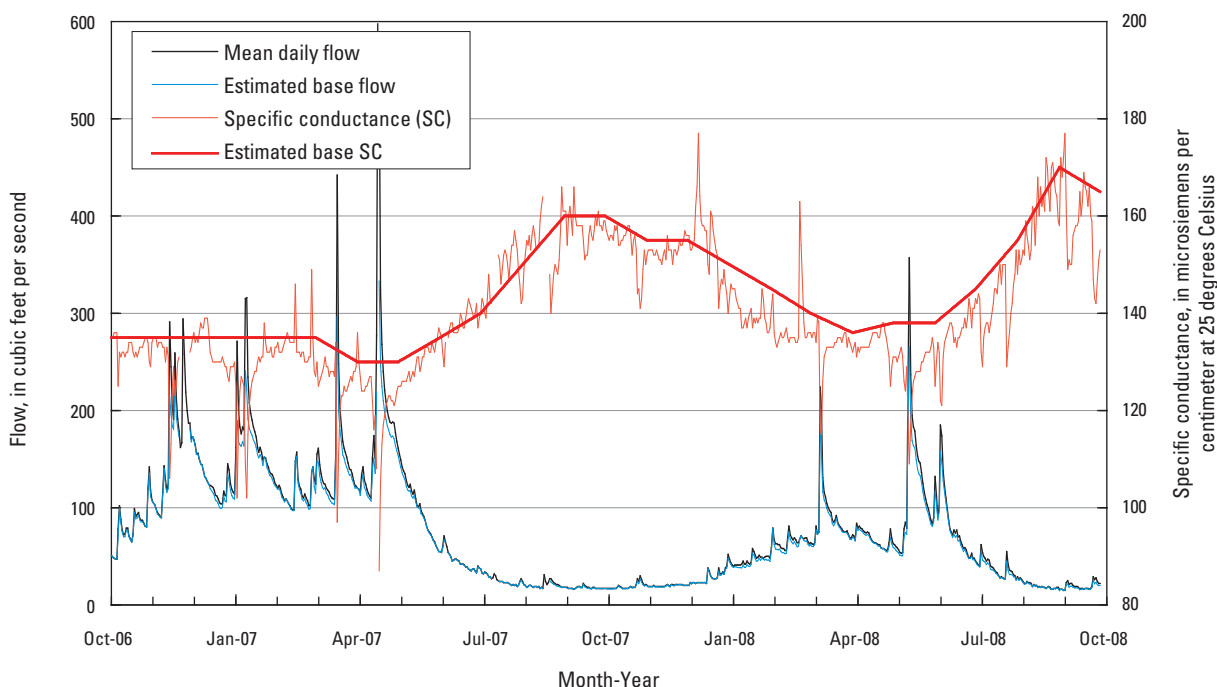
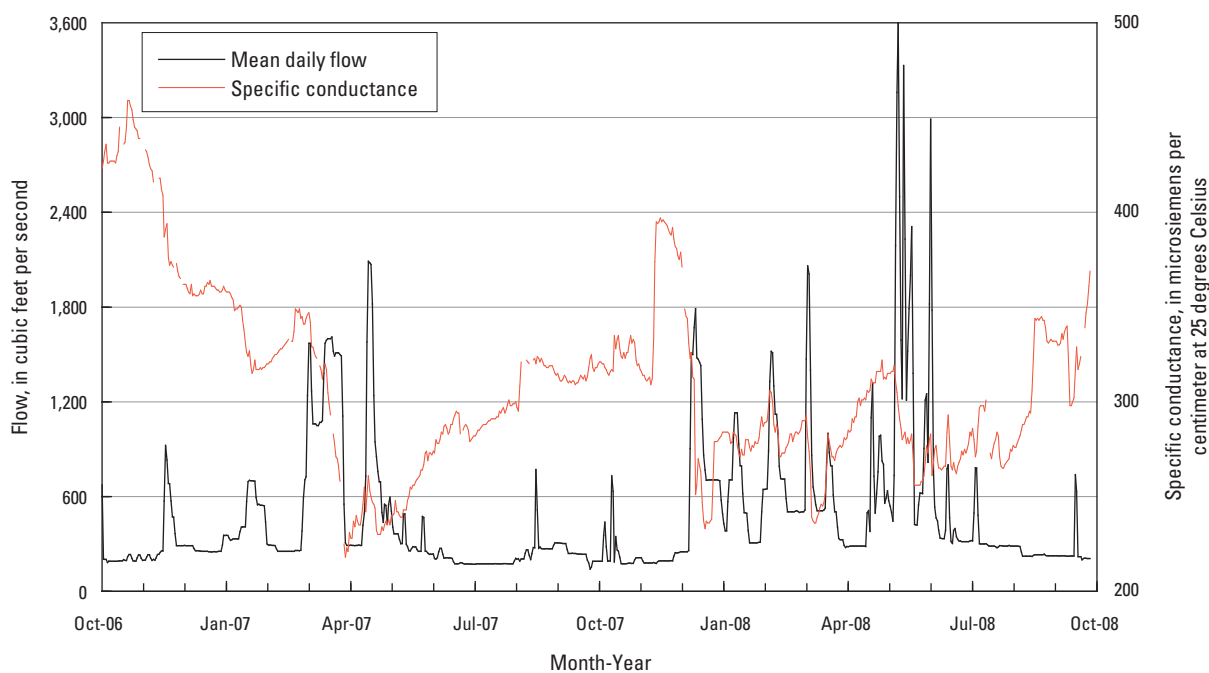


## Appendix 1

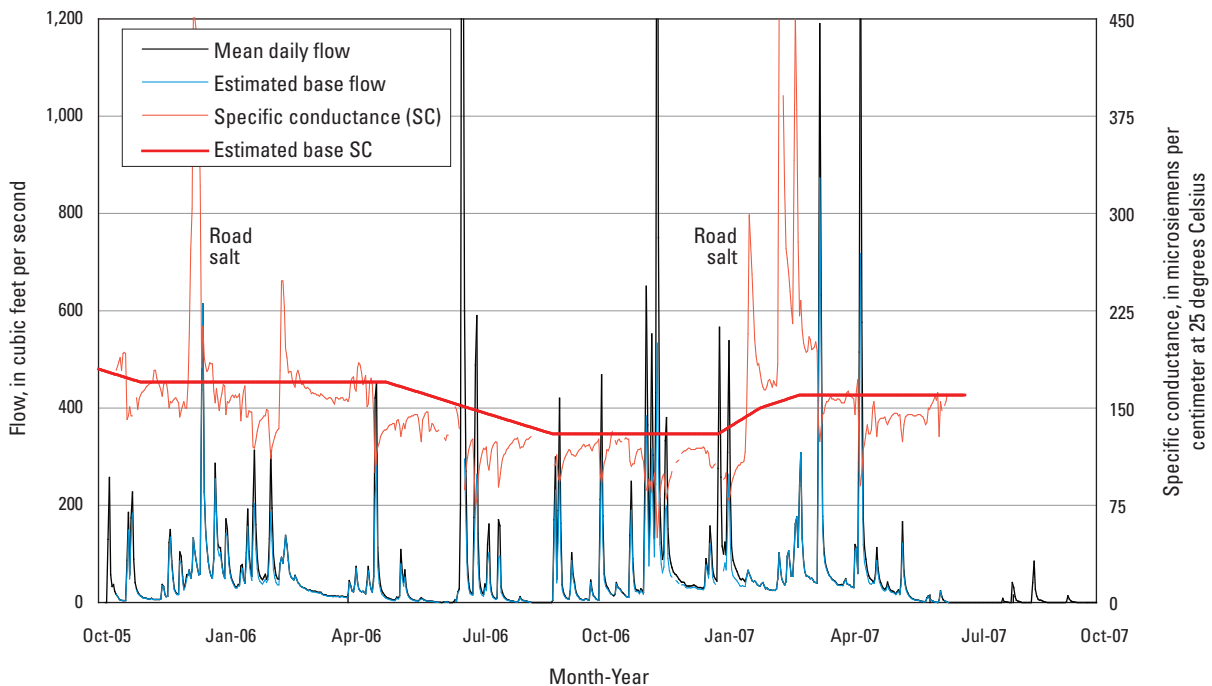
Hydrographs and records of specific conductance (SC) were obtained and plotted for 100 watersheds across the region and listed here. Of the 100 watersheds, 75 were instrumented with real-time SC probes during this study (Table 2), and 25 were also examined that had historical SC records. The SC of the base-flow component was estimated for watersheds in Virginia (or in other critical locations) by visual inspection of the SC data where possible. To accomplish this, the value for the base SC was visually estimated at the beginning of each month and daily values were then interpolated in between these values. Drops in the SC measurements during high-flow peaks were assumed to be from sudden inflows of surface runoff or subsurface storm flow, and conversely, time periods long after high-flow peaks were assumed to contain little surface runoff component. On occasion, there was observed high-frequency variability in SC during low-flow periods that was attributed to causes other than rainfall (for example, fig. 1-9). The base SC was often estimated to fall in the average range of this SC, and given that the percentage of flow occurring during these periods was low, the base-flow calculations were relatively insensitive to the base-SC estimate during those times. Periods of high SC during winter months were attributed to road-salt runoff (for example, fig. 1-3) and not included in the analysis. The estimated base-flow fraction was calculated using a binary interpolation approach using the base SC, the measured SC, and a surface-runoff SC value of 15 microsiemens per centimeter ( $\mu\text{S}/\text{cm}$ ) to represent rainwater (Hem, 1970). The base-flow fraction was multiplied by the streamflow and plotted as estimated base flow in the figures. See the Chemical Hydrograph sections of this report for further details on the interpretations.



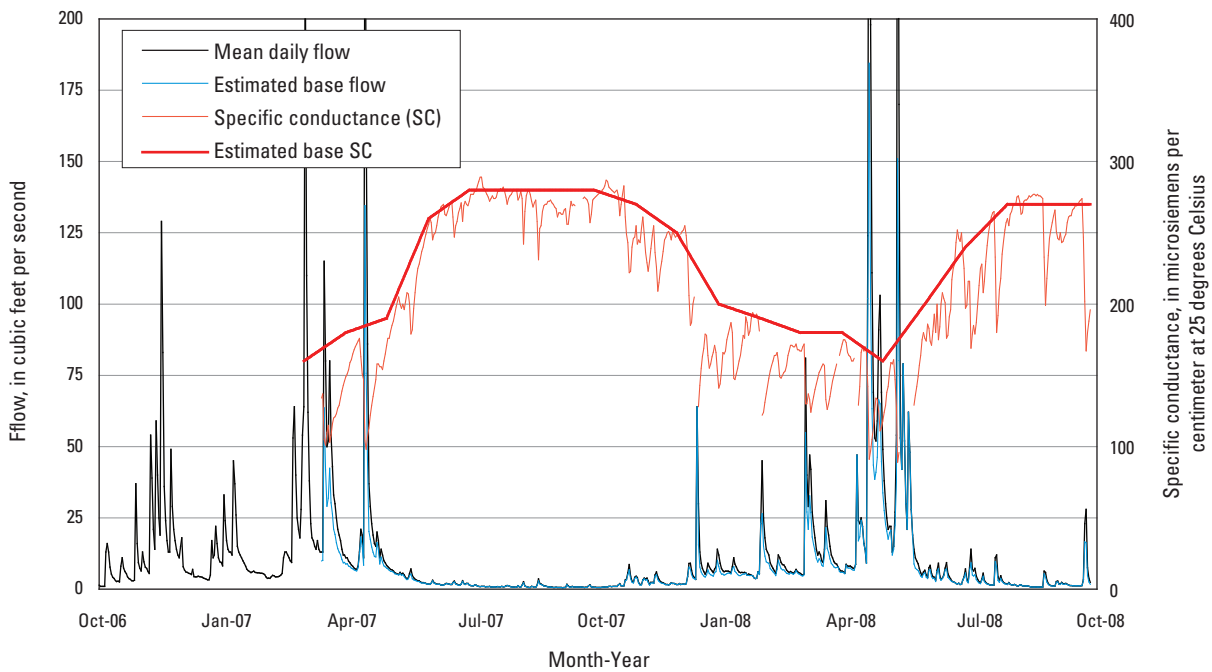
**Figure 1–1.** Flow and specific conductance record during 2006–2008 at the USGS gage 01487000 Nanticoke River near Bridgeville, Delaware.



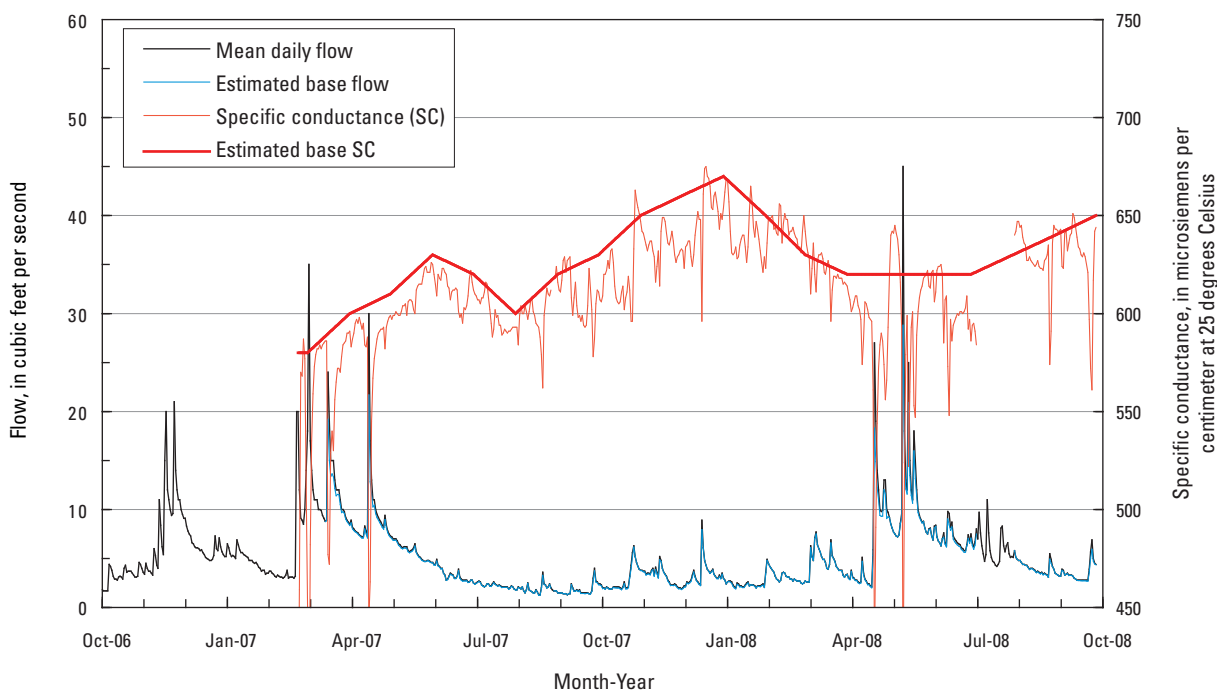
**Figure 1–2.** Flow and specific conductance record during 2006–2008 at the USGS gage 01595800 North Branch Potomac River at Barnum, West Virginia.



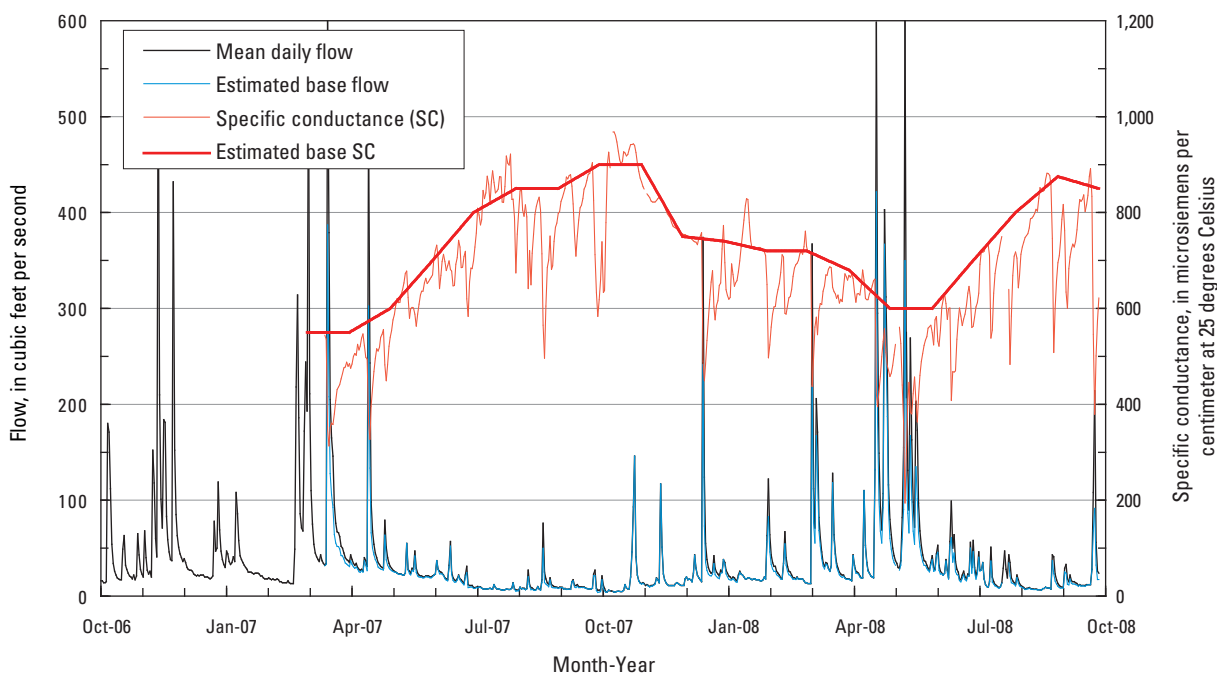
**Figure 1–3.** Flow and specific conductance record during 2005–2007 at the USGS gage 01658000 Mattawoman Creek near Pomonkey, Maryland.



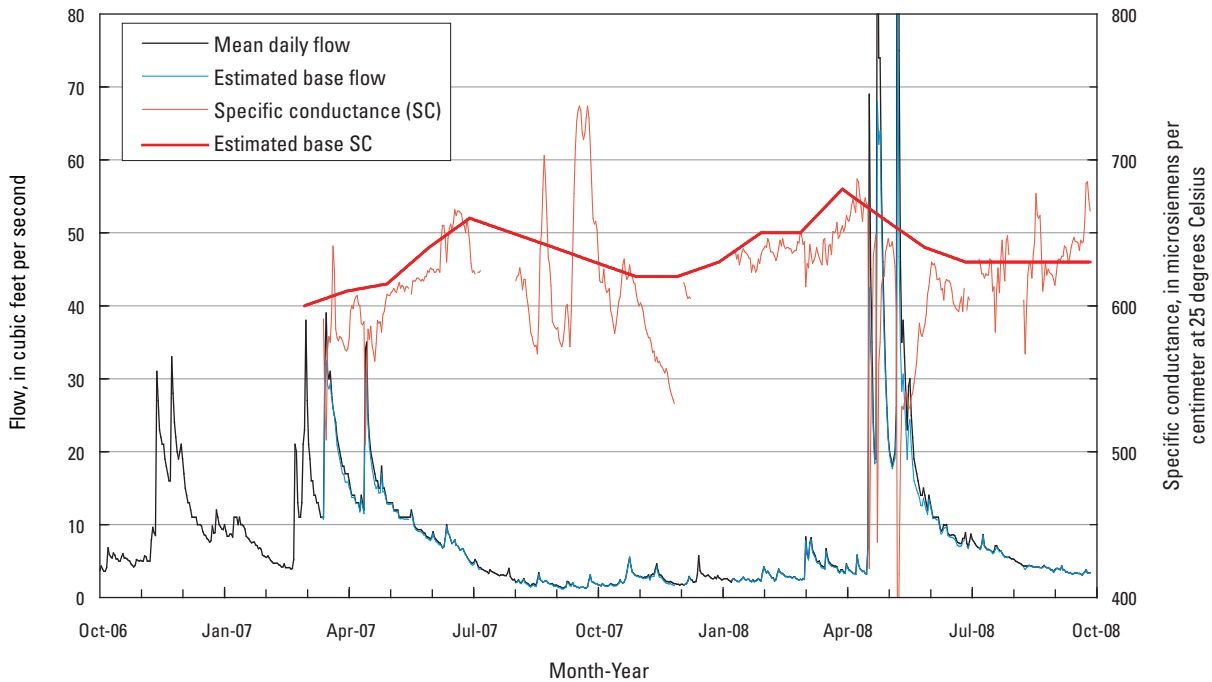
**Figure 1–4.** Flow and specific conductance record during 2006–2008 at the USGS gage 01613900 Hogue Creek near Hayfield, Virginia.



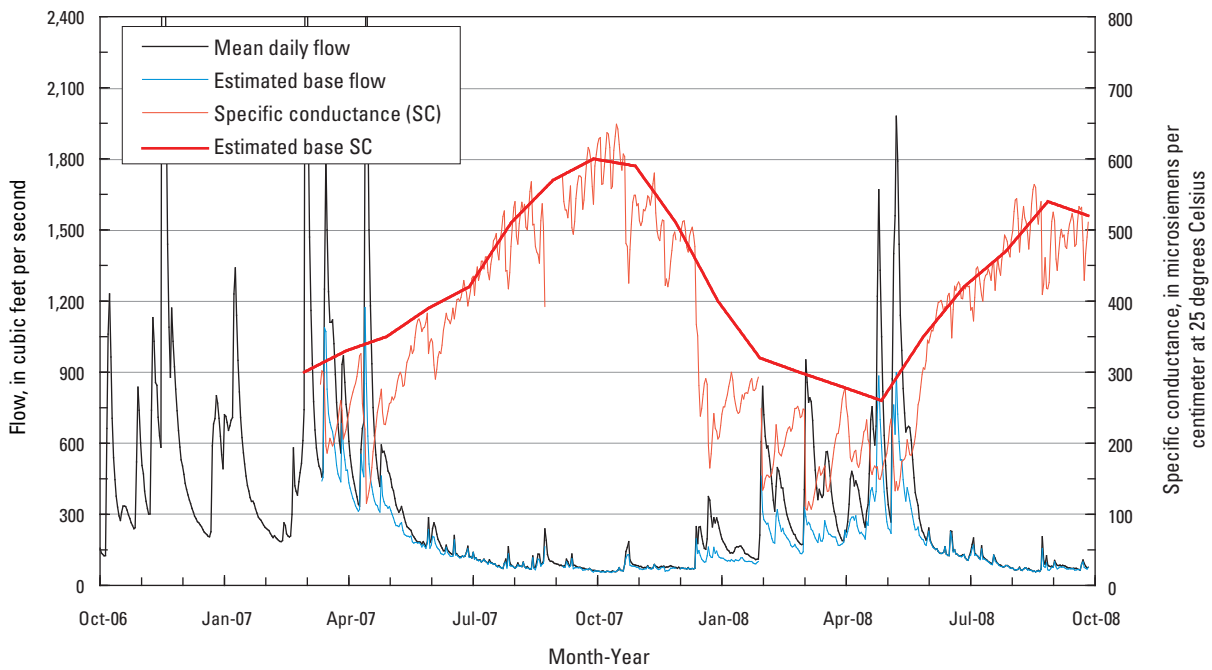
**Figure 1–5.** Flow and specific conductance record during 2006–2008 at the USGS gage 01614830 Opequon Creek near Stephens City, Virginia.



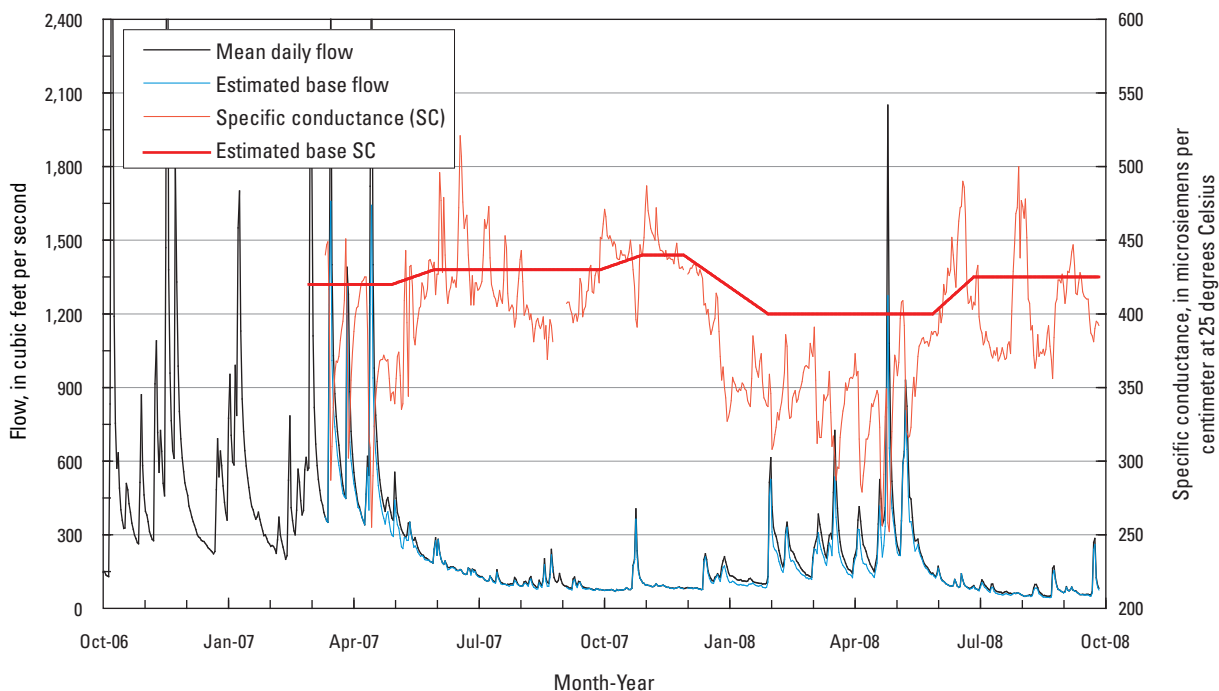
**Figure 1–6.** Flow and specific conductance record during 2006–2008 at the USGS gage 01615000 Opequon Creek near Berryville, Virginia.



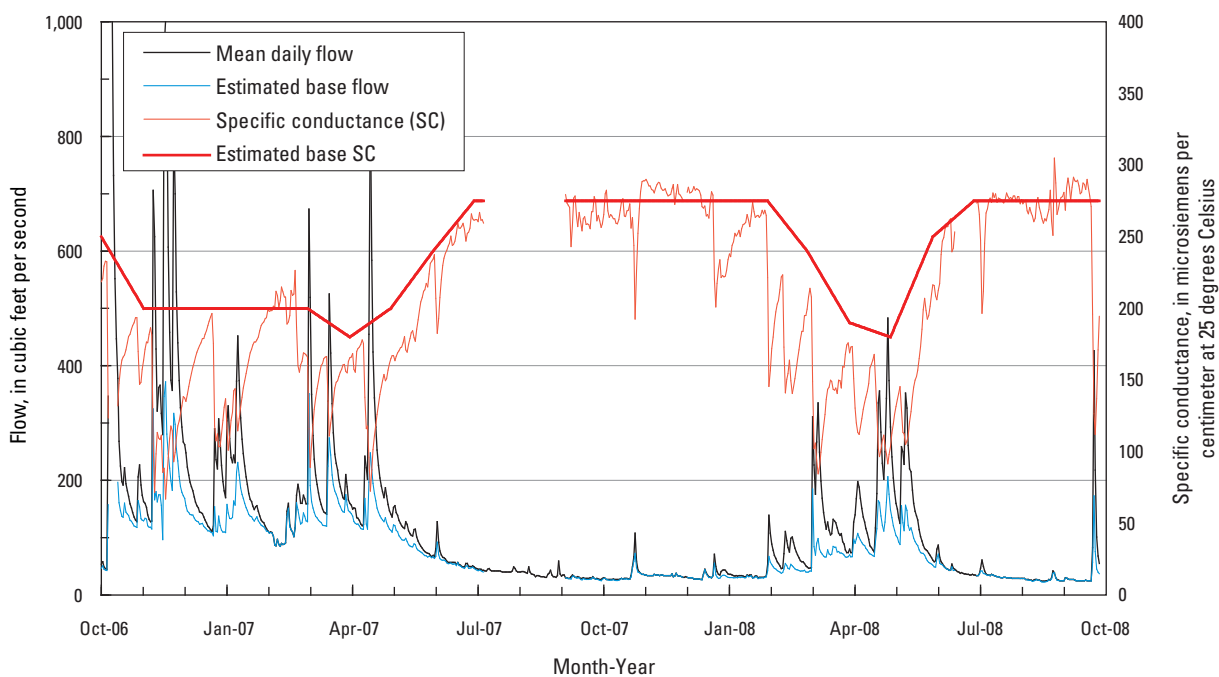
**Figure 1-7.** Flow and specific conductance record during 2006–2008 at the USGS gage 01616100 Dry Marsh Run near Berryville, Virginia.



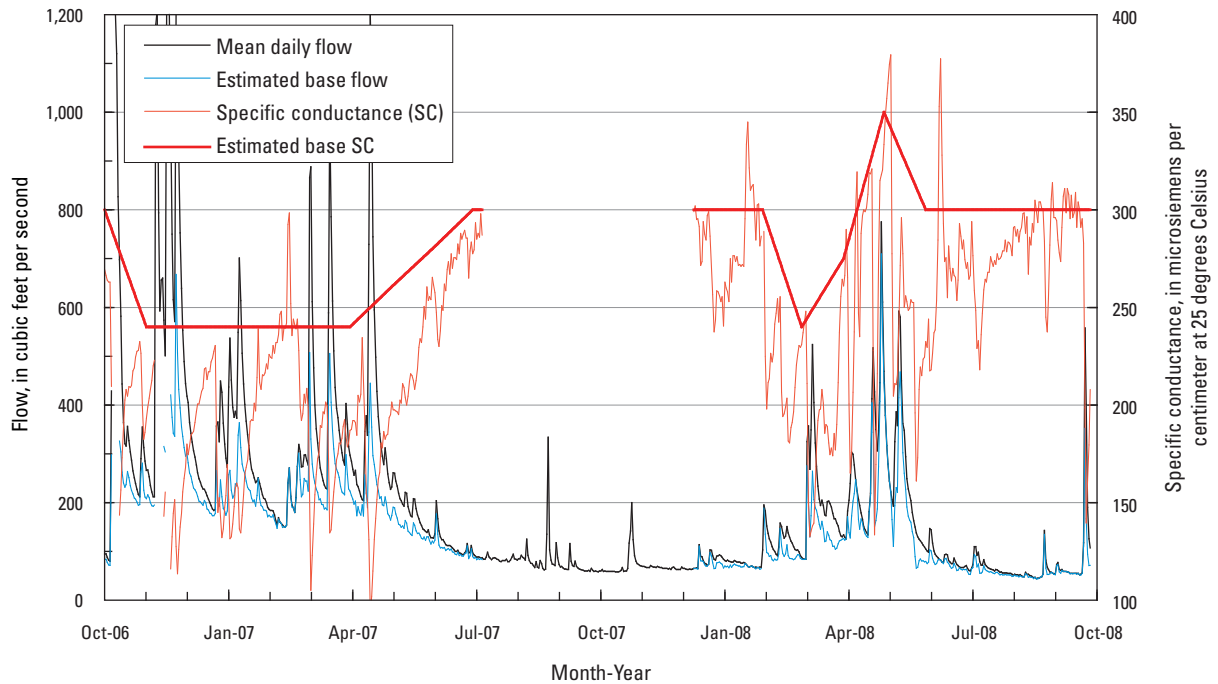
**Figure 1-8.** Flow and specific conductance record during 2006–2008 at the USGS gage 01622000 North River near Burkettown, Virginia.



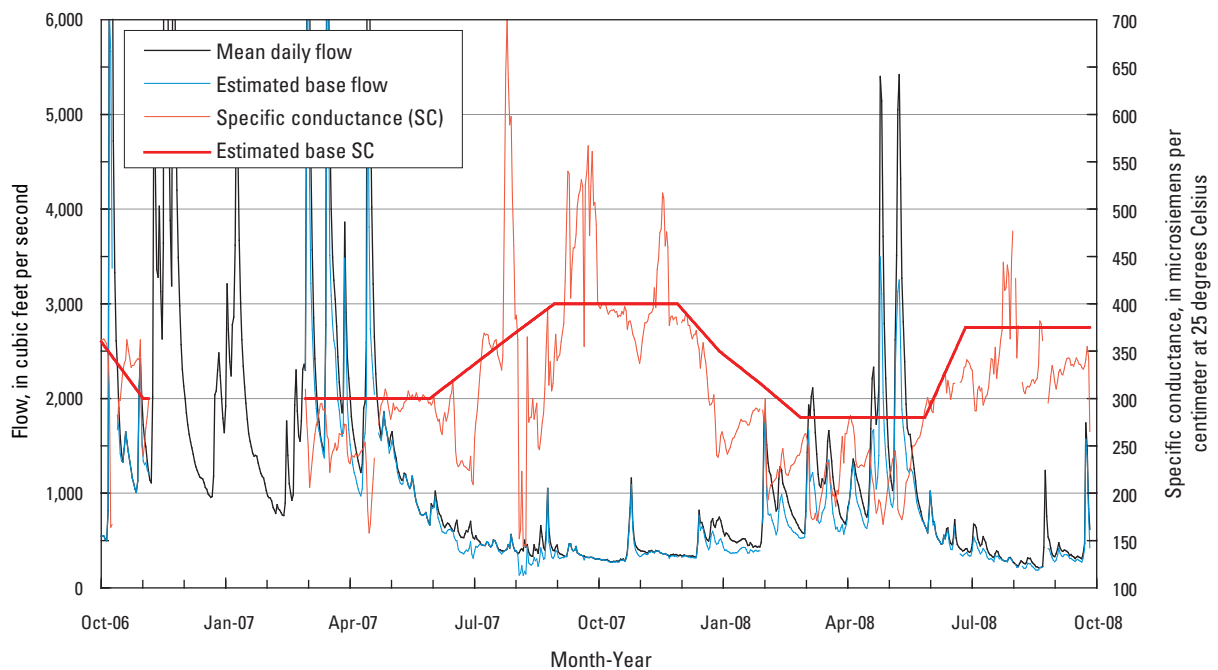
**Figure 1–9.** Flow and specific conductance record during 2006–2008 at the USGS gage 01625000 Middle River near Grottoes, Virginia.



