

MEMORANDUM

Date: January 20, 2009
To: Transfer 74093, 74094, 74095, 74096, 74396, 74719, and 74781 Files.
From: Benny Walker
Re: ESPA Model Analysis Jason Helms Brockway Engineering,
Dennis Owsley IDWR Hydrology

On August 18, 2008 a revised ESPA combined model analysis was submitted by Jason Helms relating to pending transfers 74093, 74094, 74095, 74096, 74396, 74719, and 74781. This particular analysis and results was submitted on a CD. Data entry and model analysis results (graphs) were printed out to be included as hard copies for the respective files. The **original CD is placed in the transfer # 74781 file** for reference.

The revised ESPA combined model analysis submitted by Jason Helms was forwarded to the IDWR Hydrology Section for review. Dennis Owsley of IDWR Hydrology Section prepared a review memo (dated December 2, 2008) that summarizes his review of the analysis. Copies of this memo along with copies of the data entry and model analysis results (graphs) prepared by Dennis Owsley were printed out to be included as hard copies for the respective files.

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Department of Water Resources
Eastern Region

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Department of Water Resources
Eastern Region

State of Idaho

Department of Water Resources

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Date: December 2, 2008

To: Pam Skaggs, Water Allocations

From: Dennis Owsley, Hydrology Section, State Office

cc: Rick Raymondi, Sean Vincent, Benny Walker

Subject: Revised ESPA Combined Transfer Analysis -- 8 Combined Off-Setting Transfer Applications Presented by Thompson Engineering

Introduction

The Hydrology Section in the State Office was requested to evaluate the hydrologic impacts on the Snake River from the subject water right transfer. The transfer is summarized in a technical memorandum by Brockway Engineering, dated August 16, 2007, and revised through a letter and accompanying CD presented by Thompson Engineering, addressed to Benny Walker, dated August 15, 2008.

This memo provides a summary of the review of the revised transfers by running the proposed volumes of water to be transferred through the ESPA Transfer Tool, Version 3.1. Details regarding the locations and volumes of the requested transfers can be found in the original review report dated February 29, 2008, with the proposed changes highlighted in the August 15, 2008 Thompson Engineering letter.

The applicants seek to transfer multiple water rights to various locations across the Eastern Snake Plain. The uses of the water rights that are included in the combined transfer are also proposed to change, as the transfers will dry up water right acres at existing farms to provide municipal and irrigation use volumes to be available at the proposed locations.

The parties involved with this transfer include Idaho Water Co., KBC Farms, Bowler Ranches, Alliance Land & Livestock, and Stoker Dairy. Twelve individual water rights are associated with this combined transfer.

The guidance for approving Eastern Snake Plain Aquifer (ESPA) transfers is contained in Administrative Transfer Processing Memorandum No. 24, dated October 30, 2002. The guidance indicates that the transfer applicant must submit an analysis showing the effects

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on the Snake River based on the Department's current ground water model or acceptable equivalent unless the transfer is within a model cell or to an adjacent cell. For a transfer to be approved, impacts to the Snake River flows must be within 5% of the historical depletions or less than two acre-feet per trimester per reach prior to the transfer (IDWR, 2007).

To minimize the mitigation requirements, these offsetting transfer applications have been submitted together. Careful selection of water rights for transfer was intended to reduce the need for mitigation through volume reduction.

A significant portion of this combined transfer involves transferring water from the Sagewood Ranch water rights to various locations across the ESPA. It should be noted that the four wells associated with the Sagewood Ranch water right do not lie within the domain of the ESPA model. In fact, a review of the well logs for the Sagewood Ranch wells indicate that the wells are completed in a tributary aquifer to the ESPA. However, since the wells are within two cells of the ESPA model boundary, the nearest model cell to the wells was selected in accordance with the IDWR transfer guidelines (IDWR, 2007). In addition, the Sagewood Ranch wells have not been pumping since 1994, which has been confirmed through the analysis of aerial photography taken of the area.

It is our understanding that the Sagewood Ranch water rights were not forfeited and are potentially eligible for transfer despite not having been used for more than five years because a partial decree was issued in the Snake River Basin Adjudication. However, the date of the partial decree (July 26, 2002) is slightly more than five years before the date on which transfer application was submitted (August 16, 2007).

Methodology

Impacts due to each portion of this transfer were analyzed using version 3.1 of the ESPA Transfer Spreadsheet. A total of eight model runs were required in order to evaluate the hydrologic impacts of the combined transfer. Using the principle of superposition (see, for example, Freeze and Cherry, 1979), the results from each of the model runs were then added together to determine the overall impacts of the combined transfer.

Input parameters include water right priority dates associated with each component of the combined transfer, the date on which the transfer will take place, the volume of water associated with each component of the combined transfer, and the PODs for the wells. All of the information used in the verification model runs was taken from the CD accompanying the August 15, 2008 Thompson Engineering letter. The individual model runs were conducted with the POD locations provided in the report and an initial diversion start date of spring of 2008.

Also note that, it was assumed that the Sagewood Ranch wells have been pumping up to the present time for the "without transfer" scenario but the Sagewood Ranch wells have not been pumping for the last 14 years for the "with transfer" scenario. In reality, the Sagewood Ranch wells have not been pumping for the last 14 years. This aspect of the transfer analysis is, therefore, unrealistic.

Analysis of the Results

Although components of the combined transfer result in unacceptable depletions to Snake River reaches, the overall impact of the combined transfer satisfies the 5% criterion for all of the Snake River reaches (Figure 1). The negative impacts from the individual portions of the transfer that do not meet the requirements are mitigated by the other transfer components associated with this transfer application.

Based on the results shown in Figure 1, the impacts to the Snake River are increasing throughout the duration of the modeled timeframe. Impacts to the several reaches are approaching the 105% limit after 100 years since the transfer. It appears the impacts may continue to increase to a value above the regulatory limit at a future date beyond the scope of the modeled timeframe.

It should be noted that the overall impacts of this combined transfer are incorporating all eight portions of the transfer simultaneously. If for some reason, one or more portions of this combined transfer does not occur, than the overall results of this analysis can not be applied. In addition, all of the model inputs (locations, dates, and volumes) were taken directly out of the CD associated with the August 15, 2008 Thompson Engineering letter. If it is shown that any of these values are incorrect, than the results in this analysis are not applicable.

The results shown in Figure 1 underestimate the actual impacts on the Snake River if the transfer is approved because, in reality, the Sagewood Ranch wells have not been pumping since 1994 but the wells were simulated as pumping since their priority date for the "without transfer" scenario. Note that if both the "with transfer" and "without transfer" scenarios are evaluated using the actual historical pumping history, the combined transfer fails to satisfy the 5% acceptance criterion.

Conclusions

The following conclusions are based upon my analysis of the combined transfer using information presented in the Brockway memo and version 3.1 of the ESPA Transfer Spreadsheet:

- The combined transfer involves a total of twelve water rights and multiple water right holders. The two largest water rights volumetrically are for the Sagewood Ranch wells. The Sagewood Ranch wells have not been pumped for the last 14 years.
- The Sagewood Ranch wells are outside of the official ESPA aquifer boundary and outside of the ESPA common ground water area. A review of the lithologic logs of the Sagewood Ranch wells shows that the wells are completed in sand and gravel units that underlie the basalt that makes up the ESPA. The fact the these wells appear to be in a tributary aquifer (Raft River Valley) to the ESPA raises questions regarding the validity of using the Transfer Tool to analyze impacts associated with this transfer.

- If the Sagewood Ranch wells are simulated as being idle since 1994 for the “with transfer” scenario and having been pumped for the “without transfer” scenario (as modeled by Brockway), then the hydrologic impacts are within the 105% criterion for approval of a transfer. In this case, the impacts of the transfer appear not to stabilize within 100 years of the transfer.
- If the actual historical pumping history is simulated for both the “with transfer” and “without transfer” scenarios, the impacts of the transfer exceed the 105% criterion for several reaches of the Snake River.

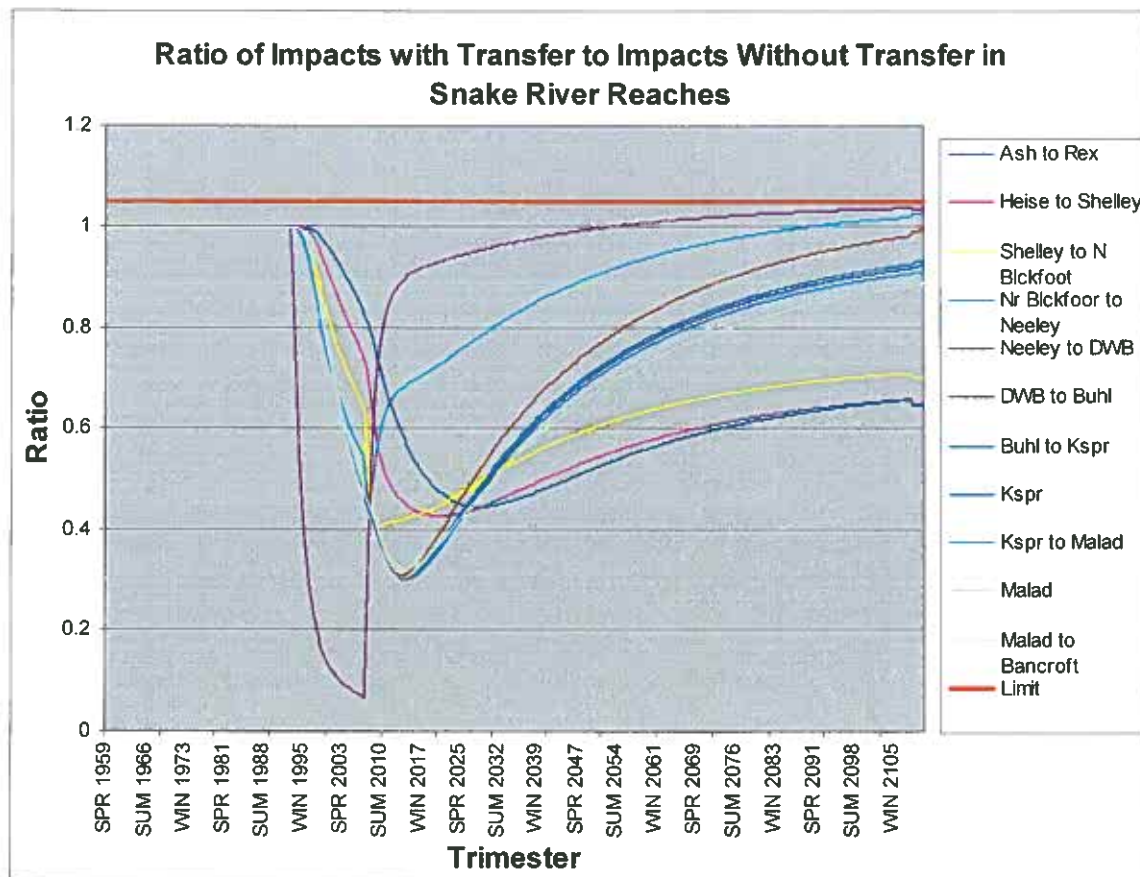


Figure 1. Impact of the combined transfer on each of the Snake River reaches.

References

Idaho Department of Water Resources, 2007. ESPA Transfer Spreadsheet (V3.1) – Implementation and Use. Memorandum from Jeff Peppersack to Water Allocations Bureau and Regions. August 13.

Freeze, R.A., and J.A. Cherry, 1979, Groundwater, Prentice-Hall, Inc., 604 pp.

ENHANCED GROUND-WATER RIGHTS TRANSFER SPREADSHEET

UNIVERSITY OF IDAHO - IDAHO WATER RESOURCES RESEARCH INSTITUTE

IDAHO DEPARTMENT OF WATER RESOURCES

Cells this color are set up for user entries

ENTER STARTING DATE FOR

SIMULATION. THEN PUSH

"UPDATE DATES" BUTTON

YEAR 1959

SEASON WINTER

TRANSFER NO:

Phillips to Alliance

TRANSFER NAME:

Phillips to Alliance

ENTER CELL LOCATIONS:

ROW	'TO' CELL	'FROM1' CELL	'FROM2' CELL	'FROM3' CELL
COLUMN	85	70		
	43	50		

TRIMESTER OF ACTIVITY	TO WELL Projected Use AF/TRIMESTER	FROM1 WELL		FROM2 WELL		FROM3 WELL	
		With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER	With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER	With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER
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SPR 1960	0	12	12				
SUM 1960	0	12	12				
WIN 1960	0	12	12				
SPR 1961	0	12	12				
SUM 1961	0	12	12				
WIN 1961	0	12	12				
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SPR 1983	0	53	53				
SUM 1983	0	53	53				
WIN 1983	0	53	53				
SPR 1984	0	53	53				
SUM 1984	0	53	53				

Entering Dates

Enter the starting year and season for your simulation. The start of the analysis period. (Spring is Mar, Apr, May and Jun.

Summer is Jul, Aug, Sep and Oct. Winter is Nov, Dec, Jan and Feb.

Once you have entered the starting date, push the "UPDATE DATES" button.

The date only needs to be updated once, unless the desired time

Modifying the date does not automatically adjust the location of the

Entering Well Locations

Enter the row and column location for the 'TO' well in spreadsheet.

Enter the row and column location for the 'FROM1' well in spreadsheet.

Enter the row and column location for the 'FROM2' well in spreadsheet.

Enter the row and column location for the 'FROM3' well in spreadsheet.

If the 'FROM2' well is not to be modeled, the entered row and column

If the 'FROM3' well is not to be modeled, the entered row and column

The 'FROM3' well cannot be used if the 'FROM2' well is not being

Running the Model

Once the model cells have been specified for the 'FROM' and 'TO' wells, push the 'RUN MODEL' button to generate the response functions. The model needs to be re-run if the locations of the 'FROM' and 'TO' wells are

Getting the Model Output

Once the model has been run, push the 'GET OUTPUT' button to get the model output. This prepares the model output for use for calculations.

Entering water use data

All water use should be entered in units of acre-feet per four months. See the instructions on multiple water rights with different priority dates.

Entering 'TO' Well Projected Water Use

Enter the projected water use for the 'TO' Well in Column B. 'TO' Well should start in the trimester (4-month period) in which the transfer

Entering 'FROM' Well 'With Transfer' Use

Enter the 'With Transfer' water use for the first 'FROM' Well in Column C, the second 'FROM' well in Column E, and for the third 'FROM' Well in Column G. 'With Transfer' water use should reflect historical and projected water use should cease or be reduced at the time of the water right transfer.

Entering 'FROM' Well 'Without Transfer' Use

The 'Without Transfer' Use for the 'FROM' wells should include historical and projected water use should reflect expected pumpage from that well. Enter the 'Without Transfer' water use for the first 'FROM' Well in Column D, the second 'FROM' well in Column F, and for the third 'FROM' Well in Column H. Prior to the expected date of transfer, the 'With Transfer' use should

If only one 'FROM' well is to be represented, pumpage in Column D.

If only two 'FROM' wells are being represented, pumpage in Columns D and F.

Projected water use in the 'TO' well and the 'FROM' wells will be affected by the river reaches caused by the water right transfer. (See

Calculating Effect of the Transfer on River Gains and Losses

After all of the above steps have been completed, the effects of the transfer will be calculated. Push the 'CALCULATE EFFECTS' button. This will result in a multiplication of the model runs) times the water use rates entered in the table per acre. After the multiplication has been performed, the spreadsheet will calculate the net effects on all 11 reaches. Here one graph is provided showing the effect for each reach. Results are also presented in the EFFECTS worksheet. See the Users Manual for more information.

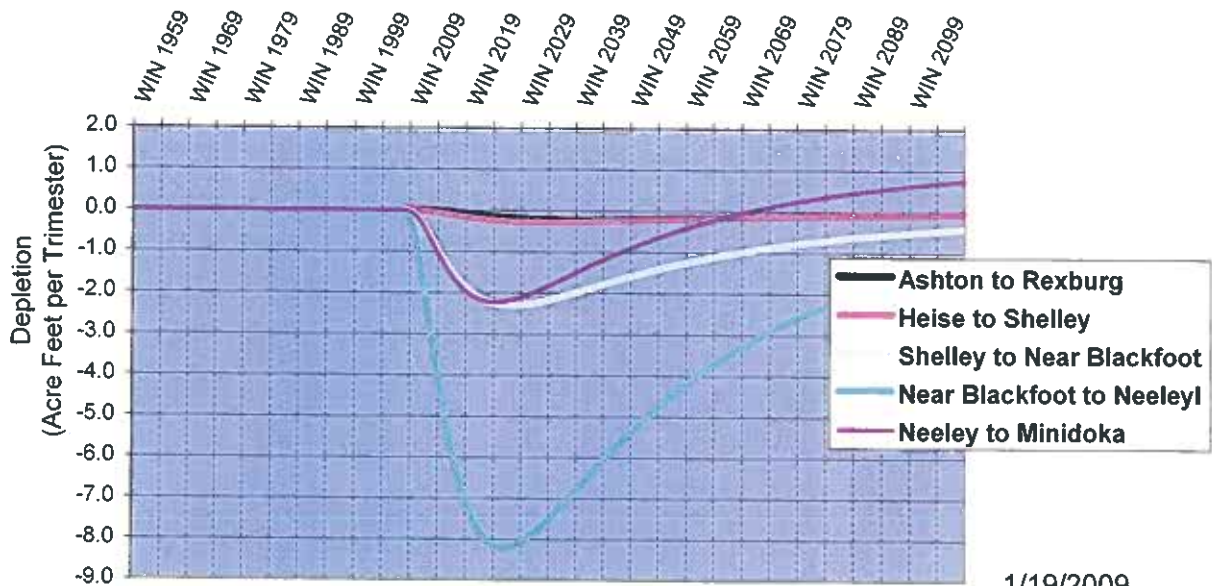
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WIN 2094	53	0	53				
SPR 2095	53	0	53				
SUM 2095	53	0	53				
WIN 2095	53	0	53				
SPR 2096	53	0	53				
SUM 2096	53	0	53				
WIN 2096	53	0	53				
SPR 2097	53	0	53				
SUM 2097	53	0	53				
WIN 2097	53	0	53				
SPR 2098	53	0	53				
SUM 2098	53	0	53				
WIN 2098	53	0	53				
SPR 2099	53	0	53				
SUM 2099	53	0	53				
WIN 2099	53	0	53				
SPR 2100	53	0	53				
SUM 2100	53	0	53				
WIN 2100	53	0	53				
SPR 2101	53	0	53				
SUM 2101	53	0	53				
WIN 2101	53	0	53				
SPR 2102	53	0	53				
SUM 2102	53	0	53				
WIN 2102	53	0	53				
SPR 2103	53	0	53				
SUM 2103	53	0	53				
WIN 2103	53	0	53				
SPR 2104	53	0	53				
SUM 2104	53	0	53				
WIN 2104	53	0	53				
SPR 2105	53	0	53				
SUM 2105	53	0	53				
WIN 2105	53	0	53				
SPR 2106	53	0	53				
SUM 2106	53	0	53				
WIN 2106	53	0	53				
SPR 2107	53	0	53				
SUM 2107	53	0	53				
WIN 2107	53	0	53				
SPR 2108	53	0	53				
SUM 2108	53	0	53				
WIN 2108	53	0	53				
SPR 2109	53	0	53				
SUM 2109	53	0	53				

Net Transfer Effect Above Milner (Total Effect With Transfer - Total Effect Without Transfer)



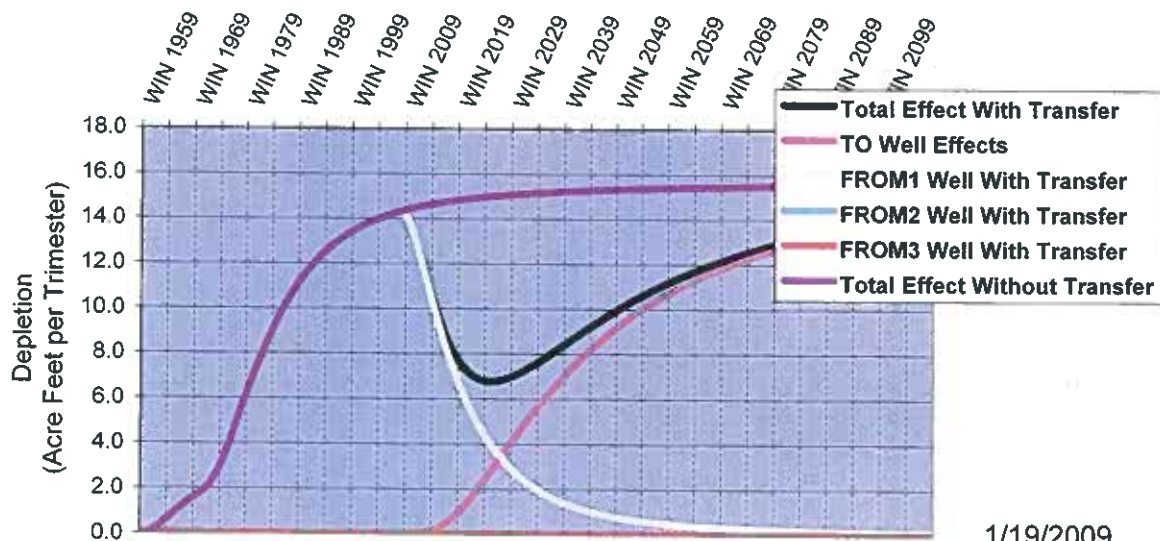
1/19/2009
Version 3.1

Customer Name: **Phillips to Alliance**

Transfer No: **Phillips**

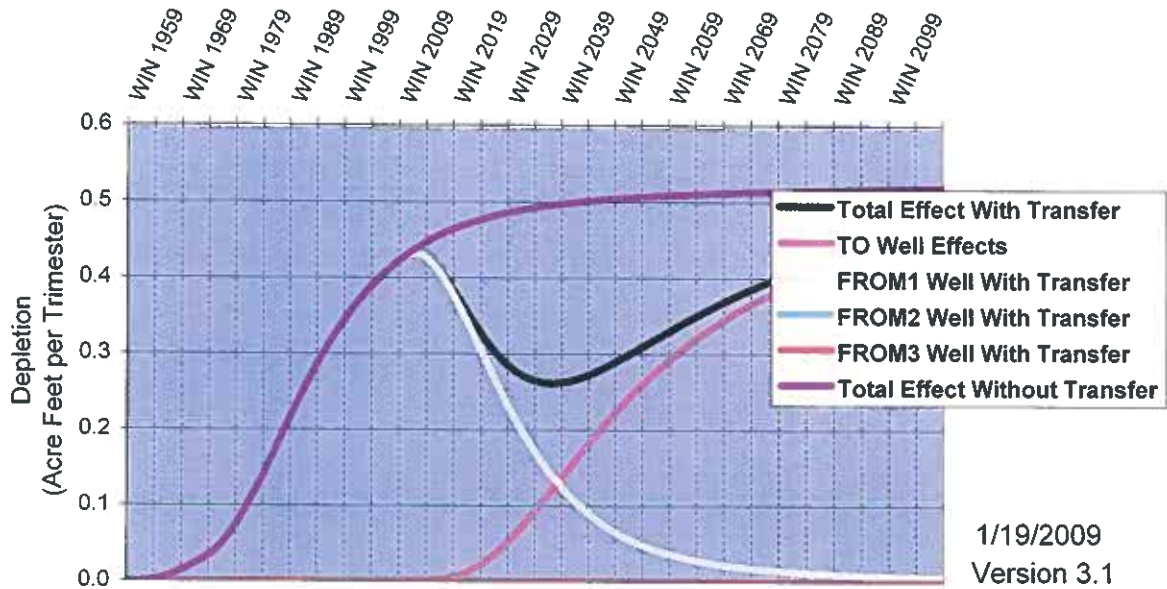
Hydrologic Response-- Near Blackfoot to Neeley

Customer Name: **Phillips to Alliance** Transfer No: **Phillips**



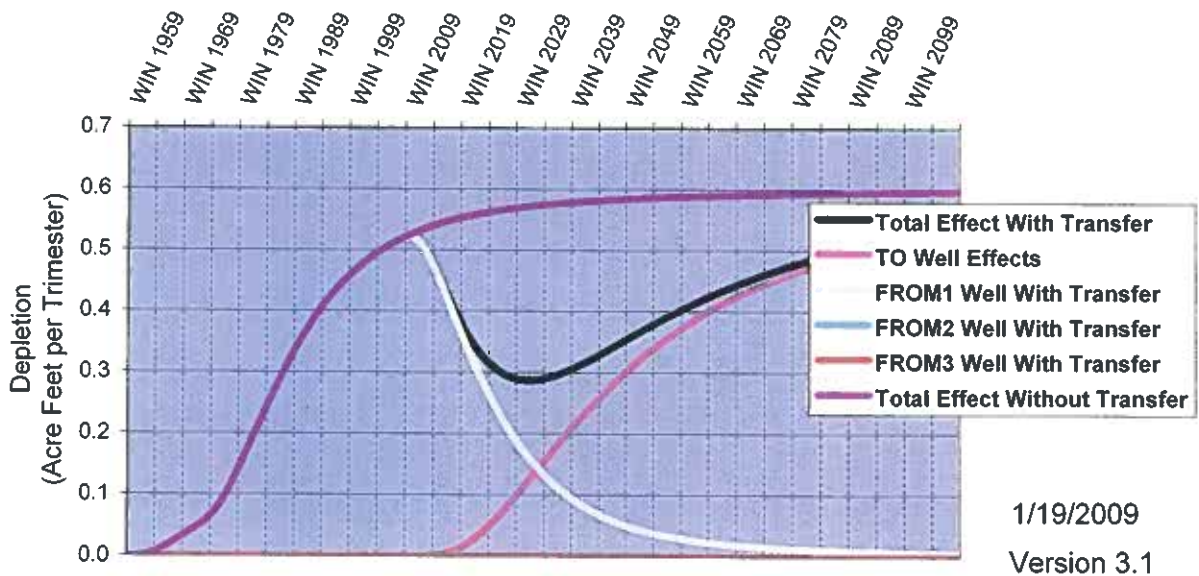
1/19/2009
Version 3.1

Hydrologic Response--Ashton to Rexburg
Customer Name:Phillips to Alliance **Transfer No:** **Phillips**



Ct

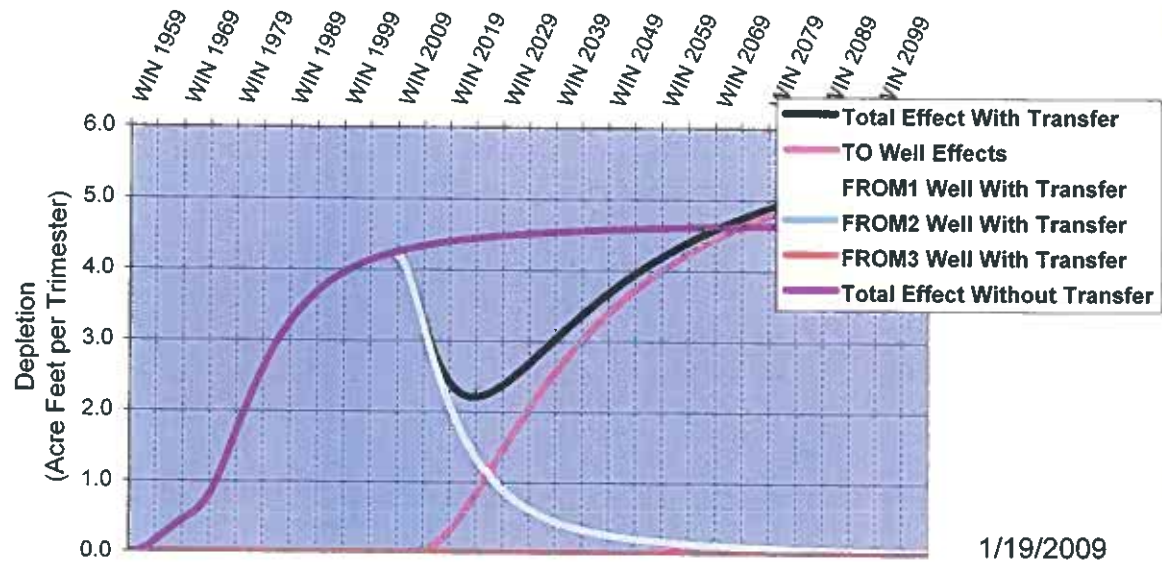
Hydrologic Response--Heise to Shelley
Customer Name:Phillips to Alliance **Transfer No:** **Phillips**



Hydrologic Response-- Neeley to Minidoka

Customer Name: Phillips to Alliance

Transfer No: Phillips



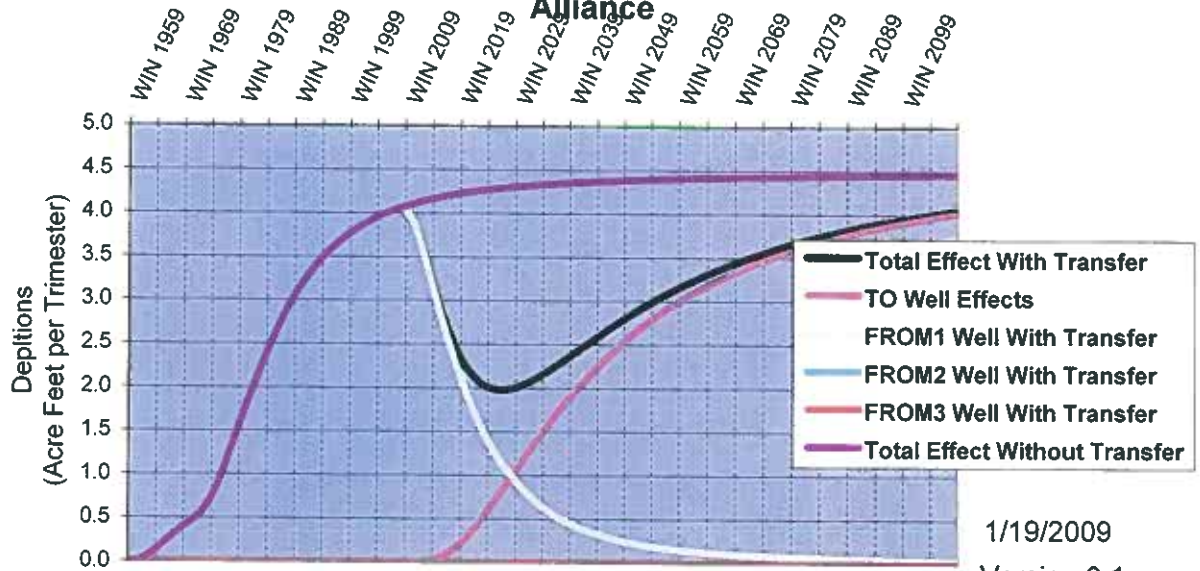
1/19/2009

Version 3.1

Hydrologic Response--Shelley to Near Blackfoot

Customer Name: Phillips to Transfer No: Phillips

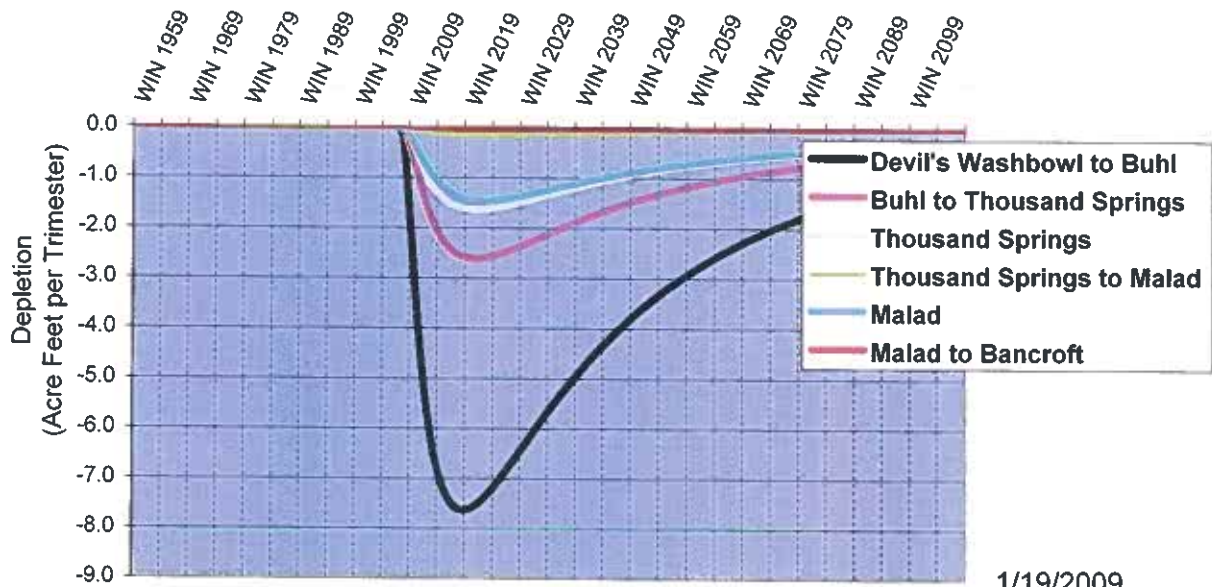
Alliance



1/19/2009

Version 3.1

Net Transfer Effect Below Milner (Total Effect With Transfer - Total Effect Without Transfer)

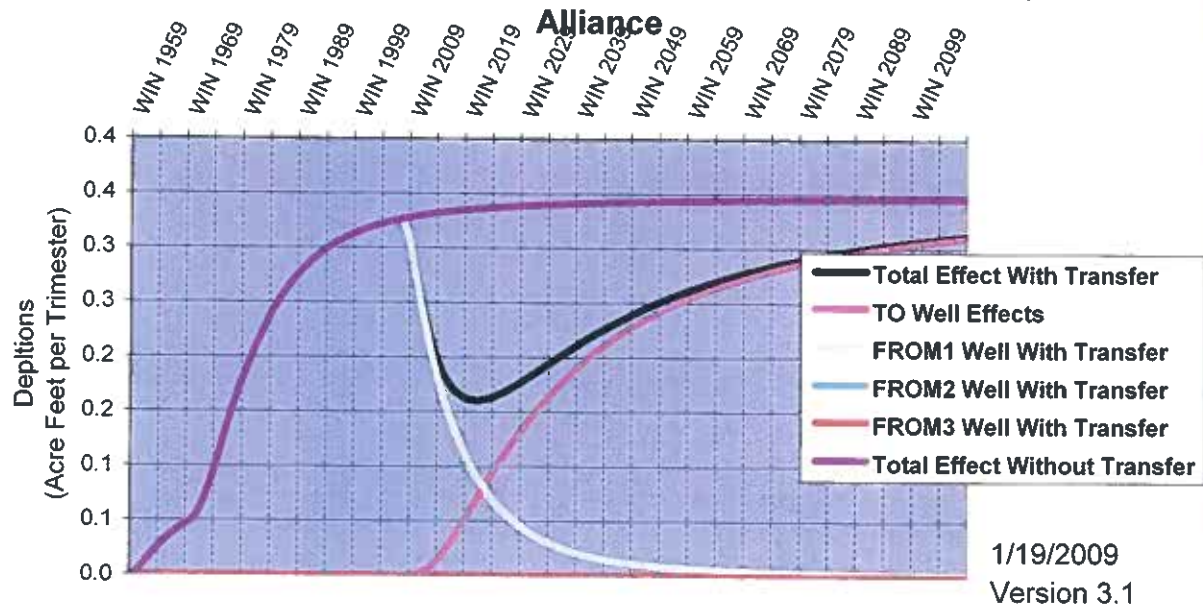


Customer Name: **Phillips to Alliance**

Transfer No: **Phillips**

Hydrologic Response--Thousand Springs to Malad

Customer Name: **Phillips to Alliance** Transfer No: **Phillips**



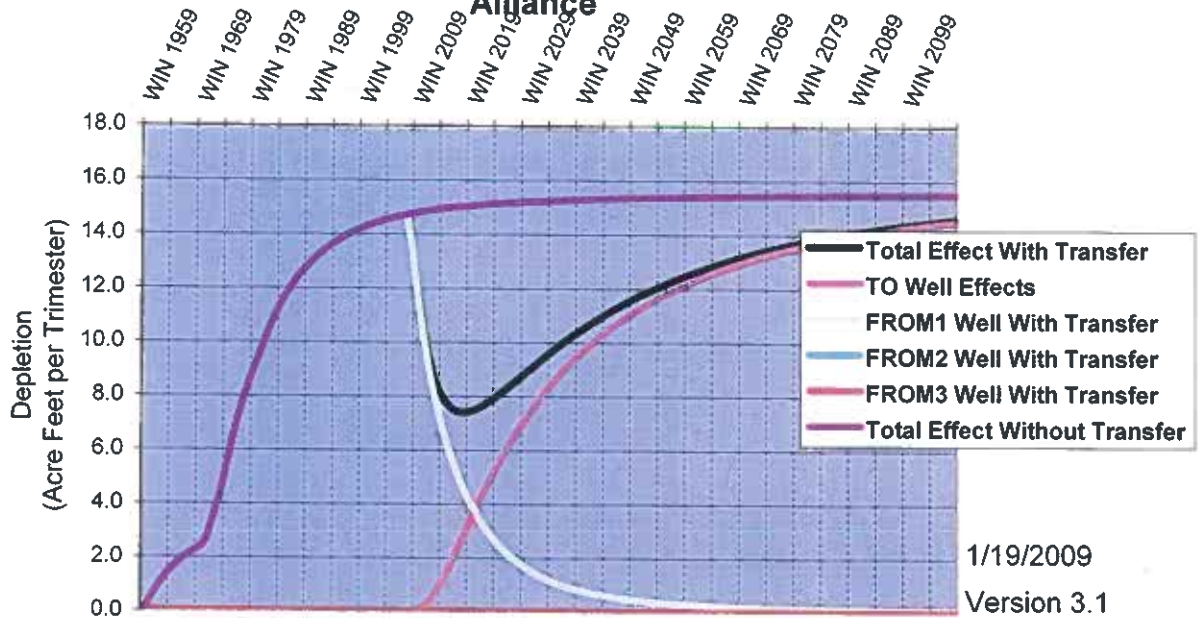
Hydrologic Response--Devil's Washbowl to Buhl

Customer Name:Phillips to

Transfer No:

Phillips

Alliance

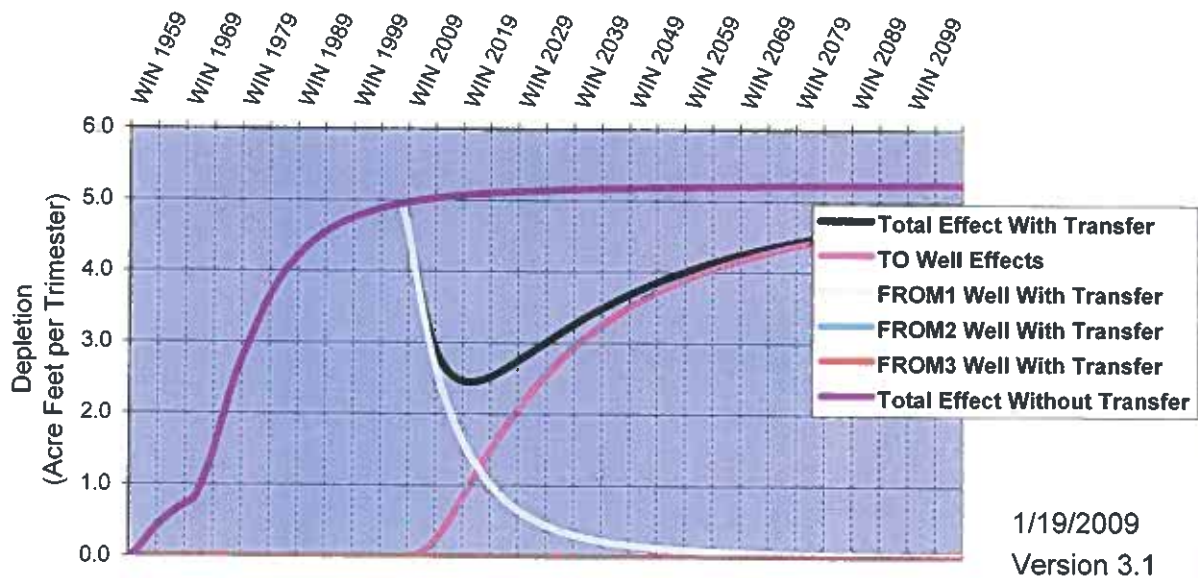


Ct

Hydrologic Response--Buhl to Thousand Springs

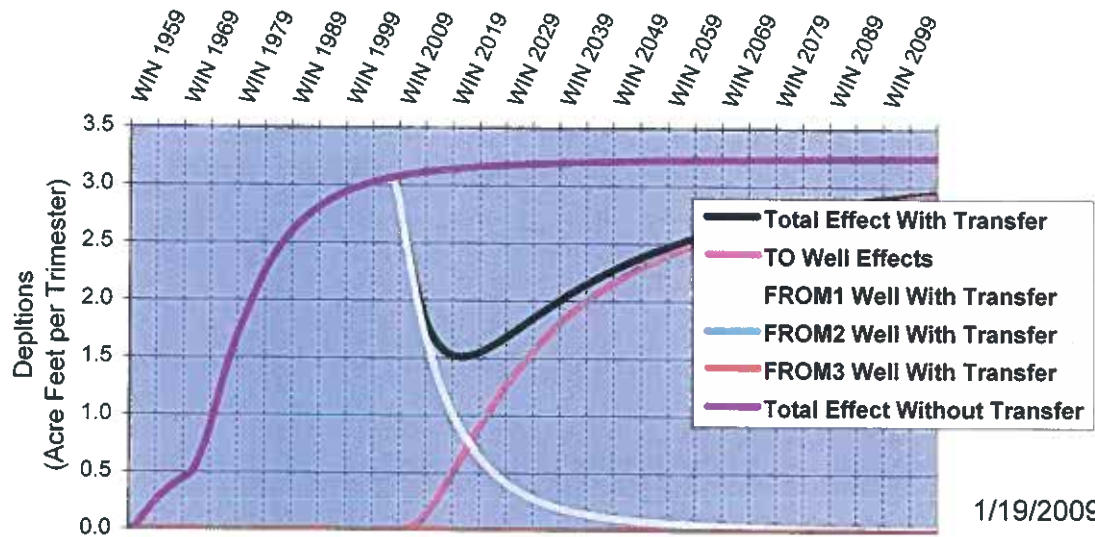
Customer Name:Phillips to AllianceTransfer No:

Phillips



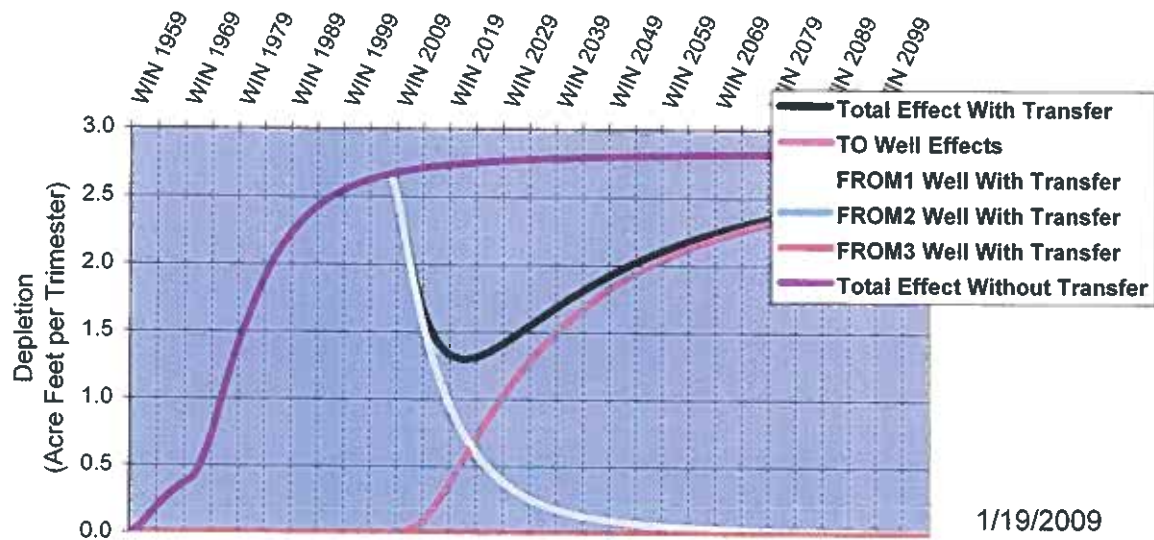
Hydrologic Response--Thousand Springs

Customer Name: Phillips to Transfer No: Phillips Alliance

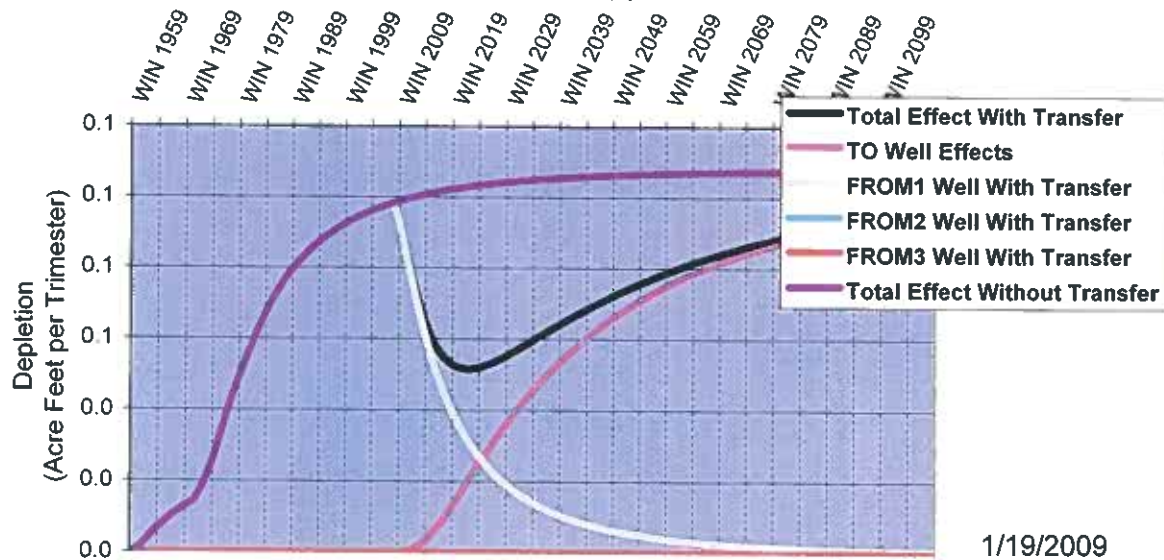


1/19/2009
Version 3.1

Hydrologic Response-- Malad
Customer Name: Phillips to Alliance Transfer No: Phillips



Hydrologic Response-- Malad to Bancroft
Customer Name: Phillips to Alliance Transfer No: Phillips



ENHANCED GROUND-WATER RIGHTS TRANSFER SPREADSHEET

UNIVERSITY OF IDAHO - IDAHO WATER RESOURCES RESEARCH INSTITUTE

IDAHO DEPARTMENT OF WATER RESOURCES

Cells this color are set up for user entries

ENTER STARTING DATE FOR SIMULATION. THEN PUSH

"UPDATE DATES" BUTTON

YEAR 1962

SEASON SPRING

TRANSFER NO: Sage/Geeles to KBC

TRANSFER NAME: Sage/Geeles to KBC

Sage/Geeles to KBC

ENTER CELL LOCATIONS:

	'TO' CELL	'FROM1' CELL	'FROM2' CELL	'FROM3' CELL
ROW	95	66	91	
COLUMN	89	128	69	

TRIMESTER OF ACTIVITY	TO WELL Projected Use AF/TRIMESTER	FROM1 WELL		FROM2 WELL		FROM3 WELL	
		With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER	With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER	With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER
SPR 1962	0	0	0	58	58		
SUM 1962	0	0	0	58	58		
WIN 1962	0	0	0	58	58		
SPR 1963	0	0	0	58	58		
SUM 1963	0	0	0	58	58		
WIN 1963	0	0	0	58	58		
SPR 1964	0	0	0	58	58		
SUM 1964	0	0	0	58	58		
WIN 1964	0	0	0	58	58		
SPR 1965	0	0	0	58	58		
SUM 1965	0	0	0	58	58		
WIN 1965	0	0	0	58	58		
SPR 1966	0	0	0	58	58		
SUM 1966	0	0	0	58	58		
WIN 1966	0	0	0	58	58		
SPR 1967	0	0	0	58	58		
SUM 1967	0	0	0	58	58		
WIN 1967	0	0	0	58	58		
SPR 1968	0	0	0	58	58		
SUM 1968	0	0	0	58	58		
WIN 1968	0	0	0	58	58		
SPR 1969	0	0	0	58	58		
SUM 1969	0	0	0	58	58		
WIN 1969	0	0	0	58	58		
SPR 1970	0	0	0	58	58		
SUM 1970	0	0	0	58	58		
WIN 1970	0	0	0	58	58		
SPR 1971	0	0	0	58	58		
SUM 1971	0	0	0	58	58		
WIN 1971	0	0	0	58	58		
SPR 1972	0	0	0	58	58		
SUM 1972	0	0	0	58	58		
WIN 1972	0	0	0	58	58		
SPR 1973	0	0	0	58	58		
SUM 1973	0	0	0	58	58		
WIN 1973	0	0	0	58	58		
SPR 1974	0	0	0	58	58		
SUM 1974	0	0	0	58	58		
WIN 1974	0	125	125	58	58		
SPR 1975	0	125	125	58	58		
SUM 1975	0	125	125	58	58		
WIN 1975	0	125	125	58	58		
SPR 1976	0	125	125	58	58		
SUM 1976	0	125	125	58	58		
WIN 1976	0	125	125	58	58		
SPR 1977	0	125	125	58	58		
SUM 1977	0	125	125	58	58		
WIN 1977	0	125	125	58	58		
SPR 1978	0	125	125	221	221		
SUM 1978	0	125	125	221	221		
WIN 1978	0	125	125	221	221		
SPR 1979	0	125	125	221	221		
SUM 1979	0	125	125	221	221		
WIN 1979	0	125	125	221	221		
SPR 1980	0	125	125	221	221		
SUM 1980	0	125	125	221	221		
WIN 1980	0	125	125	221	221		
SPR 1981	0	125	125	221	221		
SUM 1981	0	125	125	221	221		
WIN 1981	0	125	125	221	221		
SPR 1982	0	125	125	221	221		
SUM 1982	0	125	125	221	221		
WIN 1982	0	125	125	221	221		
SPR 1983	0	125	125	221	221		
SUM 1983	0	125	125	221	221		
WIN 1983	0	125	125	221	221		
SPR 1984	0	125	125	221	221		
SUM 1984	0	125	125	221	221		
WIN 1984	0	125	125	221	221		
SPR 1985	0	125	125	221	221		
SUM 1985	0	125	125	221	221		
WIN 1985	0	125	125	221	221		
SPR 1986	0	125	125	221	221		
SUM 1986	0	125	125	221	221		
WIN 1986	0	125	125	221	221		

Entering Dates

Enter the starting year and season for your simulation. The start of the analysis period. (Spring is Mar, Apr, May and Jun.

Summer is Jul, Aug, Sep and Oct. Winter is Nov, Dec, Jan and Feb.

Once you have entered the starting date, push the "UPDATE DATA"

The date only needs to be updated once, unless the desired time

Modifying the date does not automatically adjust the location of the

Entering Well Locations

Enter the row and column location for the 'TO' well in spreadsheet

Enter the row and column location for the 'FROM1' well in spread:

Enter the row and column location for the 'FROM2' well in spread:

Enter the row and column location for the 'FROM3' well in spread:

If the 'FROM2' well is not to be modeled, the entered row and col

If the 'FROM3' well is not to be modeled, the entered row and col

The 'FROM3' well cannot be used if the 'FROM2' well is not being

Running the Model

Once the model cells have been specified for the 'FROM' and 'TO

the 'RUN MODEL' button to generate the response functions. The

needs to be re-run if the locations of the 'FROM' and 'TO' wells ar

Getting the Model Output

Once the model has been run, push the 'GET OUTPUT' button to

model output. This prepares the model output for use for calculat

Entering water use data

All water use should be entered in units of acre-feet per four mont

for instructions on multiple water rights with different priority dates

Entering 'TO' Well Projected Water Use

Enter the projected water use for the 'TO' Well in Column B. 'TO'

should start in the trimester (4-month period) in which the transfer

Entering 'FROM' Well 'With Transfer' Use

Enter the 'With Transfer' water use for the first 'FROM' Well in Co

the second 'FROM' well in Column E, and for the third 'FROM' We

'With Transfer' water use should reflect historical and projected a

should cease or be reduced at the time of the water right transfer

Entering 'FROM' Well 'Without Transfer' Use

The 'Without Transfer' Use for the 'FROM' wells should include hi

The projected use should reflect expected pumpage from that we

Enter the 'Without Transfer' water use for the first 'FROM' Well in

for the second 'FROM' well in Column F, and for the third 'FROM'

Prior to the expected date of transfer, the 'With Transfer' use sho

Calculating Effect of the Transfer on River Gains and Losses

After all of the above steps have been completed, the effects of t

of the eleven hydraulically connected reaches of the Snake River

CALCULATE EFFECTS' button. This will result in a multiplication

the model runs) times the water use rates entered in the table prc

After the multiplication has been performed, the spreadsheet will :

worksheet. Here one graph is provided showing the effect for ea

illustrates the net effects on all 11 reaches. Results are also pres

EFFECTS worksheet. See the Users Manual for more information

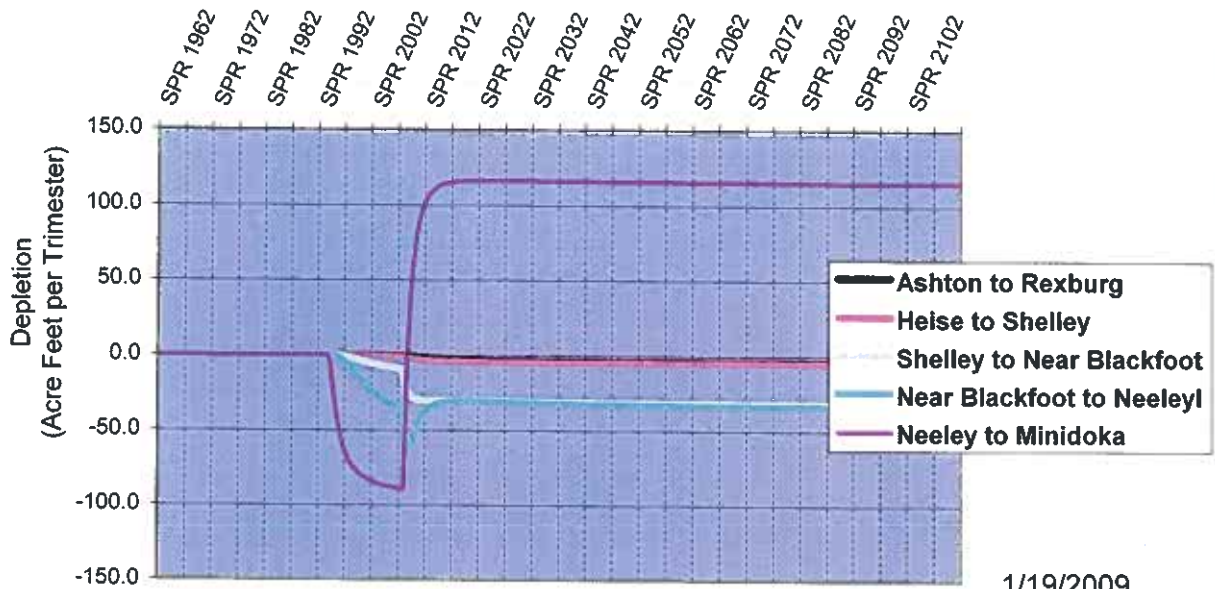
SPR 1987	0	125	125	221	221
SUM 1987	0	125	125	221	221
WIN 1987	0	125	125	221	221
SPR 1988	0	125	125	221	221
SUM 1988	0	125	125	221	221
WIN 1988	0	125	125	221	221
SPR 1989	0	125	125	221	221
SUM 1989	0	125	125	221	221
WIN 1989	0	125	125	221	221
SPR 1990	0	125	125	221	221
SUM 1990	0	125	125	221	221
WIN 1990	0	125	125	221	221
SPR 1991	0	125	125	221	221
SUM 1991	0	125	125	221	221
WIN 1991	0	125	125	221	221
SPR 1992	0	125	125	221	221
SUM 1992	0	125	125	221	221
WIN 1992	0	125	125	221	221
SPR 1993	0	125	125	221	221
SUM 1993	0	125	125	221	221
WIN 1993	0	125	125	221	221
SPR 1994	0	125	125	0	221
SUM 1994	0	125	125	0	221
WIN 1994	0	125	125	0	221
SPR 1995	0	125	125	0	221
SUM 1995	0	125	125	0	221
WIN 1995	0	125	125	0	221
SPR 1996	0	125	125	0	221
SUM 1996	0	125	125	0	221
WIN 1996	0	125	125	0	221
SPR 1997	0	125	125	0	221
SUM 1997	0	125	125	0	221
WIN 1997	0	125	125	0	221
SPR 1998	0	125	125	0	221
SUM 1998	0	125	125	0	221
WIN 1998	0	125	125	0	221
SPR 1999	0	125	125	0	221
SUM 1999	0	125	125	0	221
WIN 1999	0	125	125	0	221
SPR 2000	0	125	125	0	221
SUM 2000	0	125	125	0	221
WIN 2000	0	125	125	0	221
SPR 2001	0	125	125	0	221
SUM 2001	0	125	125	0	221
WIN 2001	0	125	125	0	221
SPR 2002	0	125	125	0	221
SUM 2002	0	125	125	0	221
WIN 2002	0	125	125	0	221
SPR 2003	0	125	125	0	221
SUM 2003	0	125	125	0	221
WIN 2003	0	125	125	0	221
SPR 2004	0	125	125	0	221
SUM 2004	0	125	125	0	221
WIN 2004	0	125	125	0	221
SPR 2005	0	125	125	0	221
SUM 2005	0	125	125	0	221
WIN 2005	0	125	125	0	221
SPR 2006	0	125	125	0	221
SUM 2006	0	125	125	0	221
WIN 2006	0	125	125	0	221
SPR 2007	0	125	125	0	221
SUM 2007	0	125	125	0	221
WIN 2007	0	125	125	0	221
SPR 2008	346	0	125	0	221
SUM 2008	346	0	125	0	221
WIN 2008	346	0	125	0	221
SPR 2009	346	0	125	0	221
SUM 2009	346	0	125	0	221
WIN 2009	346	0	125	0	221
SPR 2010	346	0	125	0	221
SUM 2010	346	0	125	0	221
WIN 2010	346	0	125	0	221
SPR 2011	346	0	125	0	221
SUM 2011	346	0	125	0	221
WIN 2011	346	0	125	0	221
SPR 2012	346	0	125	0	221
SUM 2012	346	0	125	0	221
WIN 2012	346	0	125	0	221
SPR 2013	346	0	125	0	221
SUM 2013	346	0	125	0	221
WIN 2013	346	0	125	0	221
SPR 2014	346	0	125	0	221
SUM 2014	346	0	125	0	221
WIN 2014	346	0	125	0	221
SPR 2015	346	0	125	0	221
SUM 2015	346	0	125	0	221
WIN 2015	346	0	125	0	221
SPR 2016	346	0	125	0	221
SUM 2016	346	0	125	0	221
WIN 2016	346	0	125	0	221
SPR 2017	346	0	125	0	221
SUM 2017	346	0	125	0	221
WIN 2017	346	0	125	0	221
SPR 2018	346	0	125	0	221
SUM 2018	346	0	125	0	221
WIN 2018	346	0	125	0	221
SPR 2019	346	0	125	0	221
SUM 2019	346	0	125	0	221
WIN 2019	346	0	125	0	221
SPR 2020	346	0	125	0	221
SUM 2020	346	0	125	0	221
WIN 2020	346	0	125	0	221
SPR 2021	346	0	125	0	221
SUM 2021	346	0	125	0	221
WIN 2021	346	0	125	0	221
SPR 2022	346	0	125	0	221
SUM 2022	346	0	125	0	221
WIN 2022	346	0	125	0	221
SPR 2023	346	0	125	0	221
SUM 2023	346	0	125	0	221

WIN 2023	346	0	125	0	221
SPR 2024	346	0	125	0	221
SUM 2024	346	0	125	0	221
WIN 2024	346	0	125	0	221
SPR 2025	346	0	125	0	221
SUM 2025	346	0	125	0	221
WIN 2025	346	0	125	0	221
SPR 2026	346	0	125	0	221
SUM 2026	346	0	125	0	221
WIN 2026	346	0	125	0	221
SPR 2027	346	0	125	0	221
SUM 2027	346	0	125	0	221
WIN 2027	346	0	125	0	221
SPR 2028	346	0	125	0	221
SUM 2028	346	0	125	0	221
WIN 2028	346	0	125	0	221
SPR 2029	346	0	125	0	221
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WIN 2029	346	0	125	0	221
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WIN 2030	346	0	125	0	221
SPR 2031	346	0	125	0	221
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WIN 2031	346	0	125	0	221
SPR 2032	346	0	125	0	221
SUM 2032	346	0	125	0	221
WIN 2032	346	0	125	0	221
SPR 2033	346	0	125	0	221
SUM 2033	346	0	125	0	221
WIN 2033	346	0	125	0	221
SPR 2034	346	0	125	0	221
SUM 2034	346	0	125	0	221
WIN 2034	346	0	125	0	221
SPR 2035	346	0	125	0	221
SUM 2035	346	0	125	0	221
WIN 2035	346	0	125	0	221
SPR 2036	346	0	125	0	221
SUM 2036	346	0	125	0	221
WIN 2036	346	0	125	0	221
SPR 2037	346	0	125	0	221
SUM 2037	346	0	125	0	221
WIN 2037	346	0	125	0	221
SPR 2038	346	0	125	0	221
SUM 2038	346	0	125	0	221
WIN 2038	346	0	125	0	221
SPR 2039	346	0	125	0	221
SUM 2039	346	0	125	0	221
WIN 2039	346	0	125	0	221
SPR 2040	346	0	125	0	221
SUM 2040	346	0	125	0	221
WIN 2040	346	0	125	0	221
SPR 2041	346	0	125	0	221
SUM 2041	346	0	125	0	221
WIN 2041	346	0	125	0	221
SPR 2042	346	0	125	0	221
SUM 2042	346	0	125	0	221
WIN 2042	346	0	125	0	221
SPR 2043	346	0	125	0	221
SUM 2043	346	0	125	0	221
WIN 2043	346	0	125	0	221
SPR 2044	346	0	125	0	221
SUM 2044	346	0	125	0	221
WIN 2044	346	0	125	0	221
SPR 2045	346	0	125	0	221
SUM 2045	346	0	125	0	221
WIN 2045	346	0	125	0	221
SPR 2046	346	0	125	0	221
SUM 2046	346	0	125	0	221
WIN 2046	346	0	125	0	221
SPR 2047	346	0	125	0	221
SUM 2047	346	0	125	0	221
WIN 2047	346	0	125	0	221
SPR 2048	346	0	125	0	221
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WIN 2048	346	0	125	0	221
SPR 2049	346	0	125	0	221
SUM 2049	346	0	125	0	221
WIN 2049	346	0	125	0	221
SPR 2050	346	0	125	0	221
SUM 2050	346	0	125	0	221
WIN 2050	346	0	125	0	221
SPR 2051	346	0	125	0	221
SUM 2051	346	0	125	0	221
WIN 2051	346	0	125	0	221
SPR 2052	346	0	125	0	221
SUM 2052	346	0	125	0	221
WIN 2052	346	0	125	0	221
SPR 2053	346	0	125	0	221
SUM 2053	346	0	125	0	221
WIN 2053	346	0	125	0	221
SPR 2054	346	0	125	0	221
SUM 2054	346	0	125	0	221
WIN 2054	346	0	125	0	221
SPR 2055	346	0	125	0	221
SUM 2055	346	0	125	0	221
WIN 2055	346	0	125	0	221
SPR 2056	346	0	125	0	221
SUM 2056	346	0	125	0	221
WIN 2056	346	0	125	0	221
SPR 2057	346	0	125	0	221
SUM 2057	346	0	125	0	221
WIN 2057	346	0	125	0	221
SPR 2058	346	0	125	0	221
SUM 2058	346	0	125	0	221
WIN 2058	346	0	125	0	221
SPR 2059	346	0	125	0	221
SUM 2059	346	0	125	0	221
WIN 2059	346	0	125	0	221
SPR 2060	346	0	125	0	221

SUM 2060	346	0	125	0	221
WIN 2060	346	0	125	0	221
SPR 2061	346	0	125	0	221
SUM 2061	346	0	125	0	221
WIN 2061	346	0	125	0	221
SPR 2062	346	0	125	0	221
SUM 2062	346	0	125	0	221
WIN 2062	346	0	125	0	221
SPR 2063	346	0	125	0	221
SUM 2063	346	0	125	0	221
WIN 2063	346	0	125	0	221
SPR 2064	346	0	125	0	221
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WIN 2064	346	0	125	0	221
SPR 2065	346	0	125	0	221
SUM 2065	346	0	125	0	221
WIN 2065	346	0	125	0	221
SPR 2066	346	0	125	0	221
SUM 2066	346	0	125	0	221
WIN 2066	346	0	125	0	221
SPR 2067	346	0	125	0	221
SUM 2067	346	0	125	0	221
WIN 2067	346	0	125	0	221
SPR 2068	346	0	125	0	221
SUM 2068	346	0	125	0	221
WIN 2068	346	0	125	0	221
SPR 2069	346	0	125	0	221
SUM 2069	346	0	125	0	221
WIN 2069	346	0	125	0	221
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SUM 2070	346	0	125	0	221
WIN 2070	346	0	125	0	221
SPR 2071	346	0	125	0	221
SUM 2071	346	0	125	0	221
WIN 2071	346	0	125	0	221
SPR 2072	346	0	125	0	221
SUM 2072	346	0	125	0	221
WIN 2072	346	0	125	0	221
SPR 2073	346	0	125	0	221
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WIN 2073	346	0	125	0	221
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SPR 2075	346	0	125	0	221
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WIN 2094	346	0	125	0	221
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WIN 2095	346	0	125	0	221
SPR 2096	346	0	125	0	221
SUM 2096	346	0	125	0	221
WIN 2096	346	0	125	0	221

SPR 2097	346	0	125	0	221	
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WIN 2100	346	0	125	0	221	
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SUM 2101	346	0	125	0	221	
WIN 2101	346	0	125	0	221	
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SUM 2102	346	0	125	0	221	
WIN 2102	346	0	125	0	221	
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WIN 2103	346	0	125	0	221	
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WIN 2110	346	0	125	0	221	
SPR 2111	346	0	125	0	221	
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WIN 2111	346	0	125	0	221	

Net Transfer Effect Above Milner
(Total Effect With Transfer - Total Effect Without Transfer)



1/19/2009

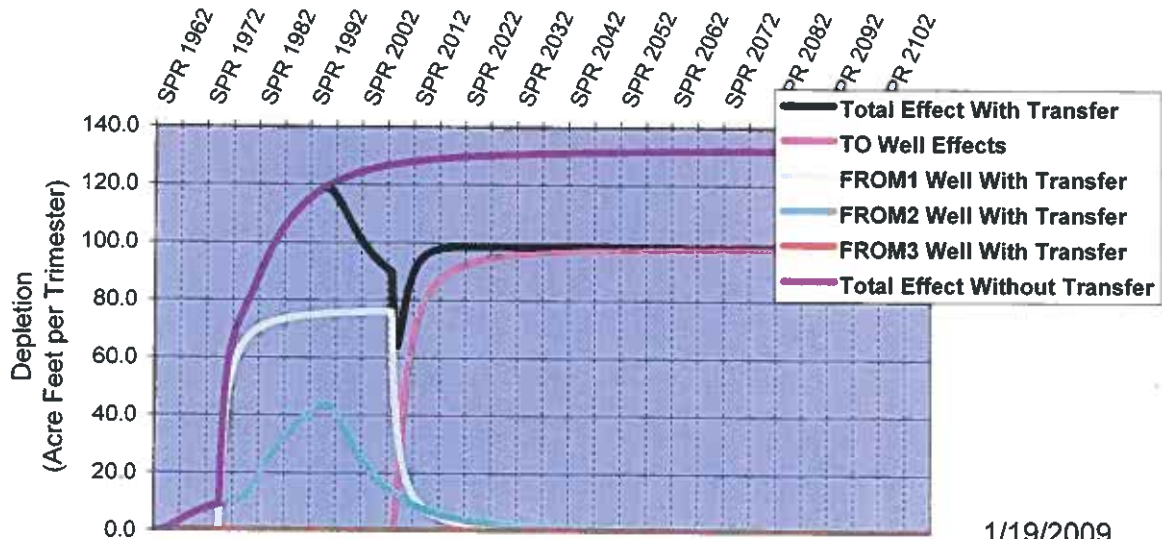
Version 3.1

Customer Name: **Sage/Geeles to KBC**

Transfer No: **Sage/G**

Hydrologic Response-- Near Blackfoot to Neeley

Customer Name: **Sage/Geeles to KBC** Transfer No: **Sage/G**



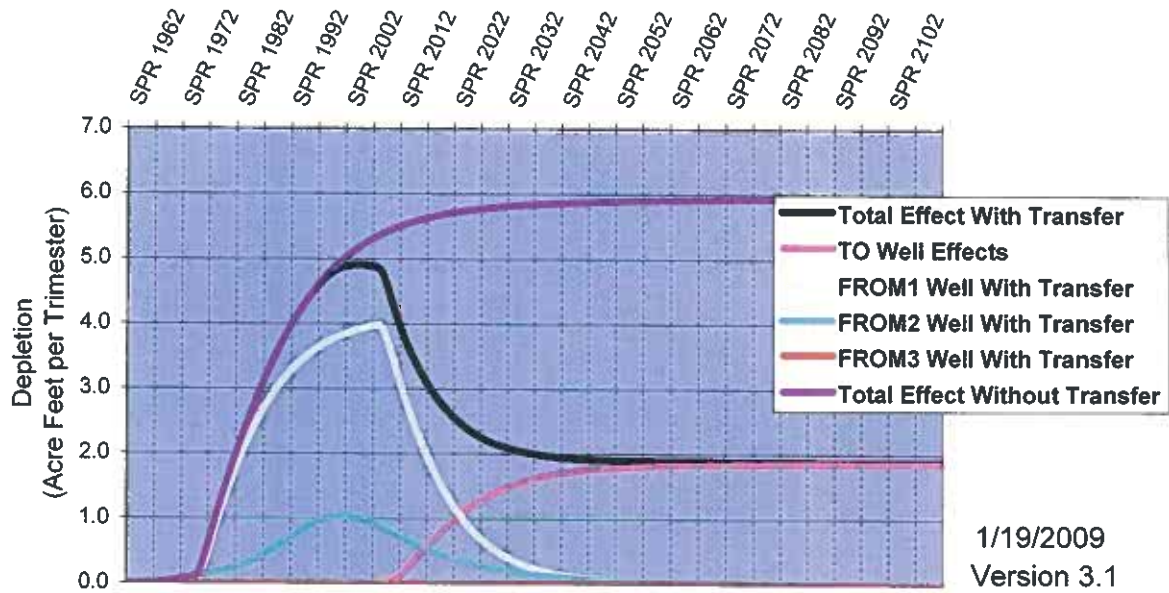
1/19/2009

Version 3.1

Hydrologic Response--Ashton to Rexburg

Customer Name: Sage/Geeles to Transfer No: Sage/G

KBC

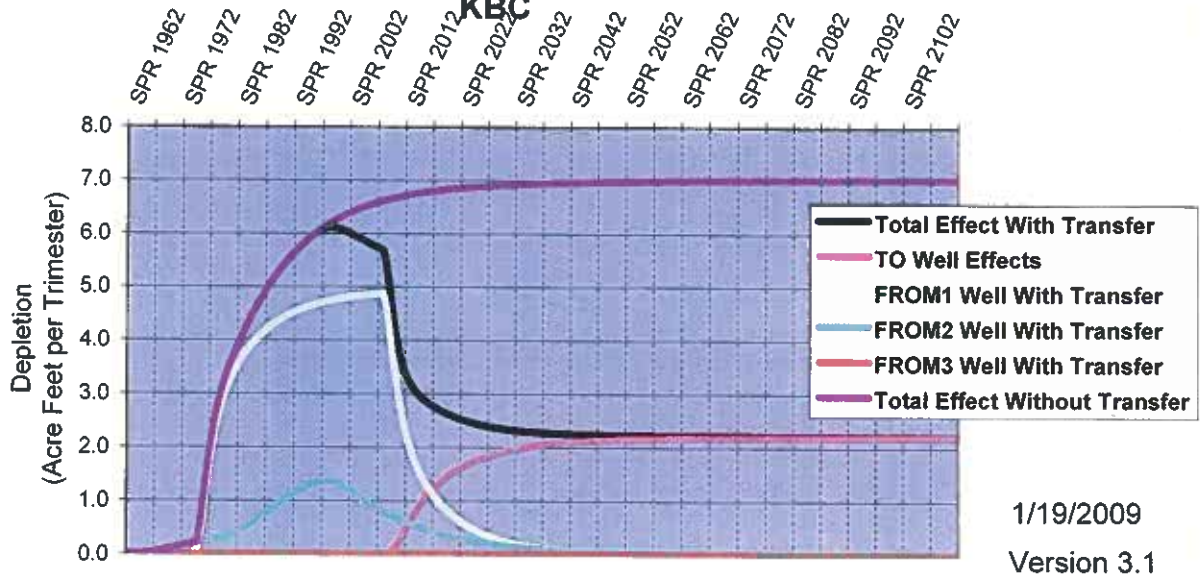


Cl

Hydrologic Response--Heise to Shelley

Customer Name: Sage/Geeles to Transfer No: Sage/G

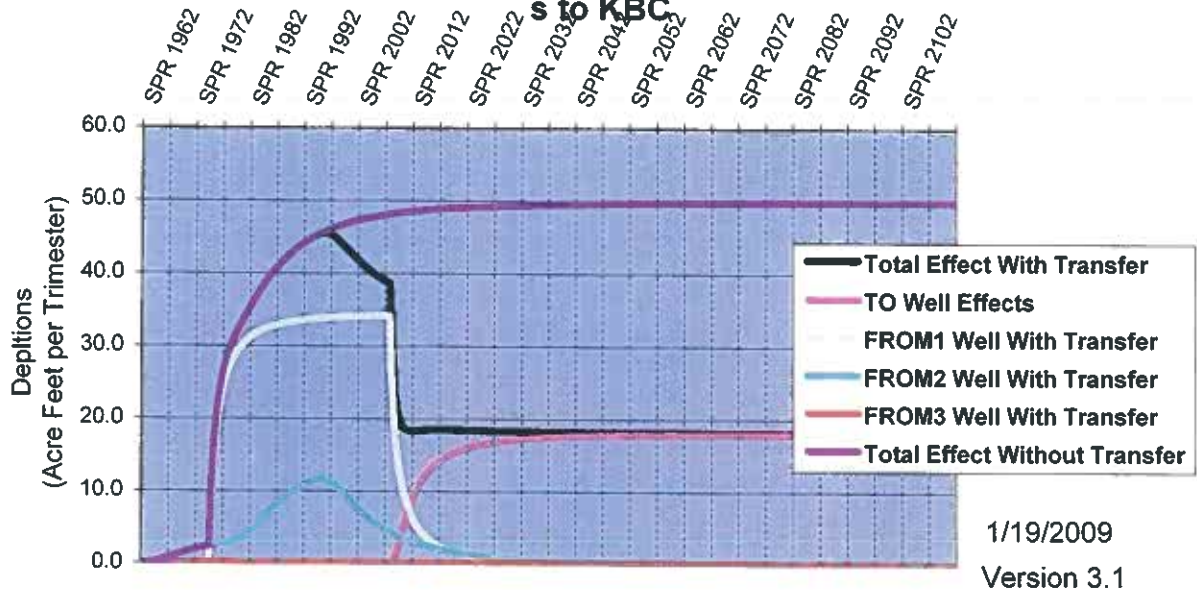
KBC



Hydrologic Response--Shelley to Near Blackfoot

Customer Name: Sage/Geele Transfer No: Sage/G

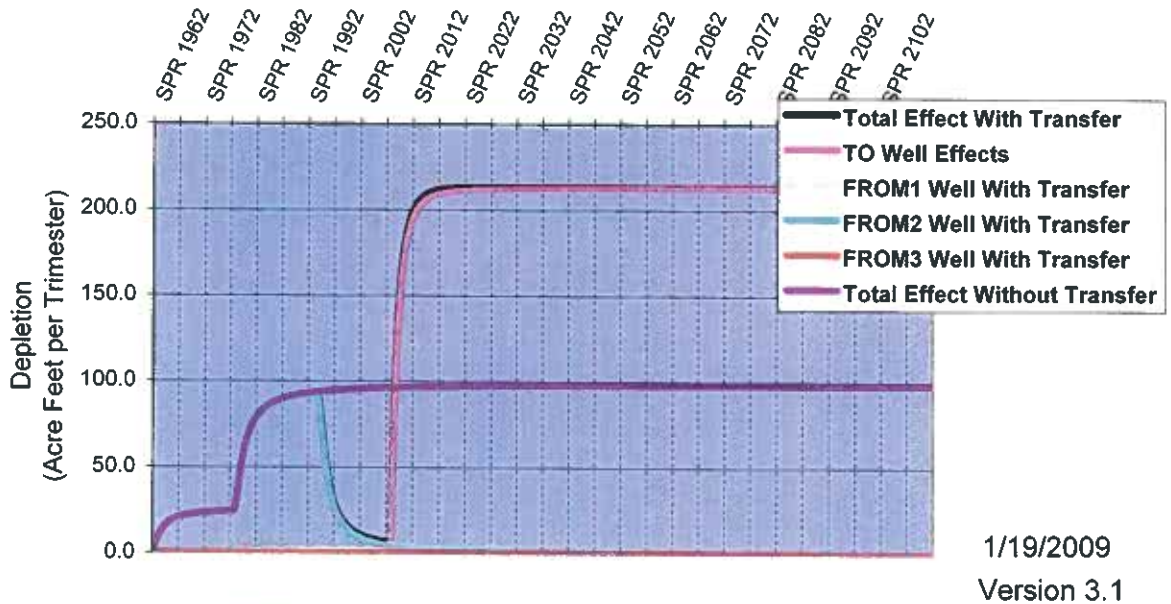
s to KBC



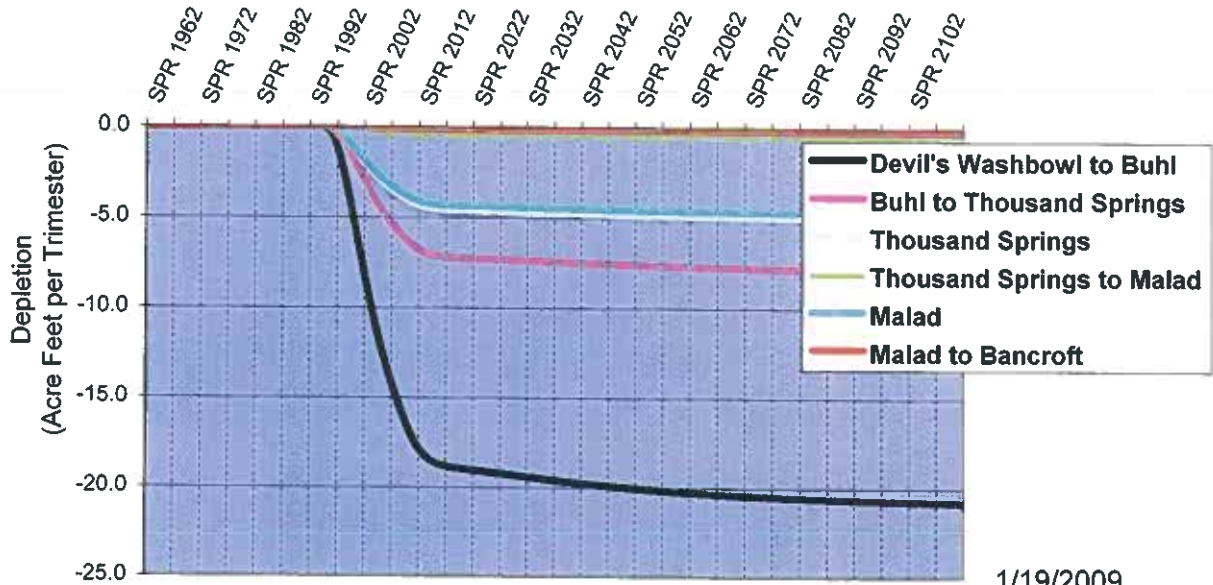
Hydrologic Response--Neeley to Minidoka

Customer Name: Sage/Geele Transfer No: Sage/G

s to KBC



Net Transfer Effect Below Milner (Total Effect With Transfer - Total Effect Without Transfer)



