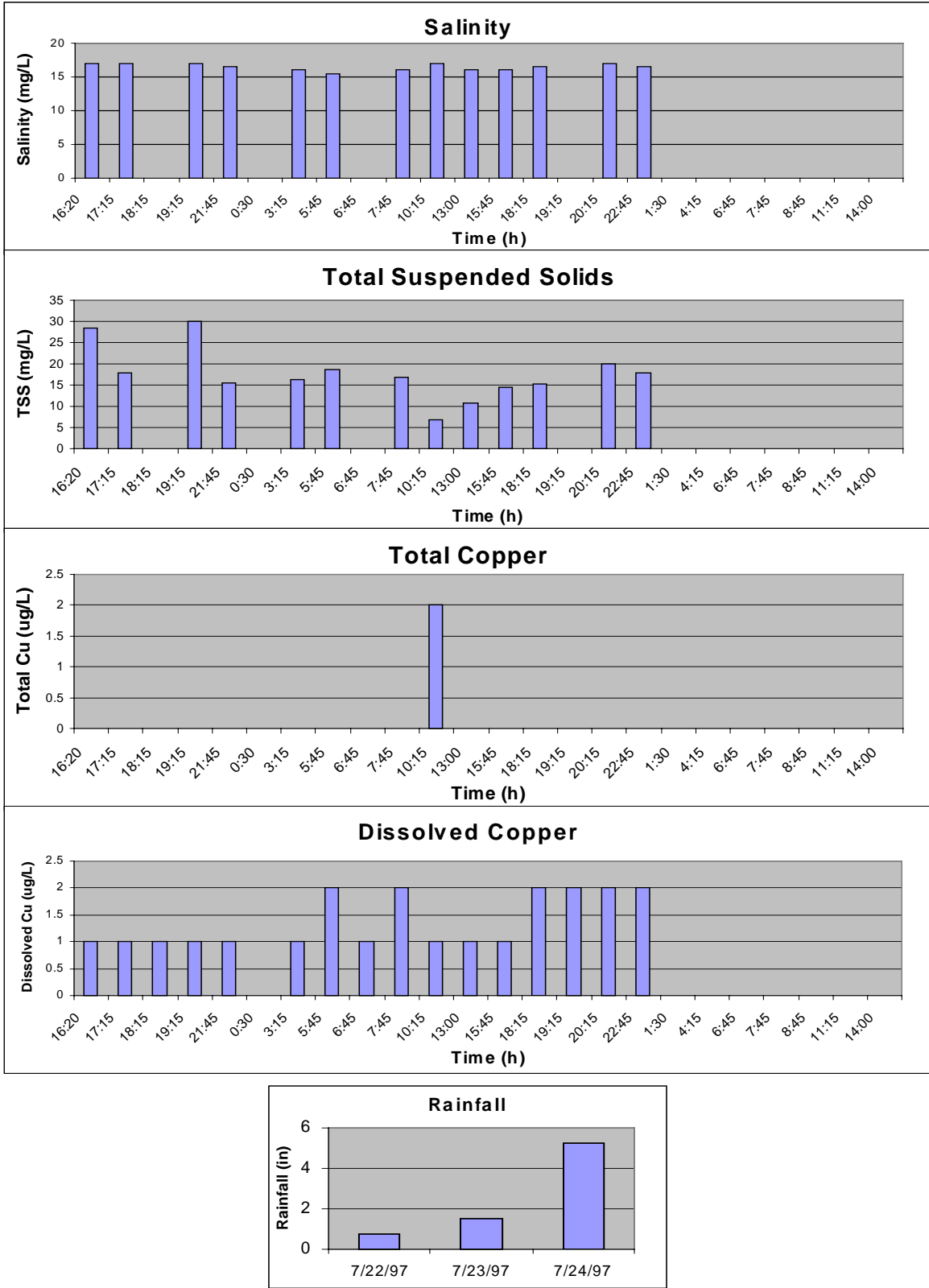


Figure 34. Water quality data for The Gulf at the Clam Company taken by autosampler during the July 22-24 rainfall event.