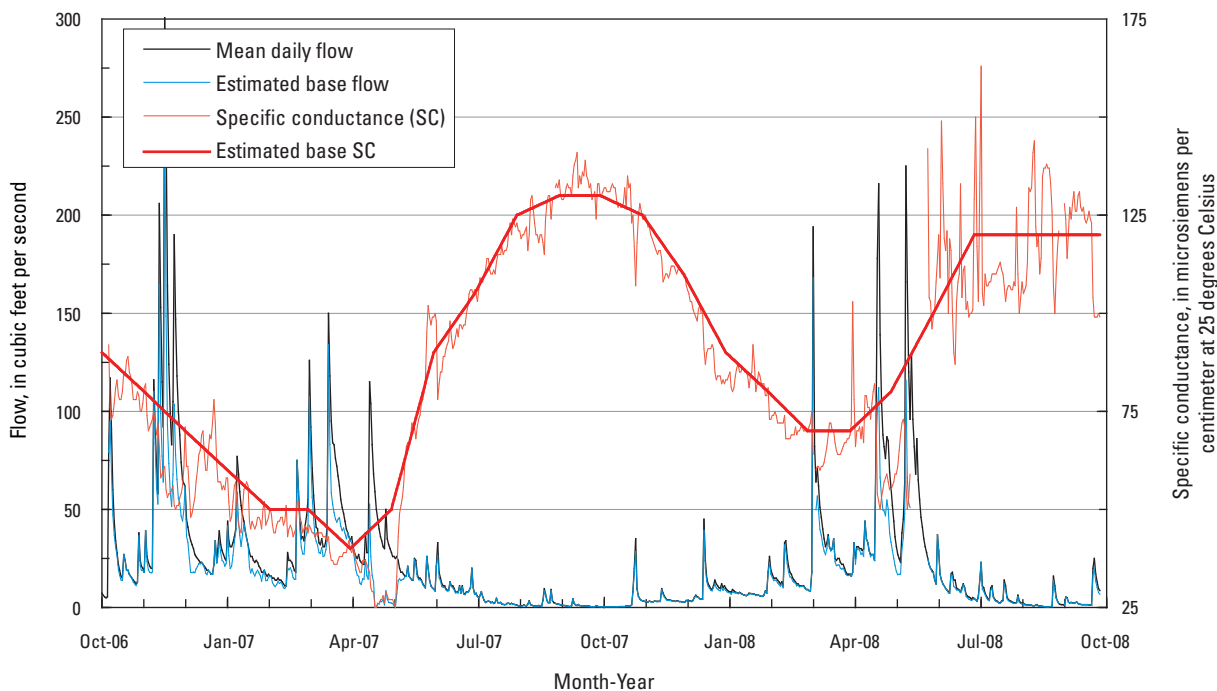
**Figure 1–10.** Flow and specific conductance record during 2006–2008 at the USGS gage 01626000 South River near Waynesboro, Virginia.



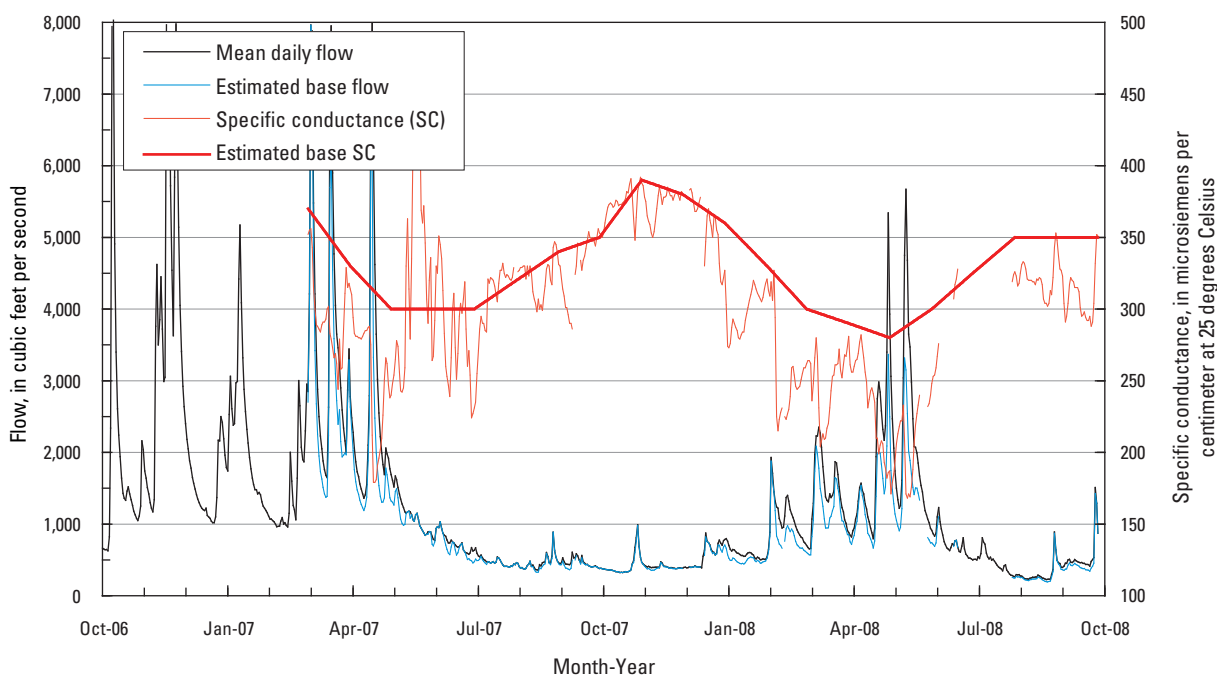
**Figure 1-11.** Flow and specific conductance record during 2006–2008 at the USGS gage 01627500 South River near Harrison, Virginia.



**Figure 1-12.** Flow and specific conductance record during 2006–2008 at the USGS gage 01629500 South Fork Shenandoah River near Luray, Virginia.

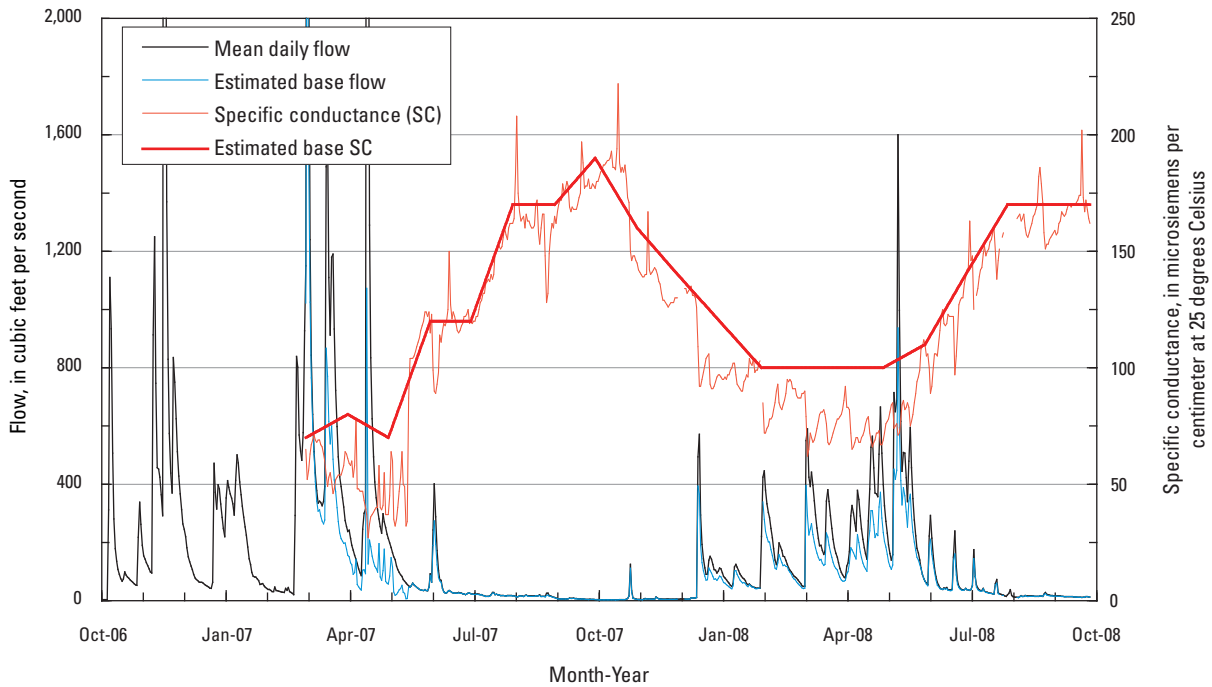


**Figure 1–13.** Flow and specific conductance record during 2006–2008 at the USGS gage 01630700 Gooney Run near Glen Echo, Virginia.

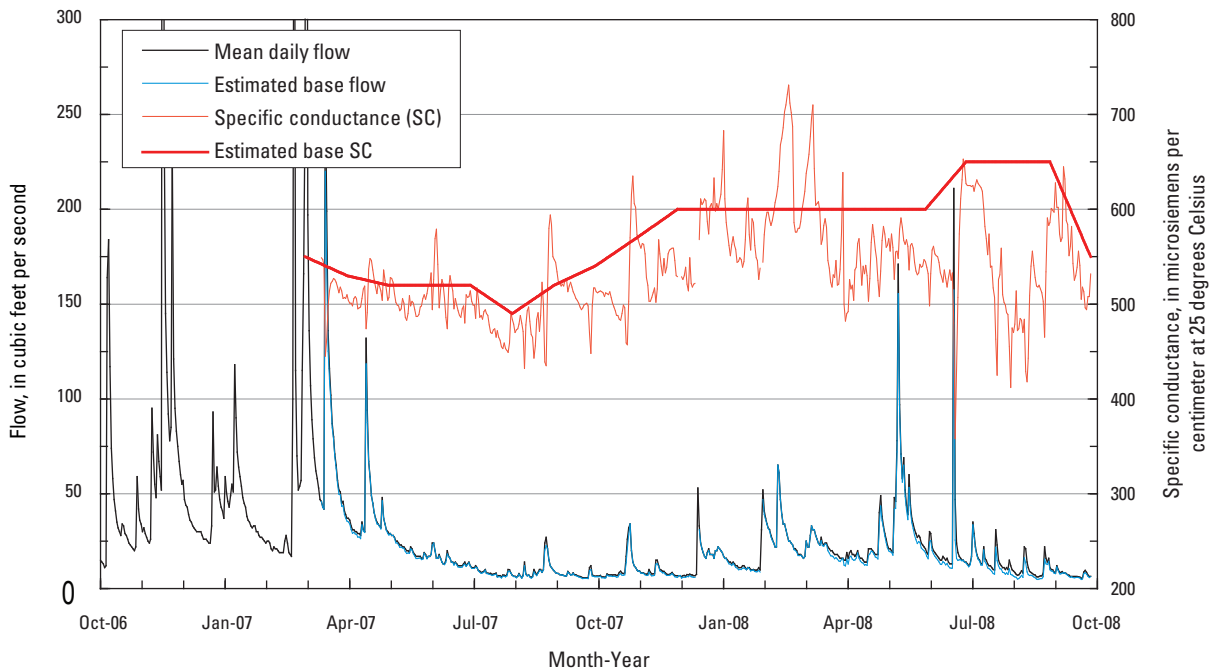


**Figure 1–14.** Flow and specific conductance record during 2006–2008 at the USGS gage 01631000 South Fork Shenandoah River near Front Royal, Virginia.

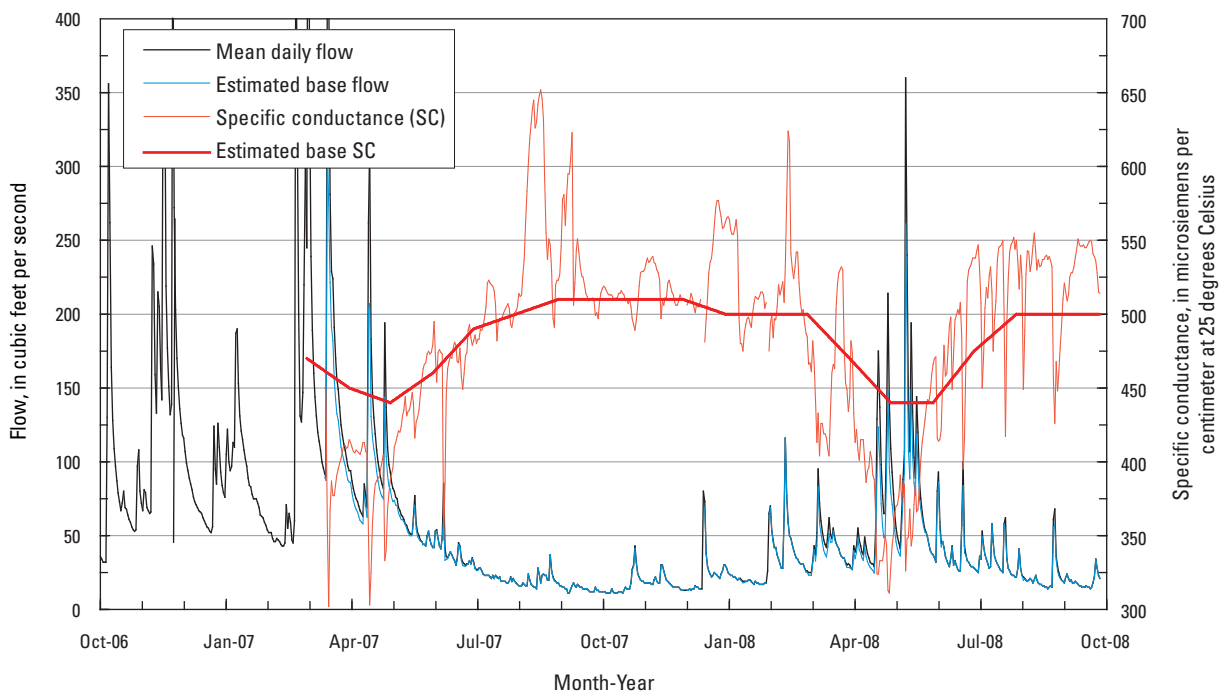




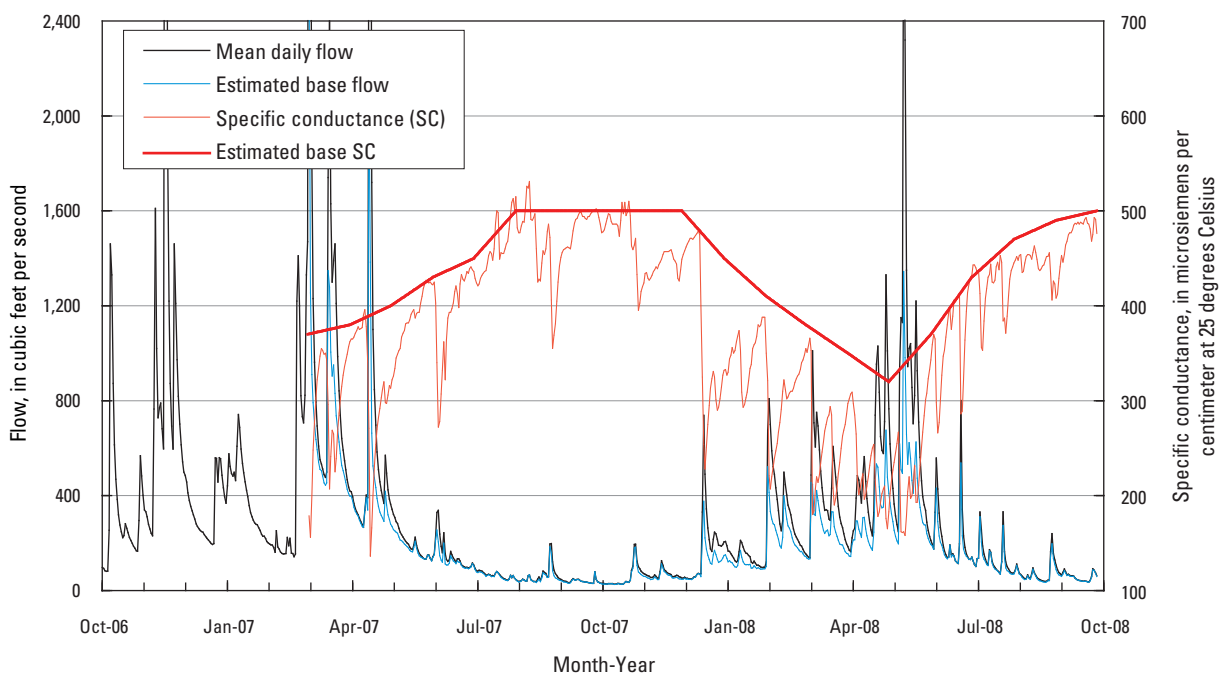
**Figure 1–15.** Flow and specific conductance record during 2006–2008 at the USGS gage 01632000 North Fork Shenandoah River at Cootes Store, Virginia.



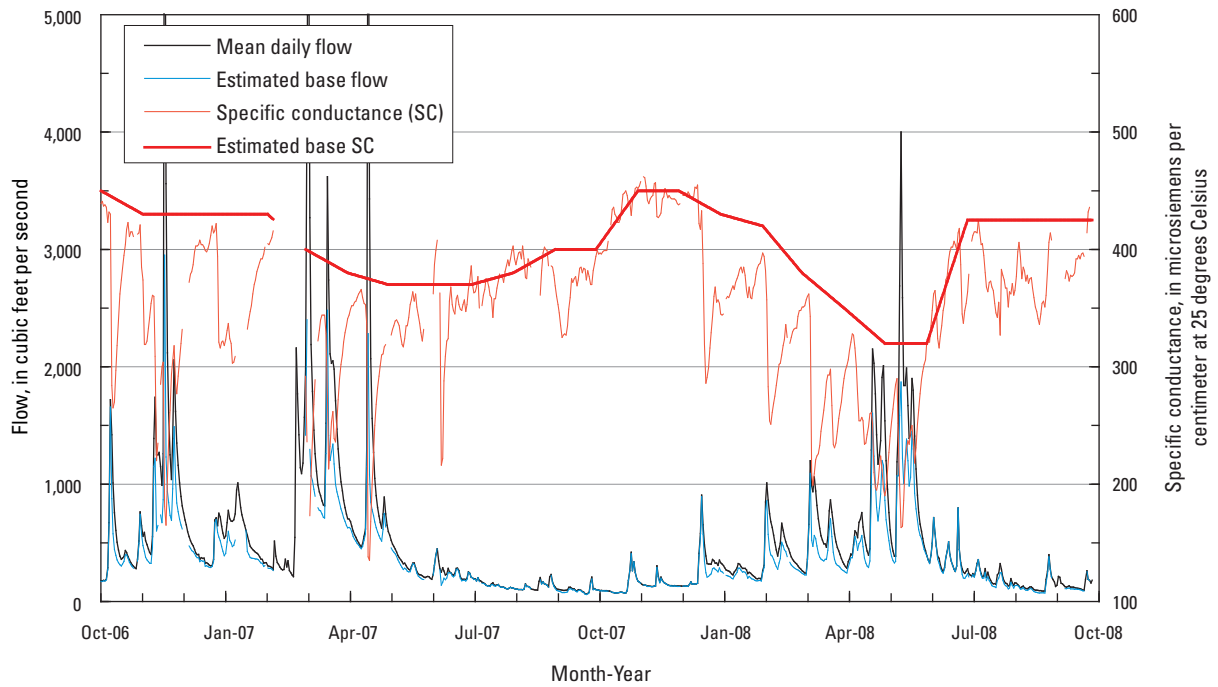
**Figure 1–16.** Flow and specific conductance record during 2006–2008 at the USGS gage 01632082 Linville Creek at Broadway, Virginia.



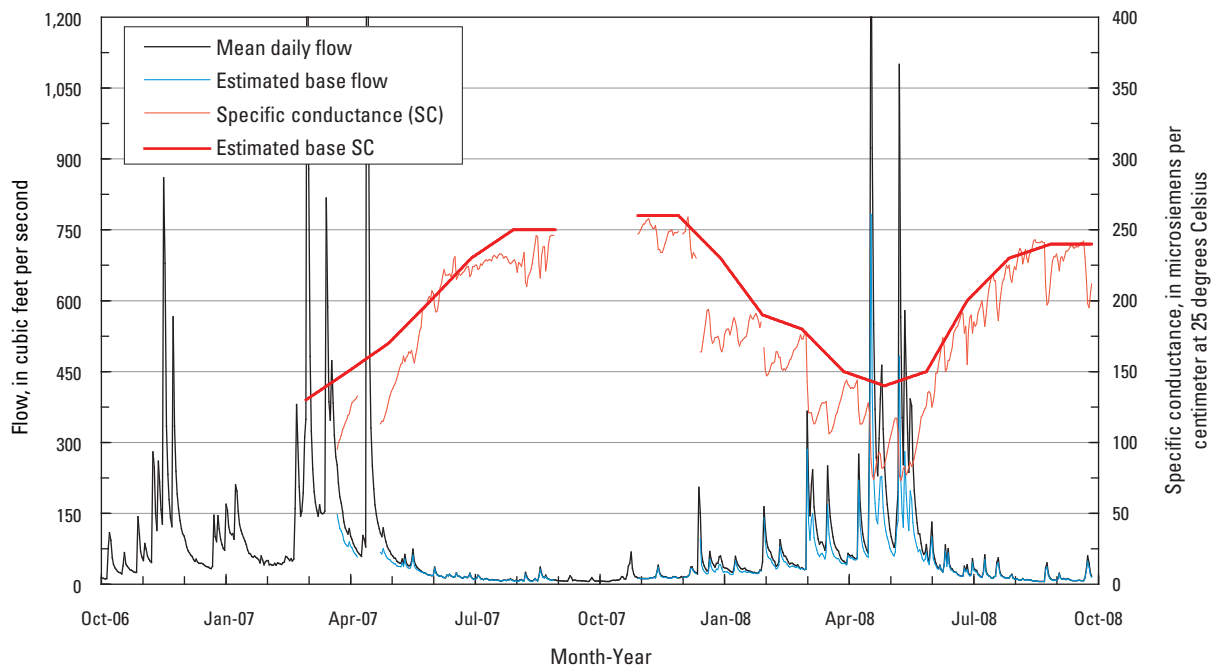
**Figure 1–17.** Flow and specific conductance record during 2006–2008 at the USGS gage 01632900 Smith Creek near New Market, Virginia.



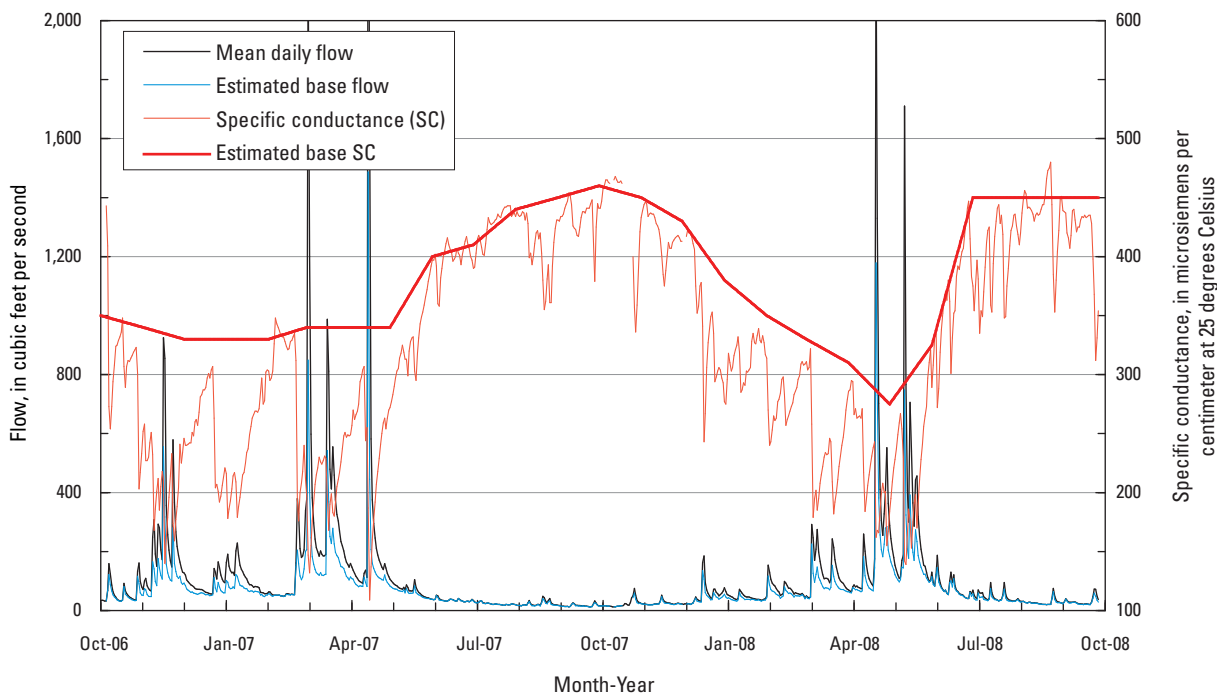
**Figure 1–18.** Flow and specific conductance record during 2006–2008 at the USGS gage 01633000 North Fork Shenandoah River at Mount Jackson, Virginia.



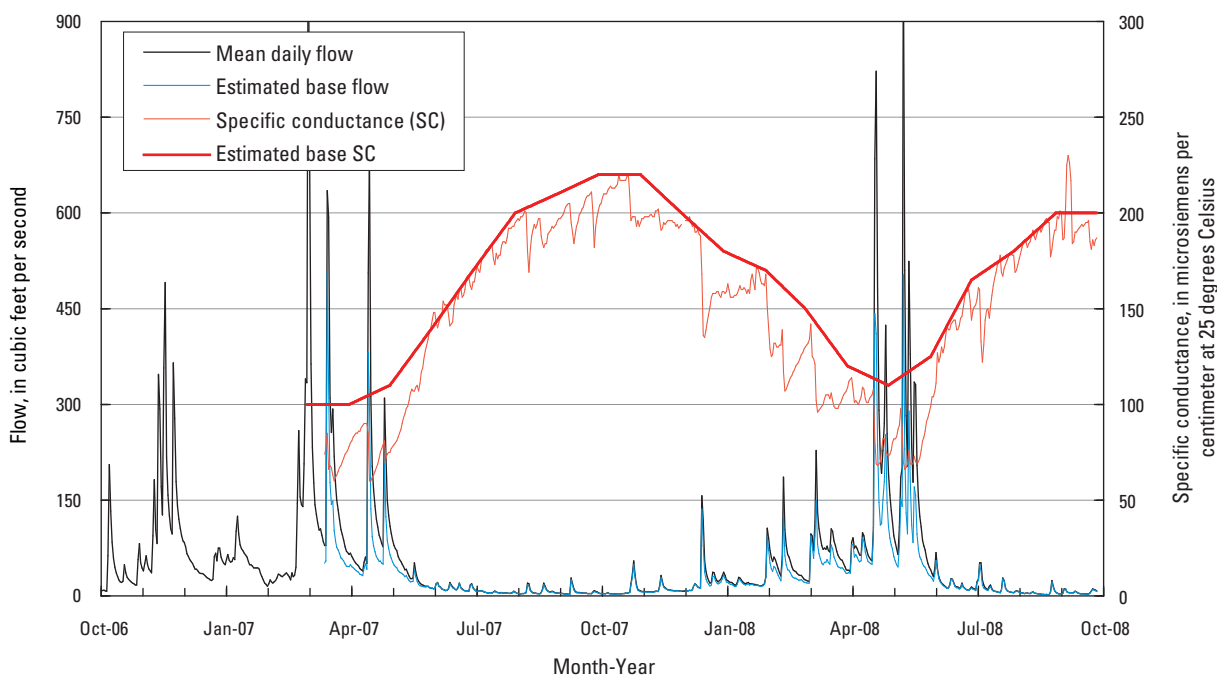
**Figure 1-19.** Flow and specific conductance record during 2006–2008 at the USGS gage 01634000 North Fork Shenandoah River near Strasburg, Virginia.



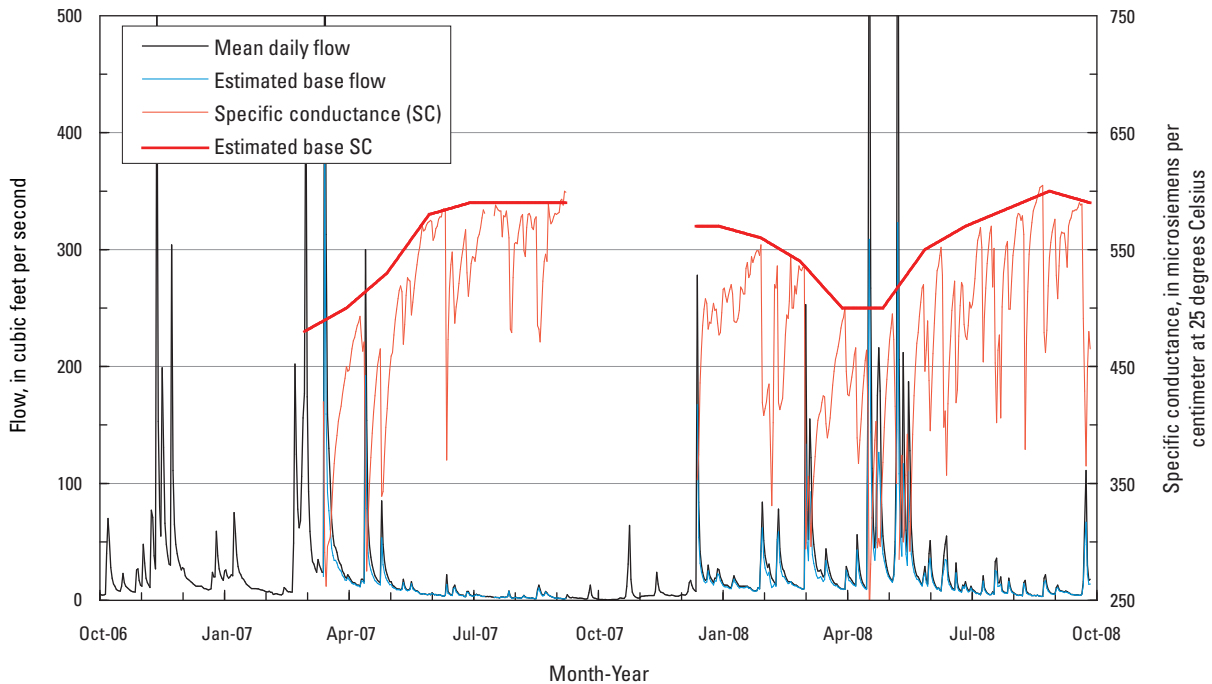
**Figure 1-20.** Flow and specific conductance record during 2006–2008 at the USGS gage 01634500 Cedar Creek near Winchester, Virginia.



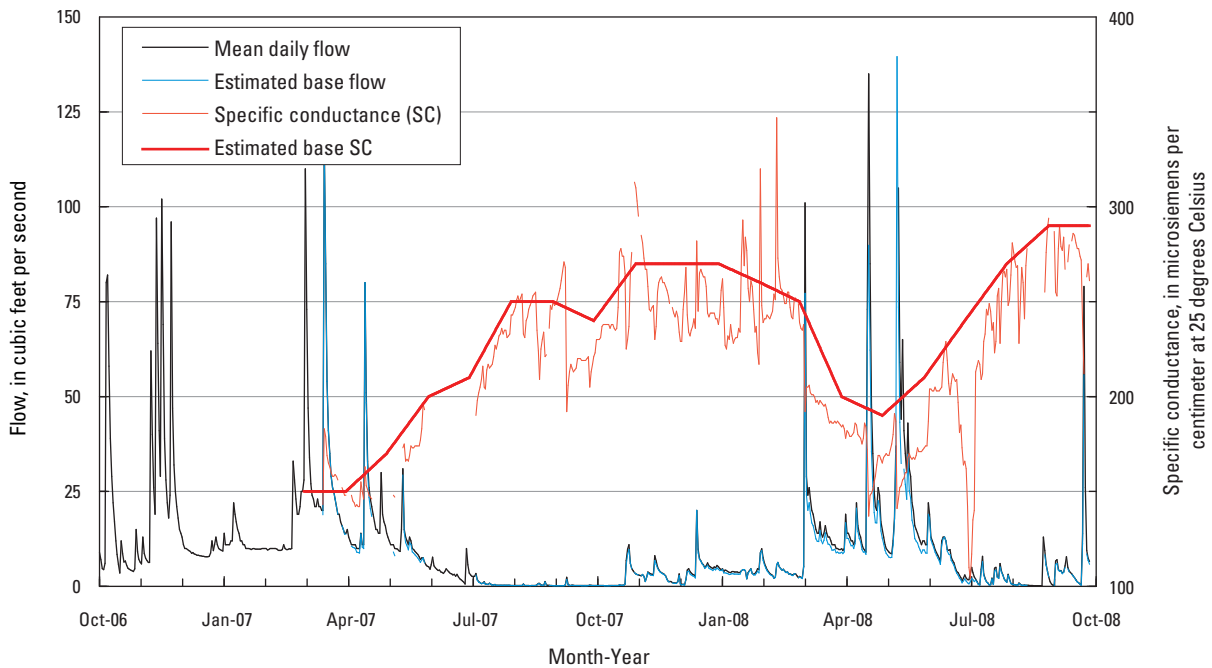
**Figure 1–21.** Flow and specific conductance record during 2006–2008 at the USGS gage 01635090 Cedar Creek above Highway 11 near Middletown, Virginia.



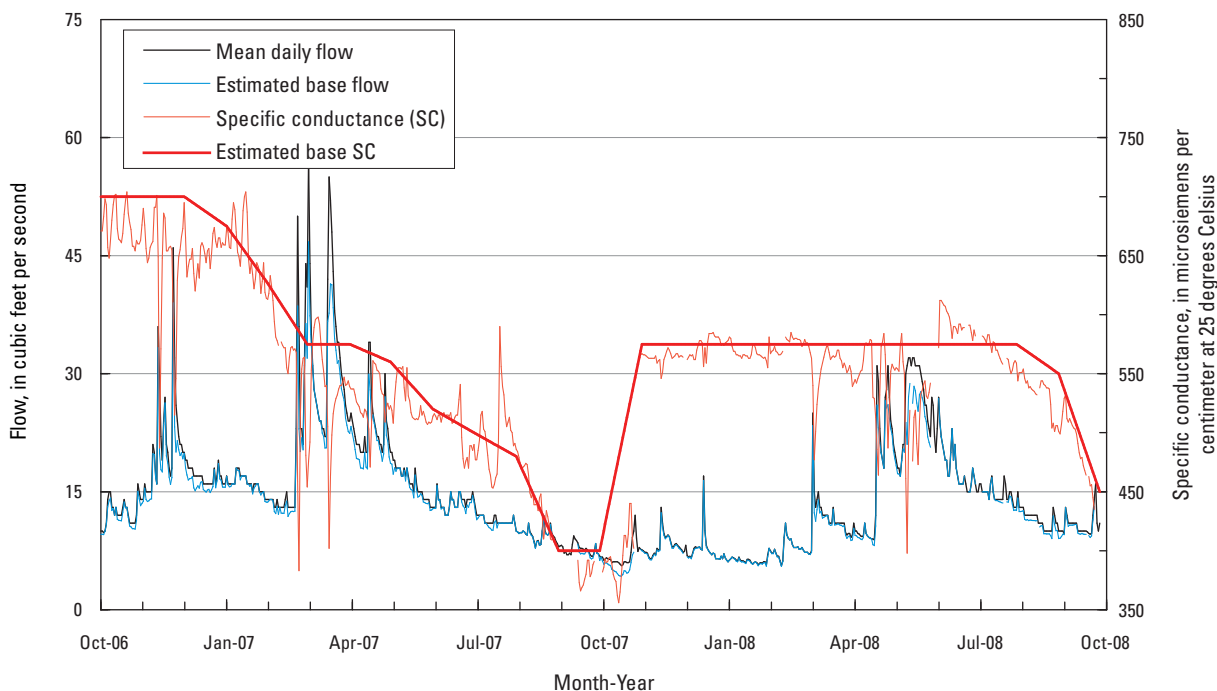
**Figure 1–22.** Flow and specific conductance record during 2006–2008 at the USGS gage 01635500 Passage Creek near Buckton, Virginia.



