



Drought Status Update #22

August 14, 2015

Note: This material is intended for, and contains elements of special interest to, WDFW agency staff. Non-agency readers or anyone having questions about the context, clarity, or content for items in this update should contact the author, WDFW Drought Coordinator Teresa Scott at (360) 902-2713 teresa.scott@dfw.wa.gov

Kaboom! Lightning and thundershowers are passing over Drought Central (i.e. Olympia) right now and it's very exciting and welcomed! Perhaps in commemoration of this weather, or vice versa, WDFW announced today additional fishing restrictions as well as prohibitions or restrictions of some hydraulic projects in more than 60 rivers and streams in Washington.

To help protect fish threatened by drought, the WDFW is restricting suction dredging and other hydraulic projects in rivers and streams where drought-related closures are in effect. A list of rivers and streams affected by HPA emergency rules is available on WDFW's website at <http://wdfw.wa.gov/conservation/drought>. A news release issued Aug. 14 describes these restrictions and others in effect for some individual Hydraulic Project Approvals (HPAs). The restrictions affect suction dredging for gold that is occurring under the "Gold and Fish" pamphlet, and hydraulic project permits previously granted for projects such as culvert

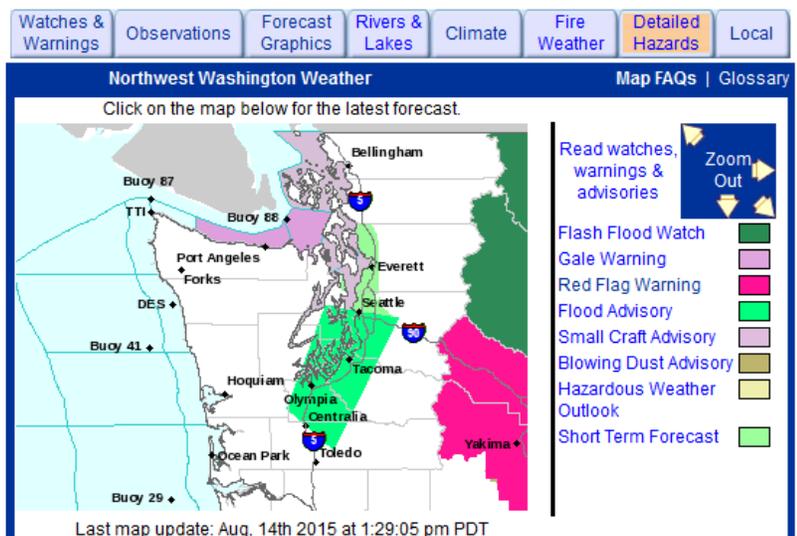
replacement and gravel removal will be reviewed to determine whether additional provisions or restrictions are needed.



At left is a photo commemorating the streaming of pink salmon up the Dungeness River this week, as seen from the Woodcock Road bridge. Many thanks to LeeAnn Nolan of Sequim for this awesome shot!

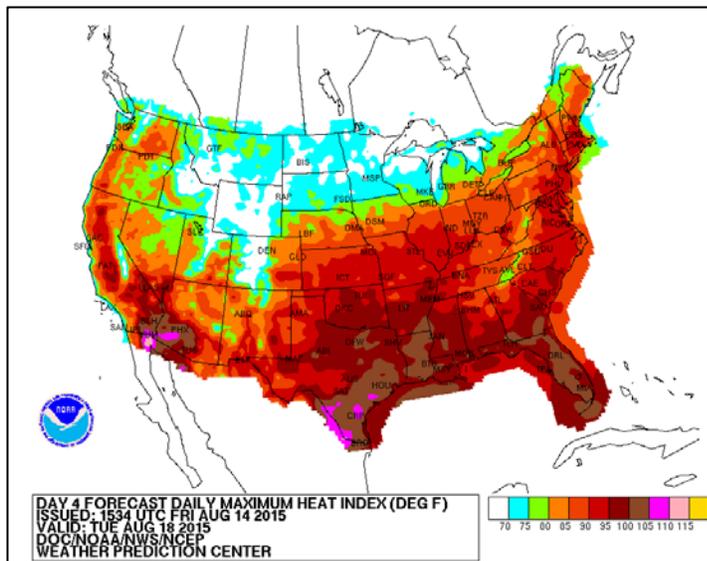
Check out the [weekly update by the Office of the State Climatologist](#), which summarizes conditions and climate milestones to-date.

And Ecology's Drought Coordinator Jeff Marti shares: "On your way home today from responding to drought issues, please be careful as there are flood advisories and wind warnings in effect all over the place!" Must be Washington!

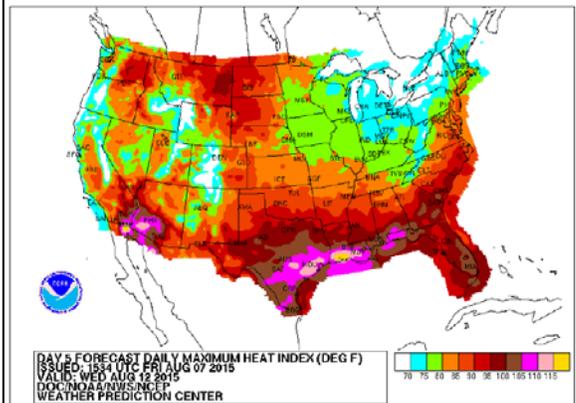


Temperature Forecasts

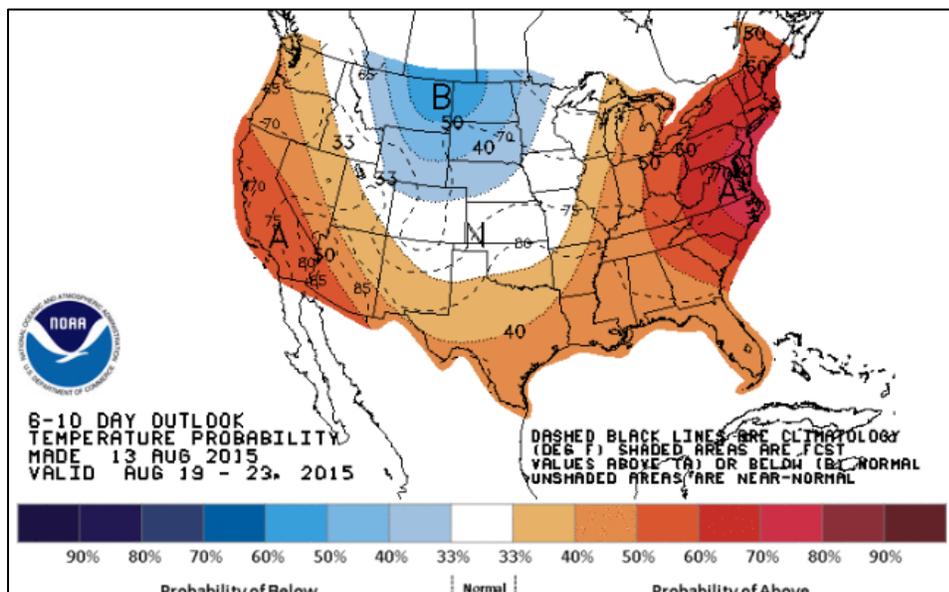
Below left is the “[Maximum Heat Index](#)” (in degrees F) for Tuesday, August 18th, as forecast 8/14. Tuesday appears to be forecasted with the warmest conditions in Washington in the upcoming week. Daily weather forecast maps are [available from NWS](#) that show maximum temperature and other useful tools.



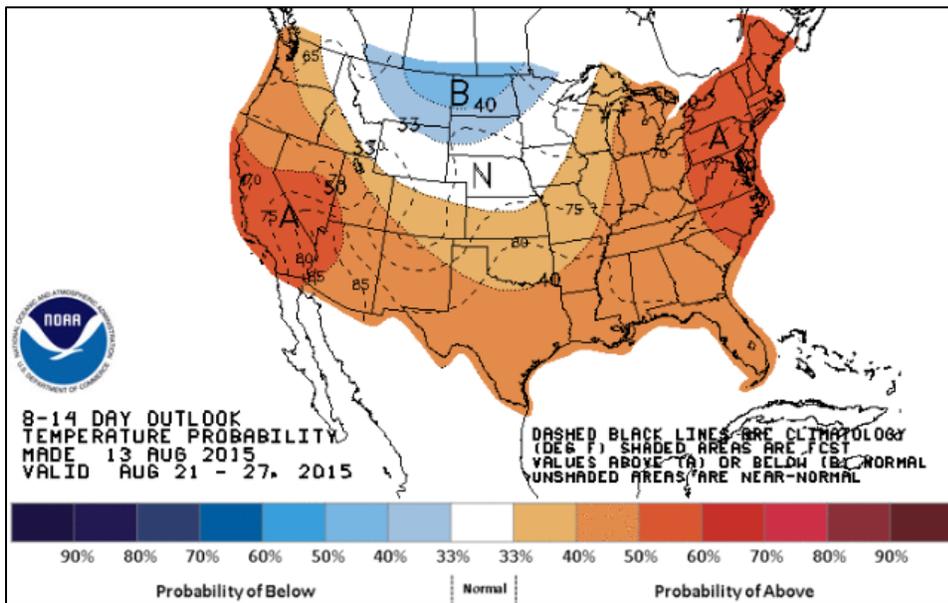
Below is this map for last Wednesday August 12; note the significant cooling (left) in northwest and central states!



The [6-10 day temperature outlook](#) shows the forecaster’s confidence (probability) that the observed temperature will be in the range of one of three possible categories - below (B), normal (N), or above (A) based on the 30-year climatology record of 1981-2010. The 6-10 day temperature outlook (below) is for **above-normal** temperatures in most of Washington, and significantly below-normal temperatures in the northern heartland.

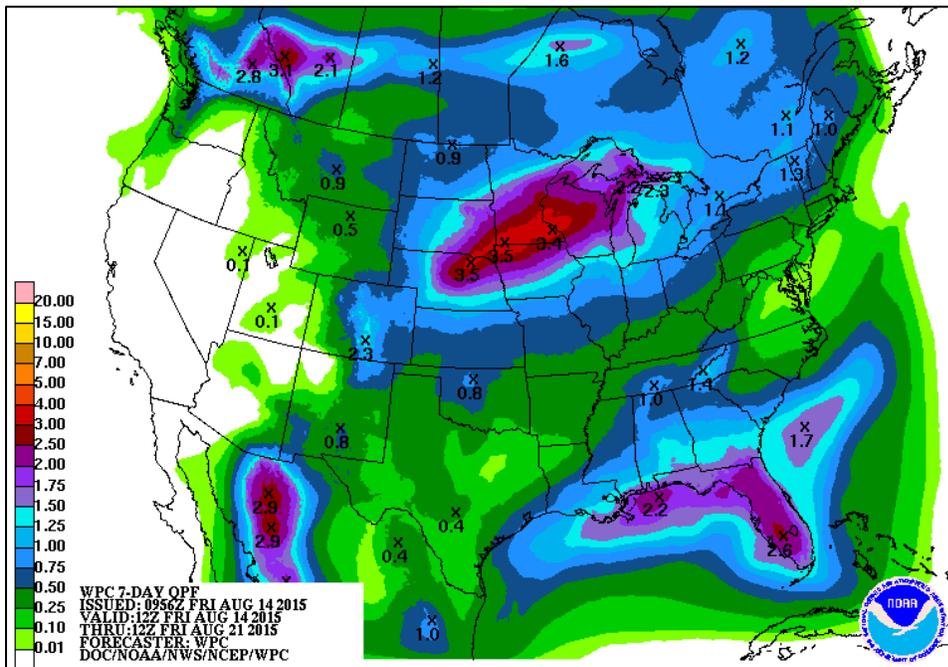


The [8-to-14 day temperature outlook](#) (below) shows little change in Washington.

