

Drought 2015

Questions of Perspective, Risk and Opportunity

Washington State Board of Health

October 14, 2015

Ginny Stern, Hydrogeologist



Public Health – Always Working for a Safer and Healthier Washington

A Little Drier, A Little Warmer, A Bit more Sun:

It has been a great summer...Why Should I Care?

- What is Snow Drought Emergency?
- What does it look like?
- What does it mean for water supplies, public health and the environment?

What is a State Drought Emergency?

A drought emergency can be declared when:

- Water supply is or is expected to be below 75 percent of normal, and
- There are or will likely be undue hardships as a result of the diminished supplies.

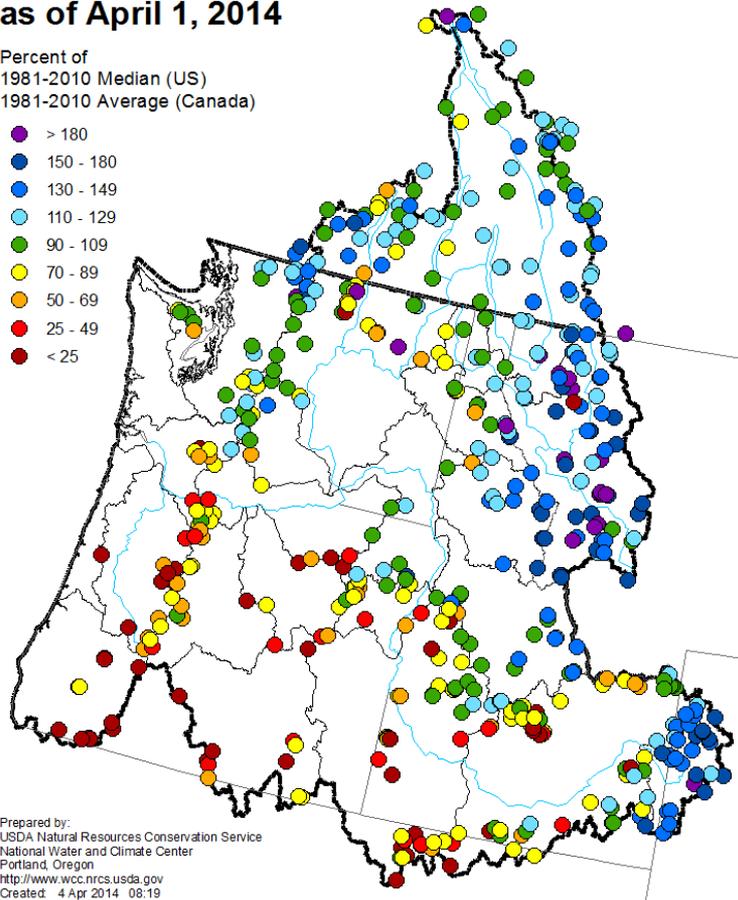
Based on recommendations from the Water Supply Advisory and the Executive Water Emergency Committees

What does drought look like?

**Columbia River and Pacific Coastal Basins
Mountain Snowpack
as of April 1, 2014**

Percent of
1981-2010 Median (US)
1981-2010 Average (Canada)

- > 180
- 150 - 180
- 130 - 149
- 110 - 129
- 90 - 109
- 70 - 89
- 50 - 69
- 25 - 49
- < 25