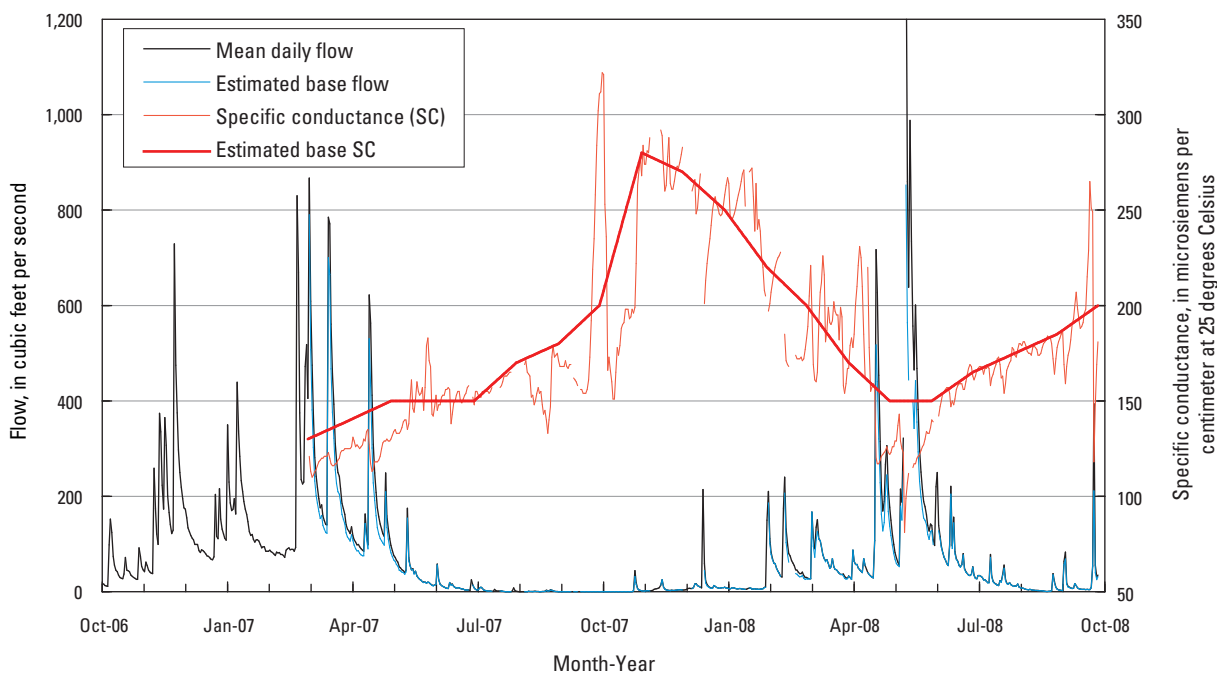
**Figure 1–23.** Flow and specific conductance record during 2006–2008 at the USGS gage 01636242 Crooked Run below Highway 340 near Riverton, Virginia.



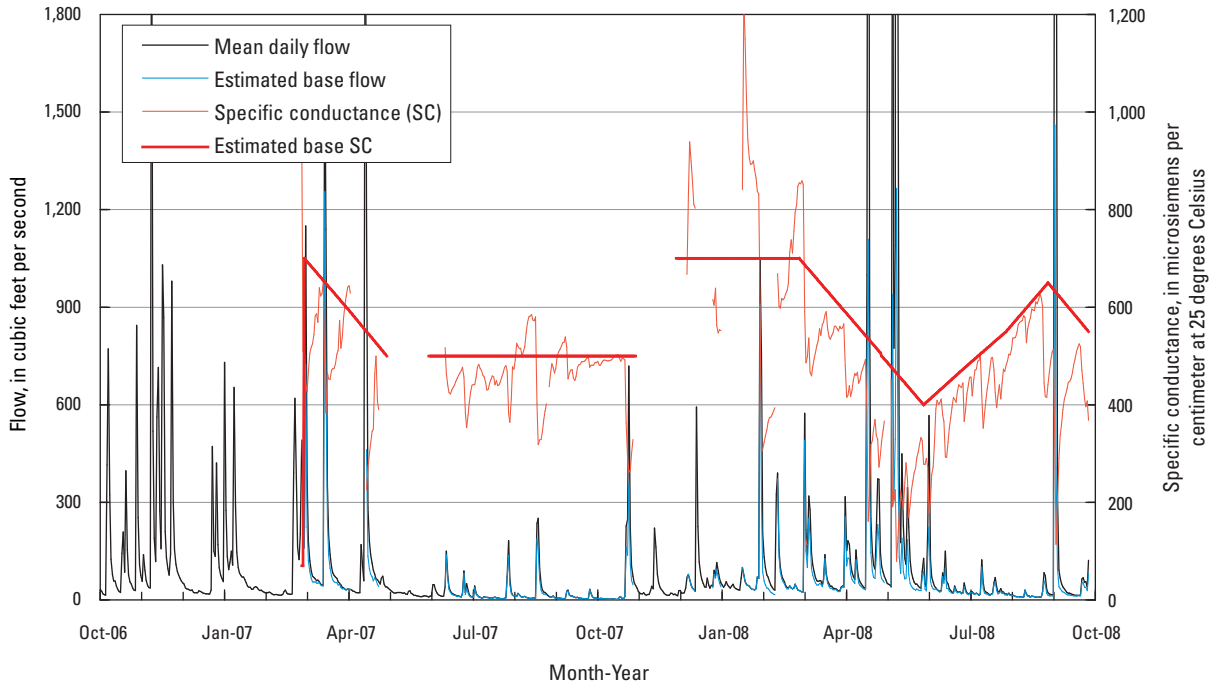
**Figure 1–24.** Flow and specific conductance record during 2006–2008 at the USGS gage 0163626650 Manassas Run at Route 645 near Front Royal, Virginia.



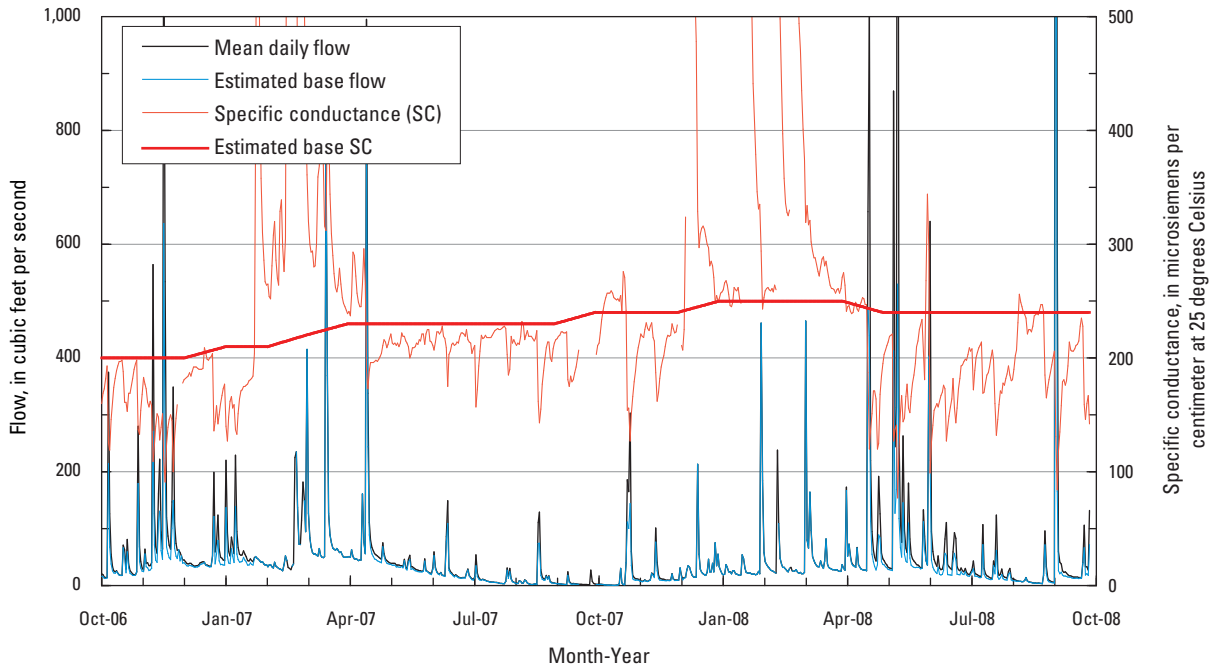
**Figure 1–25.** Flow and specific conductance record during 2006–2008 at the USGS gage 01636316 Spout Run at Route 621 near Millwood, Virginia.



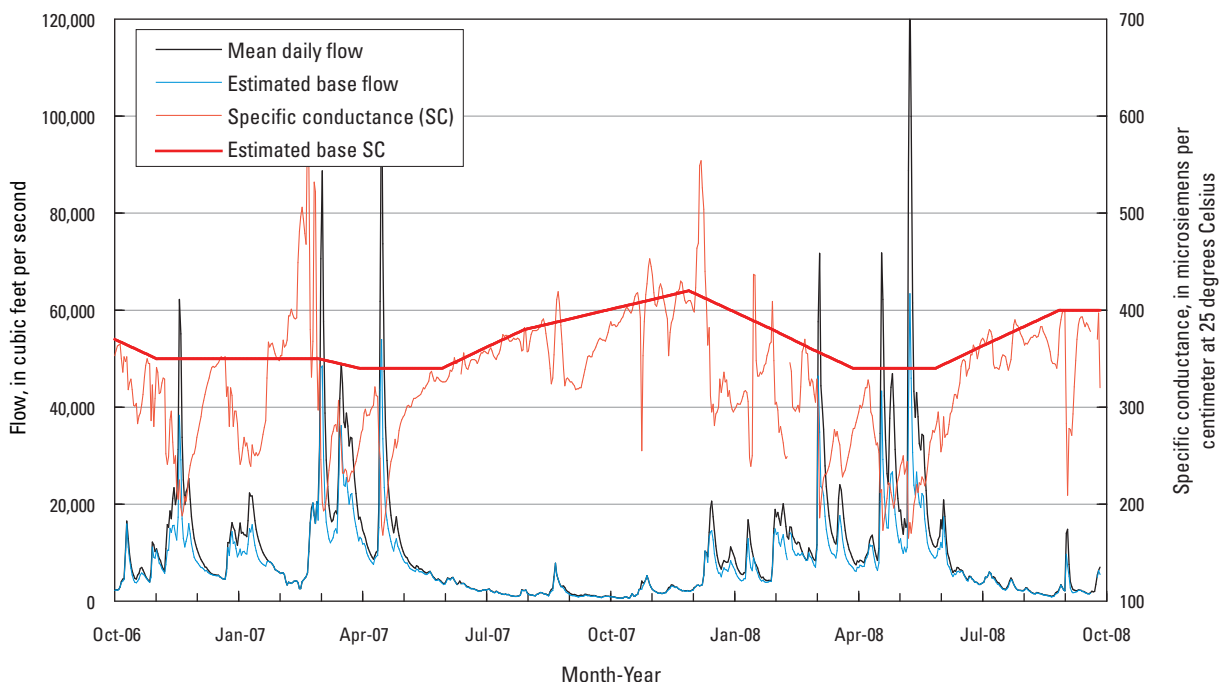
**Figure 1–26.** Flow and specific conductance record during 2006–2008 at the USGS gage 01643700 Goose Creek near Middleburg, Virginia.



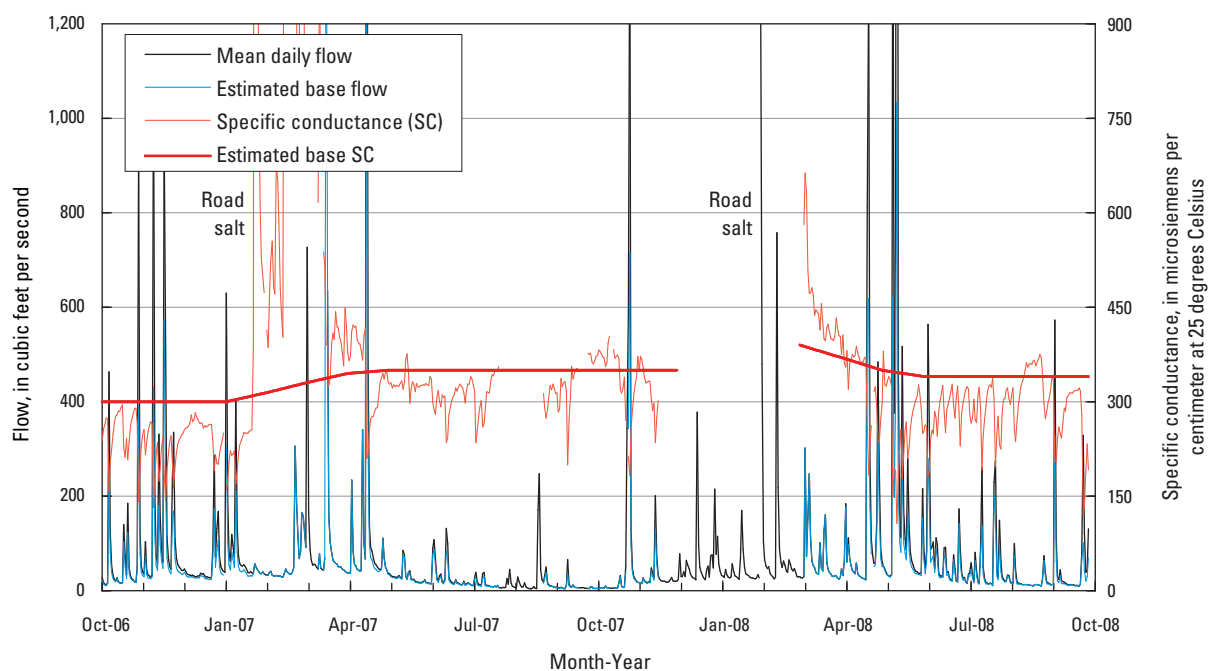
**Figure 1–27.** Flow and specific conductance record during 2006–2008 at the USGS gage 01644280 Broad Run near Leesburg, Virginia.



**Figure 1–28.** Flow and specific conductance record during 2006–2008 at the USGS gage 01646000 Difficult Run near Great Falls, Virginia.

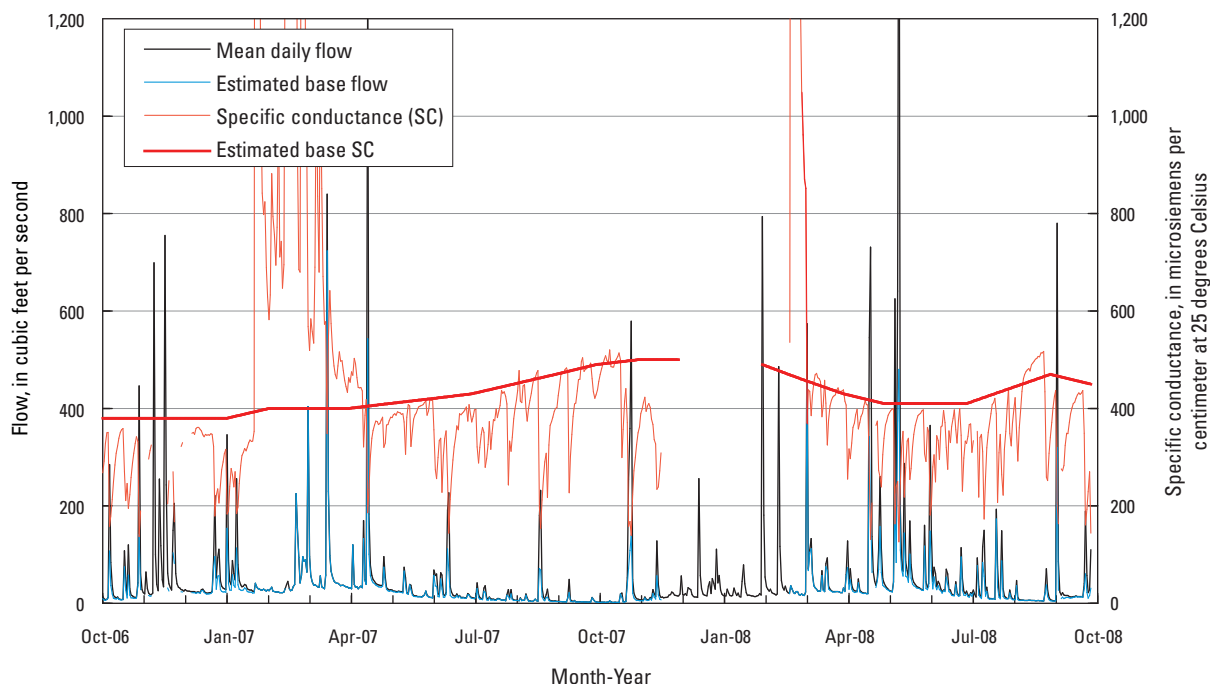


**Figure 1–29.** Flow and specific conductance record during 2006–2008 at the USGS gage 01646500 Potomac River near Little Falls pump station, Washington, D.C.

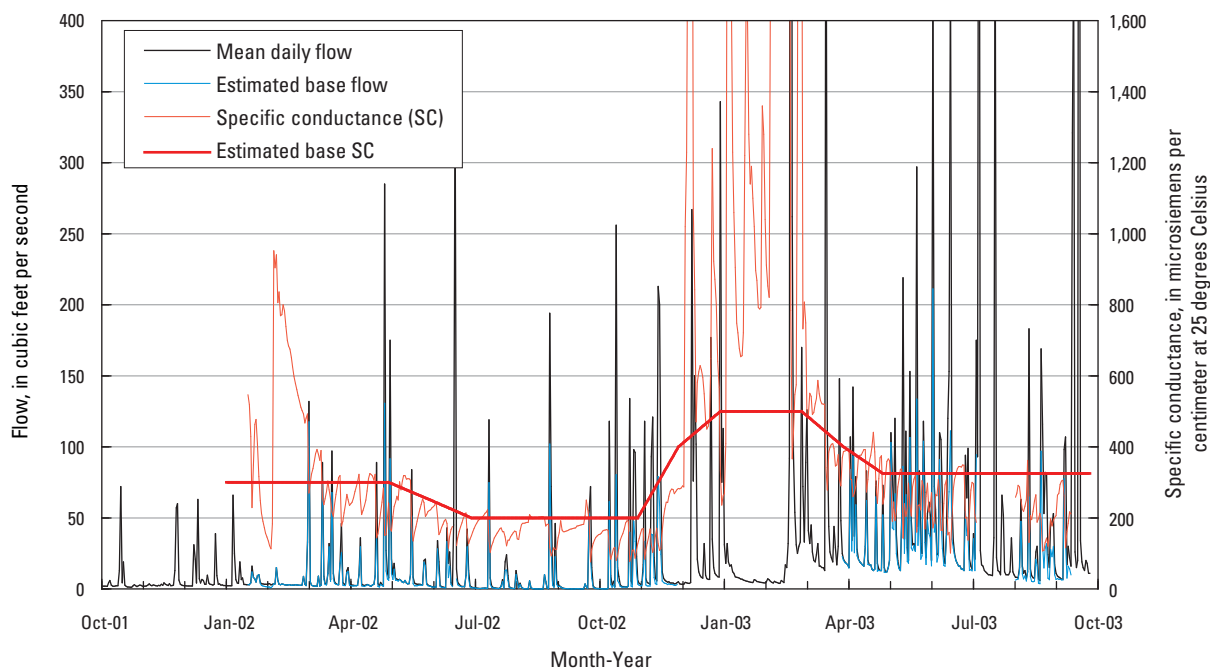


**Figure 1–30.** Flow and specific conductance record during 2006–2008 at the USGS gage 01649500 Northeast Branch Anacostia River near Riverdale, Maryland.

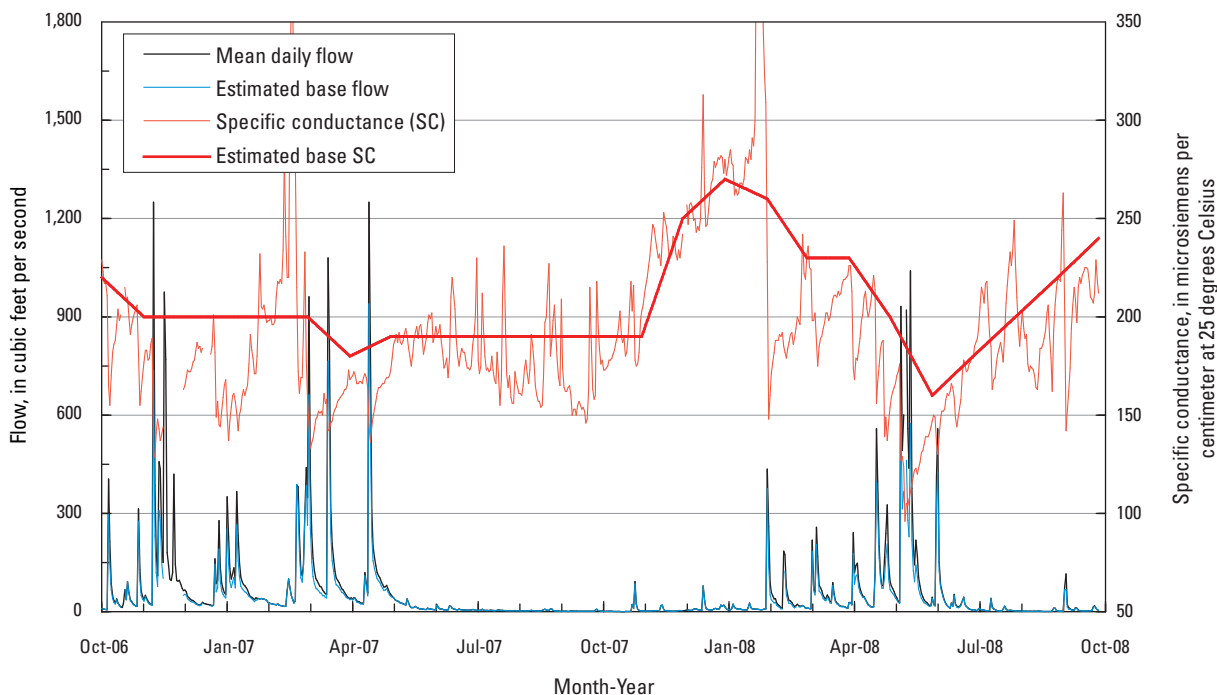




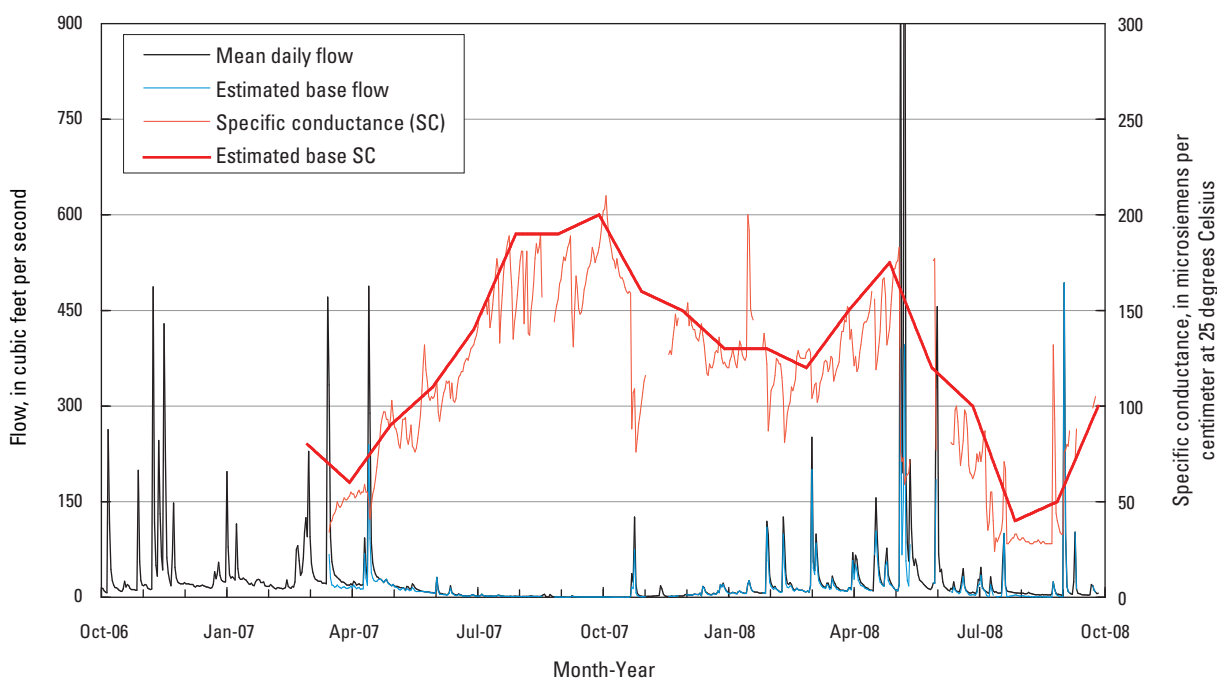
**Figure 1-31.** Flow and specific conductance record during 2006–2008 at the USGS gage 01651000 Northwest Branch Anacostia River near Hyattsville, Maryland.



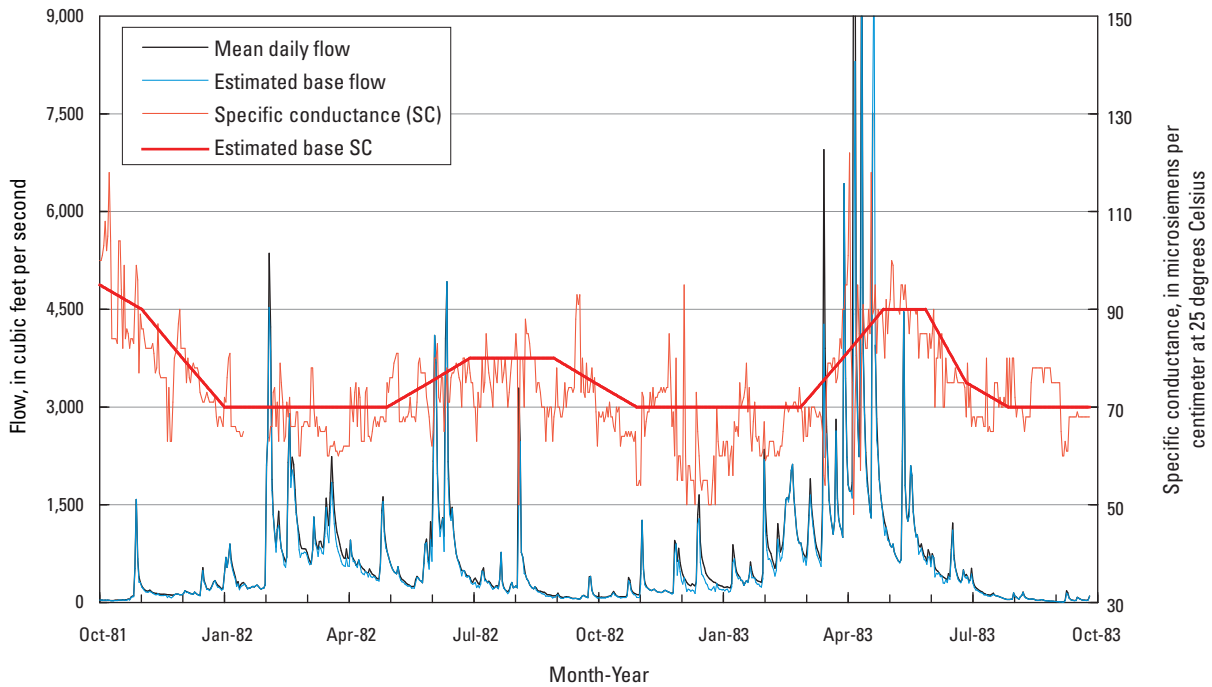
**Figure 1-32.** Flow and specific conductance record during 2001–2003 at the USGS gage 01654000 Accotink Creek near Annandale, Virginia.



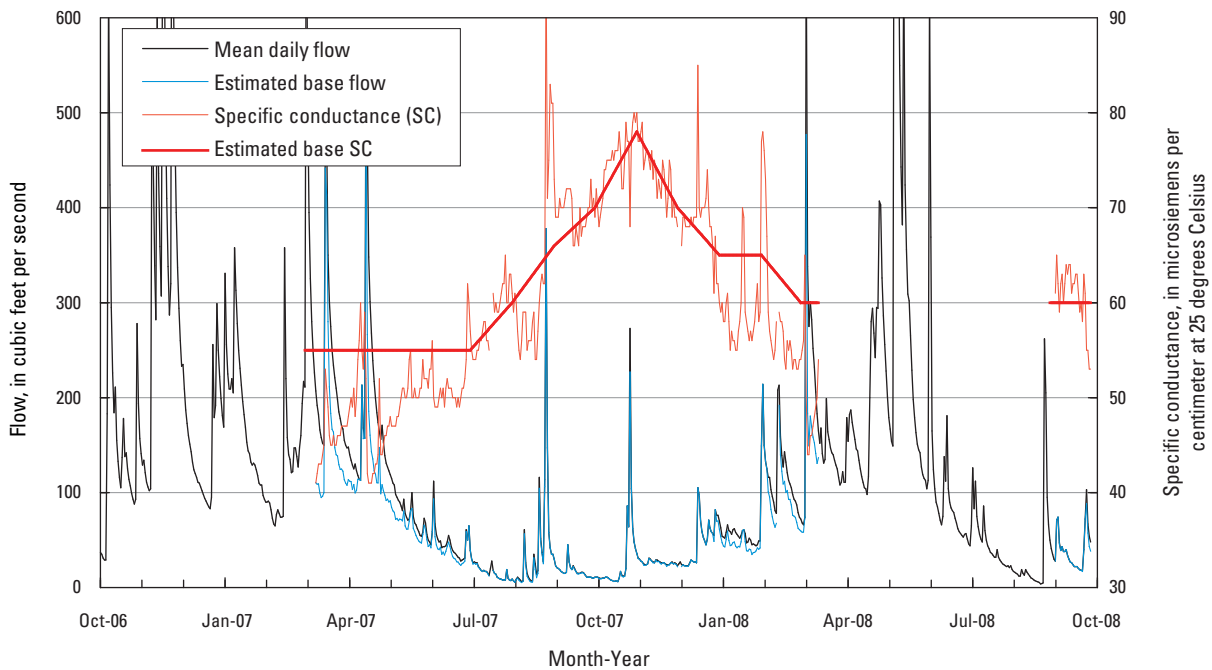
**Figure 1–33.** Flow and specific conductance record during 2006–2008 at the USGS gage 01656000 Cedar Run near Catlett, Virginia.



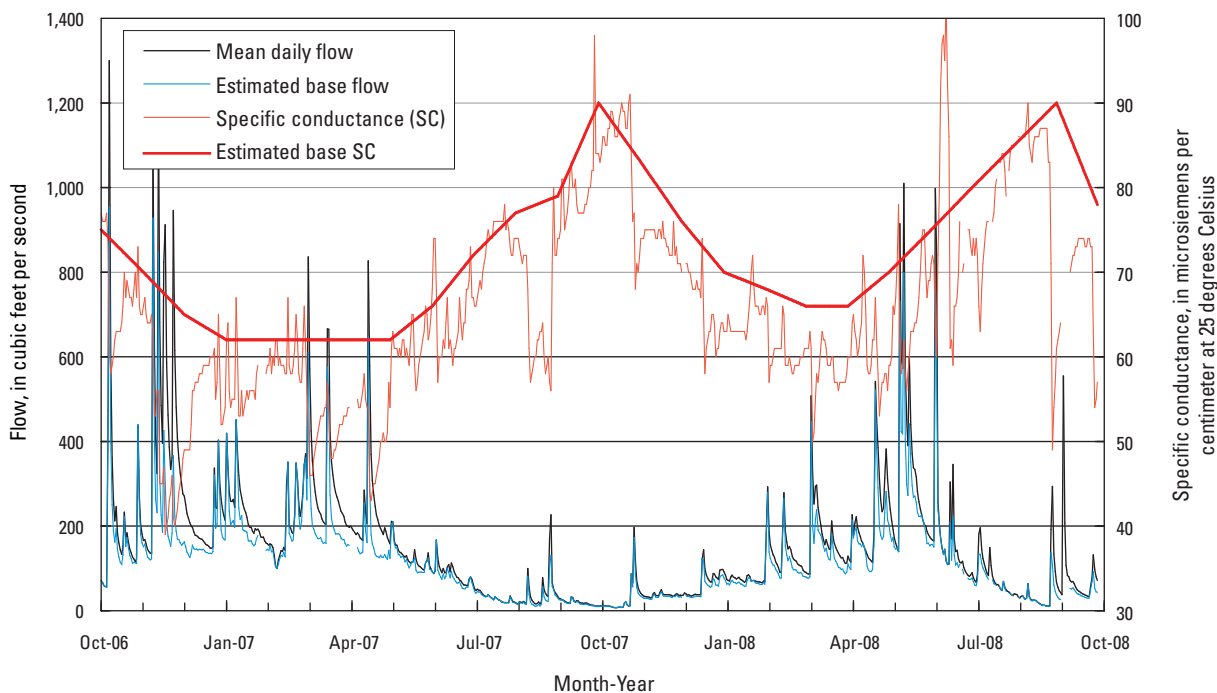
**Figure 1–34.** Flow and specific conductance record during 2006–2008 at the USGS gage 01660400 Aquia Creek near Garrisonville, Virginia.



