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Memo

To: Brad Johnson, Asotin PUD Mimi Wainwright, Ecology	
From: John Koreny	Project: Asotin/Alpowa Water Use Study
CC: Ben Floyd	
Date: April 22, 2008	Job No: 79143

RE: RESPONSE TO COMMENTS

This memo provides information in response to comments, dated April 22, 2008 and received from Mimi Wainwright, Ecology, on two draft memos by HDR for the Asotin/Alpowa Creek basin water use study. Information for your consideration with regards to these comments is presented below.

We understand that Brad and Mimi will work together to consider the comments and come up with a recommended path forward. We are available to discuss these via conference call if that is helpful. Please contact John Koreny at 425-450-6321 if you would like to arrange a conference call.

MEMO ON EARLY DRAFT OF ASSUMPTIONS FOR PER HOUSEHOLD DOMESTIC WATER USE RATES FOR RESIDENCES ON WELLS AND SEPTIC TANKS

Comment 1

Page 1; Methods and Assumptions, Indoor Household use – "It is assumed that most household water…." Indoor water use is not 100% returned. There is a portion that is consumed and Ecology estimates this to be 10%.

Response

We agree.

Comment 2

Page 2; Indoor Water Use and Septic Drainage, 1st bullet –Asotin PUD's indoor water use average should be used instead of AWWARF's 1999 published survey results of 175 GPD.

Response

We understand that Asotin PUD does not have indoor water use records. Asotin PUD only has meter records for total use which includes the combined indoor and outdoor use. AWWA reports 175 gpd/household and is a well-accepted statistic use for municipal water system plans. In the absence of other data, we recommend using this estimate.

Comment 3

Page 2; Indoor Water Use and Septic Drainage, 2nd bullet – application efficiency of 85% appears high and would indicate use of current irrigation scheduling and application technologies, and not consistent with assumption that lawns are small enough to be "watered with a garden hose." An irrigation efficiency rate of 60-70% would be more realistic.

Response
A value of 85% was selected for field efficiency to represent the observations by individuals with experience in the area (Brad Johnson and Tim Simpson) that lawn irrigation is very efficient and inividuals with domestic residences typically under-irrigate (lots of brown lawns). We agree that 60 to 70% would be an appropriate range for residences that were irrigating at the full irrigation requirement. We suggest using a 70% field efficiency range which is between the 60 and 75% field efficiency range for a stationary lateral sprinkler (as reported on 37 of Tuthill and Dreher, 1996, cited in the original memo). This is conservative and probably over-estimates water use since Brad and Tim report that many lawns in the area go brown in the summer due to underwatering.

Comment 4
Page 3; Consumptive Use and Return Flow, 2nd bullet - "approximately 90 percent of house water use is discharged…." Ecology recognizes that indoor water use with septic systems operate with an approximate 90% return rate factoring in consumption activities.

Response
We agree.

Comment 5
Page 3; Results, 1st bullet –summer total water use should be consistent with Asotin PUD's record of actual use.

Response
We are unclear as to whether the comment is suggesting using the water budget approach or to use the Asotin PUD meter records. Two choices were considered to estimate water use in the non-municipal service areas for houses served by septic tanks and wells.

- **Asotin PUD Meter Records** The first choice is to use meter records. We searched for meter records for residences with wells- but the only meter records are for houses within the Asotin PUD municipal service area. The houses in the Asotin PUD service area are served by public municipal supply and sewers and have different lawn sizes, irrigation frequencies and number of persons living in a house and consequently the household use rates will be significantly different than areas without public supply or septic service. Persons familiar with the area (Brad Johnson and Tim Simpson) indicated that using the Asotin PUD service area meter records would over-estimate rural non-public water use.

- **Water Budget** The second choice is to estimate water use based on estimated household consumption for a similar per-household population estimate and based on the estimated size of typical lawns using actual ET estimates for the area. Therefore, we decided to develop a separate water budget to account for actual water use practices in the rural areas.

We recommend using the water budget approach for the reasons noted above.

Comment 6
Page 3; Results, 2nd bullet –winter use should reflect Asotin PUD actual average indoor use with 90 percent returning to the aquifer.

Response
See the response to Comment 1 and 2.

Comment 7
Page 3; Results, 3rd bullet – Use Asotin PUD's actual indoor and outdoor water use to calculate average annual total water use estimates.

Response
See response to Comment 5.

Comment 8
Page 4, Table 1;

•Water Use Indoor column should reflect Asotin PUD's actual average indoor water use.

•Irrigation column should reflect Asotin PUD's actual average outdoor water use for the appropriate months.

•Indicate the consumptive indoor water use during October through March (6 months).

•Consumptive Use for Indoor Use totals 7% annual loss that was not indicated in the Memo?

•Factor in 10% loss of Indoor Water in Return Flow to Aquifer column.

Response
See comments above.

Comment 9
Page 4, 1st pp – Were other factors such as watering of domestic animals (cattle, horses, llamas, etc.) considered, or watering of small pastures?

Response
Stock watering and agricultural irrigation will be accounted for as an agricultural use based on an inventory of current irrigation. Persons familiar with the study area (Brad Johnson, Tim Simpson) indicate that domestic residences do not water stock. The few households with stock only have a few animals. A factor could be included to account for a small amount of stock for residences if determined to be appropriate.

DRAFT OF ASSUMPTIONS FOR POPULATION PROJECTIONS IN THE ALPOWA AND ASOTIN CREEK SUBBASINS

Comment 1
Page 3, 1st pp, last sentence – might be prudent to assume a small amount of growth in ag-transition zones.

Response
Three population estimate scenarios were evaluated: 1) Current Population, 2) Future Growth and 3) Partial Build Out. The Future Growth scenario used a 1% growth rate, so this scenario does include a small amount of growth in the ag-transition areas. The Partial Build-Out scenario estimates the growth that will occur if all buildable lots (lots with less than a 20% slope) within the valley bottoms and the ag-transition areas are developed. These assumptions can be changed if others are more appropriate for Partial Build Out. Please advise specifically what assumptions would be more appropriate.