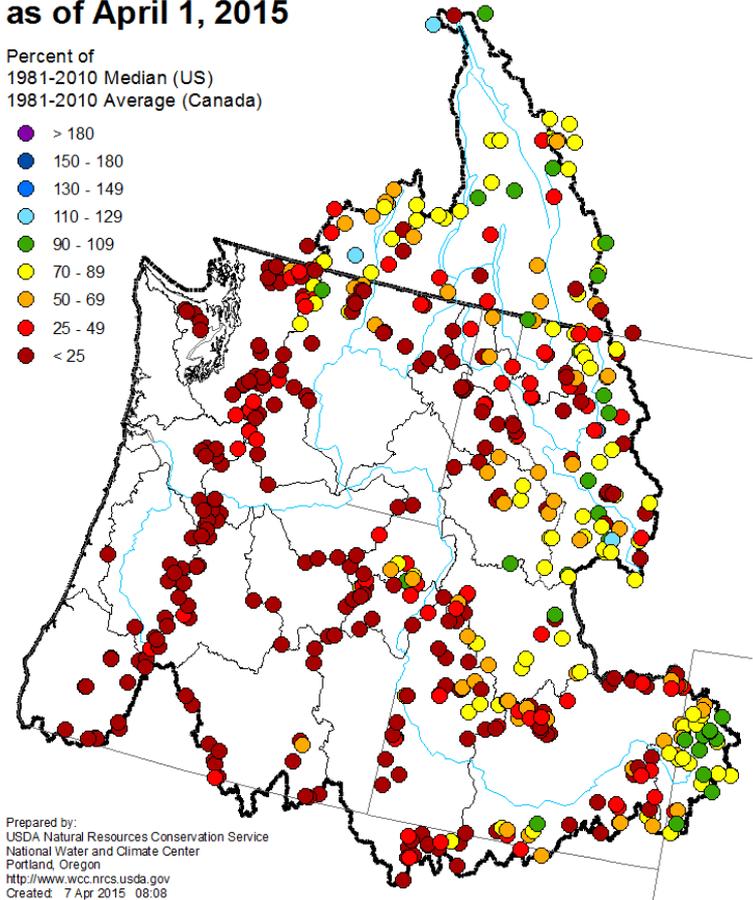


Prepared by:
USDA Natural Resources Conservation Service
National Water and Climate Center
Portland, Oregon
<http://www.wcc.nrcs.usda.gov>
Created: 4 Apr 2014 08:19

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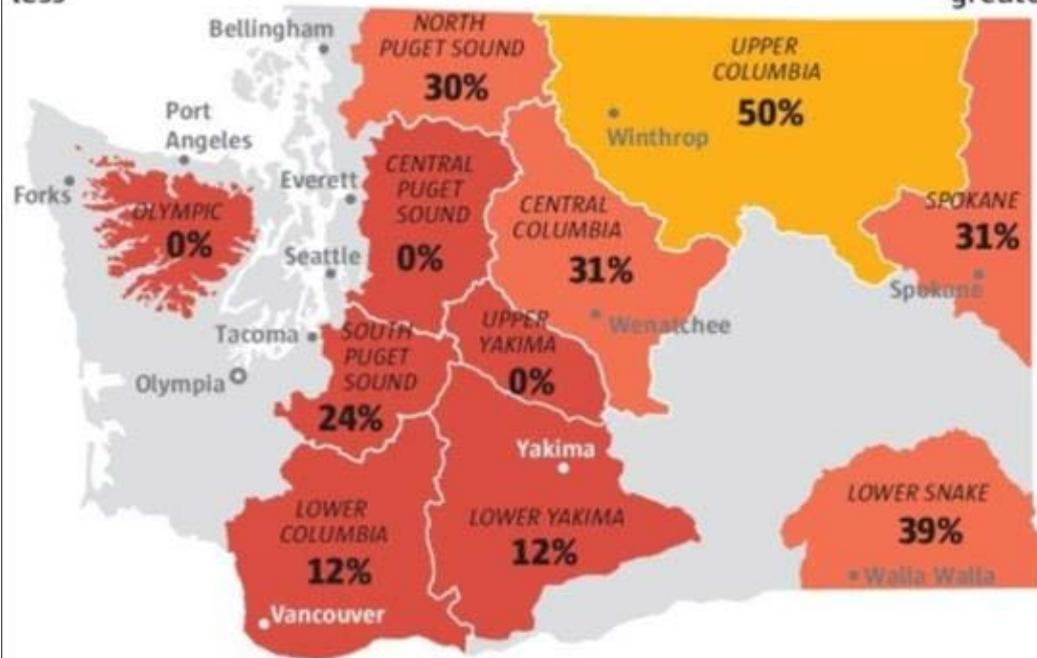
Prepared by:
USDA Natural Resources Conservation Service
National Water and Climate Center
Portland, Oregon
<http://www.wcc.nrcs.usda.gov>
Created: 7 Apr 2015 08:08