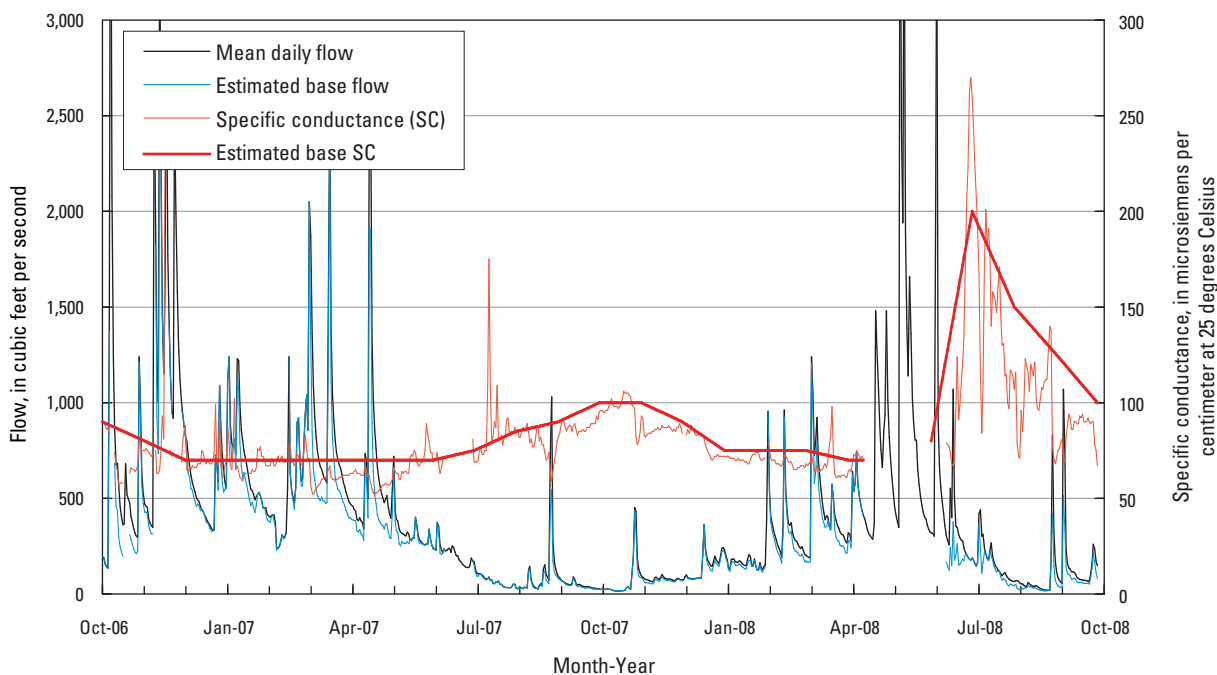
**Figure 1–35.** Flow and specific conductance record during 1981–1983 at the USGS gage 01664000 Rappahannock River near Remington, Virginia.



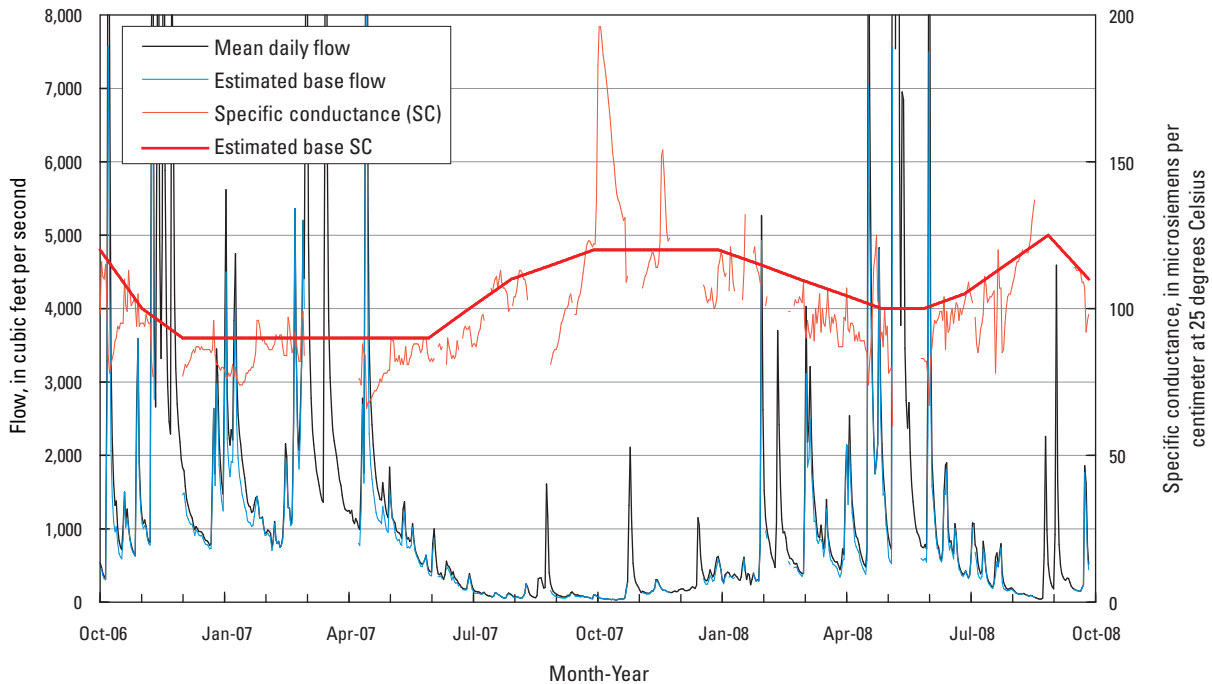
**Figure 1–36.** Flow and specific conductance record during 2006–2008 at the USGS gage 01655500 Rapidan River near Ruckersville, Virginia.



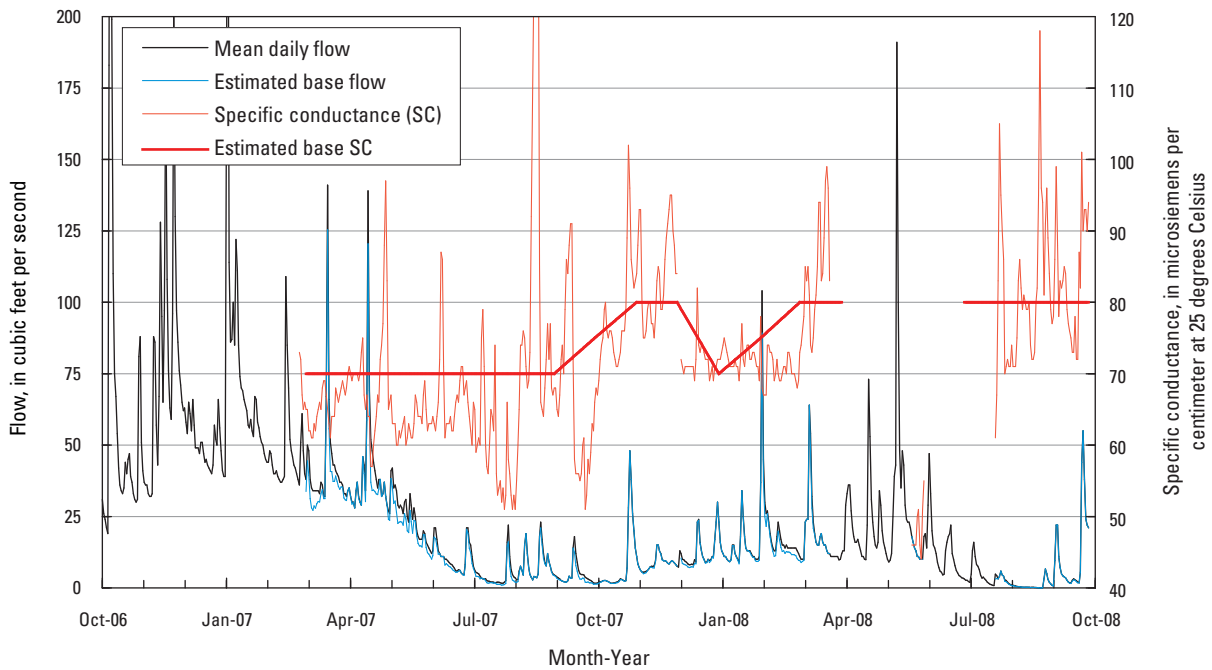
**Figure 1–37.** Flow and specific conductance record during 2006–2008 at the USGS gage 01666500 Robinson River near Locust Dale, Virginia.



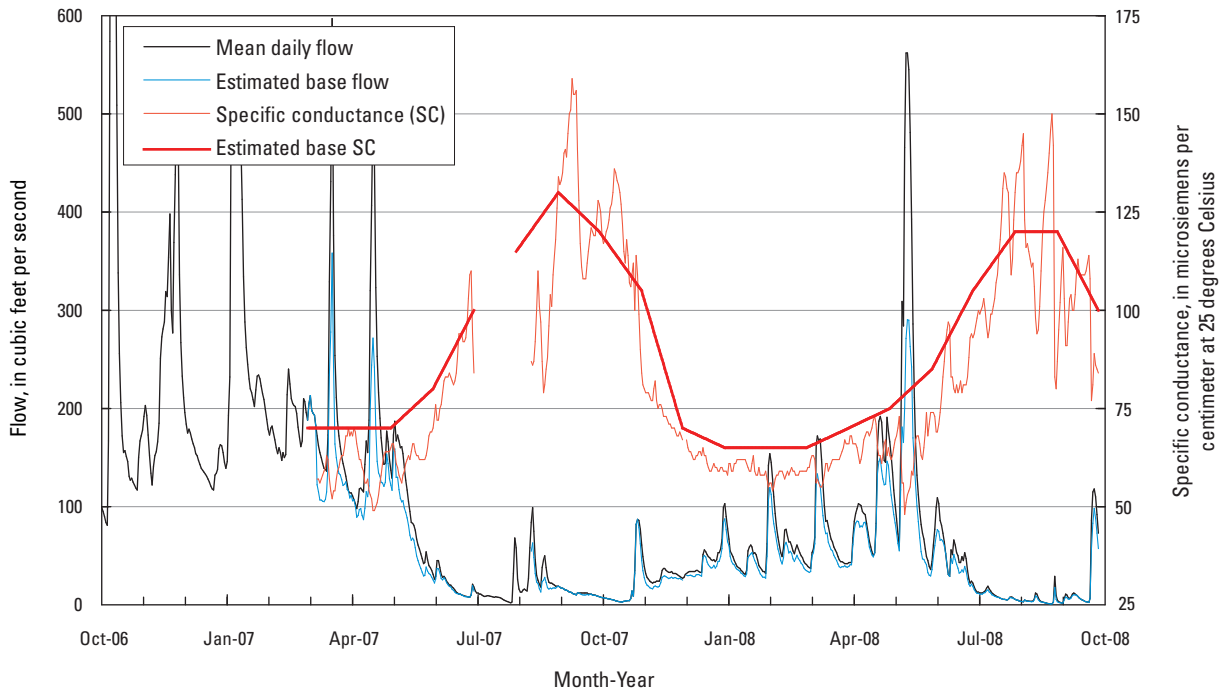
**Figure 1–38.** Flow and specific conductance record during 2006–2008 at the USGS gage 01667500 Rapidan River near Culpeper, Virginia.



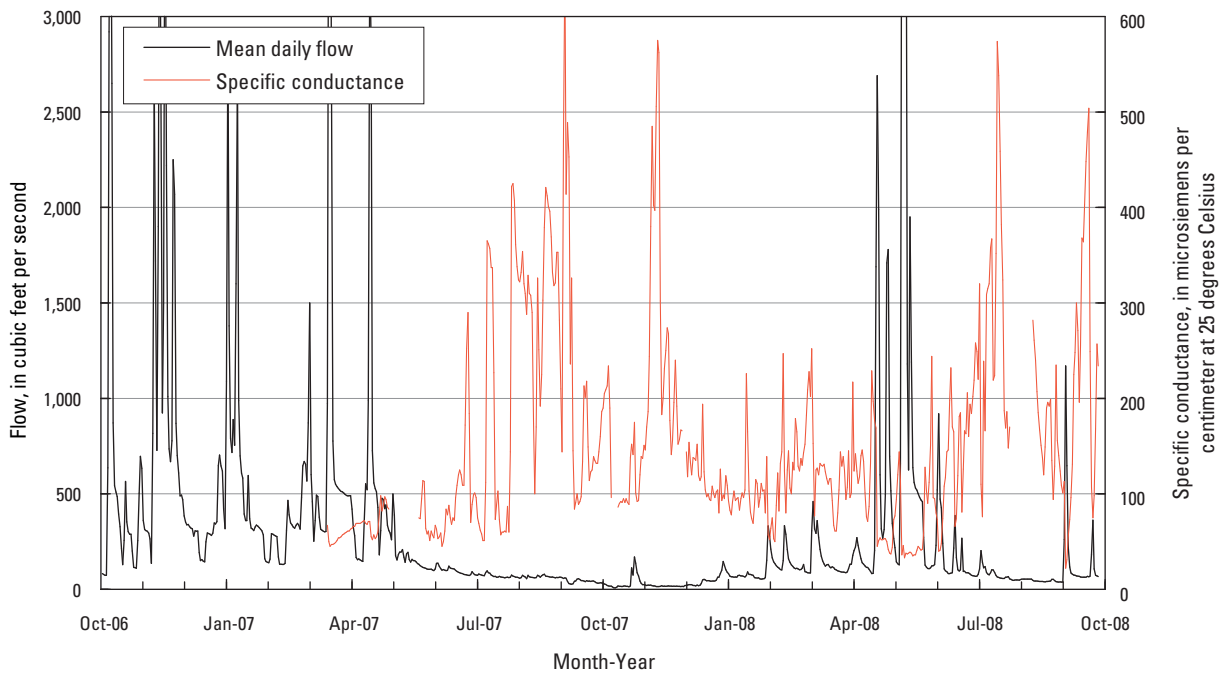
**Figure 1–39.** Flow and specific conductance record during 2006–2008 at the USGS gage 01668000 Rappahannock River near Fredericksburg, Virginia.



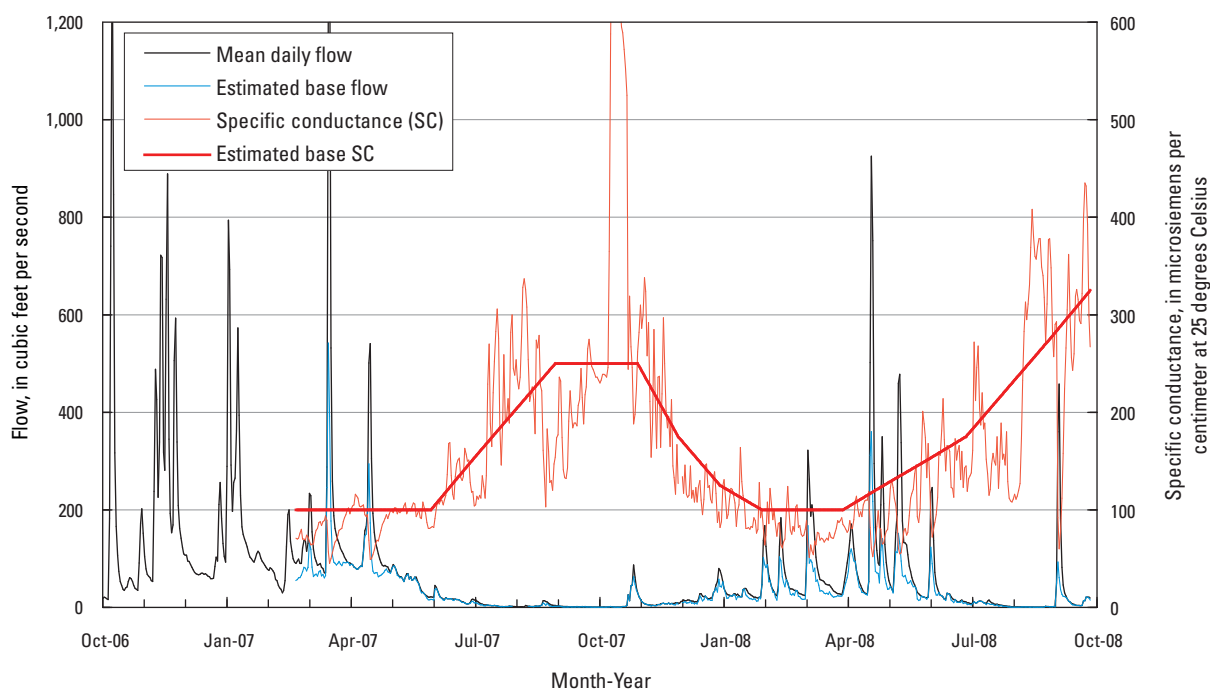
**Figure 1–40.** Flow and specific conductance record during 2006–2008 at the USGS gage 01669000 Piscataway Creek near Tappahannock, Virginia.



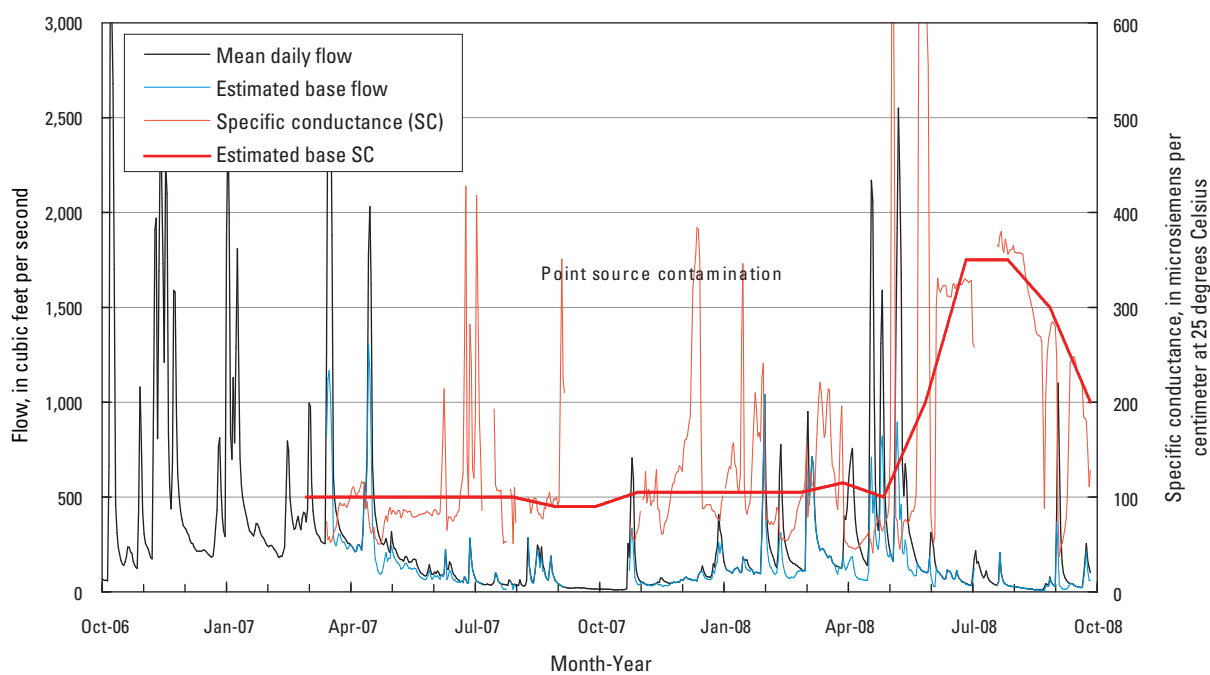
**Figure 1–41.** Flow and specific conductance record during 2006–2008 at the USGS gage 01669520 Dragon Swamp at Mascot, Virginia.



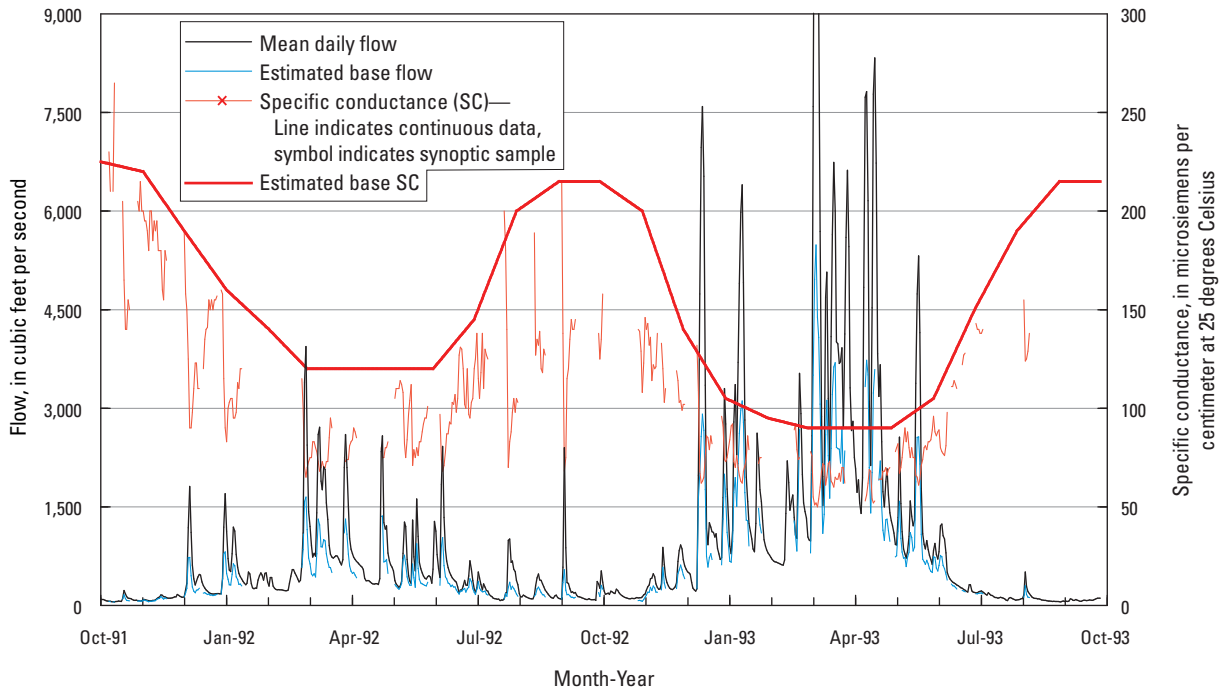
**Figure 1–42.** Flow and specific conductance record during 2006–2008 at the USGS gage 01671020 North Anna River at Hart Corner near Doswell, Virginia.



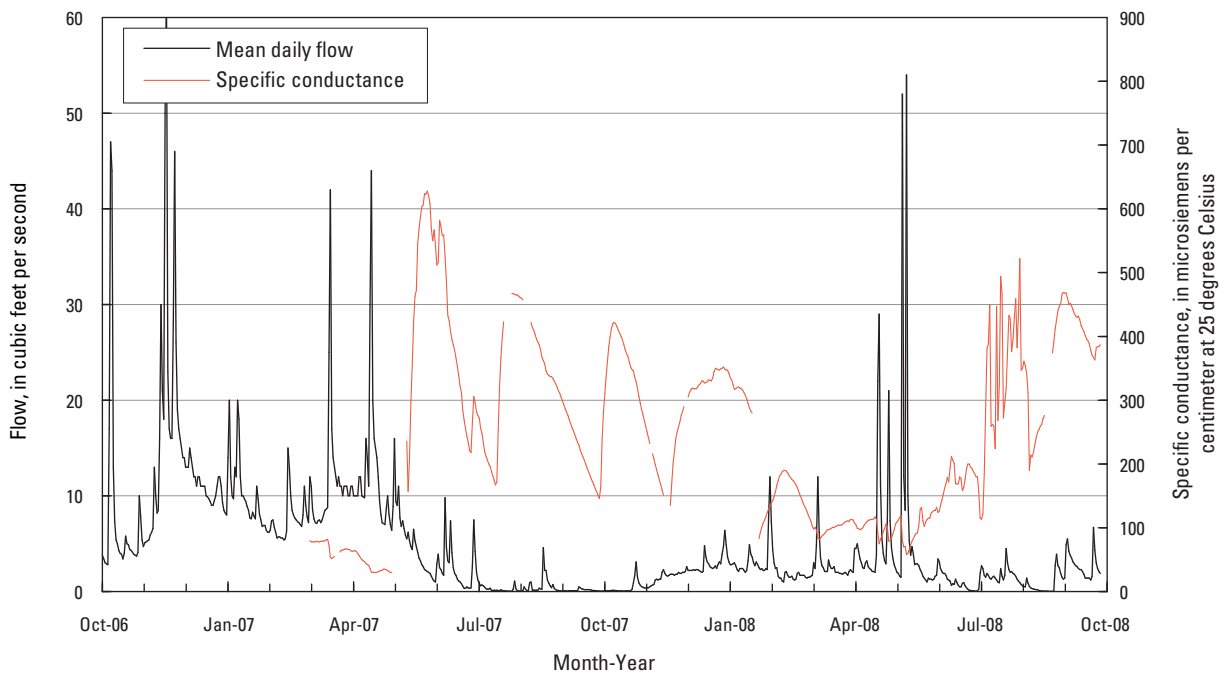
**Figure 1-43.** Flow and specific conductance record during 2006–2008 at the USGS gage 01671100 Little River near Doswell, Virginia.



**Figure 1-44.** Flow and specific conductance record during 2006–2008 at the USGS gage 01672500 South Anna River near Ashland, Virginia.

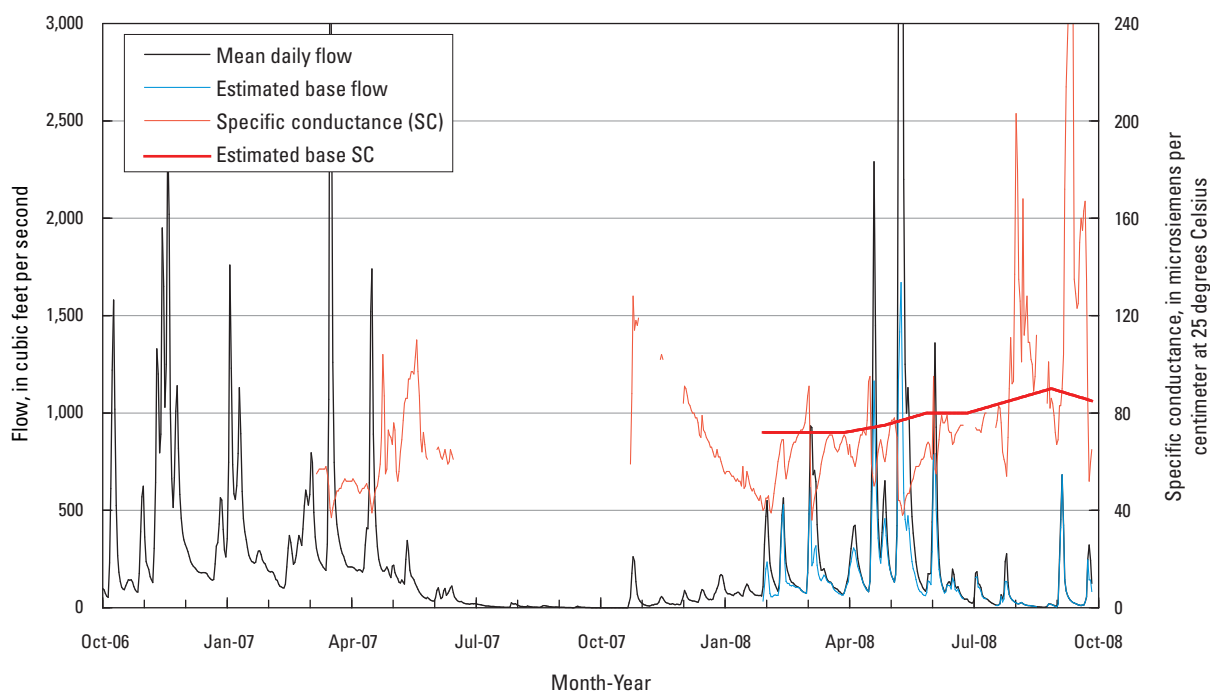


**Figure 1–45.** Flow and specific conductance record during 1992–1993 at the USGS gage 01673000 Pamunkey River near Hanover, Virginia.

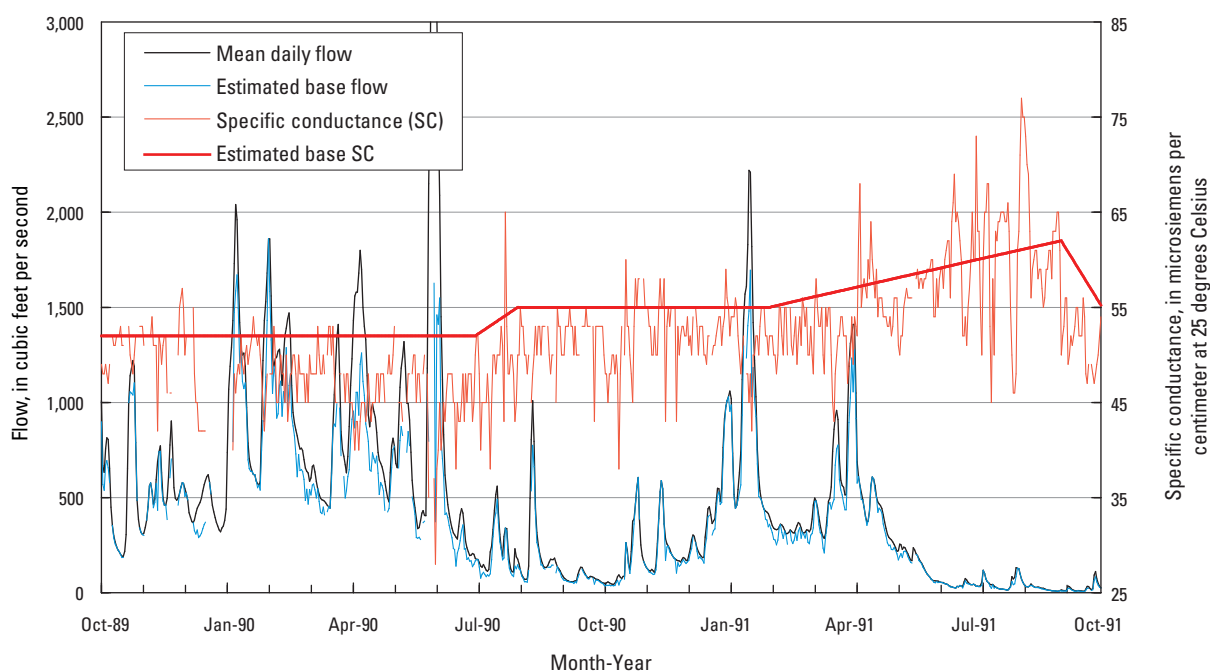


**Figure 1–46.** Flow and specific conductance record during 2006–2008 at the USGS gage 01673638 Cohoke Mill Creek near Lestor Manor, Virginia.

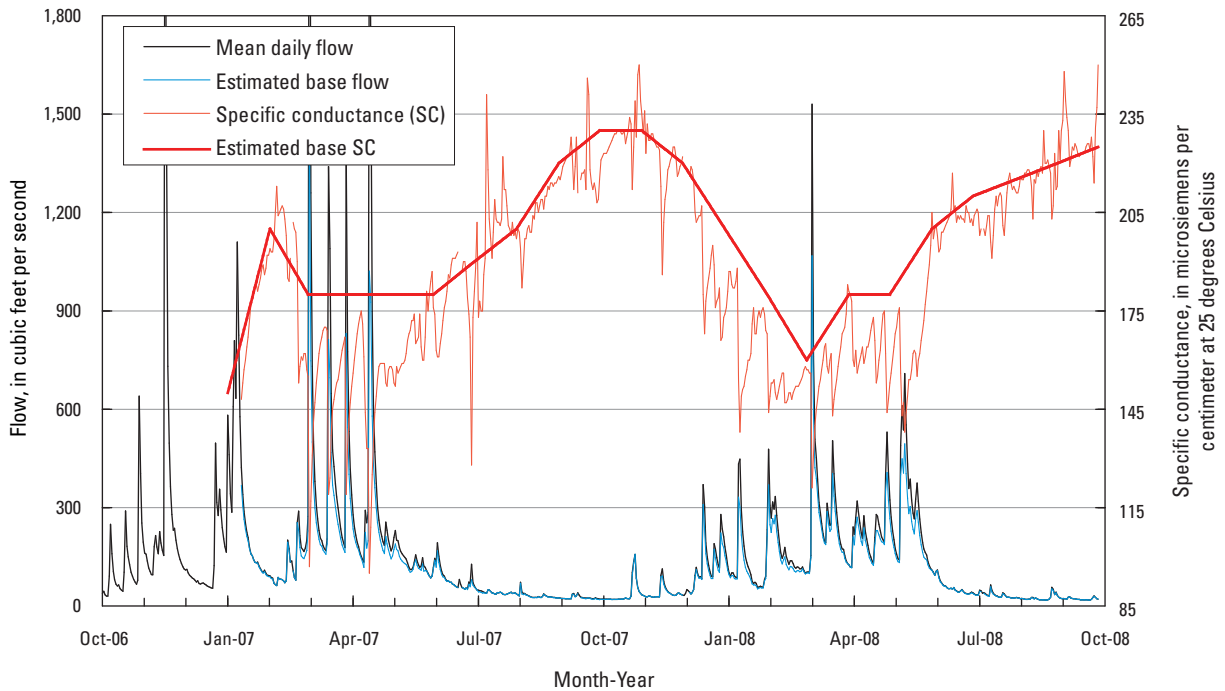




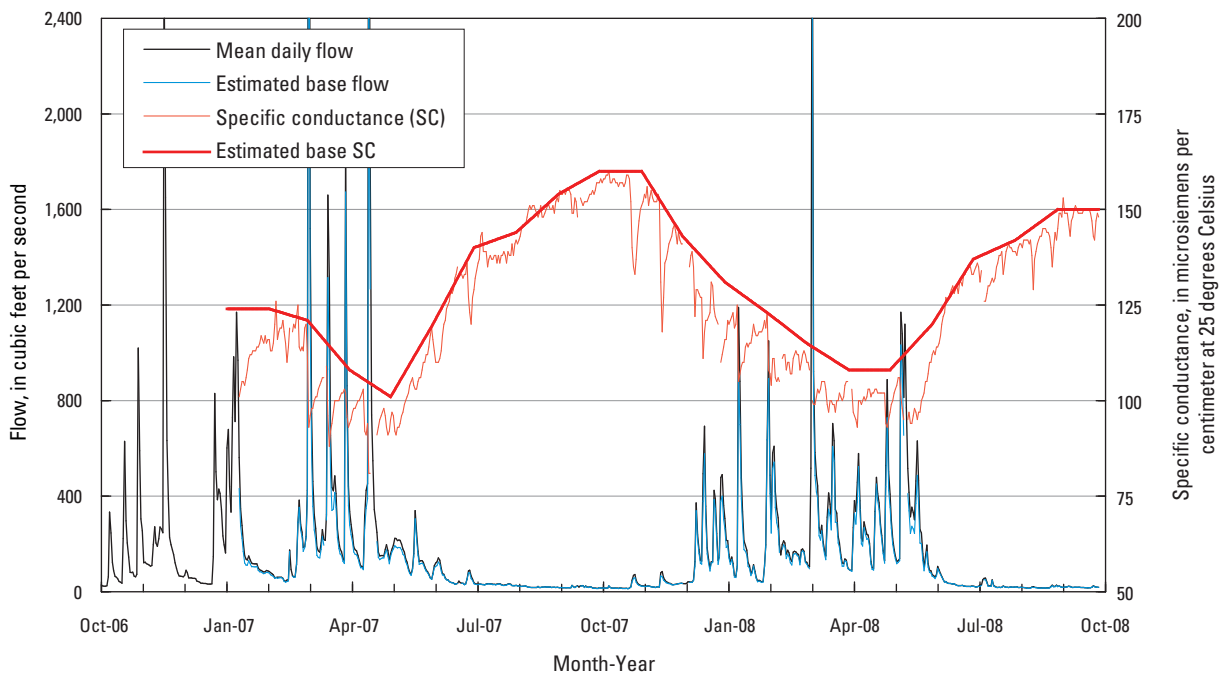
**Figure 1-47.** Flow and specific conductance record during 2006–2008 at the USGS gage 01674000 Mattaponi River near Bowling Green, Virginia.



