

For the purposes of this analysis, NMFS assumes that climate change could account for a 1-3°F increase in water temperatures within the time frame of the proposed action (see Appendix R of the CVP/SWP operations BA). If this level of warming occurs, mean water temperatures in the lower American River could range from about 51 °F to 61 °F in March, about 53 °F to 64 °F in April, and about 58 °F to 68 °F in May (figure 6-30). Under these conditions, higher egg mortality and increased fitness consequences would occur for steelhead eggs and alevins that were spawned later in the spawning season (*e.g.*, spawned in March rather than January). This selective pressure towards earlier spawning and incubation would truncate the temporal distribution of spawning, resulting in a decrease in population diversity, and consequently a likely decrease in abundance. [Revised 4/5/2019]

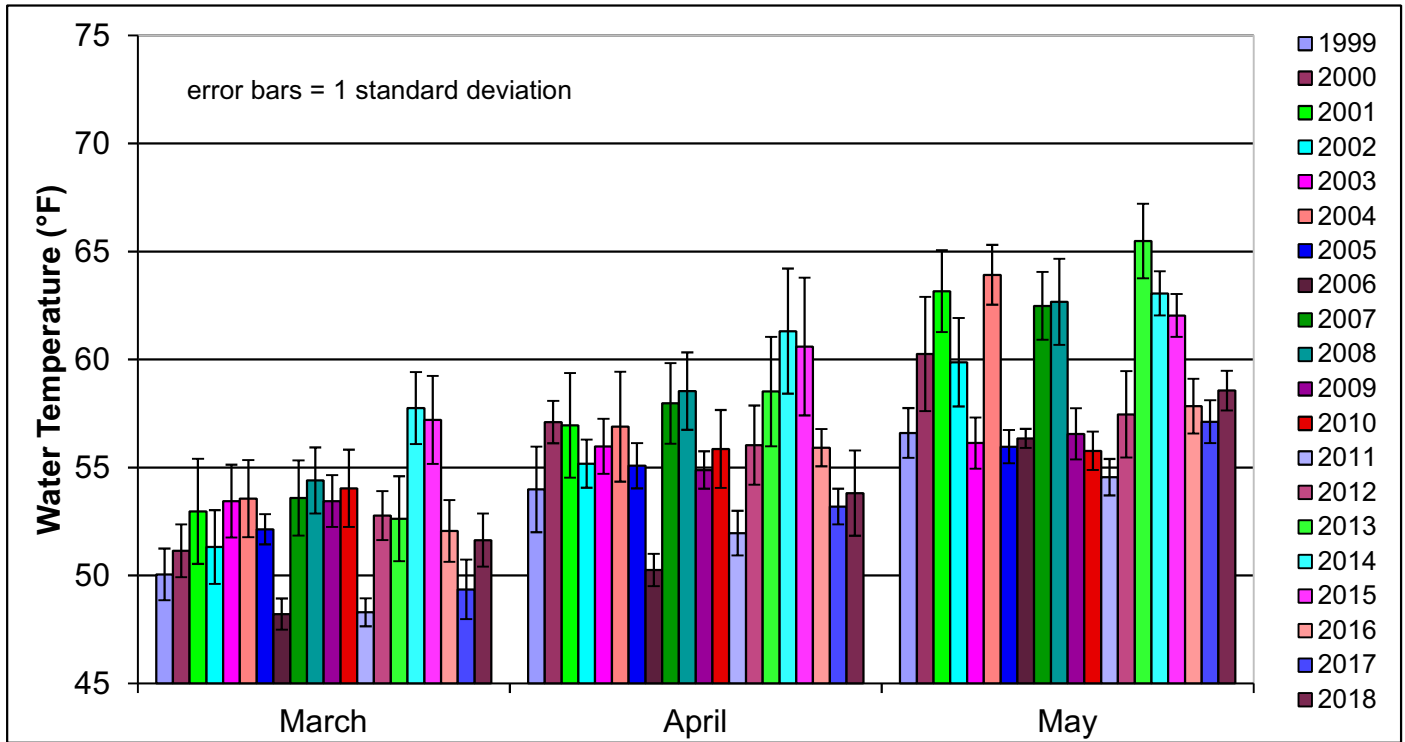