Historical Perspective

Washington snowpack

Snowpack as of May 14, 2015, as a percentage of annual average for this date (based on the first reading of the day):

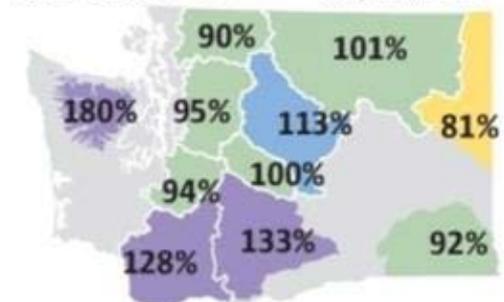
SNOW WATER EQUIVALENT* BASIN-WIDE (Percent of 1981-2010 normal)



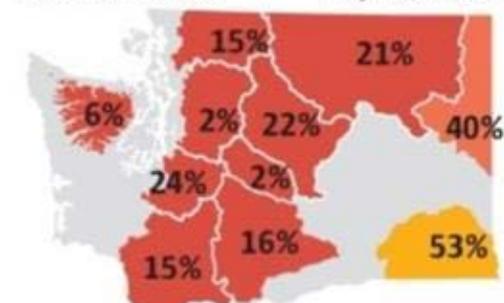
*Snow water equivalent represents the depth of water in the snowpack, if the snowpack were melted, in inches.