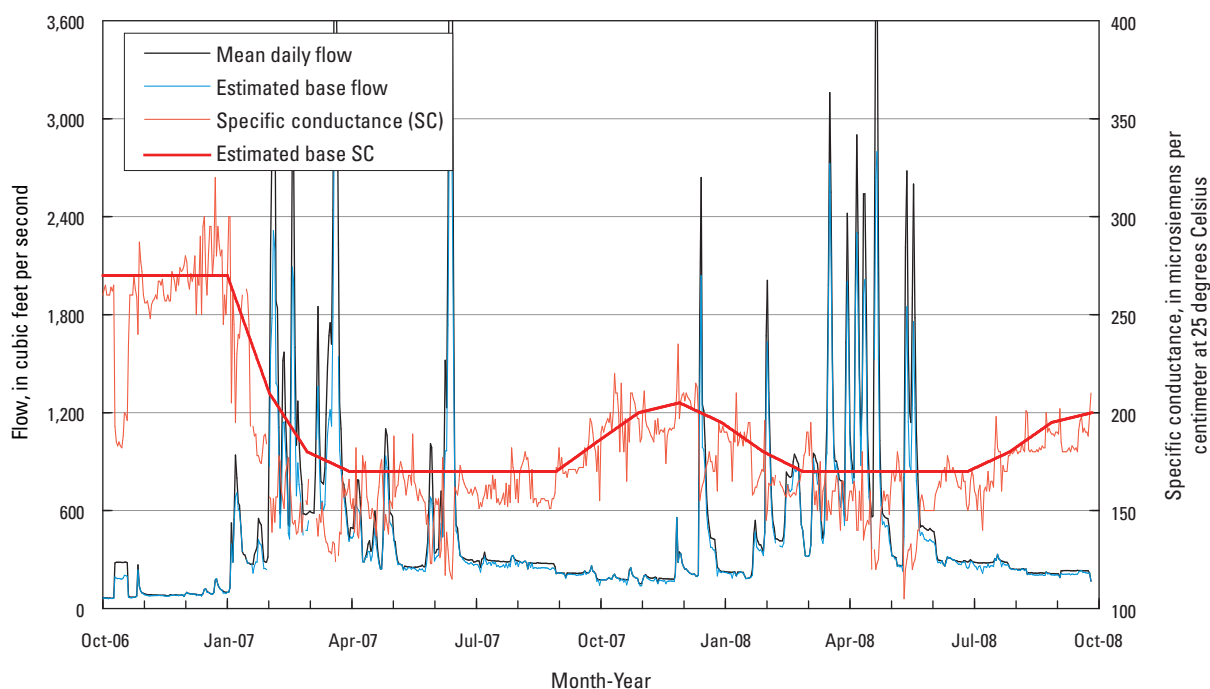
**Figure 1-48.** Flow and specific conductance record during 1989–1991 at the USGS gage 01674500 Mattaponi River near Beulahville, Virginia.



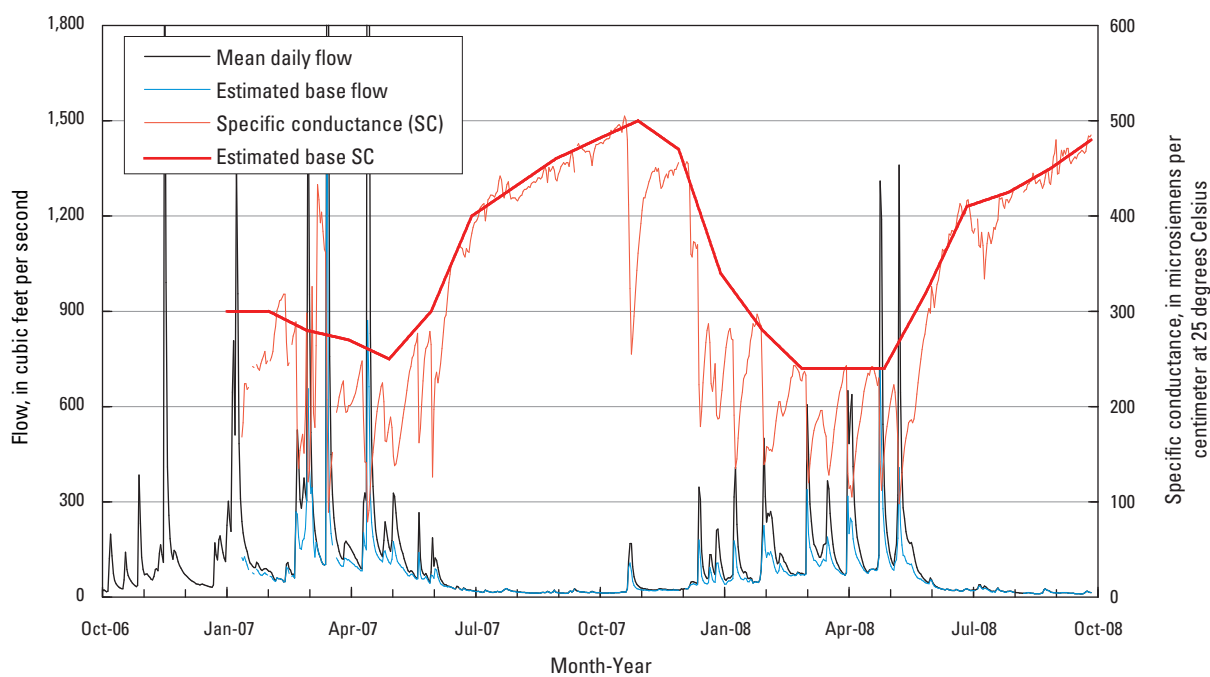
**Figure 1–49.** Flow and specific conductance record during 2006–2008 at the USGS gage 02011400 Jackson River near Bacova, Virginia.



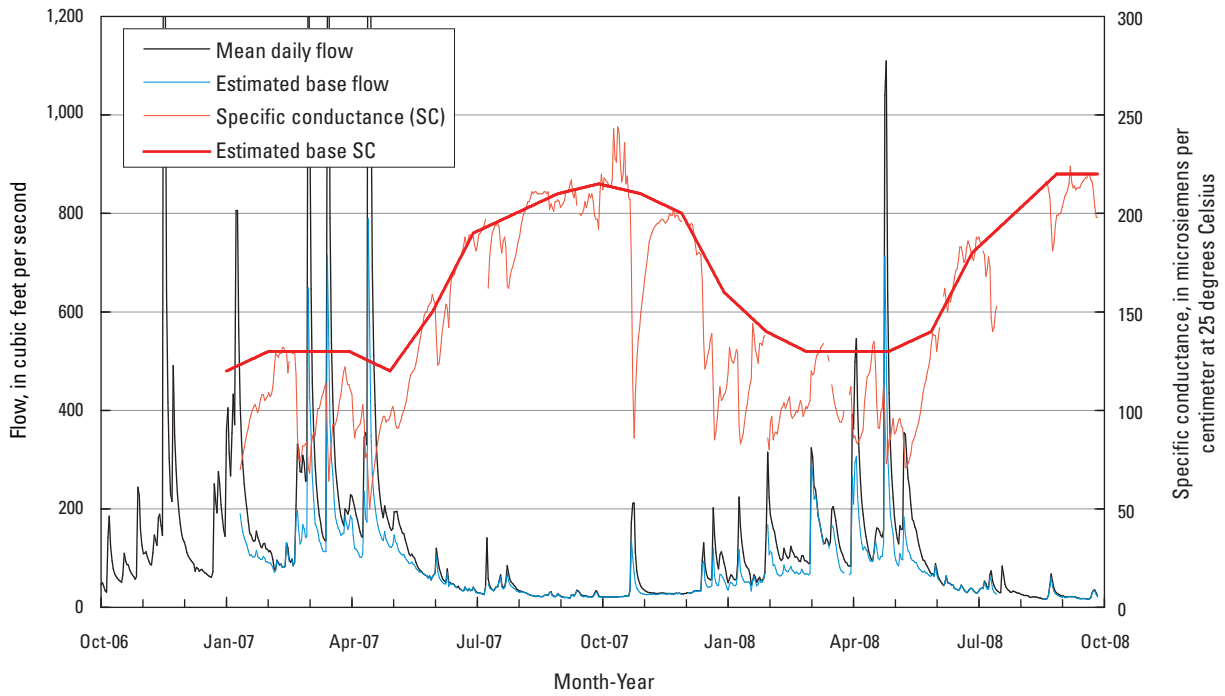
**Figure 1–50.** Flow and specific conductance record during 2006–2008 at the USGS gage 02011500 Back Creek near Mountain Grove, Virginia.



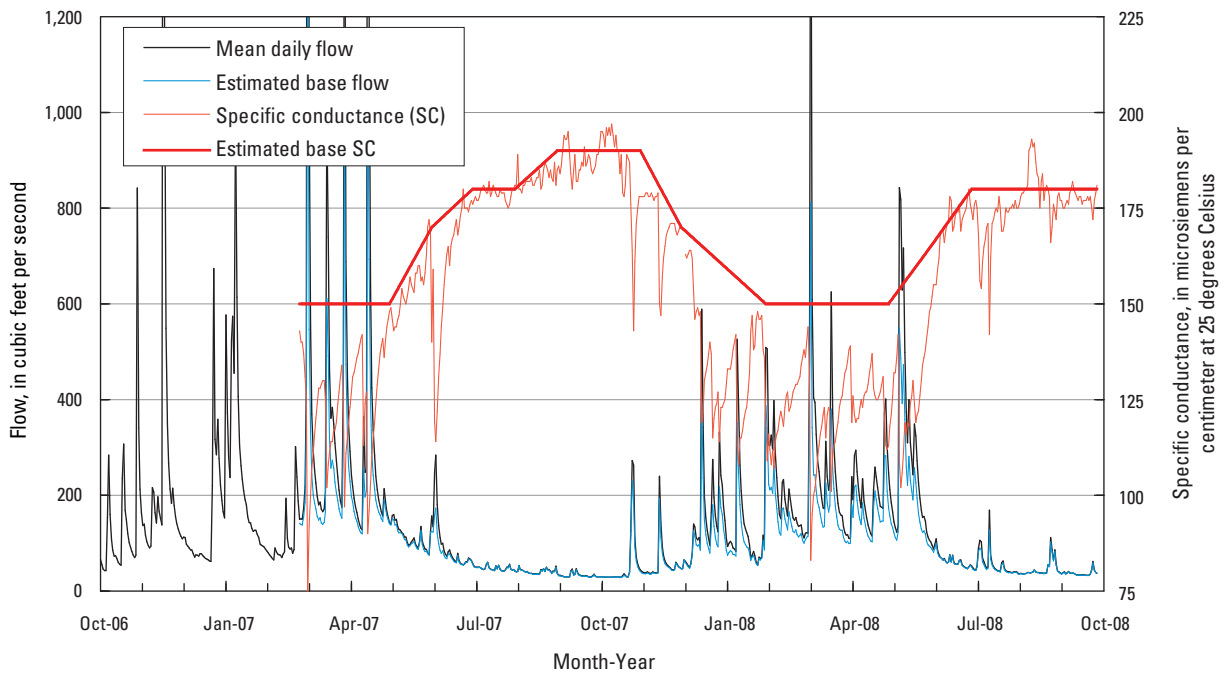
**Figure 1-51.** Flow and specific conductance record during 2006–2008 at the USGS gage 02012500 Jackson River at Falling Springs, Virginia.



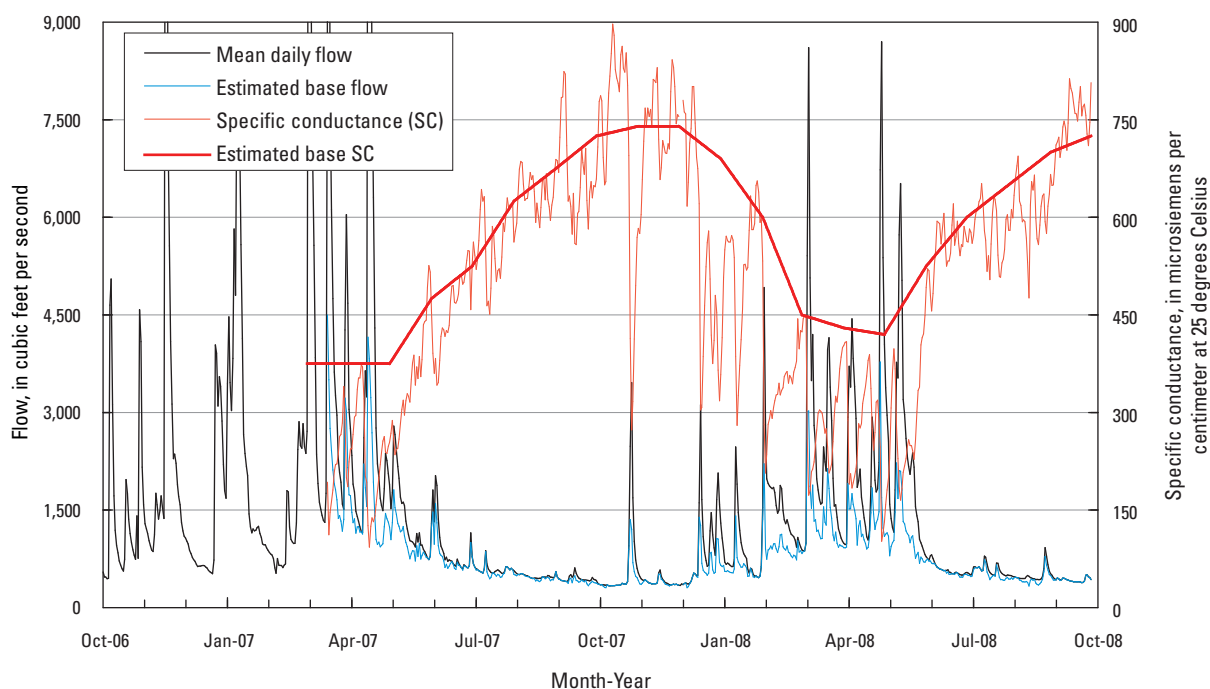
**Figure 1-52.** Flow and specific conductance record during 2006–2008 at the USGS gage 02013000 Dunlap Creek near Covington, Virginia.



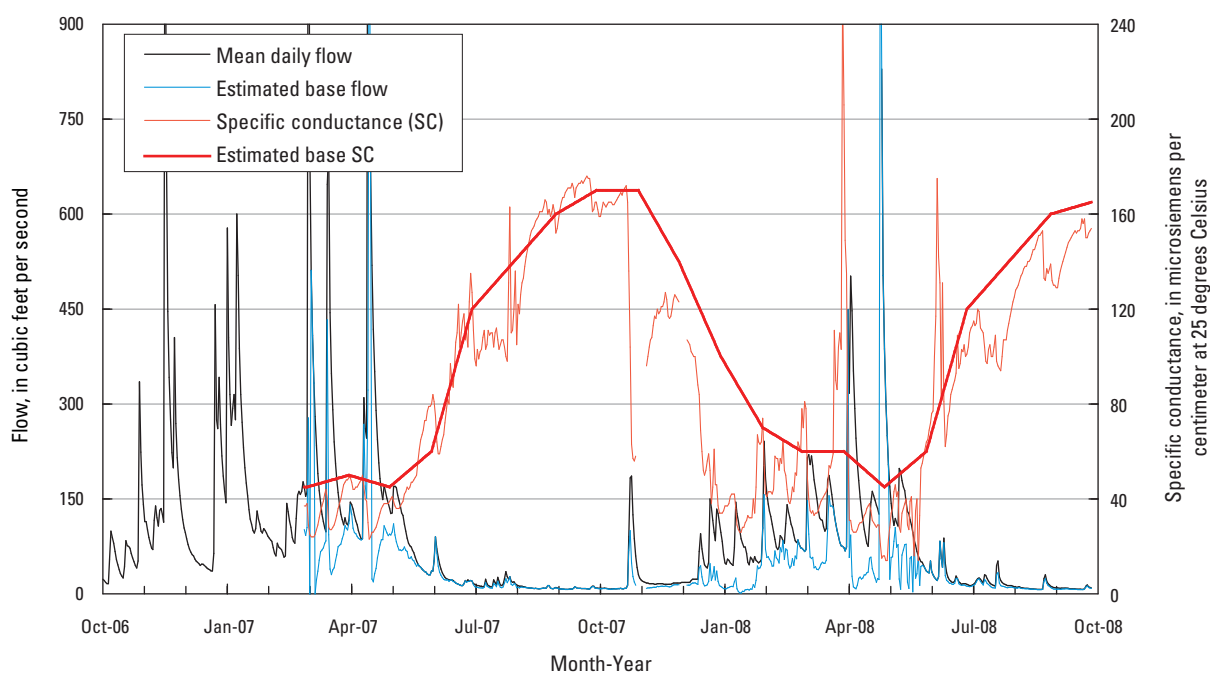
**Figure 1–53.** Flow and specific conductance record during 2006–2008 at the USGS gage 02014000 Potts Creek near Covington, Virginia.



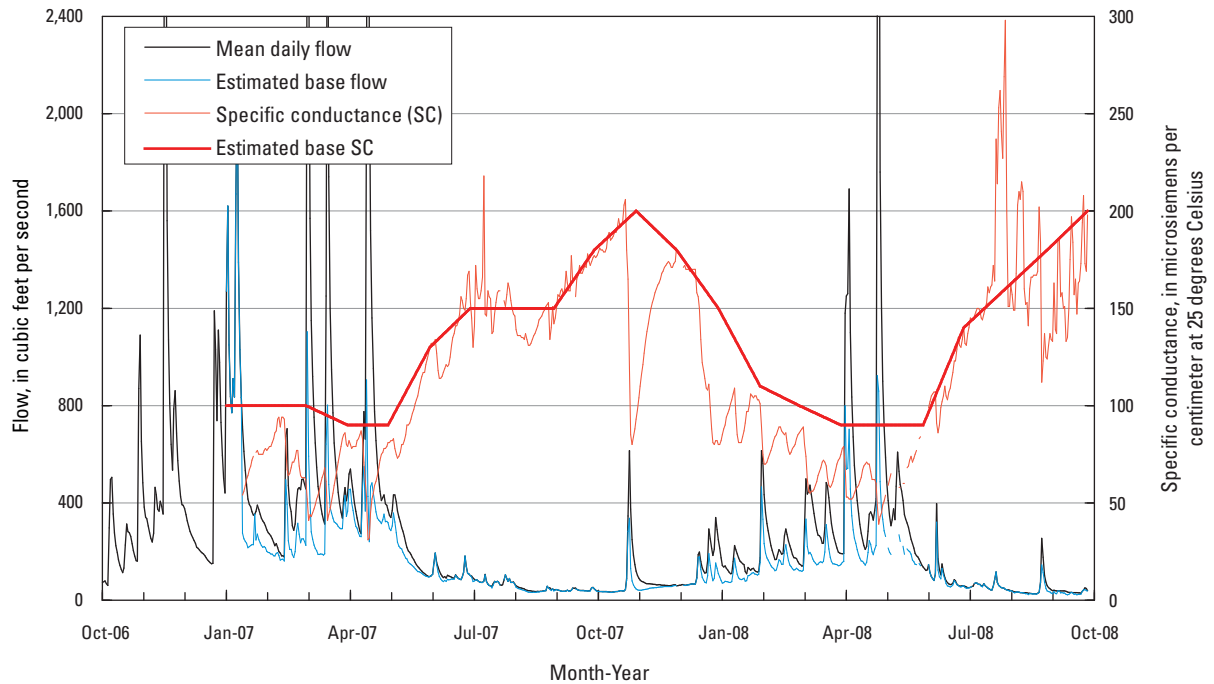
**Figure 1–54.** Flow and specific conductance record during 2006–2008 at the USGS gage 02015700 Bullpasture River near Williamsville, Virginia.



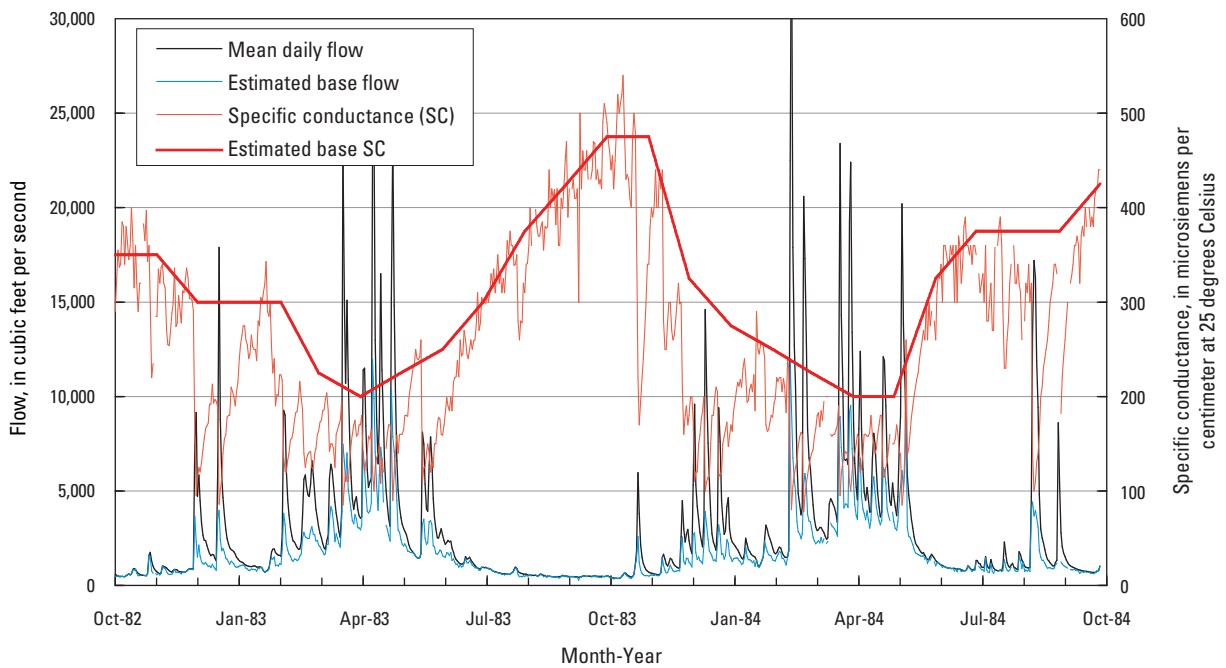
**Figure 1-55.** Flow and specific conductance record during 2006–2008 at the USGS gage 02016500 James River at Lick Run, Virginia.



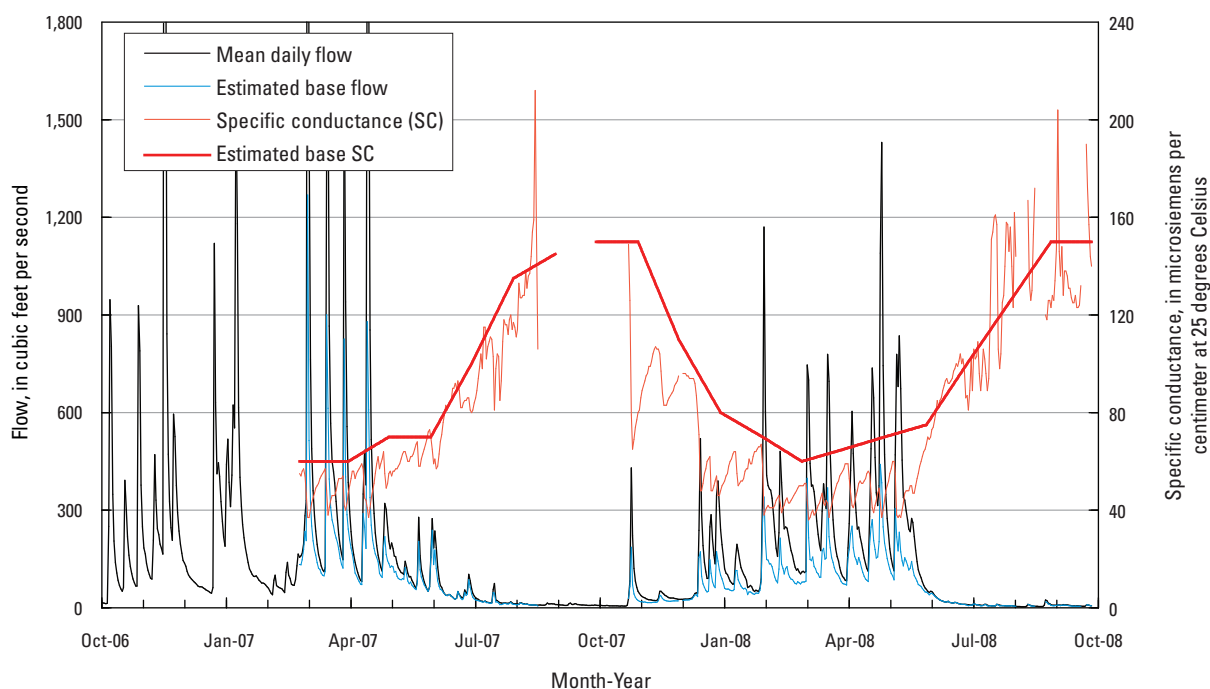
**Figure 1-56.** Flow and specific conductance record during 2006–2008 at the USGS gage 02017500 Johns Creek at New Castle, Virginia.



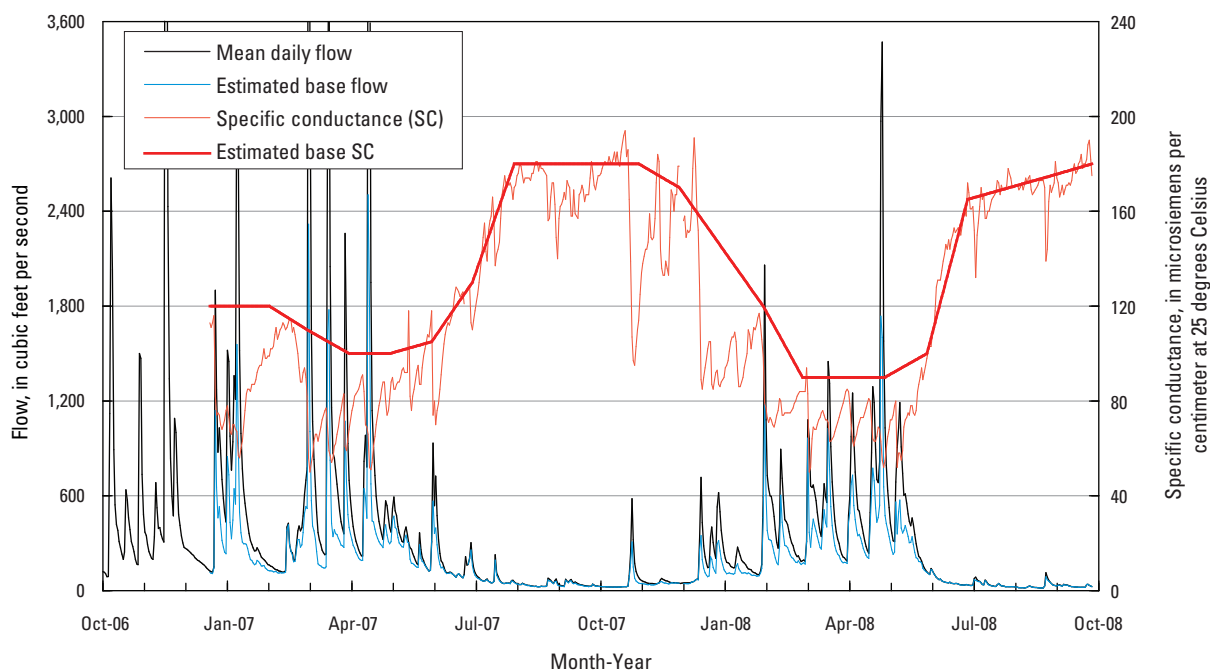
**Figure 1–57.** Flow and specific conductance record during 2006–2008 at the USGS gage 02018000 Craig Creek near Parr, Virginia.



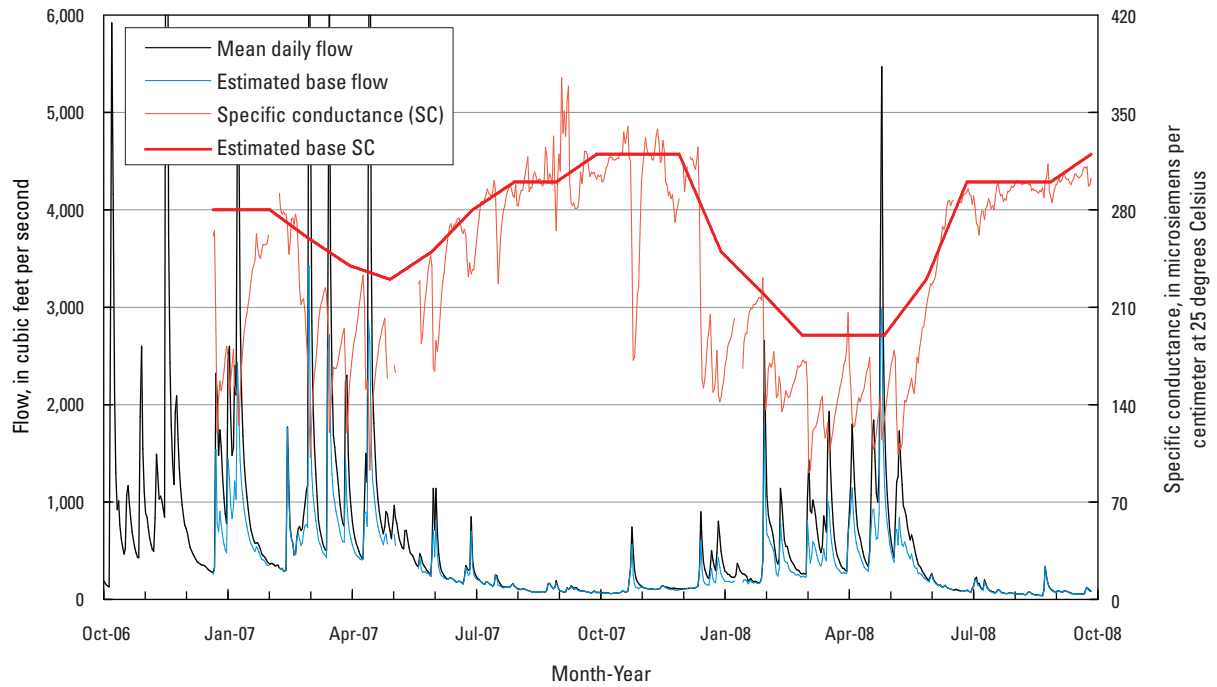
**Figure 1–58.** Flow and specific conductance record during 1982–1984 at the USGS gage 02019500 James River near Buchanan, Virginia.



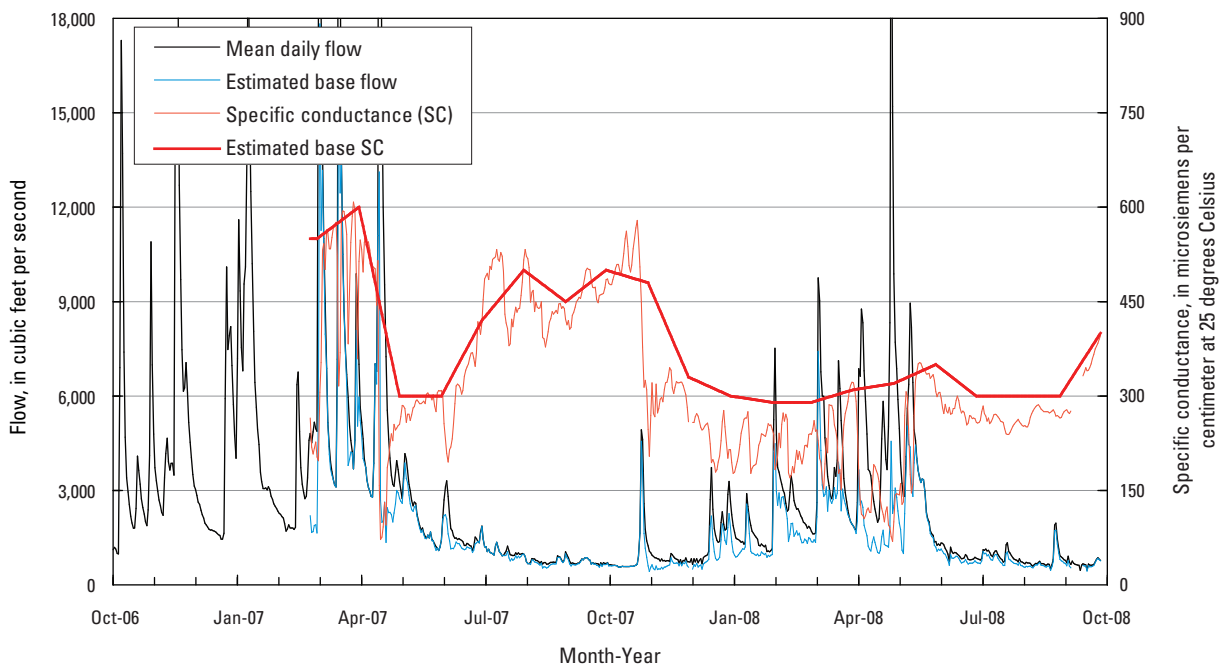
**Figure 1-59.** Flow and specific conductance record during 2006–2008 at the USGS gage 02020500 Calpasture River above Mill Creek at Goshen, Virginia.



**Figure 1-60.** Flow and specific conductance record during 2006–2008 at the USGS gage 02021500 Maury River near Rockbridge Baths, Virginia.