Figure 6-26. Lower American River water temperature during March, April, and May from 1999 through 2018 represented as the mean of the daily average at the Watt Avenue gage. (Original data were obtained from <http://cdec.water.ca.gov/>) [Revised 4/5/2019]

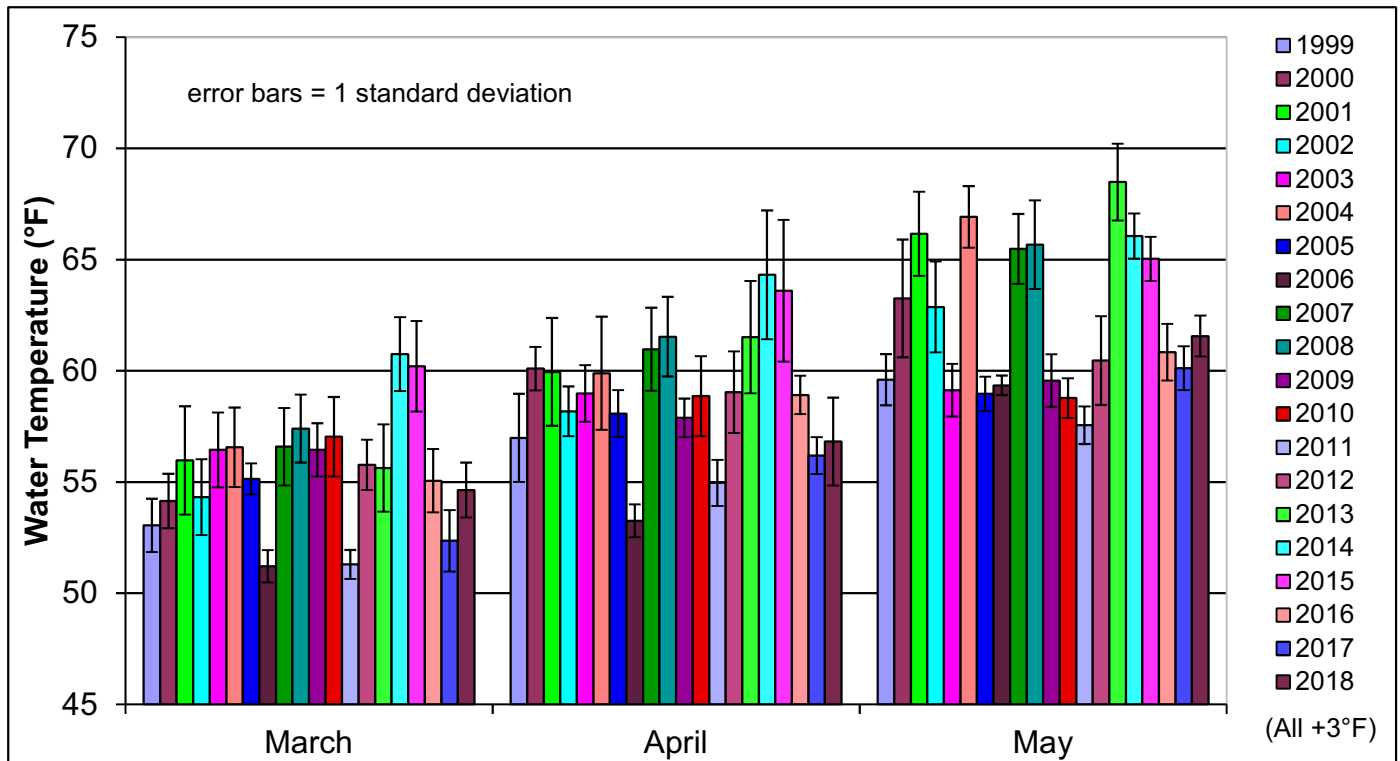
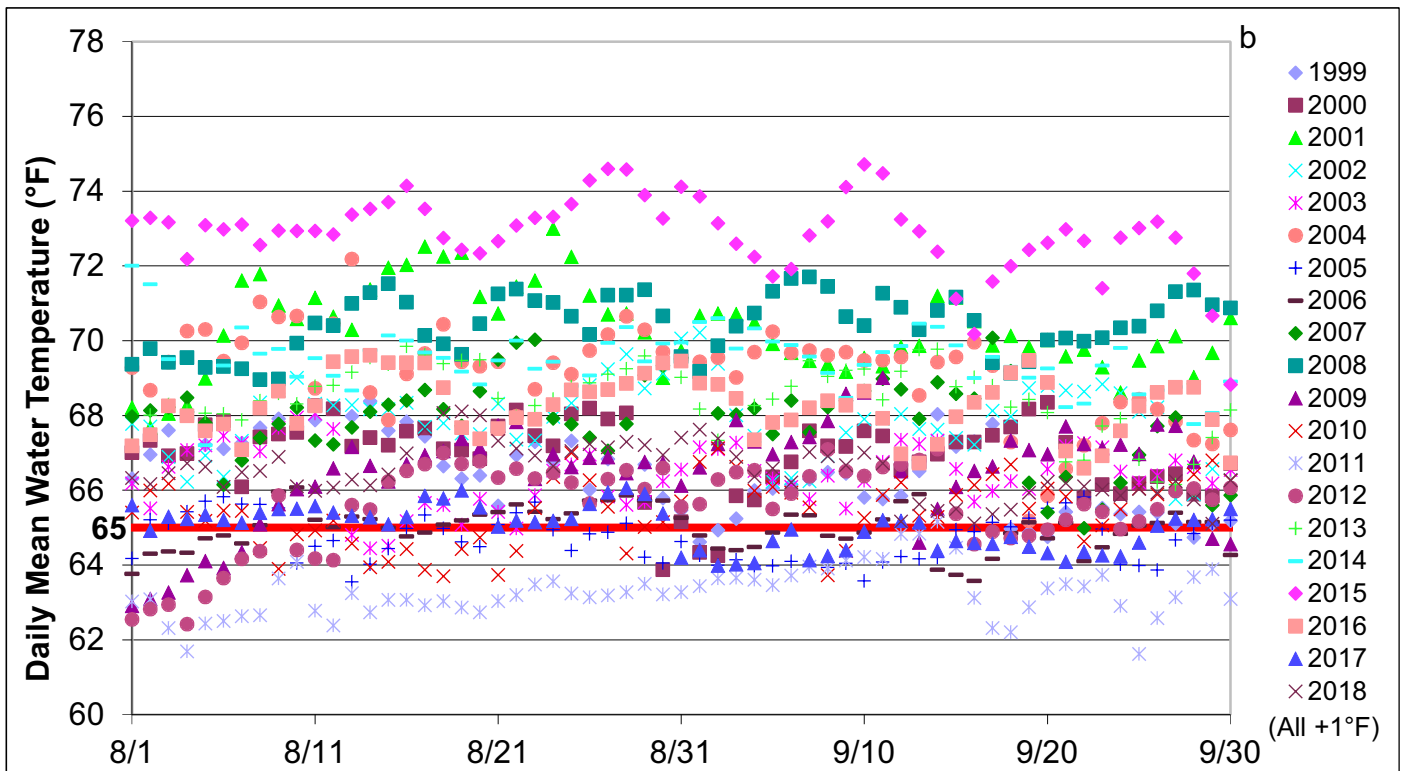
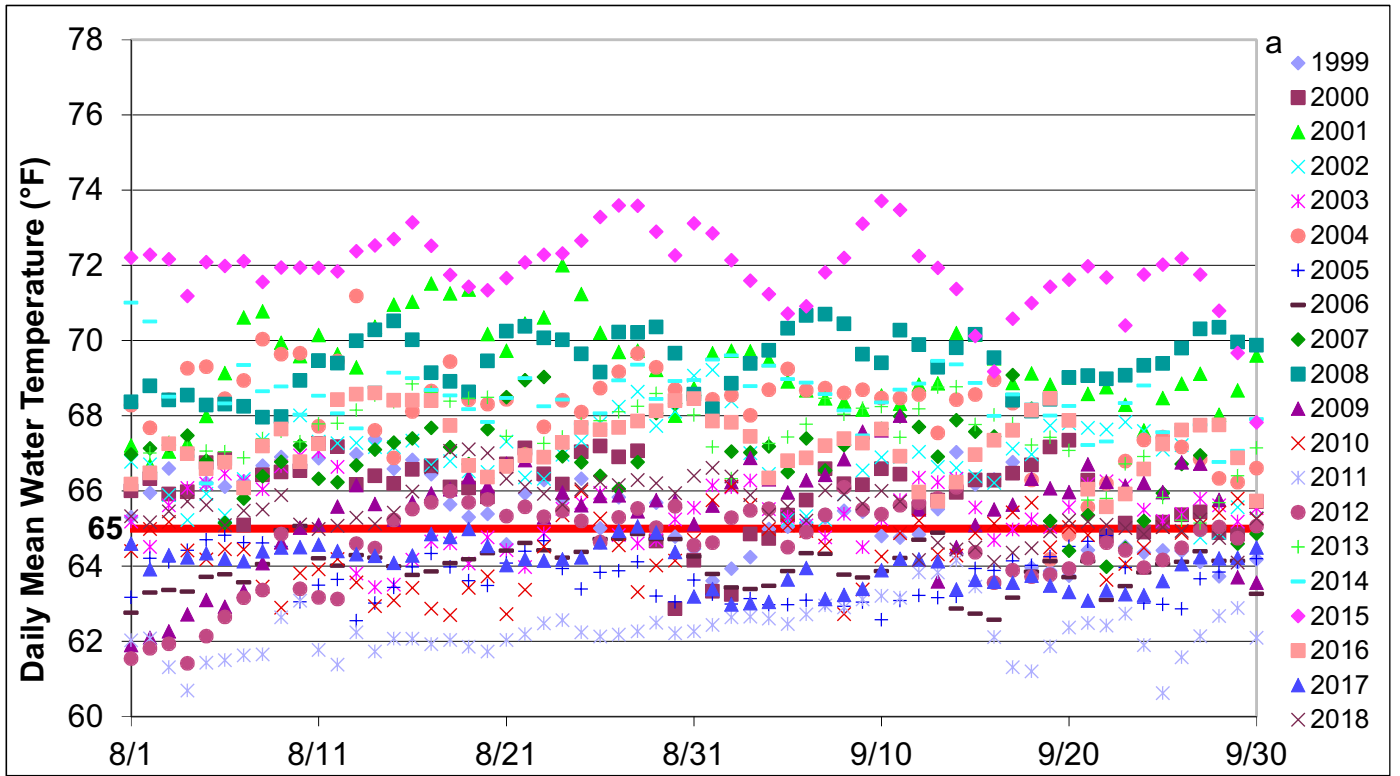


Figure 6-30. Lower American River water temperature during steelhead from 1999 through 2018 represented as the mean of the daily average at the Watt Avenue gage plus 3°F