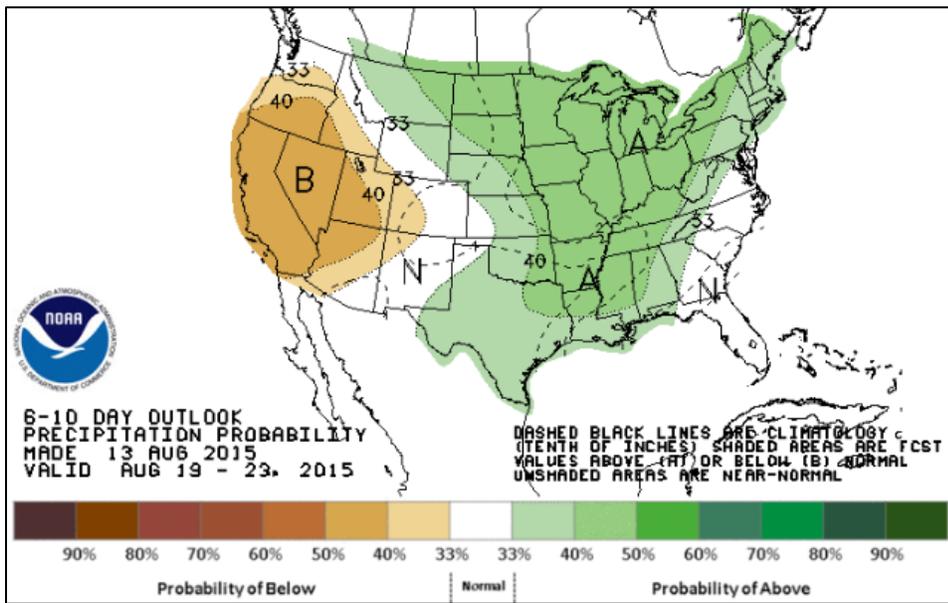


Precipitation Forecasts

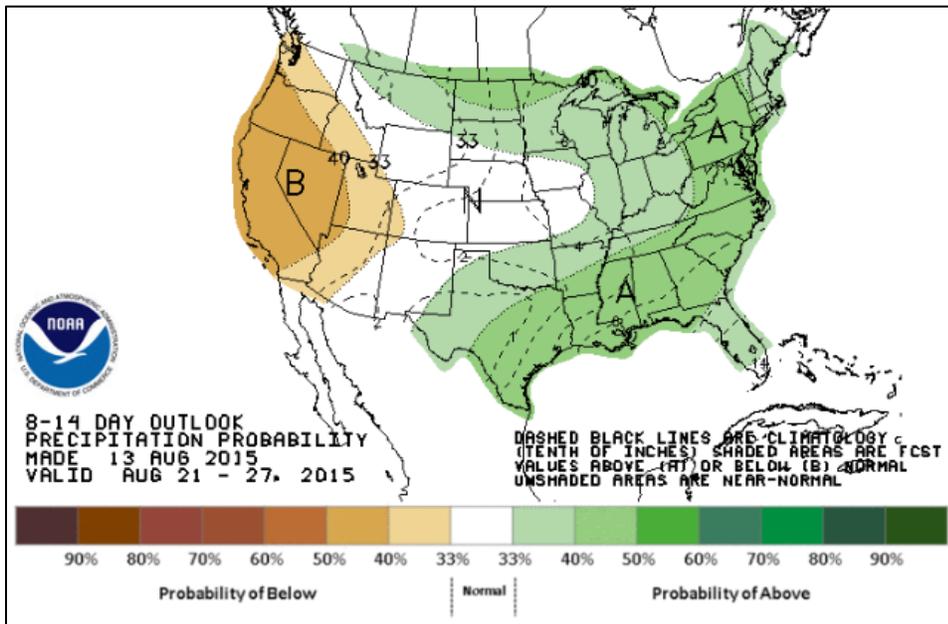
Up to a half-inch [precipitation](#) is expected everywhere except southeast Washington during the next seven days (below). We might have already gotten that so far today!



The [6-to-10 day probability of precipitation](#) (8/19-8/23) is below-normal only in south-central Washington (below).



And below is the [8-to-14-day precipitation probability outlook](#) for 8/21-27), which shows lower-than normal precipitation expanding diagonally across Washington south of a line from Point Roberts to Clarkston, more or less.



El Niño

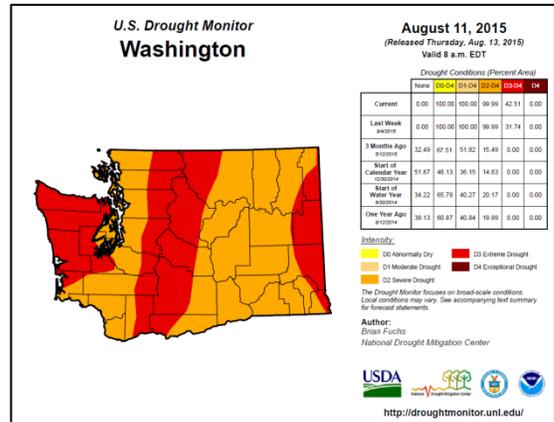
Cindy Le Fleur shared this wonderful presentation on El Niño conditions provided by NOAA’s Laurie Weitkamp. In her presentation, Laurie presents an update on The Blob and its terrestrial effects, discusses environmental indicators being used in population forecasting, shares recent biological observations, and gives marine and terrestrial outlooks. At right is Laurie’s list of conclusions – staff can view the rest of the slides on the [“S” drive](#) .

Conclusions

- El Niño conditions expected to strengthen and persist through winter 2015/16
 - Should produce warm winter in PNW, wet & cool winter in California
- PDO will continue to be positive
 - Won’t go negative until water cools (after El Niño)
- Warm ocean influencing terrestrial habitats
 - Low snowpack + hot air = low stream flows & high temps
- Unfavorable conditions for NW salmon entering ocean in 2015, mixed signals for last year (2014)
- Warm blob beyond previous observations; consequences unlikely positive for cold water fish

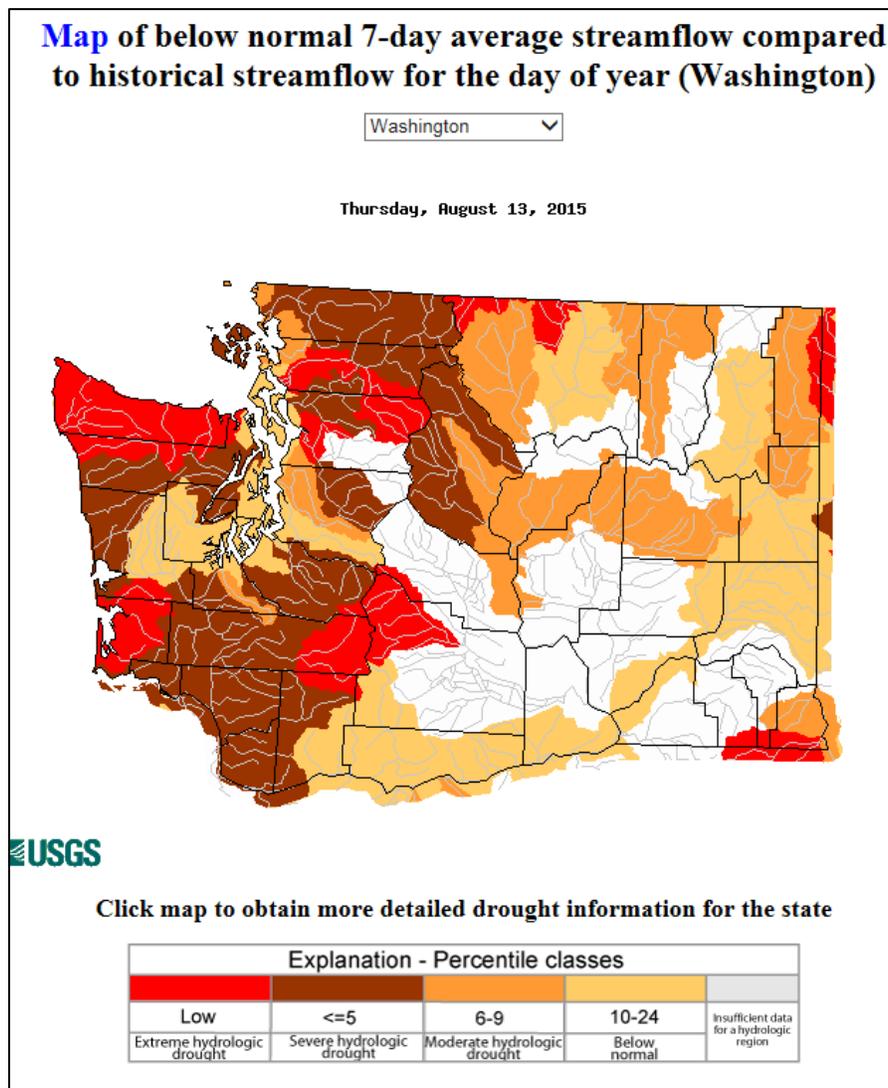
Federal Drought Status

The [U.S. Drought Portal](#) provides the weekly drought status for the nation (below). Find out more about U.S. Department of Agriculture disaster status and relief programs at the [USDA Disaster Assistance](#) web page. The total area of Washington in Extreme Drought Category D-3 expanded ten percent this week.



Stream Flows

This USGS figure showing [stream gauges with below normal streamflow](#) for 7 days or more provides the best overview of Washington conditions this week. In my completely subjective estimation, a little over half of Washington appears to be experiencing more than moderate drought conditions, and slightly less than half is experiencing moderate to normal flow conditions.



Selected Washington Streamflows Table

The table gives a quick visual reference for daily flows as a percent of normal for this date in the historic record. We selected 43 out of a total of 254 flow gauges in Washington as a subjectively representative sample of Washington conditions. The first column shows the gauge location, the second column shows today's stream flow readings, the third column shows today's flows as a percentage of average flows for this date throughout the period of record, column four shows the (previous) minimum flow for this date, and the fifth column shows in what year that minimum occurred.

Seventeen of our select set of 43 locations set record lows on August 14, 2015. Low flow records are occurring marginally less frequently as we move into the traditional low-flow periods for Washington streams. [Statewide streamflows](#) are available from USGS.

SELECTED WASHINGTON STREAMFLOWS FOR 43 OUT OF 254 GAUGES IN WASHINGTON 8/14/2015	TODAY'S FLOW (cfs)	% OF AVERAGE FOR THIS DATE IN THE RECORD	MIN FLOW (cfs)	YR OF MIN
Mf Nooksack River Near Deming, Wa	269	76%	178	1968
Nooksack River At Ferndale, Wa	1,540	74%	1,330	2003
Skagit River Near Concrete, Wa	6,080	55%	6,280	1994
Sauk River At Darrington, Wa	504	43%	483	1926
Cascade River At Marblemount, Wa	545	58%	490	2006
Nf Stillaguamish River Near Arlington, Wa	166	37%	172	1938
Snoqualmie River Near Carnation, Wa	415	41%	446	1930
Skykomish River Near Gold Bar, Wa	342	26%	534	2005
Issaquah Creek Near Mouth Near Issaquah, Wa	20	67%	13	2004
Cedar River Below Diversion Near Landsburg, Wa	85	63%	94	1995
Cedar River At Renton, Wa	81	45%	41	1958
Big Soos Creek Above Hatchery Near Auburn, Wa	25	76%	21	1995
Green River Near Auburn, Wa	266	87%	222	1989
South Prairie Creek At South Prairie, Wa	26	46%	28	1996
Puyallup River At Puyallup, Wa	1,950	92%	1,410	1989
Nisqually River At Mckenna, Wa	468	105%	35	1966
Deschutes River Near Rainier, Wa	24	63%	24	1992
Nf Skokomish R Bl Staircase Rpds Nr Hoodspport, Wa	32	22%	45	1926
Dungeness River Near Sequim, Wa	100	37%	124	2005
Hoko River Near Sekiu, Wa	10	31%	14	1967
Calawah River Near Forks, Wa	43	40%	59	2004
Hoh River At Us Highway 101 Near Forks, Wa	970	80%	709	2003
Satsop River Near Satsop, Wa	187	60%	201	1994
Chehalis River Near Grand Mound, Wa	95	42%	123	1961
Naselle River Near Naselle, Wa	17	38%	22	1970
Cowlitz River Below Mayfield Dam, Wa	2,880	107%	1,360	1940
Cowlitz River At Packwood, Wa	445	54%	455	1987
Lewis River At Ariel, Wa	867	72%	67	1931
White Salmon River Near Underwood, Wa	504	72%	399	1994
Klickitat River Above West Fork Near Glenwood, Wa	71	52%	61	1994