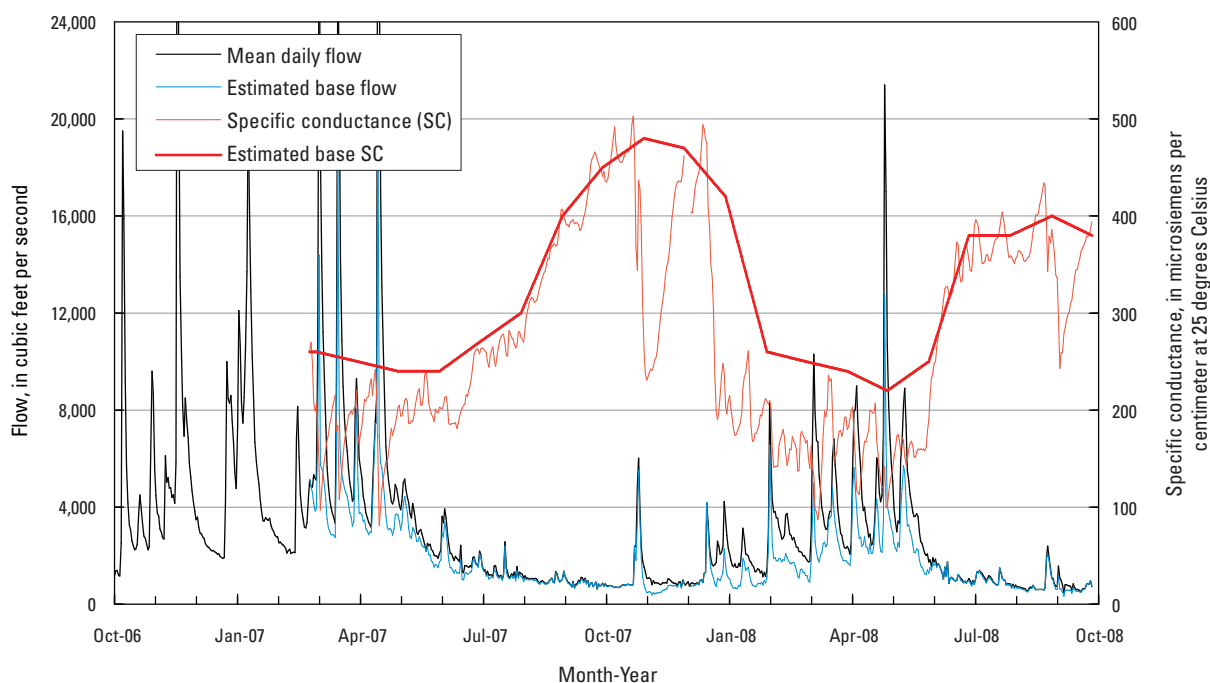


**Figure 1–61.** Flow and specific conductance record during 2006–2008 at the USGS gage 02024000 Maury River near Buena Vista, Virginia.

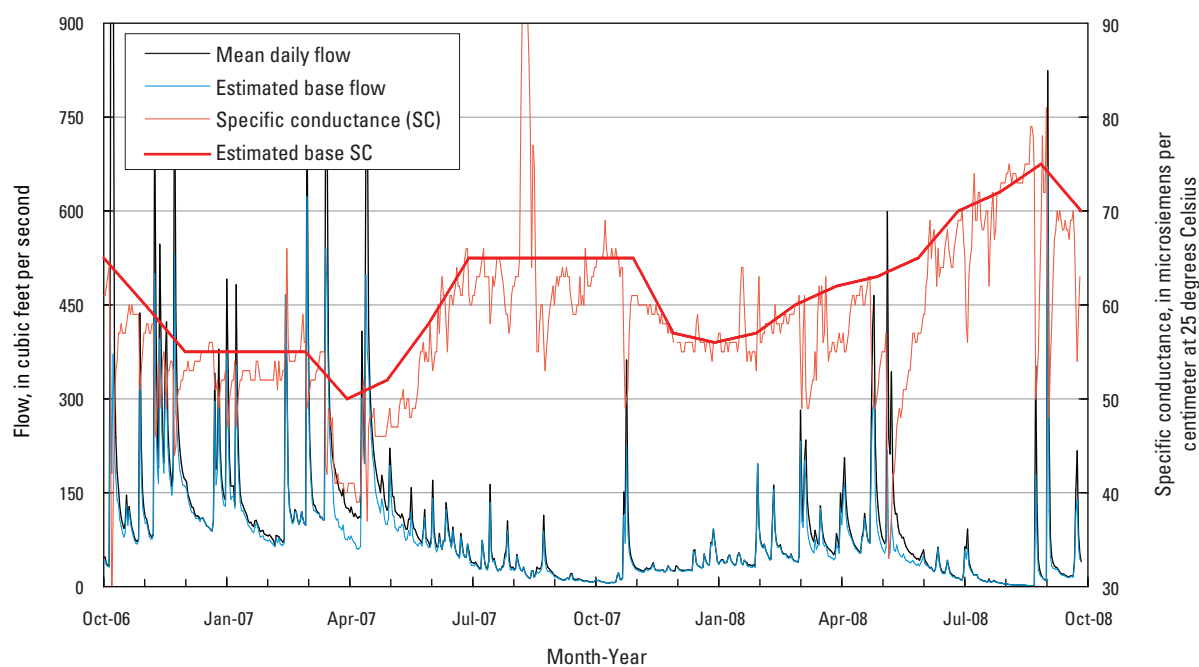


**Figure 1–62.** Flow and specific conductance record during 2006–2008 at the USGS gage 02025500 James River at Holcomb Rock, Virginia.

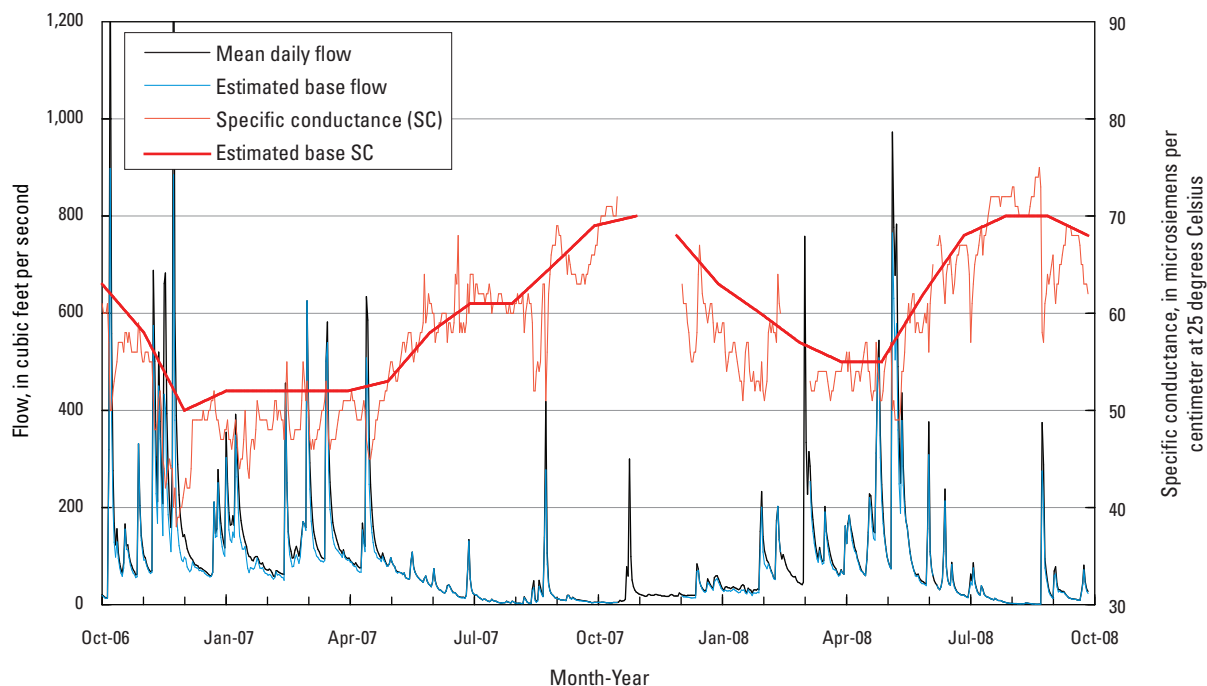




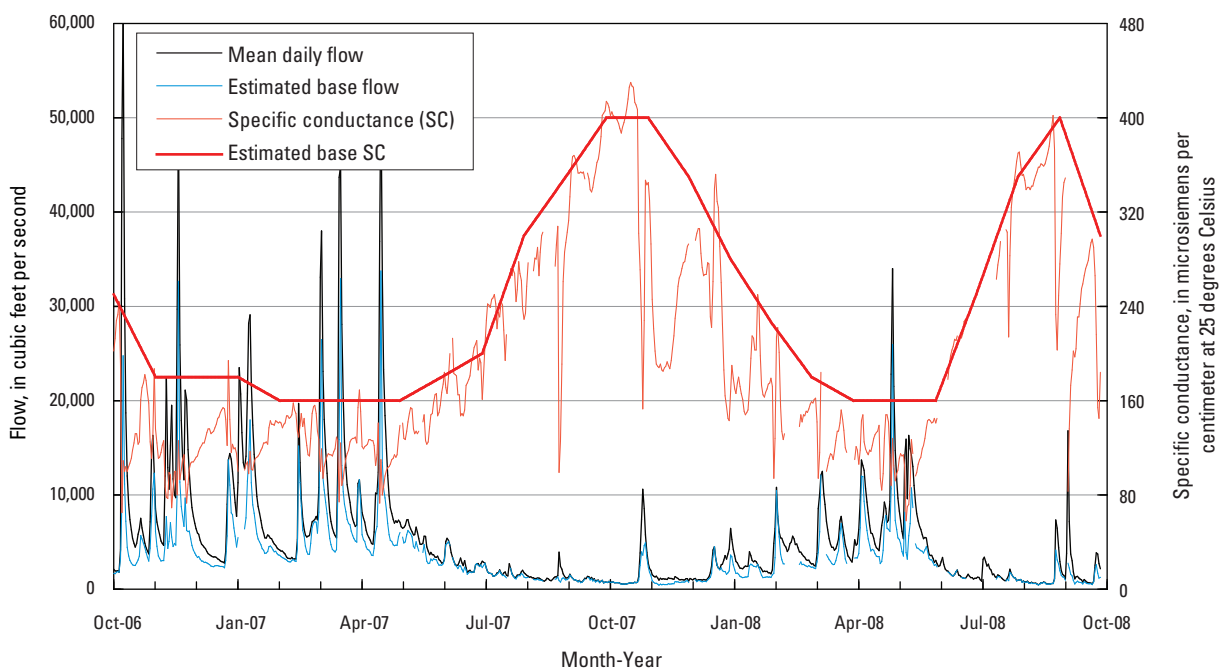
**Figure 1-63.** Flow and specific conductance record during 2006–2008 at the USGS gage 02026000 James River at Bent Creek, Virginia.



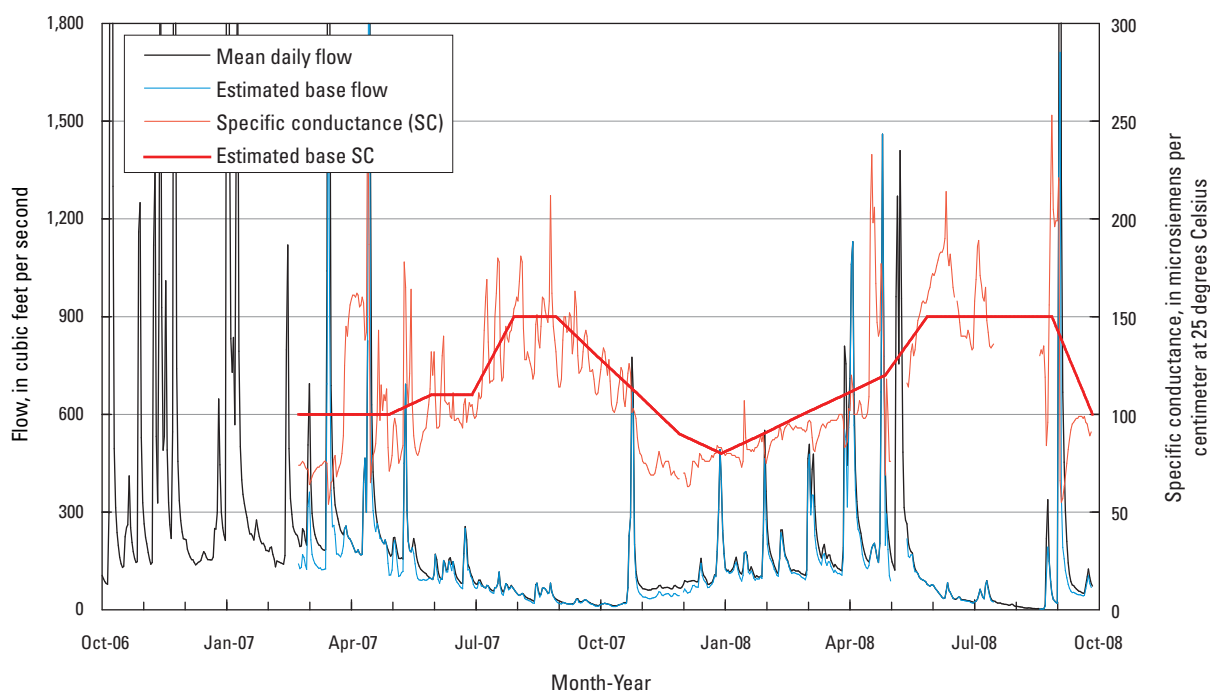
**Figure 1-64.** Flow and specific conductance record during 2006–2008 at the USGS gage 02030000 Hardware River below Briery Run near Scottsville, Virginia.



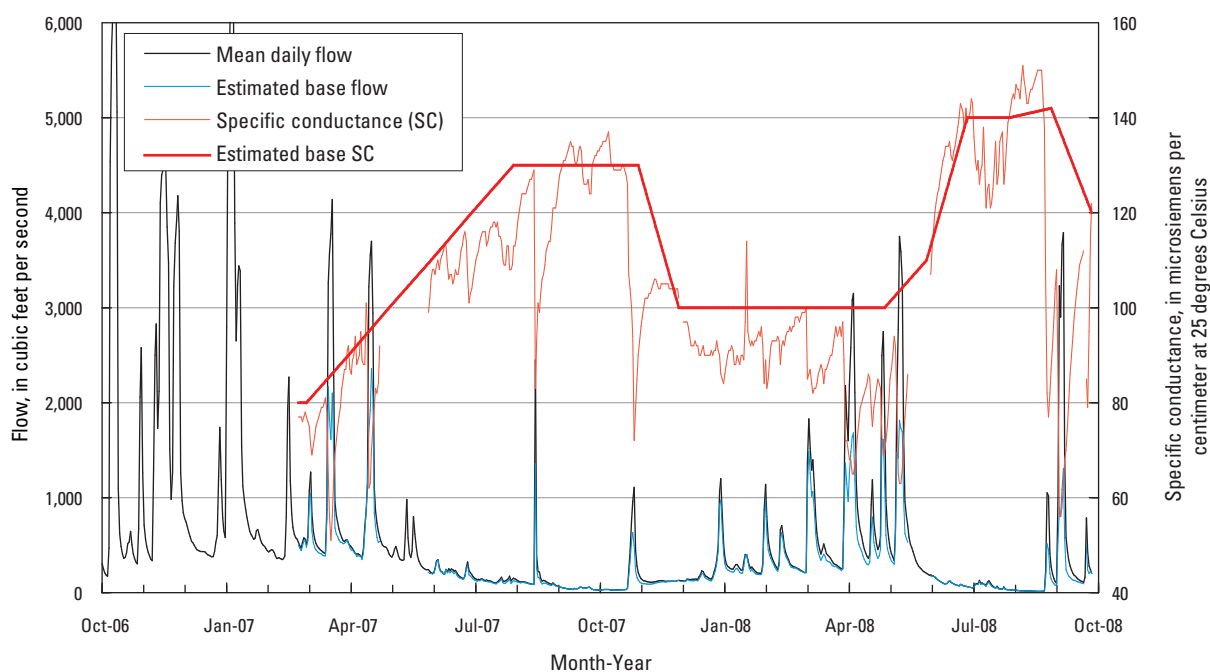
**Figure 1–65.** Flow and specific conductance record during 2006–2008 at the USGS gage 02032640 North Fork Rivanna River near Earlysville, Virginia.



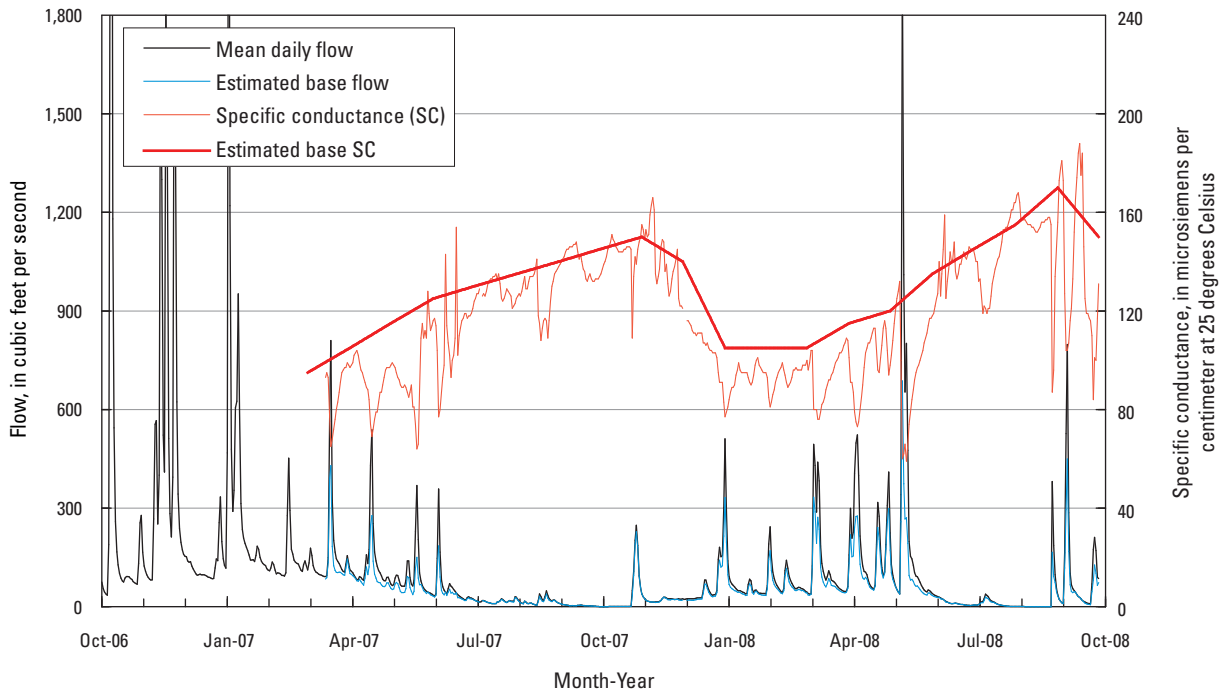
**Figure 1–66.** Flow and specific conductance record during 2006–2008 at the USGS gage 02035000 James River at Cartersville, Virginia.



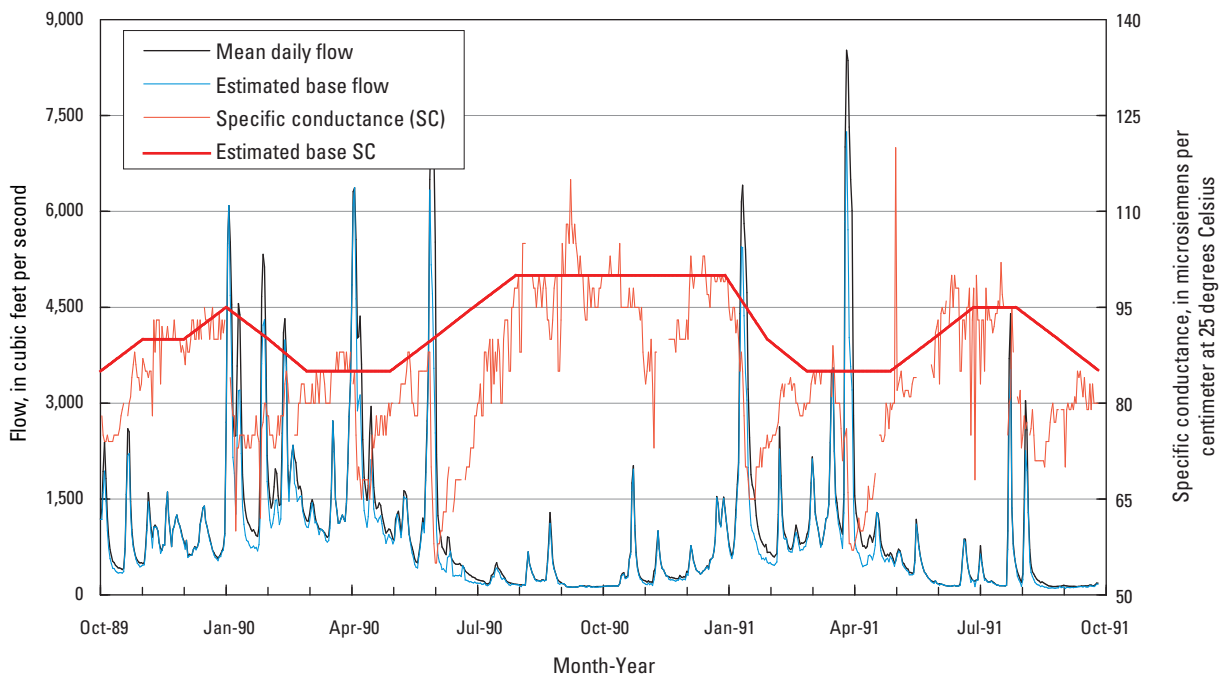
**Figure 1-67.** Flow and specific conductance record during 2006–2008 at the USGS gage 02039500 Appomattox River near Farmville, Virginia.



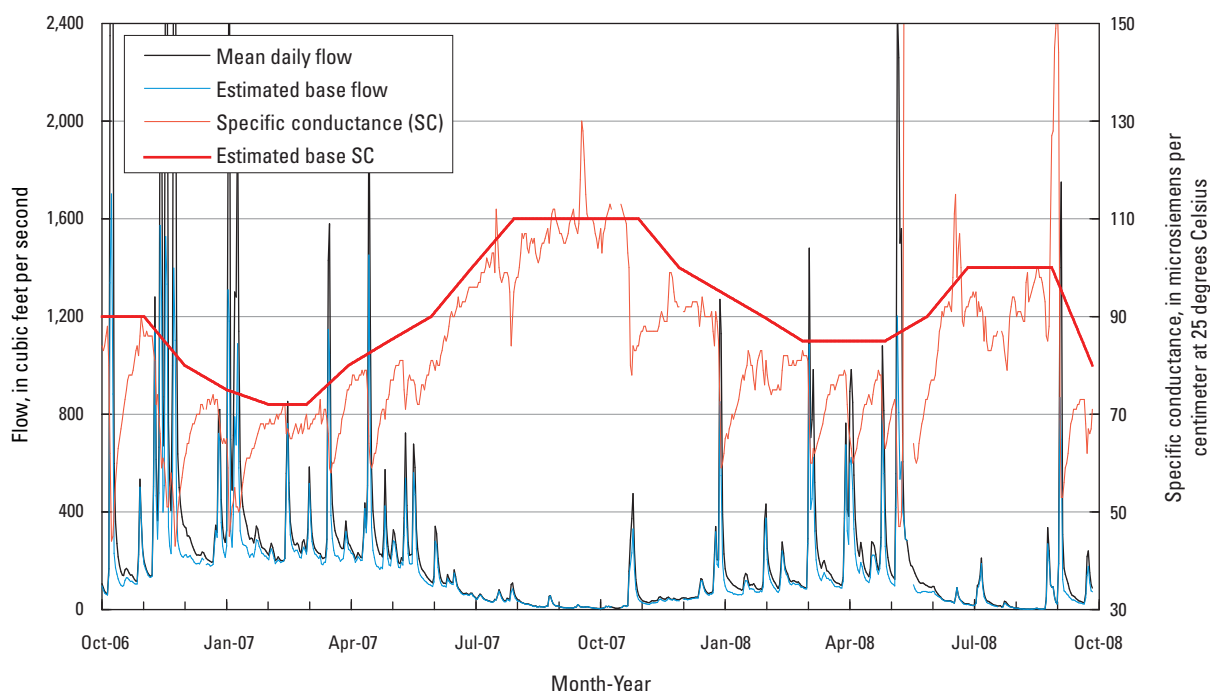
**Figure 1-68.** Flow and specific conductance record during 2006–2008 at the USGS gage 02040000 Appomattox River near Mattoax, Virginia.



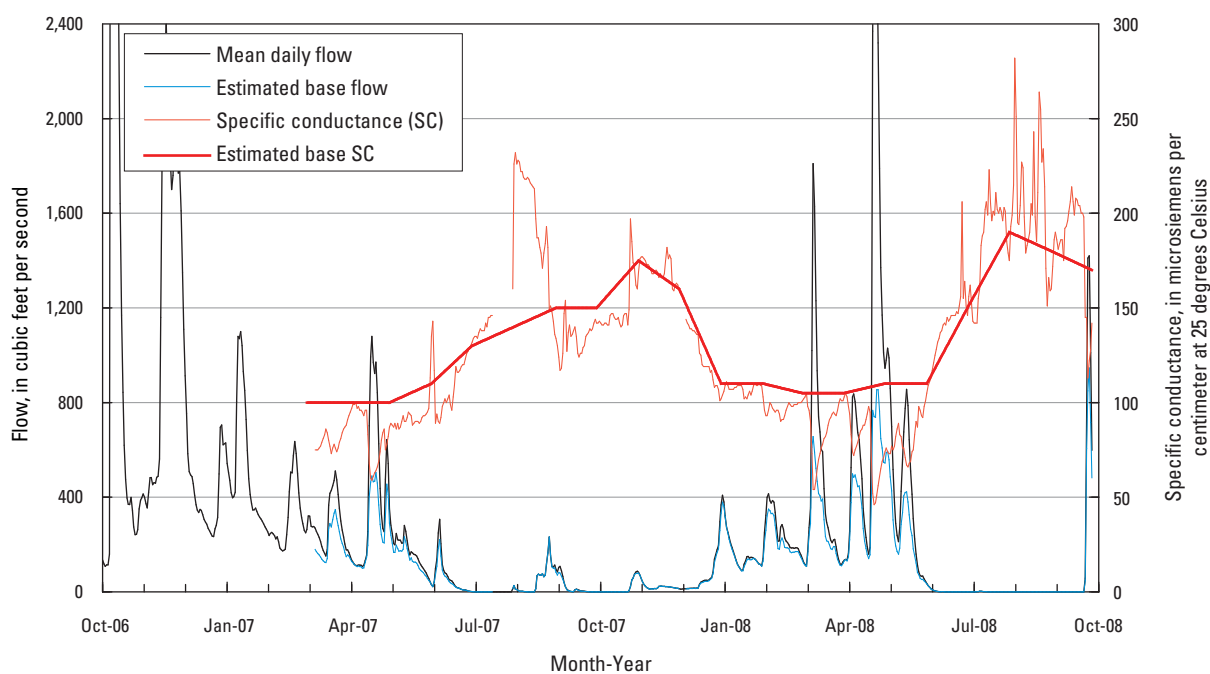
**Figure 1–69.** Flow and specific conductance record during 2006–2008 at the USGS gage 02041000 Deep Creek near Mannboro, Virginia.



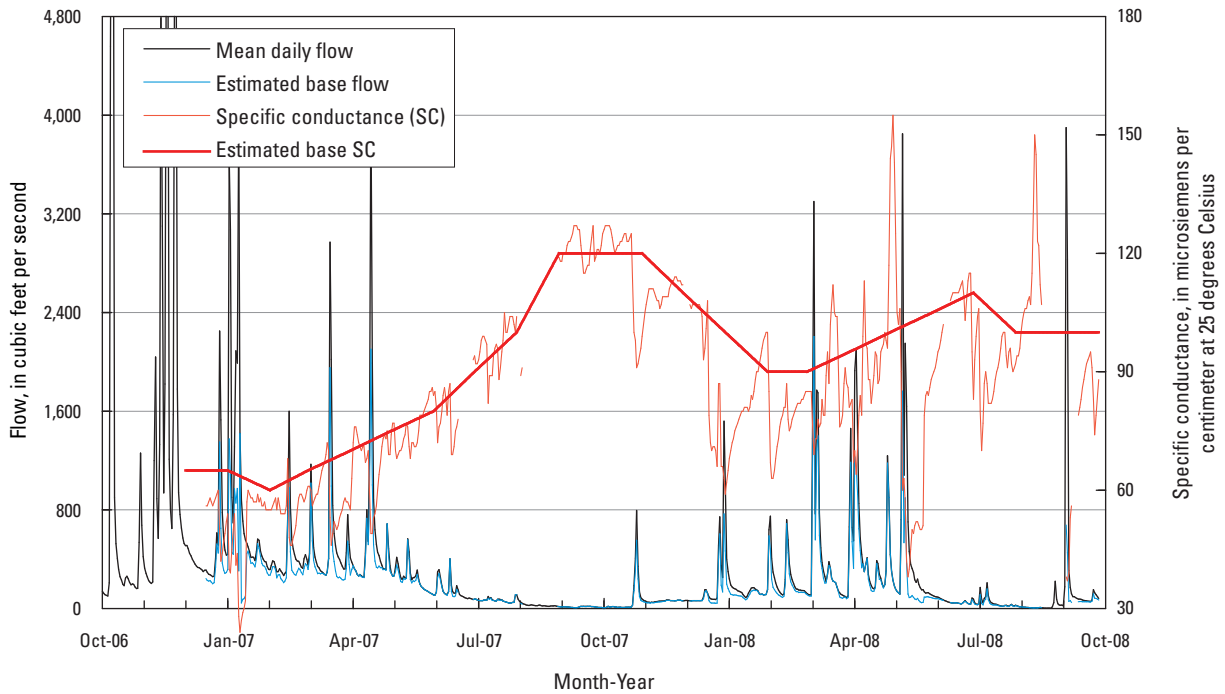
**Figure 1–70.** Flow and specific conductance record during 1989–1991 at the USGS gage 02041650 Appomattox River near Matoaca, Virginia.



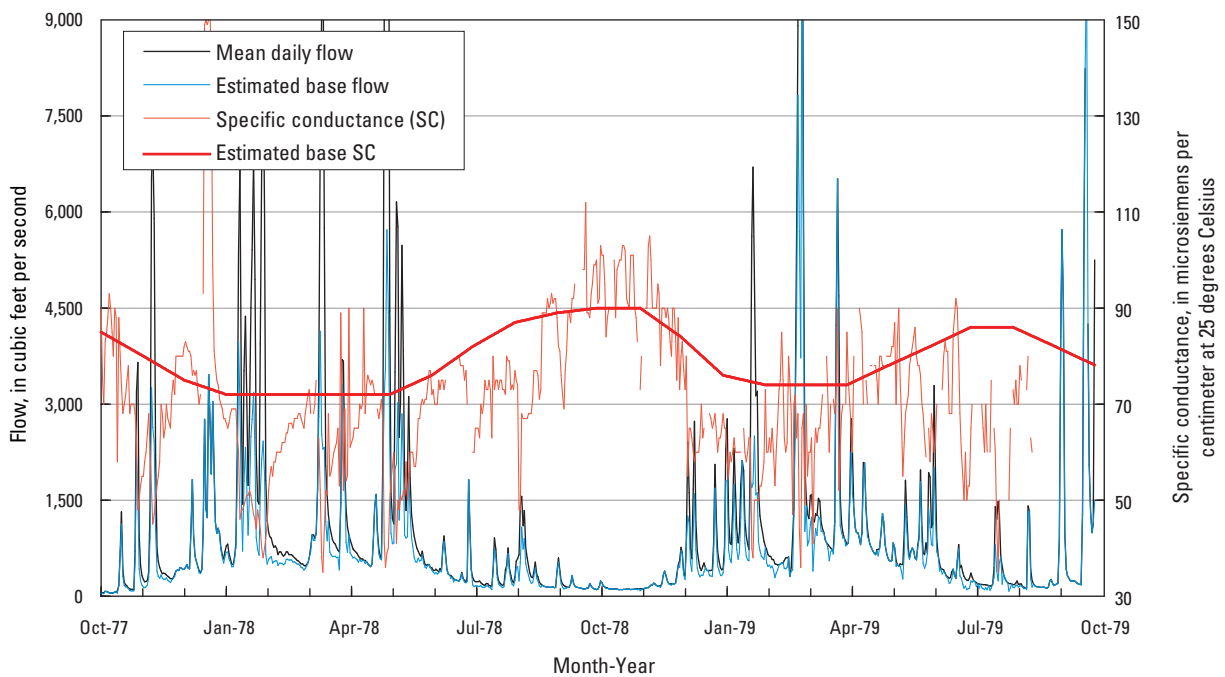
**Figure 1-71.** Flow and specific conductance record during 2006–2008 at the USGS gage 02044500 Nottoway River near Rawlings, Virginia.



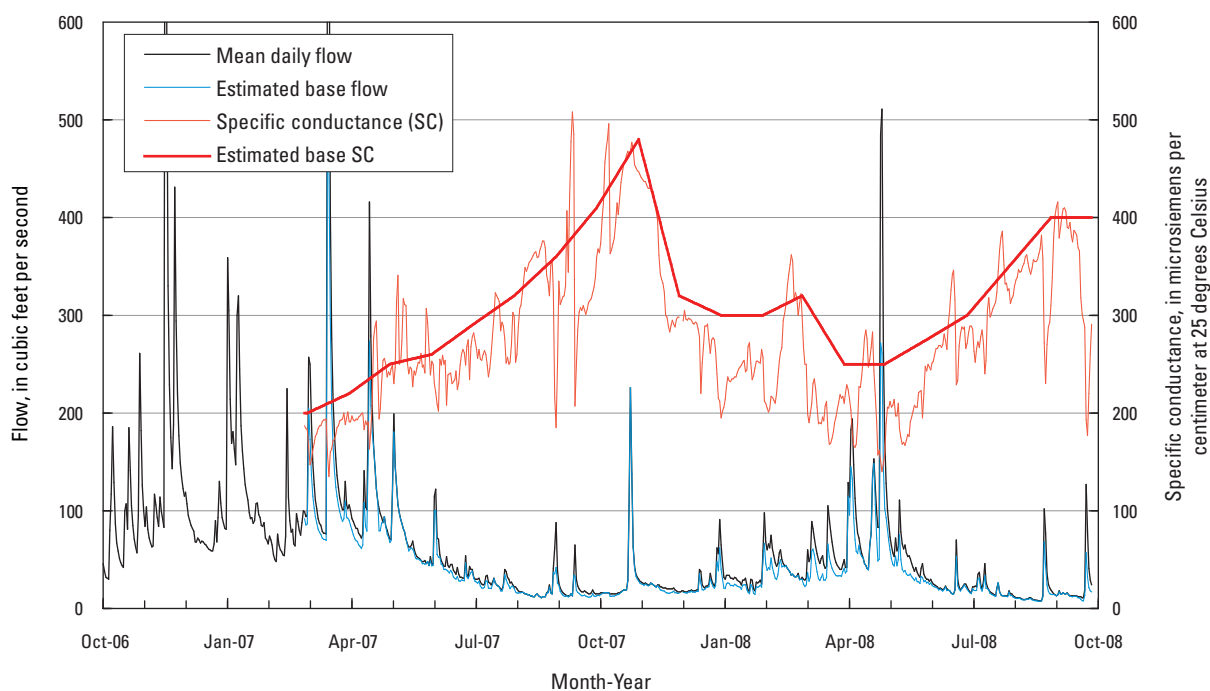
**Figure 1-72.** Flow and specific conductance record during 2006–2008 at the USGS gage 02047500 Blackwater River near Dendron, Virginia.