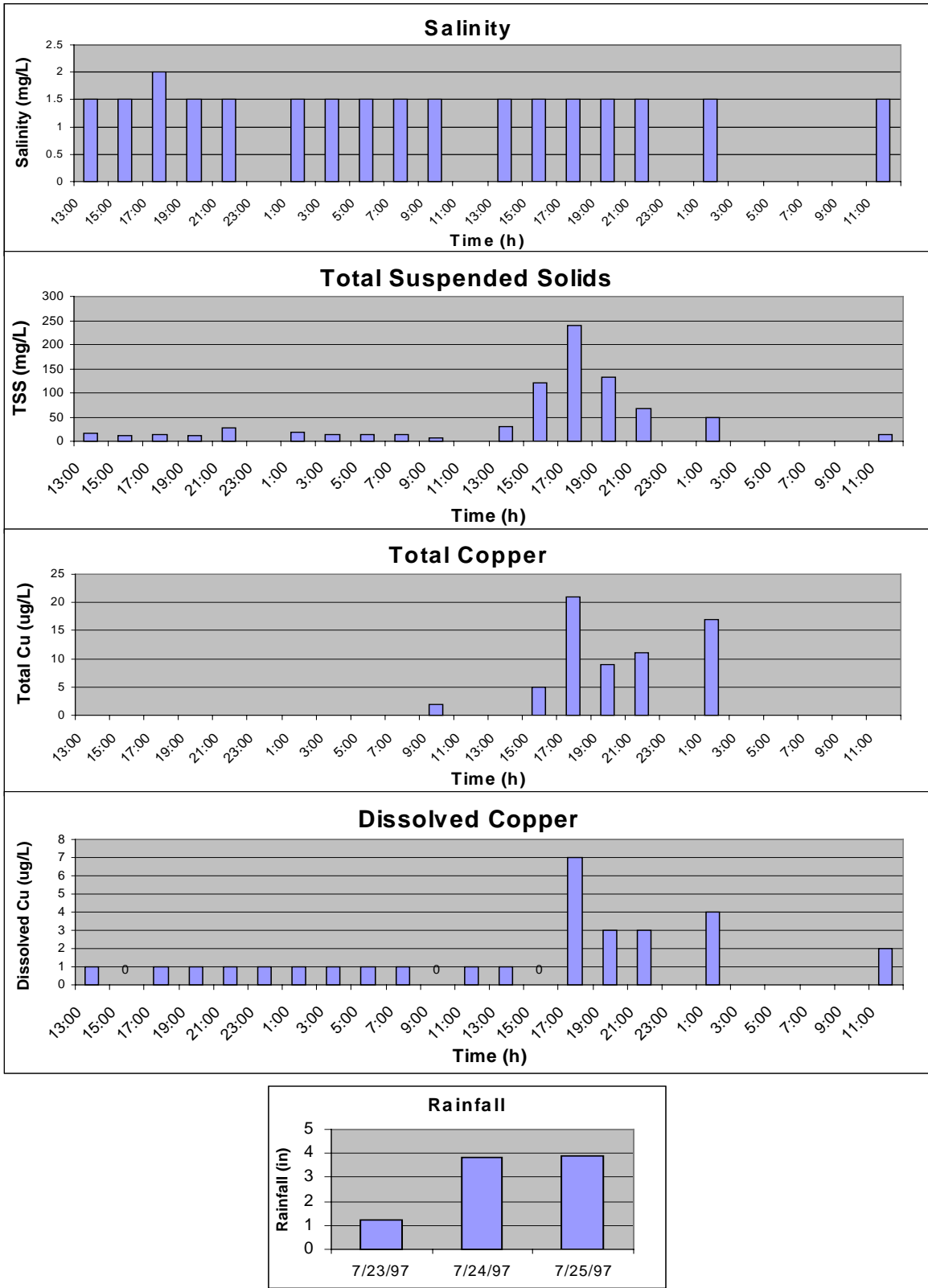


Figure 35. Water quality data for Parker's Creek taken by autosampler during the rainfall event of July 23-25.