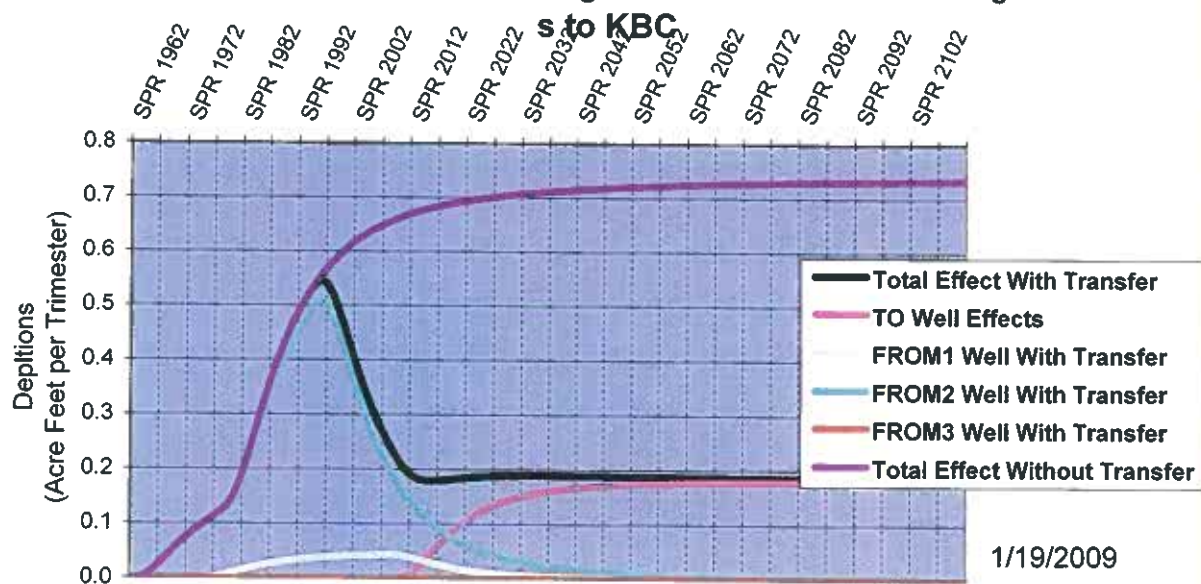
1/19/2009
Version 3.1

Customer Name: Sage/Geeles to KBC

Transfer No: Sage/G

Hydrologic Response--Thousand Springs to Malad

Customer Name: Sage/Geele Transfer No: Sage/G

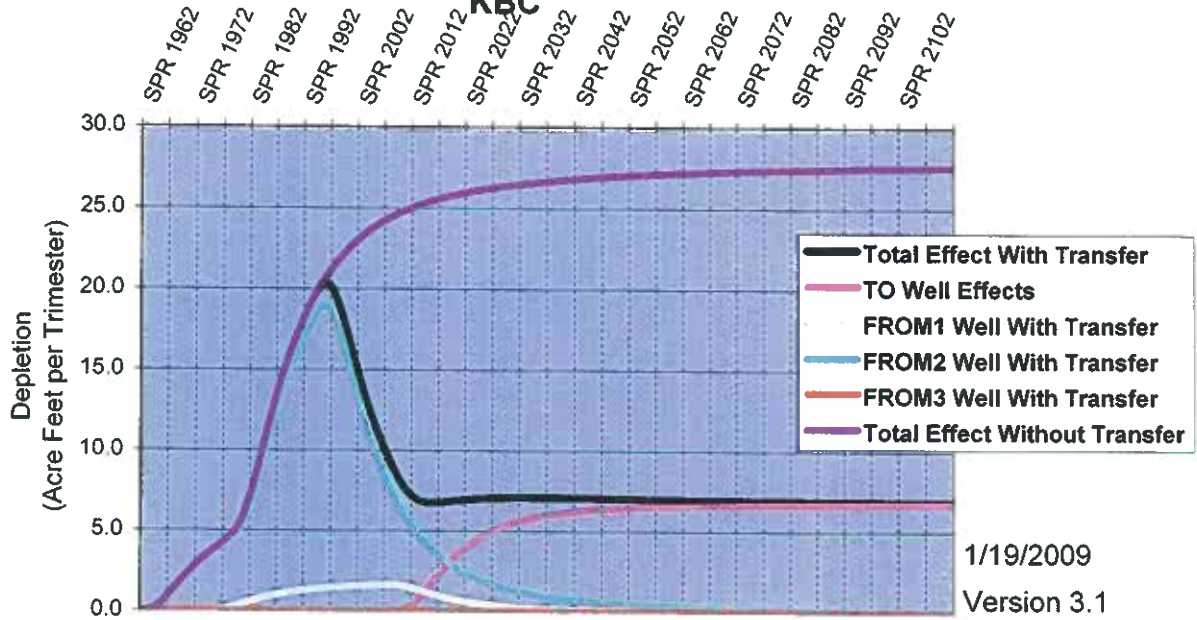


1/19/2009
Version 3.1

Hydrologic Response--Devil's Washbowl to Buhl

Customer Name: Sage/Geeles to Transfer No: Sage/G

KBC

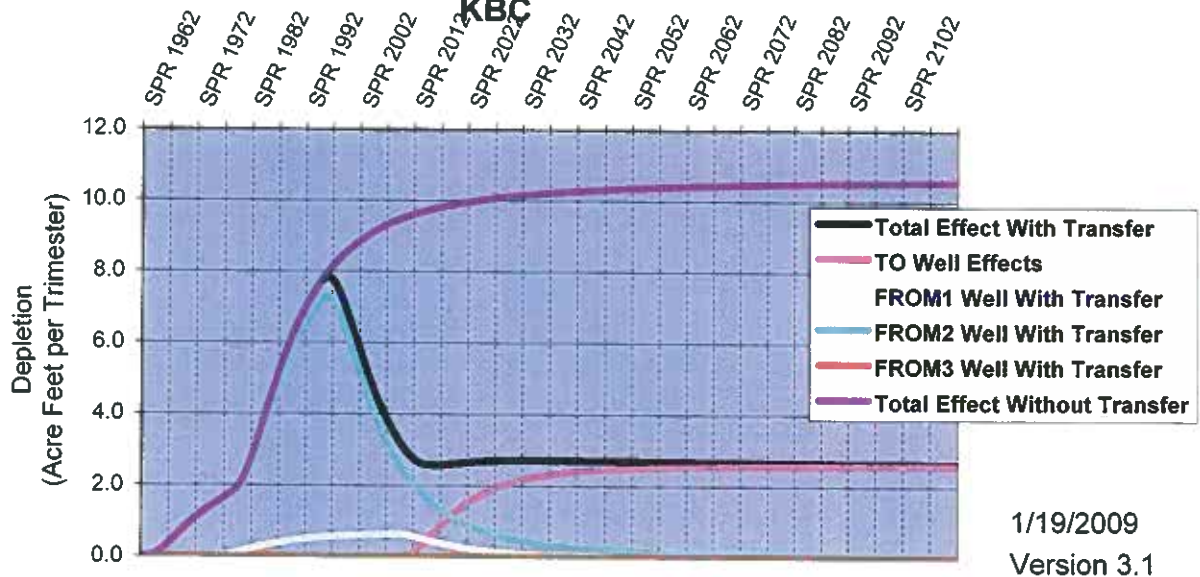


Cl

Hydrologic Response--Buhl to Thousand Springs

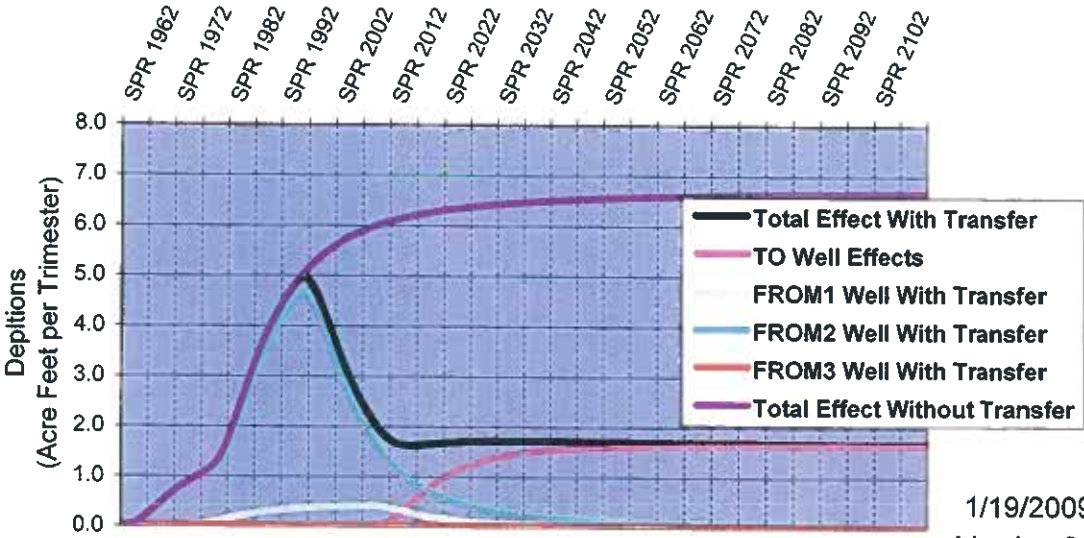
Customer Name: Sage/Geeles to Transfer No: Sage/G

KBC



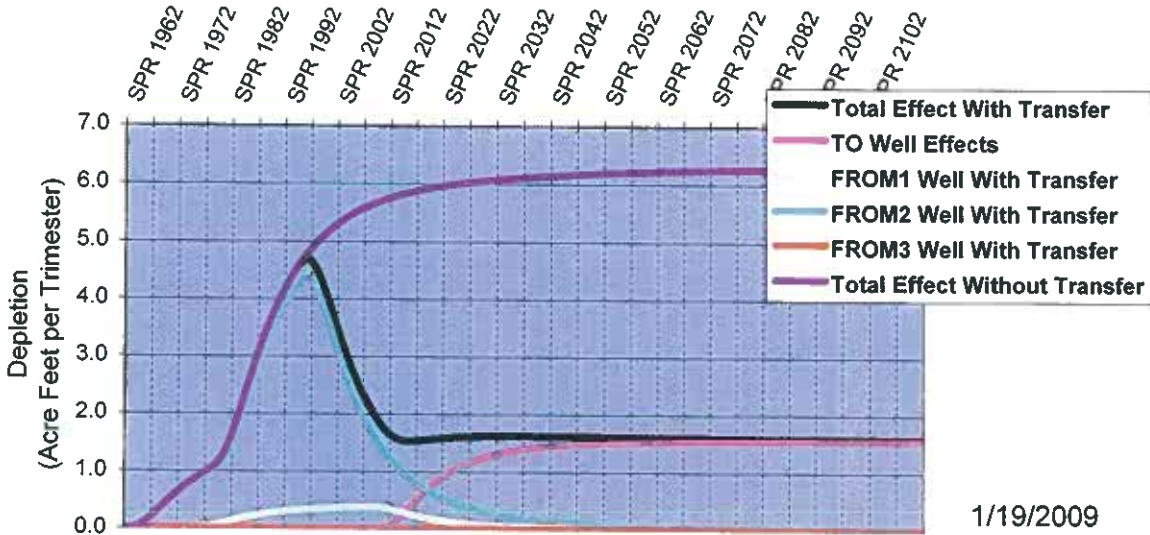
Hydrologic Response--Thousand Springs

Customer Name: Sage/Geele Transfer No: Sage/G
s to KBC



1/19/2009
Version 3.1

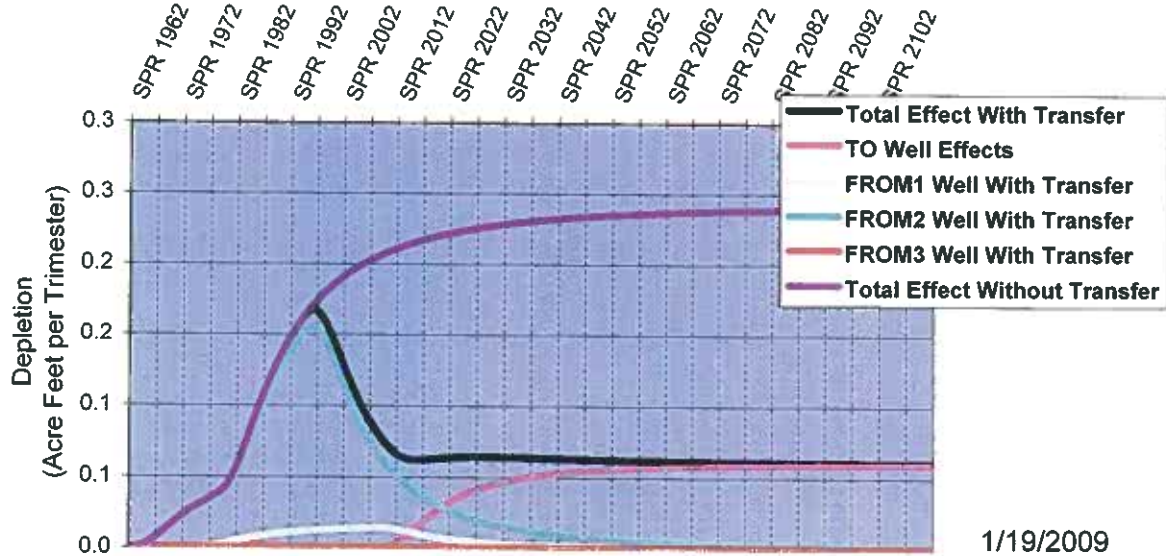
Hydrologic Response-- Malad
Customer Name: Sage/Geele **Transfer No: Sage/G**
s to KBC



1/19/2009

Version 3.1

Hydrologic Response-- Malad to Bancroft
Customer Name: Sage/Geele **Transfer No: Sage/G**
s to KBC



1/19/2009

Version 3.1

ENHANCED GROUND-WATER RIGHTS TRANSFER SPREADSHEET

UNIVERSITY OF IDAHO - IDAHO WATER RESOURCES RESEARCH INSTITUTE

IDAHO DEPARTMENT OF WATER RESOURCES

Cells this color are set up for user entries

ENTER STARTING DATE FOR SIMULATION. THEN PUSH "UPDATE DATES" BUTTON

TRANSFER NO: Sage to Alliance
YEAR: 1962
SEASON: SPRING

TRANSFER NAME: Sage to Alliance

1	2	3
4		

ENTER CELL LOCATIONS:

	'TO' CELL	'FROM1' CELL	'FROM2' CELL	'FROM3' CELL
ROW	85	91		
COLUMN	43	69		

TRIMESTER OF ACTIVITY	TO WELL Projected Use AF/TRIMESTER	FROM1 WELL		FROM2 WELL		FROM3 WELL	
		With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER	With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER	With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER
SPR 1962	0	15	15				
SUM 1962	0	15	15				
WIN 1962	0	15	15				
SPR 1963	0	15	15				
SUM 1963	0	15	15				
WIN 1963	0	15	15				
SPR 1964	0	15	15				
SUM 1964	0	15	15				
WIN 1964	0	15	15				
SPR 1965	0	15	15				
SUM 1965	0	15	15				
WIN 1965	0	15	15				
SPR 1966	0	15	15				
SUM 1966	0	15	15				
WIN 1966	0	15	15				
SPR 1967	0	15	15				
SUM 1967	0	15	15				
WIN 1967	0	15	15				
SPR 1968	0	15	15				
SUM 1968	0	15	15				
WIN 1968	0	15	15				
SPR 1969	0	15	15				
SUM 1969	0	15	15				
WIN 1969	0	15	15				
SPR 1970	0	15	15				
SUM 1970	0	15	15				
WIN 1970	0	15	15				
SPR 1971	0	15	15				
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WIN 1971	0	15	15				
SPR 1972	0	15	15				
SUM 1972	0	15	15				
WIN 1972	0	15	15				
SPR 1973	0	15	15				
SUM 1973	0	15	15				
WIN 1973	0	15	15				
SPR 1974	0	56	56				
SUM 1974	0	56	56				
WIN 1974	0	56	56				
SPR 1975	0	56	56				
SUM 1975	0	56	56				
WIN 1975	0	56	56				
SPR 1976	0	56	56				
SUM 1976	0	56	56				
WIN 1976	0	56	56				
SPR 1977	0	56	56				
SUM 1977	0	56	56				
WIN 1977	0	56	56				
SPR 1978	0	56	56				
SUM 1978	0	56	56				
WIN 1978	0	56	56				
SPR 1979	0	56	56				
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WIN 1979	0	56	56				
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WIN 1980	0	56	56				
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WIN 1981	0	56	56				
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SUM 1982	0	56	56				
WIN 1982	0	56	56				
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SPR 1984	0	56	56				
SUM 1984	0	56	56				
WIN 1984	0	56	56				
SPR 1985	0	56	56				
SUM 1985	0	56	56				
WIN 1985	0	56	56				
SPR 1986	0	56	56				
SUM 1986	0	56	56				
WIN 1986	0	56	56				

Entering Dates

Enter the starting year and season for your simulation. The start of the analysis period. (Spring is Mar, Apr, May and Jun.

Summer is Jul, Aug, Sep and Oct. Winter is Nov, Dec, Jan and Feb. Once you have entered the starting date, push the "UPDATE DATES" button. The date only needs to be updated once, unless the desired time is modified. Modifying the date does not automatically adjust the location of the wells.

Entering Well Locations

Enter the row and column location for the 'TO' well in spreadsheet.

Enter the row and column location for the 'FROM1' well in spreadsheet.

Enter the row and column location for the 'FROM2' well in spreadsheet.

Enter the row and column location for the 'FROM3' well in spreadsheet.

If the 'FROM2' well is not to be modeled, the entered row and column will be ignored.

If the 'FROM3' well is not to be modeled, the entered row and column will be ignored.

The 'FROM3' well cannot be used if the 'FROM2' well is not being modeled.

Running the Model

Once the model cells have been specified for the 'FROM' and 'TO' wells, push the "RUN MODEL" button to generate the response functions. The model will be re-run if the locations of the 'FROM' and 'TO' wells are changed.

Getting the Model Output

Once the model has been run, push the "GET OUTPUT" button to get the model output. This prepares the model output for use for calculations.

Entering water use data

All water use should be entered in units of acre-feet per four months. For instructions on multiple water rights with different priority dates, see the Users Manual.

Entering 'TO' Well Projected Water Use

Enter the projected water use for the 'TO' Well in Column B. 'TO' Well should start in the trimester (4-month period) in which the transfer begins.

Entering 'FROM' Well 'With Transfer' Use

Enter the 'With Transfer' water use for the first 'FROM' Well in Column C, the second 'FROM' well in Column E, and for the third 'FROM' Well in Column G. 'With Transfer' water use should reflect historical and projected water use. It should cease or be reduced at the time of the water right transfer.

Entering 'FROM' Well 'Without Transfer' Use

The 'Without Transfer' Use for the 'FROM' wells should include historical and projected water use. The projected use should reflect expected pumpage from that well. Enter the 'Without Transfer' water use for the first 'FROM' Well in Column D, the second 'FROM' well in Column F, and for the third 'FROM' Well in Column H. Prior to the expected date of transfer, the 'With Transfer' use should be entered.

If only one 'FROM' well is to be represented, pumpage in columns C, E, and G should be entered. If only two 'FROM' wells are being represented, pumpage in columns C, E, and F should be entered. Projected water use in the 'TO' well and the 'FROM' wells will be affected by the river reaches caused by the water right transfer. (See the Users Manual for more information.)

Calculating Effect of the Transfer on River Gains and Losses

After all of the above steps have been completed, the effects of the transfer will be calculated. Push the "CALCULATE EFFECTS" button. This will result in a multiplication of the model runs) times the water use rates entered in the table prior to the transfer. After the multiplication has been performed, the spreadsheet will calculate the net effects on all 11 reaches. Results are also presented in the EFFECTS worksheet. See the Users Manual for more information.

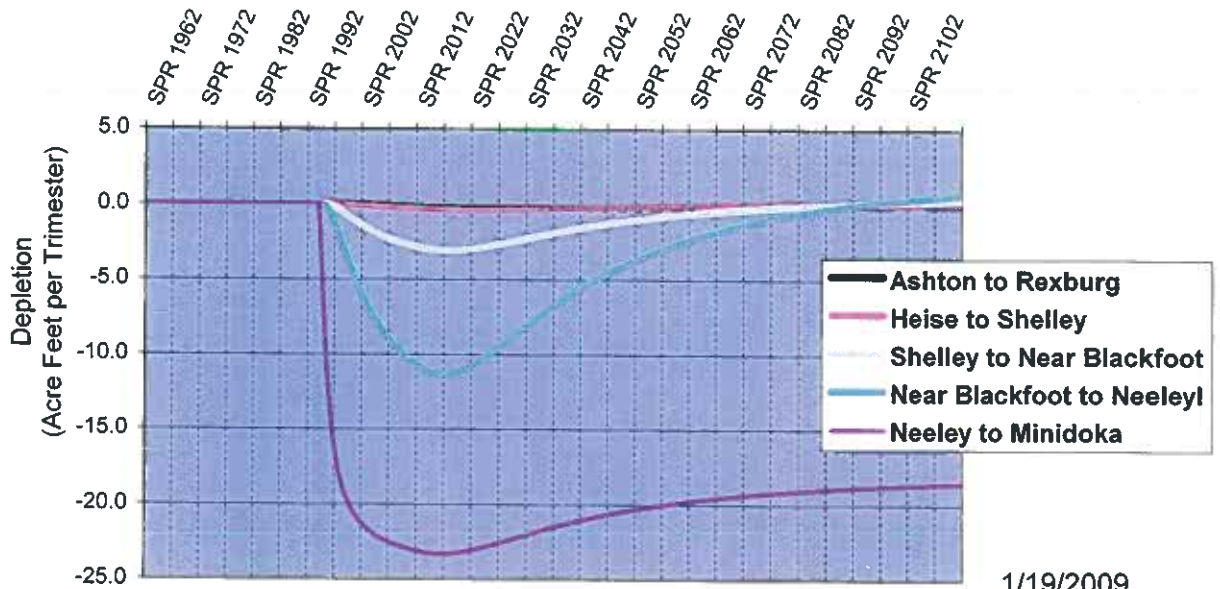
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WIN 1989	0	56	56				
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WIN 1990	0	56	56				
SPR 1991	0	56	56				
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WIN 1995	0	0	56				
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WIN 1996	0	0	56				
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WIN 2008	56	0	56				
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WIN 2009	56	0	56				
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WIN 2012	56	0	56				
SPR 2013	56	0	56				
SUM 2013	56	0	56				
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WIN 2066	56	0	56				
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WIN 2067	56	0	56				
SPR 2068	56	0	56				
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SUM 2093	56	0	56				
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SPR 2095	56	0	56				
SUM 2095	56	0	56				
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SPR 2096	56	0	56				
SUM 2096	56	0	56				
WIN 2096	56	0	56				

SPR 2087	56	0	56				
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WIN 2087	56	0	56				
SPR 2088	56	0	56				
SUM 2088	56	0	56				
WIN 2088	56	0	56				
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SUM 2089	56	0	56				
WIN 2089	56	0	56				
SPR 2100	56	0	56				
SUM 2100	56	0	56				
WIN 2100	56	0	56				
SPR 2101	56	0	56				
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SUM 2109	56	0	56				
WIN 2109	56	0	56				
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SUM 2110	56	0	56				
WIN 2110	56	0	56				
SPR 2111	56	0	56				
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WIN 2111	56	0	56				

Net Transfer Effect Above Milner **(Total Effect With Transfer - Total Effect Without Transfer)**



1/19/2009
Version 3.1

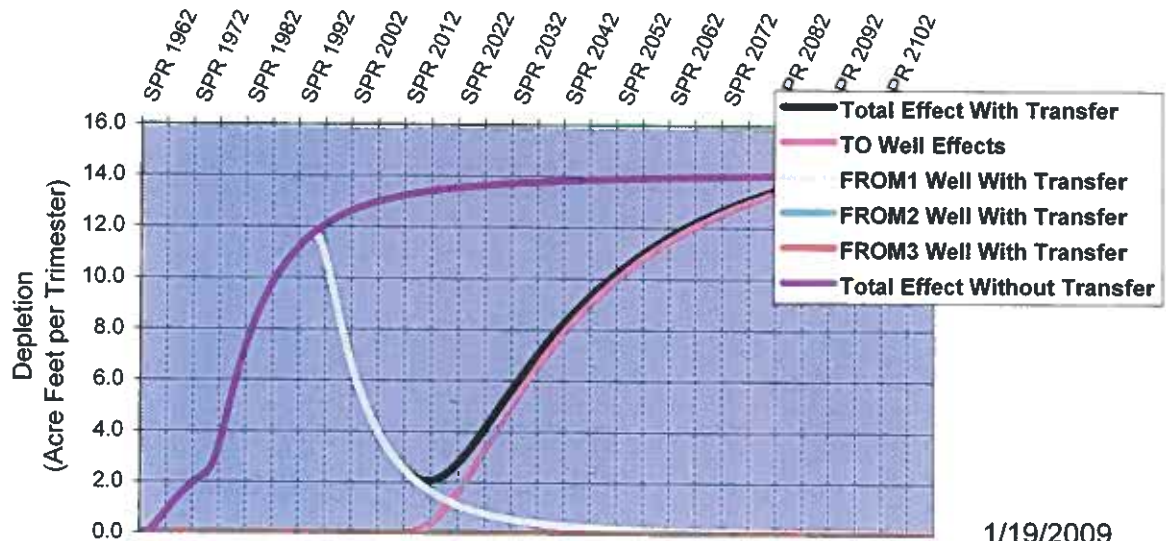
Customer Name: Sage to Alliance

Transfer No: Sage to

Hydrologic Response-- Near Blackfoot to Neeley

Customer Name: Sage to Alliance

Transfer No: Sage to

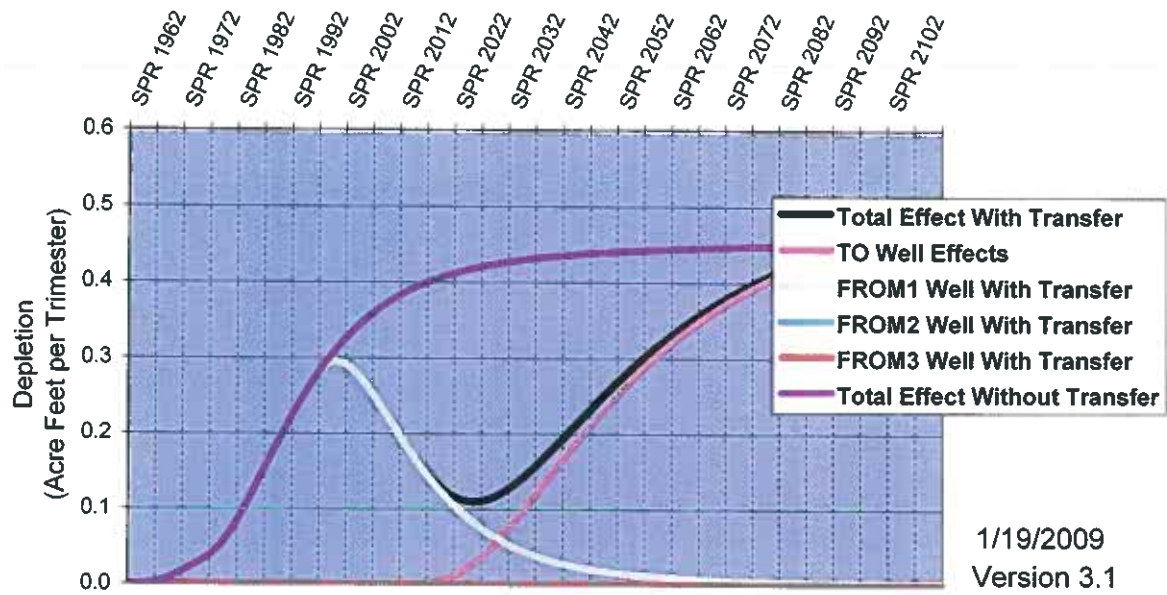


1/19/2009
Version 3.1

Hydrologic Response--Ashton to Rexburg

Customer Name: Sage to Alliance Transfer No:

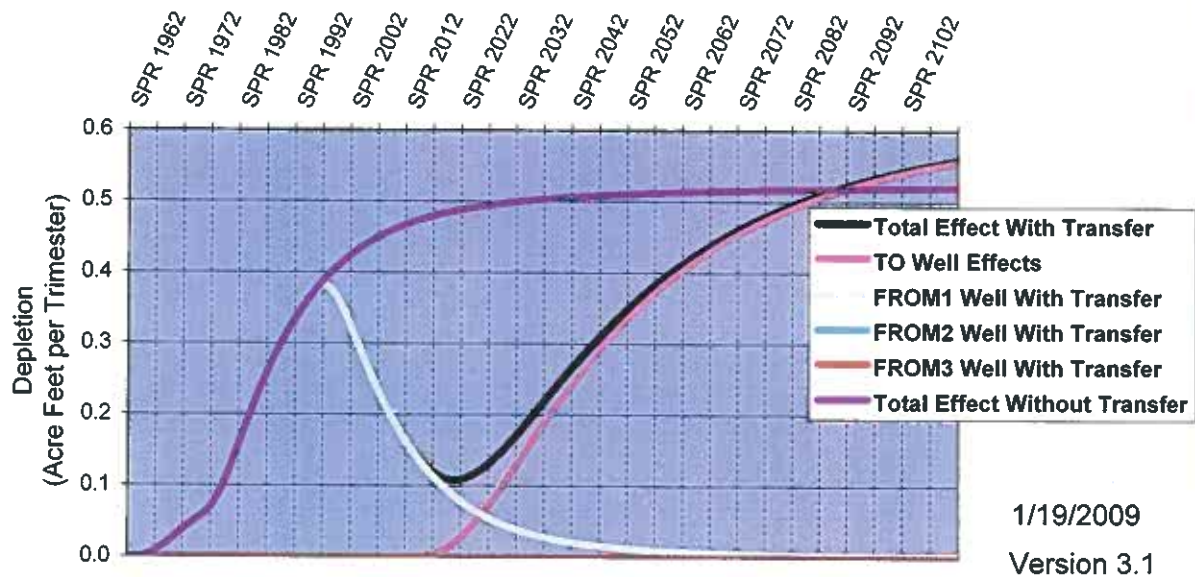
Sage to



Hydrologic Response--Heise to Shelley

Customer Name: Sage to Alliance Transfer No:

Sage to

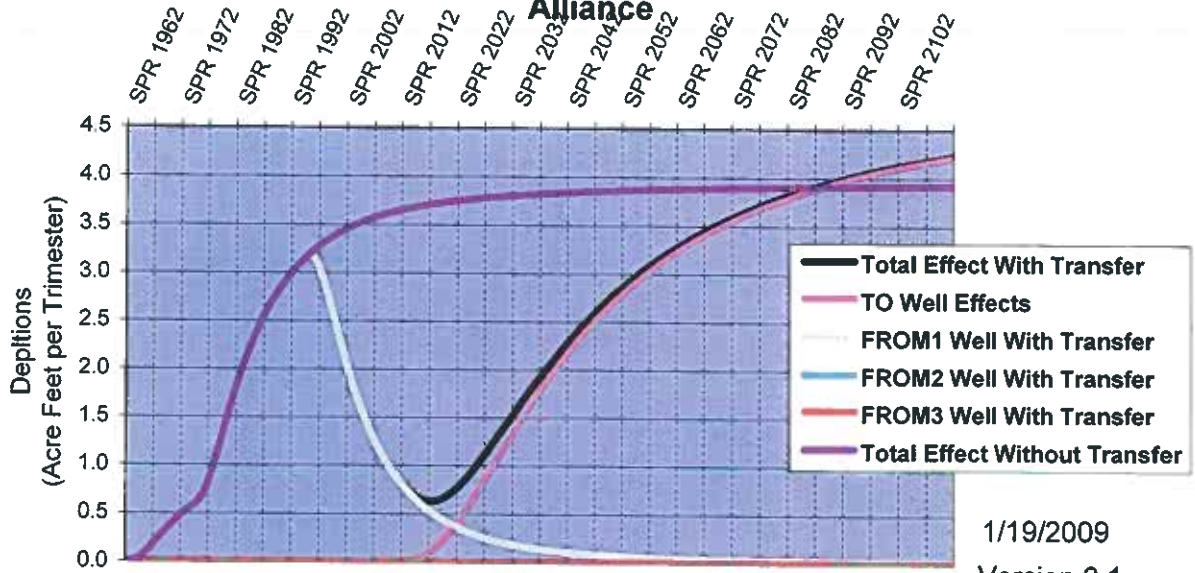


Hydrologic Response--Shelley to Near Blackfoot

Customer Name: Sage to Alliance

Transfer No:

