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JAN 12 2004

Department of Water Resources
Snake River Region

January 9, 2004

John Freitag
Idaho Department of Water Resources
1341 Fillmore St, Suite 200
Twin Falls, ID 83301-3380

RE: Willow Hills Transfer Mitigation Plan Supplemental Information

Dear John

In a telephone conversation on January 8, 2004, you requested a more detailed narrative about the input parameters used in the Willow Hills Dairy (# 70921) transfer spreadsheet model. This letter provides the details and is supplemental to the mitigation plan dated November 18, 2003. Also, I am including a set of revised figures showing the most recent results of the transfer model. The new figures show slight differences compared to the version dated November 18, 2003 due to modeling the priority dates of the FROM Well differently as explained below.

Spreadsheet Model Analysis

To evaluate the impacts of transfer #70921 to the different reaches of the Snake River, the Eastern Snake Plain Aquifer (ESPA) Ground Water Transfer Spreadsheet version 1.3 (model) was used.

The POD of the FROM well is in model cell S06,30. The POD for the TO well is in model cell S5,25.

The pumping volume at the TO well is 15.9 ac-feet per year (afa), which is 5.3 ac-ft/trimester.

As described in the mitigation plan, 15 acres of water right nos. 43-4037 and 43-7126 will be retired to offset potential impacts the transfer will create to the ESPA.

The transfer of these water rights is in part modeled by entering a pumping rate in the FROM1 WELL column. Water right no. 43-4037 has a priority date of May 1962 and represents approximately 1/3 of the total amount of water being retired (43-4037 provides irrigation for 538.3 acres in a 1660.3 acre place of use). Therefore, 1/3 of the total amount of mitigation water was modeled to have started in spring of 1962. The remainder of the mitigation water comes from water right no. 43-7126, which has a priority date of May 1978. In the model, beginning in spring 1978, the total amount of mitigation was simulated. This is summarized in Table 1 below for both the 'with transfer' and 'without transfer' scenarios.

As discussed in the mitigation plan, crop reports provided by the Farm Service Agency (FSA) show that the crop rotation in 1994 had a consumptive rate of 2.97 ac-ft/ac (Allen

Brockway, 1983). Using this consumptive rate, 15 acres of land have an annual consumptive volume of 44.6 afa. On a trimester basis, this annual consumptive volume is 15 ac-ft ($44.6 \div 3 = 15$ ac-ft/tri). The model simulation uses the fact that the water rights have been in the water bank since 1995.

Table 1 Summary of Pumping Values for Transfer Model

	To Well	From Well With transfer (ac-ft/trimester)	From Well Without Transfer (ac-ft/trimester)
Spring 1962	0	5	5
Winter 1977	0	5	5
Spring 1978	0	15	15
Winter 1994	0	15	15
Spring 1995	0	0	15
Spring 2004	5	0	15
End of simulation (2111)	5	0	15

Results

Using the above input values, the model was run and the results are shown on Figures 1 through 5. The amount of mitigation was determined by adjusting the amount of water at the FROM Well until the model predicted that no impact would occur to the ESPA. As shown in Figures 1 through 5, the curves representing the 'with transfer' scenario do not exceed the 'without transfer' condition. Therefore, by retiring 15 acres of ground under the specified water rights, there will be no impact to the ESPA according to the model.

I hope this satisfies your questions in sufficient detail. Please call if you have any additional concerns.

Regards,



Steven R. Hannula

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Southern Region