Walla Walla River Near Touchet, Wa	8	48%	-	1968
Tucannon River Near Starbuck, Wa	54	92%	19	1931
Grande Ronde River At Troy, Or	390	50%	384	1992
Yakima River At Kiona, Wa	3,360		595	1979
American River Near Nile, Wa	35	38%	39	1977
Crab Creek At Irby, Wa	1	7%	0	1973
Wenatchee River At Plain, Wa	404	33%	423	2005
Methow River Near Pateros, Wa	273	40%	274	1979
Okanogan River At Malott, Wa	472	30%	372	1979
Okanogan River At Oroville, Wa	222	35%	120	1988
Spokane River At Spokane, Wa	684	40%	511	1994
Colville River At Kettle Falls, Wa	27	31%	9	1973
Pend Oreille River Below Box Canyon Near Lone, Wa	5,010	42%	4,500	1988

Real-Time Water Temperature from USGS and Ecology

USGS Real Time temperature stations in Washington are not as numerous as their streamflow cousins, but are still helpful to stream watchers and fish managers.. Follow this link to see the [Real Time Temperature Stations map](#) for Washington. Below is a table showing today's [water temperature at all Washington gauges](#) having that attribute, in degrees C. Colors represent relative value with darkest green being coldest and darkest orange being highest within this set of data. Twenty-nine of 65 temperature gauges in Washington are registering at or higher than the lethal threshold for salmon. Note that this sample of gauges is heavily weighted by stations at Columbia-Snake hydropower facilities, so statistics like percent-of-Washington-gauges would not be representative of overall status in Washington.

WATER TEMPERATURE FOR 65 GAUGES IN WASHINGTON 8/14/2015	DEGREES C
Nf Skokomish R Bl Staircase Rpds Nr Hoodspport, Wa	13.9
White River At Headworks Ab Flume Nr Buckley, Wa	14.6
White River At R Street Near Auburn, Wa	16.1
Lake Tapps Diversion At Dieringer, Wa	15.0
Ysi 6920v2-2 At Wsu 2 At Puyallup, Wa	10.6
Duwamish River At Golf Course At Tukwila, Wa	20.7
Cedar River Near Cedar Falls, Wa	10.9
Cedar River At Cedar Falls, Wa	19.4
Cedar River Below Diversion Near Landsburg, Wa	12.5
Cedar River At Renton, Wa	16.9
South Fork Sultan River Near Sultan, Wa	14.5
Sultan River Below Diversion Dam Near Sultan, Wa	12.9
North Fork Tolt River Near Carnation, Wa	12.4
South Fork Tolt River Near Index, Wa	14.8
South Fork Tolt River Near Carnation, Wa	14.3
Sf Tolt River Bl Regulating Basin Nr Carnation, Wa	14.0
Nf Stillaguamish East Pooled Slide Area Nr Oso, Wa	6.4
Skagit River At Newhalem, Wa	11.6
Skagit River At Marblemount, Wa	11.9
Nf Nooksack River Bl Cascade Creek Nr Glacier, Wa	9.9

Sf Nooksack River At Saxon Bridge, Wa	18.5
Nooksack River At North Cedarville, Wa	13.4
Boundary Reservoir At Forebay Nr Metaline Falls	22.5
Pend Oreille River At International Boundary	22.2
Columbia River At Bridgeport, Wa	19.7
Ninemile Creek Near Oroville, Wa	
Osoyoos Lake Near Oroville, Wa	24.6
Okanogan River At Oroville, Wa	24.6
Similkameen River Near Nighthawk, Wa	20.9
Okanogan River Near Tonasket, Wa	23.7
Okanogan River At Malott, Wa	25.3
Okanogan River Nr Wakefield Br South Of Malott, Wa	25.6
Andrews Creek Near Mazama, Wa	10.9
Methow River Near Mouth Near Pateros, Wa	20.6
Wells Powerplant Headwater Near Pateros, Wa	19.6
Wells Powerplant Headwater Near Pateros, Wa	19.4
Wells Powerplant Headwater Near Pateros, Wa	19.4
Columbia River Below Hwy 395 Bridge At Pasco, Wa	21.6
Snake River Bl Mcduff Rapids At China Gardens, Id	23.5
Snake River Near Anatone, Wa	23.6
North Fork Clearwater River At Ahsahka, Id	6.9
Clearwater River Nr Peck Id	9.5
Clearwater River Nr Peck Id	9.3
Clearwater River Near Lewiston, Id	11.3
Lower Granite Lk Forebay At Lower Granite Dam, Wa	20.6
Snake River (Right Bank) Bl Lower Granite Dam, Wa	19.5
Lake Bryan Forebay At Little Goose Dam, Wa	20.1
Snake River Below Little Goose Dam, Wa	20.0
Lake H G West Forebay At Lower Monumental Dam, Wa	20.6
Snake River Below Lower Monumental Dam, Wa	20.5
Lake Sacajawea Forebay At Ice Harbor Dam, Wa	21.1
Snake River Bl Goose Island Bl Ice Harbor Dam, Wa	21.5
Columbia River At McNary Dam Lock Nr Umatilla, Or	21.5
Columbia River Below McNary Dam Near Umatilla, Or	21.6
Columbia River At The Dalles, Or	22.0
Columbia River, Right Bank, At Washougal, Wa	22.1
Columbia River At The Dalles Dam Forebay, Wa	22.1
Columbia River At Bonneville Dam Forebay, Wa	22.0
Columbia River At Cascade Island, Wa	22.0
Columbia River, Right Bank, Near Cliffs, Wa	22.3
Columbia River At John Day Dam Navigation Lock, Wa	22.3

Temperatures above 20 degrees C are still occurring along the mainstem Columbia and Snake Rivers and the Okanogan, Pend Oreille, and Duwamish Rivers. In the high teens are Cedar, and South Fork Nooksack Rivers.

Here is a contest for readers: respond to me with the name or number of any Ecology or USGS gauges for which you would like to see real-time daily **water temperature** data every year as part of Washington’s Drought Early Warning System! Some of my favorites are 42 of the 43 selected flow stations we monitor.

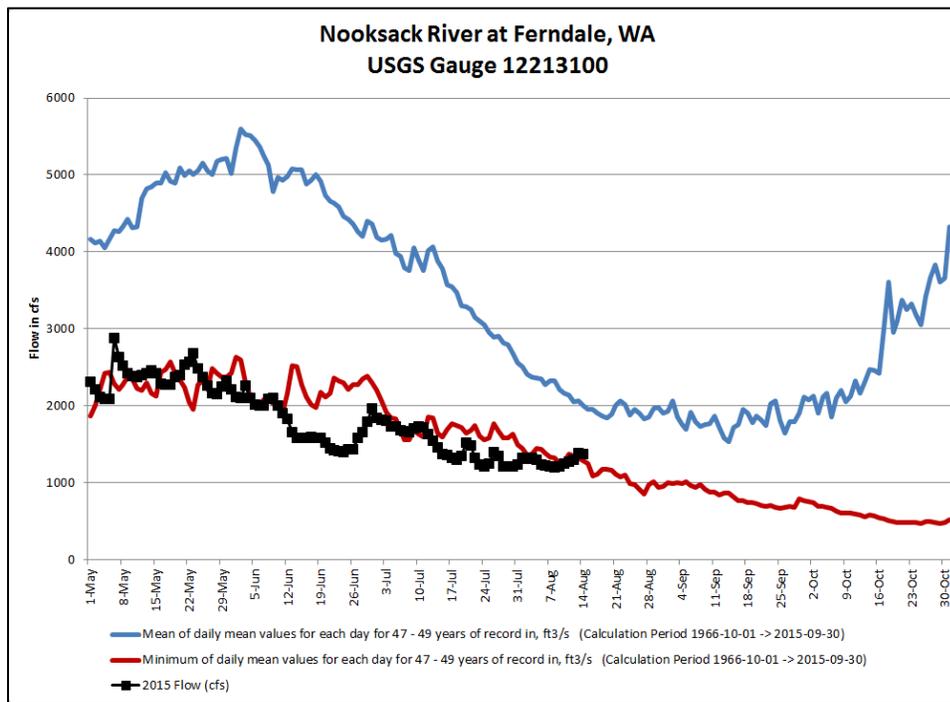
Now, as a bonus: respond to me with the name or number of the Ecology flow gauges for which you would like to see **daily real-time flow and/or water temperature data** on the USGS website. I likely won’t respond to submissions, but will pass along these suggestions to Ecology and USGS!!

Ecology’s [Flow Monitoring Network](#) provides water temperature monitoring at several Ecology and co-op stations, but these data are too difficult to download and display in a summary format. Definitely check out whether there is an Ecology gauge in your area and spend a little time looking at the information. Data for the Lake Washington Ship Canal can be found [here](#). Temperatures at the Fish Ladder ranged from about 63 to 72 degrees F this week; temperatures at 8 feet depth of the Ship Canal at University bridge range near 73-75 degrees; temperatures at 21 feet are 72 to 74 degrees; temperatures at 35-foot range from 67 to 70 with several spikes up to 73.

Drought Impacts to Fish and Wildlife

Pink salmon, sockeye, and chinook adults are starting to return; pinks are streaming in where “streaming” is possible. My favorite quote of the week comes from the hatchery staff, who agree that fish health is better at pretty much every facility! Good work, folks!

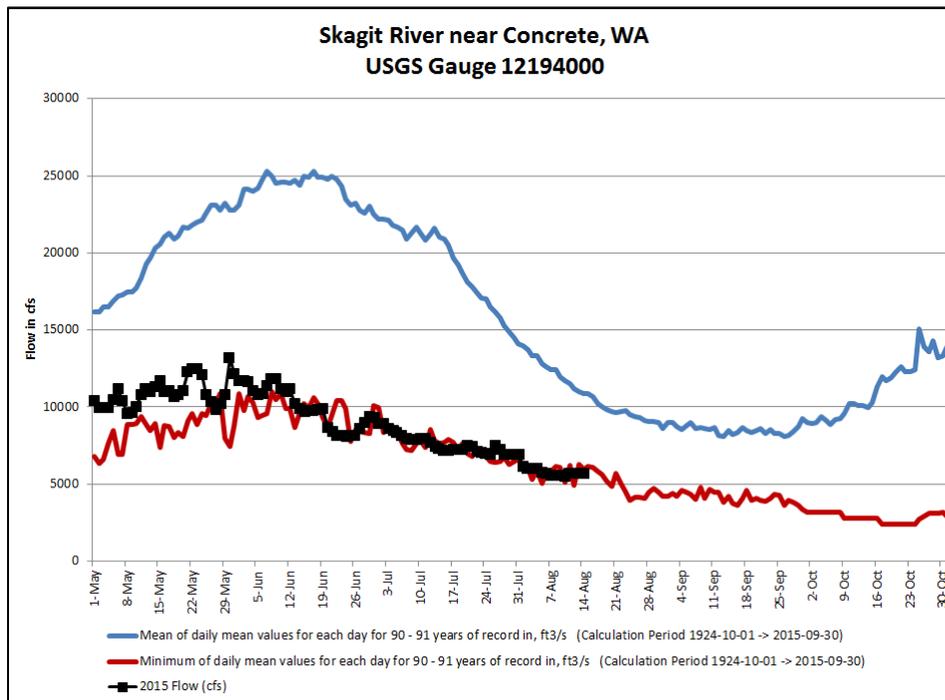
Nooksack River



On the Nooksack, Ecology has actively curtailed 9 water rights as of the end of June 2015.

