

Changes in Streamflow and Water Quality in Selected Nontidal Basins in the
Chesapeake Bay Watershed,
1985-2004

By Michael J. Langland, Jeff P. Raffensperger, Douglas L. Moyer, Jurate M. Landwehr, and
Gregory E. Schwarz

Appendix 2.2. Unbiased distribution and mean of observed concentrations of
(A) total nitrogen, (B) nitrite plus nitrate, (C) total phosphorus, (D) dissolved
inorganic phosphorus, and (E) sediment for the 23 Multi-Agency Nontidal
Monitoring Program sites, Chesapeake Bay watershed, 1985-2004.

Scientific Investigations Report 2006–5178

U.S. Geological Survey
2006

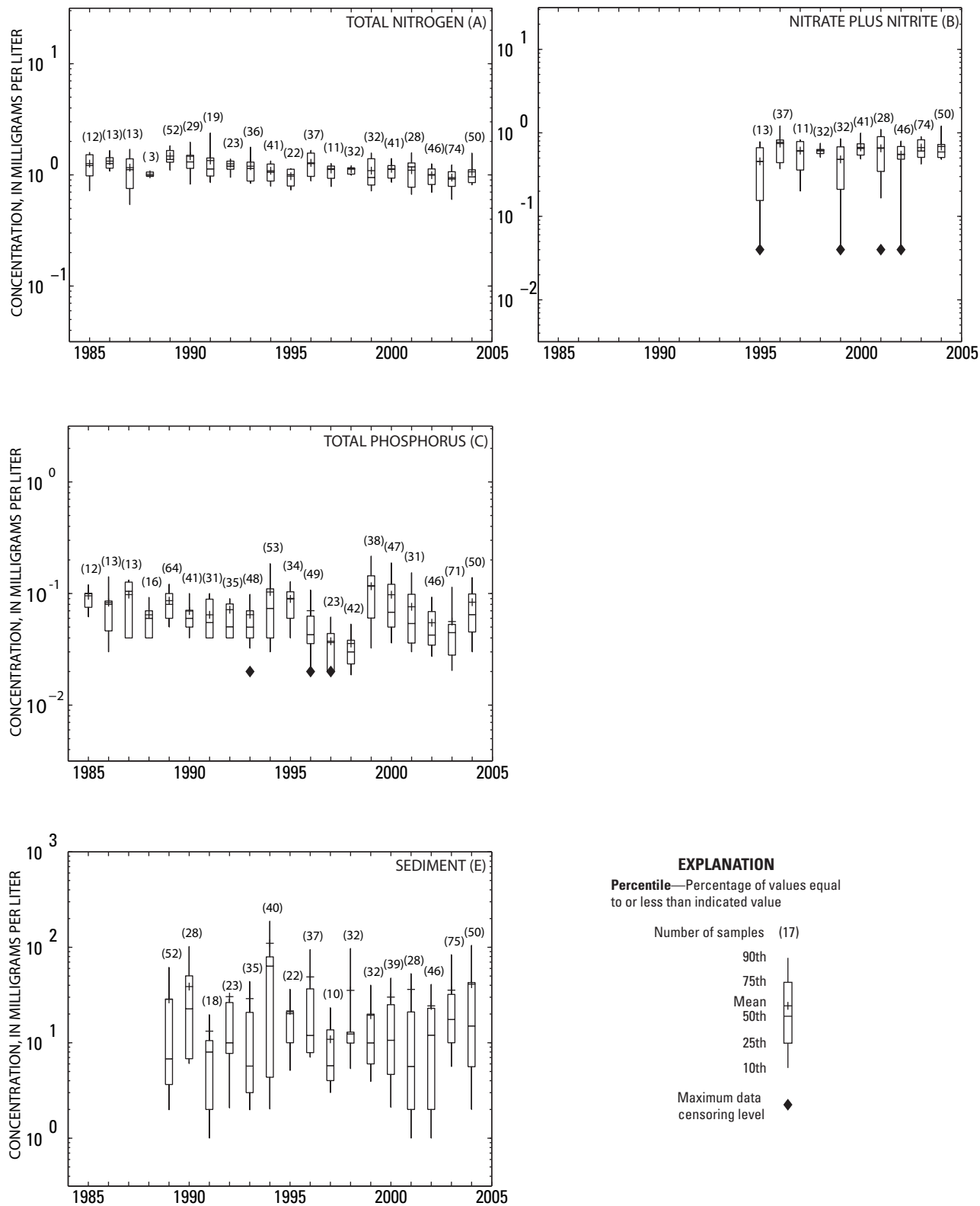


Figure 2.1. Range in annual observed water-quality concentrations of (A) total nitrogen, (B) nitrate plus nitrite, (C) total phosphorus, (D) dissolved phosphorus, and (E) sediment collected at the Susquehanna River at Towanda, PA water-quality monitoring station, 1985 - 2004.

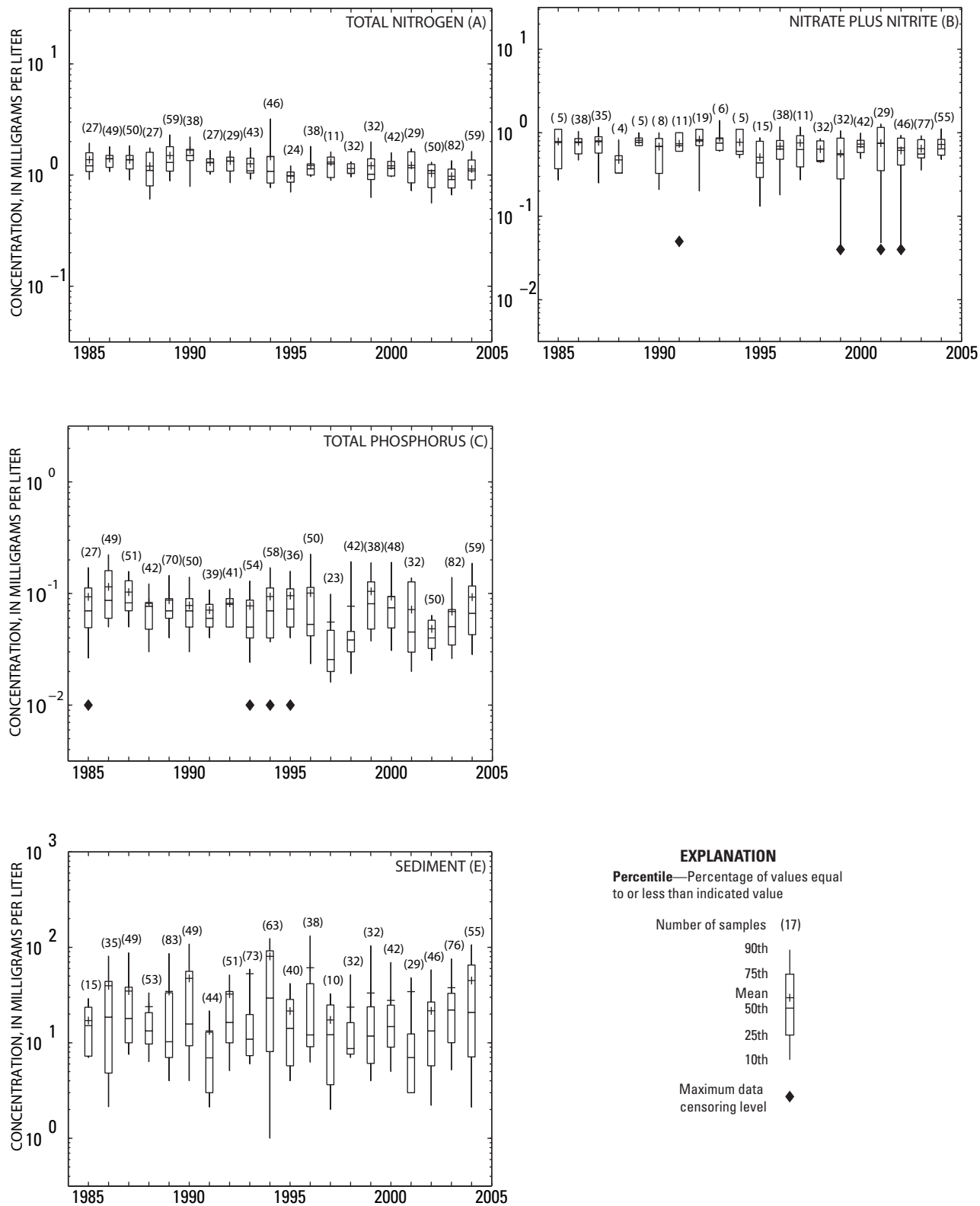


Figure 2.2. Range in annual observed water-quality concentrations of (A) total nitrogen, (B) nitrate plus nitrite, (C) total phosphorus, (D) dissolved phosphorus, and (E) sediment collected at the Susquehanna River at Danville, PA water-quality monitoring station, 1985 - 2004.

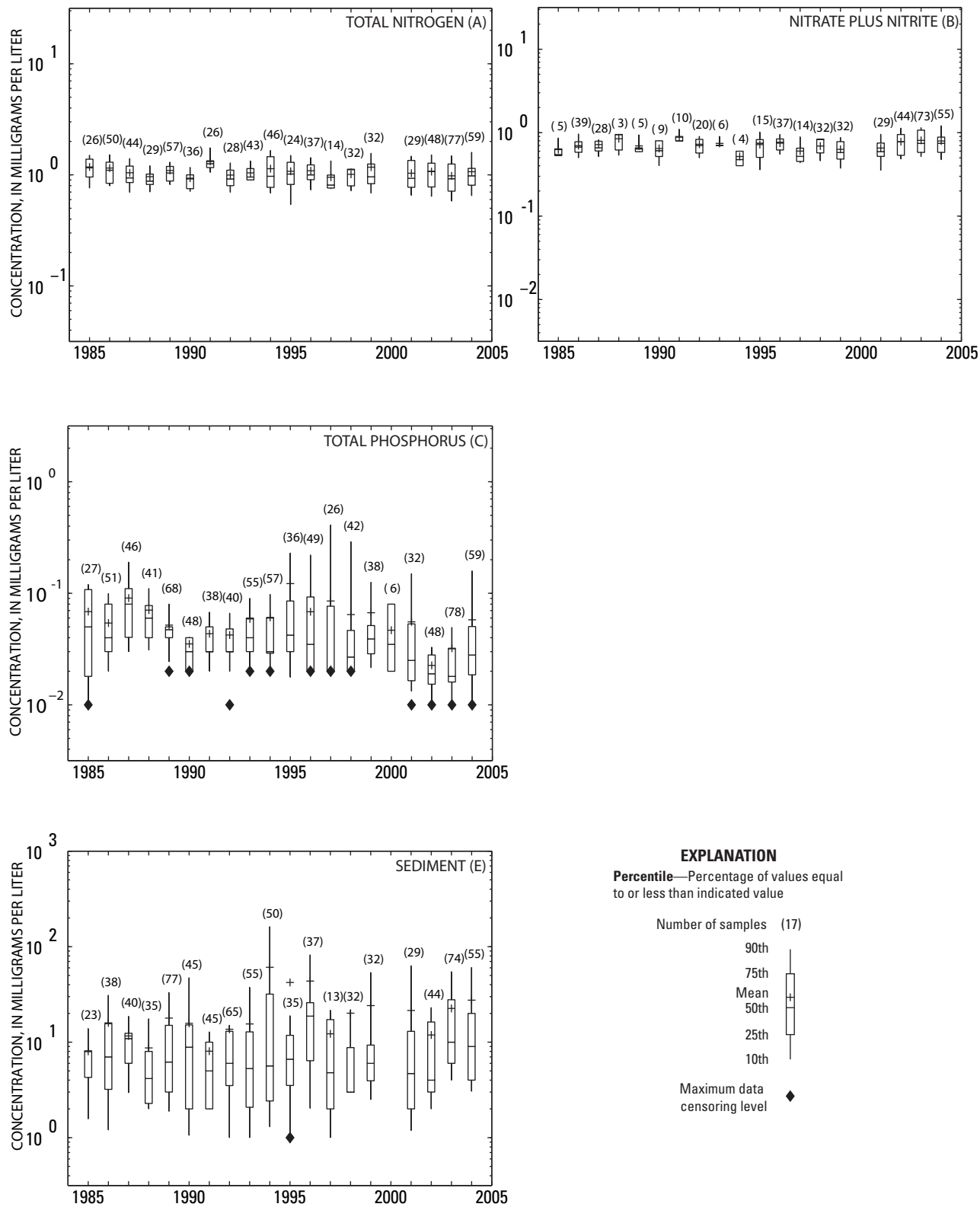


Figure 2.3. Range in annual observed water-quality concentrations of (A) total nitrogen, (B) nitrate plus nitrite, (C) total phosphorus, (D) dissolved phosphorus, and (E) sediment collected at the West Branch Susquehanna River at Lewisburg, PA water-quality monitoring station, 1985 - 2004.

