

# Water Supply Availability Committee

August 10, 2018

## **Introduction**

**Jeff Marti | Department of Ecology**

Washington's drought emergency declaration trigger is two-pronged: less than 75 percent less than normal water supply AND hardship. The purpose of WSAC is to look at the physical conditions across the state. The Executive Water Emergency Committee can analyze hardship and recommend an emergency drought declaration.

## **Regional Climate Perspective**

**Nick Bond and Karin Bumbaco | Office of Washington State Climatologist**

For the 2018 water year so far, temperatures are near-normal to above normal. Averaged statewide, October through July, it's been 0.8 degrees F above the 1981-2010 normal. For Oct-July precipitation, it's been a mixed bag for the state with a tendency for above-normal precipitation— we were 2.59 inches above the 1981-2010 normal when averaged statewide.

More recently, from May to July, temperatures were much above normal statewide. Averaged statewide, it was the fourth warmest May to July period on record (going back to 1895). 2015, our most recent drought emergency year, was the warmest on record. This year is 2.8 degrees F above normal (2015 was 5.1 degrees F above normal).

From May to July, precipitation was below normal. Averaged statewide, it's the sixth driest May to July period. We're 2.88 inches below the 1981-2010 normal (2015 was 3.14 inches below normal and ranked 4<sup>th</sup> driest).

At SNOTEL measurement stations, precipitation for May to July compared to average was normal or below normal, particularly in the southern Cascade Mountains.

Historically speaking, May-July this year is warm and dry. 2015 stands out, but 1958 had really warm ocean temperatures off the coast, making it the second-warmest May to July.

The U.S. Drought Monitor shows severe drought conditions in southwestern Washington based mainly on lack of rain, low soil moisture, and low streamflows.

The sea surface anomalies map shows our coastal waters have experienced close to normal temperatures due to northern winds. In California, however, they are seeing record-breaking ocean temperatures. Most of the north Pacific Ocean is warmer than normal.

The official forecast from the Climate Prediction Center is a 70 percent chance of an El Nino autumn and winter, likely a weak to moderate El Nino. There is a 1/3 chance of a neutral category.

Climate models looking at the rest of August show mostly warmer weather for Washington with a poor prospect for rain west of the Cascades. The 500 hPa maps show the middle troposphere and suggest warmer and drier weather than usual. The May 1 prediction for this map was spot on for Portland and was pretty accurate this summer.

Any chance of early fall rains? There's no indication that's going to happen, according to the climate models. Most models show drier conditions for September. The NOAA/CPC forecasts suggest we're going to be on the warm side and a weaker indication that we'll be on the dry side this fall.

Looking at October through December, the CFS model is not showing the typical climate response to El Nino. Instead, the model is indicating a more typical response to El Nino starting after Jan. 1. While far from certain, it looks like El Nino would be weak to moderate. This could have its expression more in the central Pacific rather than eastern Pacific. Those events tend not to have such a robust, systematic impact on our weather, especially precipitation amounts. It's likely winter will be warmer than normal but how much precipitation we get is an open question.

As we get into fall, seasonal forecasts aren't very skillful, especially for precipitation. We may have a better indication toward the end of the year. It doesn't look like the deck is really stacked one way or another in terms of how much precipitation we will get.

If we're heading into a potential El Nino, will "the blob" return? Generally, water does warm up off our coast during El Nino conditions. This summer, the winds are blowing from the north and caused upwelling and kept our waters pretty cool. But, overall, the north Pacific is on the warm side. The models suggest by mid-winter and early next year, we'll have warmer-than-normal waters off our coast. But it won't be to the extent we saw in 2015.

Looking back, this summer has played out more or less as expected. In April, the climate models indicated a hot and dry summer. Scientists also looked at past years where we moved from La Nina to El Nino as evidence. Plus, the trends of warming in the Pacific Northwest during summer are now unmistakable so a warm summer forecast is a good bet.

## **Current Streamflow and Groundwater Conditions**

### **Mark Mastin | USGS**

A check of a water discharge gage in the Chehalis River at Grand Mound indicated that the channel had been scoured and previous data need to be reworked.

The seven-day average streamflows for the state show a mixed bag, but the east side is doing quite well. Along the coast and in southwestern Washington, streamflows are below normal or, in some cases, at record-low flows. This is the case for a few small streams in the Puget Sound area, too.

The duration hydrograph shows the statewide seven-day average flows are near the bottom of the below-normal percentile range. The reverse hydrograph shows 49 percent of 151 sites are below normal. Mid-May is when things started getting dry.