Sage to



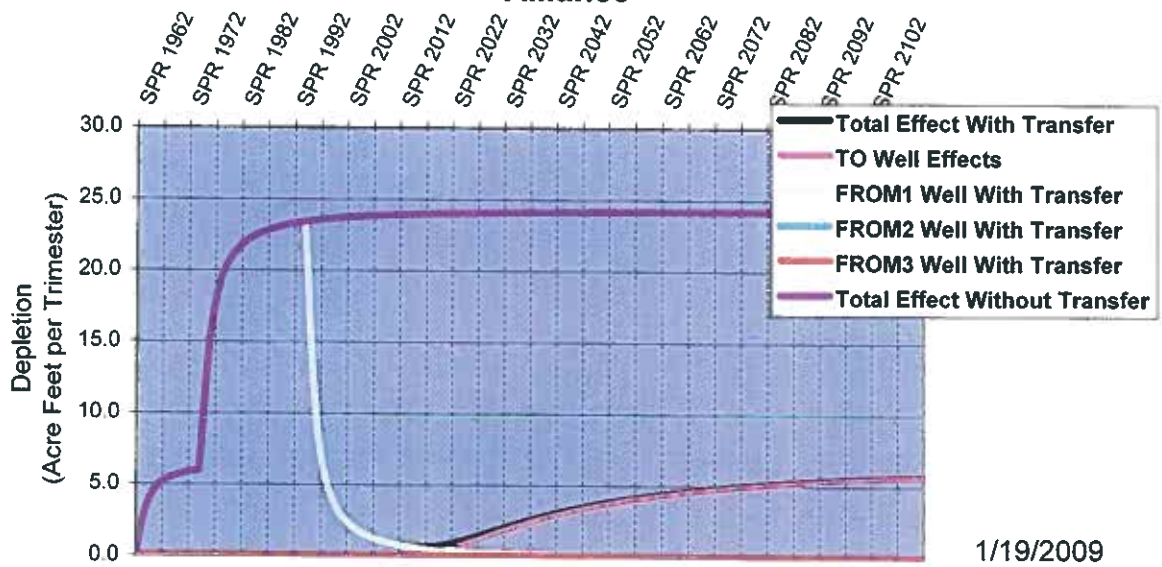
1/19/2009

Version 3.1

Hydrologic Response-- Neeley to Minidoka

Customer Name: **Sage to Alliance**

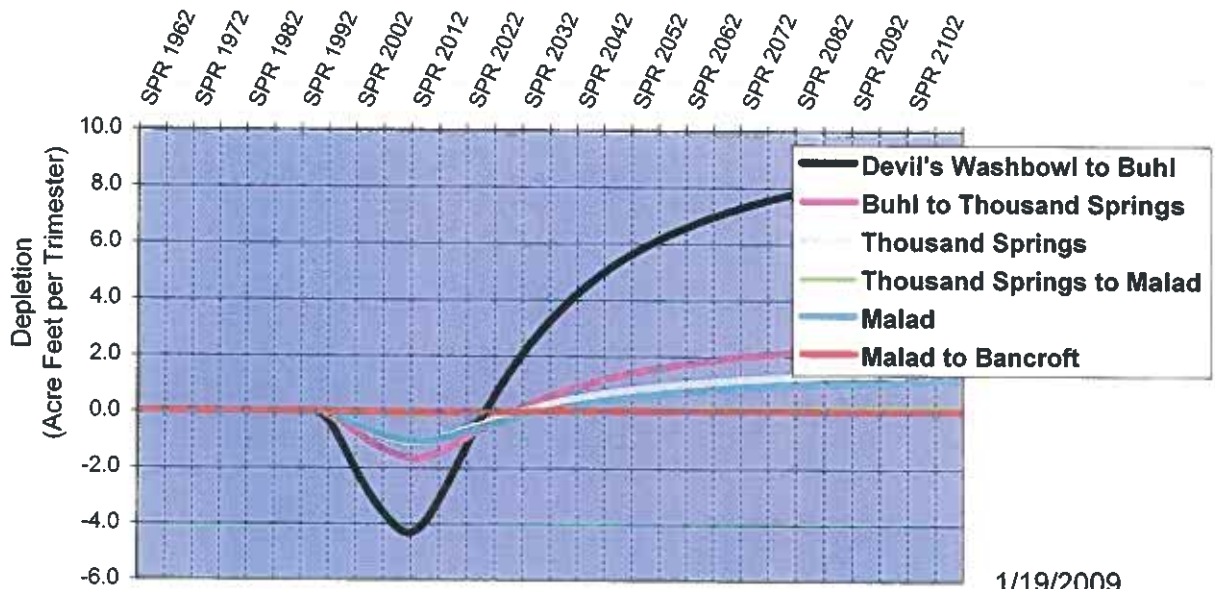
Transfer No: Sage to



1/19/2009

Version 3.1

Net Transfer Effect Below Milner (Total Effect With Transfer - Total Effect Without Transfer)

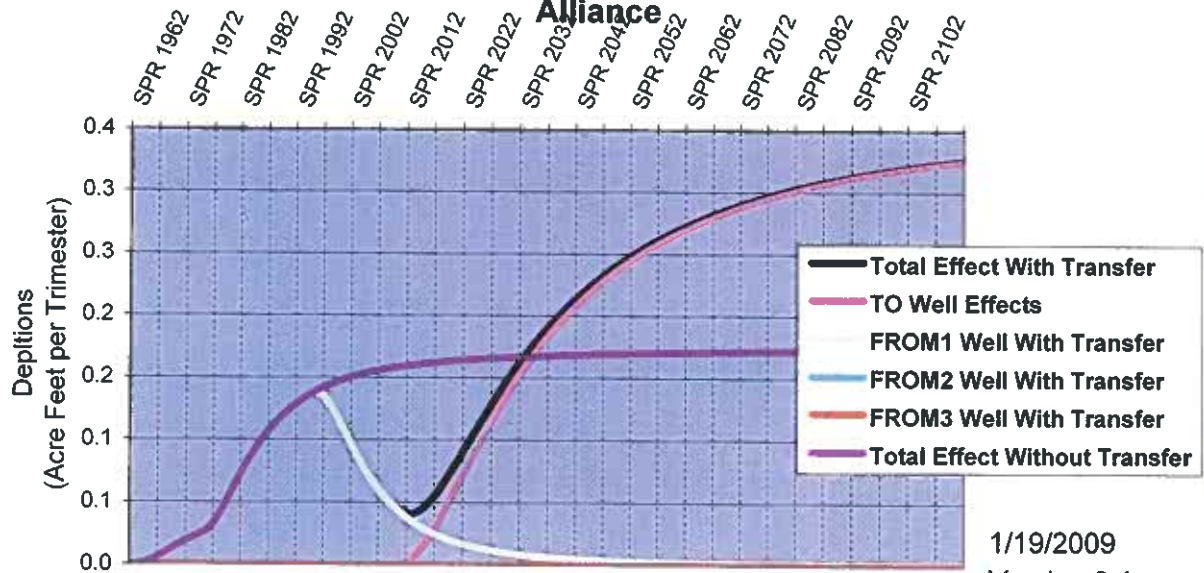


Customer Name: **Sage to Alliance**

Transfer No: Sage to

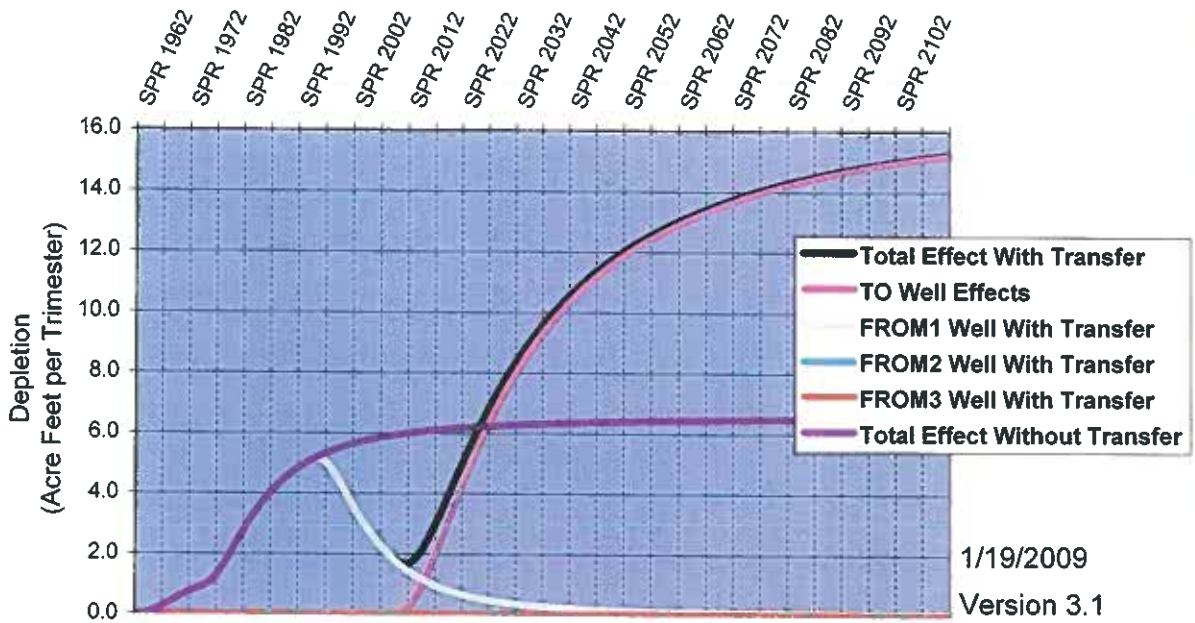
Hydrologic Response--Thousand Springs to Malad

Customer Name: **Sage to Alliance** Transfer No: Sage to



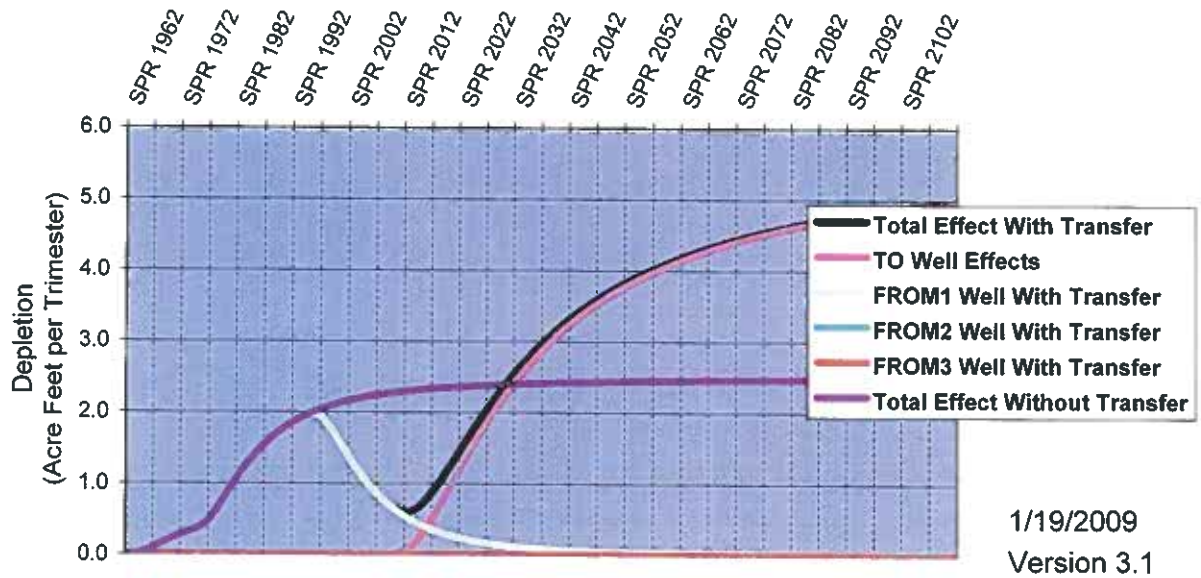
Hydrologic Response--Devil's Washbowl to Buhl

Customer Name: Sage to Alliance Transfer No: Sage to



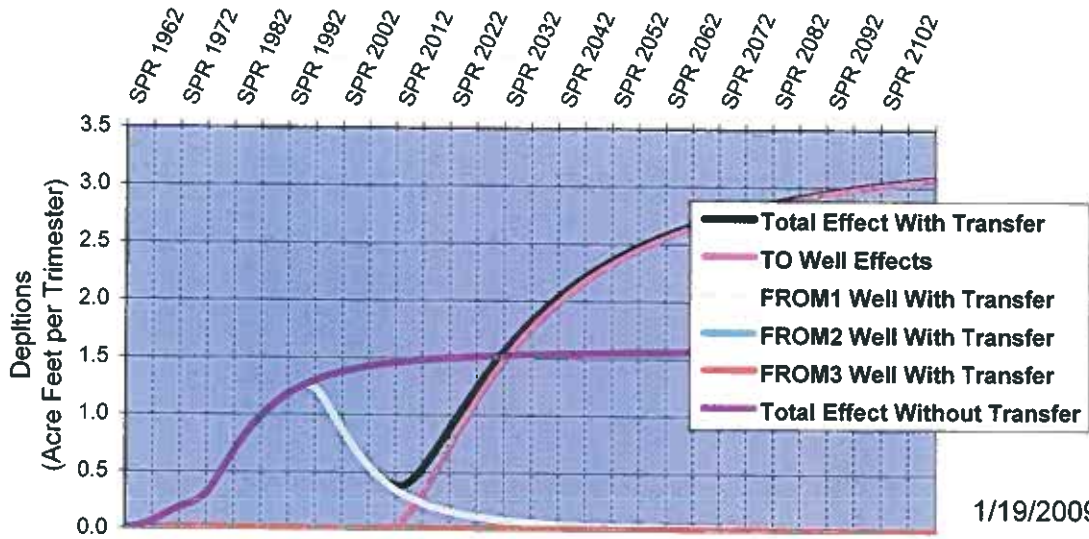
Hydrologic Response--Buhl to Thousand Springs

Customer Name: Sage to Alliance Transfer No: Sage to



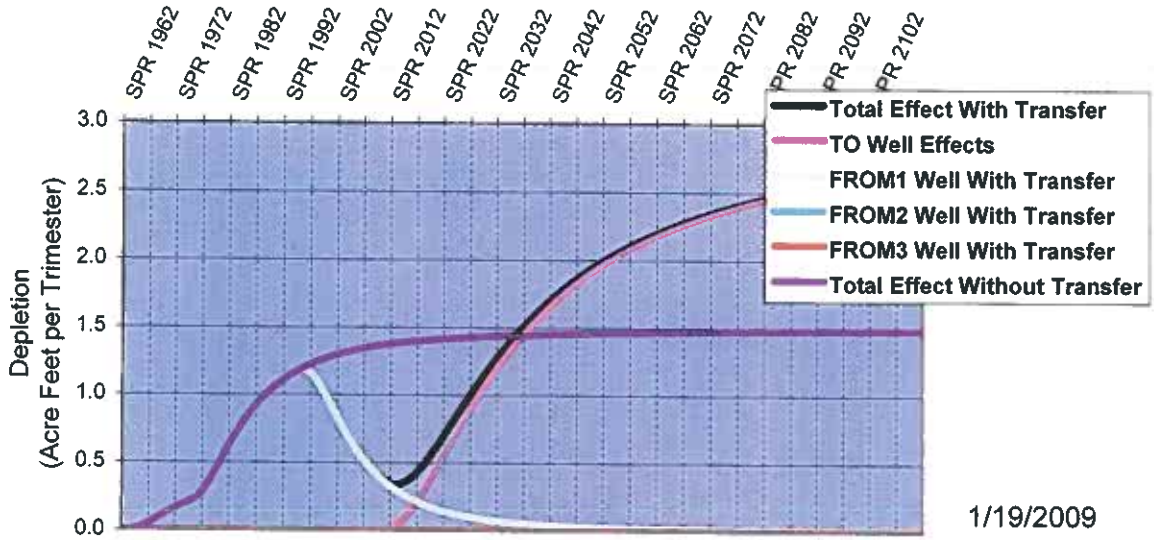
Hydrologic Response--Thousand Springs

Customer Name: Sage to Alliance Transfer No: Sage to



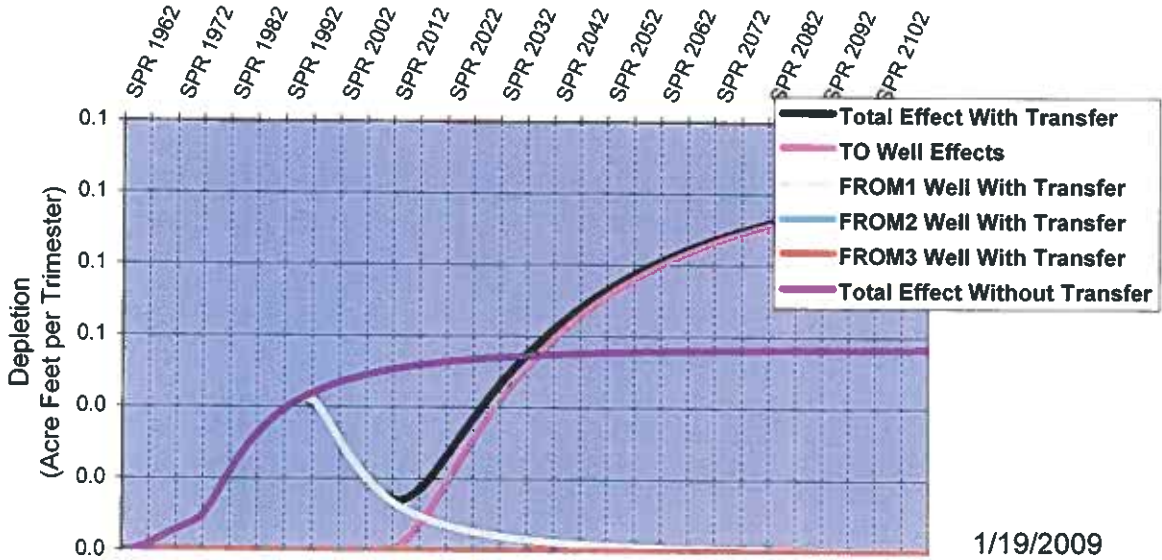
1/19/2009
Version 3.1

Hydrologic Response-- Malad **Customer Name: Sage to Alliance** **Transfer No:** **Sage to**



1/19/2009
Version 3.1

Hydrologic Response-- Malad to Bancroft **Customer Name: Sage to Alliance** **Transfer No:** **Sage to**



1/19/2009
Version 3.1

ENHANCED GROUND-WATER RIGHTS TRANSFER SPREADSHEET

UNIVERSITY OF IDAHO - IDAHO WATER RESOURCES RESEARCH INSTITUTE

IDAHO DEPARTMENT OF WATER RESOURCES

Cells this color are
set up for user entries

ENTER STARTING DATE FOR

SIMULATION. THEN PUSH "UPDATE DATES" BUTTON

YEAR 1962

SEASON SPRING

TRANSFER NO:

Sage to Bowler(1)

TRANSFER NAME:

Sage to Bowler(1)

ENTER CELL LOCATIONS:

	'TO' CELL	'FROM1' CELL	'FROM2' CELL	'FROM3' CELL
ROW	93	91		
COLUMN	89	69		

TRIMESTER OF ACTIVITY	'TO' WELL Projected Use AF/TRIMESTER	FROM1 WELL		FROM2 WELL		FROM3 WELL	
		With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER	With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER	With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER
SPR 1962	0	6	6				
SUM 1962	0	6	6				
WIN 1962	0	6	6				
SPR 1963	0	6	6				
SUM 1963	0	6	6				
WIN 1963	0	6	6				
SPR 1964	0	6	6				
SUM 1964	0	6	6				
WIN 1964	0	6	6				
SPR 1965	0	6	6				
SUM 1965	0	6	6				
WIN 1965	0	6	6				
SPR 1966	0	6	6				
SUM 1966	0	6	6				
WIN 1966	0	6	6				
SPR 1967	0	6	6				
SUM 1967	0	6	6				
WIN 1967	0	6	6				
SPR 1968	0	6	6				
SUM 1968	0	6	6				
WIN 1968	0	6	6				
SPR 1969	0	6	6				
SUM 1969	0	6	6				
WIN 1969	0	6	6				
SPR 1970	0	6	6				
SUM 1970	0	6	6				
WIN 1970	0	6	6				
SPR 1971	0	6	6				
SUM 1971	0	6	6				
WIN 1971	0	6	6				
SPR 1972	0	6	6				
SUM 1972	0	6	6				
WIN 1972	0	6	6				
SPR 1973	0	6	6				
SUM 1973	0	6	6				
WIN 1973	0	6	6				
SPR 1974	0	21	21				
SUM 1974	0	21	21				
WIN 1974	0	21	21				
SPR 1975	0	21	21				
SUM 1975	0	21	21				
WIN 1975	0	21	21				
SPR 1976	0	21	21				
SUM 1976	0	21	21				
WIN 1976	0	21	21				
SPR 1977	0	21	21				
SUM 1977	0	21	21				
WIN 1977	0	21	21				
SPR 1978	0	21	21				
SUM 1978	0	21	21				
WIN 1978	0	21	21				
SPR 1979	0	21	21				
SUM 1979	0	21	21				
WIN 1979	0	21	21				
SPR 1980	0	21	21				
SUM 1980	0	21	21				
WIN 1980	0	21	21				
SPR 1981	0	21	21				
SUM 1981	0	21	21				
WIN 1981	0	21	21				
SPR 1982	0	21	21				
SUM 1982	0	21	21				
WIN 1982	0	21	21				
SPR 1983	0	21	21				
SUM 1983	0	21	21				
WIN 1983	0	21	21				
SPR 1984	0	21	21				
SUM 1984	0	21	21				
WIN 1984	0	21	21				
SPR 1985	0	21	21				
SUM 1985	0	21	21				
WIN 1985	0	21	21				
SPR 1986	0	21	21				
SUM 1986	0	21	21				
WIN 1986	0	21	21				

Entering Dates

Enter the starting year and season for your simulation. The start of the analysis period. (Spring is Mar, Apr, May and Jun.

Summer is Jul, Aug, Sep and Oct. Winter is Nov, Dec, Jan and Feb.

Once you have entered the starting date, push the "UPDATE DATA"

The date only needs to be updated once, unless the desired time

Modifying the date does not automatically adjust the location of the

Entering Well Locations

Enter the row and column location for the 'TO' well in spreadsheet

Enter the row and column location for the 'FROM1' well in spread:

Enter the row and column location for the 'FROM2' well in spread:

Enter the row and column location for the 'FROM3' well in spread:

If the 'FROM2' well is not to be modeled, the entered row and col

If the 'FROM3' well is not to be modeled, the entered row and col

The 'FROM3' well cannot be used if the 'FROM2' well is not being

Running the Model

Once the model cells have been specified for the 'FROM' and 'TO'

the 'RUN MODEL' button to generate the response functions. Th

needs to be re-run if the locations of the 'FROM' and 'TO' wells ar

Getting the Model Output

Once the model has been run, push the 'GET OUTPUT' button to

model output. This prepares the model output for use for calcula

Entering water use data

All water use should be entered in units of acre-feet per four mont

for instructions on multiple water rights with different priority dates

Entering 'TO' Well Projected Water Use

Enter the projected water use for the 'TO' Well in Column B. 'TO'

should start in the trimester (4-month period) in which the transfer

Entering 'FROM' Well 'With Transfer' Use

Enter the 'With Transfer' water use for the first 'FROM' Well in Co

the second 'FROM' well in Column E, and for the third 'FROM' We

'With Transfer' water use should reflect historical and projected a

should cease or be reduced at the time of the water right transfer

Entering 'FROM' Well 'Without Transfer' Use

The 'Without Transfer' Use for the 'FROM' wells should include hi

The projected use should reflect expected pumpage from that we

Enter the 'Without Transfer' water use for the first 'FROM' Well in

for the second 'FROM' well in Column F, and for the third 'FROM'

Prior to the expected date of transfer, the 'With Transfer' use sho

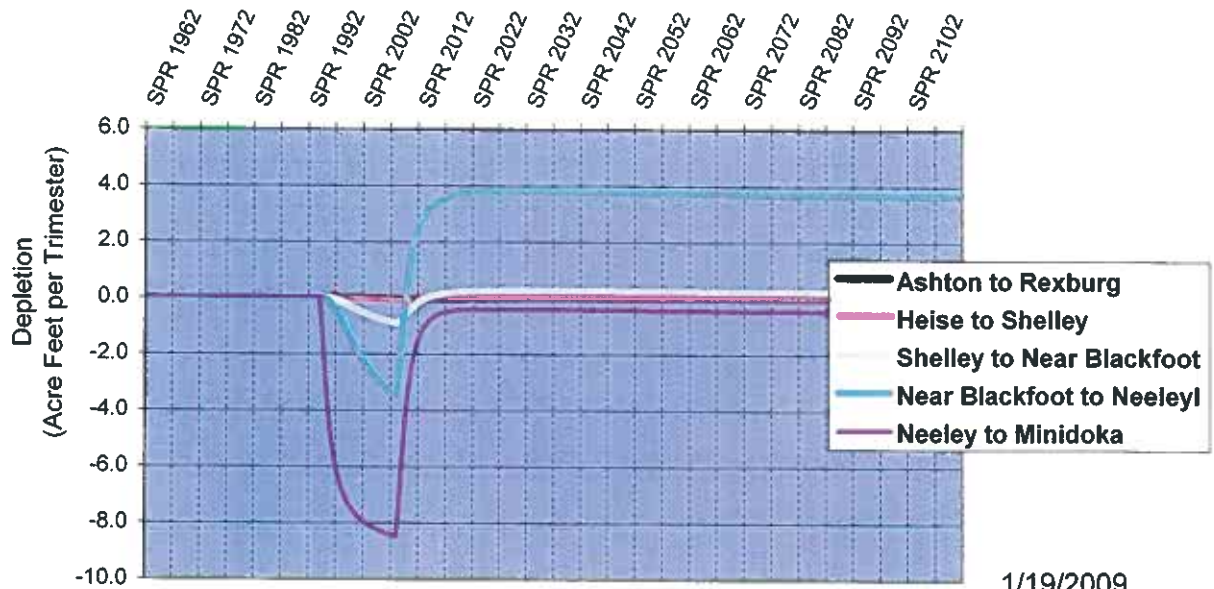
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SUM 1987	0	21	21			
WIN 1987	0	21	21			
SPR 1988	0	21	21			
SUM 1988	0	21	21			
WIN 1988	0	21	21			
SPR 1989	0	21	21			
SUM 1989	0	21	21			
WIN 1989	0	21	21			
SPR 1990	0	21	21			
SUM 1990	0	21	21			
WIN 1990	0	21	21			
SPR 1991	0	21	21			
SUM 1991	0	21	21			
WIN 1991	0	21	21			
SPR 1992	0	21	21			
SUM 1992	0	21	21			
WIN 1992	0	21	21			
SPR 1993	0	21	21			
SUM 1993	0	21	21			
WIN 1993	0	21	21			
SPR 1994	0	0	21			
SUM 1994	0	0	21			
WIN 1994	0	0	21			
SPR 1995	0	0	21			
SUM 1995	0	0	21			
WIN 1995	0	0	21			
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WIN 1996	0	0	21			
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WIN 1997	0	0	21			
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WIN 1998	0	0	21			
SPR 1999	0	0	21			
SUM 1999	0	0	21			
WIN 1999	0	0	21			
SPR 2000	0	0	21			
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WIN 2000	0	0	21			
SPR 2001	0	0	21			
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WIN 2001	0	0	21			
SPR 2002	0	0	21			
SUM 2002	0	0	21			
WIN 2002	0	0	21			
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WIN 2003	0	0	21			
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WIN 2004	0	0	21			
SPR 2005	0	0	21			
SUM 2005	0	0	21			
WIN 2005	0	0	21			
SPR 2006	0	0	21			
SUM 2006	0	0	21			
WIN 2006	0	0	21			
SPR 2007	0	0	21			
SUM 2007	0	0	21			
WIN 2007	0	0	21			
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SUM 2008	21	0	21			
WIN 2008	21	0	21			
SPR 2009	21	0	21			
SUM 2009	21	0	21			
WIN 2009	21	0	21			
SPR 2010	21	0	21			
SUM 2010	21	0	21			
WIN 2010	21	0	21			
SPR 2011	21	0	21			
SUM 2011	21	0	21			
WIN 2011	21	0	21			
SPR 2012	21	0	21			
SUM 2012	21	0	21			
WIN 2012	21	0	21			
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WIN 2014	21	0	21			
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WIN 2016	21	0	21			
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WIN 2017	21	0	21			
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SPR 2095	21	0	21				
SUM 2095	21	0	21				
WIN 2095	21	0	21				
SPR 2096	21	0	21				
SUM 2096	21	0	21				
WIN 2096	21	0	21				

SPR 2097	21	0	21				
SUM 2097	21	0	21				
WIN 2097	21	0	21				
SPR 2098	21	0	21				
SUM 2098	21	0	21				
WIN 2098	21	0	21				
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WIN 2099	21	0	21				
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WIN 2109	21	0	21				
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SUM 2110	21	0	21				
WIN 2110	21	0	21				
SPR 2111	21	0	21				
SUM 2111	21	0	21				
WIN 2111	21	0	21				

Net Transfer Effect Above Milner (Total Effect With Transfer - Total Effect Without Transfer)

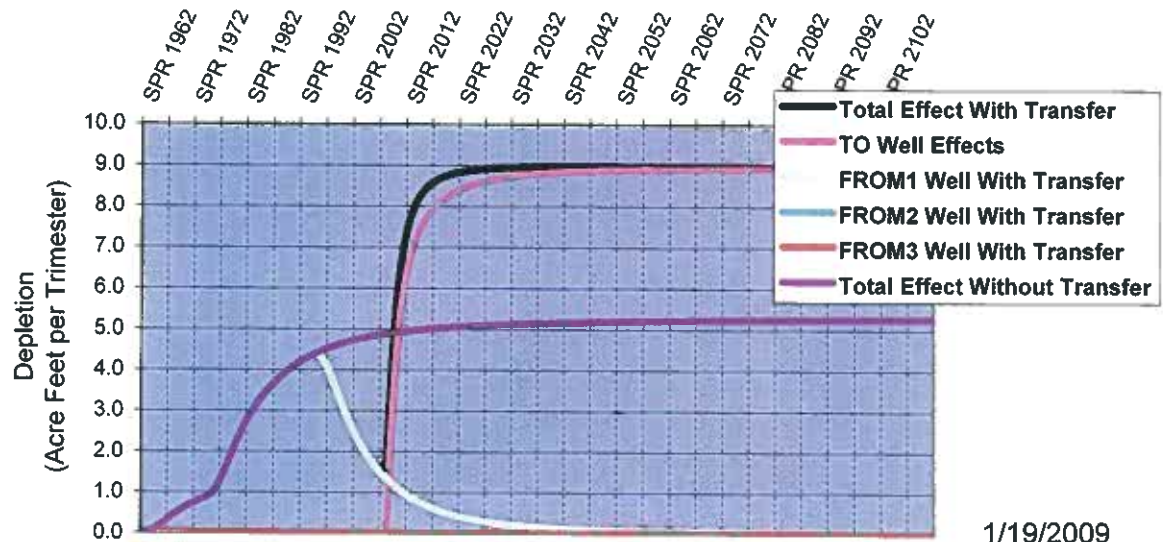


Customer Name: Sage to Bowler(1)

Transfer No: Sage to

Hydrologic Response-- Near Blackfoot to Neeley

Customer Name: Sage to Bowler(1) Transfer No: Sage to



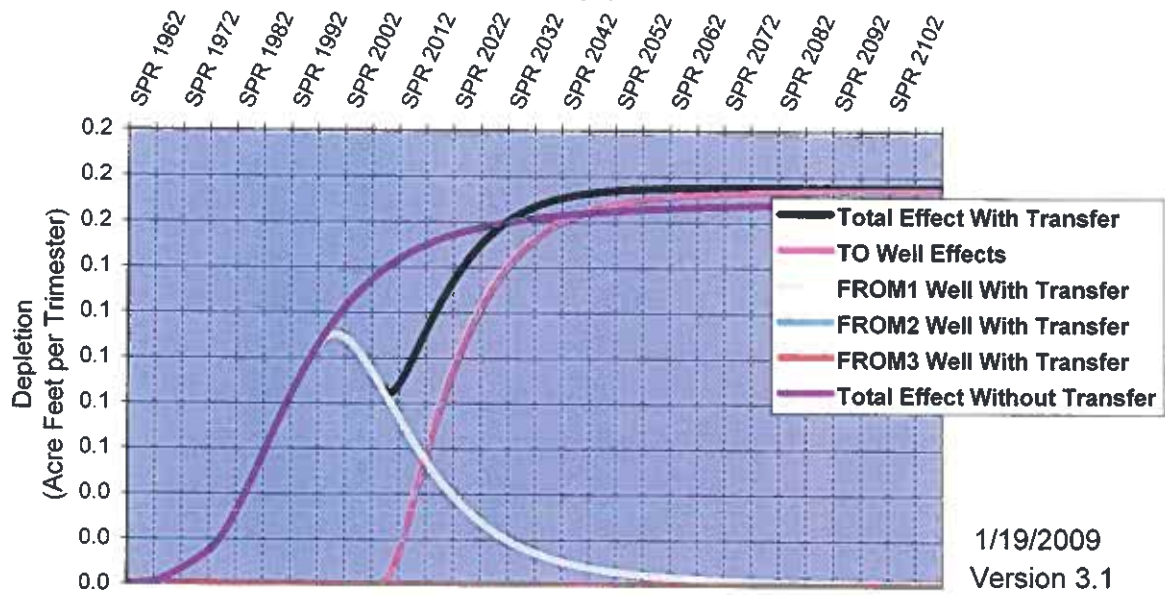
Hydrologic Response--Ashton to Rexburg

Customer Name: Sage to

Transfer No:

Sage to

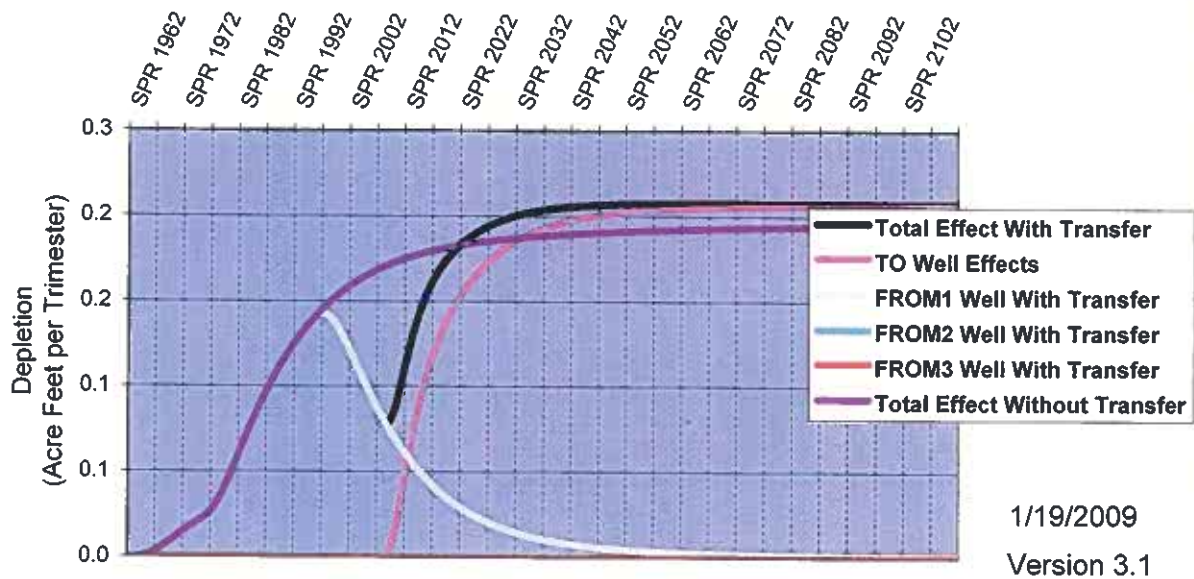
Bowler(1)



Hydrologic Response--Heise to Shelley

Customer Name: Sage to Bowler(1) Transfer No:

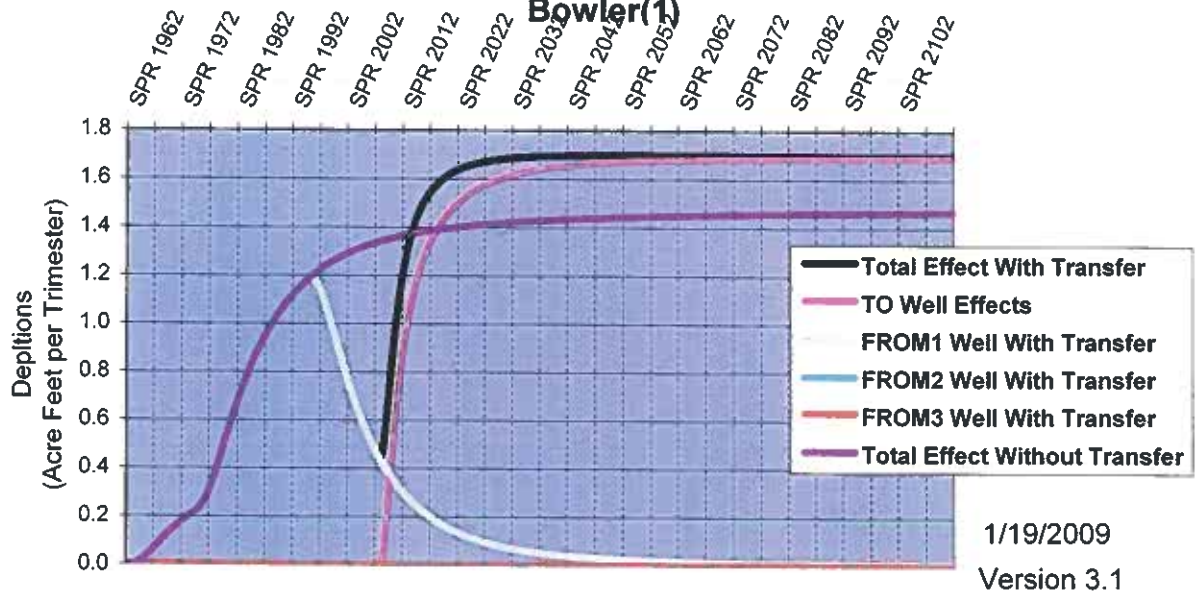
Sage to



Hydrologic Response--Shelley to Near Blackfoot

Customer Name: Sage to Transfer No: Sage to

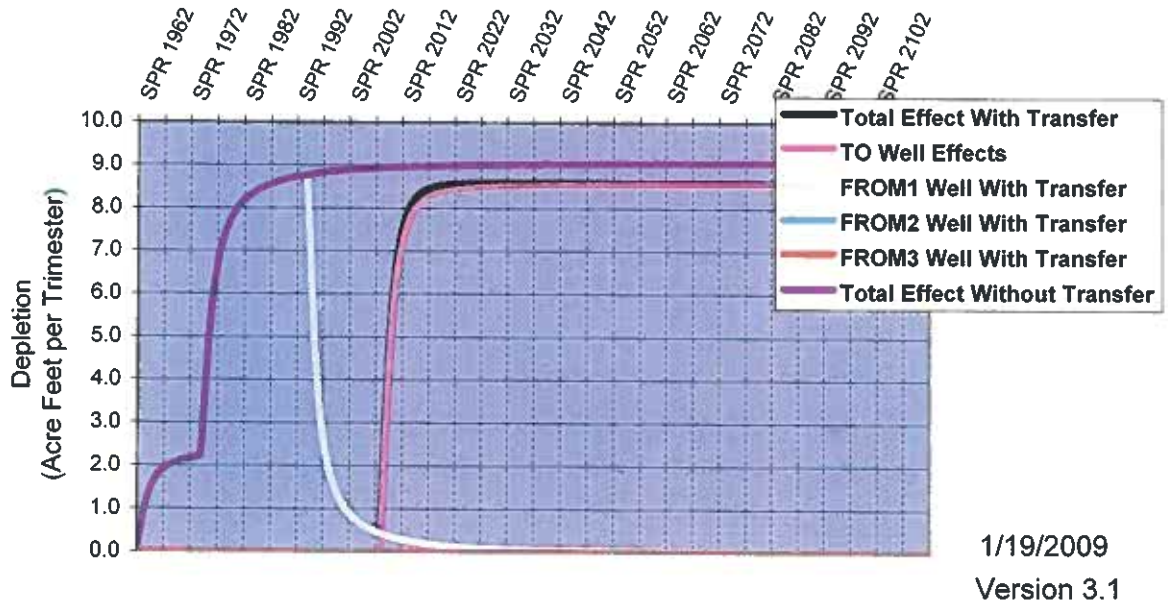
Bowler(1)