Source: Natural Resources Conservation Service

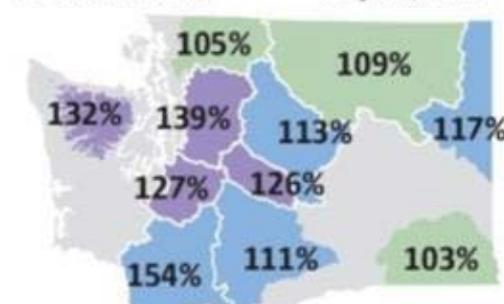
FIVE YEARS AGO: May 14, 2010



TEN YEARS AGO: May 14, 2005

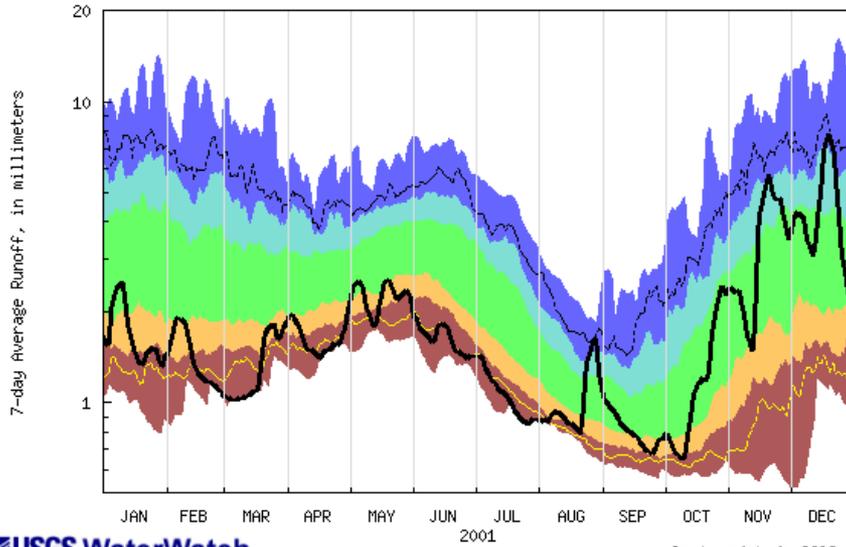


15 YEARS AGO: May 14, 2000



MARK NOWLIN / THE SEATTLE TIMES

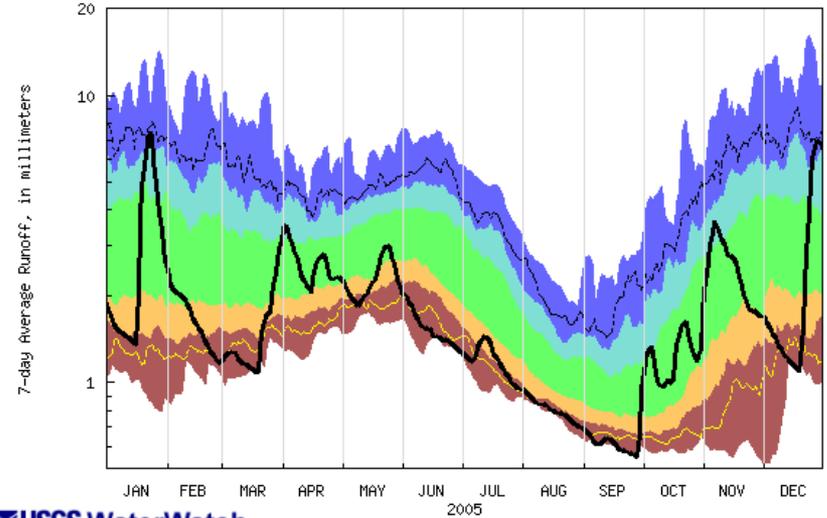
Duration hydrograph of 7-day average runoff for Washington



USGS WaterWatch

Last updated: 2015-09-30

Duration hydrograph of 7-day average runoff for Washington



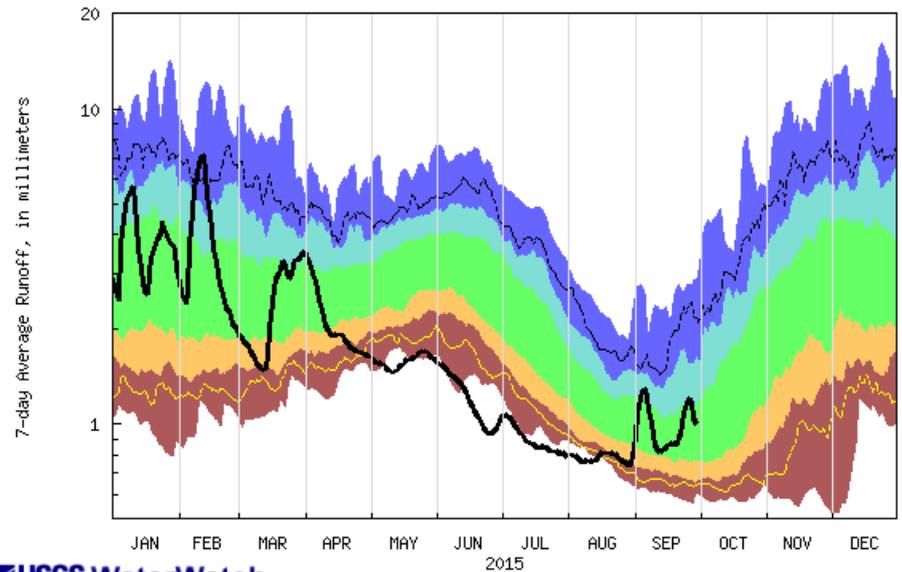
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Explanation - Percentile classes						
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile -highest
Much below Normal	Below normal	Normal	Above normal	Much above normal		Runoff