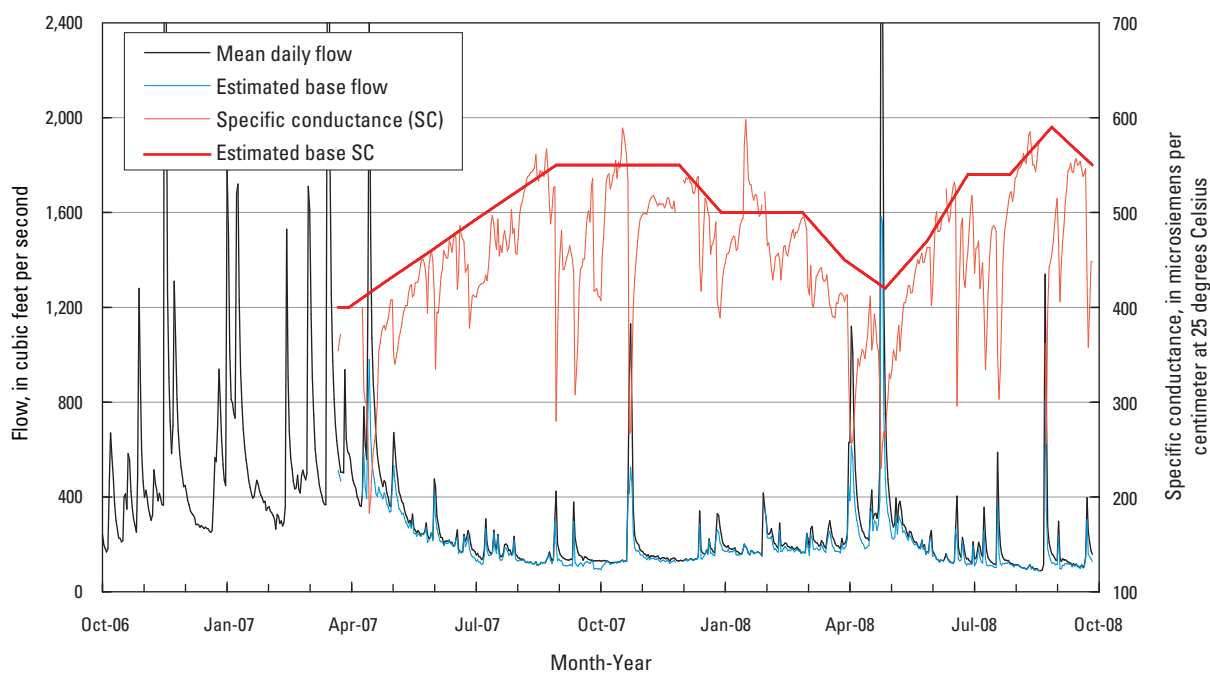
**Figure 1–73.** Flow and specific conductance record during 2006–2008 at the USGS gage 02051500 Meherrin River near Lawrenceville, Virginia.



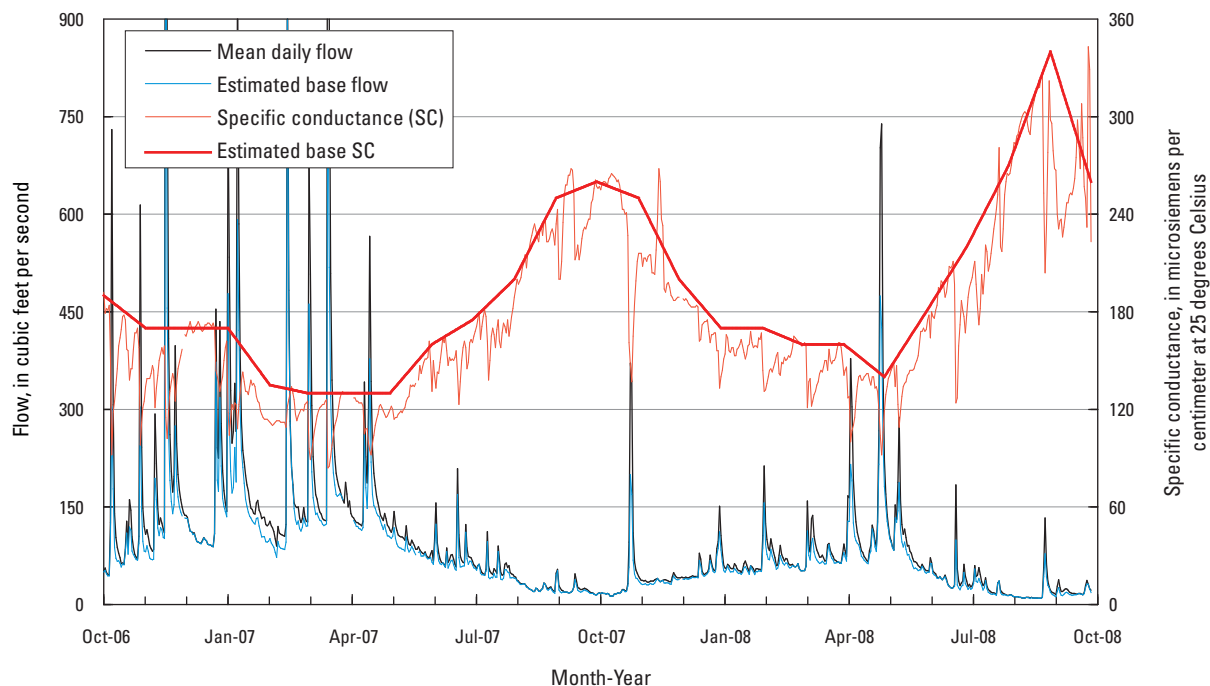
**Figure 1–74.** Flow and specific conductance record during 1977–1979 at the USGS gage 02052000 Meherrin River near Emporia, Virginia.



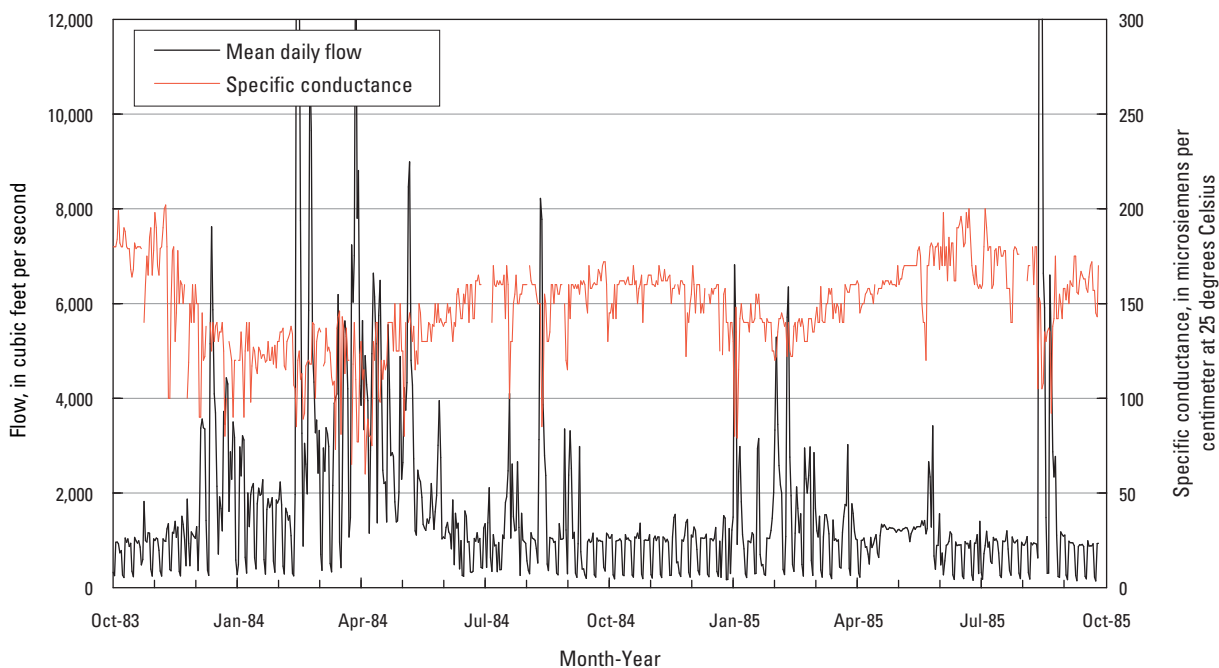
**Figure 1–75.** Flow and specific conductance record during 2006–2008 at the USGS gage 02053800 South Fork Roanoke River near Shawsville, Virginia.



**Figure 1–76.** Flow and specific conductance record during 2006–2008 at the USGS gage 02056000 Roanoke River at Niagara, Virginia.

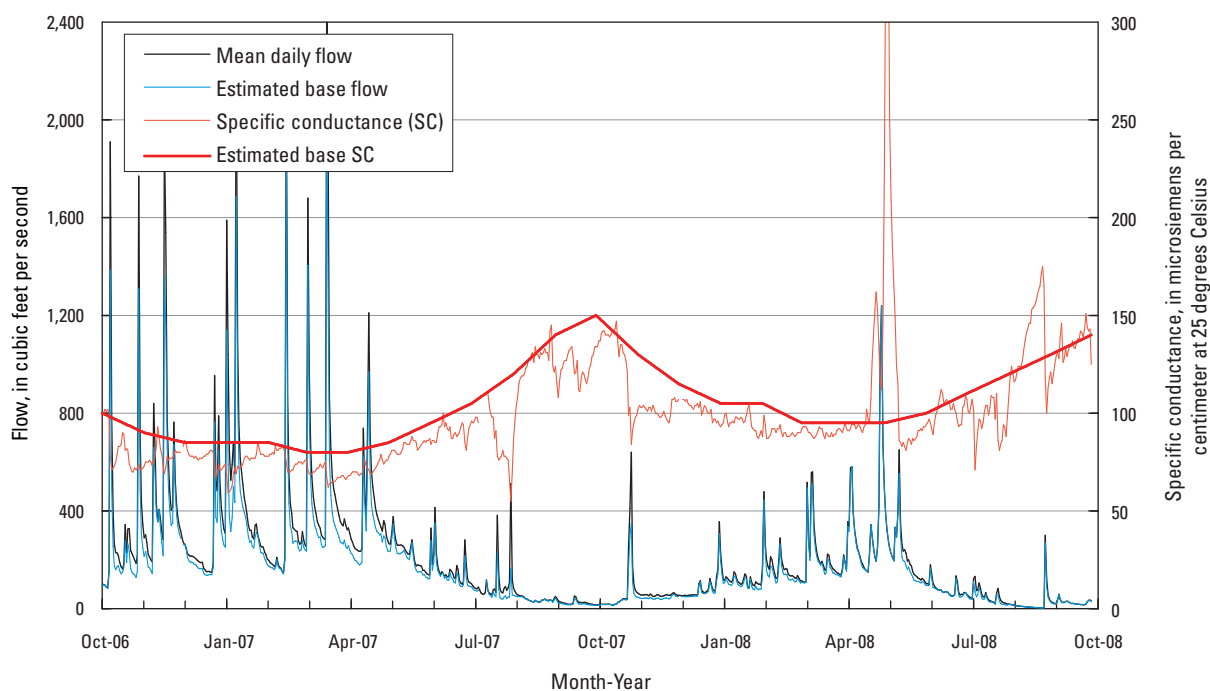


**Figure 1–77.** Flow and specific conductance record during 2006–2008 at the USGS gage 02059500 Goose Creek near Huddleston, Virginia.

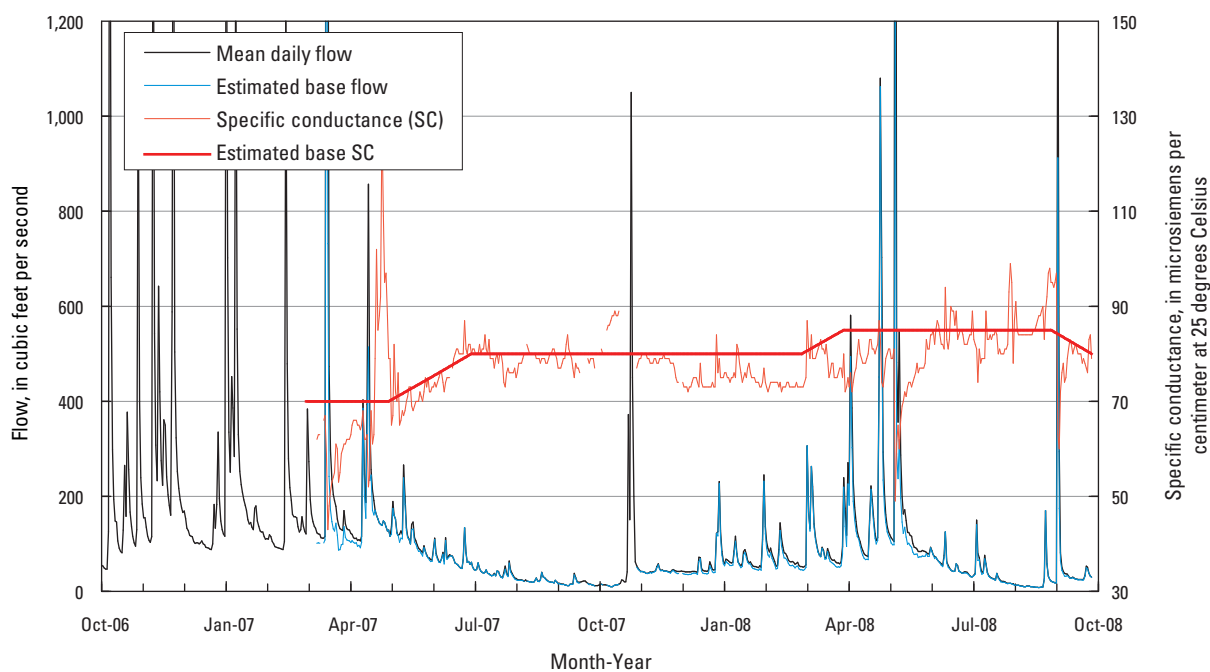


**Figure 1–78.** Flow and specific conductance record during 1983–1985 at the USGS gage 02060500 Roanoke River at Altavista, Virginia.

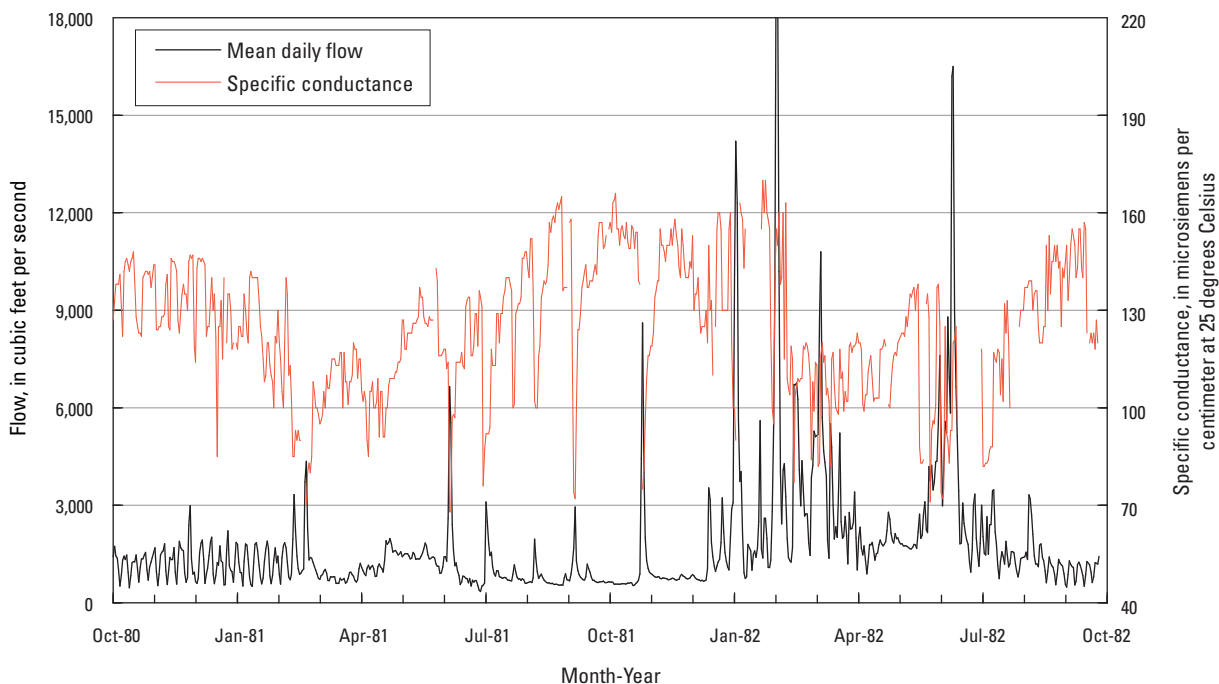




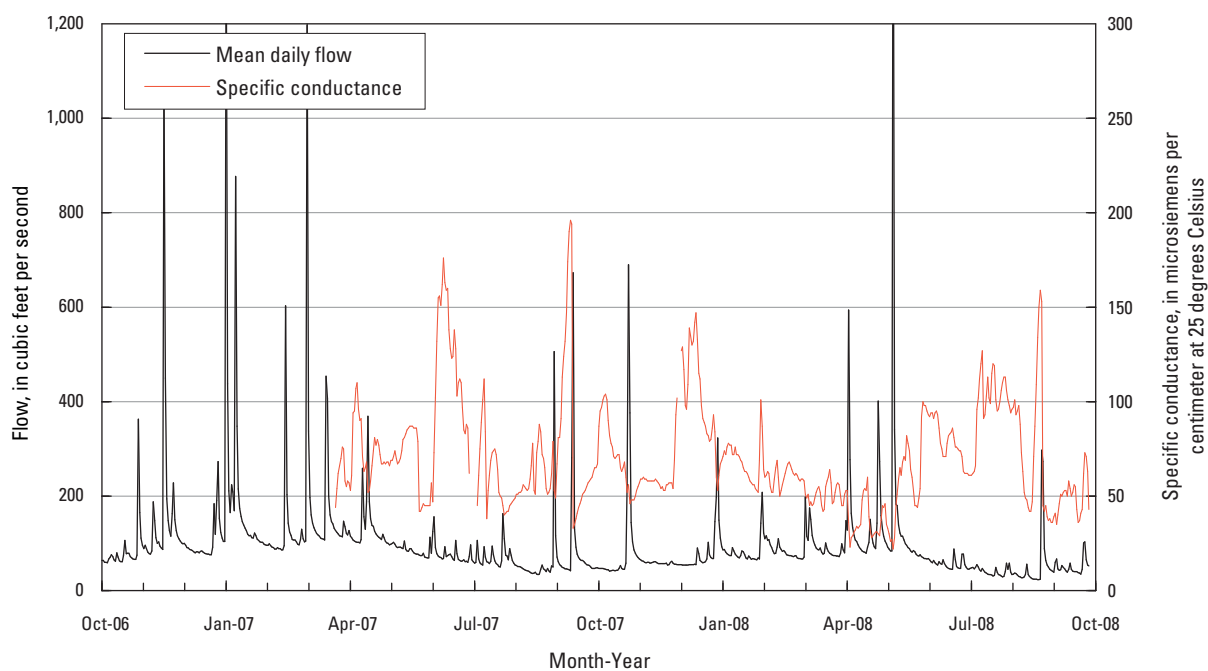
**Figure 1–79.** Flow and specific conductance record during 2006–2008 at the USGS gage 02061500 Big Otter River near Evington, Virginia.



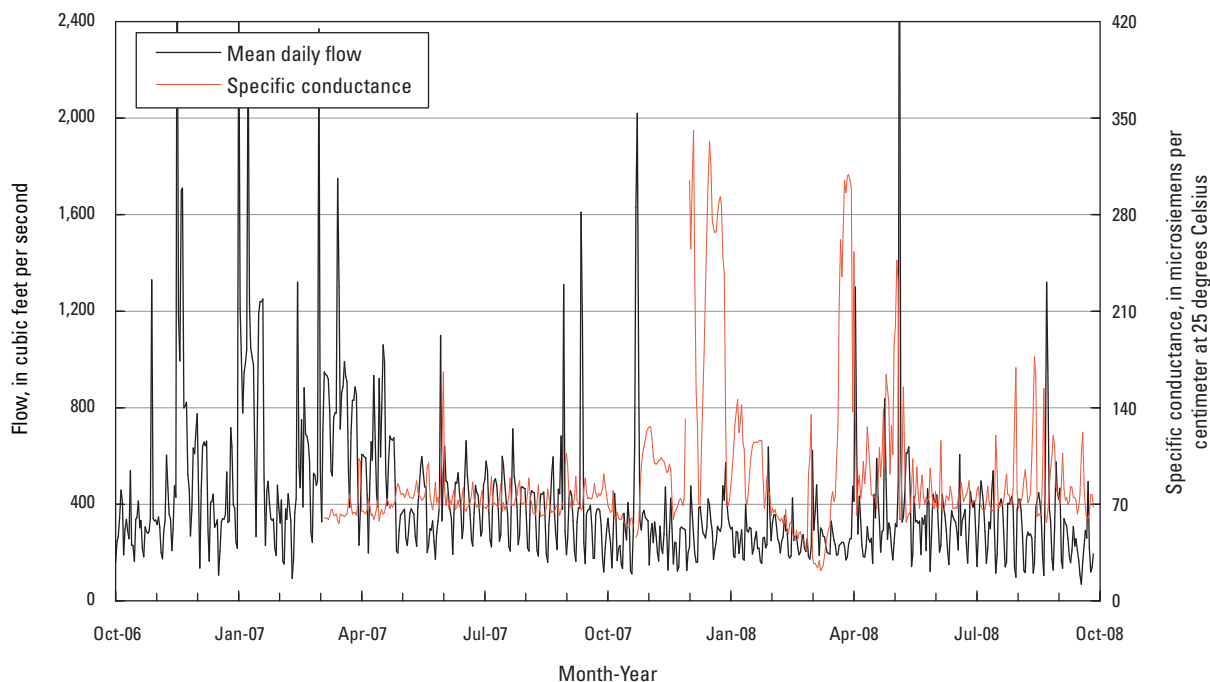
**Figure 1–80.** Flow and specific conductance record during 2006–2008 at the USGS gage 02064000 Falling River near Naruna, Virginia.



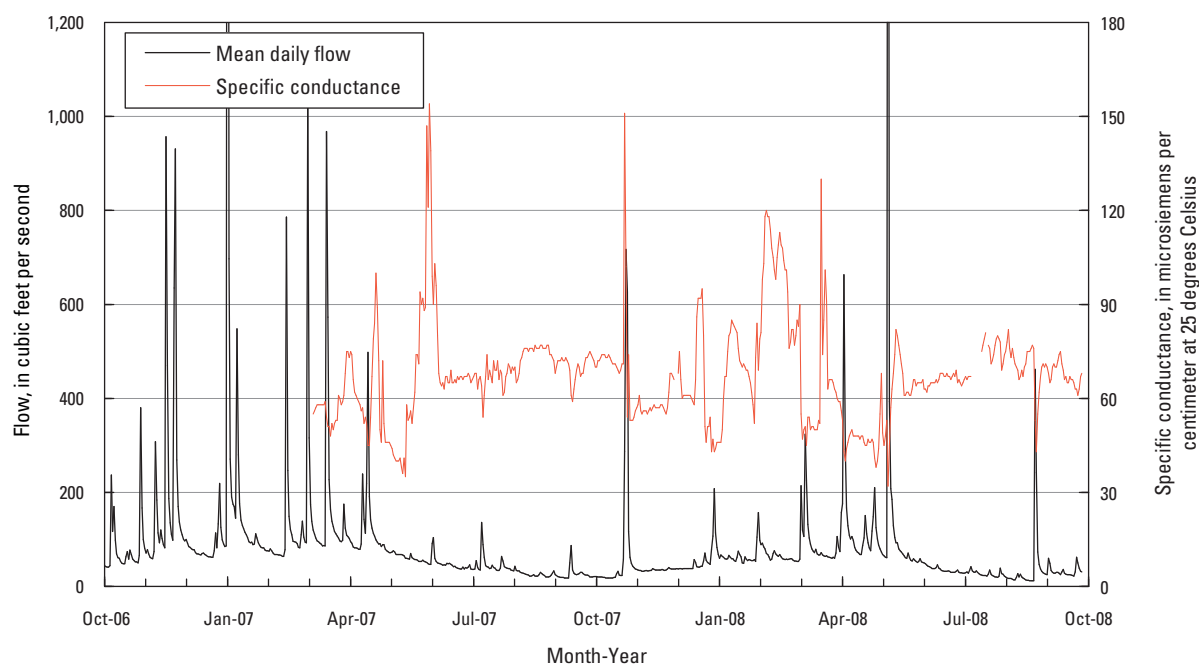
**Figure 1–81.** Flow and specific conductance record during 1980–1982 at the USGS gage 02066000 Roanoke (Staunton) River at Randolph, Virginia.



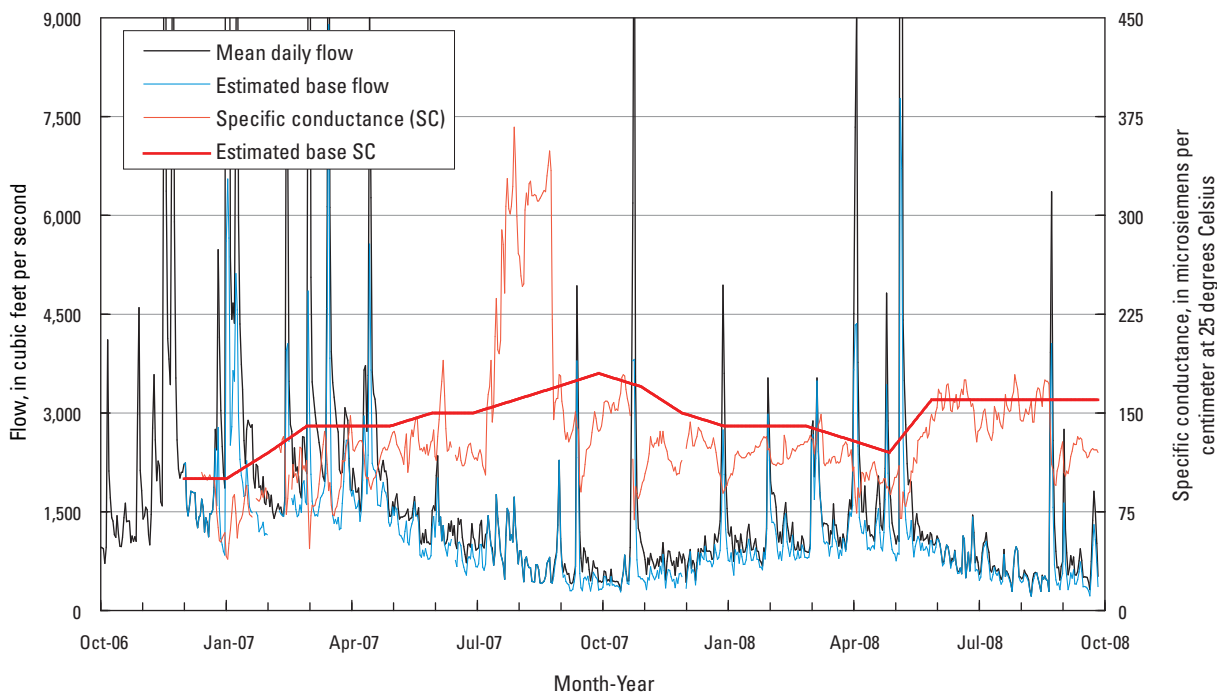
**Figure 1–82.** Flow and specific conductance record during 2006–2008 at the USGS gage 02070000 North Mayo River near Spencer, Virginia.



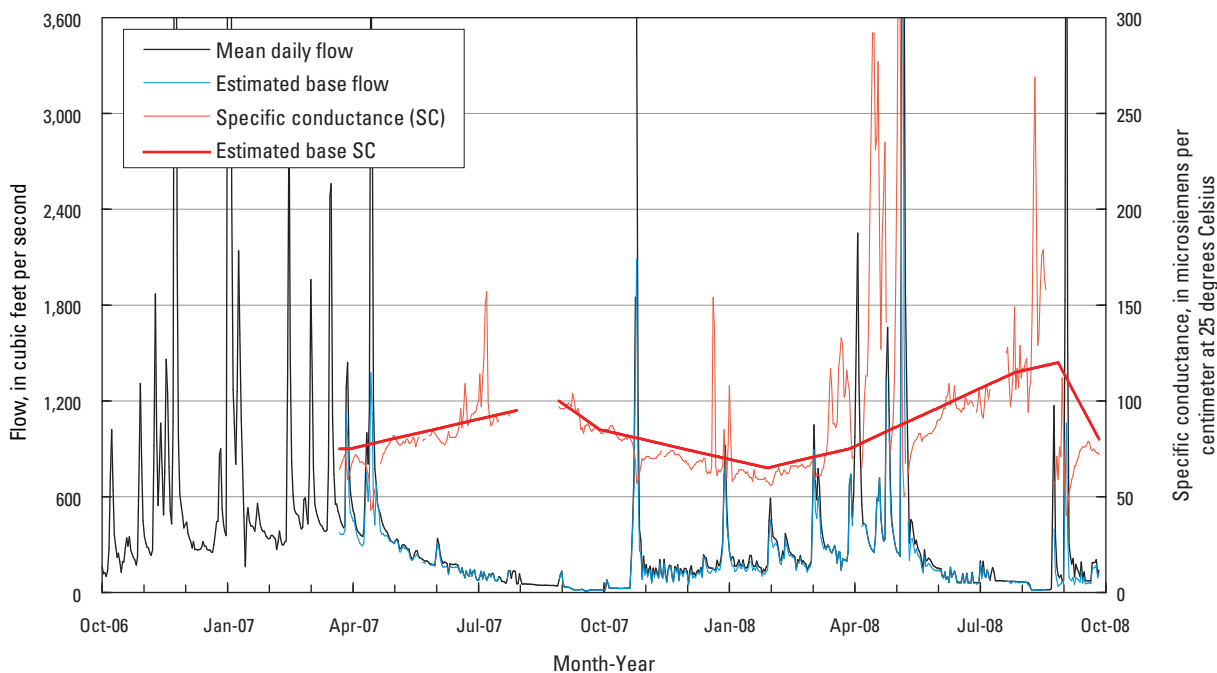
**Figure 1-83.** Flow and specific conductance record during 2006–2008 at the USGS gage 02073000 Smith River at Martinsville, Virginia.



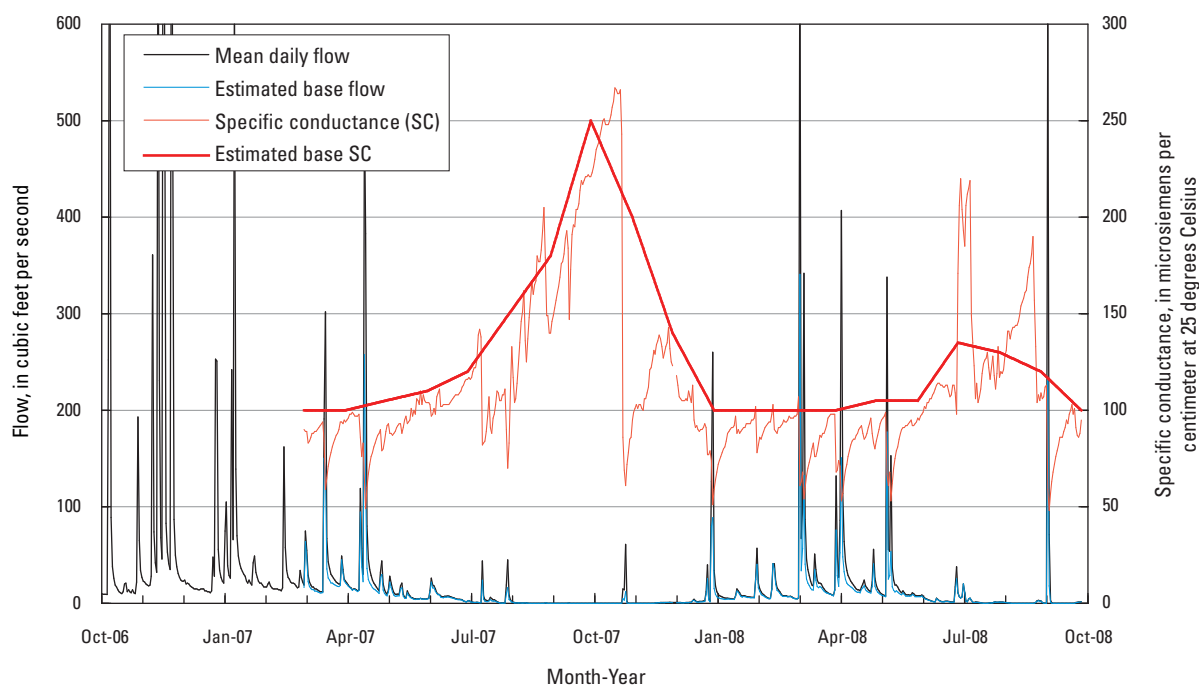
**Figure 1-84.** Flow and specific conductance record during 2006–2008 at the USGS gage 02074500 Sandy River near Danville, Virginia.



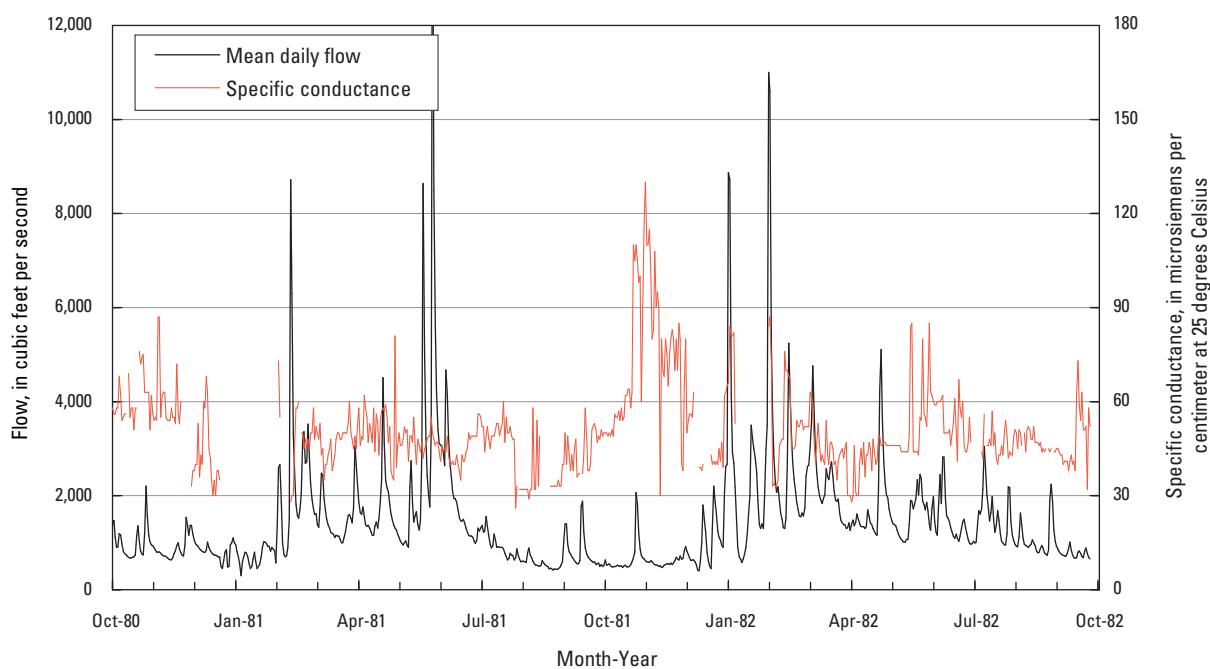
**Figure 1–85.** Flow and specific conductance record during 2006–2008 at the USGS gage 02075045 Dan River at STP near Danville, Virginia.



