

MEMORANDUM

FROM: Jennifer Sukow, IDWR Hydrology Section
TO: Monica Van Bussum, IDWR Water Supply Bank Coordinator
CC: Sean Vincent, IDWR Hydrology Section Manager
DATE: April 27, 2012
RE: Review of **Amended** Lee Sutton Application to Rent Water from the Water Supply Bank

Introduction

Lee Sutton submitted an amended application to rent groundwater to irrigate 46 acres from 2012 through 2015. A portion of water right 22-7336 is being considered for rental to Mr. Sutton. The amendment is a reduction in acres from the original application and an earlier amended application, which were discussed in previous memorandums dated February 22, 2012 and April 11, 2012. The Hydrology Section was requested to provide an assessment of potential impacts of the amended water supply bank rental application, assuming that Mr. Sutton rents 69.5 acres of water right 22-7336 to include mitigation for predicted impacts to the Heise to Shelley reach.

The proposed point of diversion and rental water right point of diversion are located within the Eastern Snake Plain Aquifer (ESPA). Guidance for approving transfers which propose a change to points of diversion in the ESPA is contained in Administrative Transfer Processing Memorandum No. 24, dated January 21, 2009. Because the proposed Water Supply Bank rental would in effect be a temporary change to the points of diversion, potential impacts to the Snake River can be evaluated using this guidance. The transfer guidance indicates that a change which increases depletions to a modeled reach of the Snake River by greater than 10 percent must be fully mitigated, unless the increased depletion is less than two acre-feet per trimester or the total steady-state depletion to the reach is less than 10 percent of the total depletion.

Figure 1 shows the locations of the proposed point of diversion and the points of diversion for the available water rights. The proposed point of diversion is located within the ESPAM1.1 model in cell 1068181. The point of diversion for water right 22-7336 is located in model cell 1061184.

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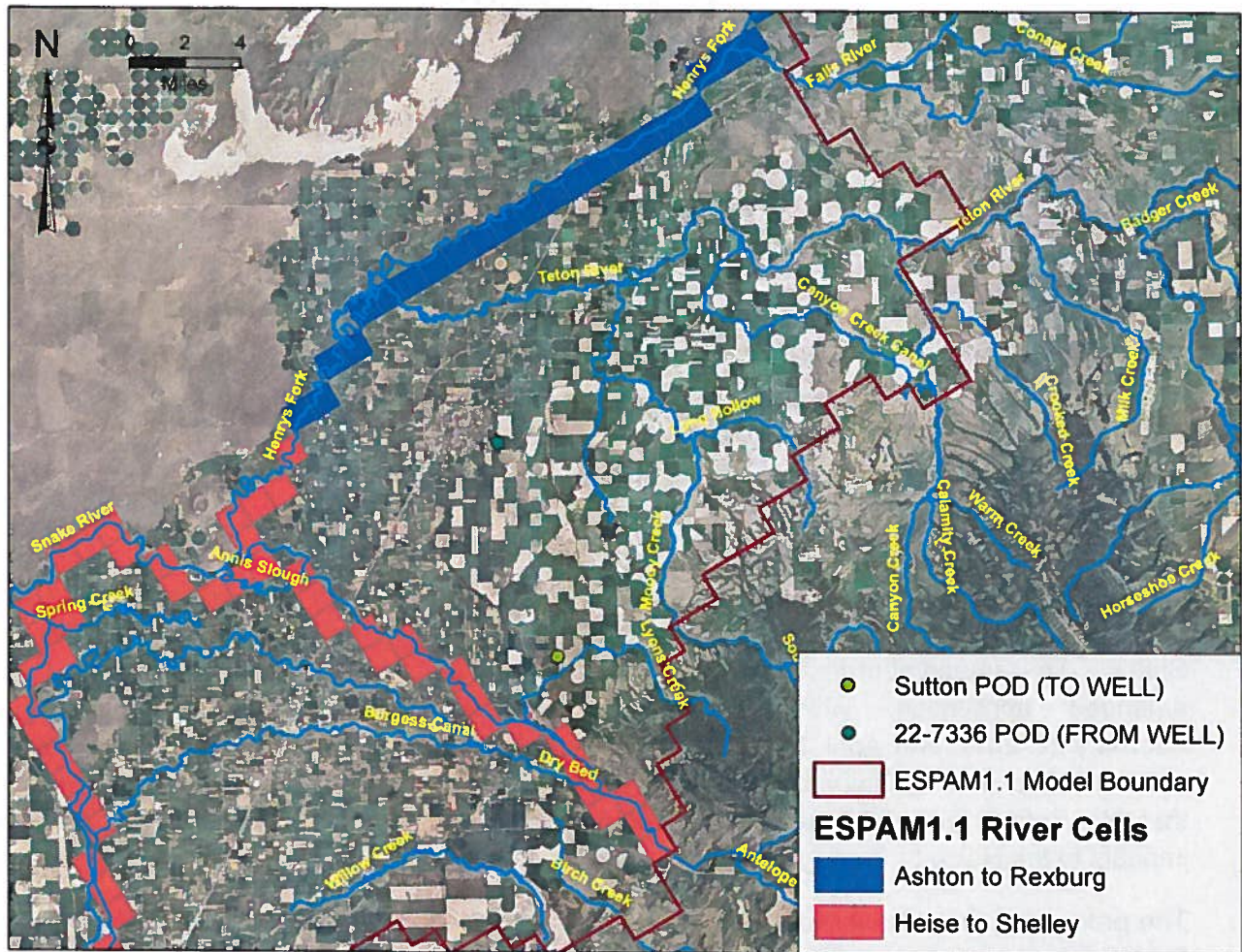


