

## POLICY NOTE

# How to fix Washington's cumbersome drought declaration process

By Pam Lewison, Director, Initiative on Agriculture

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### Key Findings

1. The definition of drought should be expanded to focus on the four types of droughts and how they affect the people of the state.
2. Drought declarations should include monitoring of groundwater and soil moisture levels, in addition to measuring yearly rain and snow levels.
3. Seasonal transfers of water permits should be opened to include a larger geographical destination, not arbitrarily limited by property boundaries.
4. The drought declaration process should be accelerated so official decisions are made as early as possible in the growing season.

### Introduction

Much of Eastern Washington has been in a state of drought since 2019, with the most intense period of the drought recorded the week of August 3, 2021.<sup>1</sup> Washington state officials define “drought” as water availability falling below 75 percent of average use and when water depletion may create hardships for community residents.<sup>2</sup>

Current water supply conditions have prompted the Water Supply Advisory Committee, to alter and extend the drought emergency in several Eastern Washington counties.<sup>3</sup> The current approach to drought declarations involves an assessment of surface water availability, rainfall, and snowpack.

The advisory committee is convened by the state Department of Ecology and is made up of state and federal experts who evaluate statewide water supply conditions.

State experts give little consideration to soil moisture, operational conditions, and functional data input from those with on-the-ground experience. These factors are important indicators of the impact of water shortage on agriculture. Soil moisture, operational conditions, and functional data input all offer in-depth information that are not found in water availability, rainfall, and snowpack reports. Specifically, when considering soil moisture and operational conditions in semi-arid parts of the state, an understanding of moisture depth and soil recharge could be taken into account to produce a fuller report of water availability conditions.

### The definition of drought

Research suggests there are more than 150 functional definitions of the term “drought.” The National Drought Mitigation Center cites four

1 U.S. Drought Monitor – Historical Conditions, Washington State. Accessed June 1, 2022. <https://www.drought.gov/states/washington#historical-conditions>

2 State of Washington Department of Ecology – Drought Preparedness & Response. Accessed June 1, 2022. <https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-availability/Statewide-conditions/Drought-2022/Drought-response>

3 State of Washington Department of Ecology – Drought 2022. Accessed June 1, 2022. <https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-availability/Statewide-conditions/Drinought-2022>

major categories for measuring drought: meteorological, hydrological, agricultural, and socioeconomic.<sup>4</sup>

In the hierarchy of prolonged drought, meteorological drought is the first step in the drought process and is part of natural climate variability. Much of Eastern Washington currently has observable signs of meteorological drought including reduced precipitation coupled with reduced groundwater recharge, higher temperatures, and high winds which result in increased evaporation and transpiration.

These signs are not necessarily a hallmark of drought, however, and do not constitute a de facto drought in the central portion of Eastern Washington. The semi-arid nature of much of Eastern Washington's landscape classifies the area as a natural desert, making official drought declarations for some portions of the state more complex.<sup>5</sup>

Prolonged meteorological drought leads to depleted soil moisture and plant stress coupled with reduced biomass and yield. Agricultural droughts are tracked through various means, including precipitation declines, soil water deficits, and lack of water availability.<sup>6</sup> Determining agricultural drought requires more context given the variety of growing methods used by Washington farmers and the availability of access to both surface- and well-sourced irrigation.

Hydrological drought is the third stage of prolonged drought and includes reduced streamflow, shrinking wetlands, and impact on other wildlife habitats. Hydrological droughts are typically monitored with soil moisture and observed changes in stream- and river-flows, wetland habitat reduction, precipitation levels, and vegetation greenness.<sup>7</sup>

Research suggests there is room for improvement in how hydrological droughts are tracked and reported, specifically by monitoring weather events and quantifying how regional differences in the water table, precipitation, and soil moisture play a role in water availability.

Socioeconomic drought includes social, economic, and environmental impacts. Socioeconomic drought is effectively the byproduct of all other forms of drought combined, creating a daily water demand by the public that outpaces supply.

The effects of socioeconomic drought are felt by the largest number of water users, but typically do not occur until after meteorological, agricultural, and hydrological droughts have been observed long-term. More specifically, while other forms of drought may end, socioeconomic droughts can have a lasting

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4 University of Nebraska – National Drought Mitigation Center. Types of Drought. Accessed June 1, 2022. <https://drought.unl.edu/Education/DroughtIn-depth/TypesofDrought.aspx>

5 *Deserts in Eastern Washington*. Travel Tips, USA Today. Posted April 24, 2018. Accessed June 1, 2022. <https://traveltips.usatoday.com/deserts-eastern-washington-107196.html>

6 National Integrated Drought Information System. *Agricultural drought*. Accessed June 2, 2022. <https://www.drought.gov/topics/agriculture>

7 *Editorial: Challenges of Hydrological Drought Monitoring and Prediction*. Frontiers in Water. Posted Aug. 21, 2021. Accessed June 2, 2022. <https://www.frontiersin.org/articles/10.3389/frwa.2021.750311/full>

effect depending upon the resilience of the water system where the other forms of drought occurred.<sup>8</sup>

## **Drought in Washington state**

The drought emergency declared July 2021 in Washington state covered 29 counties (out of 39) and reflected the dryness perpetuated by the natural heat dome event over the state last June. Average precipitation in March and April 2021 tied the second-driest period on record since 1895 and contributed to the fourth-driest soil moisture for those two months.<sup>9</sup>

The 2018 adoption of the Drought Contingency Plan guides the decision-making related to drought declarations and describes various supply monitoring techniques used by the state.<sup>10</sup> Under the plan, “normal” water supply is “the median amount of water available to a geographical area relative to the most recent 30-year base period.” However, groundwater monitoring wells were not checked regularly enough to establish a reliable baseline on which to base groundwater averages.