2001 – cold drought
 2005 – dry drought
 2015 – snow drought/heat

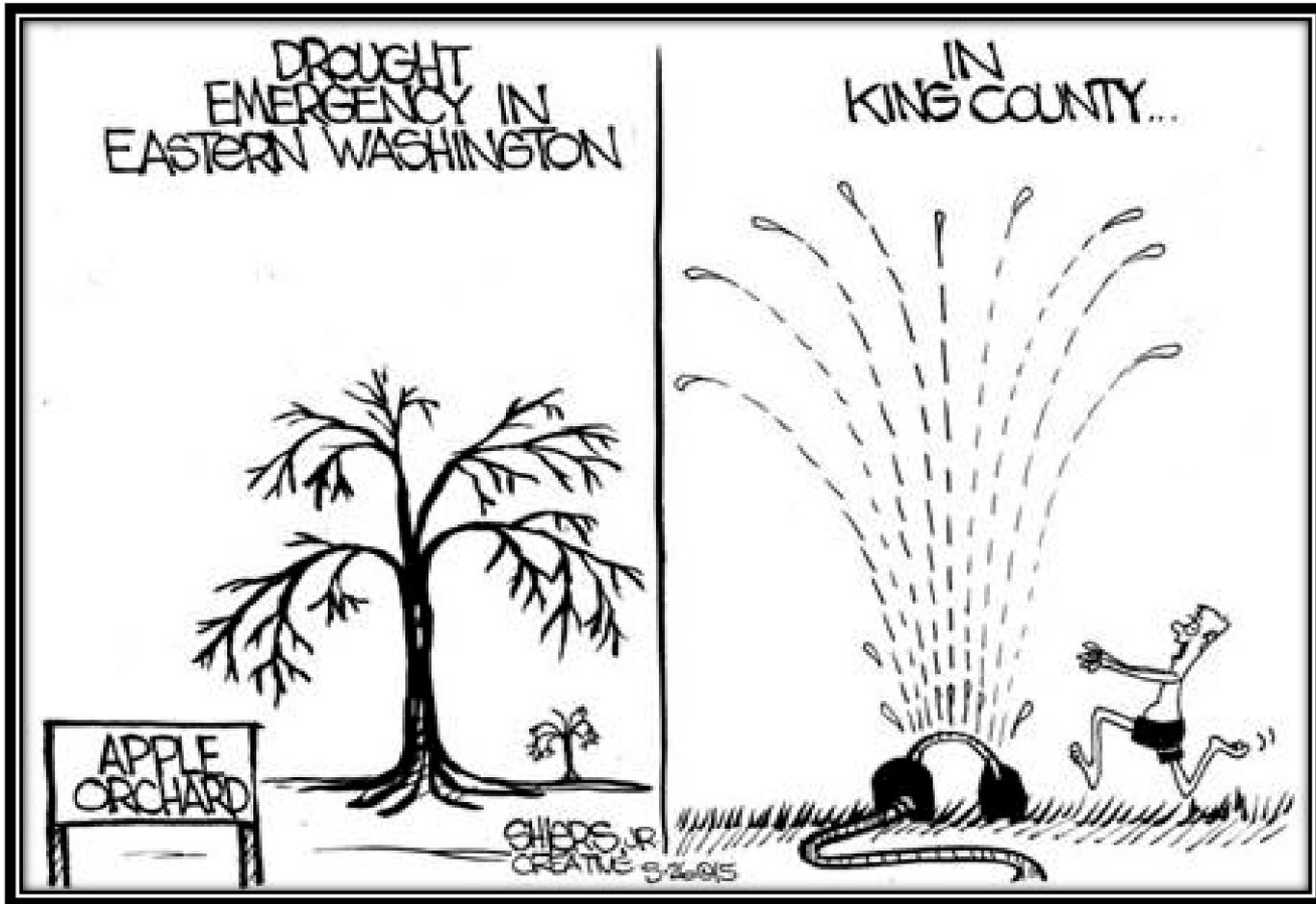
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