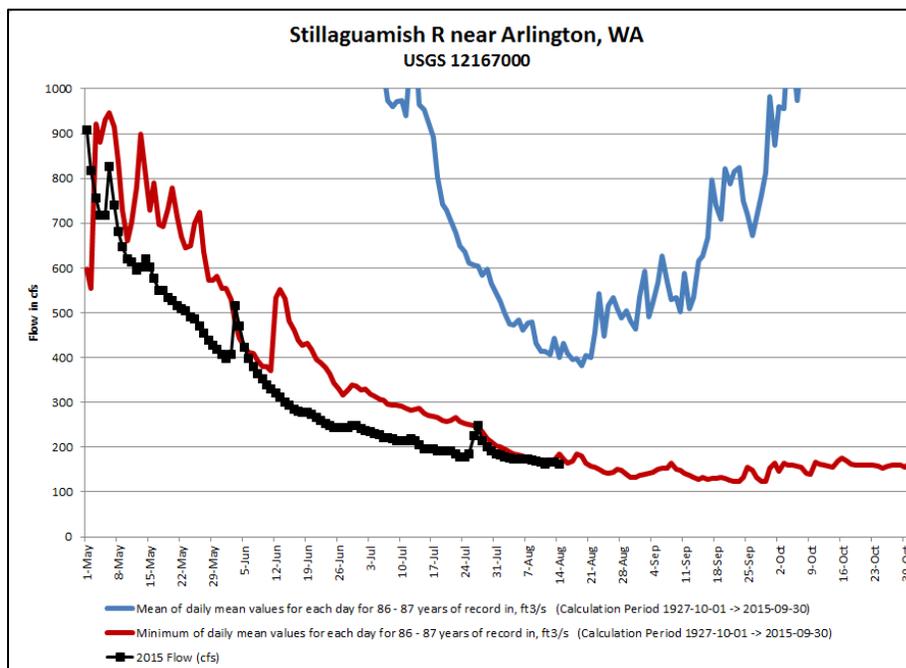
Skagit River

Skagit flows reflect continued compliance with FERC license outflows for the Baker and Ross projects. Ecology has sent 3 letters warning water users of potential for curtailment.



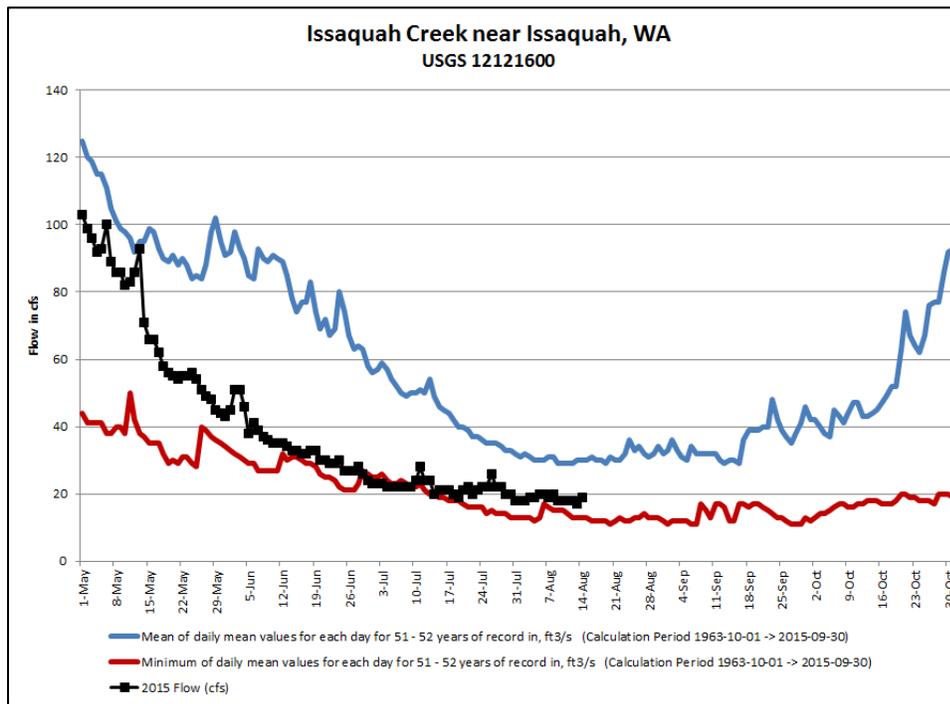
Stillaguamish

Stillaguamish looks just about as expected for unregulated streams in this neighborhood. Not sure what happened on July 24-27 (does anyone know? Rain?) but it's nice to see those flows more in line with the historic record instead of being so much below. Funny the things we value when we have so little!



Lake Washington/Cedar

Issaquah Creek continues with above-expected (and above-historic-minimum) flows. Conditions at the hatchery are holding.

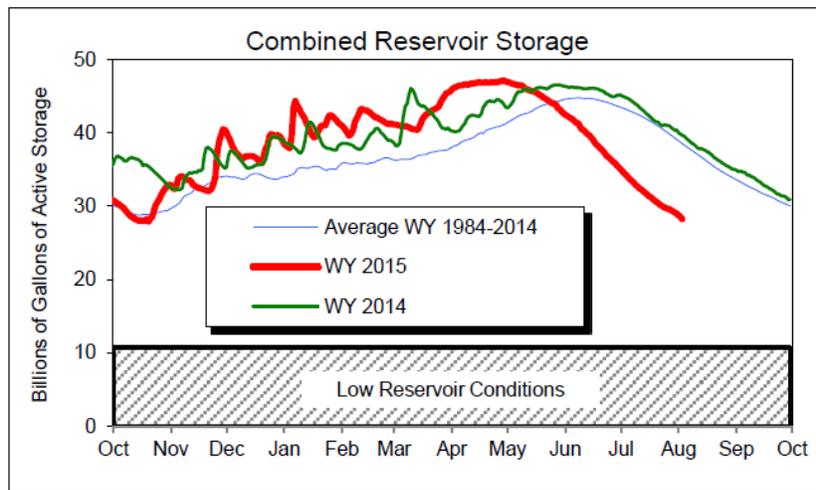


King County Flow and Temperature Conditions

Following are excerpts from correspondents Curtis DeGasperi and Jim Simmonds from King County Department of Natural Resources and Parks. King County presents weekly summaries on King County river and creek flow and temperatures. Request data and/or get on Jim's distribution list at Jim.Simmonds@kingcounty.gov

WATER SUPPLY STATUS

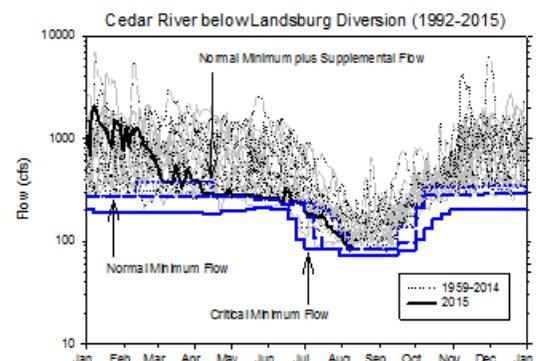
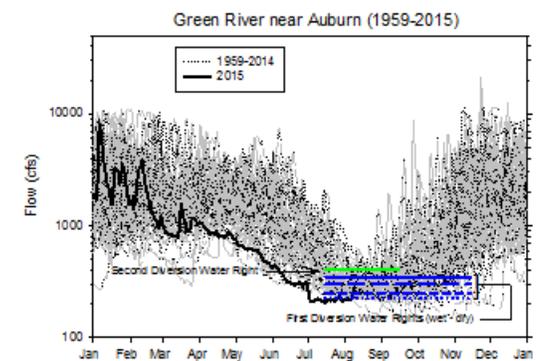
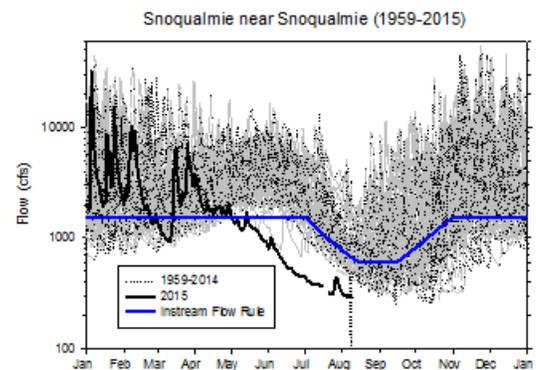
- On August 11, Seattle, Everett, Tacoma, and the Cascade Water Alliance moved to the second stage – voluntary reduction – of their water shortage response plans and are now asking customers to help by voluntarily reducing water use by 10 percent. More information available here <http://www.seattle.gov/util/MyServices/Water/AbouttheWaterSystem/WaterSupply/index.htm> and here <http://www.savingwater.org/>.
- As of August 3, Seattle Public Utilities reports that the combined reservoir storage of Chester Morse Lake, Masonry Pool, Lake Youngs and South Fork Tolt Reservoir is below the long term average for this time of the year. See graph below.



- Cascade Water Alliance continued adding water to Lake Tapps from water stored behind Mud Mountain Dam as part of a capital repair project. Cascade anticipated adding about one foot of water to the reservoir during the week (see <http://cascadewater.org/2015/08/06/reservoir-fill-update/> for more information).

FLOW AND TEMPERATURE STATUS

- 11 of 16 rivers and 6 of 23 creeks with over 15 years of flow data and real-time data delivery had the lowest flows ever recorded for the week. Conversely and unexpectedly, 8 of these same 23 creeks had flows that were typical or higher-than-typical for the week, and 2 of these 23 creeks (Crisp and Laughing Jacobs) recorded their *highest ever* flows for the week.
- 1 of 12 rivers/streams with over 15 years of temperature data and real-time data delivery had the highest temperatures ever recorded for the week, and another 7 of these 12 were higher than typical for the week. Maximum daily temperatures in the Cedar River (below the reservoir and at Renton), Little Soos, and Bear Creek were between 20 degrees C and 23 degrees C.
- Lake Washington water levels are the second lowest ever recorded for the week based on U.S. Army Corps of Engineer records that go back to 1940, above the 1958 minimum. Temperature data at the fish ladder at the locks were the highest for the week since record-keeping began in 2004.
- Lake Sammamish elevation data from USGS shows that Lake Sammamish levels are the lowest recorded for the week since the Marymoor weir was modified in 1999 to

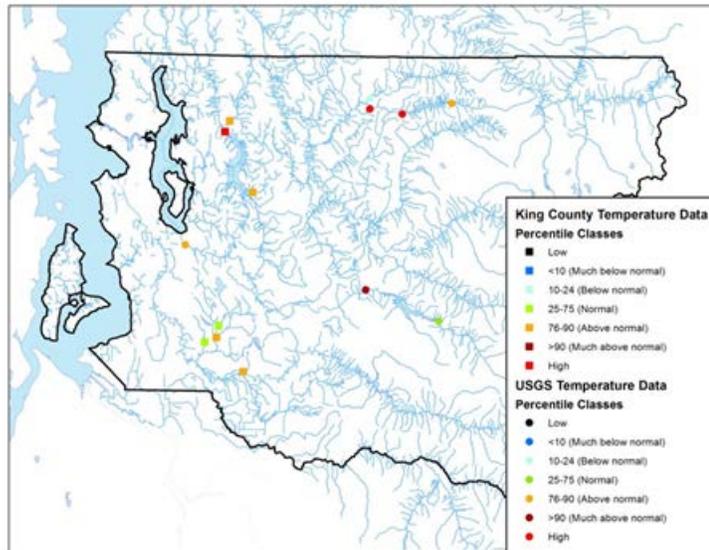


improve anadromous fish passage at low flows.