Figure 1. Location map.

Methodology

Potential impacts to the Snake River were evaluated using the ESPA Transfer Spreadsheet Version 3.1. Water right 22-7336 and the proposed Sutton point of diversion were modeled in cells 1061184 and 1068181, respectively. The effects without and with transfer were modeled assuming that the water right volume was diverted year-round. This was requested to provide smoothed output that is easier to view graphically. This method results in slightly lower peak trimester impacts than modeling use during the irrigation season.

The effects without transfer were modeled assuming that water right 22-7336 had not been leased to the Water Supply Bank and was diverted each year. For water right 22-7336, diversion of 81.07 AF in each trimester was modeled, beginning in the spring of 1981, based on the water right priority date of 10/22/1980.

The effects with transfer were modeled assuming that water right 22-7336 was diverted each year beginning in 1981 and ending in 2010, when leased to the water supply bank. During spring 2012 through winter 2015, diversion of 53.7 acre-feet each trimester was modeled at the Sutton point of diversion. Diversion of water right 22-7336 was assumed to resume at the original location beginning in the spring of 2016.

Results

Because of the locations of the points of diversion between the Henry's Fork and South Fork of the Snake River, significant effects on modeled Snake River gains are limited to the Ashton to Rexburg and Heise to Shelley reaches. Net changes to depletions and accruals in other modeled reaches are less than 2.0 acre feet per trimester. Net transfer effects on reaches above Milner are shown in Figure 2 and Figure 3. With rental of 243.2 AF/year from water right 22-7336 and use of 161.1 AF/year at the Sutton point of diversion, the modeled peak impacts to the Heise to Shelley reach are 0.00 in the winter of 2015. There is a net benefit to the Heise to Shelley reach in other trimesters and a net benefit to the Ashton to Rexburg reach in all trimesters during the rental period. Hydrologic responses in the Ashton to Rexburg and Heise to Shelley reaches are shown in Figures 4 and 5.