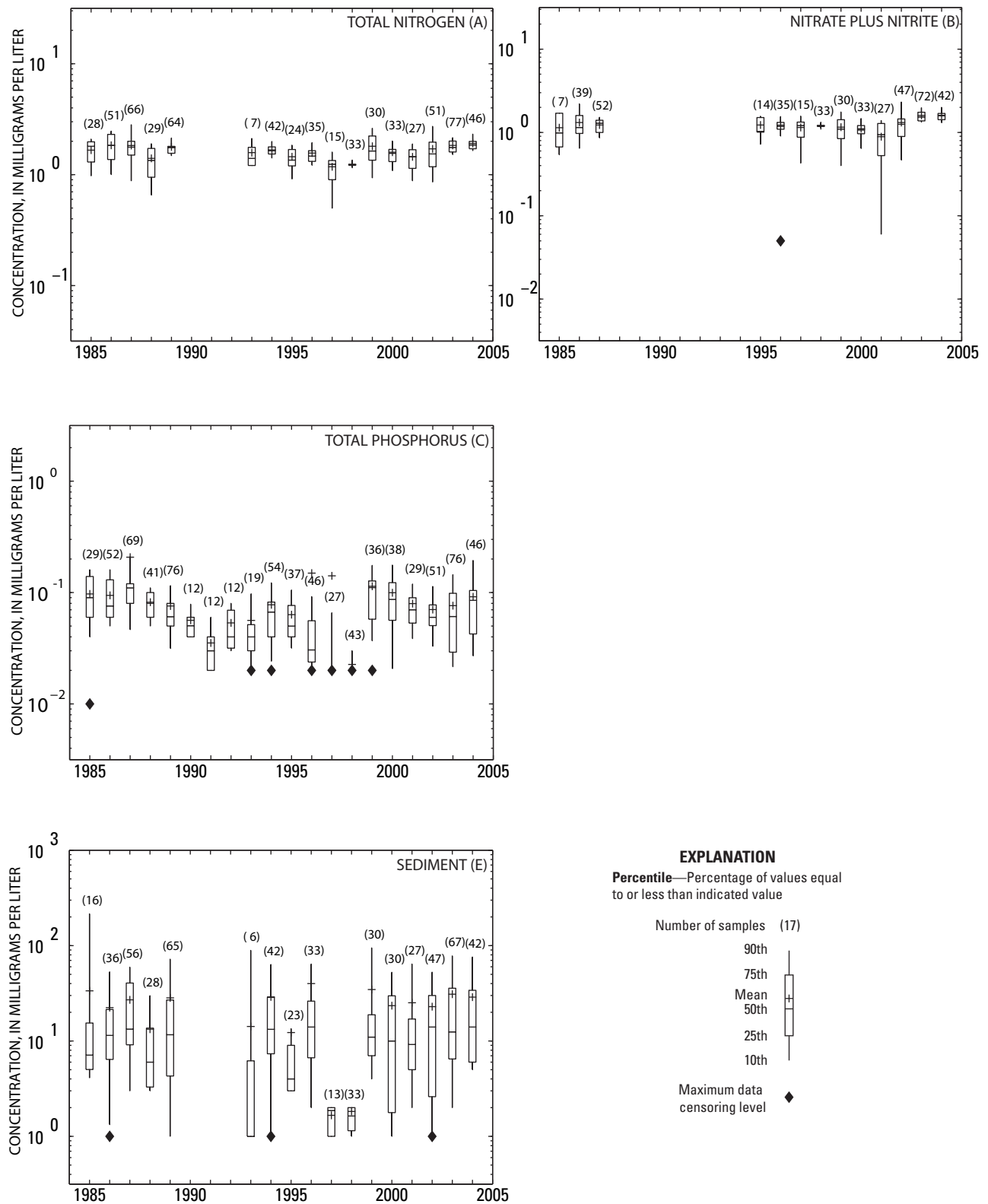


Figure 2.4. Range in annual observed water-quality concentrations of (A) total nitrogen, (B) nitrate plus nitrite, (C) total phosphorus, (D) dissolved phosphorus, and (E) sediment collected at the Juniata River at Newport, PA water-quality monitoring station, 1985 - 2004.

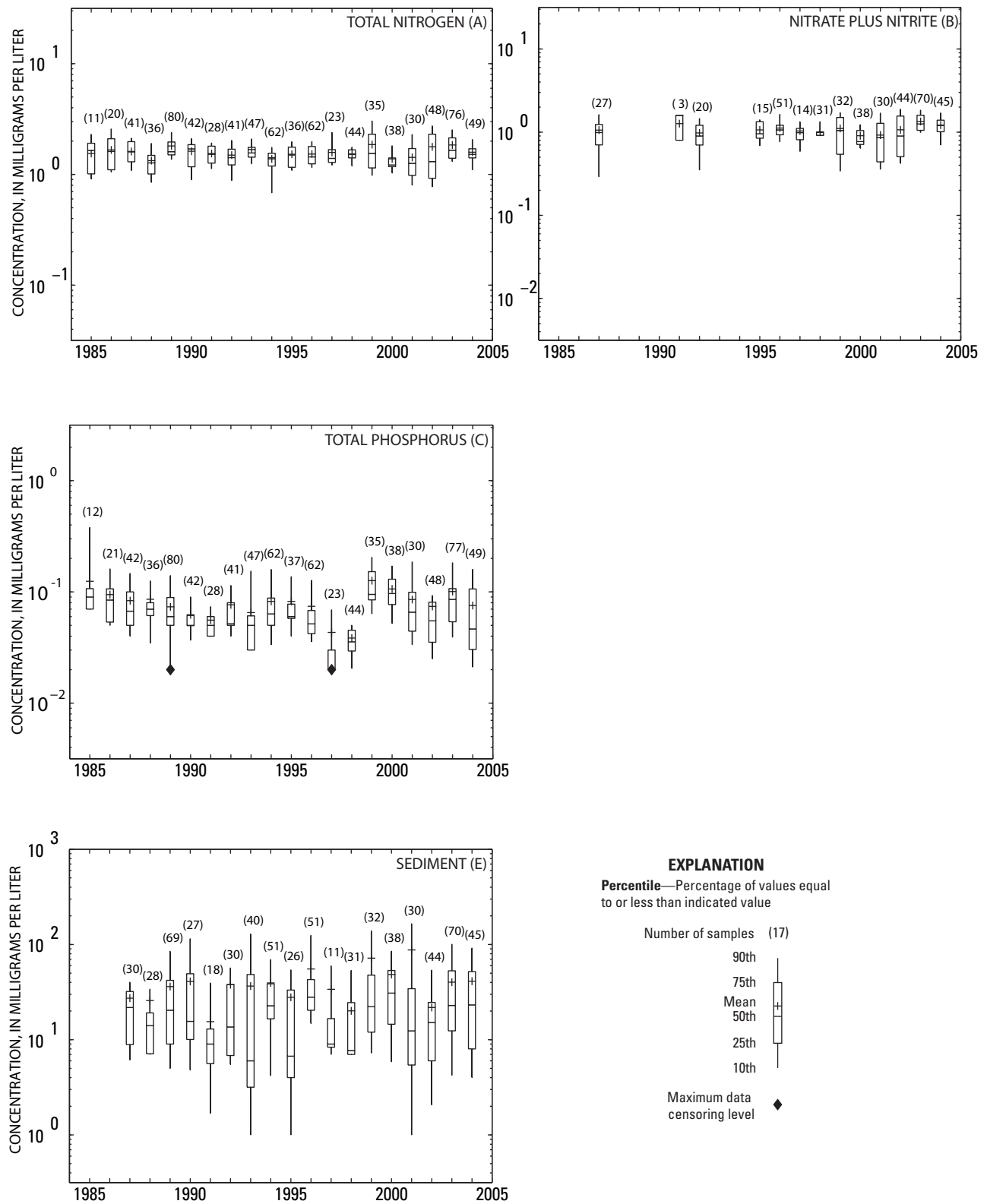


Figure 2.5. Range in annual observed water-quality concentrations of (A) total nitrogen, (B) nitrate plus nitrite, (C) total phosphorus, (D) dissolved phosphorus, and (E) sediment collected at the Susquehanna River at Marietta, PA water-quality monitoring station, 1985 - 2004.