to incorporate potential climate change effects (see Key Assumptions in section 2). All years have three degrees added to the mean daily water temperature. It is denoted to show the intended application of this figure as an analysis of climate change effects. (Original data were obtained from <http://cdec.water.ca.gov/>) [Revised 4/5/2019]



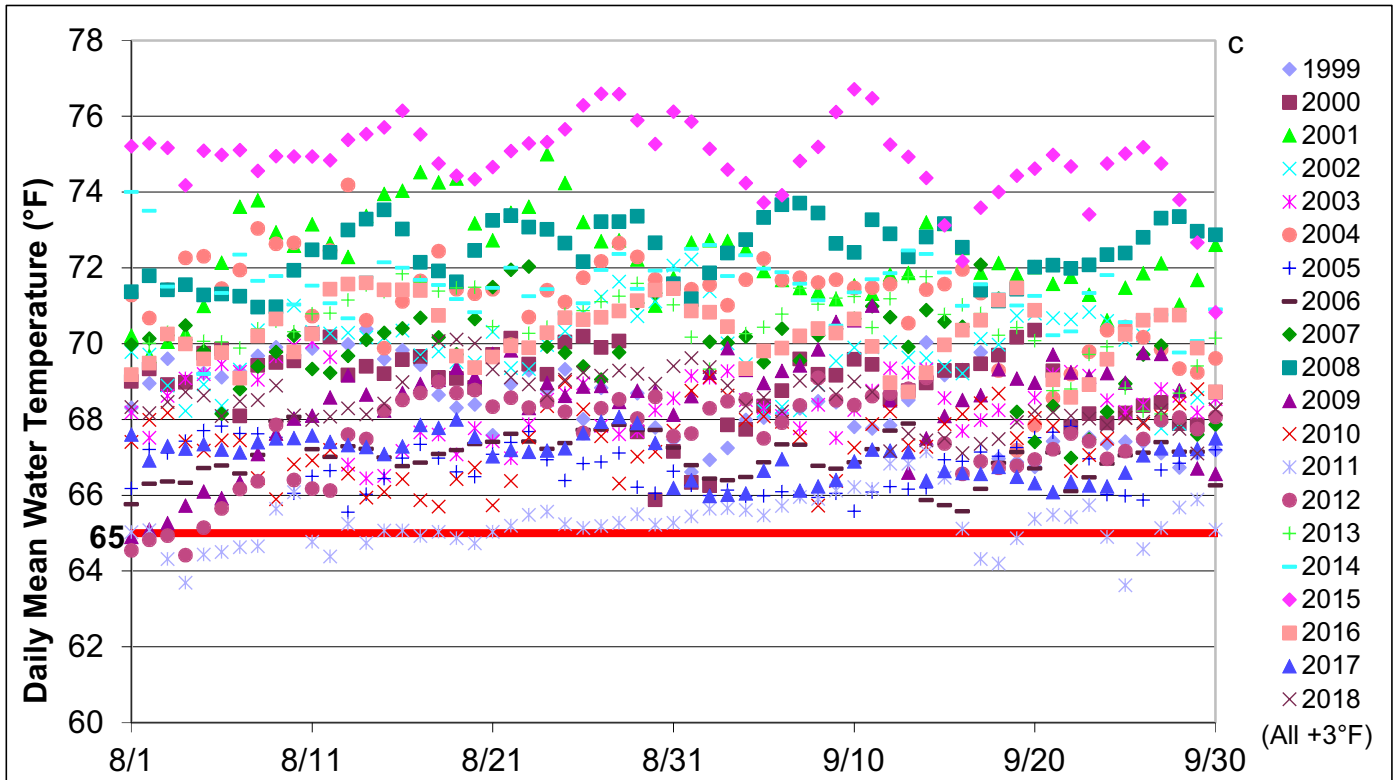


Figure 6-32 a, b, and c. Lower American River water temperature during August and September from 1999 through 2018 represented as the daily mean at the Watt Avenue gage (a). Figures b and c show these same water temperatures plus 1°F and 3°F, respectively, to incorporate potential climate change effects (see Key Assumptions in Chapter 2). The 65°F line is indicated in red because visible symptoms of thermal stress in juvenile steelhead are associated with exposure to daily mean water temperatures above 65°F. (Original data were obtained from <http://cdec.water.ca.gov/>) [Revised 4/5/2019]