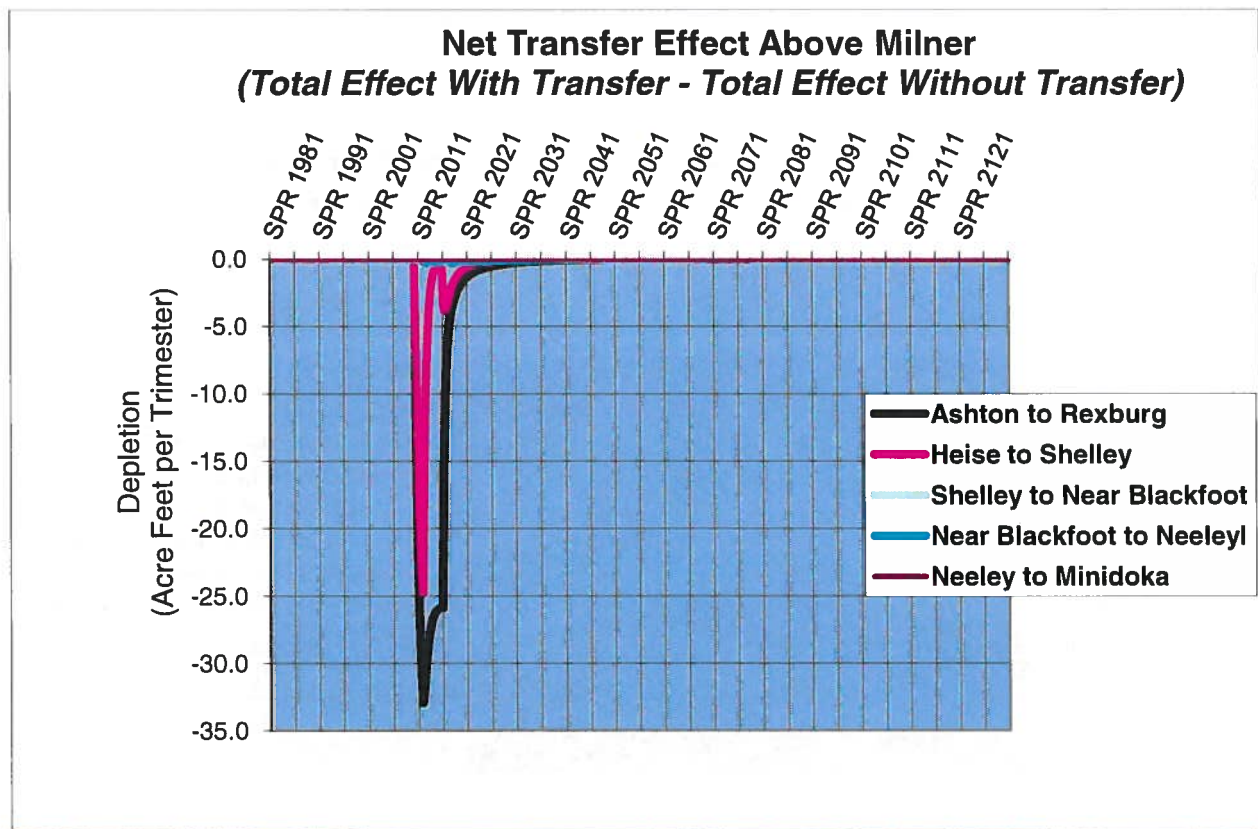


Figure 2. Net effect on modeled river reaches above Milner, assuming year-round water use.