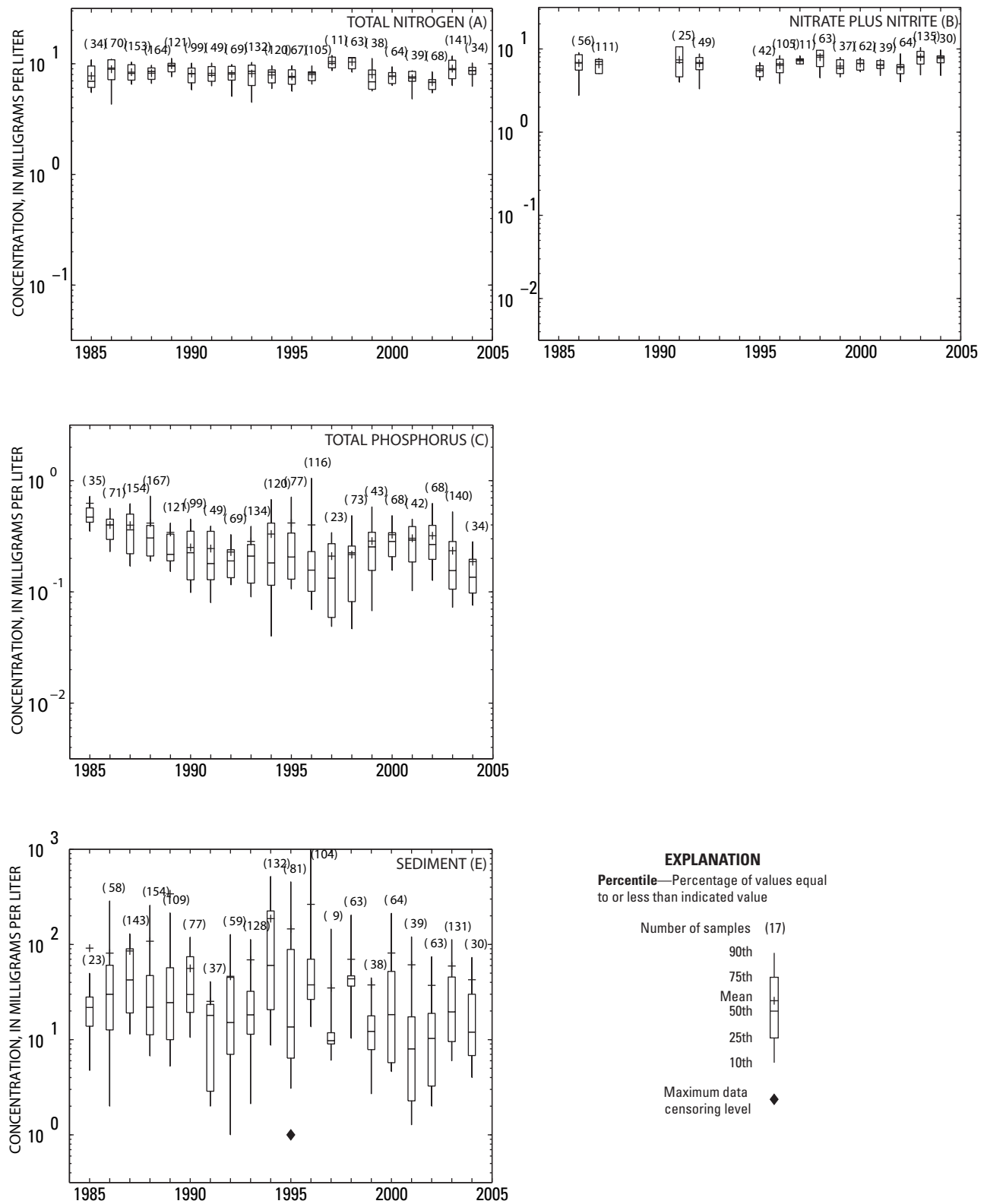


Figure 2.6. Range in annual observed water-quality concentrations of (A) total nitrogen, (B) nitrate plus nitrite, (C) total phosphorus, (D) dissolved phosphorus, and (E) sediment collected at the Conestoga River at Conestoga, PA water-quality monitoring station, 1985 - 2004.

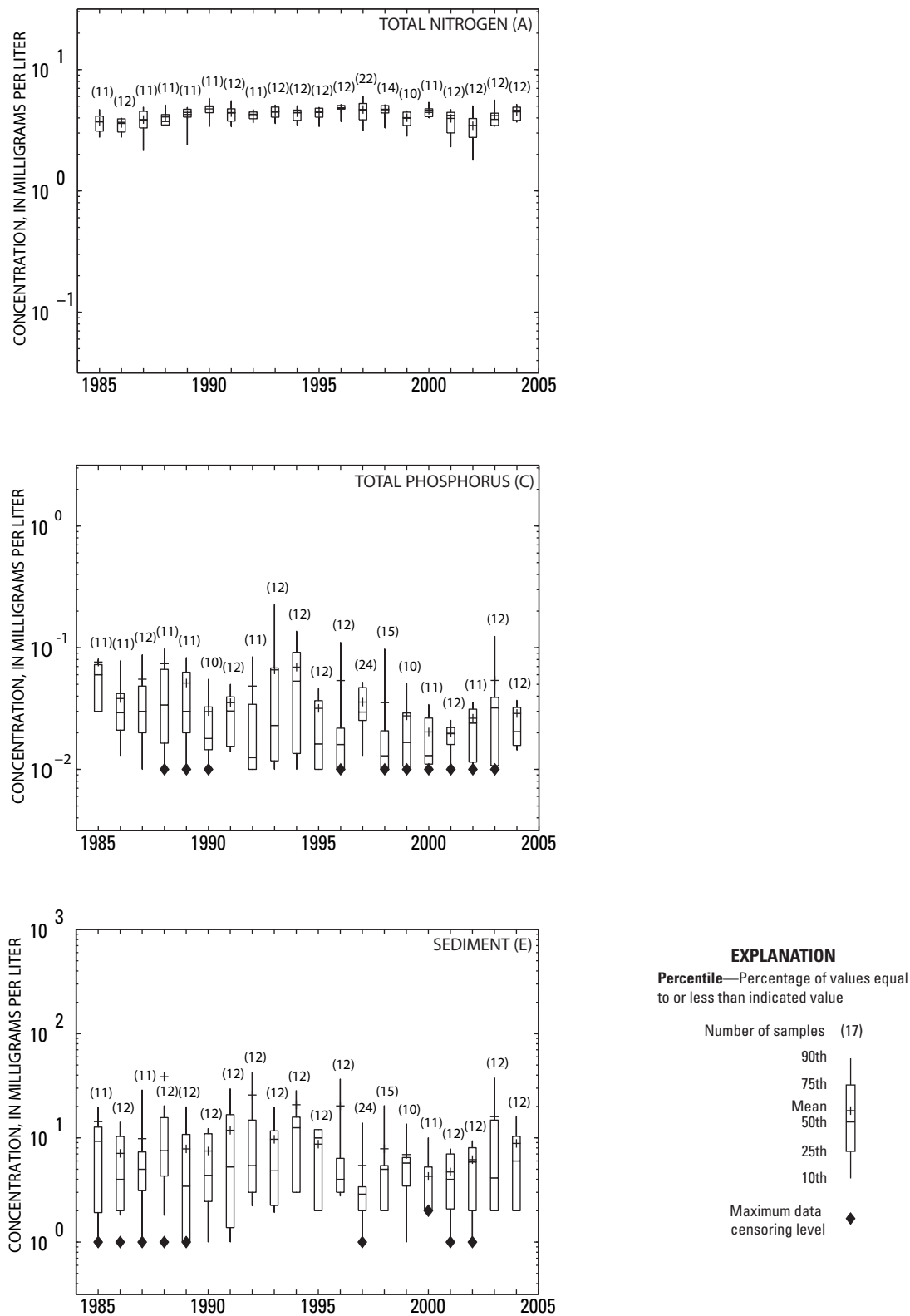
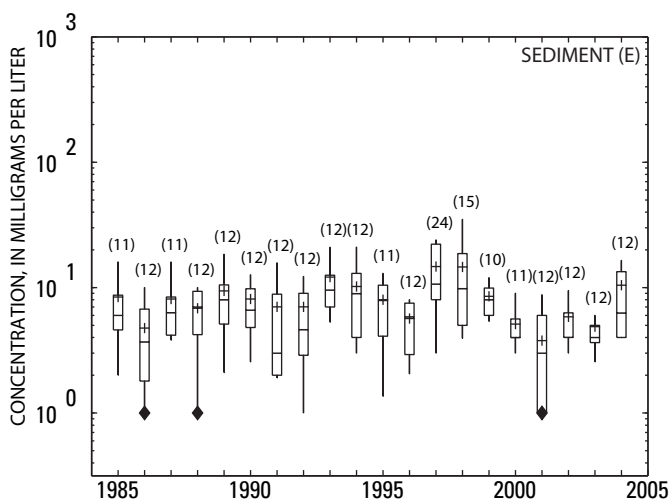
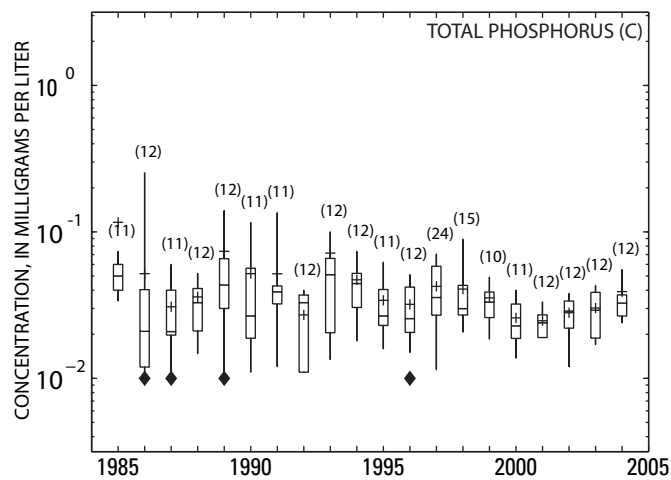
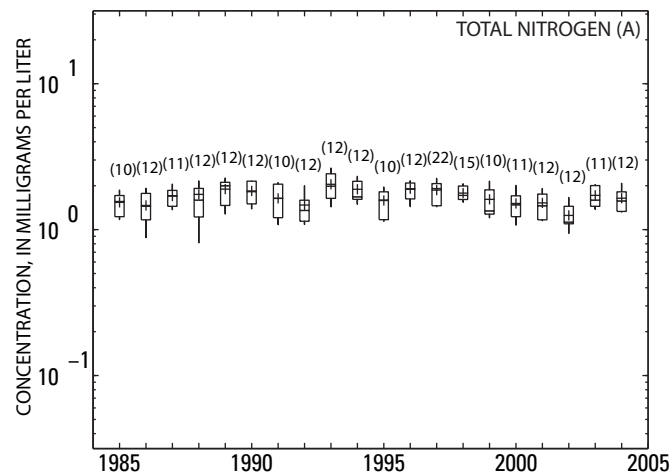


Figure 2.7. Range in annual observed water-quality concentrations of (A) total nitrogen, (B) nitrate plus nitrite, (C) total phosphorus, (D) dissolved phosphorus, and (E) sediment collected at the Patapsco River at Hollofield, MD water-quality monitoring station, 1985 - 2004.



EXPLANATION
Percentile—Percentage of values equal to or less than indicated value

Number of samples (17)

90th
 75th
 Mean
 50th
 25th
 10th

Maximum data
 censoring level

Figure 2.8. Range in annual observed water-quality concentrations of (A) total nitrogen, (B) nitrate plus nitrite, (C) total phosphorus, (D) dissolved phosphorus, and (E) sediment collected at the Patuxent River at Laurel, MD water-quality monitoring station, 1985 - 2004.