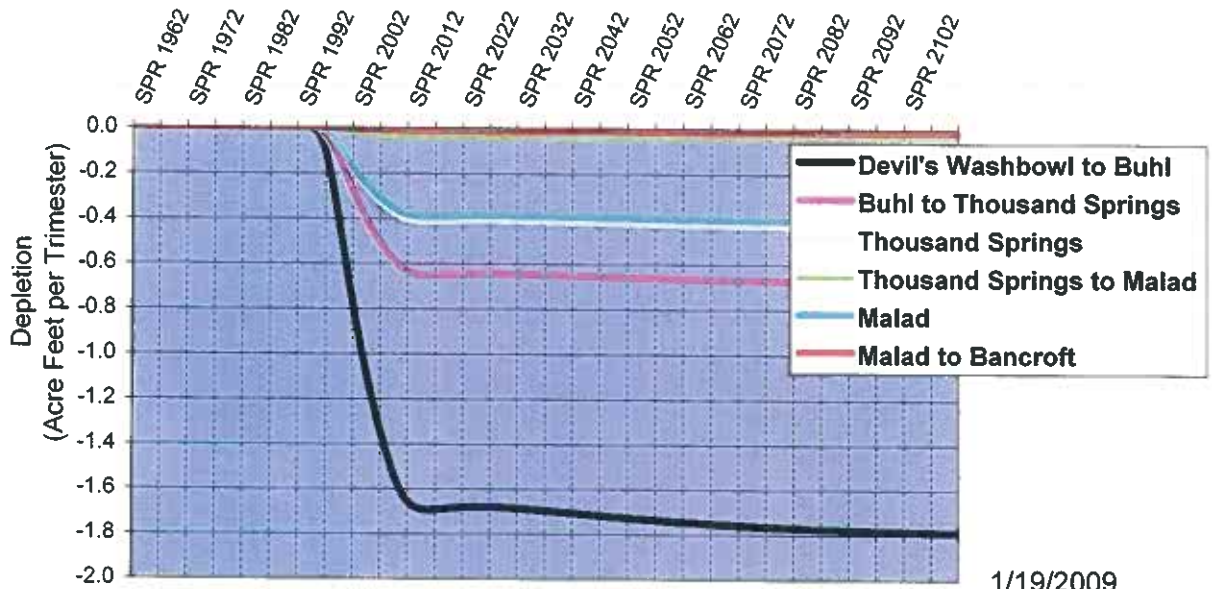
Hydrologic Response--Neeley to Minidoka

Customer Name: Sage to Transfer No: Sage to

Bowler(1)



Net Transfer Effect Below Milner
(Total Effect With Transfer - Total Effect Without Transfer)



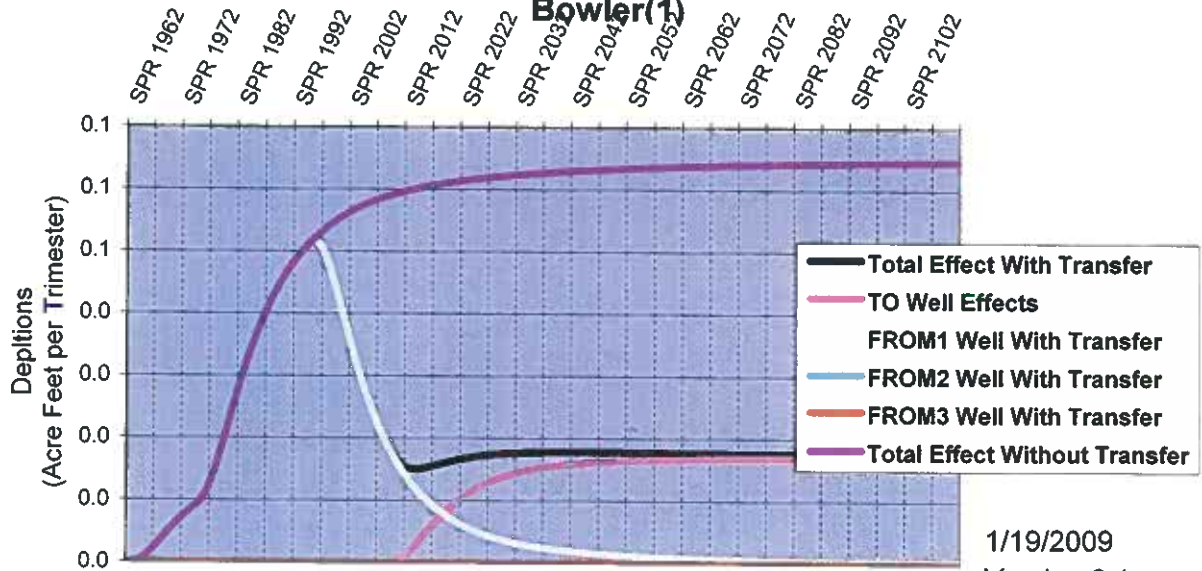
1/19/2009
Version 3.1

Customer Name: **Sage to Bowler(1)**

Transfer No: Sage to

Hydrologic Response--Thousand Springs to Malad

Customer Name: **Sage to** Transfer No: **Sage to**
Bowler(1)



1/19/2009
Version 3.1

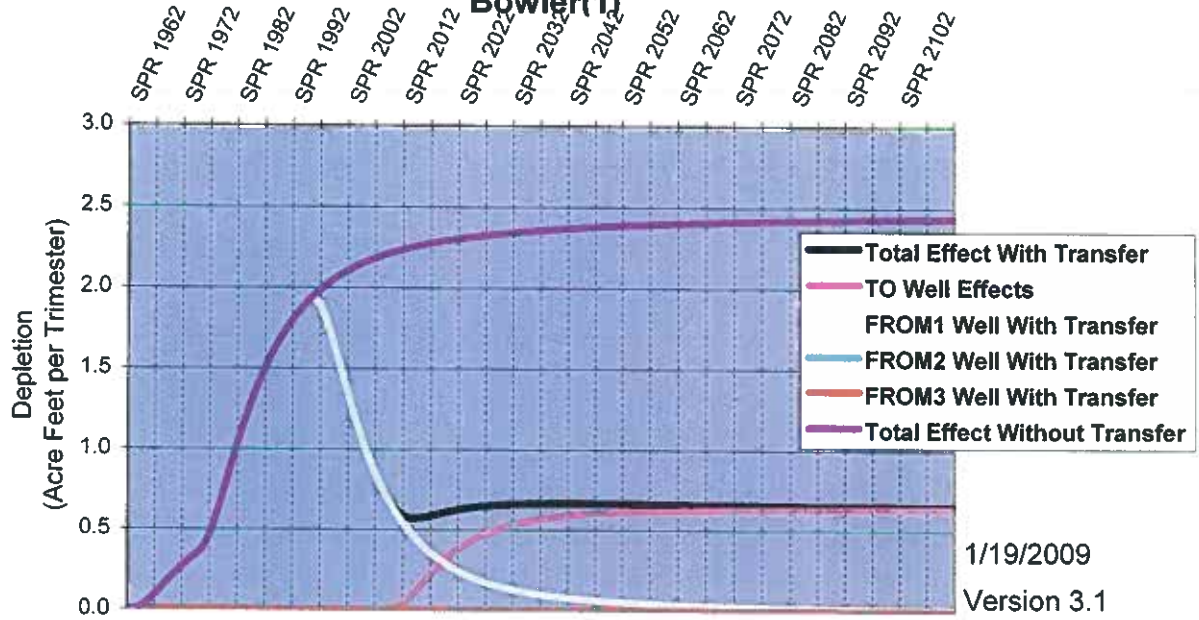
Hydrologic Response--Devil's Washbowl to Buhl

Customer Name: Sage to

Transfer No:

Sage to

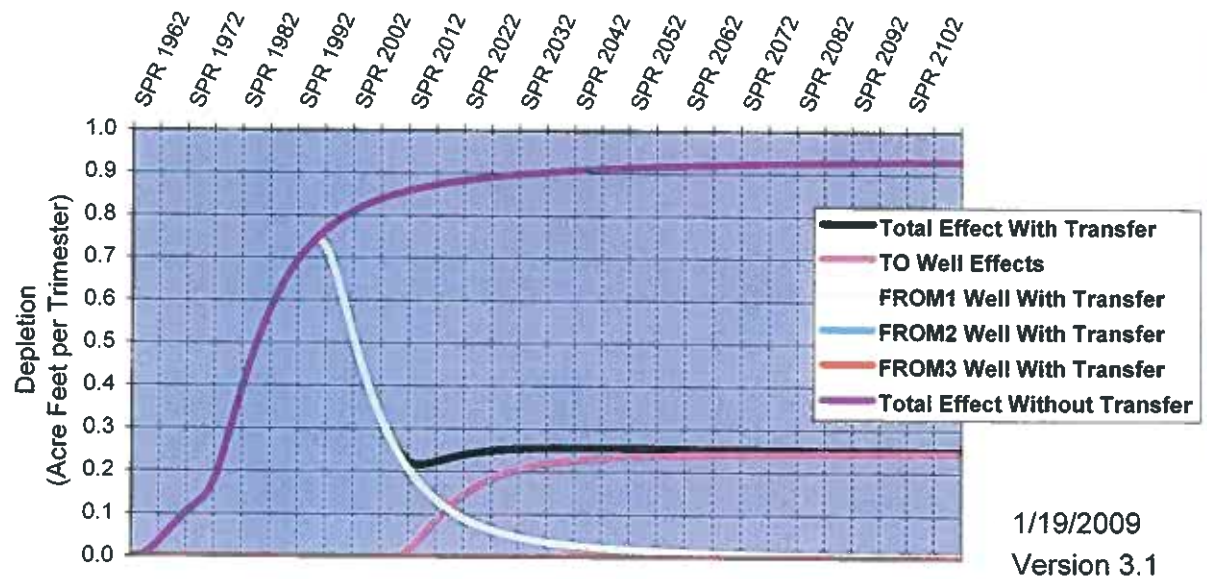
Bowler(1)



Hydrologic Response--Buhl to Thousand Springs

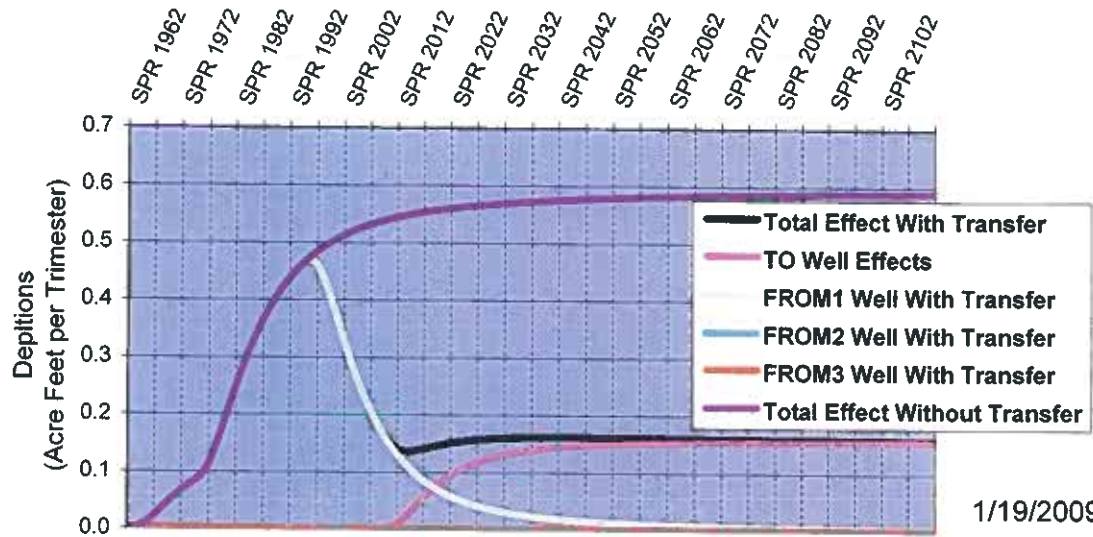
Customer Name: Sage to Bowler(1) Transfer No:

Sage to



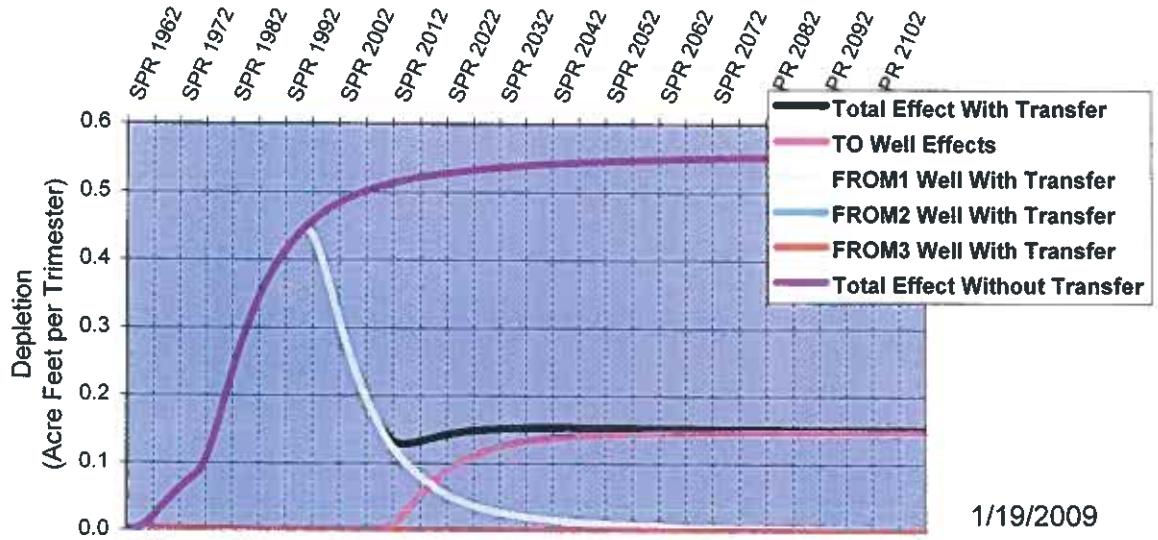
Hydrologic Response--Thousand Springs

Customer Name: Sage to Transfer No: Sage to
Bowler(1)



1/19/2009
Version 3.1

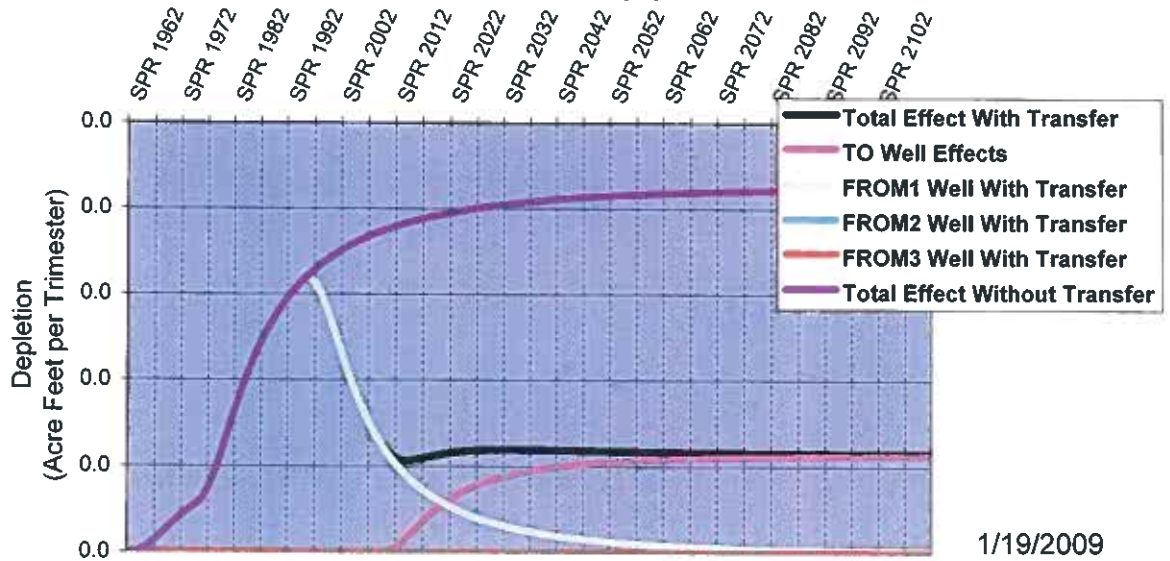
Hydrologic Response-- Malad
Customer Name: Sage to Transfer No: Sage to
Bowler(1)



1/19/2009

Version 3.1

Hydrologic Response-- Malad to Bancroft
Customer Name: Sage to Transfer No: Sage to
Bowler(1)



1/19/2009

Version 3.1

ENHANCED GROUND-WATER RIGHTS TRANSFER SPREADSHEET

UNIVERSITY OF IDAHO - IDAHO WATER RESOURCES RESEARCH INSTITUTE

IDAHO DEPARTMENT OF WATER RESOURCES

Cells this color are
set up for user entries

ENTER STARTING DATE FOR
SIMULATION. THEN PUSH

"UPDATE DATES" BUTTON

YEAR 1962

SEASON SPRING

TRANSFER NO:
Sage to bowler (2)

TRANSFER NAME:

Sage to Bowler (2)

ENTER CELL LOCATIONS:

	'TO' CELL	'FROM1' CELL	'FROM2' CELL	'FROM3' CELL
ROW	93	91		
COLUMN	68	69		

TRIMESTER OF ACTIVITY	TO WELL Projected Use AF/TRIMESTER	FROM1 WELL		FROM2 WELL		FROM3 WELL	
		With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER	With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER	With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER
SPR 1962	0	3	3				
SUM 1962	0	3	3				
WIN 1962	0	3	3				
SPR 1963	0	3	3				
SUM 1963	0	3	3				
WIN 1963	0	3	3				
SPR 1964	0	3	3				
SUM 1964	0	3	3				
WIN 1964	0	3	3				
SPR 1965	0	3	3				
SUM 1965	0	3	3				
WIN 1965	0	3	3				
SPR 1966	0	3	3				
SUM 1966	0	3	3				
WIN 1966	0	3	3				
SPR 1967	0	3	3				
SUM 1967	0	3	3				
WIN 1967	0	3	3				
SPR 1968	0	3	3				
SUM 1968	0	3	3				
WIN 1968	0	3	3				
SPR 1969	0	3	3				
SUM 1969	0	3	3				
WIN 1969	0	3	3				
SPR 1970	0	3	3				
SUM 1970	0	3	3				
WIN 1970	0	3	3				
SPR 1971	0	3	3				
SUM 1971	0	3	3				
WIN 1971	0	3	3				
SPR 1972	0	3	3				
SUM 1972	0	3	3				
WIN 1972	0	3	3				
SPR 1973	0	3	3				
SUM 1973	0	3	3				
WIN 1973	0	3	3				
SPR 1974	0	3	3				
SUM 1974	0	3	3				
WIN 1974	0	3	3				
SPR 1975	0	3	3				
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WIN 1975	0	3	3				
SPR 1976	0	3	3				
SUM 1976	0	3	3				
WIN 1976	0	3	3				
SPR 1977	0	3	3				
SUM 1977	0	3	3				
WIN 1977	0	3	3				
SPR 1978	0	18	18				
SUM 1978	0	18	18				
WIN 1978	0	18	18				
SPR 1979	0	18	18				
SUM 1979	0	18	18				
WIN 1979	0	18	18				
SPR 1980	0	18	18				
SUM 1980	0	18	18				
WIN 1980	0	18	18				
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SUM 1981	0	18	18				
WIN 1981	0	18	18				
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SUM 1982	0	18	18				
WIN 1982	0	18	18				
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SUM 1983	0	18	18				
WIN 1983	0	18	18				
SPR 1984	0	18	18				
SUM 1984	0	18	18				
WIN 1984	0	18	18				
SPR 1985	0	18	18				
SUM 1985	0	18	18				
WIN 1985	0	18	18				
SPR 1986	0	18	18				
SUM 1986	0	18	18				
WIN 1986	0	18	18				

Entering Dates

Enter the starting year and season for your simulation. The start of the analysis period. (Spring is Mar, Apr, May and Jun.

Summer is Jul, Aug, Sep and Oct. Winter is Nov, Dec, Jan and Feb.

Once you have entered the starting date, push the "UPDATE DATA"

The date only needs to be updated once, unless the desired time

Modifying the date does not automatically adjust the location of the

Entering Well Locations

Enter the row and column location for the 'TO' well in spreadsheet

Enter the row and column location for the 'FROM1' well in spread:

Enter the row and column location for the 'FROM2' well in spread:

Enter the row and column location for the 'FROM3' well in spread:

If the 'FROM2' well is not to be modeled, the entered row and col

If the 'FROM3' well is not to be modeled, the entered row and col

The 'FROM3' well cannot be used if the 'FROM2' well is not being

Running the Model

Once the model cells have been specified for the 'FROM' and 'TO'

the 'RUN MODEL' button to generate the response functions. The

needs to be re-run if the locations of the 'FROM' and 'TO' wells ar

Getting the Model Output

Once the model has been run, push the 'GET OUTPUT' button to

model output. This prepares the model output for use for calculat

Entering water use data

All water use should be entered in units of acre-feet per four mont

for instructions on multiple water rights with different priority dates

Entering 'TO' Well Projected Water Use

Enter the projected water use for the 'TO' Well in Column B. 'TO'

should start in the trimester (4-month period) in which the transfer

Entering 'FROM' Well 'With Transfer' Use

Enter the 'With Transfer' water use for the first 'FROM' Well in Co

the second 'FROM' well in Column E, and for the third 'FROM' We

'With Transfer' water use should reflect historical and projected a

should cease or be reduced at the time of the water right transfer

Entering 'FROM' Well 'Without Transfer' Use

The 'Without Transfer' Use for the 'FROM' wells should include hi

The projected use should reflect expected pumpage from that we

Enter the 'Without Transfer' water use for the first 'FROM' Well in

for the second 'FROM' well in Column F, and for the third 'FROM'

Prior to the expected date of transfer, the 'With Transfer' use sho

Calculating Effect of the Transfer on River Gains and Losses

After all of the above steps have been completed, the effects of t

of the eleven hydraulically connected reaches of the Snake River

CALCULATE EFFECTS' button. This will result in a multiplication

the model runs) times the water use rates entered in the table prc

After the multiplication has been performed, the spreadsheet will

worksheet. Here one graph is provided showing the effect for ear

illustrates the net effects on all 11 reaches. Results are also pres

EFFECTS worksheet. See the Users Manual for more information

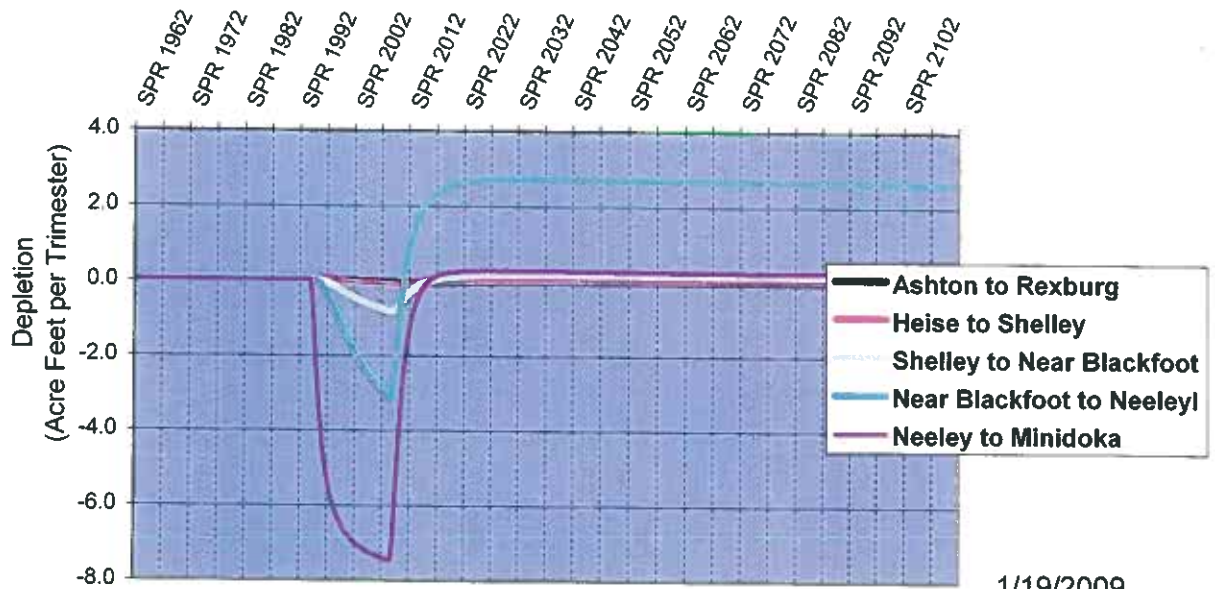
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WIN 1987	0	18	18				
SPR 1988	0	18	18				
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SPR 1989	0	18	18				
SUM 1989	0	18	18				
WIN 1989	0	18	18				
SPR 1990	0	18	18				
SUM 1990	0	18	18				
WIN 1990	0	18	18				
SPR 1991	0	18	18				
SUM 1991	0	18	18				
WIN 1991	0	18	18				
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SUM 1993	0	18	18				
WIN 1993	0	18	18				
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WIN 1998	0	0	18				
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WIN 2000	0	0	18				
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SUM 2001	0	0	18				
WIN 2001	0	0	18				
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WIN 2004	0	0	18				
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SUM 2005	0	0	18				
WIN 2005	0	0	18				
SPR 2006	0	0	18				
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WIN 2006	0	0	18				
SPR 2007	0	0	18				
SUM 2007	0	0	18				
WIN 2007	0	0	18				
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WIN 2008	18	0	18				
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SPR 2102	18	0	18			
SUM 2102	18	0	18			
WIN 2102	18	0	18			
SPR 2103	18	0	18			
SUM 2103	18	0	18			
WIN 2103	18	0	18			
SPR 2104	18	0	18			
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SPR 2105	18	0	18			
SUM 2105	18	0	18			
WIN 2105	18	0	18			
SPR 2106	18	0	18			
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SUM 2108	18	0	18			
WIN 2108	18	0	18			
SPR 2109	18	0	18			
SUM 2109	18	0	18			
WIN 2109	18	0	18			
SPR 2110	18	0	18			
SUM 2110	18	0	18			
WIN 2110	18	0	18			
SPR 2111	18	0	18			
SUM 2111	18	0	18			
WIN 2111	18	0	18			

Net Transfer Effect Above Milner (Total Effect With Transfer - Total Effect Without Transfer)



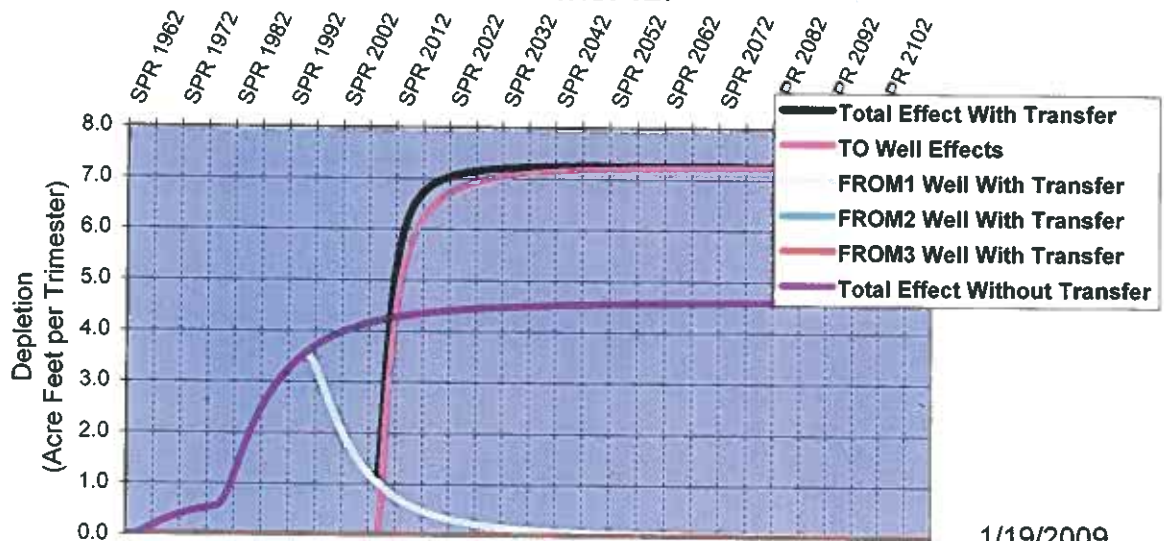
1/19/2009
Version 3.1

Customer Name: **Sage to Bowler (2)**

Transfer No: Sage to

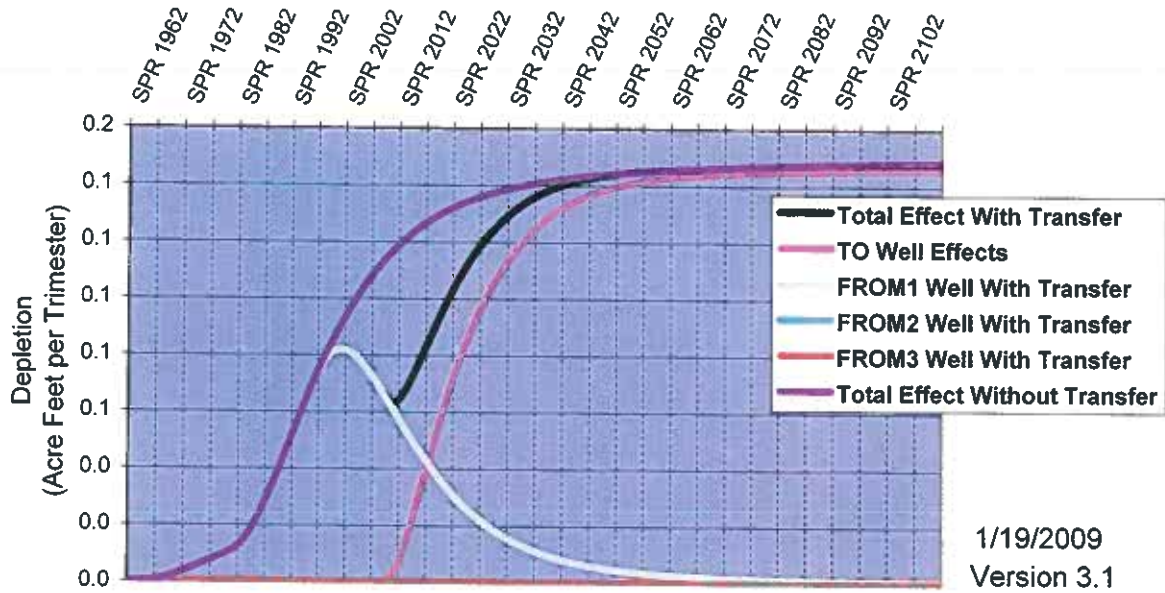
Hydrologic Response-- Near Blackfoot to Neeley

Customer Name: **Sage to Bowler (2)** Transfer No: Sage to

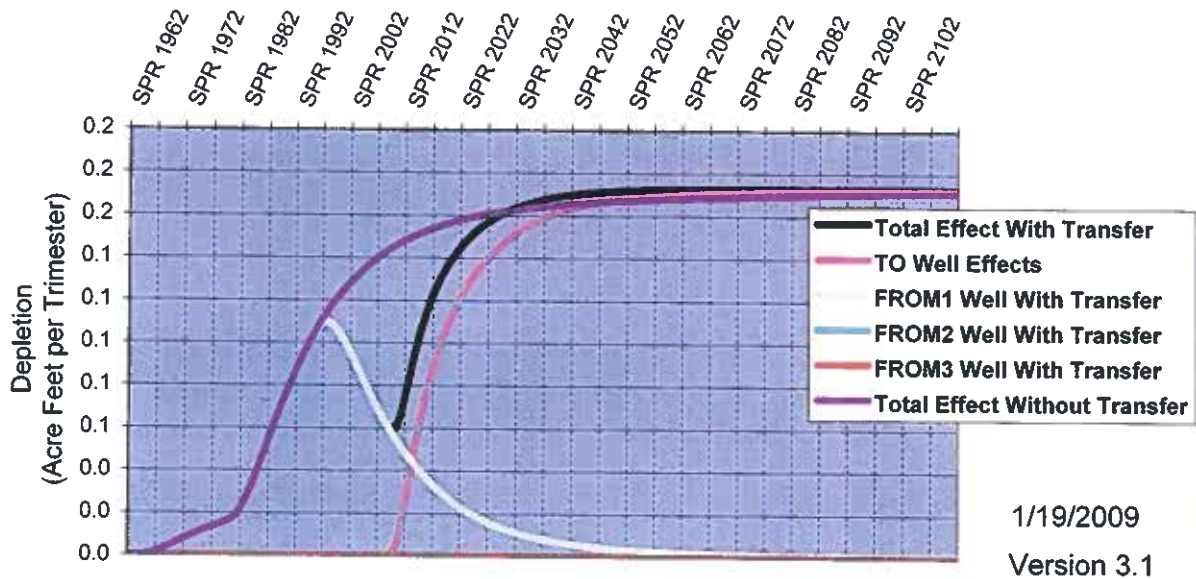


1/19/2009
Version 3.1

Hydrologic Response--Ashton to Rexburg
 Customer Name: Sage to Bowler Transfer No: Sage to
 (2)



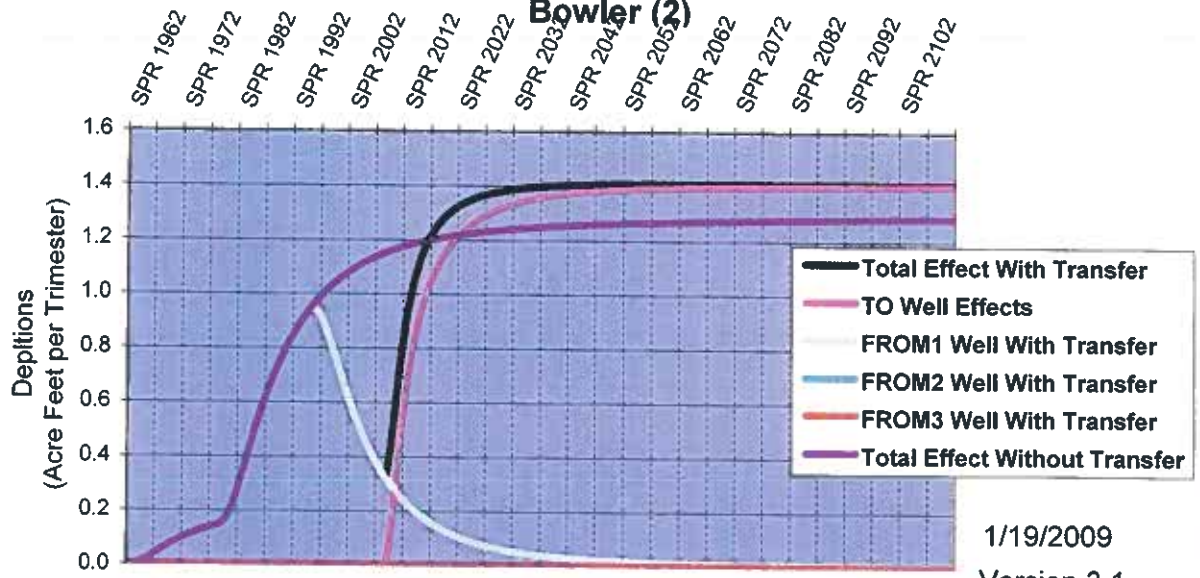
Hydrologic Response--Heise to Shelley
 Customer Name: Sage to Bowler (2) Transfer No: Sage to



Hydrologic Response--Shelley to Near Blackfoot

Customer Name: Sage to Transfer No: Sage to

Bowler (2)



1/19/2009

Version 3.1

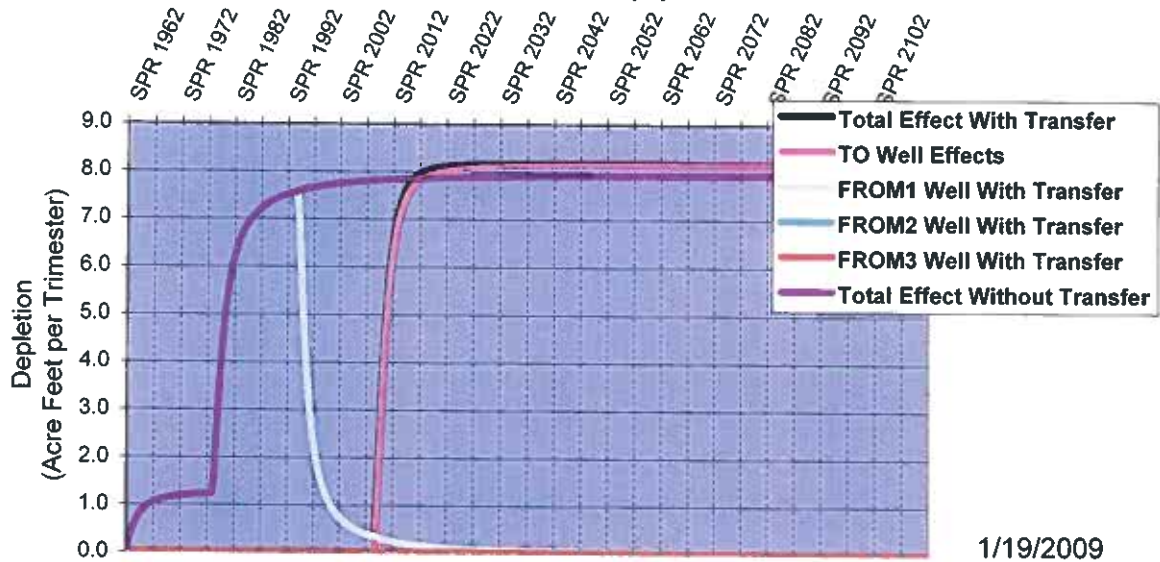
Hydrologic Response-- Neeley to Minidoka