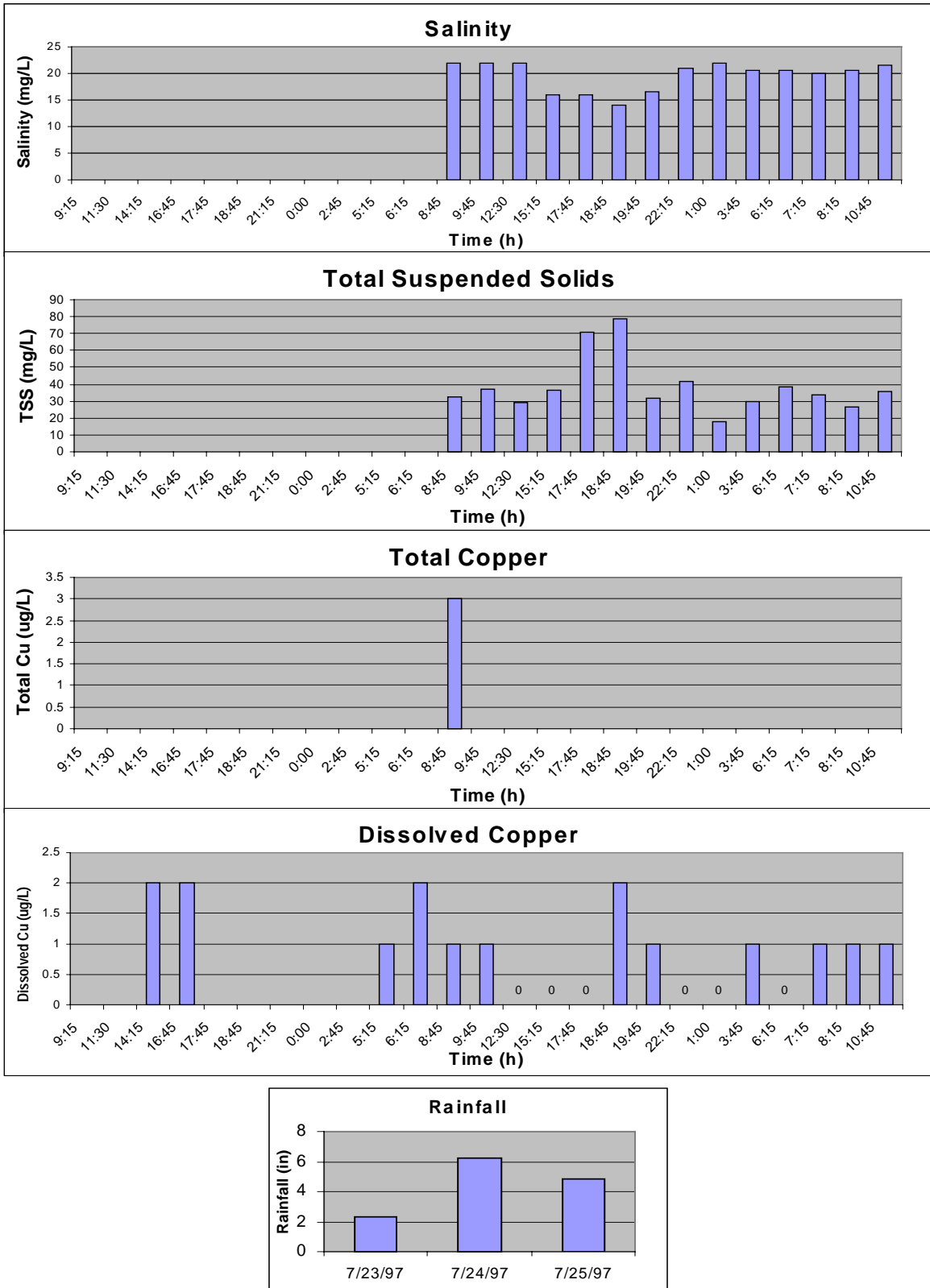


Figure 36. Water quality data from Raccoon Creek taken by autosampler during the rainfall event of July 23-25.