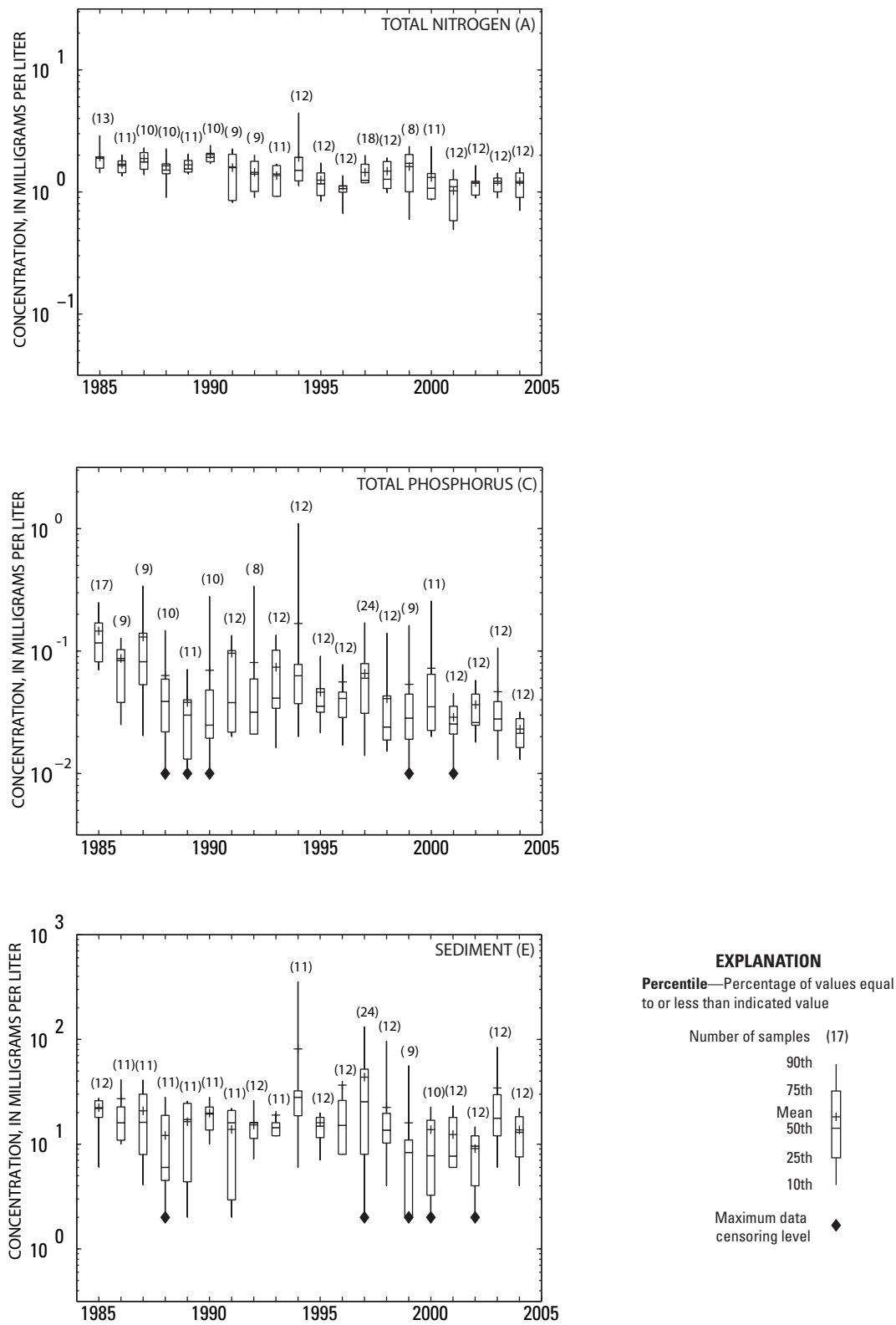


Figure 2.9. Range in annual observed water-quality concentrations of (A) total nitrogen, (B) nitrate plus nitrite, (C) total phosphorus, (D) dissolved phosphorus, and (E) sediment collected at the Georges Creek near Franklin, MD water-quality monitoring station, 1985 - 2004.

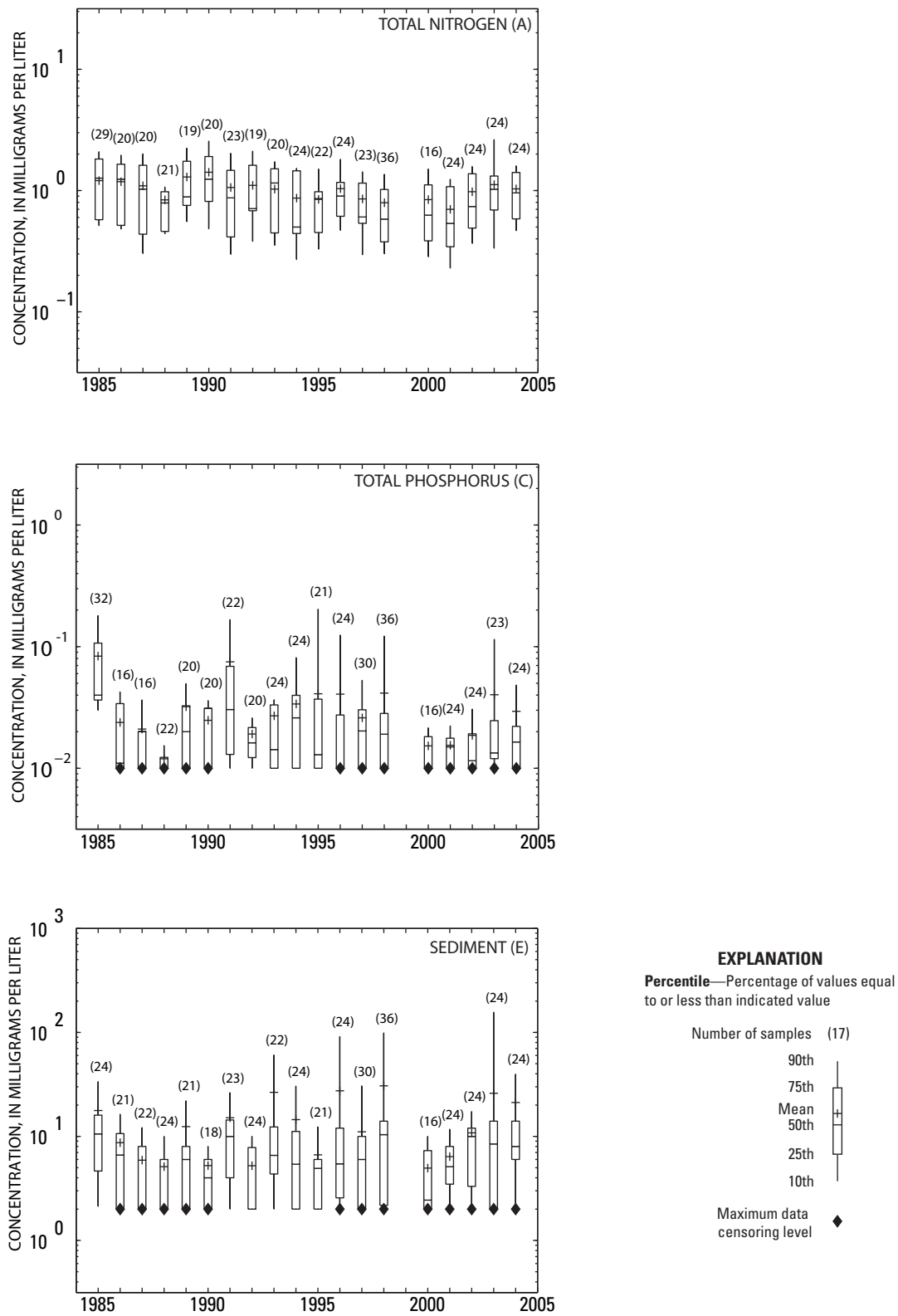


Figure 2.10. Range in annual observed water-quality concentrations of (A) total nitrogen, (B) nitrate plus nitrite, (C) total phosphorus, (D) dissolved phosphorus, and (E) sediment collected at the Wills Creek near Cumberland, MD water-quality monitoring station, 1985 - 2004.

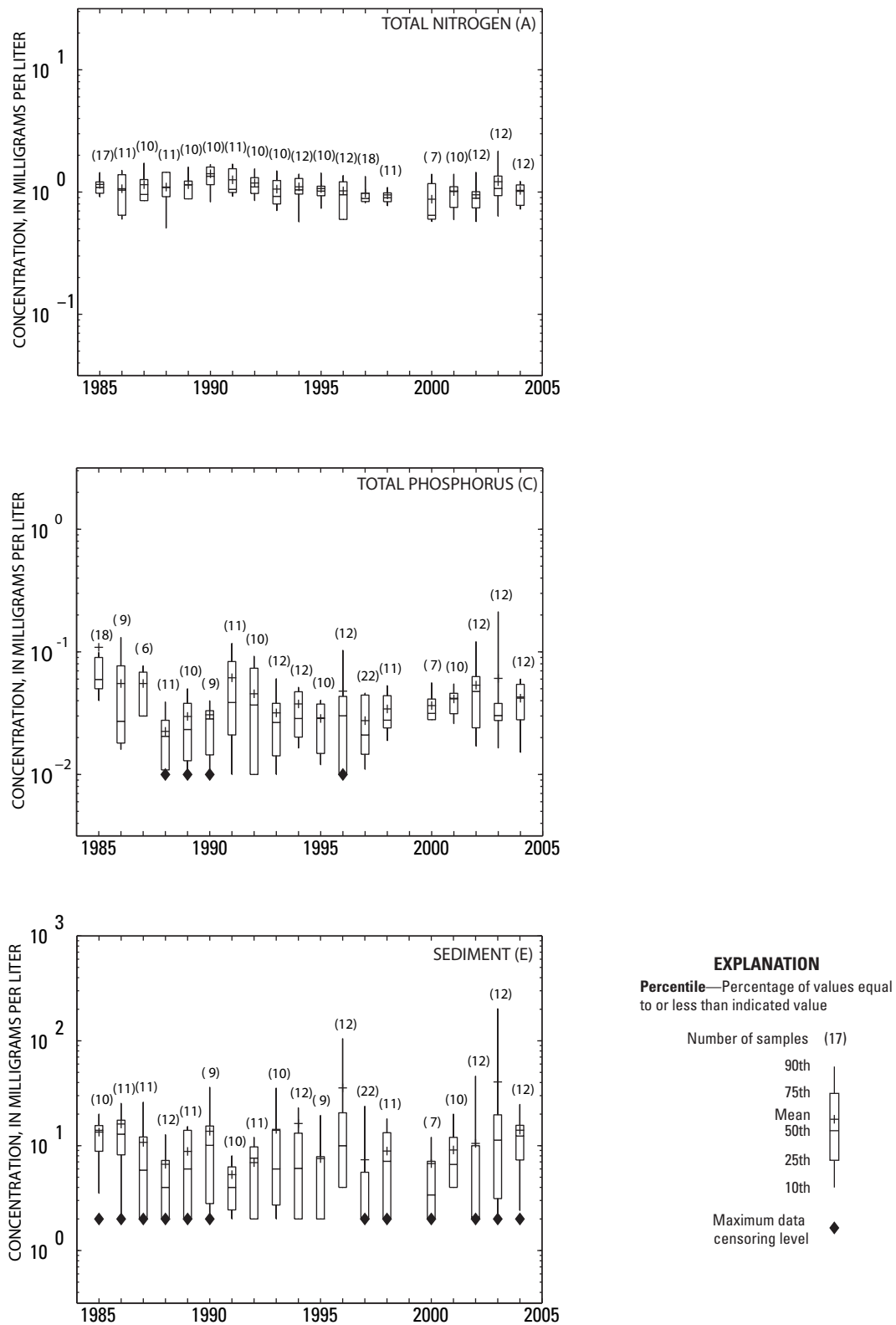


Figure 2.11. Range in annual observed water-quality concentrations of (A) total nitrogen, (B) nitrate plus nitrite, (C) total phosphorus, (D) dissolved phosphorus, and (E) sediment collected at the Potomac River at Paw Paw, WV. water-quality monitoring station, 1985 - 2004.

