

About the Composite Hydrograph

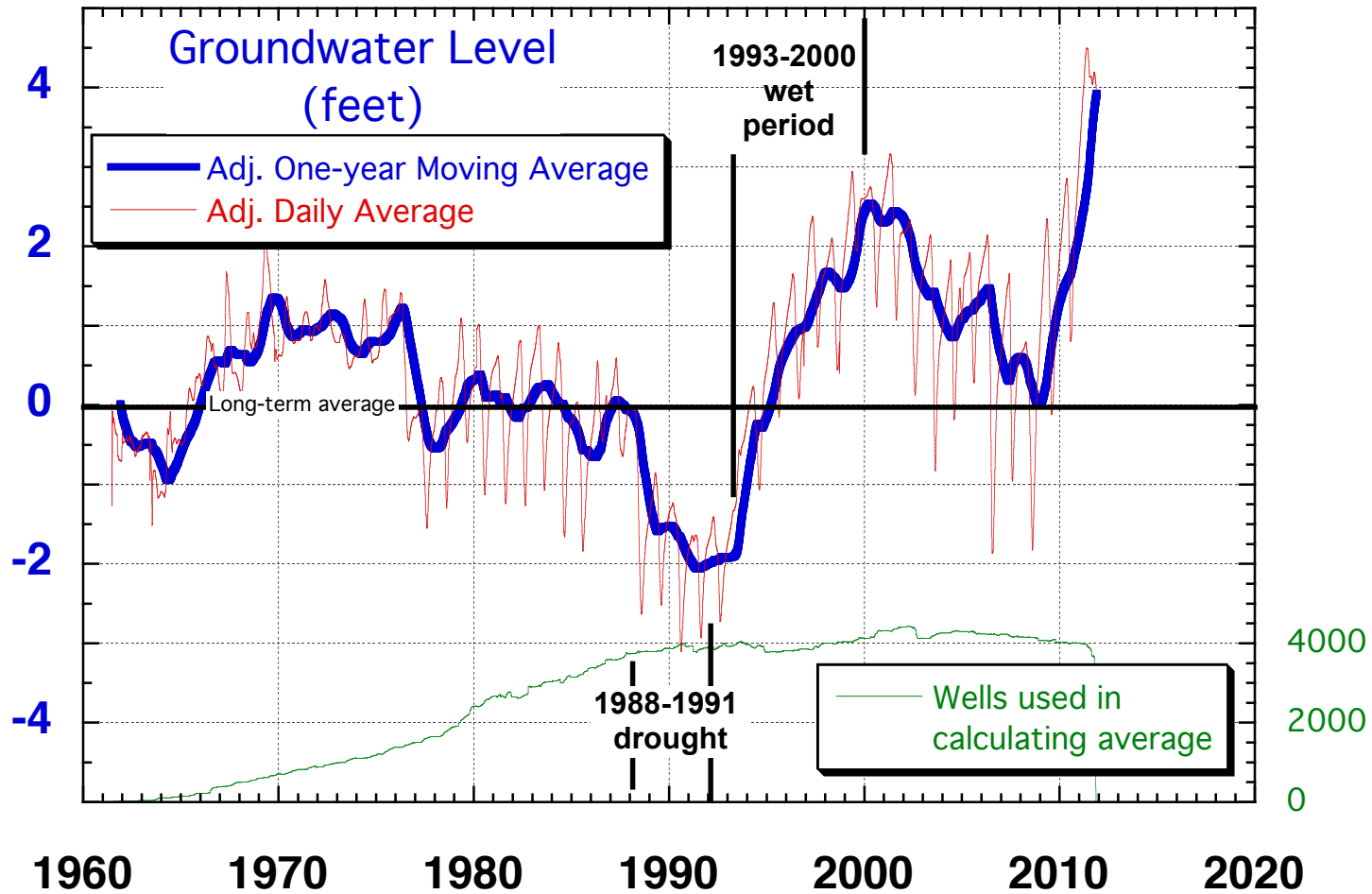
The Water Appropriation Division of the SWC monitors a network of over 4,000 sites (observation wells, stream gages, and surface water sampling locations) to keep tabs on the water resource conditions throughout the state. This composite hydrograph amalgamates every water level measurement stored in the SWC database to build this single hydrograph of ground-water level changes of the state as a whole.

The subroutines used to create this hydrograph are designed to build a daily change array, so the frequency or duration of monitoring does not unfairly weight any specific well, no matter how long it was monitored, how often it was monitored, or the period of time it was monitored.

The ground-water trends follow climatic cycles. Of particular note are the "wetter" periods in the mid to late 1960s and from 1993 to 2000, as well as the "drier" period in 1988 to 1991. The recent downward trend since 2000 represents a return to more normal precipitation amounts statewide; however, 2009 thru 2011 were wetter than normal, and resulted in an average increase of over four feet in ground-water levels.

The daily average water level at the end of 2011, nearly two feet higher than the 2010 peak in 2011, was the highest on record since widespread monitoring began in the 1960s.

Composite Hydrograph of Observation Wells State of North Dakota



Source: Jon Patch, Hydrologist, NDSWC