Customer Name: Sage to

Transfer No:

Sage to

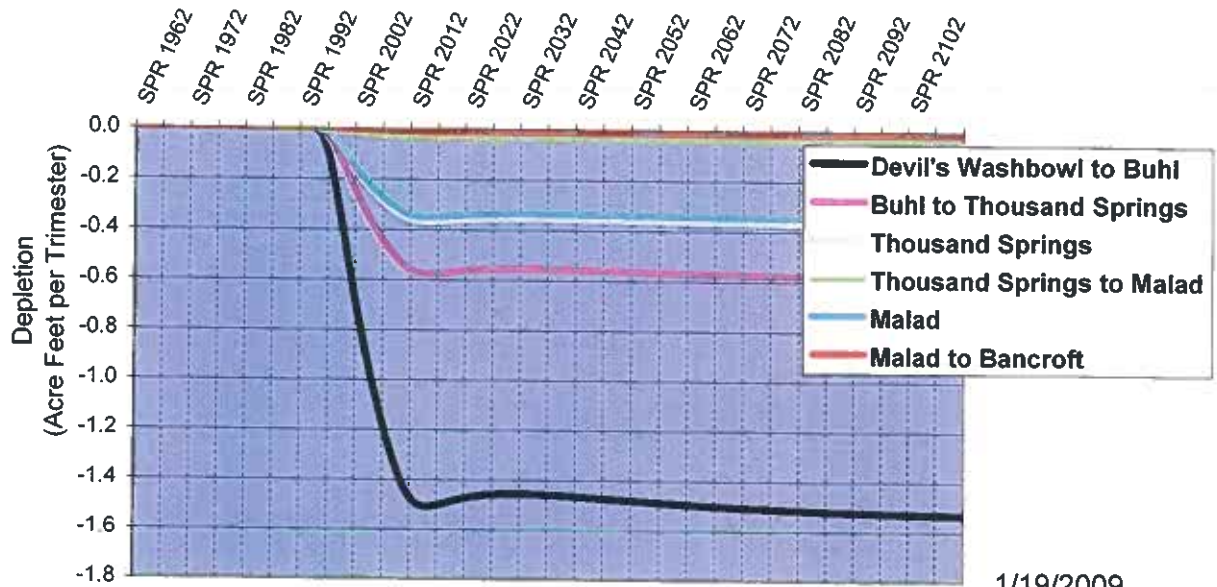
Bowler (2)



1/19/2009

Version 3.1

Net Transfer Effect Below Milner (Total Effect With Transfer - Total Effect Without Transfer)



1/19/2009

Version 3.1

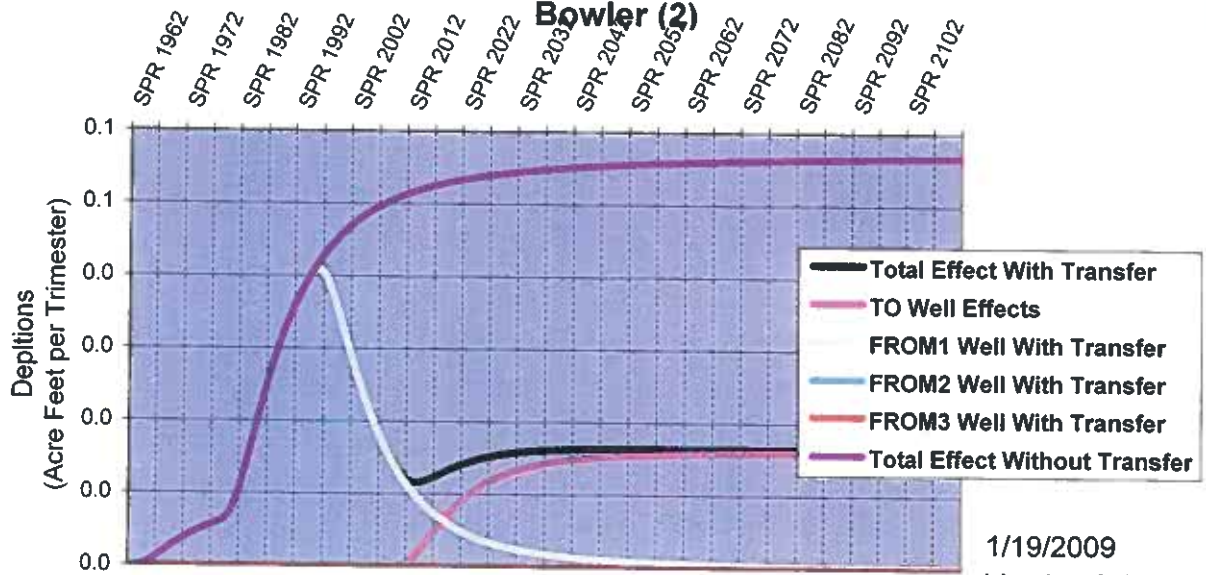
Customer Name: **Sage to Bowler (2)**

Transfer No: Sage to

Hydrologic Response--Thousand Springs to Malad

Customer Name: **Sage to** Transfer No: **Sage to**

Bowler (2)

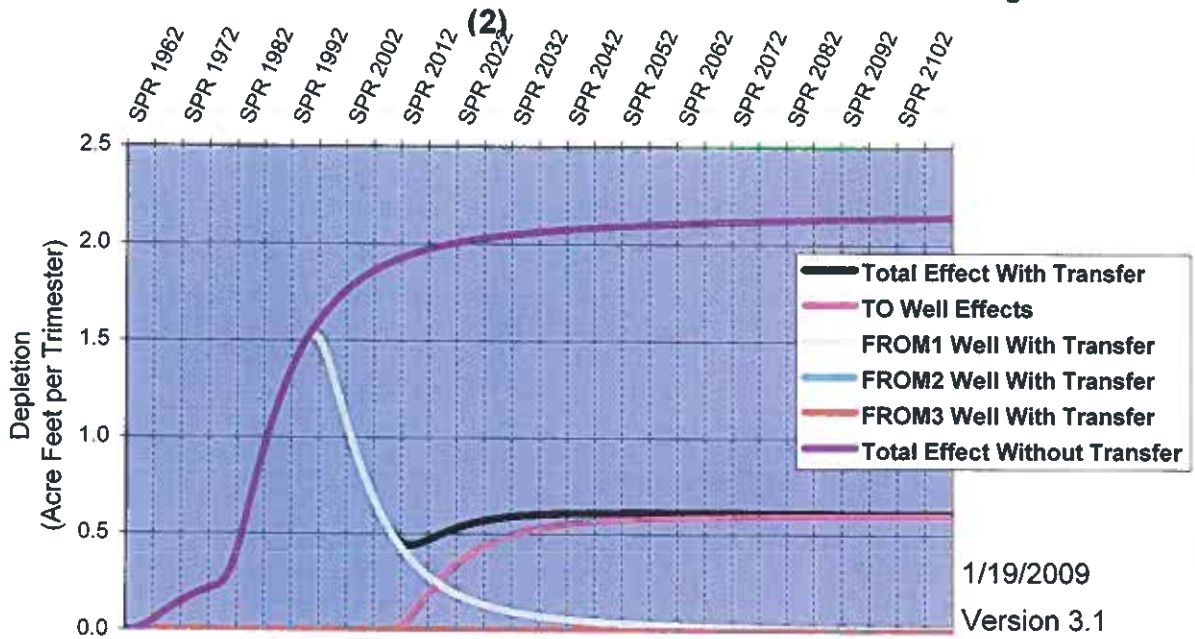


1/19/2009

Version 3.1

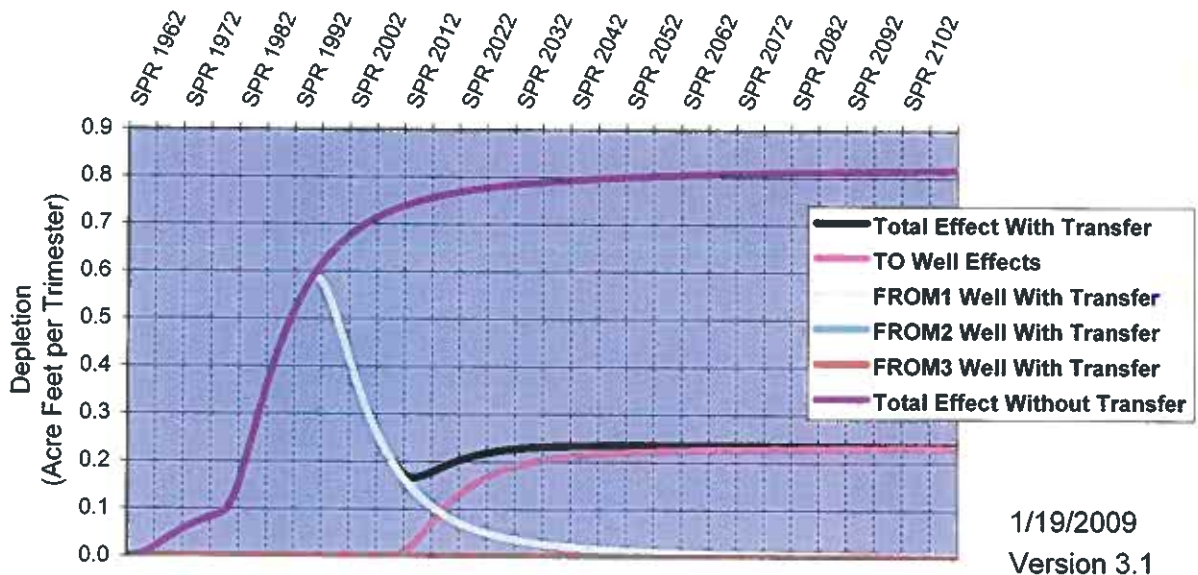
Hydrologic Response--Devil's Washbowl to Buhl

Customer Name: Sage to Bowler Transfer No: Sage to



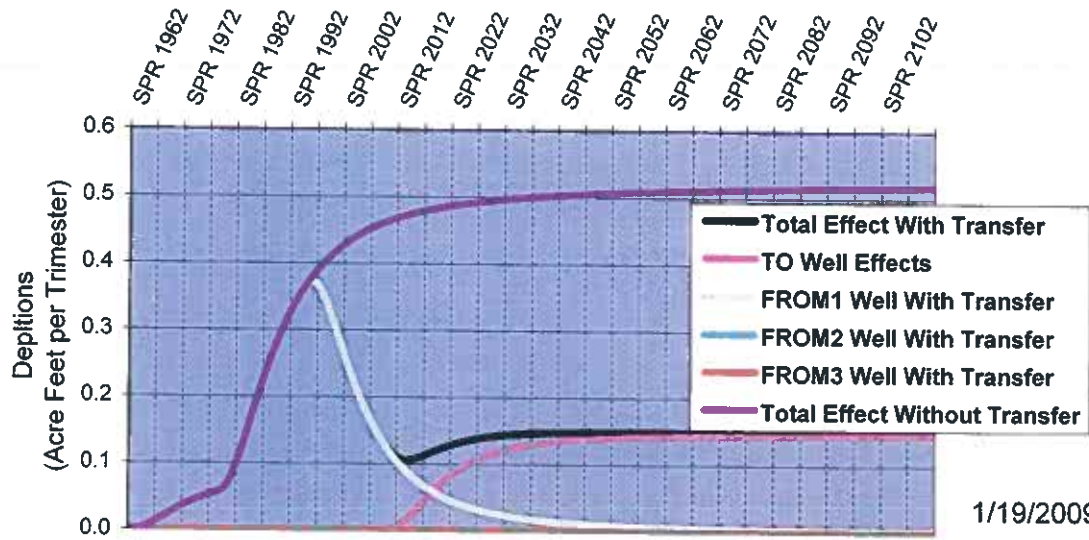
Hydrologic Response--Buhl to Thousand Springs

Customer Name: Sage to Bowler (2) Transfer No: Sage to



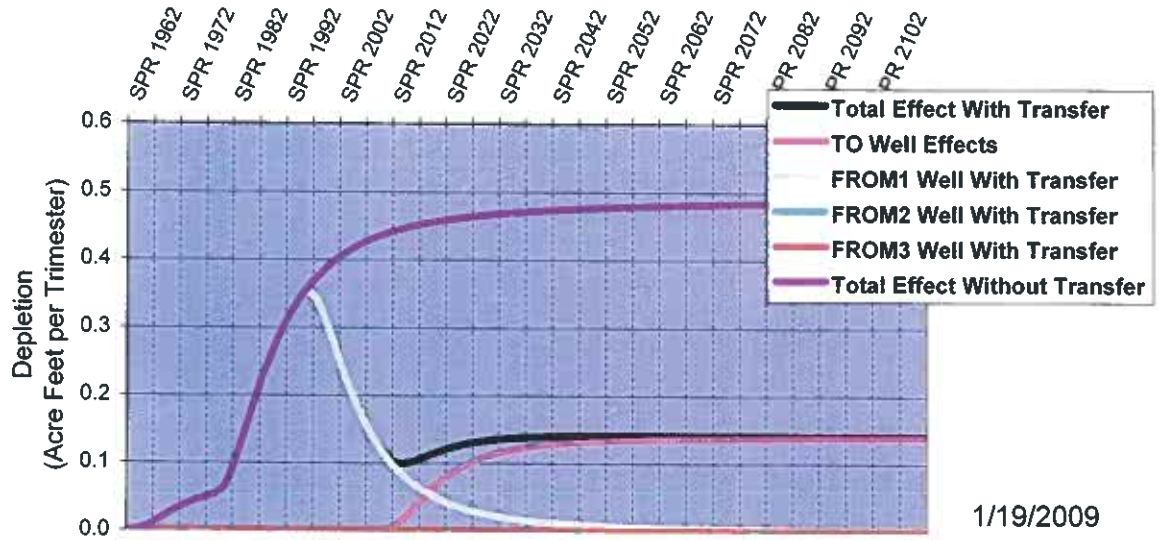
Hydrologic Response--Thousand Springs

Customer Name: Sage to Transfer No: Sage to
Bowler (2)

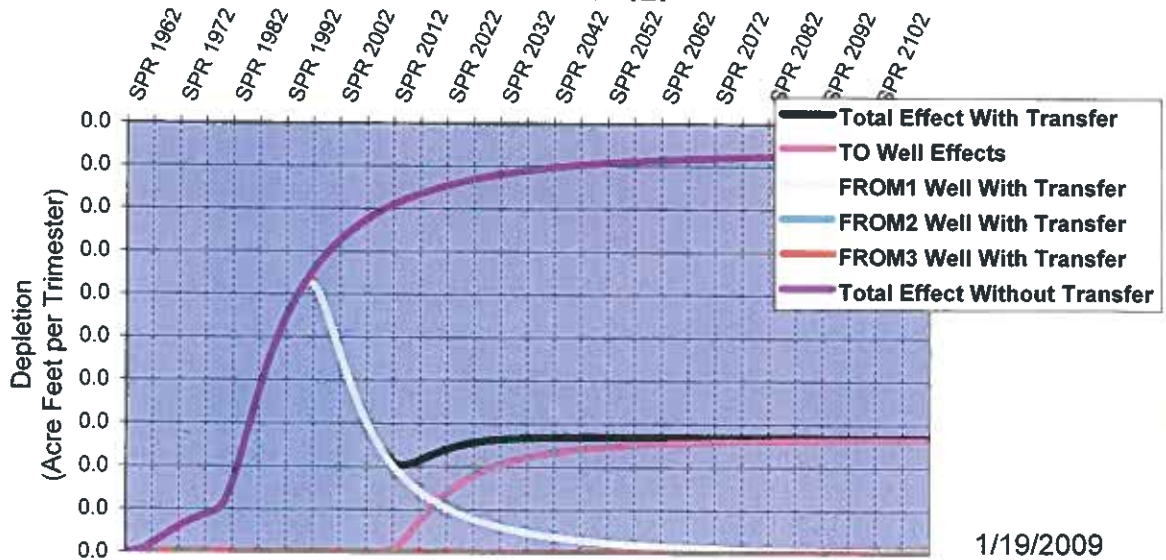


1/19/2009
Version 3.1

Hydrologic Response-- Malad
 Customer Name: Sage to Transfer No: Sage to
 Bowler (2)



Hydrologic Response-- Malad to Bancroft
 Customer Name: Sage to Transfer No: Sage to
 Bowler (2)



ENHANCED GROUND-WATER RIGHTS TRANSFER SPREADSHEET

UNIVERSITY OF IDAHO - IDAHO WATER RESOURCES RESEARCH INSTITUTE

IDAHO DEPARTMENT OF WATER RESOURCES

Cells this color are
set up for user entries

ENTER STARTING DATE FOR

SIMULATION. THEN PUSH
"UPDATE DATES" BUTTON

YEAR 1962

SEASON SPRING

TRANSFER NO:
Sage to KBC

TRANSFER NAME:

Sage to KBC

ENTER CELL LOCATIONS:

	'TO' CELL	'FROM1' CELL	'FROM2' CELL	'FROM3' CELL
ROW	94	91		
COLUMN	91	69		

TRIMESTER OF ACTIVITY	TO WELL Projected Use AF/TRIMESTER	FROM1 WELL		FROM2 WELL		FROM3 WELL	
		With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER	With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER	With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER
SPR 1962	0	24	24				
SUM 1962	0	24	24				
WIN 1962	0	24	24				
SPR 1963	0	24	24				
SUM 1963	0	24	24				
WIN 1963	0	24	24				
SPR 1964	0	24	24				
SUM 1964	0	24	24				
WIN 1964	0	24	24				
SPR 1965	0	24	24				
SUM 1965	0	24	24				
WIN 1965	0	24	24				
SPR 1966	0	24	24				
SUM 1966	0	24	24				
WIN 1966	0	24	24				
SPR 1967	0	24	24				
SUM 1967	0	24	24				
WIN 1967	0	24	24				
SPR 1968	0	24	24				
SUM 1968	0	24	24				
WIN 1968	0	24	24				
SPR 1969	0	24	24				
SUM 1969	0	24	24				
WIN 1969	0	24	24				
SPR 1970	0	24	24				
SUM 1970	0	24	24				
WIN 1970	0	24	24				
SPR 1971	0	24	24				
SUM 1971	0	24	24				
WIN 1971	0	24	24				
SPR 1972	0	24	24				
SUM 1972	0	24	24				
WIN 1972	0	24	24				
SPR 1973	0	24	24				
SUM 1973	0	24	24				
WIN 1973	0	24	24				
SPR 1974	0	90	90				
SUM 1974	0	90	90				
WIN 1974	0	90	90				
SPR 1975	0	90	90				
SUM 1975	0	90	90				
WIN 1975	0	90	90				
SPR 1976	0	90	90				
SUM 1976	0	90	90				
WIN 1976	0	90	90				
SPR 1977	0	90	90				
SUM 1977	0	90	90				
WIN 1977	0	90	90				
SPR 1978	0	90	90				
SUM 1978	0	90	90				
WIN 1978	0	90	90				
SPR 1979	0	90	90				
SUM 1979	0	90	90				
WIN 1979	0	90	90				
SPR 1980	0	90	90				
SUM 1980	0	90	90				
WIN 1980	0	90	90				
SPR 1981	0	90	90				
SUM 1981	0	90	90				
WIN 1981	0	90	90				
SPR 1982	0	90	90				
SUM 1982	0	90	90				
WIN 1982	0	90	90				
SPR 1983	0	90	90				
SUM 1983	0	90	90				
WIN 1983	0	90	90				
SPR 1984	0	90	90				
SUM 1984	0	90	90				
WIN 1984	0	90	90				
SPR 1985	0	90	90				
SUM 1985	0	90	90				
WIN 1985	0	90	90				
SPR 1986	0	90	90				
SUM 1986	0	90	90				
WIN 1986	0	90	90				

Entering Dates

Enter the starting year and season for your simulation. The start of the analysis period. (Spring is Mar, Apr, May and Jun.

Summer is Jul, Aug, Sep and Oct. Winter is Nov, Dec, Jan and Feb.

Once you have entered the starting date, push the "UPDATE DATES" button.

The date only needs to be updated once, unless the desired time

Modifying the date does not automatically adjust the location of the

Entering Well Locations

Enter the row and column location for the 'TO' well in spreadsheet.

Enter the row and column location for the 'FROM1' well in spreadsheet.

Enter the row and column location for the 'FROM2' well in spreadsheet.

Enter the row and column location for the 'FROM3' well in spreadsheet.

If the 'FROM2' well is not to be modeled, the entered row and column

If the 'FROM3' well is not to be modeled, the entered row and column

The 'FROM3' well cannot be used if the 'FROM2' well is not being

Running the Model

Once the model cells have been specified for the 'FROM' and 'TO' the 'RUN MODEL' button to generate the response functions. This needs to be re-run if the locations of the 'FROM' and 'TO' wells are

Getting the Model Output

Once the model has been run, push the 'GET OUTPUT' button to model output. This prepares the model output for use for calculation.

Entering water use data

All water use should be entered in units of acre-feet per four months for instructions on multiple water rights with different priority dates.

Entering 'TO' Well Projected Water Use

Enter the projected water use for the 'TO' Well in Column B. 'TO' should start in the trimester (4-month period) in which the transfer

Entering 'FROM' Well 'With Transfer' Use

Enter the 'With Transfer' water use for the first 'FROM' Well in Column C, the second 'FROM' well in Column E, and for the third 'FROM' Well in Column G. 'With Transfer' water use should reflect historical and projected a should cease or be reduced at the time of the water right transfer.

Entering 'FROM' Well 'Without Transfer' Use

The 'Without Transfer' Use for the 'FROM' wells should include historical. The projected use should reflect expected pumpage from that well. Enter the 'Without Transfer' water use for the first 'FROM' Well in Column D, for the second 'FROM' well in Column F, and for the third 'FROM' Well in Column H. Prior to the expected date of transfer, the 'With Transfer' use should

If only one 'FROM' well is to be represented, pumpage in columns

If only two 'FROM' wells are being represented, pumpage in Columns

Projected water use in the 'TO' well and the 'FROM' wells will be affected to the river reaches caused by the water right transfer. (See

Calculating Effect of the Transfer on River Gains and Losses

After all of the above steps have been completed, the effects of the transfer of the eleven hydraulically connected reaches of the Snake River. The 'CALCULATE EFFECTS' button. This will result in a multiplication of the model runs) times the water use rates entered in the table prior. After the multiplication has been performed, the spreadsheet will calculate the net effects on all 11 reaches. Results are also presented in the EFFECTS worksheet. See the Users Manual for more information.

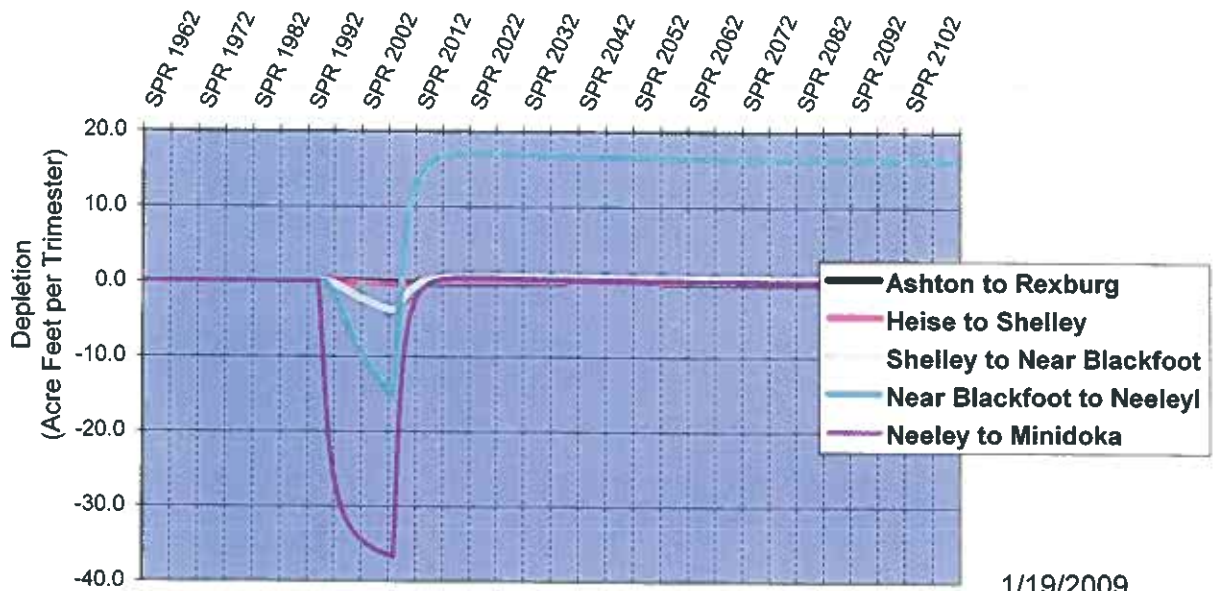
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SUM 1987	0	90	90				
WIN 1987	0	90	90				
SPR 1988	0	90	90				
SUM 1988	0	90	90				
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SPR 1989	0	90	90				
SUM 1989	0	90	90				
WIN 1989	0	90	90				
SPR 1990	0	90	90				
SUM 1990	0	90	90				
WIN 1990	0	90	90				
SPR 1991	0	90	90				
SUM 1991	0	90	90				
WIN 1991	0	90	90				
SPR 1992	0	90	90				
SUM 1992	0	90	90				
WIN 1992	0	90	90				
SPR 1993	0	90	90				
SUM 1993	0	90	90				
WIN 1993	0	90	90				
SPR 1994	0	0	90				
SUM 1994	0	0	90				
WIN 1994	0	0	90				
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WIN 1995	0	0	90				
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WIN 1998	0	0	90				
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WIN 1999	0	0	90				
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SUM 2000	0	0	90				
WIN 2000	0	0	90				
SPR 2001	0	0	90				
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WIN 2001	0	0	90				
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WIN 2008	90	0	90				
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WIN 2009	90	0	90				
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WIN 2011	90	0	90				
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WIN 2013	90	0	90				
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WIN 2014	90	0	90				
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WIN 2015	90	0	90				
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WIN 2028	90	0	90				
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WIN 2096	90	0	90				

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WIN 2103	90	0	90				
SPR 2104	90	0	90				
SUM 2104	90	0	90				
WIN 2104	90	0	90				
SPR 2105	90	0	90				
SUM 2105	90	0	90				
WIN 2105	90	0	90				
SPR 2106	90	0	90				
SUM 2106	90	0	90				
WIN 2106	90	0	90				
SPR 2107	90	0	90				
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WIN 2107	90	0	90				
SPR 2108	90	0	90				
SUM 2108	90	0	90				
WIN 2108	90	0	90				
SPR 2109	90	0	90				
SUM 2109	90	0	90				
WIN 2109	90	0	90				
SPR 2110	90	0	90				
SUM 2110	90	0	90				
WIN 2110	90	0	90				
SPR 2111	90	0	90				
SUM 2111	90	0	90				
WIN 2111	90	0	90				

Net Transfer Effect Above Milner (Total Effect With Transfer - Total Effect Without Transfer)



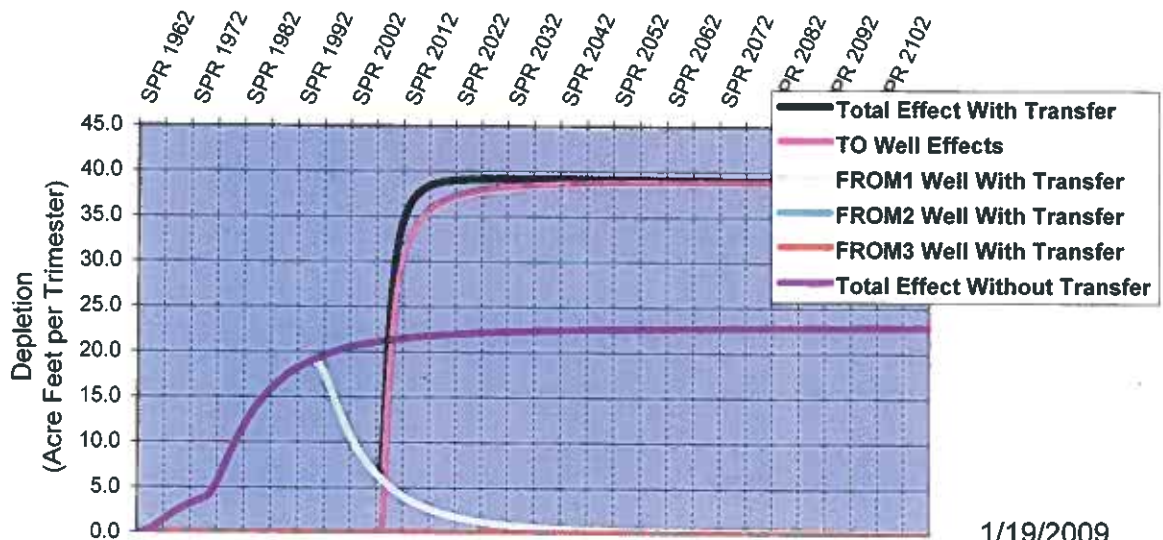
1/19/2009
Version 3.1

Customer Name: Sage to KBC

Transfer No: Sage to

Hydrologic Response-- Near Blackfoot to Neeley

Customer Name: Sage to KBC Transfer No: Sage to KBC



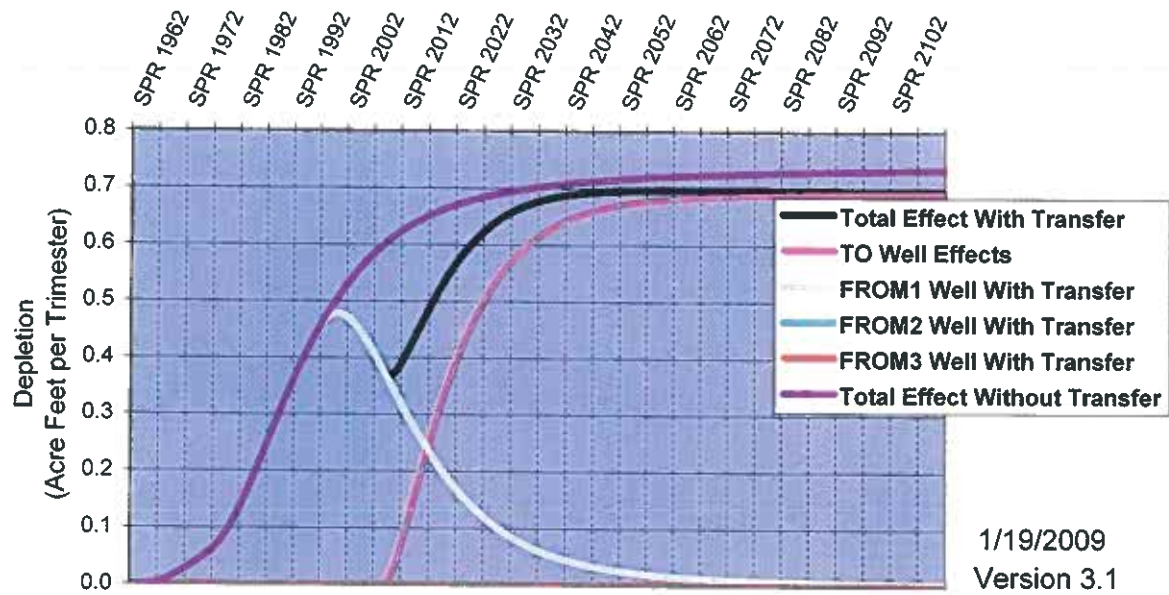
1/19/2009
Version 3.1

Hydrologic Response--Ashton to Rexburg

Customer Name: Sage to KBC

Transfer No:

Sage to

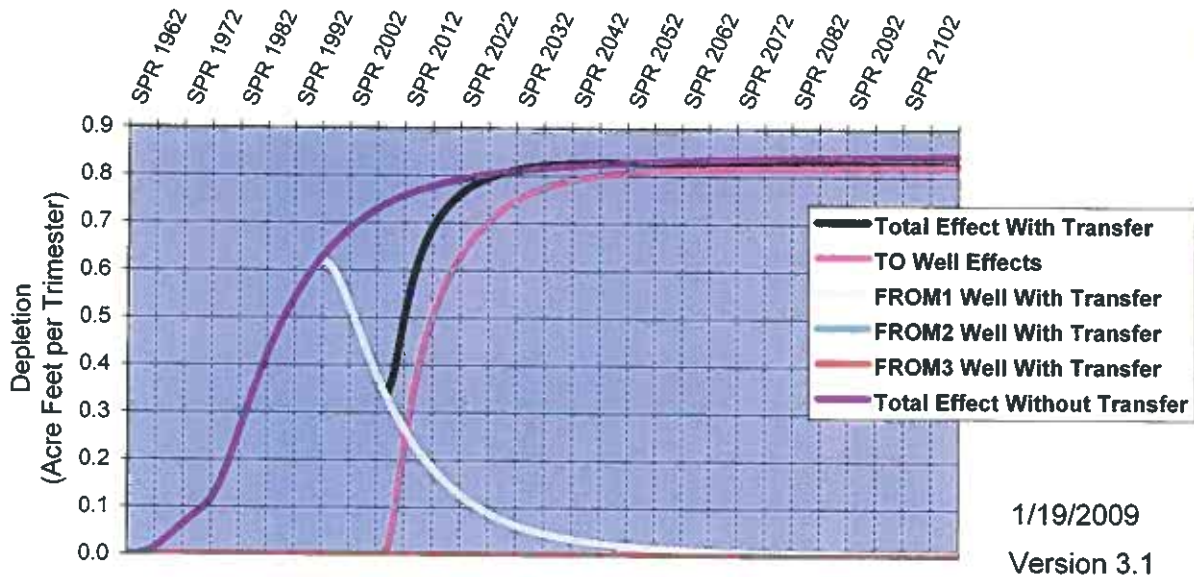


Hydrologic Response--Heise to Shelley

Customer Name: Sage to KBC

Transfer No:

Sage to



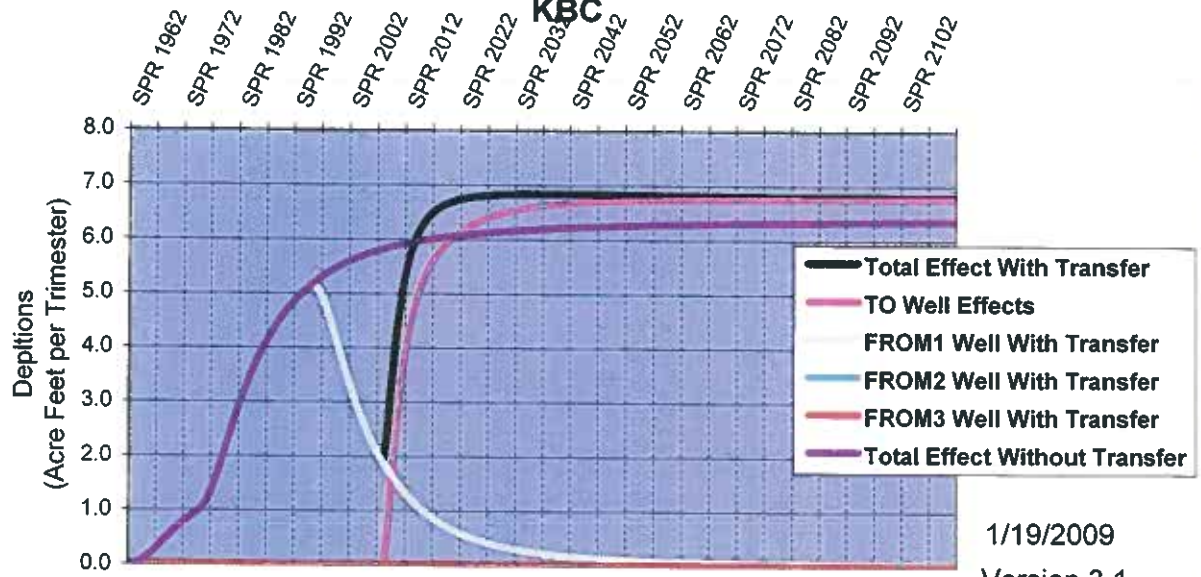
Hydrologic Response--Shelley to Near Blackfoot

Customer Name: Sage to

Transfer No:

Sage to

KBC



1/19/2009

Version 3.1

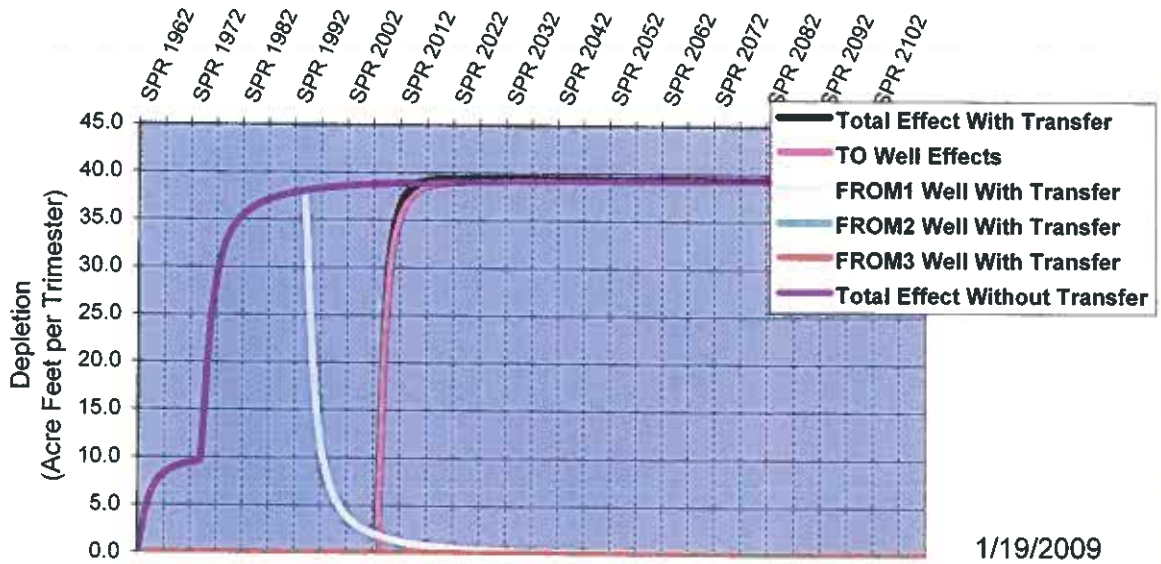
Hydrologic Response-- Neeley to Minidoka