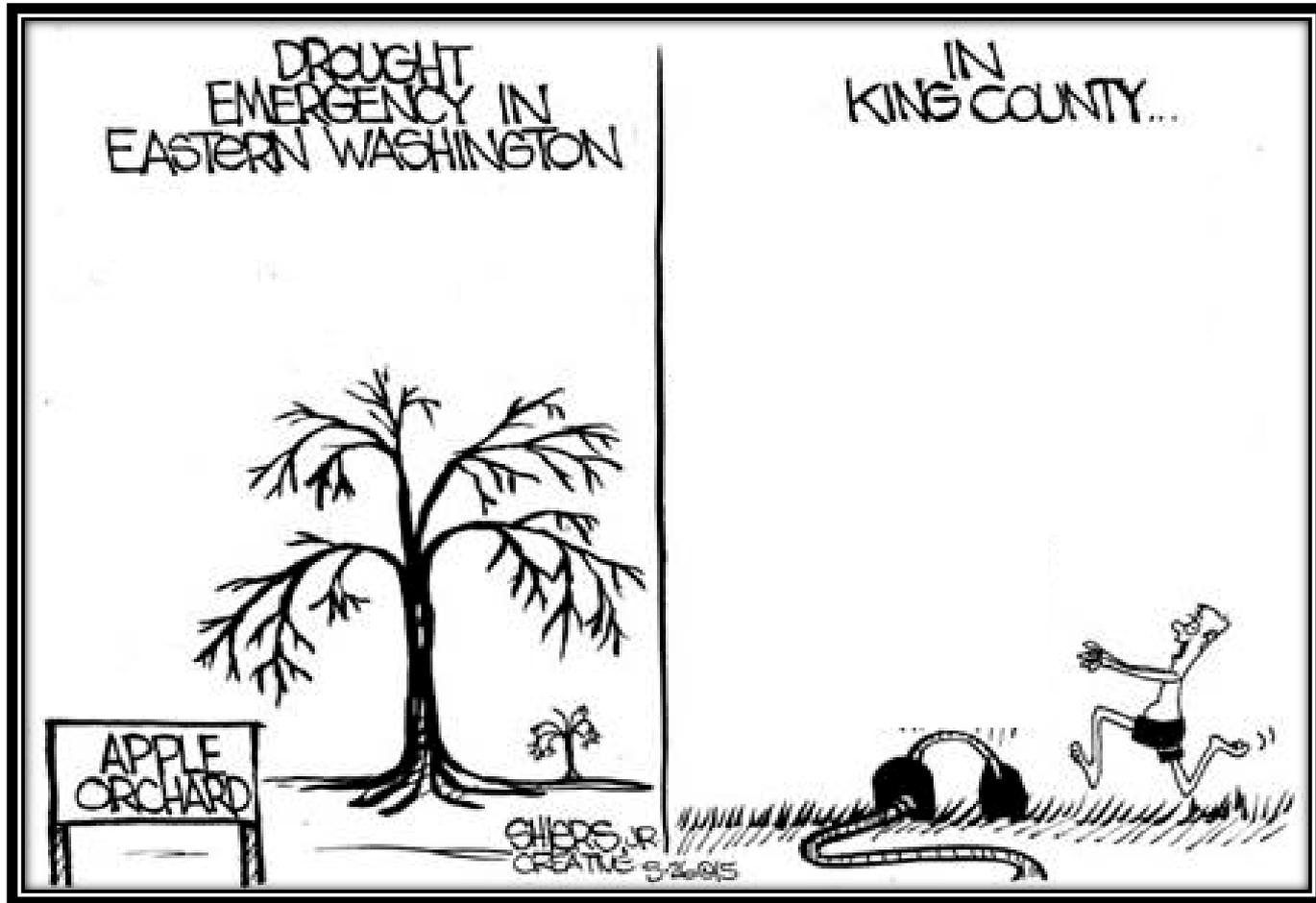
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Perspective is Everything....