The drought plan also outlines the responsibilities of the Water Supply Advisory Committee, which reviews drought data during regularly convened meetings. The recommendations of the supply committee are then forwarded to the Emergency Water Executive Committee, a committee made up of state agencies involved in water supplies. It is then up to the Executive Committee to review the work of the Water Supply Advisory Committee and decide whether to make a drought declaration recommendation to the governor.

Once the governor declares a drought emergency in a region of the state, the Department of Ecology can employ drought response and mitigation measures. Ecology can disburse funds allocated for drought response by the Legislature. The funds can be used for the purchase of water for municipalities, provide reimbursement for lost crops in agriculture, or other uses as approved by the department. Additionally, the drought declaration allows for expedited processing of seasonal water transfers on agricultural land.

## **Emergency declaration improvements**

Drought emergencies in our state rely heavily on measuring annual rainfall, mountain snowpack levels, and the availability of surface water but, because of the lack of historic monitoring of wells, groundwater and soil moisture are less often discussed. Also, the process of drought declarations frequently takes longer than is helpful to meet the urgent needs of the agricultural community.

Finally, the seasonal transfer of water rights should be changed from the current highly restrictive format to a format that is more owner- and aquifer-

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8 *Socioeconomic Drought Under Growing Population and Changing Climate: A New Index Considering the Resilience of a Regional Water Resources System*. Advancing Earth and Space Science. Posted July 26, 2020. Accessed June 2, 2022. <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2020JD033005>.

9 *Ecology declares drought*. Washington State Department of Ecology. Posted July 14, 2021. Accessed June 2, 2022. <https://ecology.wa.gov/About-us/Who-we-are/News/2021/2021-Drought-Declaration>.

10 *Washington State Drought Contingency Plan*. Washington State Department of Ecology. 2018. Accessed June 2, 2022.

friendly, allowing for rolling transfers throughout the year that are geographically advantageous for the water right holder.

When drought emergencies occur, evaluations of surface water availability are the easiest means available to determine whether an emergency exists. However, this approach does not take into account the long-term damage and consequences of drought, particularly in areas of Washington state with limited rainfall and snowpack.

Soil moisture depth is a long-term measure for success in areas of the state where the predominant form of agriculture is dryland production. Dryland growers rely on snow runoff and seasonal rainfall for their immediate needs, but long-term soil moisture retention is equally important to the success of an annual crop. Moreover, a lack of soil moisture from a previous year's drought can affect the ability of growers to successfully plant a new crop the following year.

The time lag in how official drought declarations are made could be easily solved by providing better mechanisms for moisture tracking and eliminating the layers of slow bureaucracy in the process.

Identifying drought conditions earlier in the year or anticipated new conditions based upon the previous year's expired drought and convening the Advisory Committee more often to review water availability would certainly speed the process.

Another improvement would be to include members of the Executive Committee in the regular Advisory Committee meetings, developing recommendations, and voting on whether drought conditions exist as one body early on.

For example, in 2020, Advisory Committee meetings were held in January, February, April, August, and December. For agricultural activities, March is the ideal time to make a drought determination so producers can plan for the coming crop year, adjust rotations as needed, and address any infrastructure maintenance that may be necessary.

Water rights transfers are a critical component of being able to respond to the needs of irrigators throughout the state during drought. The annual seasonal transfer deadline is February 15 during a regular irrigation year. The transfer is only good for one year and must be annually renewed if the permit holder wishes to transfer water to a new place of use, change a diversion point, or add a diversion point.

Historically, water users have been required to confine seasonal transfer applications to property adjacent to the parcel where the water right was initially granted and only seasonally transfer to land under the same ownership as the water right. Seasonal transfers should be expanded to allow for users to transfer permit use within an identified aquifer, watershed, or Water Resource Inventory Area (WRIA) to truly alleviate the effects of drought. Drought conditions do not recognize property boundaries, so water right holders should be able to transfer access to water to where it is needed most. Additionally, applications should be accepted on a rolling basis regardless of drought conditions.



**Pam Lewison** is the Director for the Washington Policy Center Initiative on Agriculture and is based in the Tri-Cities office. She farms in Eastern Washington and is a tireless advocate for agriculture both in Washington state and around the country. Before entering the public policy world, Pam spent nearly a decade as a journalist in the Northwest and got her feet wet as the coordination clerk for the Odessa Groundwater Replacement Program. She holds a Master of Science from Texas A&M University and a Bachelor of Arts from Washington State University.

## Conclusion

The official process for responding to drought in Washington state needs to be streamlined to meet the needs of water users more effectively across the state. A streamlined and earlier timeline for official drought declarations would provide the certainty that agricultural and other water users need to plan for the anticipated water shortfall. By adopting better groundwater and soil moisture monitoring practices, state officials can ensure dryland growers are able to get the help they need in drought years early and provide a secure water supply for all Washingtonians.

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