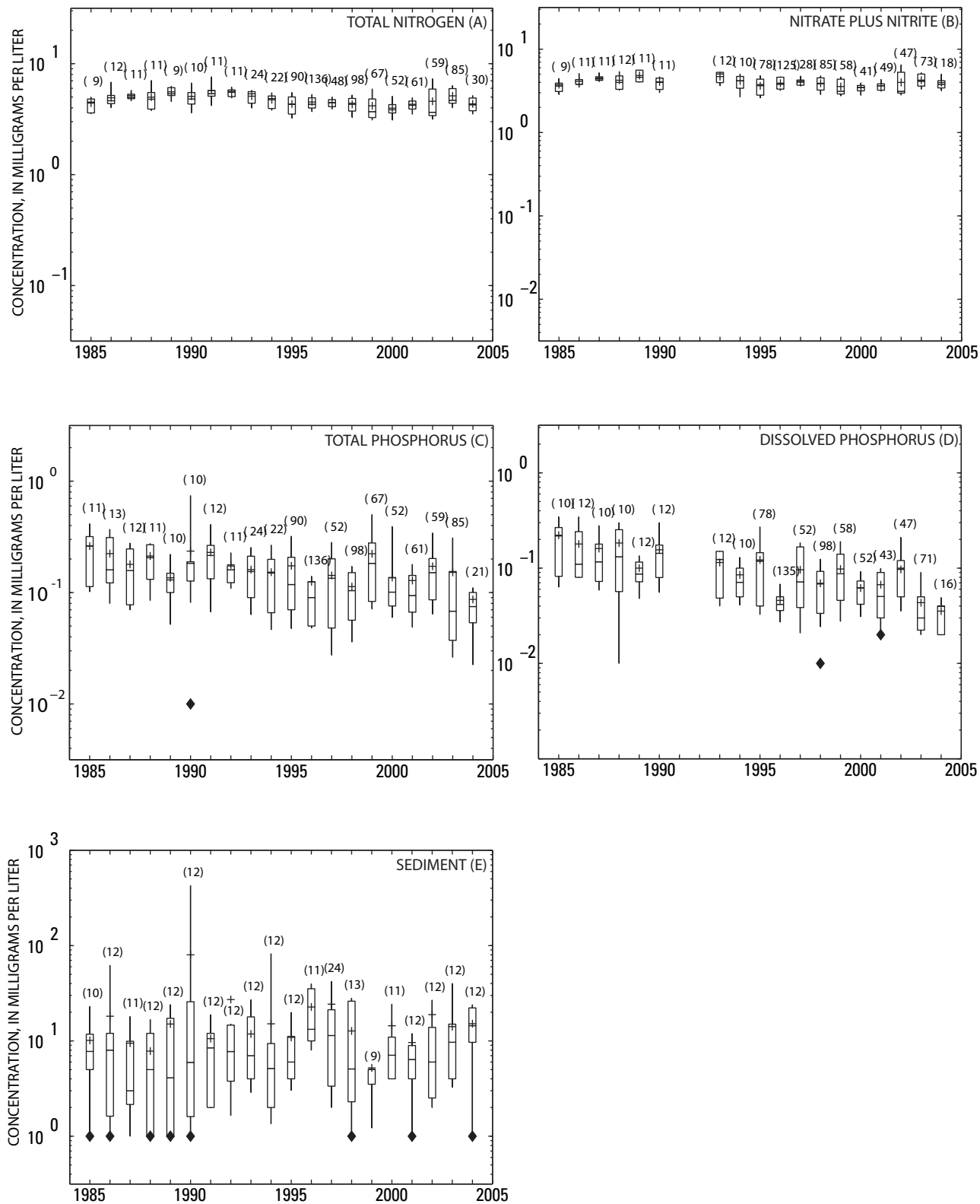


Figure 2.12. Range in annual observed water-quality concentrations of (A) total nitrogen, (B) nitrate plus nitrite, (C) total phosphorus, (D) dissolved phosphorus, and (E) sediment collected at the Conococheague Creek at Fairview, Md. water-quality monitoring station, 1985 - 2004.

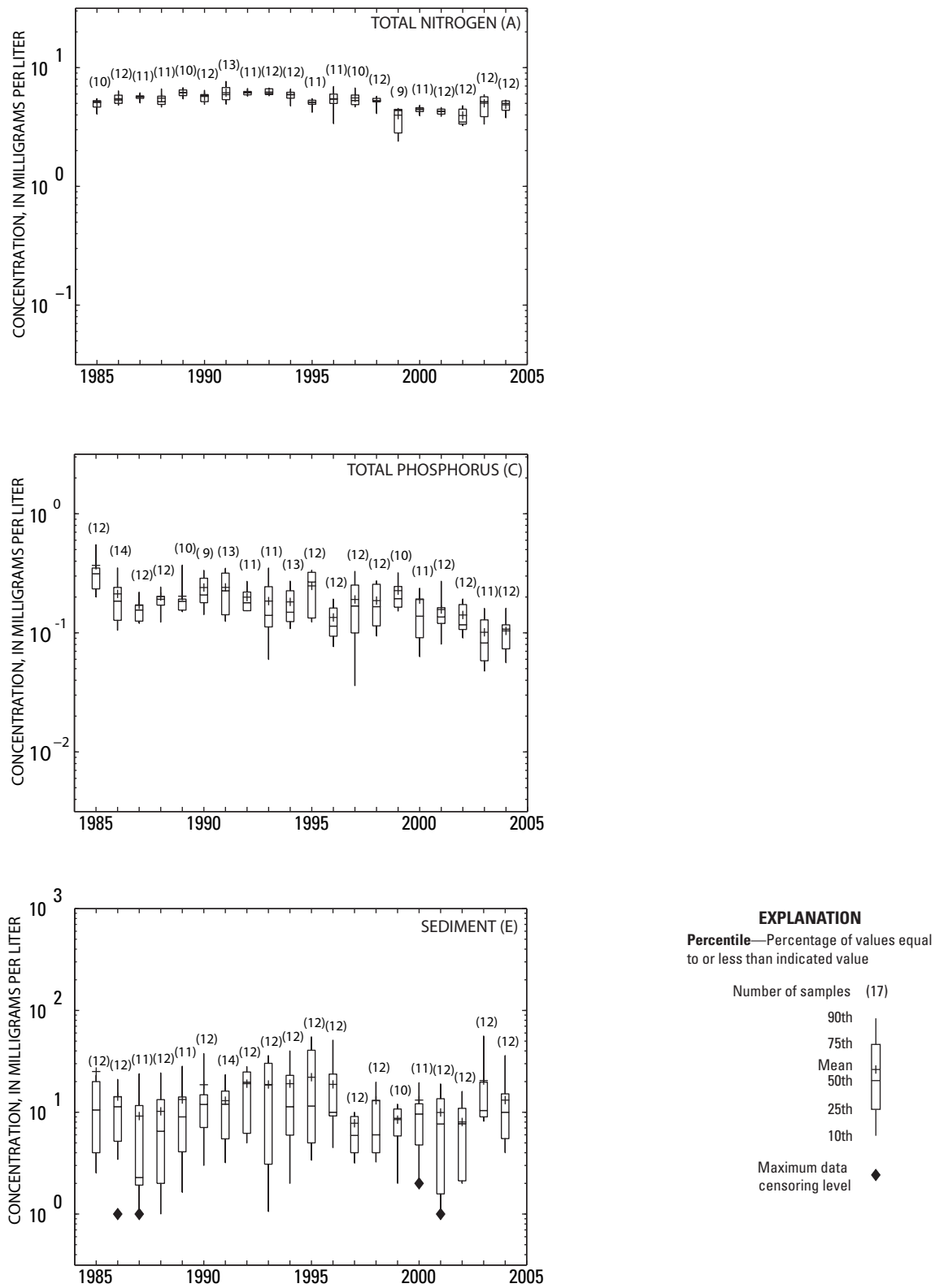


Figure 2.13. Range in annual observed water-quality concentrations of (A) total nitrogen, (B) nitrate plus nitrite, (C) total phosphorus, (D) dissolved phosphorus, and (E) sediment collected at the Antietam Creek near Sharpsburg, Md. water-quality monitoring station, 1985 - 2004.

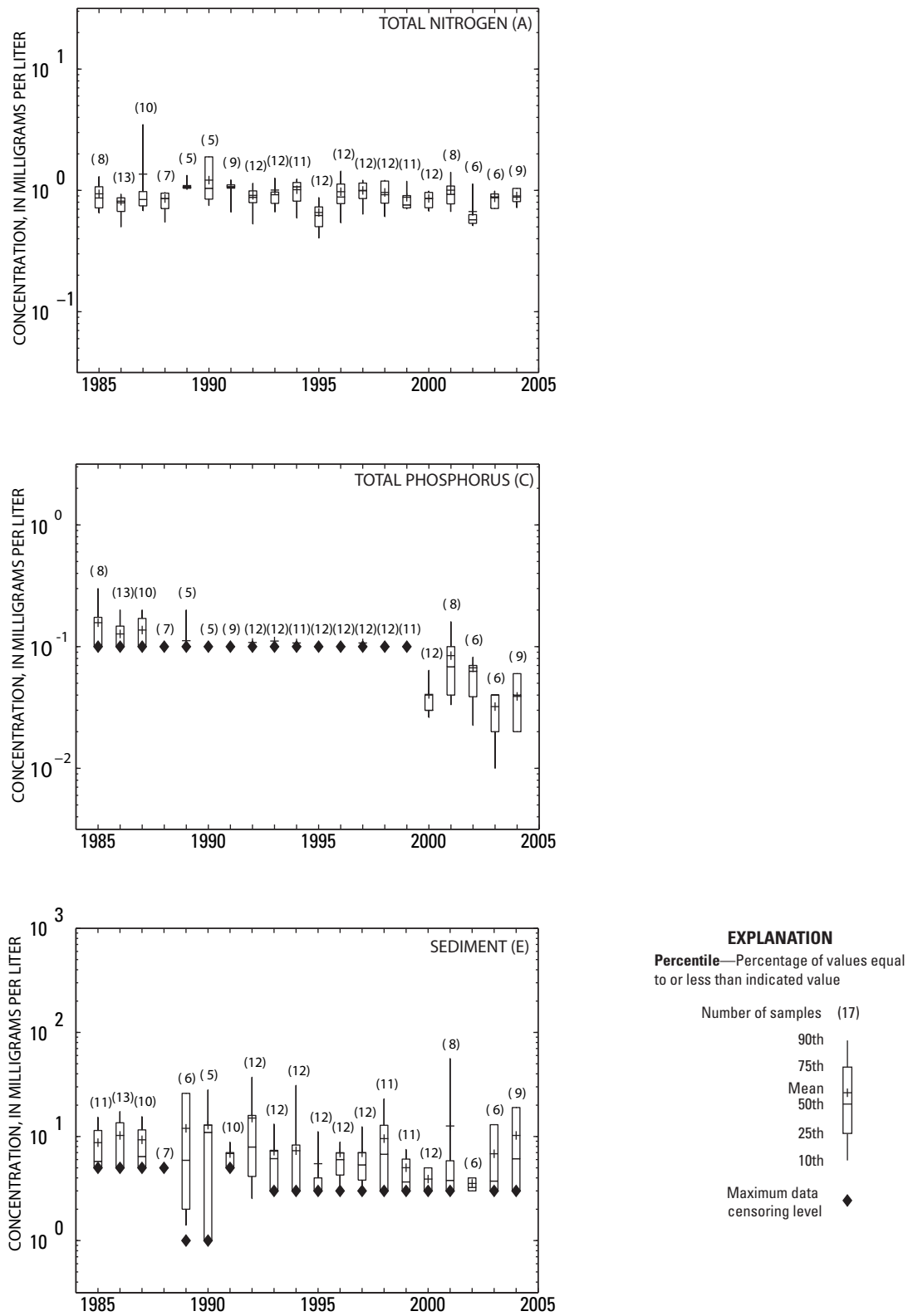


Figure 2.14. Range in annual observed water-quality concentrations of (A) total nitrogen, (B) nitrate plus nitrite, (C) total phosphorus, (D) dissolved phosphorus, and (E) sediment collected at the South River near Waynesboro, Va. water-quality monitoring station, 1985 - 2004.