But Timing is Key....



What is a Safe and Reliable Supply...

💧 Water Supply

- ✓ Adequate ~ *Is there enough to meet needs?*
- ✓ Dependable ~ *Is it there when you need it?*
- ✓ Sustainable ~ *Will it be there tomorrow?*

💧 Water Quality

- ✓ Water quality shifts as result of temperature and flow changes
- ✓ Disrupts treatment regime
- ✓ Interruption of service

What does drought risk look like?

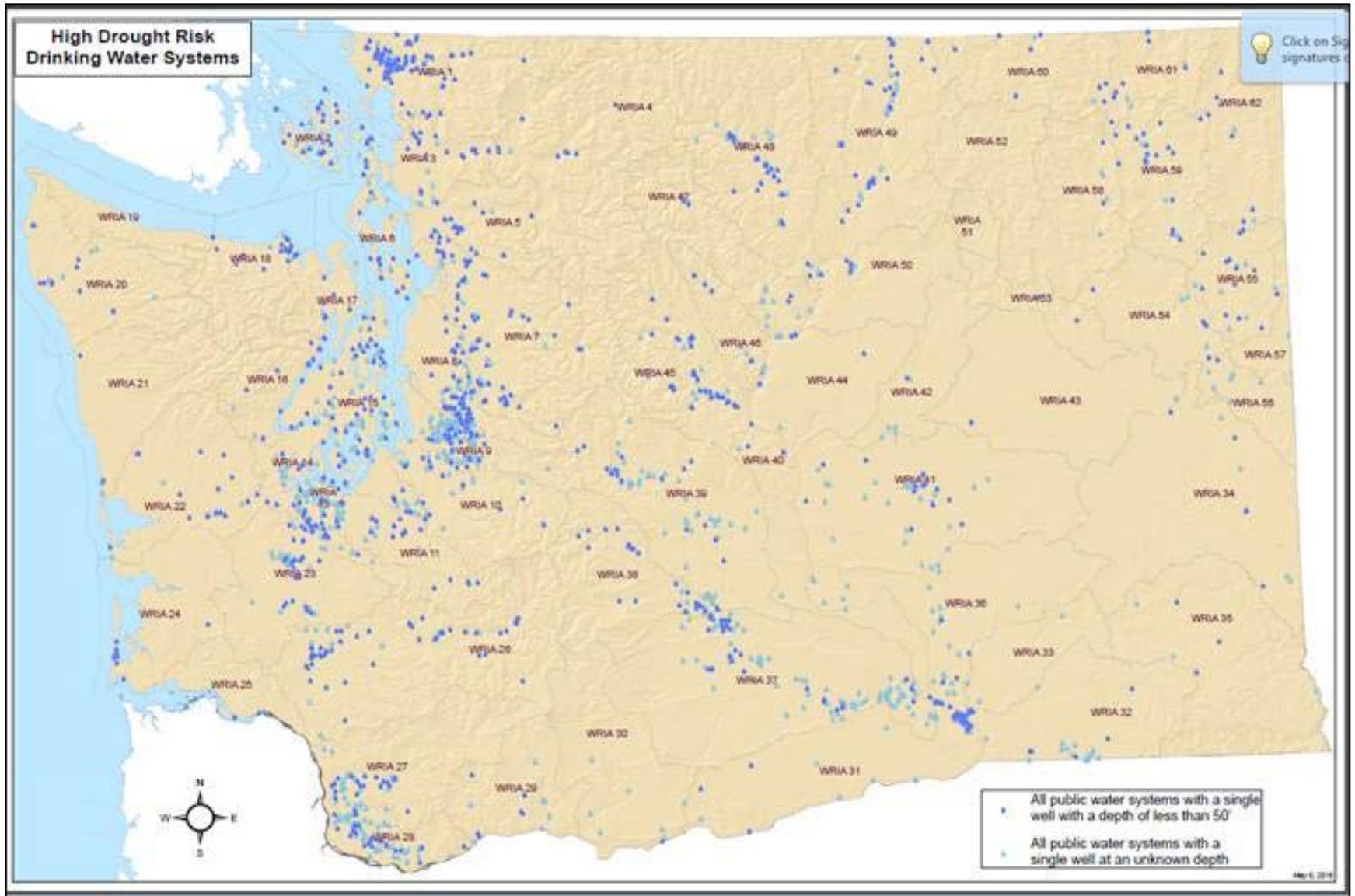
Tier 1 Drought Risk	Total		Source Depth ≤50 ft		Source Depth Unknown	
	# systems	Res Pop	# systems	Res Pop	# systems	Res Pop
Ground water	2,735	26,164	1,278	12,520	1,457	13,644
Grp A	349	10,684	232	5,166	117	5,518
Grp B	2,366	15,480	1,046	7,354	1,320	8,126
Surface water	87	1,579*				
Grp A*	40	1,230				
Grp B	47	349				

Tier 1 -
single
shallow
source

Tier 2 Drought Risk	Combined Source Capacity ≤ 10 gpm		Combined Source Capacity > 10 gpm and ≤ 20 gpm	
	# systems	Res Pop	# systems	Res Pop
Grp B	3,045	20,243	2,878	20,434
Grp A Comm	145	1,282,934	77	4,618
Grp A NTNC	32	52	31	34
Grp A TNC	337	1,025	283	900

Tier 2 -
low capacity

Where are drought vulnerable supplies?