ECOLOGICAL IMPACTS

- Data collected by the Muckleshoot Tribe show that 994 adult Chinook salmon and about 33,000 sockeye salmon had migrated past the Ballard Locks into the Lake Washington watershed as of August 9. This is about 31% of the 10-year average Chinook return by August 9 and about 27% of the 10-year average sockeye return by August 9. Over the past 10 years, an average of 98% of the sockeye run had passed the Ballard Locks by August 9.
- Low flows and high temperatures may hinder adult salmon from reaching upstream spawning grounds. Temperatures above 20 to 21 degrees C are generally considered to be a migratory barrier to migration. Pink salmon in Alaska have shown increased mortality above 17 degrees C combined with lower than typical dissolved oxygen. Temperatures between 20 degrees C and 23 degrees C can cause thermal stress to many salmonids and increase disease outbreaks and infection, while temperatures above 23 degrees C can cause substantial health impacts or mortality to many salmonids. Low flows also decrease available wetted habitat for spawning and rearing, limit food availability, and increase predation.
- Washington Department of Fish and Wildlife is encouraging people to submit reports of suspected blockages or distressed fish or wildlife to <http://dfw.wa.gov/conservation/drought/reporting/>.
- Starting in mid-August, over 600,000 pink salmon are projected to return to the Green/Duwamish and over 1.6 million pink salmon are projected to return to the Snohomish River.

TEMPERATURE



REGULATORY AND LEGAL CONSIDERATIONS

- Flow in the Snoqualmie River is lower than the minimum instream flow established by Washington Administrative Code, which allows the state to curtail withdrawals by holders of junior water rights.
- Flows in the Green River are higher than instream flows required during drought years for Tacoma Public Utilities to withdraw water from the Green River using its primary water right claim under agreements with the Muckleshoot Tribe, but are below the minimum instream flow established by Washington Administrative Code for Tacoma Public Utilities to withdraw water from the Green River with its second diversion water right.
- Flows in the Cedar River are higher than the normal minimum flow required by the Habitat Conservation Plan to be maintained by Seattle Public Utilities during normal years.

Flow and temperatures summary tables and figures are available from Jim, or let me know and I will forward Jim's report to you. Many thanks to Jim and Curtis for sharing this information with us!

Nisqually River

Unusually high water temperatures that could result in higher than anticipated mortality of caught and released salmon has led WDFW to close Nisqually River (Thurston County) from mouth to the military tank crossing bridge (located one mile upstream of mouth of Muck Creek) daily to fishing from 2 p.m. to one hour before official sunrise on days it is open for recreational fishing.

Dungeness

The Dungeness River drought team brought in some experts from Yakima and two WCC crews to improve flows and passage this week. The Yakima Construction Shop crew joined Fish Passage and Screening biologists, local biologists, Washington Conservation Corps crews and staff from Jamestown s’Klallam Tribe to reduce the amount of flow diverted into Dungeness Valley irrigation channels, and keep more water in the main stem and side channels. Flow that diverts to the irrigation channels sometimes attracts fish, who then are unable to find their way out of the channel. The Drought Team spent Tuesday installing flow diversion structures in the lower Dungeness, including “water gate” portable dams and (ironically) rock weirs (photos right and below).

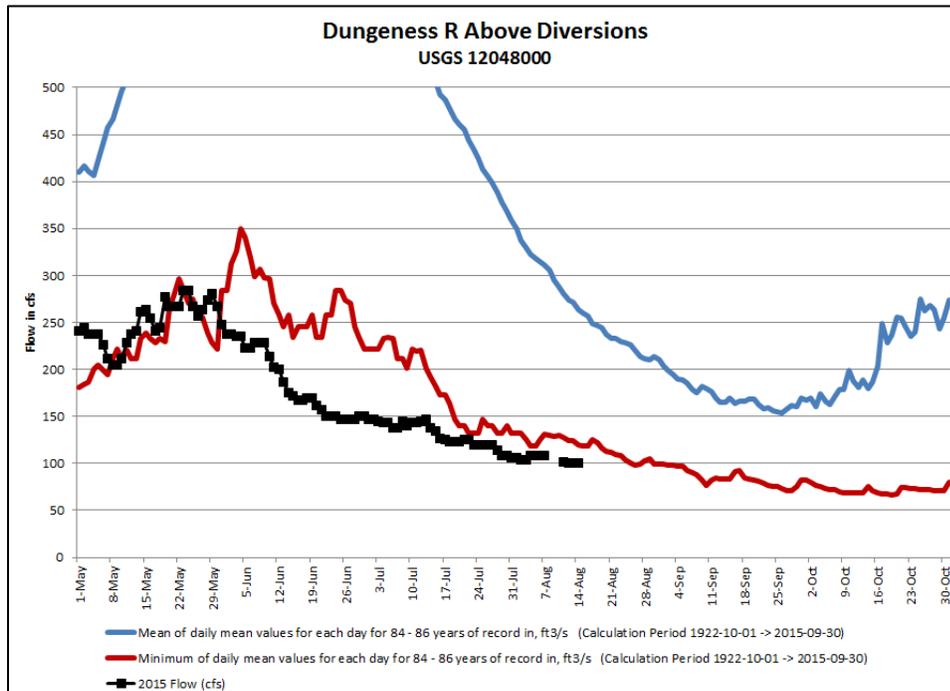


Jamestown s’Klallam staff were posting signs Thursday afternoon and noticed about a dozen Chinook just below Highway 101 that were not there on Tuesday when staff came through. This tells us that the efforts of the Dungeness Drought Team are paying off and the fish are

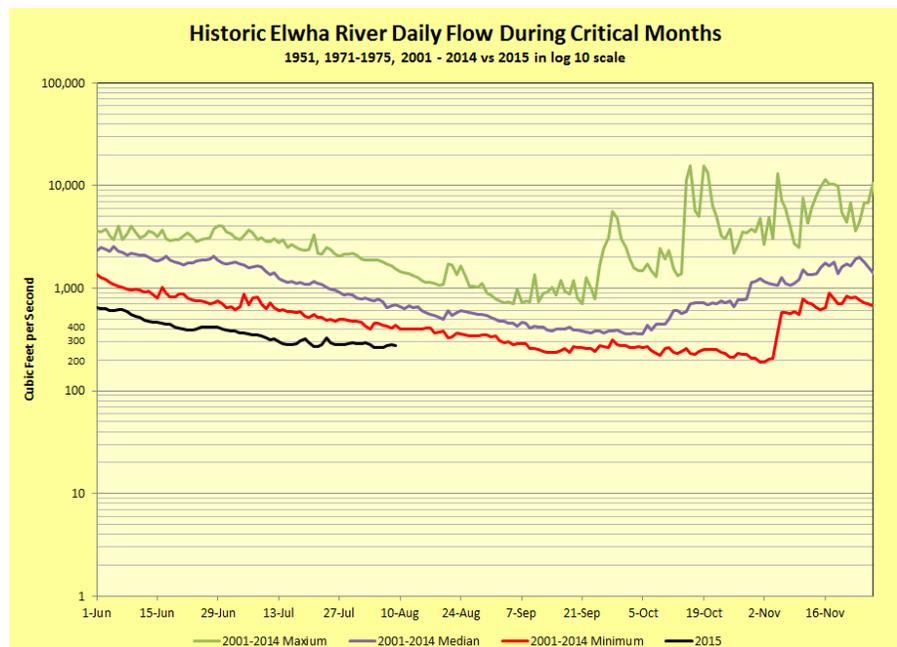
moving more freely through the river. Good work this week, everybody!

All rock weirs constructed by WDFW/partners for the purpose of improving fish migration are posted with signs identifying them as such.

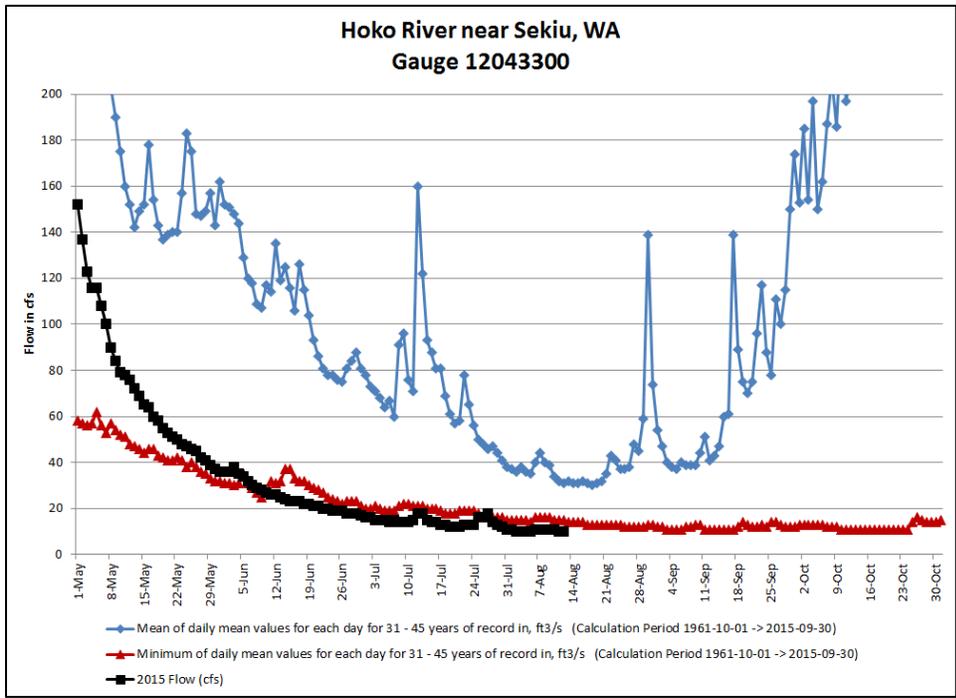
There was a little bit of a data burp at the Dungeness gauge for a couple of days this week. But could flows be levelling off? Maybe another week's data will tell?



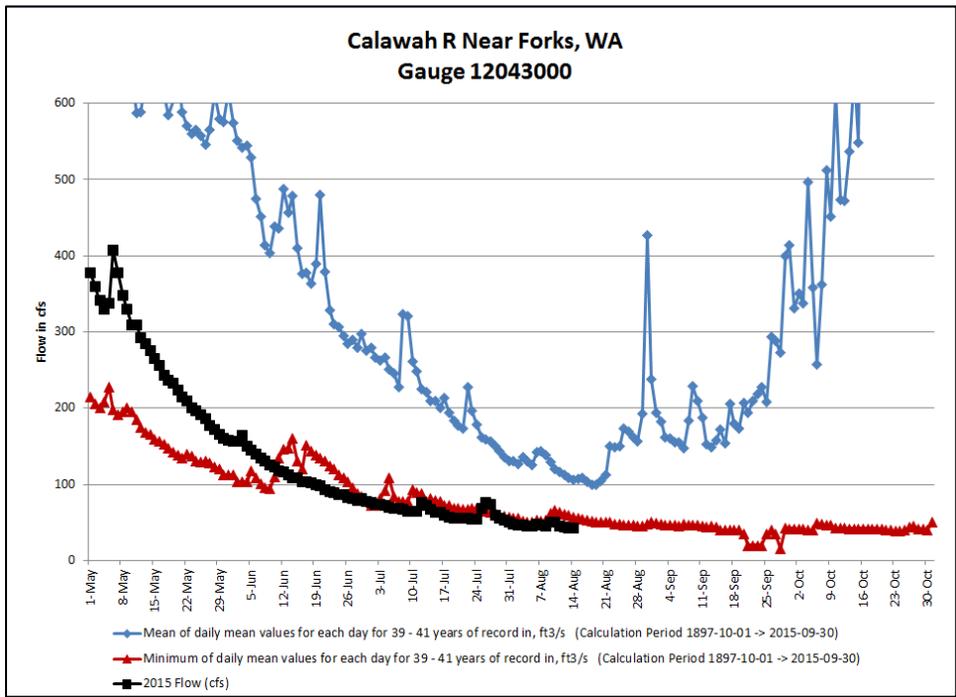
Elwha flows(below) continue at record-breaking lows. Due to these low flows, which influence the amount of water available to the City of Port Angeles' water system, a Stage III Water Shortage was declared on August 4, 2015. This means that, based on street address numbers, immediate ODD-EVEN voluntary outdoor sprinkling restrictions are implemented, and other voluntary reductions in water consumption are encouraged. For more information regarding this declaration, please follow this link <http://wa-portangeles.civicplus.com/807/Water-Conservation> . Figure provided by Correspondent Craig Fulton at City of Port Angeles.