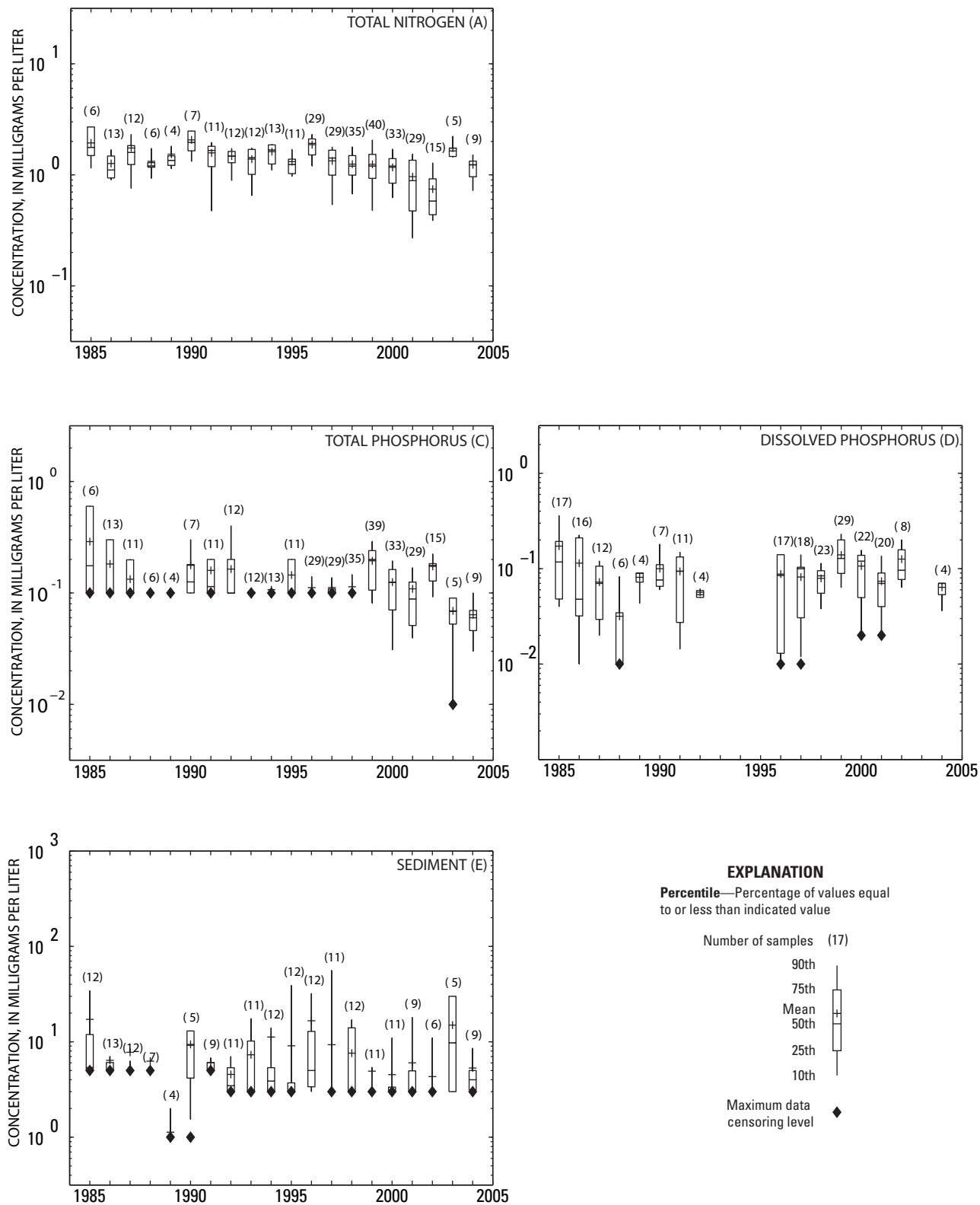


Figure 2.15. Range in annual observed water-quality concentrations of (A) total nitrogen, (B) nitrate plus nitrite, (C) total phosphorus, (D) dissolved phosphorus, and (E) sediment collected at the S.F. Shenandoah River at Front Royal, Va. water-quality monitoring station, 1985 - 2004.

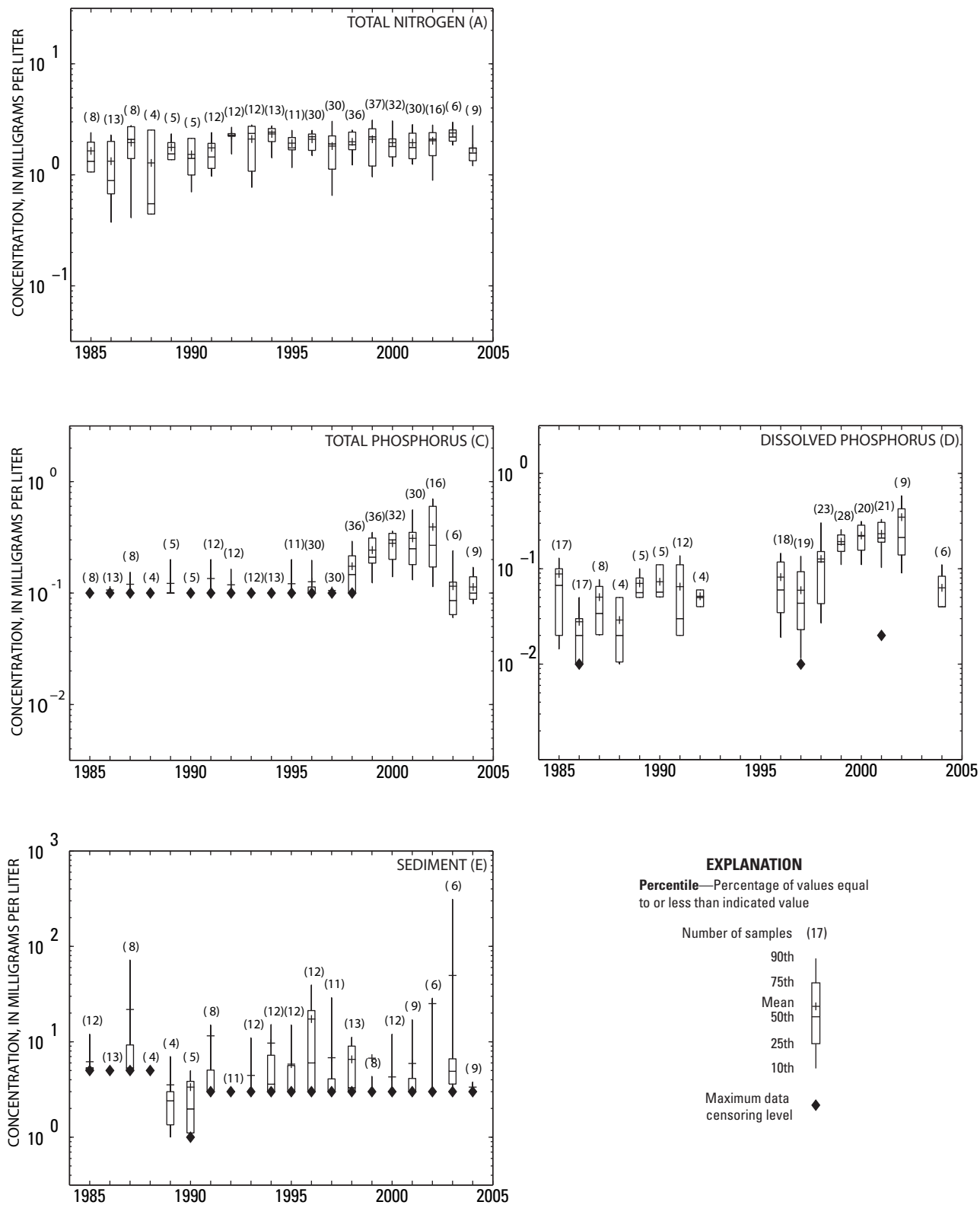
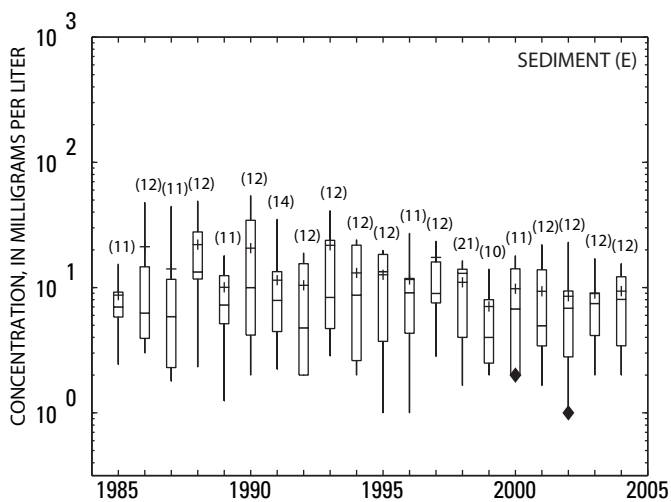
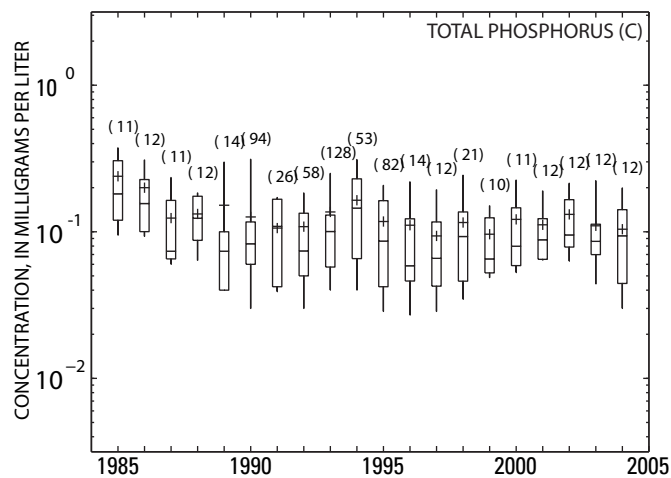
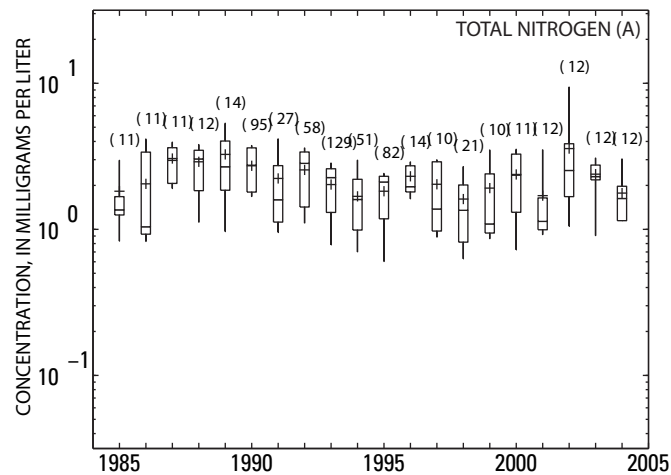


Figure 2.16. Range in annual observed water-quality concentrations of (A) total nitrogen, (B) nitrate plus nitrite, (C) total phosphorus, (D) dissolved phosphorus, and (E) sediment collected at the N.F. Shenandoah River at Strasburg, Va. water-quality monitoring station, 1985 - 2004.



EXPLANATION
Percentile—Percentage of values equal to or less than indicated value

Number of samples (17)

90th

75th

Mean

50th

25th

10th

Maximum data censoring level

Figure 2.17. Range in annual observed water-quality concentrations of (A) total nitrogen, (B) nitrate plus nitrite, (C) total phosphorus, (D) dissolved phosphorus, and (E) sediment collected at the Monocacy River at Bridgeport, Md. water-quality monitoring station, 1985 - 2004.