The monthly average streamflow maps for July shows the pattern of southwestern Washington and along the coast being quite dry. We also see it along the Columbia River in northeastern Washington—the same area hit by record flooding is now much below normal. Last year, it was quite normal. 2015 was much worse than where we are this year.

Groundwater indicator wells:

- The Davenport well is 117 feet deep is still well above normal.

- Scatter Creek is 82 feet deep in sand and gravel and is dropping but still higher than usual. It follows the rain pattern. That's pretty normal for the site.

The seven-day average streamflow at seven index gaging stations is:

- "Much below normal" at the Quinault River at Quinault Lake and Chehalis River near Grand Mound, and "low" at the East Fork Lewis River near Heisson.
- "Normal" and "much above normal" at the remaining sites (North Fork Nooksack near Glacier, Puyallup River near Orting, American River near Nile, and Hangman Creek near Spokane).

### **Yakima Basin water supply**

**Chris Lynch | U.S. Bureau of Reclamation**

The water supply forecast remains 100 percent. They experienced high usage through most of July and early August. In September, they will start thinking about a winter flow target. The reservoirs will have a below-average amount of water in storage heading into winter unless we get rain. About 250,000 acre feet or a little lower is expected if demand doesn't let up; that's in the 83-93 percent of normal range. There's some ground to make up but it's not a bad starting point for the new water year.

### **Impacts review**

**Jeff Marti | Ecology**

Drinking water system impacts as of Aug. 10, 2018:

- Two Clallam PUD water systems: Clallam Bay/Seiku (wellfield near Hoko River) and Island View (Olsen Creek - mandatory)
- City of Forks - groundwater near Calawah River
- City of Woodland – Ranney collector - North Fork of the Lewis River
- City of Cheney (chronic issues) - groundwater
- City of Ryderwood – Campbell Creek - mandatory restrictions
- Town of Cathlamet (down to one intake, half of capacity) – Elochoman River
- Small system in western Thurston County (well going dry)
- Moses Lake and Medical Lake have passed summer watering ordinances (not exclusive to this summer) - groundwater
- City of Kelso (Cowlitz River - Ranney collector system)
- Two rural systems in Jefferson County (groundwater)
- Makah Reservation (mandatory restrictions for two weeks)
- Eagle Mountain in Thurston County

Agriculture impacts:

- Non-irrigated crops are showing stress; soil moisture is declining.
- Conservation districts are getting queries from tree growers about irrigation; seedlings are dying, needles are falling.
- Reports of substantially reduced yields on second cuttings of hay (15 vs 70 round 80-pound bales).
- Media report of crop damage near Vancouver.
- Cranberry growers in the coastal counties are concerned about water supplies.

#### Fish impacts:

- Low flows
- Thermal block on lower Yakima River
- Fish stranding Dry Creek, trib to Skagit

WDFW is seeing the first heat-related fishing closures (Aug. 6 mandatory release on the Columbia River for sockeye and chinook). They also adopted Oregon's closure at the mouth of the Deschutes River for steelhead holding in colder temperatures. Overall, they are seeing high temperatures. The Columbia River is at 72 degrees at Bonneville. They're seeing lots of reports of small creeks being very warm—mostly on the east side. Some tributaries in the Yakima basin recorded temperatures of 78.8 degrees. It's not totally out of the ordinary, but they're watching. Reports of dry streambeds are also coming in; Schoolhouse Creek in southwest Washington has no surface flows. That's probably the result of the past few dry summers and limited connection to groundwater.

#### Curtailments:

Curtailment is underway or notices sent in the Chehalis, Walla Walla and Methow basins (Methow is stabilizing). A hotline was activated for some water users along the Similkameen in the Okanogan. NWRO staff reached out to irrigators in Skagit basin.

#### **Drinking water systems**

Seattle Public Utilities: They are managing through the hot and dry weather. The combined reservoir storage is slightly below normal for this time of year but modeling and analysis indicates they will be providing normal flows in major rivers going into fall and meeting needs for customers.

Tacoma Water: A similar report to Seattle. The reservoir is a little lower than normal. They are seeing record-low inflows to the reservoir, even lower than 2015. They are pumping water from their wellfield to reduce pressure on the river, which is above its minimum flows. They are waiting and hoping for the timely return of fall rains but have adequate water for people and fish.

Puget Sound Energy: They pull down reservoirs in fall and are reliant on the winter/spring to refill them. In Washington, many reservoirs don't carry over a lot of storage from one year to the next.

Oregon: Had it not been for carryover from 2017, many reservoirs would now be empty.

**Next meeting: Sept. 27, 2018**