Hoko continues to show record low flows.



Calawah R values give us an indication of conditions in the Bogachiel, Dickey, Sol Duc, and Quillayute Rivers.

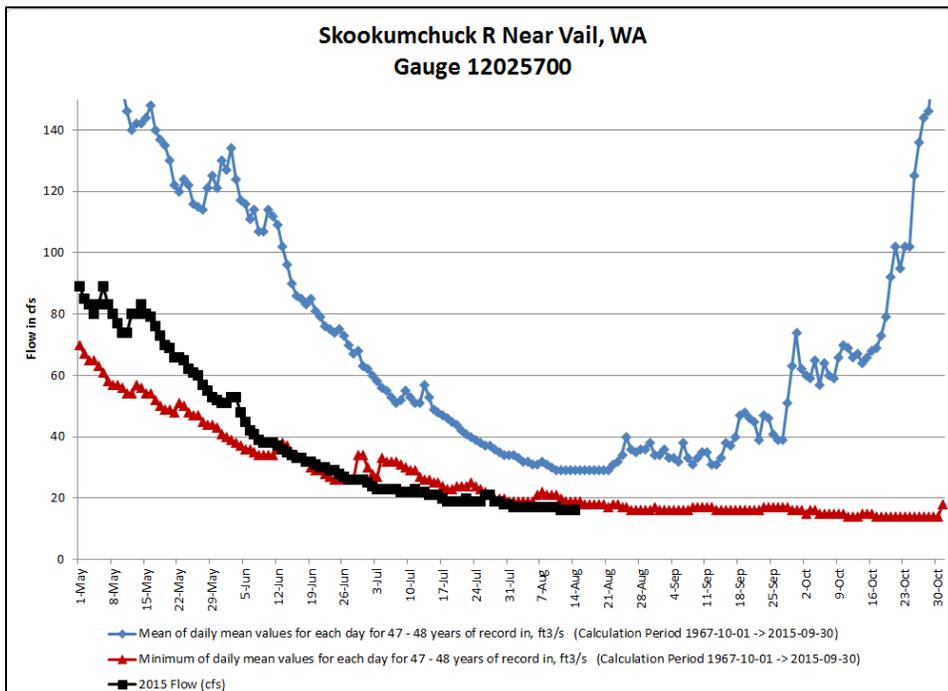


Chehalis Basin

Ecology has actively curtailed 93 water users and issued one compliance order as of June 30, 2015.

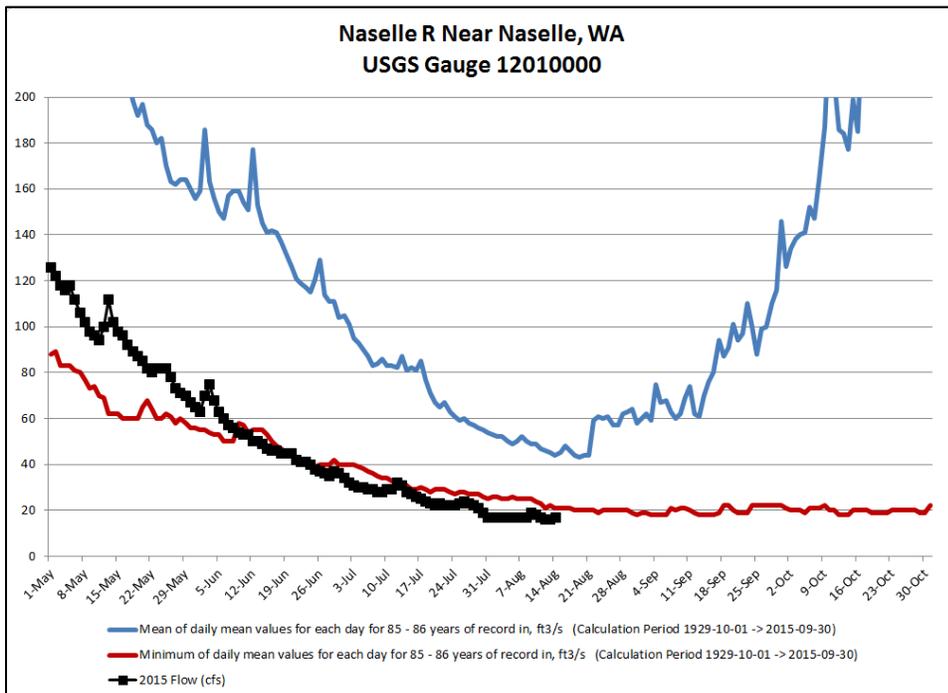
Skookumchuck:

Flows in the figure below represent inflow to the Skookumchuck Reservoir. Records low flows continue.

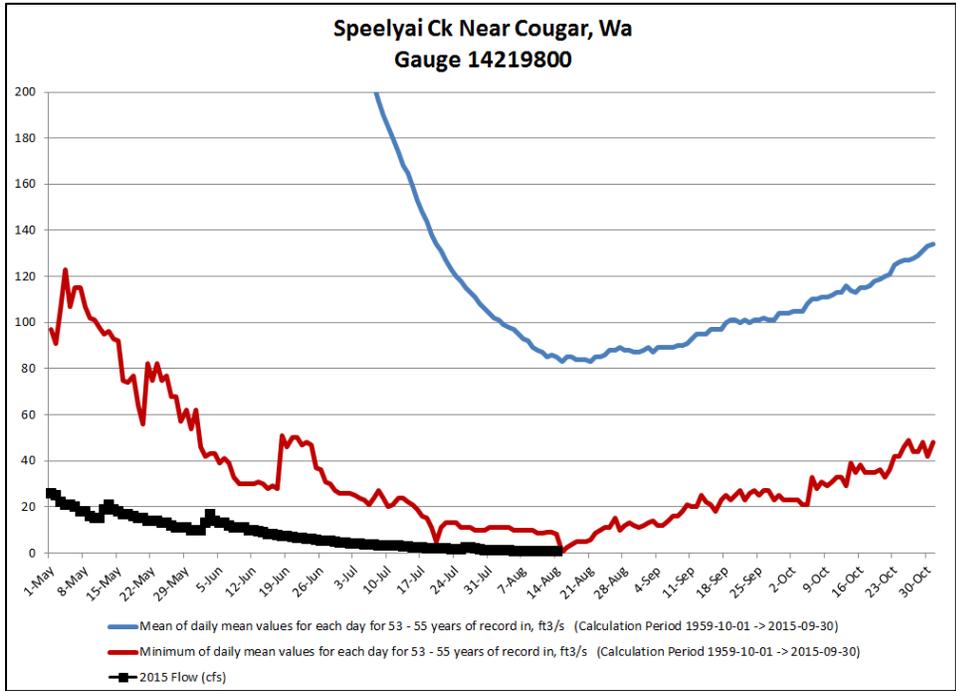


Southwest Region

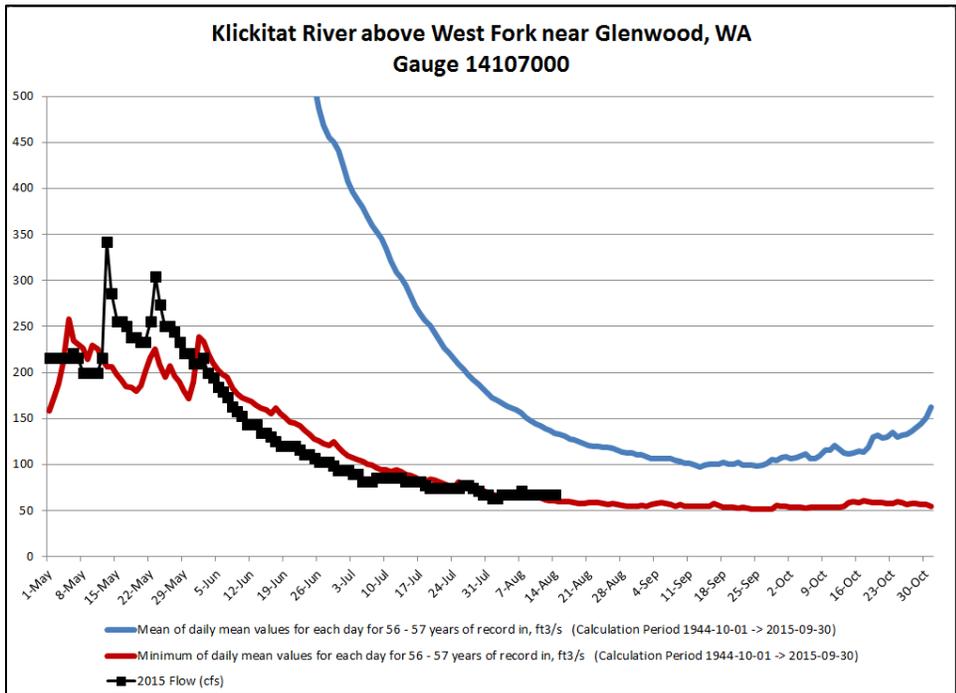
Naselle R continues to show record low flows.



Speelyai Creek rate of decline is slowing and total flow is down to 1.4 cfs.



Upper Klickitat seems to be bottoming out.



Yakima

The Reclamation Teacup Diagram (right) for Yakima Basin shows Lake Keechelus volume down to 23%, Kachess down to 57%, and Cle Elum down to 20%. Bumping is at 67% of full, and Rimrock is 82% full. Storage is 70.7% of average (1981-2010). Inflow to the five reservoirs is 55%, releases from the five are 78% and major canal diversions are 70% of average for August 14.

WDFW has partially or completely closed current fishing seasons for game fish in select areas to reduce drought-related injury and/or mortality. **Locations for new restrictions or closures:**

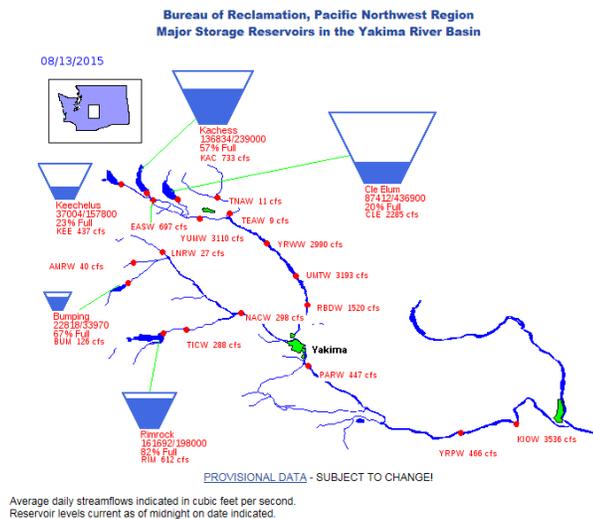
- Yakima River from I-82 Bridge at Union Gap to the South Cle Elum Bridge: Closed 2 p.m. until midnight
- Swauk Creek and all tributaries downstream of Williams Creek: Closed 2 p.m. until midnight
- Williams Creek and all tributaries: Closed
- Swauk Creek and all tributaries upstream of Williams Creek: Closed
- American River: Closed

Previously announced restrictions and closures remain in effect on the following Yakima Basin tributaries :

- Ahtanum Creek, including North and Middle Forks: Closed
- Naches River from Tieton River to Bumping River/Little Naches River: Closed 2 p.m. until midnight
- Rattlesnake Creek: Closed 2 p.m. until midnight
- Little Naches River: Closed
- Teanaway River, including West, Middle and North Forks: Closed

Mid-Columbia RFEF continues to lead and participate in fish rescue and recreational rock dam removal throughout the Yakima basin. Monday, the team presented a training session for Washington Conservation Corps crews and interested RFEFs.