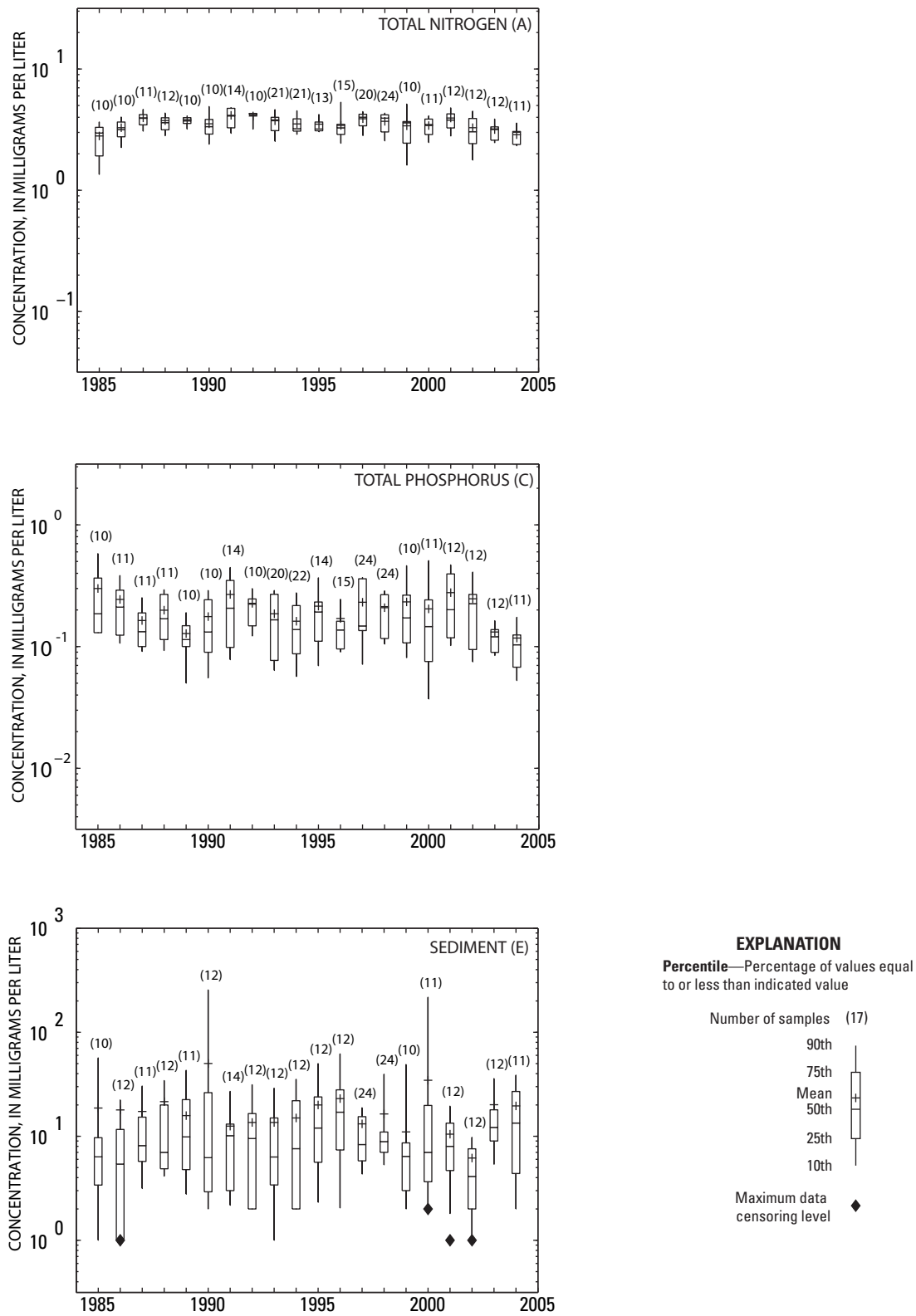


Figure 2.18. Range in annual observed water-quality concentrations of (A) total nitrogen, (B) nitrate plus nitrite, (C) total phosphorus, (D) dissolved phosphorus, and (E) sediment collected at the Monocacy River at Jug Bridge near Frederick, Md. water-quality monitoring station, 1985 - 2004.

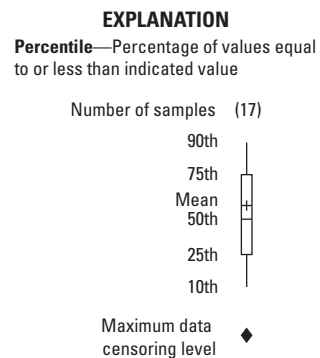
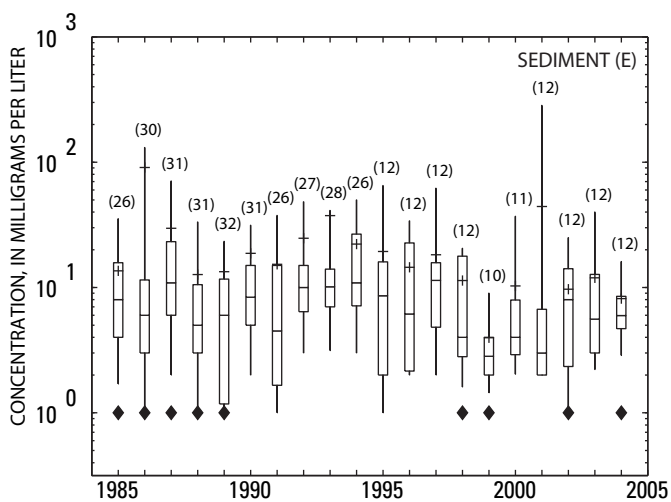
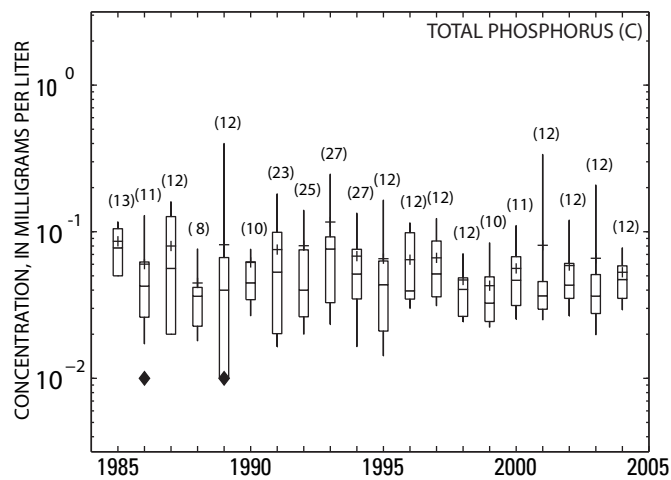
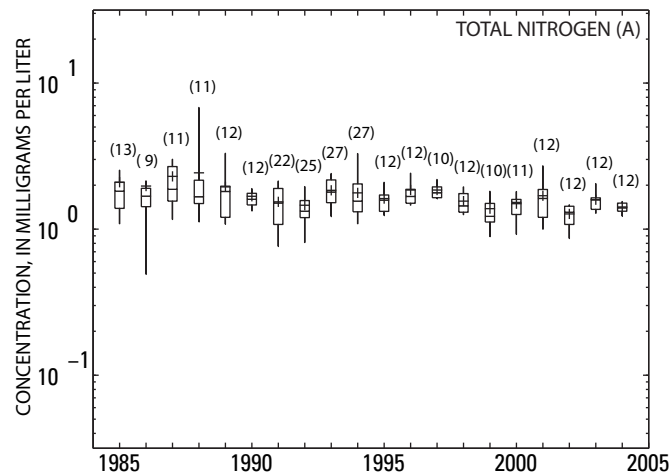


Figure 2.19. Range in annual observed water-quality concentrations of (A) total nitrogen, (B) nitrate plus nitrite, (C) total phosphorus, (D) dissolved phosphorus, and (E) sediment collected at the NW Branch Anacostia River near Hyattsville, Md. water-quality monitoring station, 1985 - 2004.

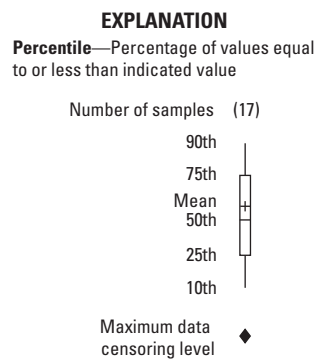
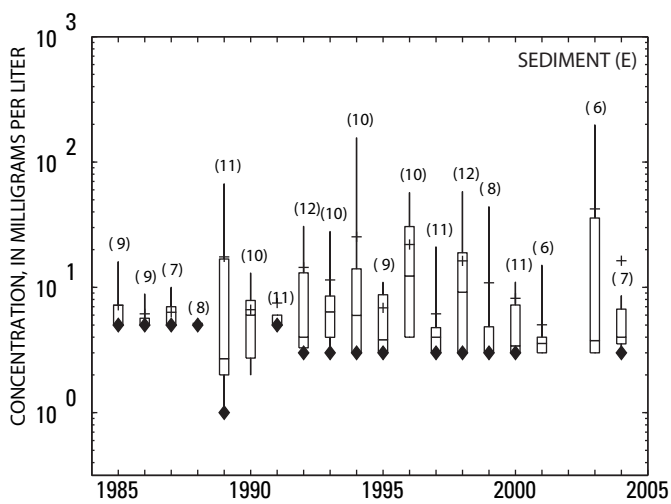
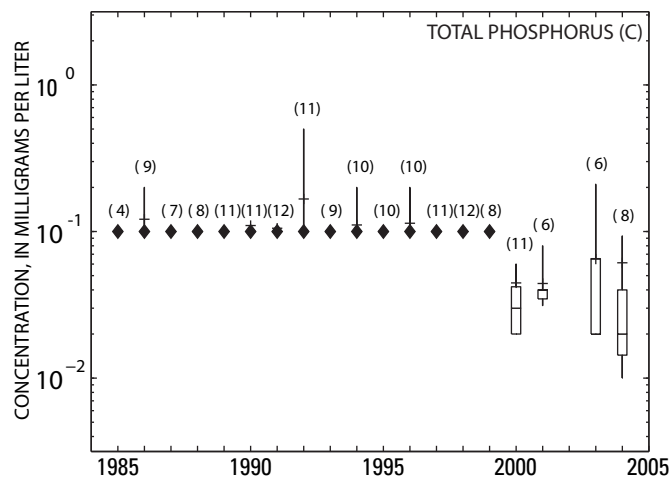
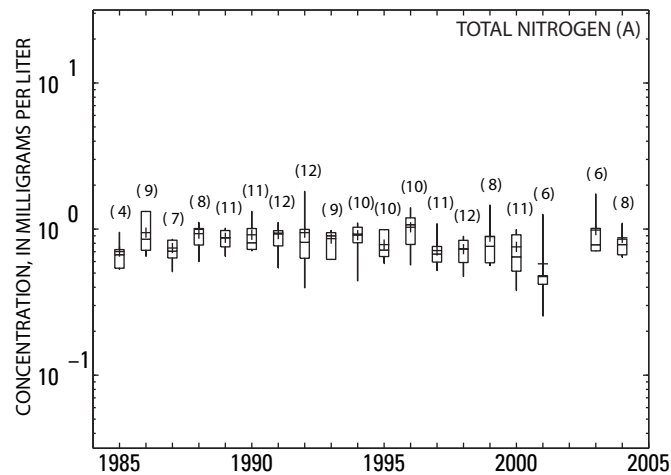


Figure 2.20. Range in annual observed water-quality concentrations of (A) total nitrogen, (B) nitrate plus nitrite, (C) total phosphorus, (D) dissolved phosphorus, and (E) sediment collected at the Robinson River near Locust Dale, Va. water-quality monitoring station, 1985 - 2004.

