

**To:** Puyallup-White (WRIA 10) Watershed Restoration and Enhancement Committee

**From:** Rebecca Brown, Committee Chair

**Date:** October 30, 2019

**Re:** Permit Exempt Well Projections and Consumptive Use Estimates

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## **Background**

The WRIA 10 Watershed Restoration and Enhancement Committee Chair will seek a path forward on permit-exempt well projections and consumptive use estimates at the November 6, 2019 committee meeting. The committee and workgroup have discussed PE well projections and consumptive use estimates with its related methodologies and assumptions for the past several months without a formal decision. The workgroup has identified a recommendation for the PE well projections. At this point, the workgroup has not arrived at a recommendation for the consumptive use estimate.

## **PE Well Projections**

HDR developed three PE well projections using well data from Tacoma-Pierce County Health Department (TPCHD). The high projection was based on the rate of PE wells constructed between 1999 - 2008. This timeframe represents high growth due to housing boom and strong economy. The low projection was based on 2009-2018. This timeframe coincides with the recession and slowing of new home construction. The moderate projection is based on the entire 1999-2018 dataset, a twenty-year period that includes both a housing boom and a recession. King County provided a similar analysis using building permit data for buildings outside of the city limits.

***Workgroup Recommendation:*** *The WRIA 10 workgroup recommends that the committee move forward using the moderate projection (688 wells across seven subbasins) as part of the calculation to estimate consumptive use.*

## **Consumptive Use Estimate**

On October 21, 2019, the workgroup discussed the consumptive use estimate, focusing on the outdoor irrigation analysis conducted by HDR. HDR provided their methodology and answered questions. HDR provided additional information on their methodology and statistics on a webinar on October 28, 2019.

HDR's initial analysis yielded an average outdoor irrigation area of 0.17 acres. The analysis returned a large number of parcels without detectable outdoor irrigation. HDR used an arbitrary value of 0.05 acres to account for the outdoor water use that may occur but was not detected. Including the 0.05 value instead of zero yielded an average outdoor irrigation area of 0.20 acres. From there, HDR calculated the 95% Upper Confidence Level as 0.27 acres.<sup>1</sup> Concerns remain from WDFW and other entities regarding the sample size used to conduct the outdoor irrigation analysis, and the use of 0.05 as the non-detect value.

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<sup>1</sup> The 95% Upper Confidence Level assuming 0's are non-detects, replaced with 0.05 acres; Parametric (Gamma or Lognormal).

The average outdoor irrigation area is one input into the consumptive use estimate calculation. The other inputs and current assumptions are:

- Average irrigation requirement based on Washington Irrigation Guide (16.1 inches/year).
- Irrigation efficiency (75%).
- Outdoor consumptive use (80%).
- Indoor use (60 gal/day/person).
- Indoor consumptive use (10%).
- Average persons per household (2.5 people).
- PE well projection (moderate projection: 688).

**Next Steps:** The committee can choose an interim consumptive use estimate based on the above inputs while HDR and Ecology continue to work through the remaining concerns. Having a consumptive use estimate in mind will help the committee during upcoming project discussions. The committee can revisit and confirm a consumptive use estimate at the February 5, 2020 meeting.

### **Offset Target**

In addition to the consumptive use estimate, the committee may choose to pursue an “offset target”—a value higher than the consumptive use estimate that provides a safety factor to account for uncertainty inherent in the analysis. The committee can arrive at the offset target through several ways, including:

1. Double the consumptive use estimate (recommended as an option by Tom Culhane).
2. Change specific factors and assumptions in the CU calculator. For instance, the committee may choose to use the higher PE well projection, assume a larger outdoor watering area, and/or a greater outdoor consumptive rate to account for uncertainty in the assumptions.
3. Develop a list of projects, and determine the extent that the projects’ offsets exceed the consumptive use estimate. WRIA 11 plan generally took this approach.

**Next Steps:** The committee can consider how they would like to arrive at a safety factor. The workgroup can continue the discussion as the consumptive use estimate is refined and project list is developed.