Last week, the Bull Trout Task Force took Yakima Herald's Kate Prengaman along, resulting in this [story in the newspaper](#) on August 10. WDFW posted the article on our [Facebook](#) wall, and through Wednesday more than 27,000 people had seen it, with many commenting that they're "on it"! Bull Trout Task Force team members were out Wednesday in the Little Naches removing rock dams near Lost Meadow, and they came across dams that already had holes punched in them. They made contact with the recreationists along the stream to inquire about the partial removals, and one man told them, "Oh, yeah – I read your article." Becca Wassell of

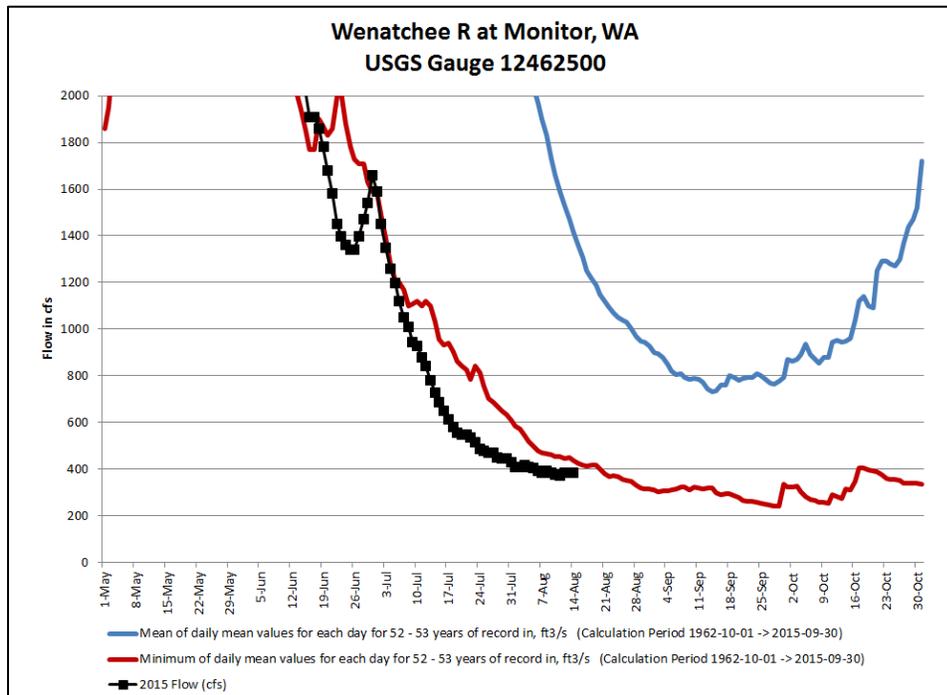


the Mid-Columbia Fisheries Enhancement Group says, “Congratulations, Kate Prengaman – you saved some fish today!”

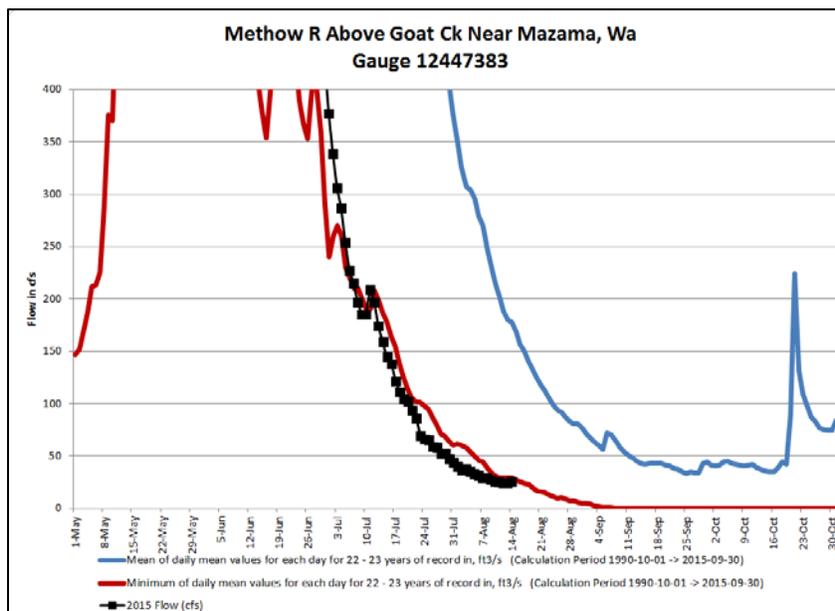
Yakima water right curtailments by Ecology total 18 post-1805 rights, 55 Teanaway users, and 74 users on the Cowiche as of end of July.

North Central Washington

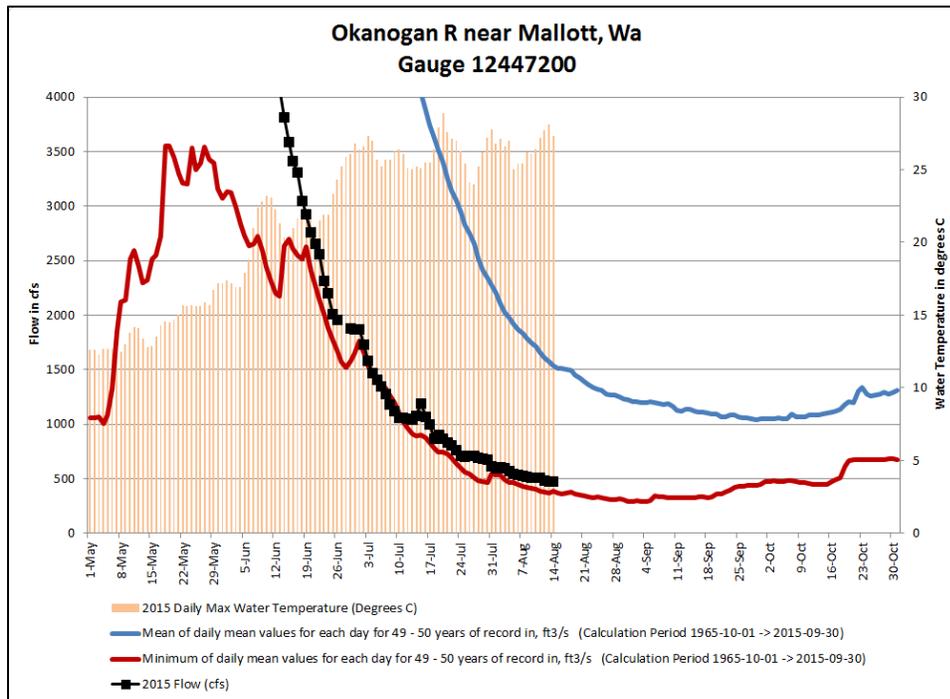
Wenatchee River low flows are moderating. Ecology has curtailed 91 Wenatchee basin water users.



Methow is tracking with its historic low base flows. Ecology has curtailed 70 water users in the Methow.

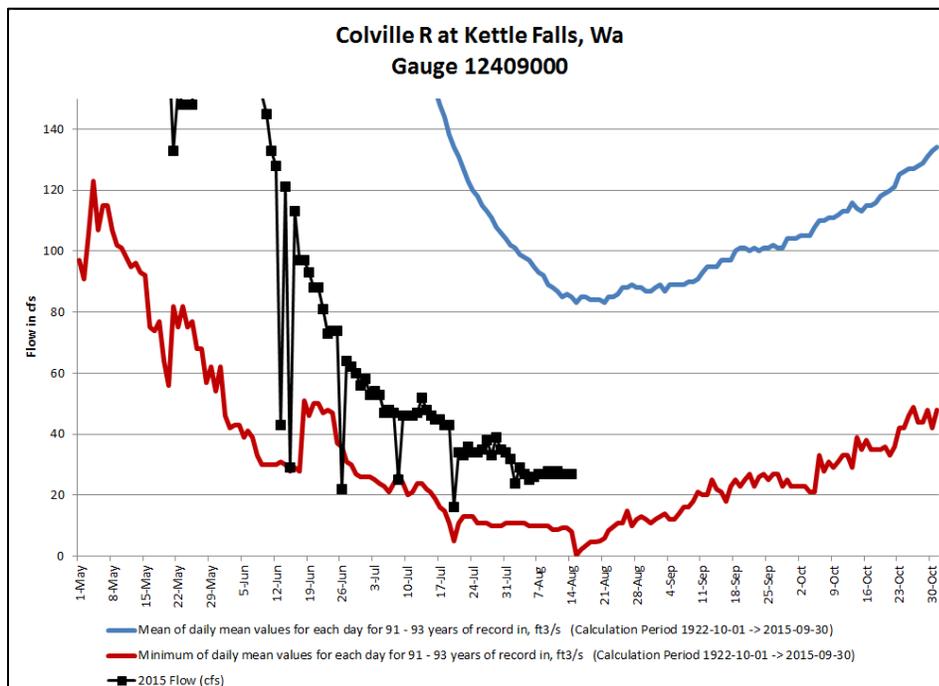


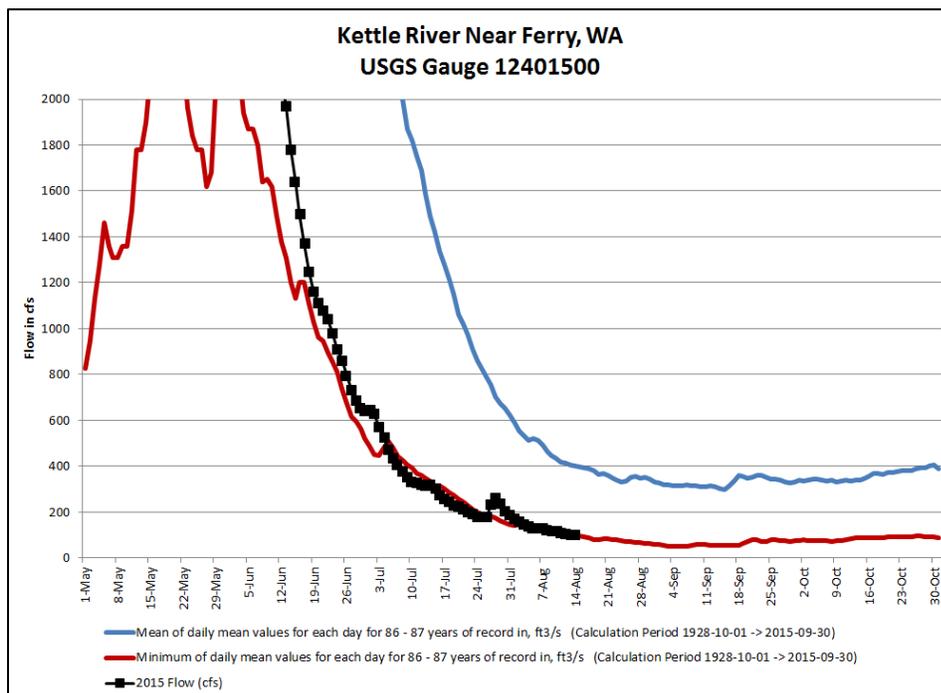
Okanogan is still hurting temperature-wise. Ecology has curtailed 101 water users in the Okanogan/Similkameen basins.



Spokane, northeast, and southeast Washington

Both Colville and Kettle are low and appear to be leveling off. Ecology has curtailed 55 water users in the Colville Basin, 140 in the Little Spokane Basin, 84 in the Walla Walla/Touchet basins, 15 in Tucannon/Asotin basins, and 41 elsewhere in the eastern region. There are also 14 compliance orders active in this region.





Snake & Columbia Rivers

Reservoir drafting at Dworshak (5 feet) and Brownlee (1 foot) reservoirs (Snake River) slowed this week. Dworshak contributes cool-water flows to the Snake. Outflows at Grand Coulee ranged from 94.3 Kcfs and 112.2 kcfs. Lake Roosevelt drafted 2 feet. Snake summer BiOp flow objectives are 50 Kcfs; actual flow averaged 24 to 27 Kcfs at Lower Granite last week. Columbia at McNary summer BiOp flow objective is 200 Kcfs; flows at McNary averaged 141Kcfs.