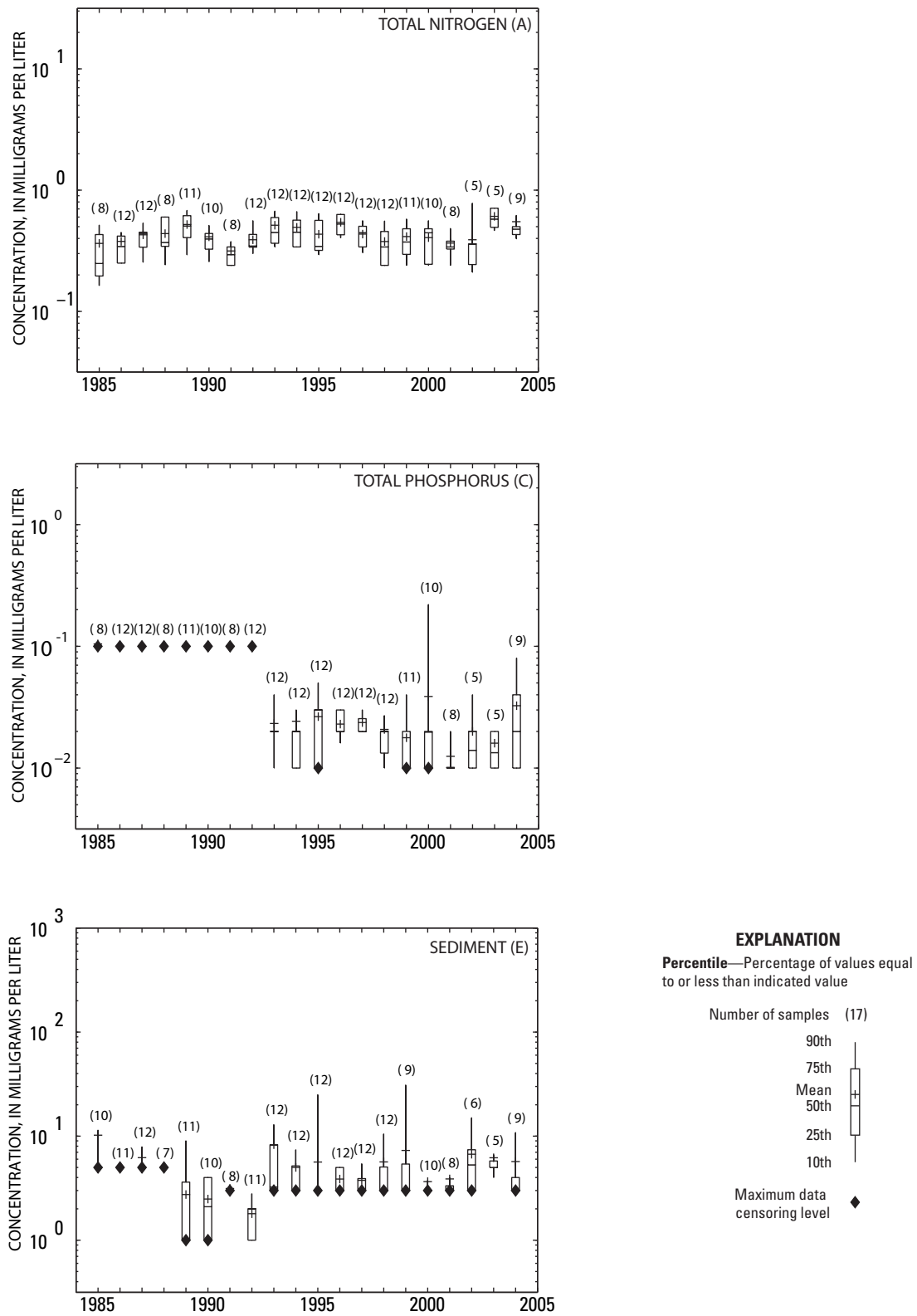


Figure 2.21. Range in annual observed water-quality concentrations of (A) total nitrogen, (B) nitrate plus nitrite, (C) total phosphorus, (D) dissolved phosphorus, and (E) sediment collected at the North Anna River at Hart Corner near Doswell, Va. water-quality monitoring station, 1985 - 2004.

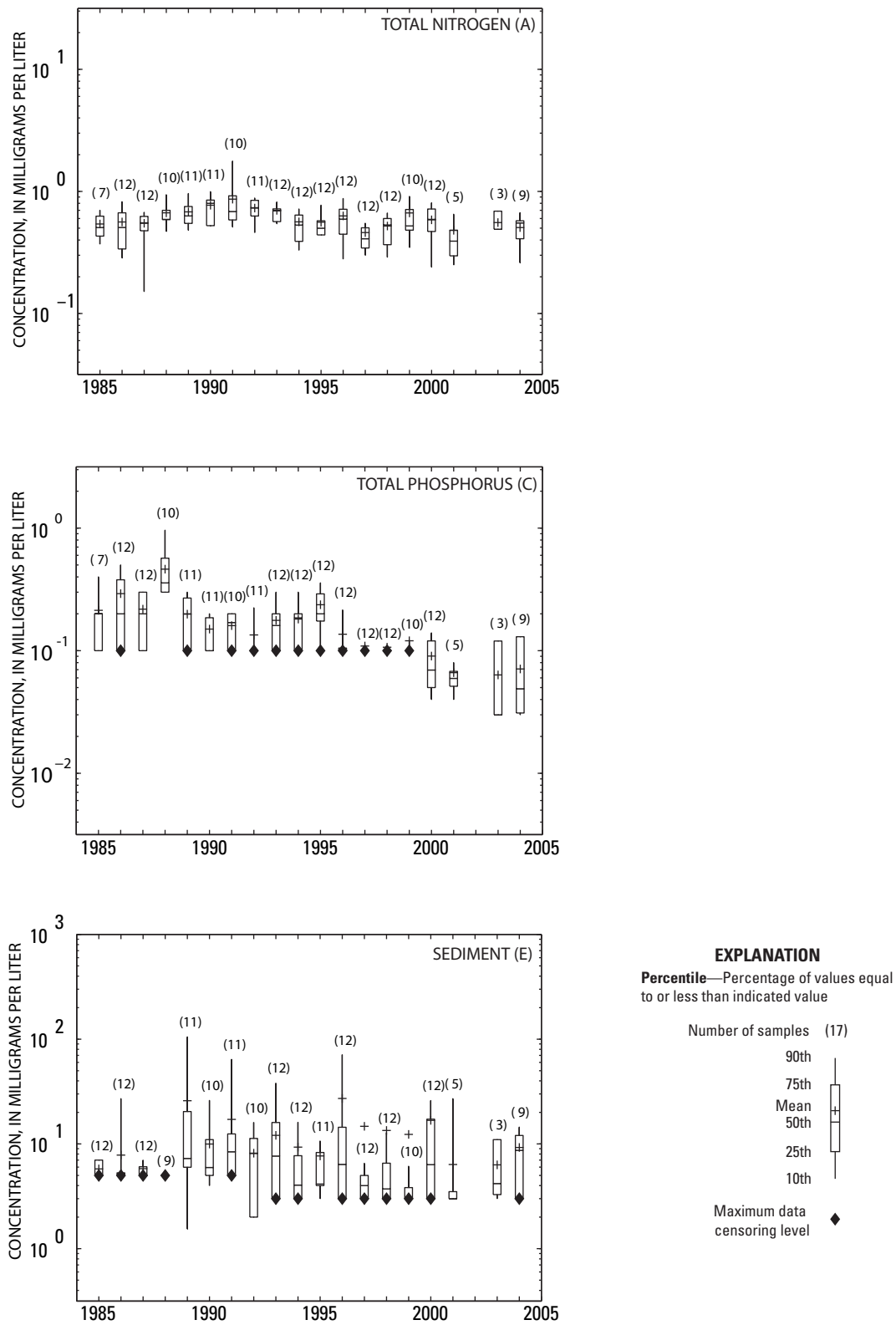


Figure 2.22. Range in annual observed water-quality concentrations of (A) total nitrogen, (B) nitrate plus nitrite, (C) total phosphorus, (D) dissolved phosphorus, and (E) sediment collected at the James River at Bent Creek, Va. water-quality monitoring station, 1985 - 2004.

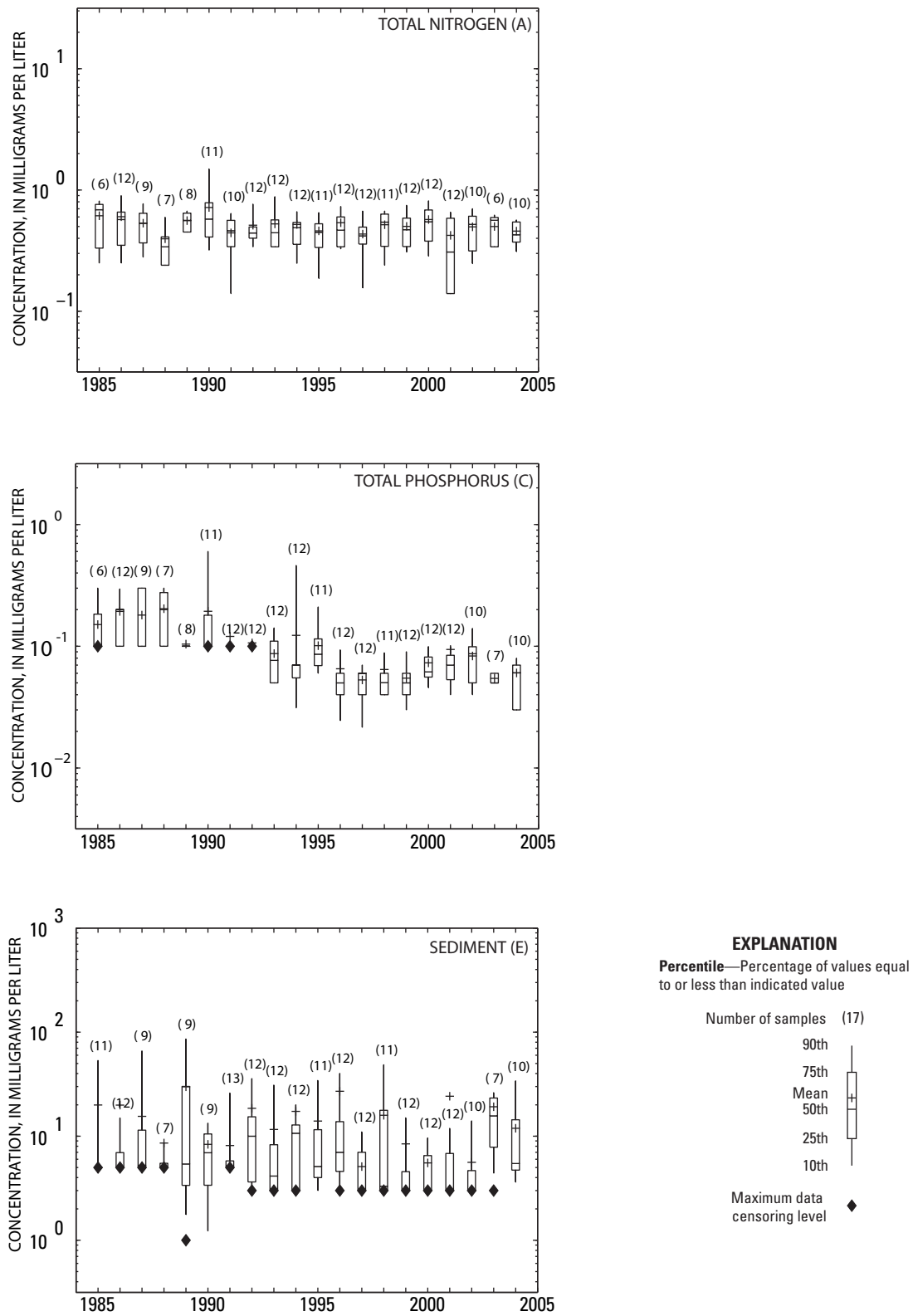


Figure 2.23. Range in annual observed water-quality concentrations of (A) total nitrogen, (B) nitrate plus nitrite, (C) total phosphorus, (D) dissolved phosphorus, and (E) sediment collected at the James River near Richmond, Va. water-quality monitoring station, 1985 - 2004.