

# MEMO

## State of Idaho

### Department of Water Resources

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**Date:** December 10, 2021

**To:** Technical Working Group for Big Wood River Ground Water Management Area  
Advisory Committee

**From:** Jennifer Sukow

**Subject:** Estimating consumptive use reductions corresponding to estimated Silver Creek shortfalls

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On November 29, 2021, the Advisory Committee asked the Technical Working Group (TWG) to “develop a guideline for groundwater consumptive use limits for the basin based on two (or possibly three) different tiers of forecasted water supply.” During TWG meetings on December 3, December 7, and December 9, 2021, members of the TWG proposed and discussed methods for estimating shortfalls in aquifer discharge to Silver Creek corresponding to the Advisory Committee’s goal “to maintain a 32 cfs four-day moving average streamflow target from May 1 through September 30 at Station 10, Little Wood River near Richfield.”

On December 10, 2021, members of the TWG agreed to recommend use of Dave Shaw’s calculations for estimating shortfalls in aquifer discharge to Silver Creek for different tiers of forecasted water supply. The estimated shortfall volumes represent aquifer discharge to Silver Creek during the months of June through September. Because the hydrologic impacts of reducing consumptive use of groundwater in the Wood River Valley aquifer system will also accrue during other months of the year and to other river reaches, the reduction in consumptive use needed to mitigate the estimated shortfall is a larger volume than the shortfall.

As discussed in the December 9 meeting, the groundwater users would ideally develop a plan detailing the locations and timing of proposed consumptive use reductions and the hydrologic response to the detailed plan could be evaluated using the WRV1.1 groundwater flow model. Given the lack of a detailed plan and the limited time available to develop estimates of consumptive use reductions for the initial term of the groundwater management plan, a simplified approach is

proposed to provide a rough estimate of consumptive use reduction volumes by scaling model results from the fallowing scenario<sup>1</sup>.

The attached spreadsheet starts with the June through September shortfall in aquifer discharge to Silver Creek calculated by Dave Shaw. The estimated average June through September benefit to Silver Creek reach gain from fallowing 1,500 acres in the South Valley Ground Water District every year is deducted from the shortfall to calculate an estimated unmet shortfall. A rough estimate of the volume of additional groundwater consumptive use reduction needed is calculated by multiplying the unmet shortfall volume by the ratio between the fallowing scenario's modeled reduction in aquifer stress and the modeled increase in June through September aquifer discharge to Silver Creek. This approach assumes the spatial and temporal distribution of additional consumptive use reductions will be somewhat similar to the distribution modeled in the fallowing scenario.

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<sup>1</sup>Sukow, J., 2021, *Hydrologic Impacts of Proposed Fallowing Conservation (SVGWD sites, 10/11/2021)*, presentation to the Big Wood River Ground Water Management Area Advisory Committee, <https://idwr.idaho.gov/wp-content/uploads/sites/2/groundwater-mgmt/big-wood-gwma-advisory-comm/FallowImpactAnalysis.pdf>.