Customer Name: Sage to

Transfer No:

Sage to

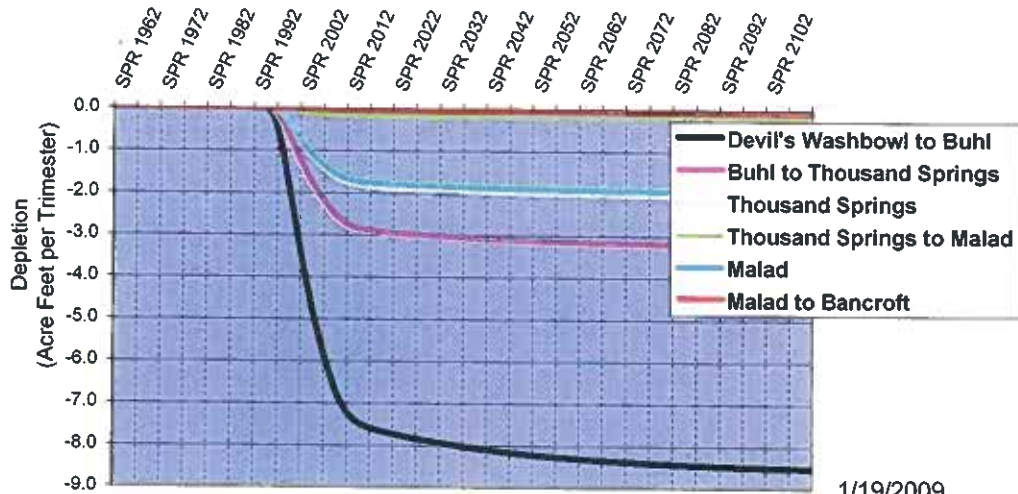
KBC



1/19/2009

Version 3.1

Net Transfer Effect Below Milner (Total Effect With Transfer - Total Effect Without Transfer)



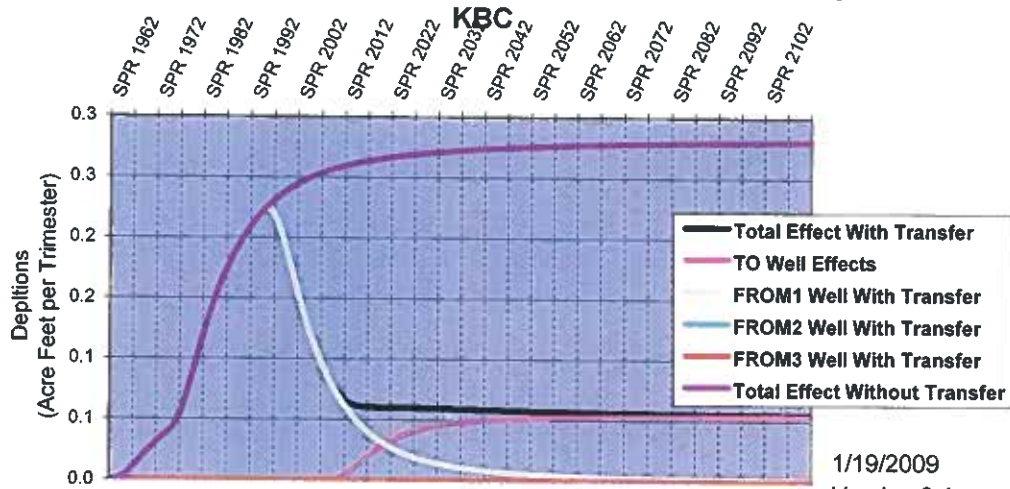
1/19/2009
Version 3.1

Customer Name: Sage to KBC

Transfer No: Sage to

Hydrologic Response--Thousand Springs to Malad

Customer Name: Sage to KBC Transfer No: Sage to



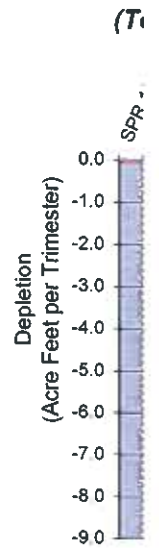
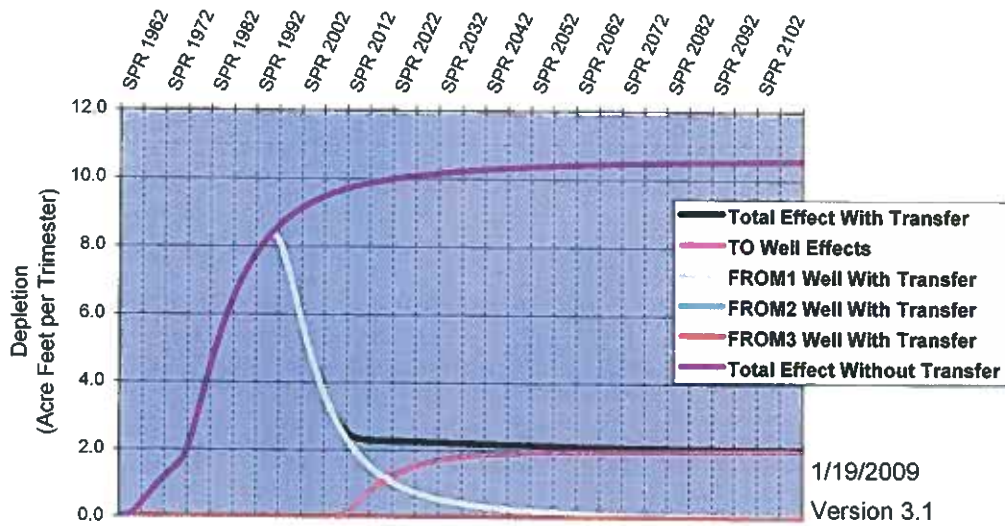
1/19/2009
Version 3.1

Hydrologic Response--Devil's Washbowl to Buhl

Customer Name: Sage to KBC

Transfer No:

Sage to



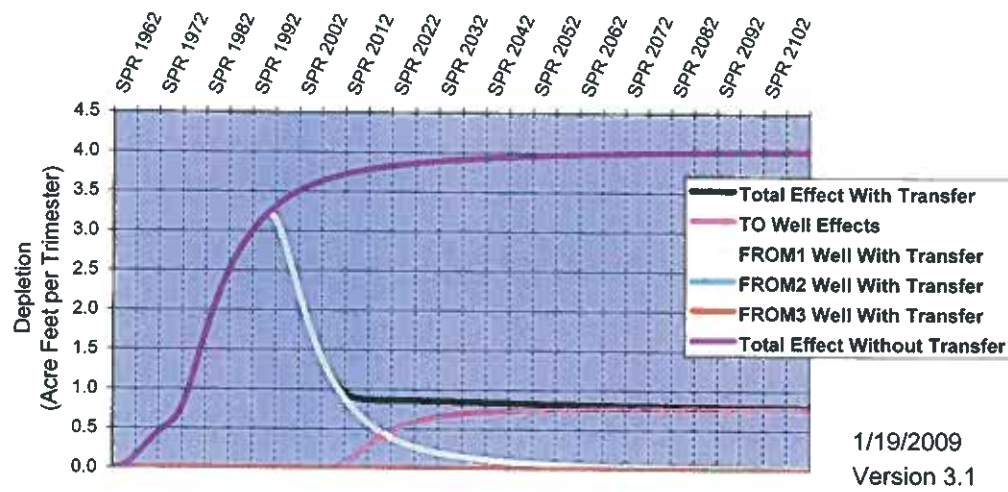
Customer Name:

Hydrologic Response--Buhl to Thousand Springs

Customer Name: Sage to KBC

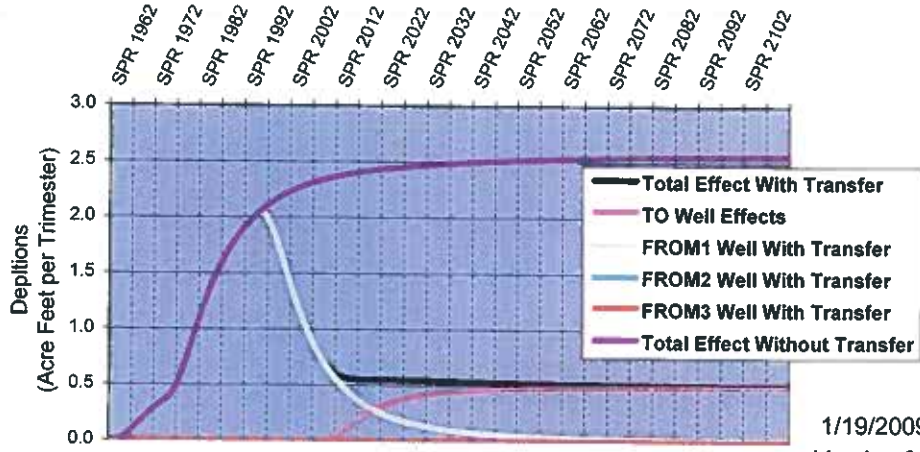
Transfer No:

Sage to



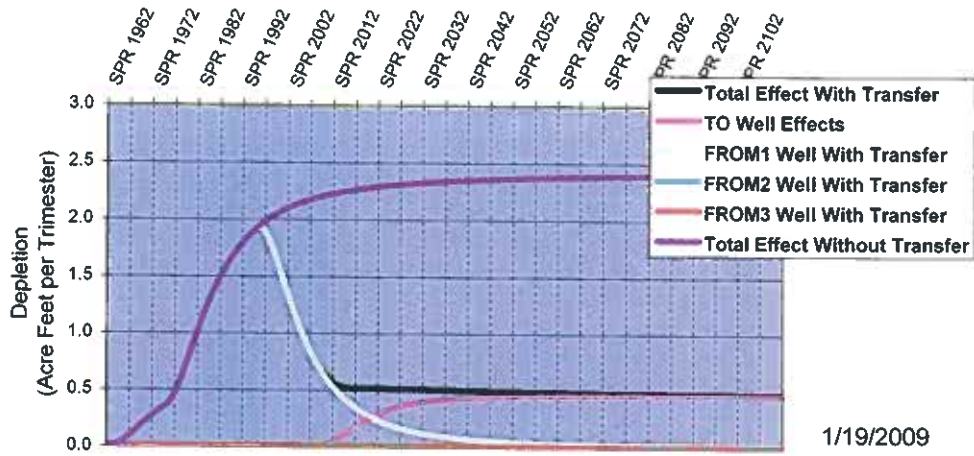
Hydrologic Response--Thousand Springs

Customer Name: Sage to Transfer No: Sage to
KBC

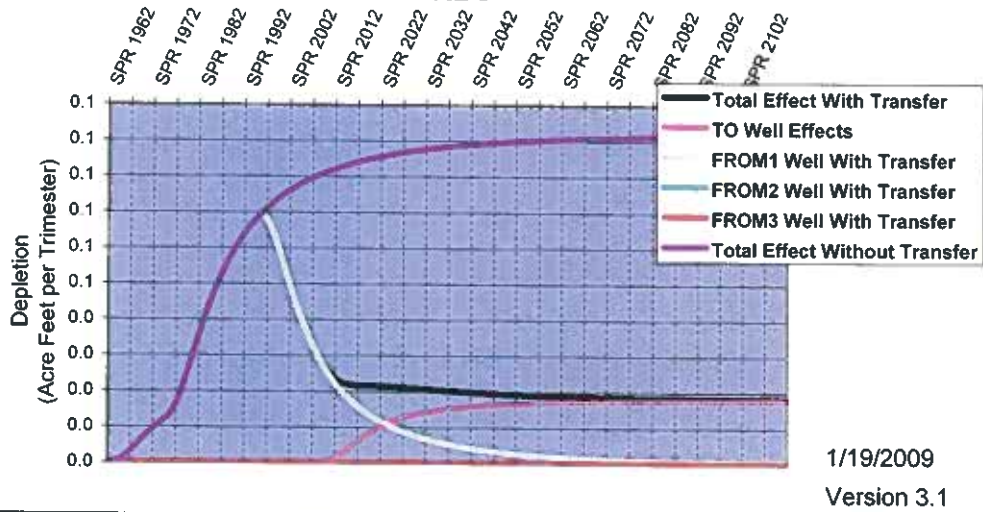


1/19/2009
Version 3.1

Hydrologic Response-- Malad
 Customer Name: Sage to KBC Transfer No: Sage to



Hydrologic Response-- Malad to Bancroft
 Customer Name: Sage to KBC Transfer No: Sage to



ENHANCED GROUND-WATER RIGHTS TRANSFER SPREADSHEET

UNIVERSITY OF IDAHO - IDAHO WATER RESOURCES RESEARCH INSTITUTE

IDAHO DEPARTMENT OF WATER RESOURCES

Cells this color are set up for user entries

ENTER STARTING DATE FOR

SIMULATION. THEN PUSH "UPDATE DATES" BUTTON

YEAR 1962
SEASON SPRING

TRANSFER NO: Sage to Stoker Dairy

TRANSFER NAME: Sage to Stoker Dairy

ENTER CELL LOCATIONS:

	'TO' CELL	'FROM1' CELL	'FROM2' CELL	'FROM3' CELL
ROW	93	91		
COLUMN	53	69		

TRIMESTER OF ACTIVITY	TO WELL Projected Use AF/TRIMESTER	FROM1 WELL		FROM2 WELL		FROM3 WELL	
		With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER	With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER	With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER
SPR 1962	0	39	39				
SUM 1962	0	39	39				
WIN 1962	0	39	39				
SPR 1963	0	39	39				
SUM 1963	0	39	39				
WIN 1963	0	39	39				
SPR 1964	0	39	39				
SUM 1964	0	39	39				
WIN 1964	0	39	39				
SPR 1965	0	39	39				
SUM 1965	0	39	39				
WIN 1965	0	39	39				
SPR 1966	0	39	39				
SUM 1966	0	39	39				
WIN 1966	0	39	39				
SPR 1967	0	39	39				
SUM 1967	0	39	39				
WIN 1967	0	39	39				
SPR 1968	0	39	39				
SUM 1968	0	39	39				
WIN 1968	0	39	39				
SPR 1969	0	39	39				
SUM 1969	0	39	39				
WIN 1969	0	39	39				
SPR 1970	0	39	39				
SUM 1970	0	39	39				
WIN 1970	0	39	39				
SPR 1971	0	39	39				
SUM 1971	0	39	39				
WIN 1971	0	39	39				
SPR 1972	0	39	39				
SUM 1972	0	39	39				
WIN 1972	0	39	39				
SPR 1973	0	39	39				
SUM 1973	0	39	39				
WIN 1973	0	39	39				
SPR 1974	0	39	39				
SUM 1974	0	39	39				
WIN 1974	0	39	39				
SPR 1975	0	39	39				
SUM 1975	0	39	39				
WIN 1975	0	39	39				
SPR 1976	0	39	39				
SUM 1976	0	39	39				
WIN 1976	0	39	39				
SPR 1977	0	39	39				
SUM 1977	0	39	39				
WIN 1977	0	39	39				
SPR 1978	0	147	147				
SUM 1978	0	147	147				
WIN 1978	0	147	147				
SPR 1979	0	147	147				
SUM 1979	0	147	147				
WIN 1979	0	147	147				
SPR 1980	0	147	147				
SUM 1980	0	147	147				
WIN 1980	0	147	147				
SPR 1981	0	147	147				
SUM 1981	0	147	147				
WIN 1981	0	147	147				
SPR 1982	0	147	147				
SUM 1982	0	147	147				
WIN 1982	0	147	147				
SPR 1983	0	147	147				
SUM 1983	0	147	147				
WIN 1983	0	147	147				
SPR 1984	0	147	147				
SUM 1984	0	147	147				
WIN 1984	0	147	147				
SPR 1985	0	147	147				
SUM 1985	0	147	147				
WIN 1985	0	147	147				
SPR 1986	0	147	147				
SUM 1986	0	147	147				
WIN 1986	0	147	147				

Entering Dates

Enter the starting year and season for your simulation. The start of the analysis period (Spring is Mar, Apr, May and Jun.

Summer is Jul, Aug, Sep and Oct. Winter is Nov, Dec, Jan and Feb.

Once you have entered the starting date, push the "UPDATE DATES" button.

The date only needs to be updated once, unless the desired time is

Modifying the date does not automatically adjust the location of the

Entering Well Locations

Enter the row and column location for the 'TO' well in spreadsheet.

Enter the row and column location for the 'FROM1' well in spreadsheet.

Enter the row and column location for the 'FROM2' well in spreadsheet.

Enter the row and column location for the 'FROM3' well in spreadsheet.

If the 'FROM2' well is not to be modeled, the entered row and column

If the 'FROM3' well is not to be modeled, the entered row and column

The 'FROM3' well cannot be used if the 'FROM2' well is not being

Running the Model

Once the model cells have been specified for the 'FROM' and 'TO' wells, push the 'RUN MODEL' button to generate the response functions. The

needs to be re-run if the locations of the 'FROM' and 'TO' wells are

Getting the Model Output

Once the model has been run, push the 'GET OUTPUT' button to generate the model output. This prepares the model output for use for calculations.

Entering water use data

All water use should be entered in units of acre-feet per four months.

for instructions on multiple water rights with different priority dates.

Entering 'TO' Well Projected Water Use

Enter the projected water use for the 'TO' Well in Column B. 'TO' should start in the trimester (4-month period) in which the transfer

Entering 'FROM' Well 'With Transfer' Use

Enter the 'With Transfer' water use for the first 'FROM' Well in Column C, the second 'FROM' well in Column E, and for the third 'FROM' Well in Column G.

'With Transfer' water use should reflect historical and projected water use should cease or be reduced at the time of the water right transfer.

Entering 'FROM' Well 'Without Transfer' Use

The 'Without Transfer' Use for the 'FROM' wells should include historical and projected water use from that well.

Enter the 'Without Transfer' water use for the first 'FROM' Well in Column D, for the second 'FROM' well in Column F, and for the third 'FROM' Well in Column H.

Prior to the expected date of transfer, the 'With Transfer' use should be the same as the 'Without Transfer' use.

If only one 'FROM' well is to be represented, pumpage in Column C should be the same as the 'Without Transfer' use.

If only two 'FROM' wells are being represented, pumpage in Column E should be the same as the 'Without Transfer' use.

Projected water use in the 'TO' well and the 'FROM' wells will be the same as the 'Without Transfer' use.

effect to the river reaches caused by the water right transfer. (See the EFFECTS worksheet. See the Users Manual for more information.)

Calculating Effect of the Transfer on River Gains and Losses

After all of the above steps have been completed, the effects of the transfer on the river reaches can be calculated.

of the eleven hydraulically connected reaches of the Snake River.

CALCULATE EFFECTS' button. This will result in a multiplication of the model runs times the water use rates entered in the table prior to the multiplication has been performed, the spreadsheet will calculate the net effects on all 11 reaches. Results are also presented in the EFFECTS worksheet. See the Users Manual for more information.

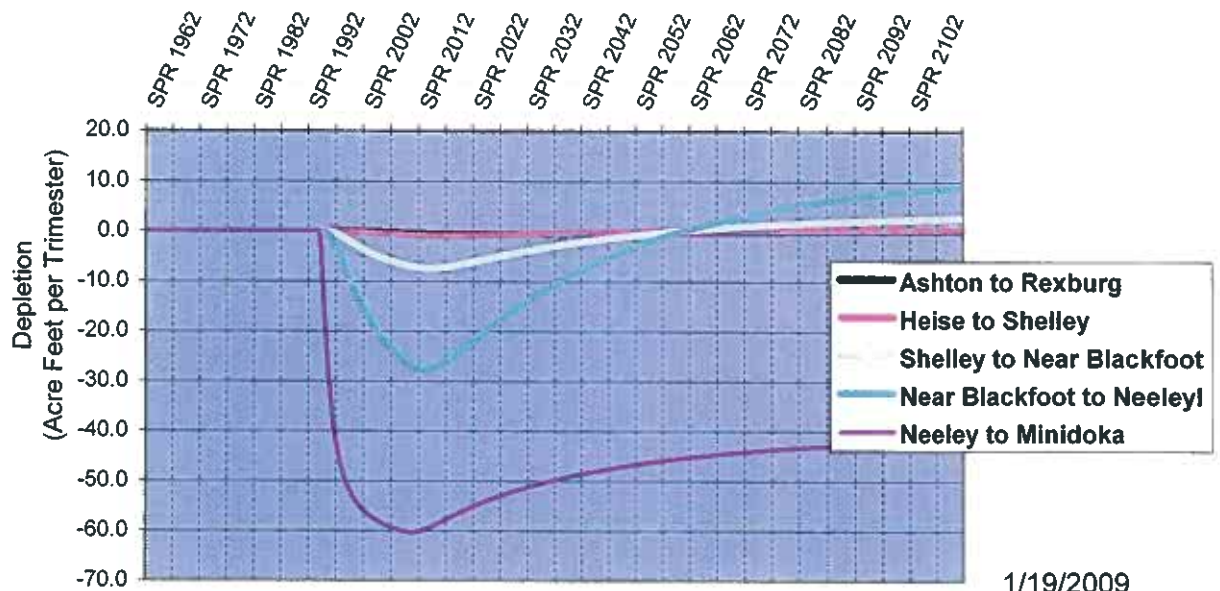
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SUM 1987	0	147	147				
WIN 1987	0	147	147				
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SUM 1988	0	147	147				
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SPR 1989	0	147	147				
SUM 1989	0	147	147				
WIN 1989	0	147	147				
SPR 1990	0	147	147				
SUM 1990	0	147	147				
WIN 1990	0	147	147				
SPR 1991	0	147	147				
SUM 1991	0	147	147				
WIN 1991	0	147	147				
SPR 1992	0	147	147				
SUM 1992	0	147	147				
WIN 1992	0	147	147				
SPR 1993	0	147	147				
SUM 1993	0	147	147				
WIN 1993	0	147	147				
SPR 1994	0	0	147				
SUM 1994	0	0	147				
WIN 1994	0	0	147				
SPR 1995	0	0	147				
SUM 1995	0	0	147				
WIN 1995	0	0	147				
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SUM 1996	0	0	147				
WIN 1996	0	0	147				
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WIN 1997	0	0	147				
SPR 1998	0	0	147				
SUM 1998	0	0	147				
WIN 1998	0	0	147				
SPR 1999	0	0	147				
SUM 1999	0	0	147				
WIN 1999	0	0	147				
SPR 2000	0	0	147				
SUM 2000	0	0	147				
WIN 2000	0	0	147				
SPR 2001	0	0	147				
SUM 2001	0	0	147				
WIN 2001	0	0	147				
SPR 2002	0	0	147				
SUM 2002	0	0	147				
WIN 2002	0	0	147				
SPR 2003	0	0	147				
SUM 2003	0	0	147				
WIN 2003	0	0	147				
SPR 2004	0	0	147				
SUM 2004	0	0	147				
WIN 2004	0	0	147				
SPR 2005	0	0	147				
SUM 2005	0	0	147				
WIN 2005	0	0	147				
SPR 2006	0	0	147				
SUM 2006	0	0	147				
WIN 2006	0	0	147				
SPR 2007	0	0	147				
SUM 2007	0	0	147				
WIN 2007	0	0	147				
SPR 2008	147	0	147				
SUM 2008	147	0	147				
WIN 2008	147	0	147				
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SUM 2009	147	0	147				
WIN 2009	147	0	147				
SPR 2010	147	0	147				
SUM 2010	147	0	147				
WIN 2010	147	0	147				
SPR 2011	147	0	147				
SUM 2011	147	0	147				
WIN 2011	147	0	147				
SPR 2012	147	0	147				
SUM 2012	147	0	147				
WIN 2012	147	0	147				
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SUM 2013	147	0	147				
WIN 2013	147	0	147				
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WIN 2014	147	0	147				
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WIN 2015	147	0	147				
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SUM 2023	147	0	147				

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SUM 2035	147	0	147				
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SUM 2037	147	0	147				
WIN 2037	147	0	147				
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WIN 2096	147	0	147				

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WIN 2110	147	0	147				
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WIN 2111	147	0	147				

Net Transfer Effect Above Milner (Total Effect With Transfer - Total Effect Without Transfer)



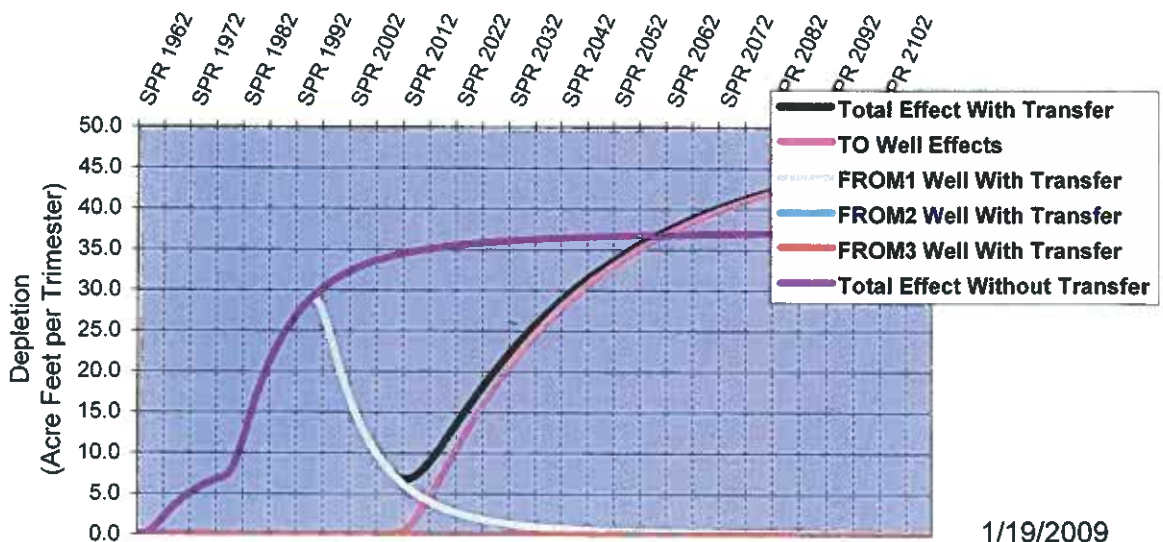
1/19/2009
Version 3.1

Customer Name: Sage to Stoker Dairy Irr

Transfer No: Sage to

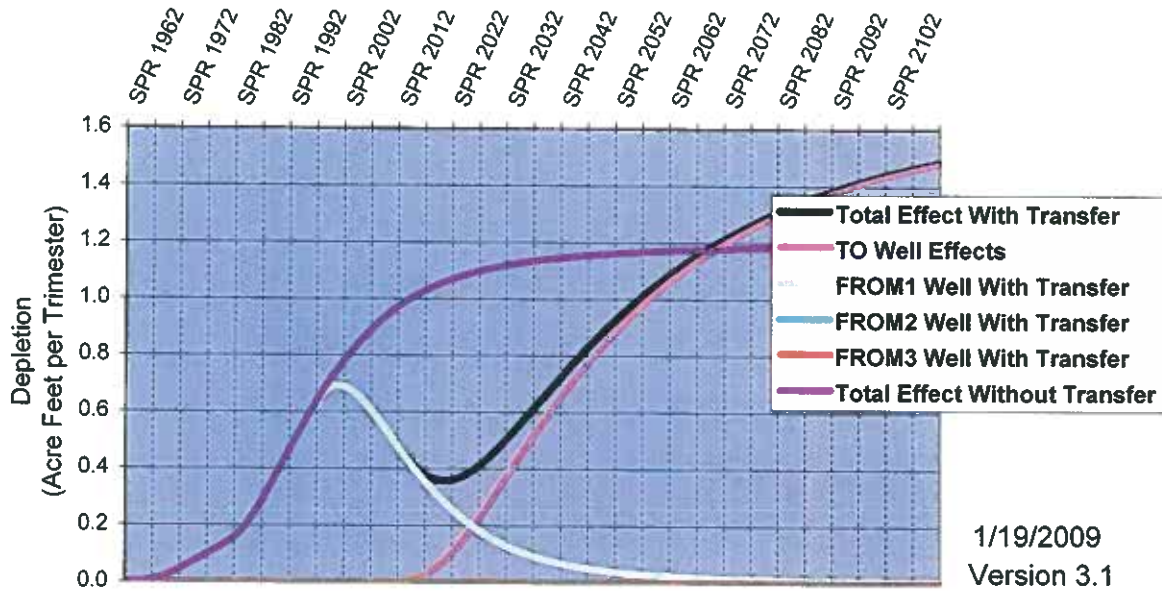
Hydrologic Response-- Near Blackfoot to Neeley

Customer Name: Sage to Stoker Transfer No: Sage to Stoker

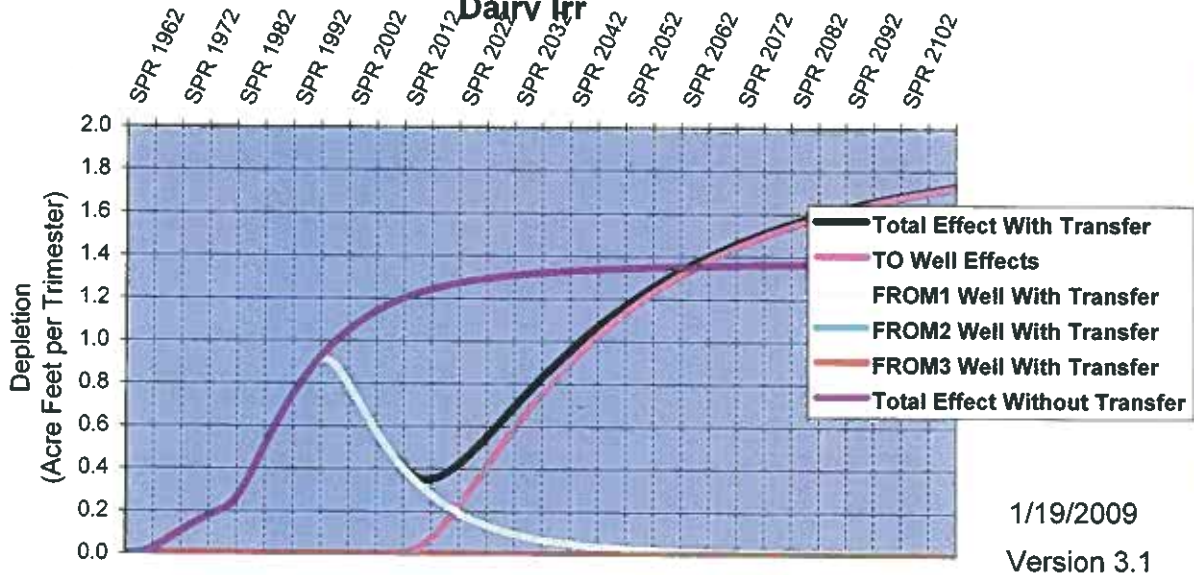


1/19/2009
Version 3.1

Hydrologic Response--Ashton to Rexburg
Customer Name: Sage to Stoker **Transfer No:** **Sage to**
Dairy Irr



Hydrologic Response--Heise to Shelley
Customer Name: Sage to Stoker **Transfer No:** **Sage to**
Dairy Irr



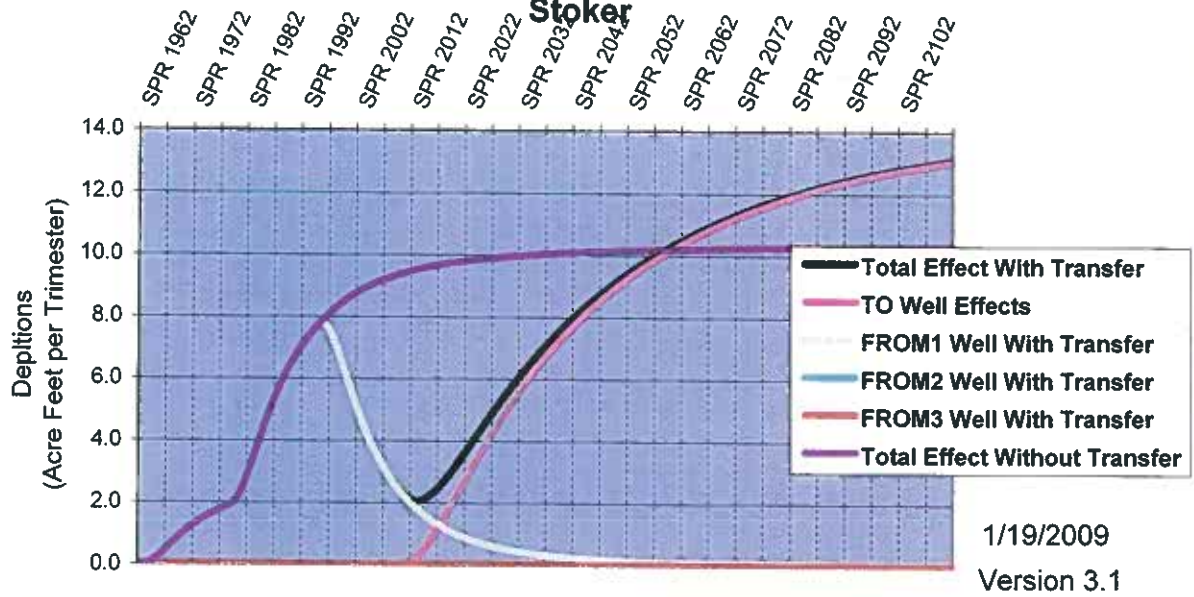
Hydrologic Response--Shelley to Near Blackfoot

Customer Name: Sage to

Transfer No:

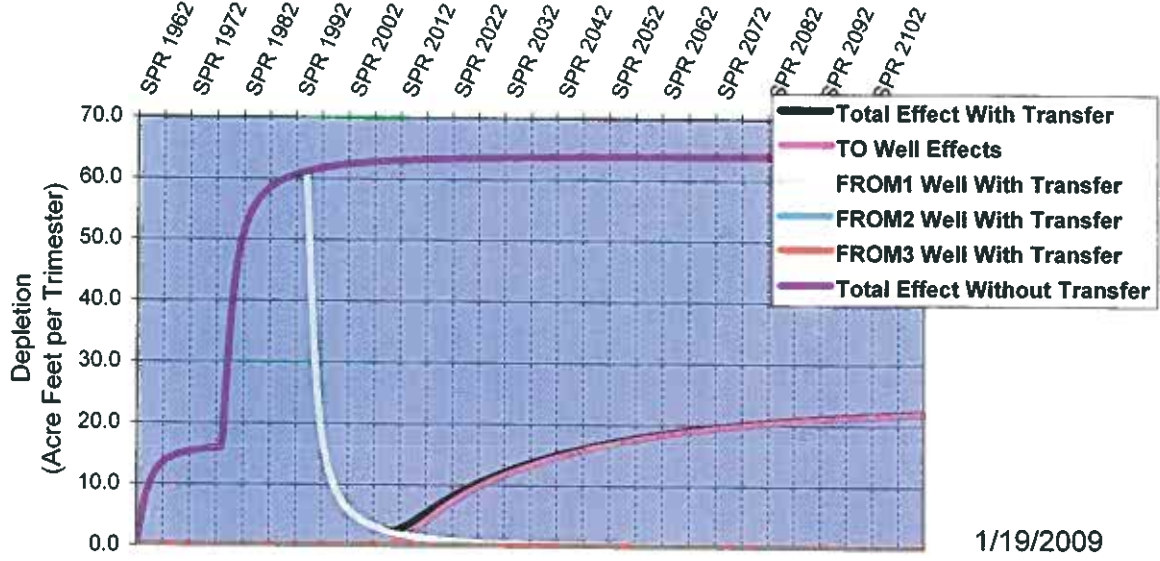
Sage to

Stoker



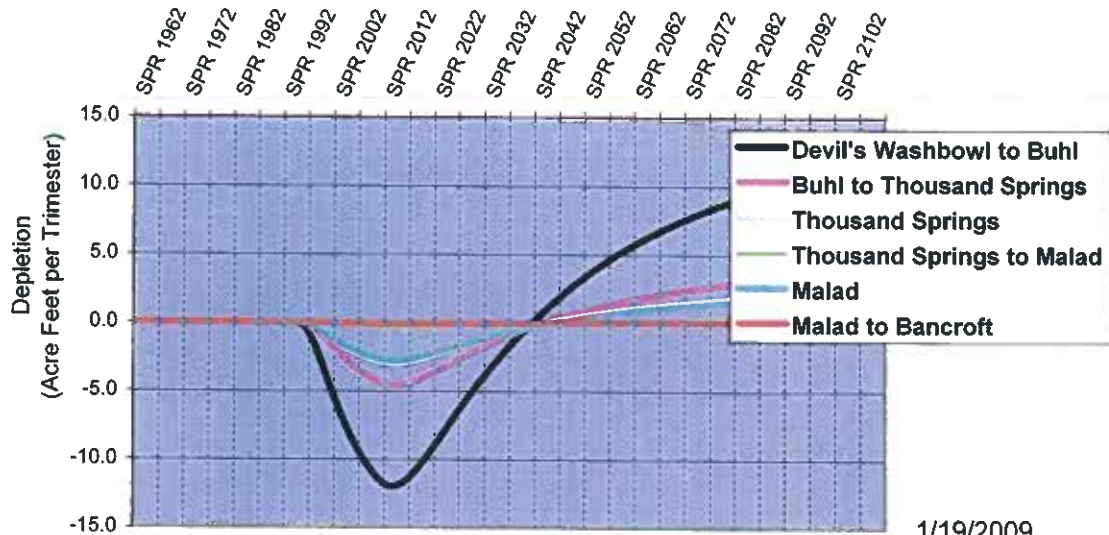
Hydrologic Response-- Neeley to Minidoka

Customer Name: Sage to Stoker Transfer No: Sage to



1/19/2009
Version 3.1

Net Transfer Effect Below Milner (Total Effect With Transfer - Total Effect Without Transfer)