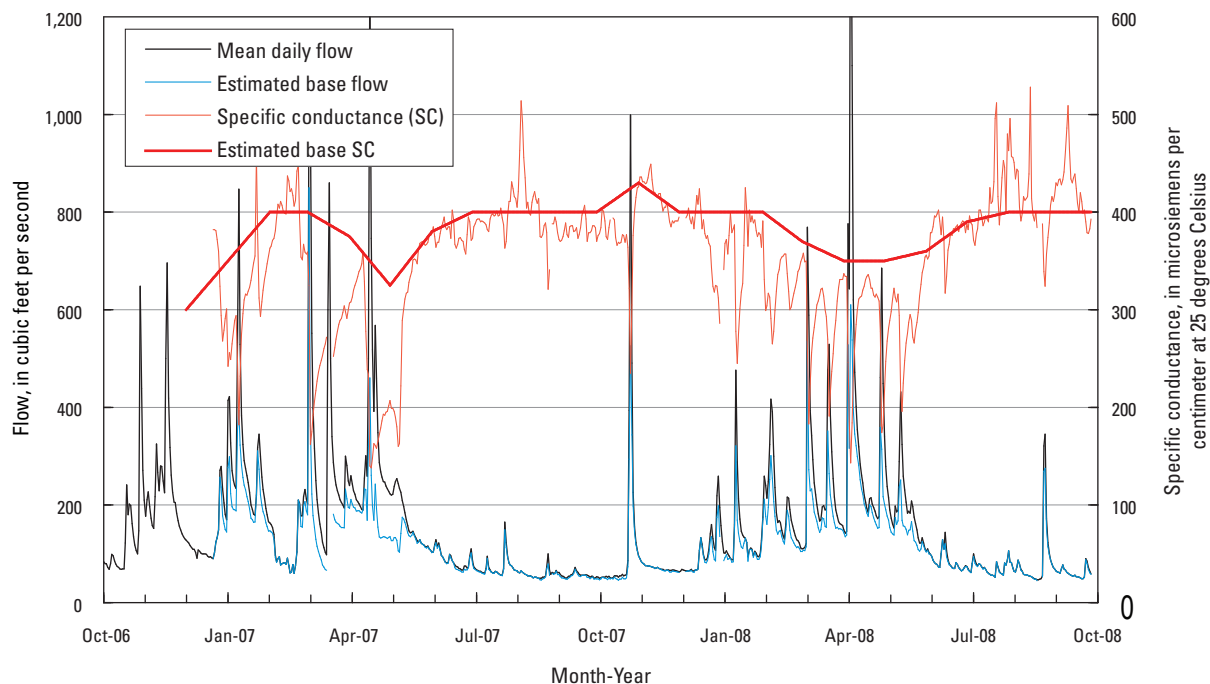
**Figure 1–86.** Flow and specific conductance record during 2006–2008 at the USGS gage 02077000 Banister River at Halifax, Virginia.



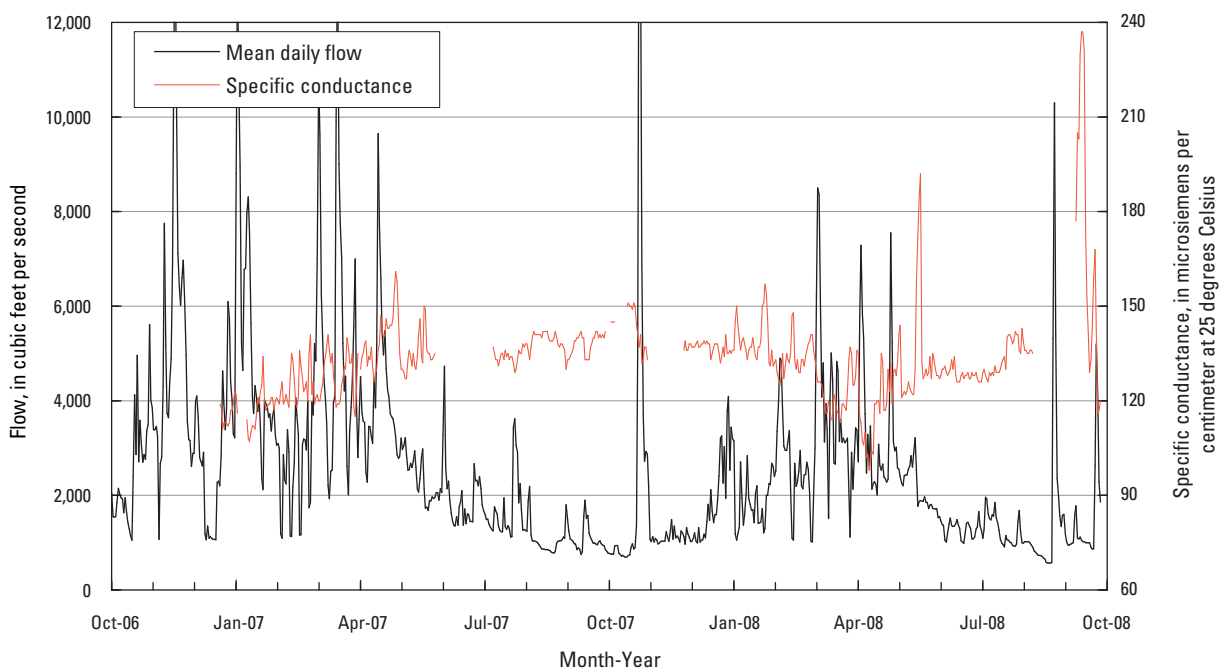
**Figure 1-87.** Flow and specific conductance record during 2006–2008 at the USGS gage 02079640 Allen Creek near Boydton, Virginia.



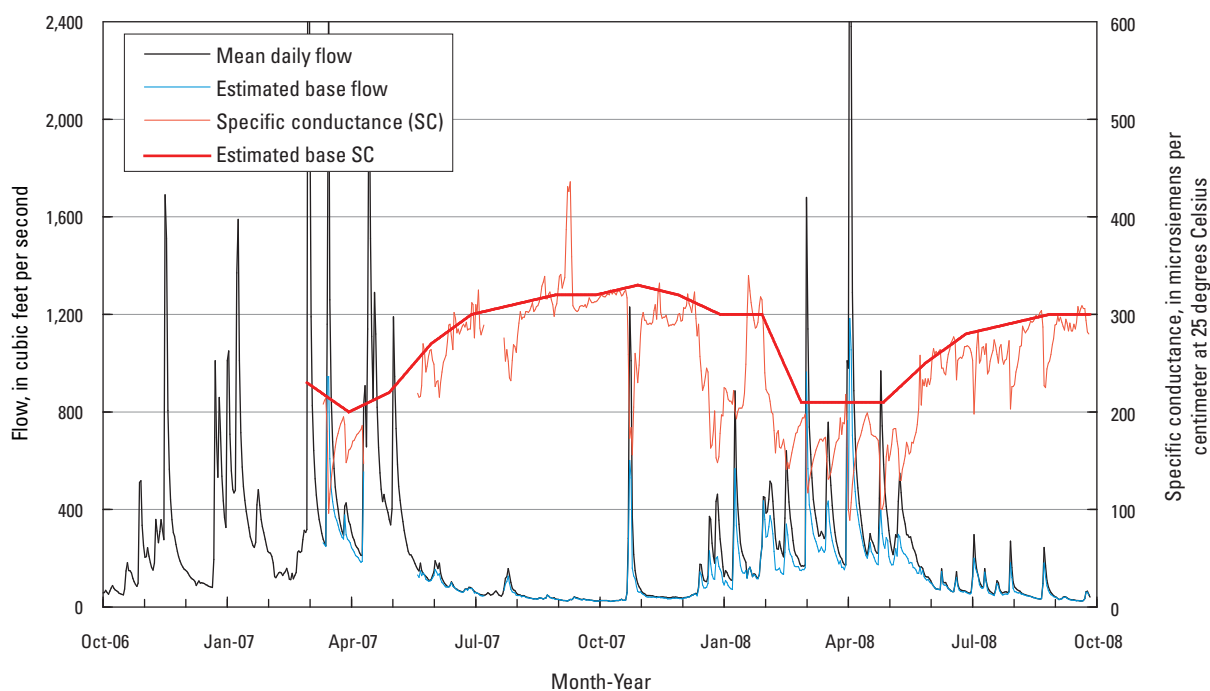
**Figure 1-88.** Flow and specific conductance record during 1980–1982 at the USGS gage 03164000 New River near Galax, Virginia.



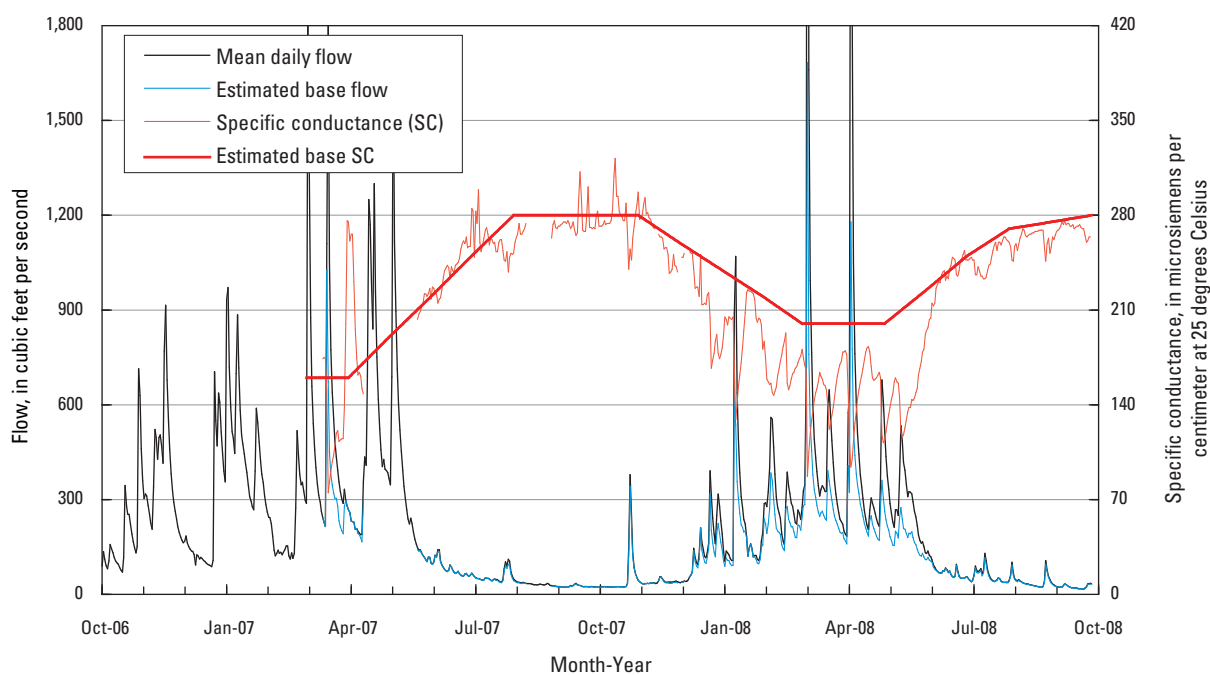
**Figure 1–89.** Flow and specific conductance record during 2006–2008 at the USGS gage 03167000 Reed Creek near Grahams Forge, Virginia.



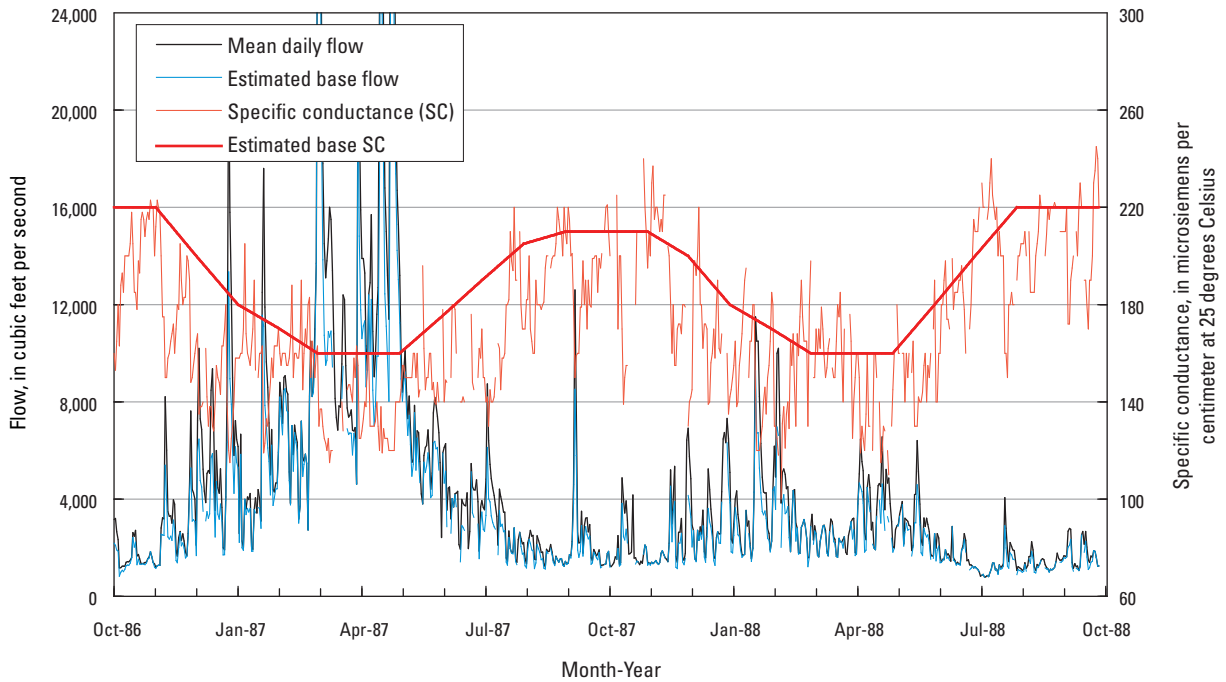
**Figure 1–90.** Flow and specific conductance record during 2006–2008 at the USGS gage 03171000 New River near Radford, Virginia.



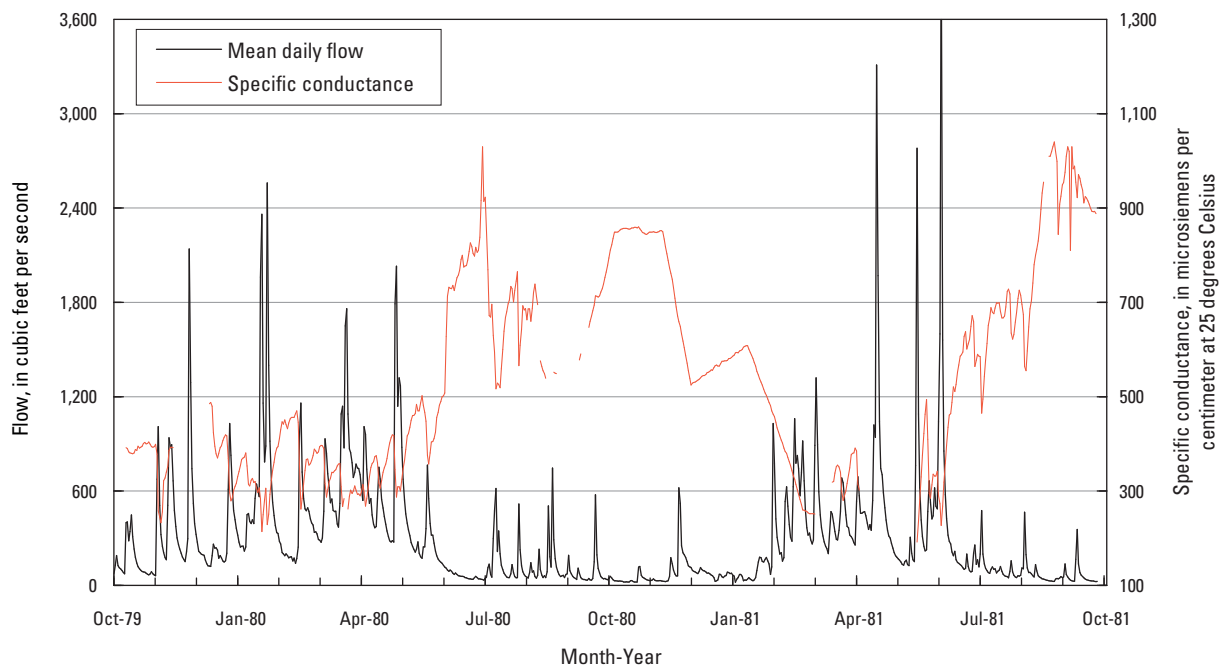
**Figure 1-91.** Flow and specific conductance record during 2006–2008 at the USGS gage 03173000 Walker Creek at Bane, Virginia.



**Figure 1-92.** Flow and specific conductance record during 2006–2008 at the USGS gage 03175500 Wolf Creek near Narrows, Virginia.

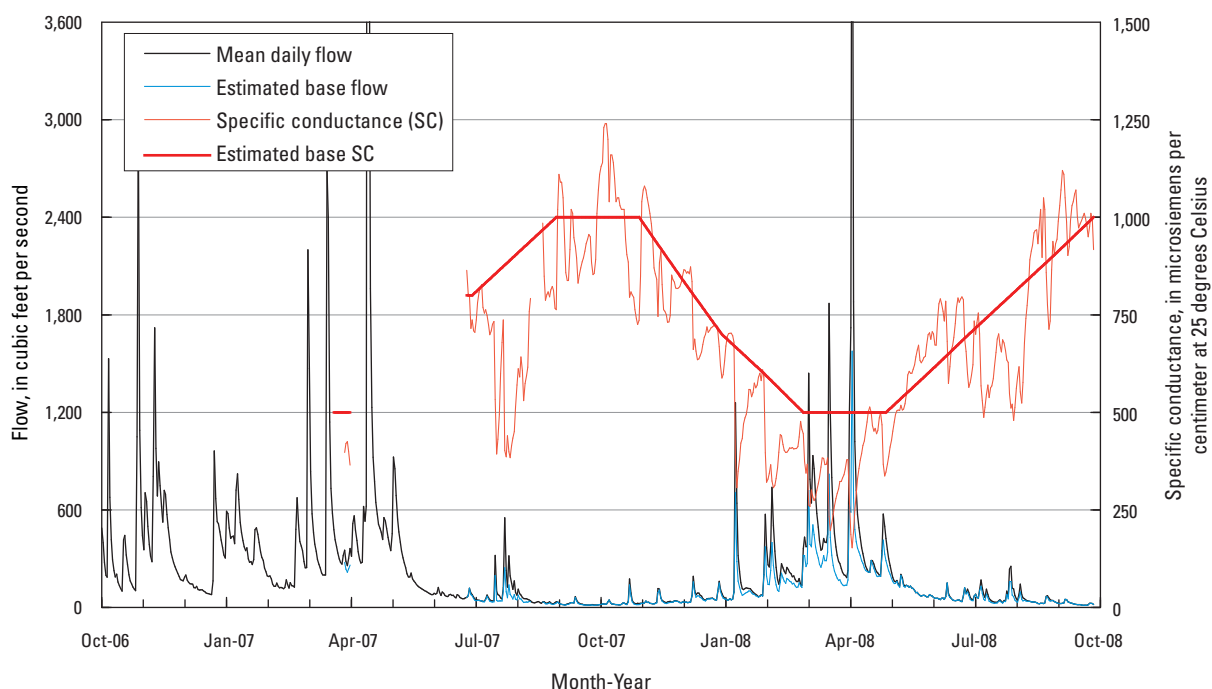


**Figure 1–93.** Flow and specific conductance record during 1986–1988 at the USGS gage 03176500 New River at Glen Lyn, Virginia.

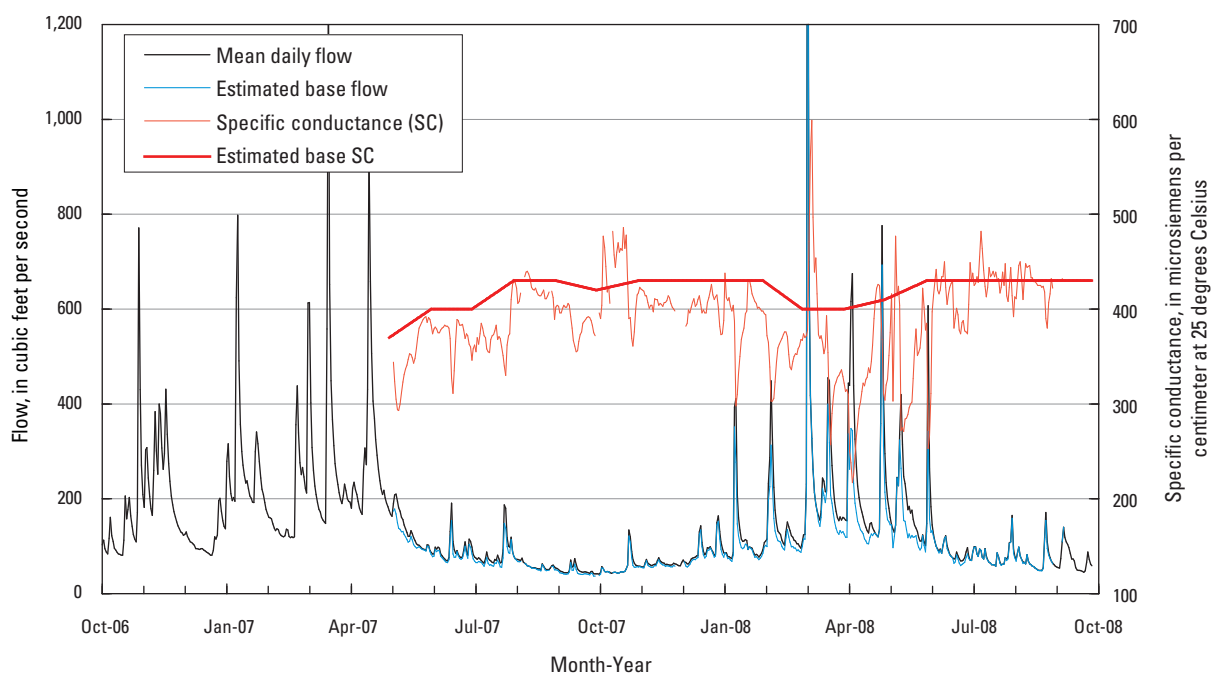


**Figure 1–94.** Flow and specific conductance record during 1979–1981 at the USGS gage 03207800 Levisa Fork at Big Rock, Virginia.

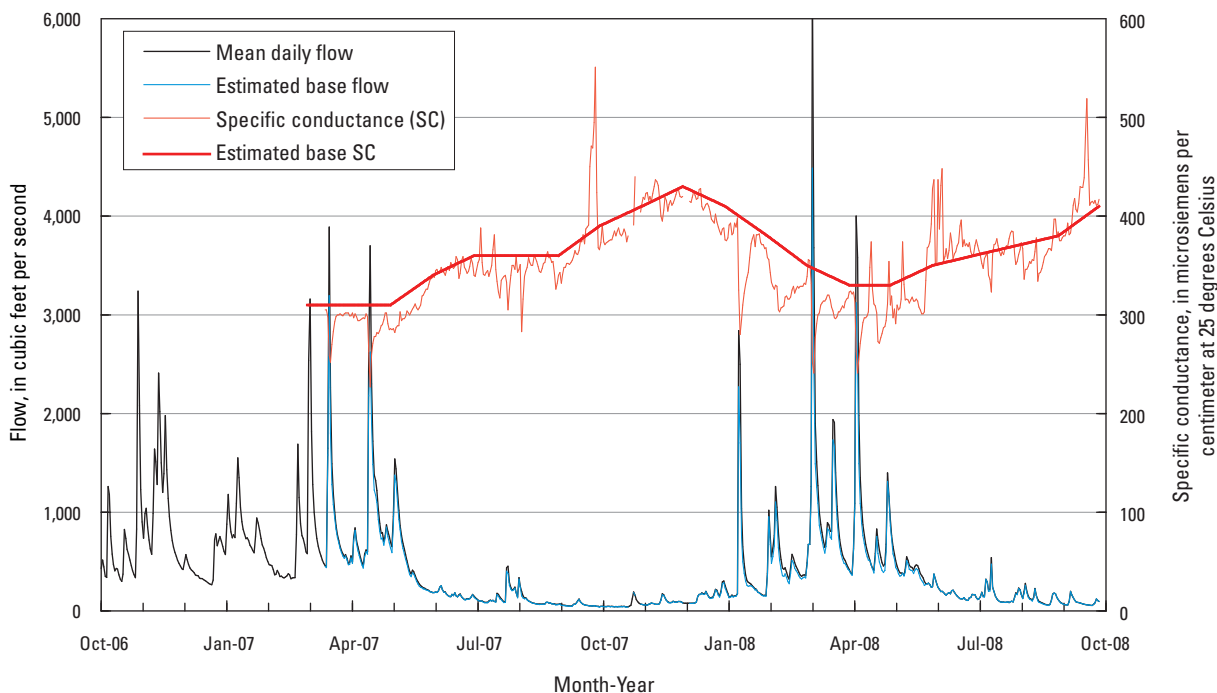




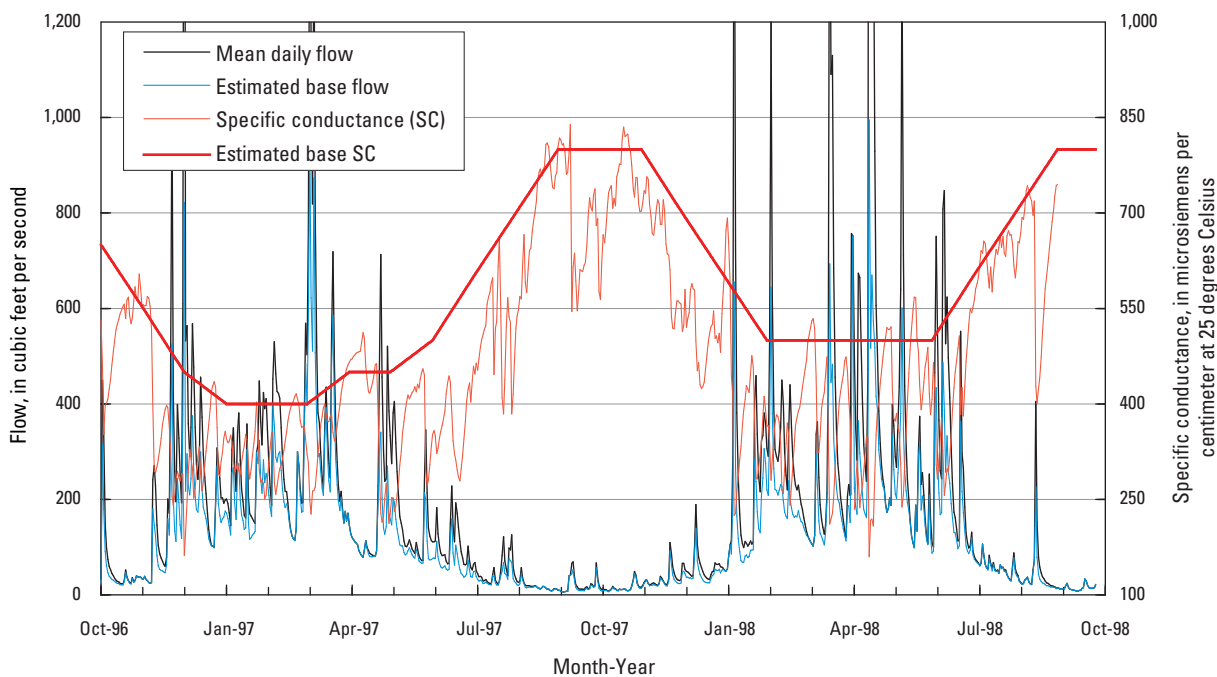
**Figure 1-95.** Flow and specific conductance record during 2006–2008 at the USGS gage 03208500 Russell Fork at Haysi, Virginia.



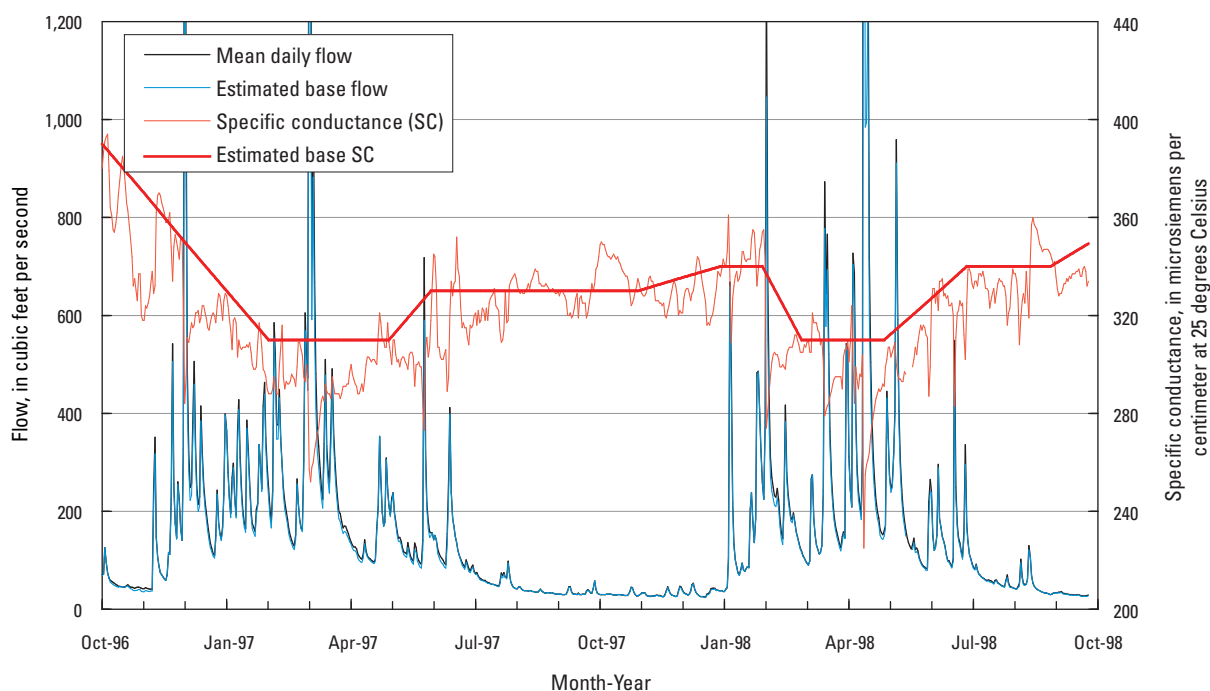
**Figure 1-96.** Flow and specific conductance record during 1996–1998 at the USGS gage 03475000 Middle Fork Holston River near Meadowview, Virginia.



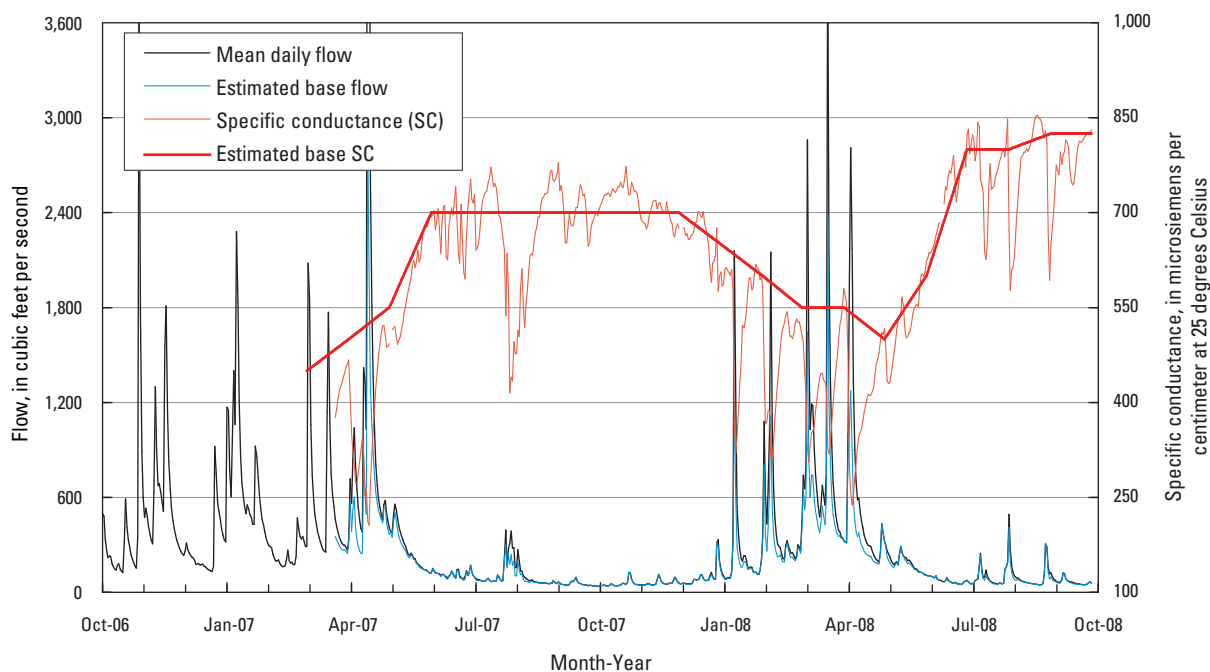
**Figure 1–97.** Flow and specific conductance record during 2006–2008 at the USGS gage 03524000 Clinch River at Cleveland, Virginia.



**Figure 1–98.** Flow and specific conductance record during 1996–1998 at the USGS gage 03524550 Guest River near Miller Yard, Virginia.



**Figure 1–99.** Flow and specific conductance record during 1996–1998 at the USGS gage 03526000 Copper Creek near Gate City, Virginia.



**Figure 1–100.** Flow and specific conductance record during 1996–1998 at the USGS gage 03531500 Powell River near Jonesville, Virginia.

