

Peak Water on Whidbey Island

ADDENDUM 1:

Peak Water Version 2

The original white paper¹ defines why we must develop a predictive model for the sustainability of our fresh water supply on Whidbey Island.

Anticipating the future freshwater resource will guide our planning and legislative actions to determine the carrying capacity of Whidbey Island.

This predictive model of Peak Water (PW) is still the only known method of predicting when the Extraction Rate may exceed the Recharge Rate of fresh water on Whidbey Island. The first development and application of the PW model used general assumptions for testing its applicability.

In Version 2, we have refined our assumptions based on feedback from expert reviewers. PW Version 2 refines assumptions on population growth rates, individual consumption (Oak Harbor removed) and septic tank recharge credit. The estimated Recharge was given a random generated drought factor to provide some way to estimate climate and land use effects on Recharge.

Reliable data on Extraction and Recharge rates is still very crude and requires better monitoring of the aquifer system. Efforts must be made to develop better monitoring data collection processes. These efforts require collective and political collaboration and action to tackle the complex problems of Whidbey's water resources. A second paper was written to identify the elements of the complexity and recommend potential solutions².

Continued refinement of the PW Model is necessary to guide the Resilience evaluation and mitigation with the changing Climate, part of the Island County Comprehensive Plan documentation. The PW model is presented as a tool to use in the Comprehensive Planning efforts across

¹ Predicting Peak Water on Whidbey Island, October 2024, Perry Lovelace

² Whidbey Water Solutions; Solving the Complex Problem, January 2025, Perry Lovelace
Both papers available at www.whidbeyclimate.org

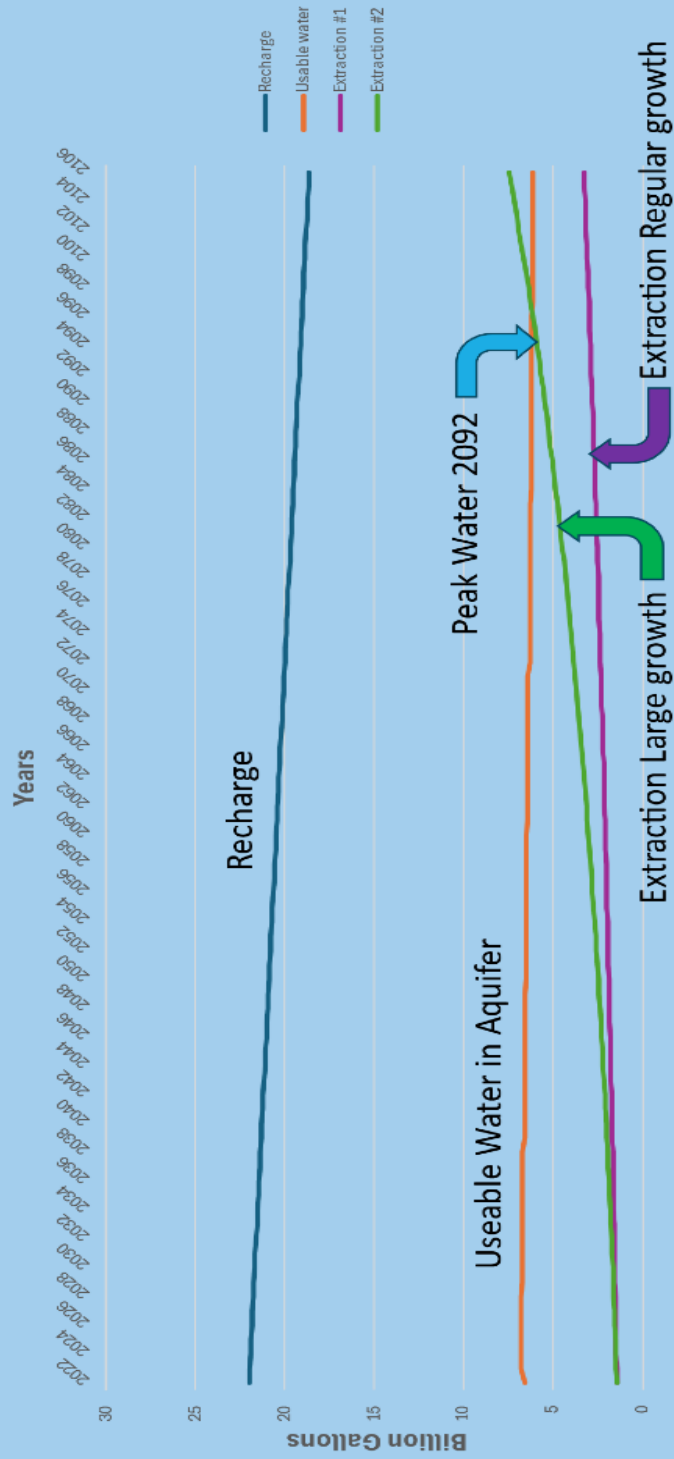
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Island County. Comments are invited. Version 2 was generated by Ed Anderson (edwina@whidbey.com).

Many Straws

A Peak Water Prediction Model, version 2

Recharge and Extraction



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Assumpt

- 1, Whidbey Island's recharge amounts to 22 to 26 billion gallons annually. (Source 2004 hydrological
2. We have not had a significant change in rainfall
3. Washington State officials are not projecting a rainfall decrease due to climate change.
4. Island County populations for 2022 were North, 38,609, Central 13,179, and South 14,036.
5. Since the North end of Whidbey gets water via a pipeline from the Skagit River, not all of the North end
6. Of the recharge, 30% is available for
7. Water run through a septic system becomes available for recharge. Water discharged into Sound
8. Rainfall could decrease over time with heat rise. Reflected in a change in the slope of the rainfall
9. Rainfall, even if unchanged overall, is projected to show more variability,

Cells with green fill will produce chart redrawing when changed. All percents shown as decimal values

Island county growth rate	0.01	Historical data(Island county and WA State projections.
Island County Growth	0.02	Extr actio
Recharg	22	Billio
% Recharge	0.30	
North End	38,60	
Central Populatio	13,17	

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South End	14,03	
North End Population	0.30	Percent of North End population included in
Starting Population	38,79	
Extraction rate per person per	100	Gal
Percentage of	0.50	Percent of extraction added
Rainfall change due to heat, e.g. 0.01	0.040	Adds a small slope to the rainfall line. (800,000,000 Approx
Maximum Annual Variability in rainfall	-	Billion Gallons maximum (a portion of this amount is applied each year + or - via random number generation).