WDFW Headquarters Drought Response Activity

New guidance documents have been posted to the “S” drive. In particular, a new “frequently-asked questions” type document informs staff about drought response elements previously mysterious and confusing. Staff should look for guidance material at <S:\All Agency\Shared Projects\DROUGHT 2015>. Material posted there includes:

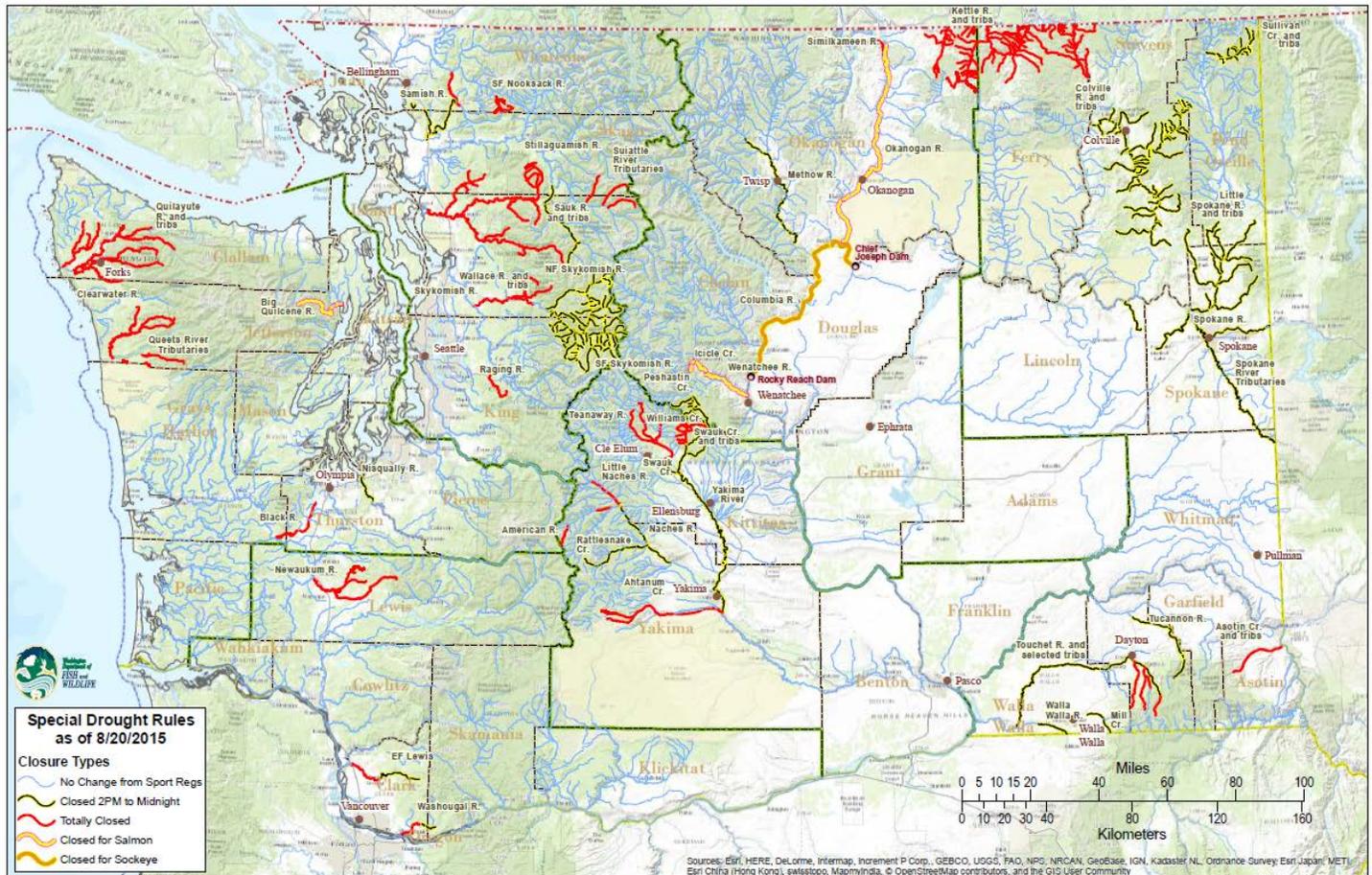
- Agency water use during drought
- “Let ‘em Pass” rock dam Signs
- “Helping Fish Survive Drought” tri-fold brochures
- Low Flow Blockage Remediation Program and Drought HPA
- WDFW Drought Response Roles and Responsibilities,
- Guidance for writing drought HPAs and implementing the new HPA emergency rules
- Images from 2015 drought
- These “update” messages
- Drought slides and talking points
- And more...

Drought-related Hatchery Actions through August 13

Region	Facility (Species)	Mortality (% production)	Comments
2	Carlton Pond (No Fish On Station)		Met with Grant County PUD on Tuesday to discuss a potential water right issue for filling the pond this fall. Grant PUD is going to follow-up with the county and further discussions will be ongoing.
3	Naches		On Monday 8/10 the local power company met with CAMP and WDFW staff to review the existing power supplies. It was determined that the existing supply would need to be upgraded and the power company was willing to support our request.
4	Bellingham (Rainbow Trout)	0 this week 5,760 cum. (80% cum.)	
4	Issaquah (Coho)	0 this week 6,728 cum. (1% cum.)	
4	Soos Creek (Summer Steelhead)	100 this week 41,308 cum. (60% cum.)	
4	Soos Creek (Coho)	500 this week 172,963 cum. (21% cum.)	
5	Fallert Creek (Steelhead)	0 this week 0 cum. (0% cum.)	Currently being treated for columnaris.
5	Grays River (Chinook)	0 this week 0 cum. (0% cum.)	Typical treatment for Frunculosis. TM for 10 days
5	Grays River (Juvenile Coho)	0 this week 0 cum. (0% cum.)	Moved 450k Early coho to Cowitz Trout on 07-28-15. The remaining 400k doing well.
5	Grays River (Steelhead)	200 this week 150,300 cum. (93% cum.)	Survivors doing well. Ich epizootic has passed for now
5	Kalama Falls (Steelhead)	0 this week 0 cum. (0% cum.)	Low levels of Ich. Currently treating. Losses are minimal.
5	Mossyrock	0 this week 0 cum. (0% cum.)	No current issues. Working on water right issues related to low flows.
5	North Toutle (Coho)	0 this week 101,746 (76% cum.)	On July 14 th , 33,600 Type S coho were shipped to Cowlitz Trout Hatchery. So far Cowlitz has only seen a loss of an additional 961 which leaves a live total at Cowlitz of 32,639. This stock is doing well.
5	Washougal (Coho)	0 this week 37,000 cum. (2% cum.)	
6	Forks Creek (Steelhead)	0 this week 14,489 cum. (24% cum.)	
6	Lake Aberdeen (Steelhead)	0 this week 64,903 cum.	Loss was due to Ich.

		(22% cum.)	
6	Naselle (Steelhead)	0 new 64,989 cum. (22% cum.)	
6	Naselle (Coho)	0 new 639,646 cum. (44% cum.)	
6	Voights Creek (Coho)	0 new 347,000 cum. (44% cum.)	

Drought-related fishery and hydraulic project actions through August 14



News Clips

FROM: KIRO 7-TV, and PENINSULA DAILY NEWS August 12:

A storm moving through Seattle and the Puget Sound brought hail, lightning and rain late Wednesday morning. On the North Olympic Peninsula, very light rain fell in scattered areas before noon. The sun and dry weather were back in force by 1 p.m.

Seattle City Light reported at noon that just over 5,600 customers were without power. Since then, outages — confirmed to be from lightning strikes — are affecting more than 1,800 customers.

WSDOT traffic reported the thunderstorm caused traffic to come to a crawl on the Interstate 90 floating bridges. Storms cleared the Seattle area around 12:40 p.m.

Meteorologist Morgan Palmer reports the Seattle rain total with Wednesday's storm is .30" — the most rain in a single day for Seattle since April 13.

[Record Washington drought hampering river monitoring](#)

King5.com - August 13, 2015

[Yakima River fishing best during morning hours, warm water detrimental to fish](#)

Daily Record News - August 14, 2015

[Lack of rain drives up businesses' costs, cuts into revenue](#)

HeraldNet.com - August 14, 2015

[Why water issues come up dry in Olympia](#)

Yakima Herald Republic - August 13, 2015

[Editorial: Drought put new facet on U.S.-Canada river treaty](#)

The Spokesman-Review - August 14, 2015

[Chandler: Legislature avoids water issues](#)

Yakima Herald Republic - August 13, 2015

[Heat-related fishing restrictions lifted on Rogue River](#)

Daily Astorian - August 13, 2015

[Washington falls deeper into 'extreme' drought](#)

Capital Press - August 13, 2015

[Unusual drought impacts all of Washington's farmers](#)

Capital Press - August 13, 2015

[State to limit Kalama River chinook passage](#)

The Columbian - August 13, 2015

[Red tide toxins shut down Pacific coast crabbing](#)

The Northern Light - August 12, 2015

[A plentiful pink return](#)

Sequim Gazette - August 12, 2015

[Impacts of irrigation heightened by drought](#)

Sequim Gazette - August 12, 2015

[Washington Department of Ecology awards first drought-relief grants](#)

Capital Press - August 12, 2015

[Seattle, Tacoma, Everett ask residents to cut water use 10%](#)

The Seattle Times - August 11, 2015

[Big Quilcene River salmon season called off as low flows continue amid drought](#)

Peninsula Daily News (AP) - August 11, 2015

[Editorial: Hot water ripples through shellfish industry](#)

Chinook Observer - August 11, 2015

[Drought is impacting electric utilities](#)

King 5 - August 11, 2015

[Drought prompts fishing closure in Olympic National Park](#)

Spokesman Review - August 11, 2015

[Spokane River drops below 500 cfs; water use soars](#)

Spokesman Review - August 11, 2015

[Drought causes emergency fishing closure in Olympic National Park](#)

King 5 - August 10, 2015

[Rock dams causing problems for fish on low-flowing rivers](#)

Yakima Herald Republic - August 08, 2015

[Crews to prep Dungeness River this week for huge run of pink salmon](#)

Peninsula Daily News (AP) - August 08, 2015

[Editorial: Washington's weather changes require adaptability](#)

The Spokesman-Review - August 08, 2015

[Oregon, Washington Moving To Drop Warmwater Limits On Shared Columbia](#)

Northwest Sportsman - August 07, 2015

['Lazy' jet stream affecting the Pacific NW](#)

Q13 Fox News - August 07, 2015

Clips from Ecology

<https://twitter.com/PeterGleick/status/629073580119056384>

citing: <http://www.isprs.org/proceedings/XXXVI/8-W27/milesi.pdf>

"In this study, relating turf grass area to fractional impervious surface area, it was estimated that potentially 163,812 km² (\pm 35,850 km²) of land are cultivated with some form of lawn in the continental United States, an area three times larger than that of any irrigated crop."

Ecology News Release – August 10, 2015

El Niño vs. the Blob: Which will win out this winter?

<http://www.scpr.org/news/2015/08/10/53627/el-nino-versus-the-blob-which-will-win-out-this-wi/>

Links

[Ecology's "Washington Drought 2015"](#)

Ecology Dam Safety web page [Wildfire Impacts on Dams](#)

Washington State Climatologist [weekly drought update for Washington State](#).

Drought web pages for State departments of [Health](#) and [Agriculture](#)

National Integrated Drought Information System [Pacific Northwest Drought Portal](#)

NOAA [El Nino Portal](#)

[NOAA's Climate Prediction Center](#)

[Northwest River Forecast Center Water Supply](#)

USGS [Real time stream data for Washington](#)

U.S. Army Corps of Engineers [Seattle District Reservoir Control Center](#)

[Rich Landers Outdoors Blog](#) Spokesman Review – ongoing

[Concerns mount as drought deepens](#) Columbian Special Project July 11, 2015

For Further Information:

Drought-related staff resources are available on the "S" drive at <S:\All Agency\Shared Projects\DROUGHT 2015>. Contact WDFW Drought Coordinator Teresa Scott at teresa.scott@dfw.wa.gov or (360) 902-2713 with questions and suggestions.