Drought Impacts to Public Health and the Environment

- Water Quality (temperature and contaminants)
 - ✓ Shellfish – Biotoxins
 - ✓ Recreational water – Algal blooms
 - ✓ Interference with treatment plants
- Air Quality
 - ✓ Dust, smoke and particulates
- Pests and Related Disease
- Fisheries
 - ✓ Disease and mortality
 - ✓ Passage
- Fire

What have we learned?

• Successes

- ✓ Innovation and proactive work on part of water systems when the risk is tagged early
- ✓ Local partners taking an active role in Drought prep/response
- ✓ Media – coordinated state messages

• Challenges

- ✓ Drought preparedness – risk mitigation vs. emergency response
- ✓ Funding priorities
- ✓ Who tells the story about drought
- ✓ Rapid response

• What drought contingency planning look like?

So it's fall again, isn't the drought over?

U.S. Drought Monitor Washington

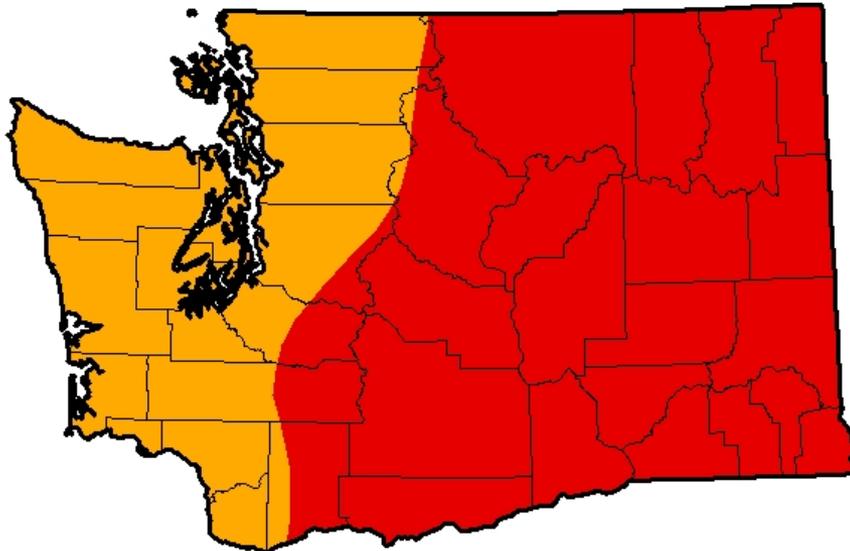
September 22, 2015

(Released Thursday, Sep. 24, 2015)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	100.00	100.00	67.96	0.00
Last Week 9/15/2015	0.00	100.00	100.00	99.99	67.96	0.00
3 Months Ago 6/23/2015	0.00	100.00	90.03	32.35	0.00	0.00
Start of Calendar Year 12/02/2014	51.87	48.13	36.15	14.83	0.00	0.00
Start of Water Year 9/30/2014	34.22	65.78	40.27	20.17	0.00	0.00
One Year Ago 9/23/2014	32.68	67.32	40.27	19.99	0.00	0.00



Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Eric Luebehusen

U.S. Department of Agriculture



<http://droughtmonitor.unl.edu/>

So it's fall again, isn't the drought over?

- Current Drought Emergency runs through December
- Forecasts and predictions
 - ✓ El Nino vs. the Blob
- What are the odds of a multi-year drought?
 - ✓ Are we going to turn into California or Texas?
 - ✓ Doesn't the fall rains mean a weather reset?
- What does it take to "call off" a drought?

Questions?