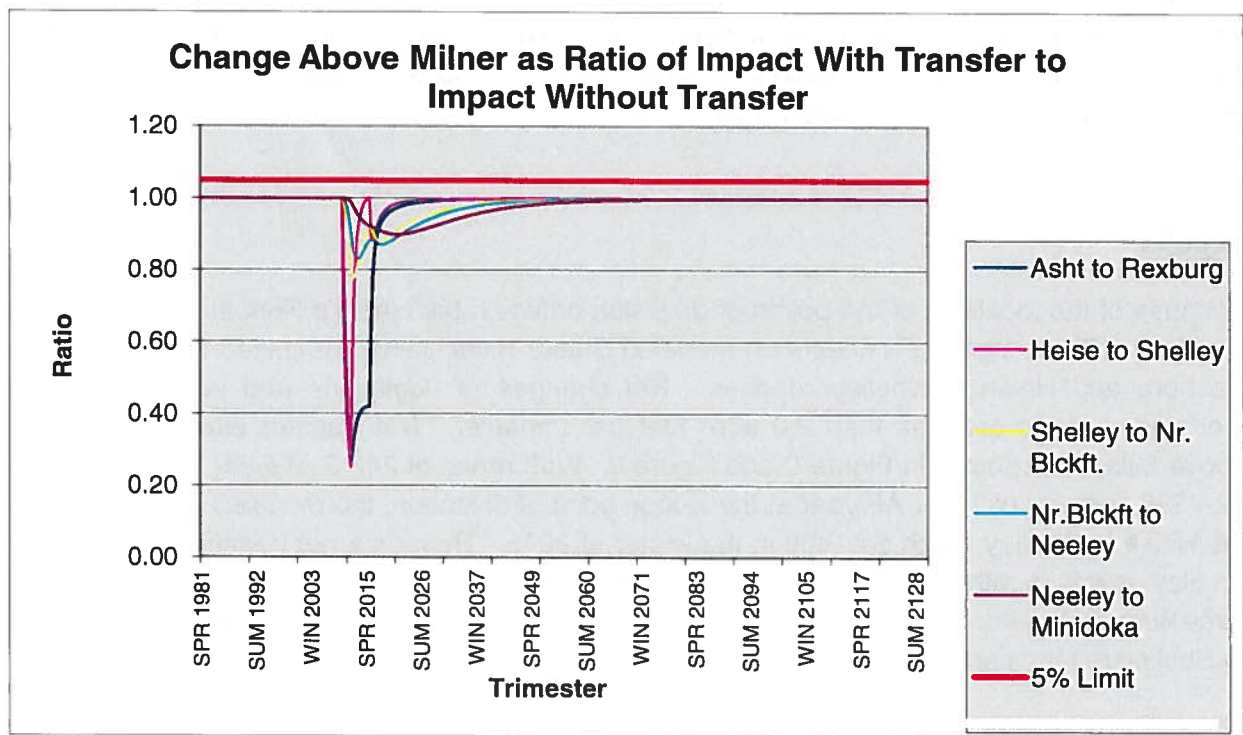


Figure 3. Change in depletions to reaches above Milner, assuming year-round use.

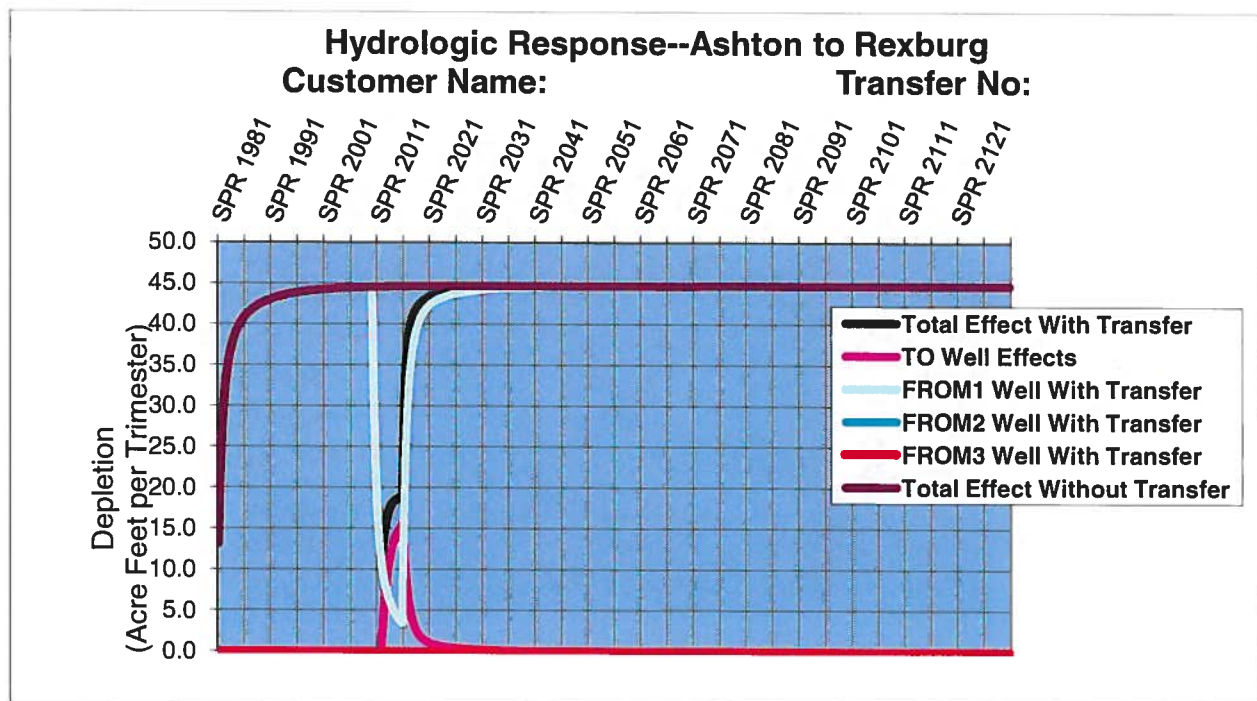


Figure 4. Hydrologic response in Ashton to Rexburg reach, assuming year-round use.

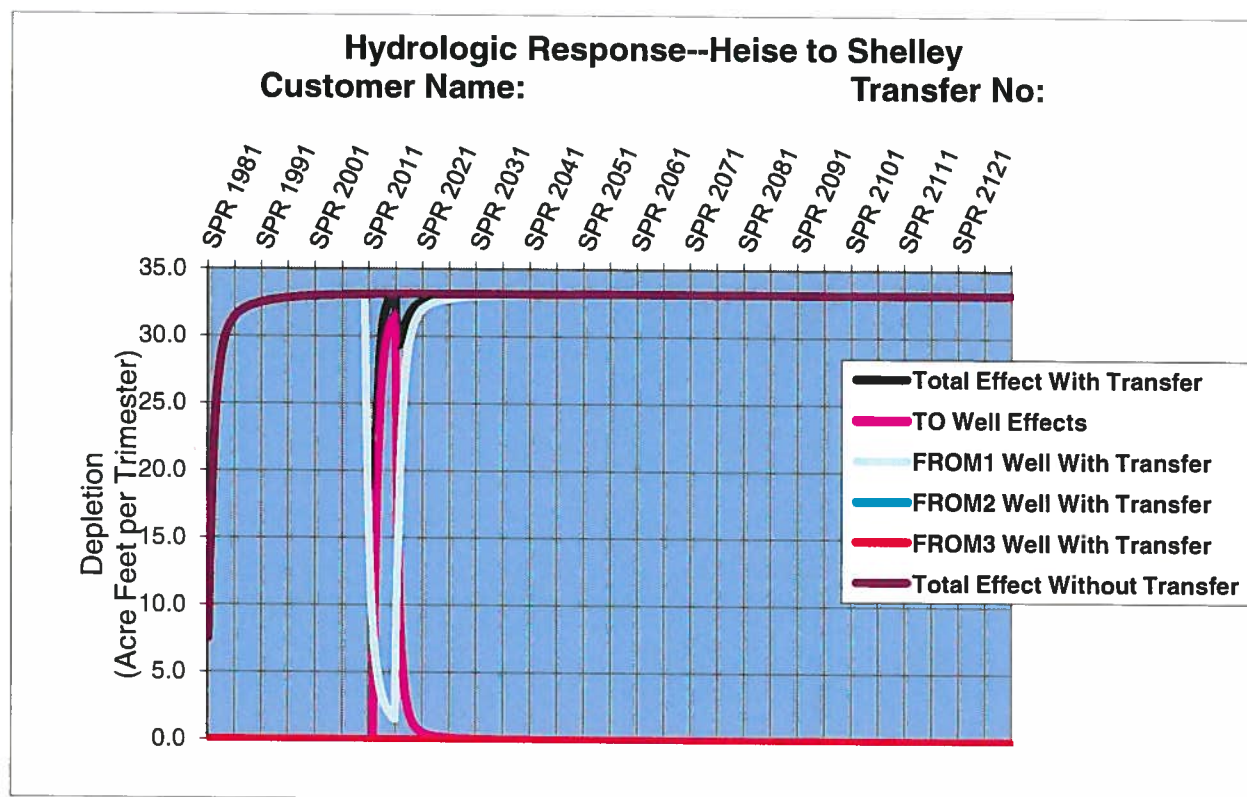


Figure 5. Hydrologic response in Heise to Shelley reach.

Conclusions

The following conclusions are based on analysis of the proposed water bank rental using the ESPA Transfer Spreadsheet Version 3.1.

1. Significant effects (exceeding 2.0 acre-feet per trimester) on Snake River gains are expected to be limited to the Ashton to Rexburg and Heise to Shelley model reaches.
2. Model results indicate with rental of 243.2 AF/year from water right 22-7336 and use of 161.1 AF/year at the Sutton point of diversion, the modeled peak impacts to the Heise to Shelley reach are 0.00 in the winter of 2015, assuming year-round diversion.
3. There is a net benefit to the Heise to Shelley reach in other trimesters and a net benefit to the Ashton to Rexburg reach in all trimesters during the rental period.