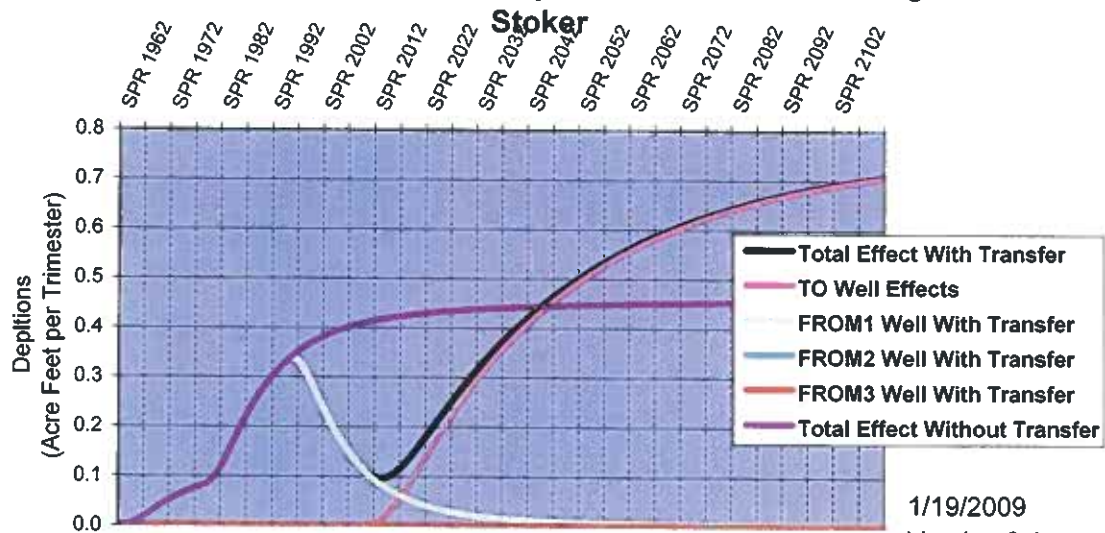
1/19/2009
Version 3.1

Customer Name: Sage to Stoker Dairy Irr

Transfer No: Sage to

Hydrologic Response--Thousand Springs to Malad

Customer Name: Sage to Stoker Transfer No: Sage to



1/19/2009
Version 3.1

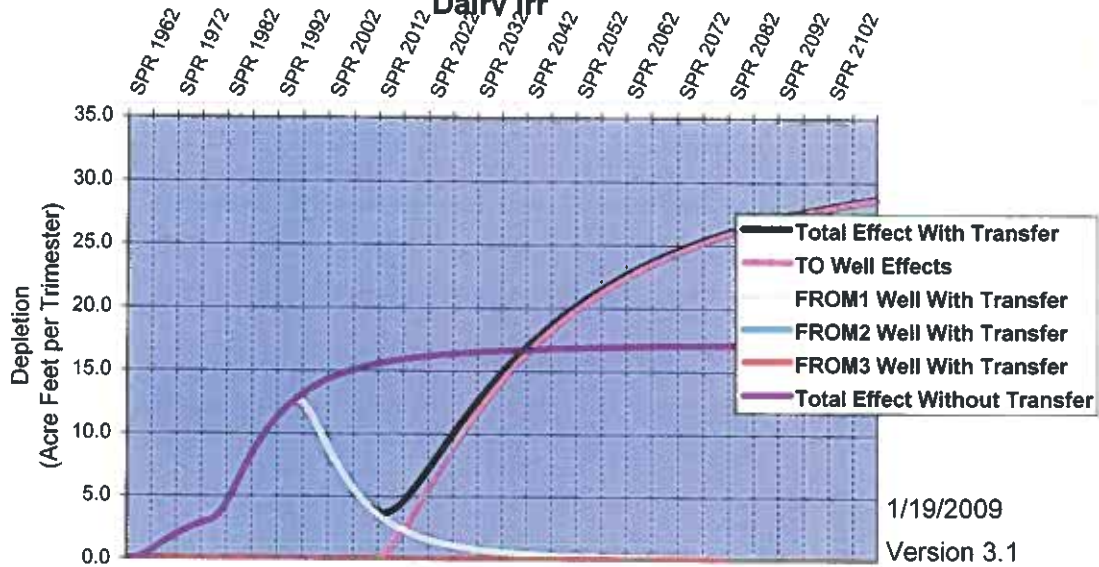
Hydrologic Response--Devil's Washbowl to Buhl

Customer Name:Sage to Stoker

Transfer No:

Sage to

Dairy Irr



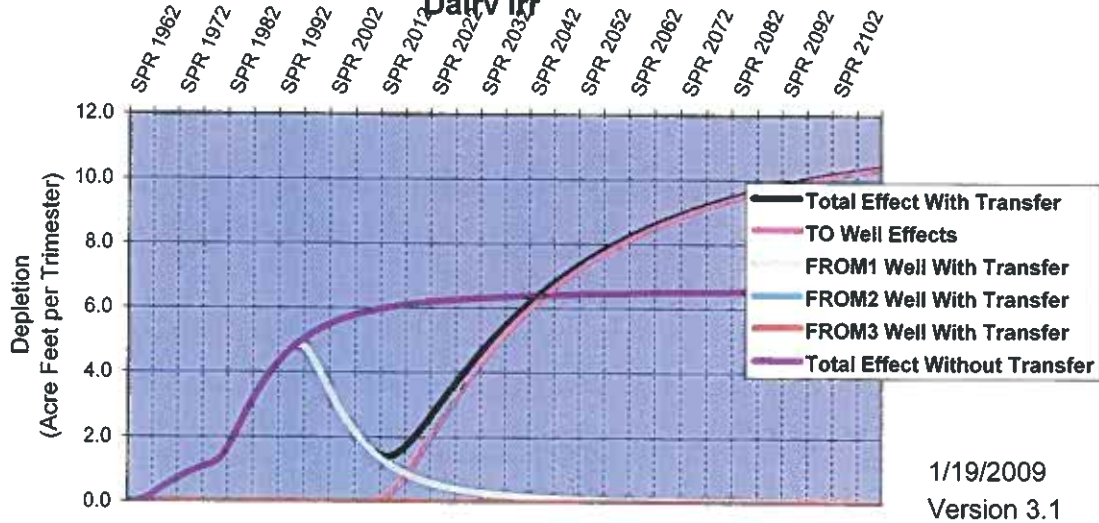
Hydrologic Response--Buhl to Thousand Springs

Customer Name:Sage to Stoker

Transfer No:

Sage to

Dairy Irr

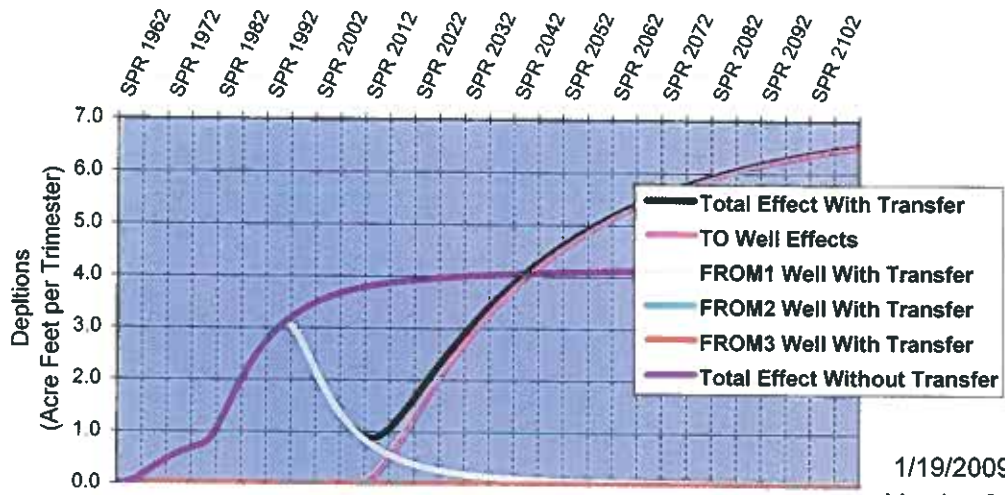


Hydrologic Response--Thousand Springs

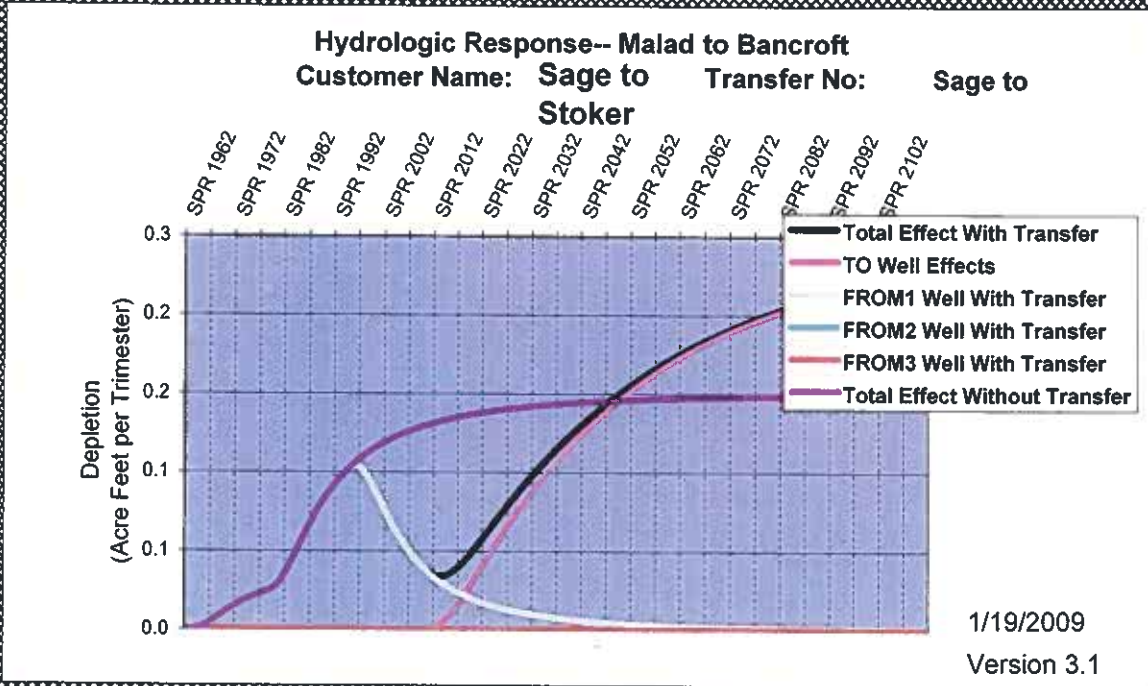
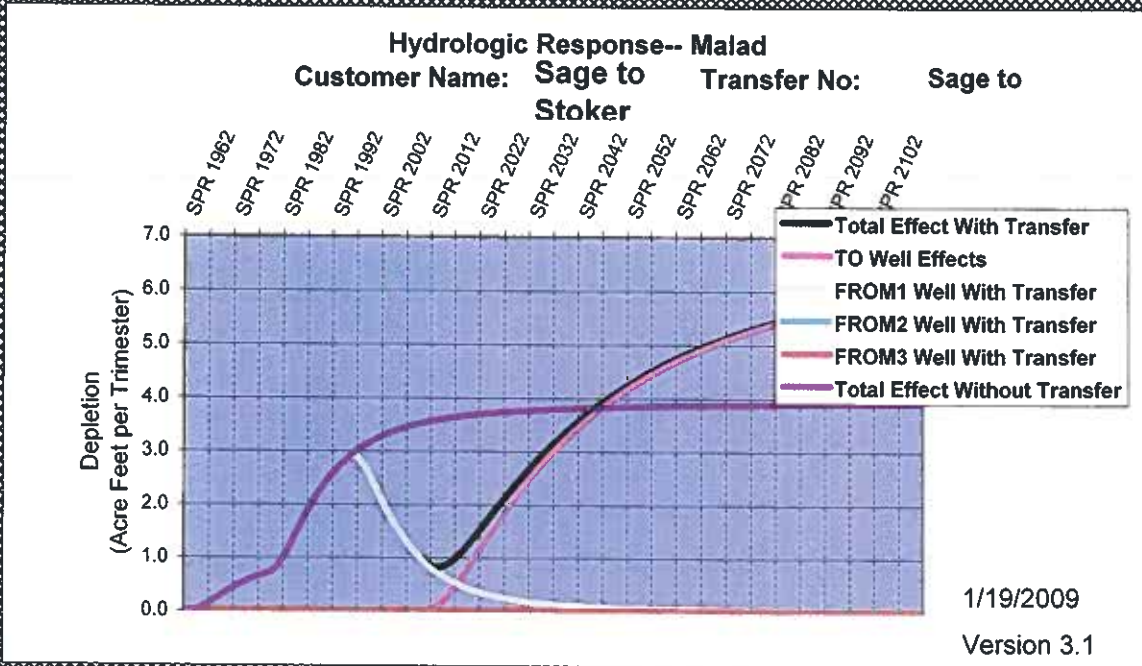
Customer Name: Sage to
Stoker

Transfer No:

Sage to



1/19/2009
Version 3.1



ENHANCED GROUND-WATER RIGHTS TRANSFER SPREADSHEET

UNIVERSITY OF IDAHO - IDAHO WATER RESOURCES RESEARCH INSTITUTE

IDAHO DEPARTMENT OF WATER RESOURCES

Cells this color are
set up for user entries

ENTER STARTING DATE FOR

SIMULATION. THEN PUSH
"UPDATE DATES" BUTTON
YEAR 1962
SEASON SPRING

TRANSFER NO:
Sage to Stoker Dairy
TRANSFER NAME:
Sage to Stoker Dairy

1	2	3
4		

ENTER CELL LOCATIONS:

	'TO' CELL	'FROM1' CELL	'FROM2' CELL	'FROM3' CELL
ROW	93	91		
COLUMN	54	69		

TRIMESTER OF ACTIVITY	TO WELL Projected Use AF/TRIMESTER	FROM1 WELL		FROM2 WELL		FROM3 WELL	
		With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER	With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER	With Transfer AF/TRIMESTER	Without Transfer AF/TRIMESTER
SPR 1962	0	40	40				
SUM 1962	0	40	40				
WIN 1962	0	40	40				
SPR 1963	0	40	40				
SUM 1963	0	40	40				
WIN 1963	0	40	40				
SPR 1964	0	40	40				
SUM 1964	0	40	40				
WIN 1964	0	40	40				
SPR 1965	0	40	40				
SUM 1965	0	40	40				
WIN 1965	0	40	40				
SPR 1966	0	40	40				
SUM 1966	0	40	40				
WIN 1966	0	40	40				
SPR 1967	0	40	40				
SUM 1967	0	40	40				
WIN 1967	0	40	40				
SPR 1968	0	40	40				
SUM 1968	0	40	40				
WIN 1968	0	40	40				
SPR 1969	0	40	40				
SUM 1969	0	40	40				
WIN 1969	0	40	40				
SPR 1970	0	40	40				
SUM 1970	0	40	40				
WIN 1970	0	40	40				
SPR 1971	0	40	40				
SUM 1971	0	40	40				
WIN 1971	0	40	40				
SPR 1972	0	40	40				
SUM 1972	0	40	40				
WIN 1972	0	40	40				
SPR 1973	0	40	40				
SUM 1973	0	40	40				
WIN 1973	0	40	40				
SPR 1974	0	40	40				
SUM 1974	0	40	40				
WIN 1974	0	40	40				
SPR 1975	0	40	40				
SUM 1975	0	40	40				
WIN 1975	0	40	40				
SPR 1976	0	40	40				
SUM 1976	0	40	40				
WIN 1976	0	40	40				
SPR 1977	0	40	40				
SUM 1977	0	40	40				
WIN 1977	0	40	40				
SPR 1978	0	153	153				
SUM 1978	0	153	153				
WIN 1978	0	153	153				
SPR 1979	0	153	153				
SUM 1979	0	153	153				
WIN 1979	0	153	153				
SPR 1980	0	153	153				
SUM 1980	0	153	153				
WIN 1980	0	153	153				
SPR 1981	0	153	153				
SUM 1981	0	153	153				
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SUM 1982	0	153	153				
WIN 1982	0	153	153				
SPR 1983	0	153	153				
SUM 1983	0	153	153				
WIN 1983	0	153	153				
SPR 1984	0	153	153				
SUM 1984	0	153	153				
WIN 1984	0	153	153				
SPR 1985	0	153	153				
SUM 1985	0	153	153				
WIN 1985	0	153	153				
SPR 1986	0	153	153				
SUM 1986	0	153	153				
WIN 1986	0	153	153				

Entering Dates

Enter the starting year and season for your simulation. The start of the analysis period. (Spring is Mar, Apr, May and Jun.

Summer is Jul, Aug, Sep and Oct. Winter is Nov, Dec, Jan and Feb.

Once you have entered the starting date, push the "UPDATE DATA"

The date only needs to be updated once, unless the desired time

Modifying the date does not automatically adjust the location of the

Entering Well Locations

Enter the row and column location for the 'TO' well in spreadsheet

Enter the row and column location for the 'FROM1' well in spreadsheet

Enter the row and column location for the 'FROM2' well in spreadsheet

Enter the row and column location for the 'FROM3' well in spreadsheet

If the 'FROM2' well is not to be modeled, the entered row and column

If the 'FROM3' well is not to be modeled, the entered row and column

The 'FROM3' well cannot be used if the 'FROM2' well is not being

Running the Model

Once the model cells have been specified for the 'FROM' and 'TO' wells, the 'RUN MODEL' button to generate the response functions. This needs to be re-run if the locations of the 'FROM' and 'TO' wells are

Getting the Model Output

Once the model has been run, push the 'GET OUTPUT' button to model output. This prepares the model output for use for calculation

Entering water use data

All water use should be entered in units of acre-feet per four months for instructions on multiple water rights with different priority dates

Entering 'TO' Well Projected Water Use

Enter the projected water use for the 'TO' Well in Column B. 'TO' should start in the trimester (4-month period) in which the transfer

Entering 'FROM' Well 'With Transfer' Use

Enter the 'With Transfer' water use for the first 'FROM' Well in Column C, the second 'FROM' well in Column E, and for the third 'FROM' Well in Column G. 'With Transfer' water use should reflect historical and projected a should cease or be reduced at the time of the water right transfer

Entering 'FROM' Well 'Without Transfer' Use

The 'Without Transfer' Use for the 'FROM' wells should include the projected use should reflect expected pumpage from that well. Enter the 'Without Transfer' water use for the first 'FROM' Well in Column D, for the second 'FROM' well in Column F, and for the third 'FROM' Well in Column H. Prior to the expected date of transfer, the 'With Transfer' use should

If only one 'FROM' well is to be represented, pumpage in columns

If only two 'FROM' wells are being represented, pumpage in Columns

Projected water use in the 'TO' well and the 'FROM' wells will be affected to the river reaches caused by the water right transfer. (See

Calculating Effect of the Transfer on River Gains and Losses

After all of the above steps have been completed, the effects of the transfer of the eleven hydraulically connected reaches of the Snake River

CALCULATE EFFECTS' button. This will result in a multiplication of the model runs) times the water use rates entered in the table provided

After the multiplication has been performed, the spreadsheet will calculate

worksheet. Here one graph is provided showing the effect for each reach. It

illustrates the net effects on all 11 reaches. Results are also presented in the

EFFECTS worksheet. See the Users Manual for more information

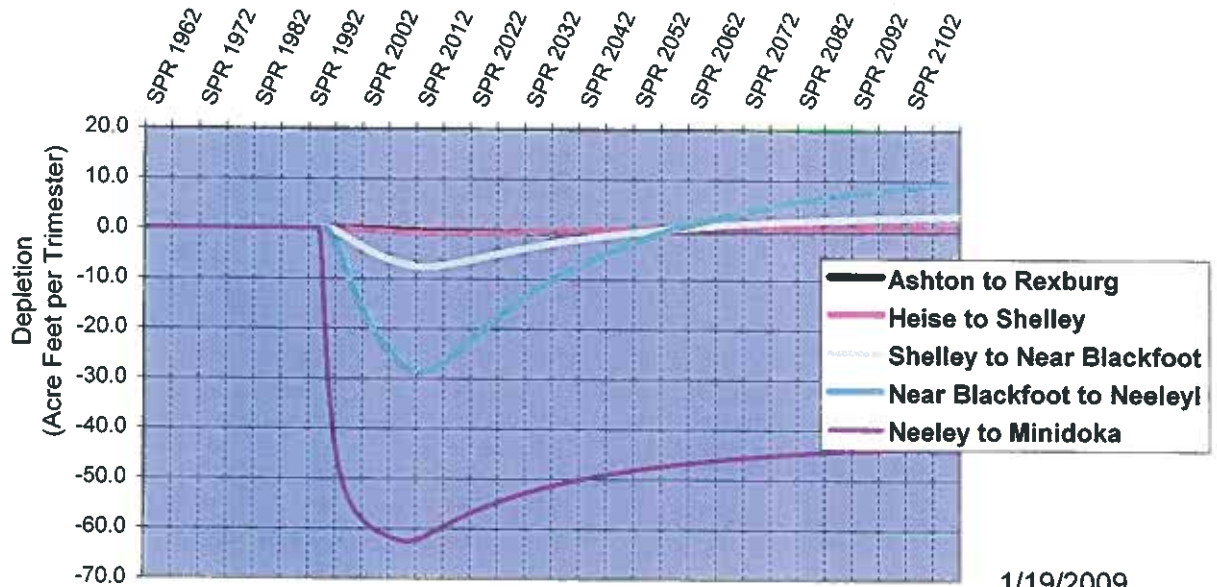
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SPR 1989	0	153	153			
SUM 1989	0	153	153			
WIN 1989	0	153	153			
SPR 1990	0	153	153			
SUM 1990	0	153	153			
WIN 1990	0	153	153			
SPR 1991	0	153	153			
SUM 1991	0	153	153			
WIN 1991	0	153	153			
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WIN 2000	0	0	153			
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WIN 2001	0	0	153			
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WIN 2003	0	0	153			
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WIN 2004	0	0	153			
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WIN 2005	0	0	153			
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WIN 2106	153	0	153				
SPR 2107	153	0	153				
SUM 2107	153	0	153				
WIN 2107	153	0	153				
SPR 2108	153	0	153				
SUM 2108	153	0	153				
WIN 2108	153	0	153				
SPR 2109	153	0	153				
SUM 2109	153	0	153				
WIN 2109	153	0	153				
SPR 2110	153	0	153				
SUM 2110	153	0	153				
WIN 2110	153	0	153				
SPR 2111	153	0	153				
SUM 2111	153	0	153				
WIN 2111	153	0	153				

Net Transfer Effect Above Milner (Total Effect With Transfer - Total Effect Without Transfer)



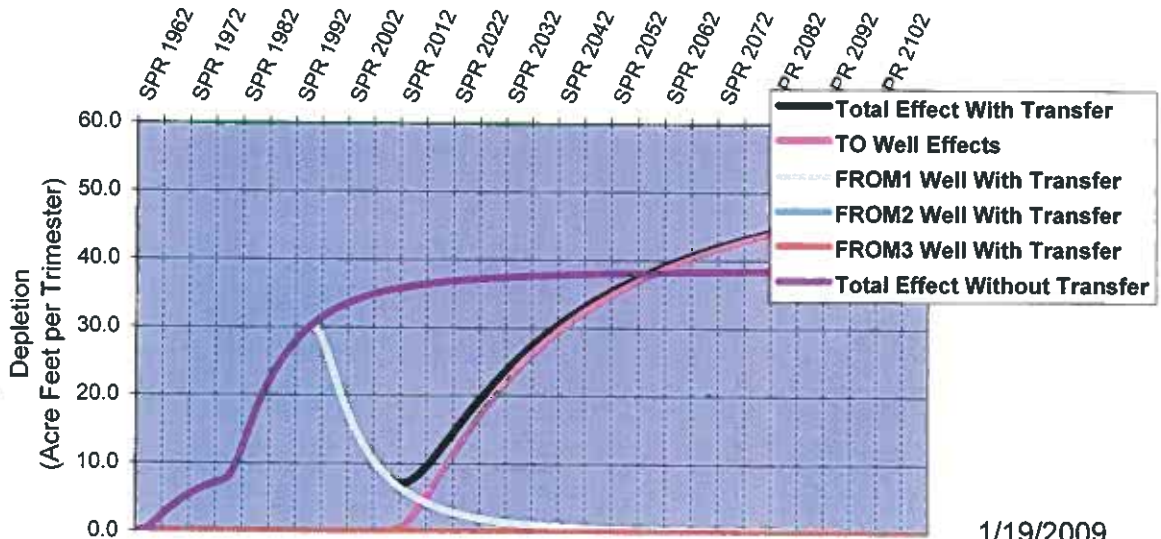
1/19/2009
Version 3.1

Customer Name: Sage to Stoker Dairy

Transfer No: Sage to

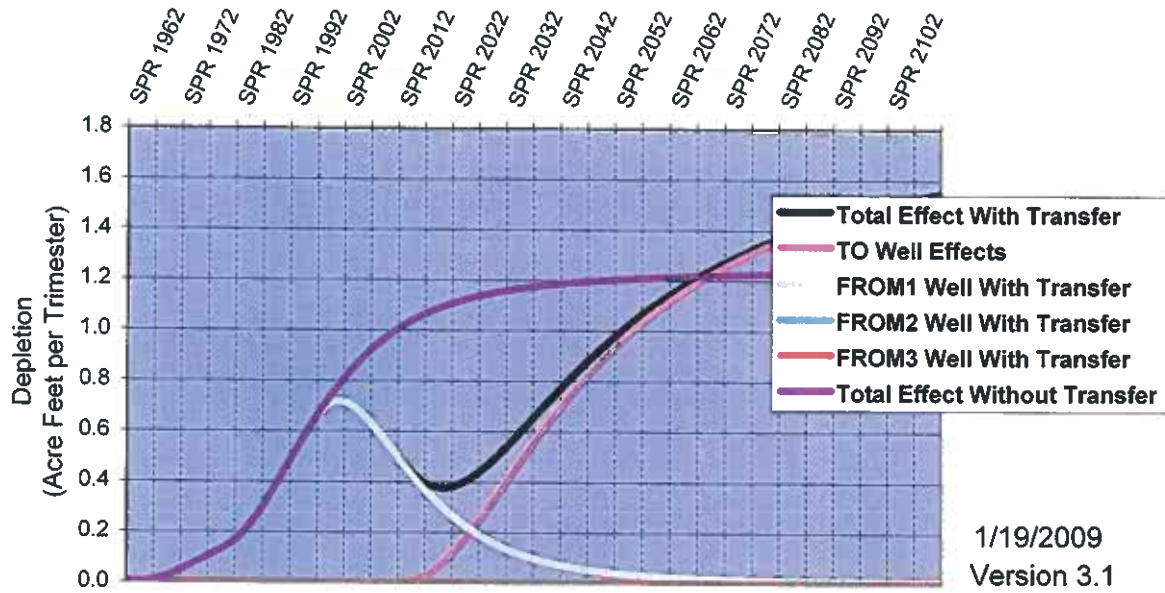
Hydrologic Response-- Near Blackfoot to Neeley

Customer Name: Sage to Stoker Transfer No: Sage to

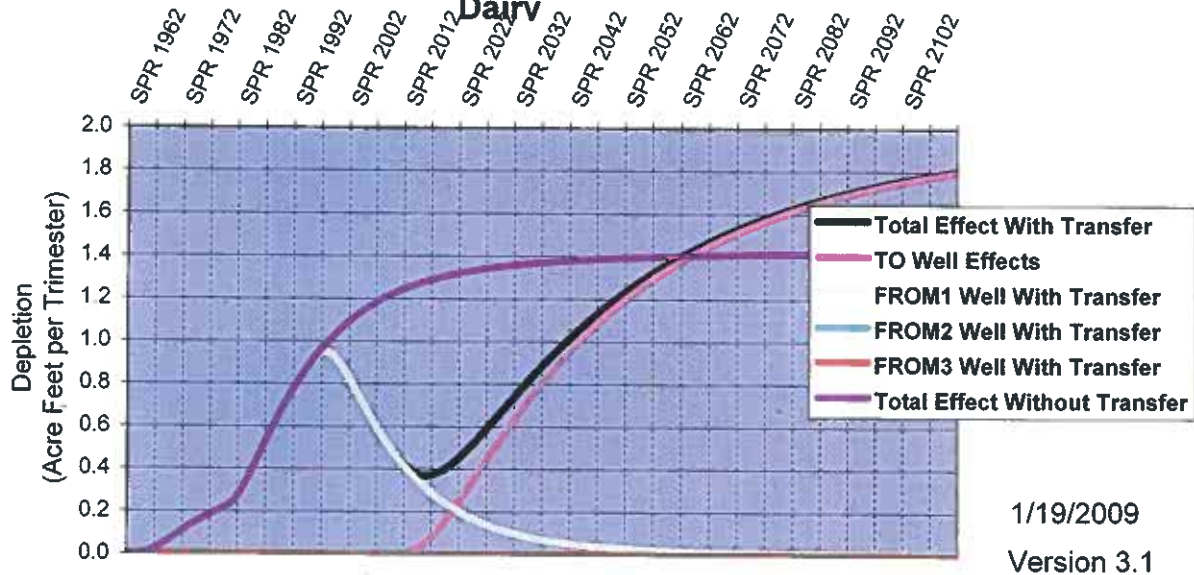


1/19/2009
Version 3.1

Hydrologic Response--Ashton to Rexburg
 Customer Name: Sage to Stoker Transfer No: Sage to Dairy



Hydrologic Response--Heise to Shelley
 Customer Name: Sage to Stoker Transfer No: Sage to Dairy



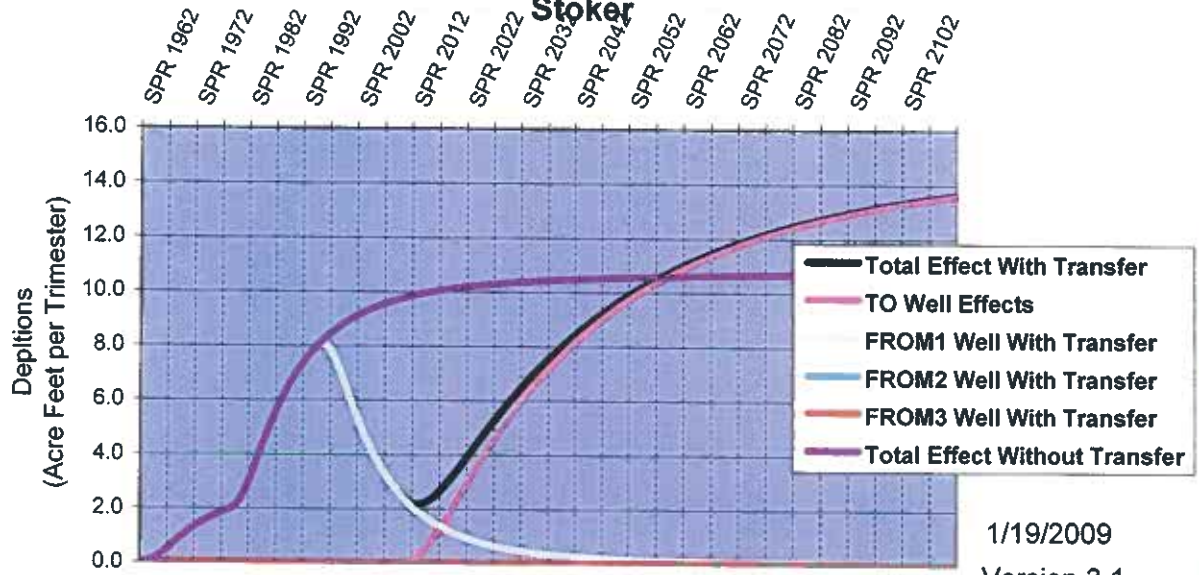
Hydrologic Response--Shelley to Near Blackfoot

Customer Name: Sage to

Transfer No:

Sage to

Stoker



1/19/2009

Version 3.1

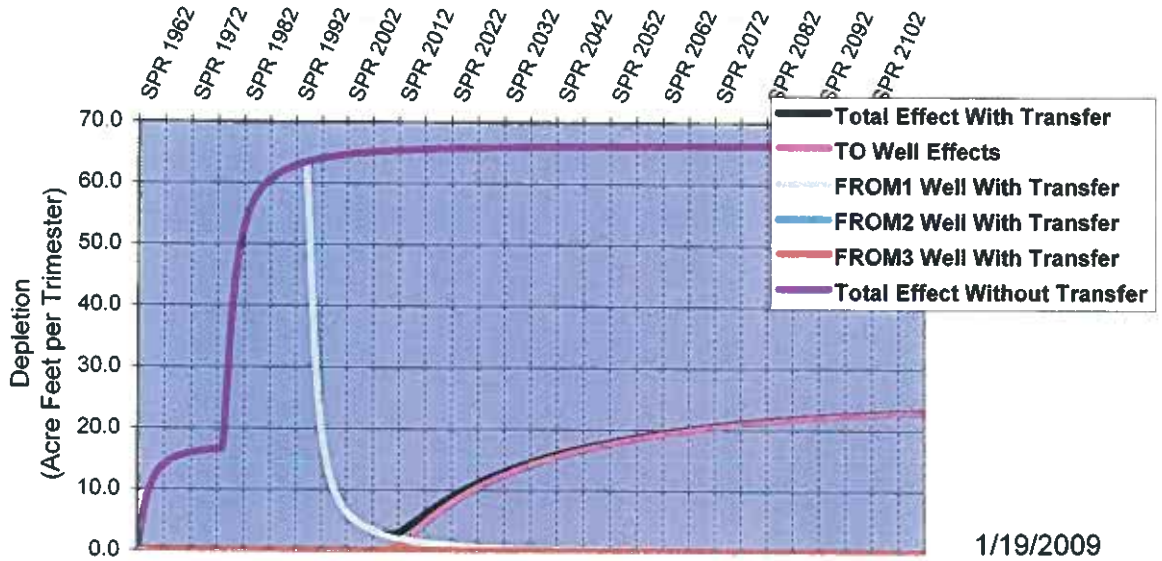
Hydrologic Response-- Neeley to Minidoka

Customer Name: Sage to

Transfer No:

Sage to

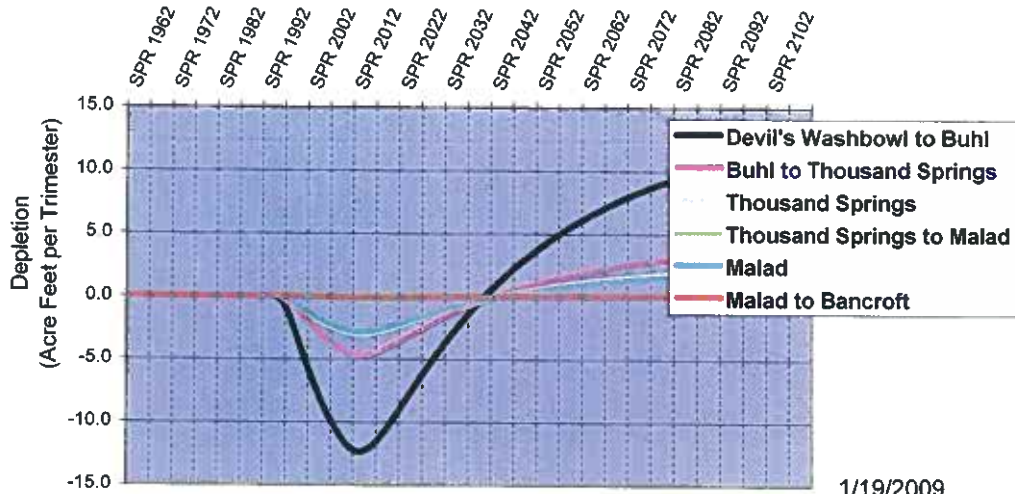
Stoker



1/19/2009

Version 3.1

Net Transfer Effect Below Milner
(Total Effect With Transfer - Total Effect Without Transfer)

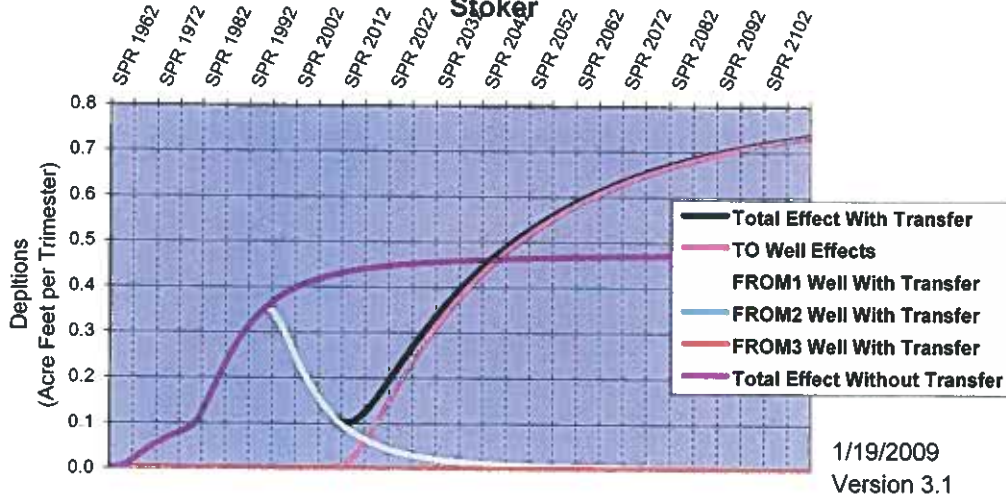


Customer Name: Sage to Stoker Dairy

Transfer No: Sage to

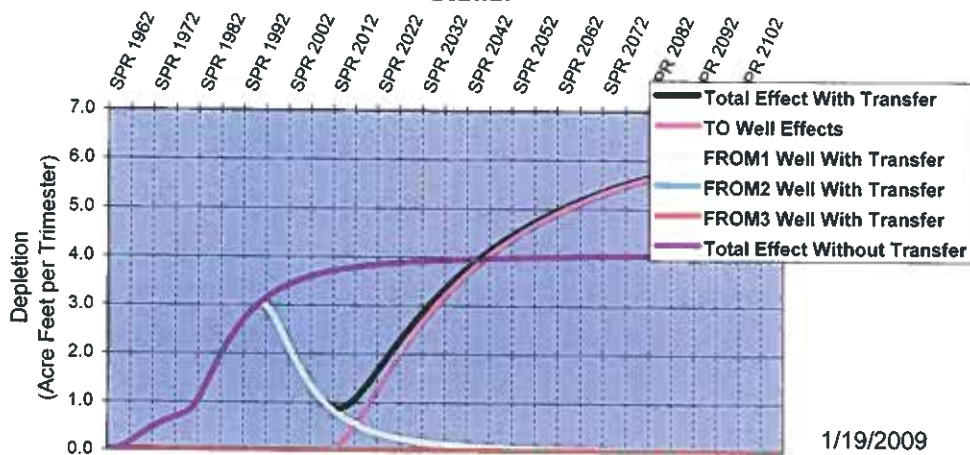
Hydrologic Response--Thousand Springs to Malad

Customer Name: Sage to Stoker **Transfer No: Sage to**



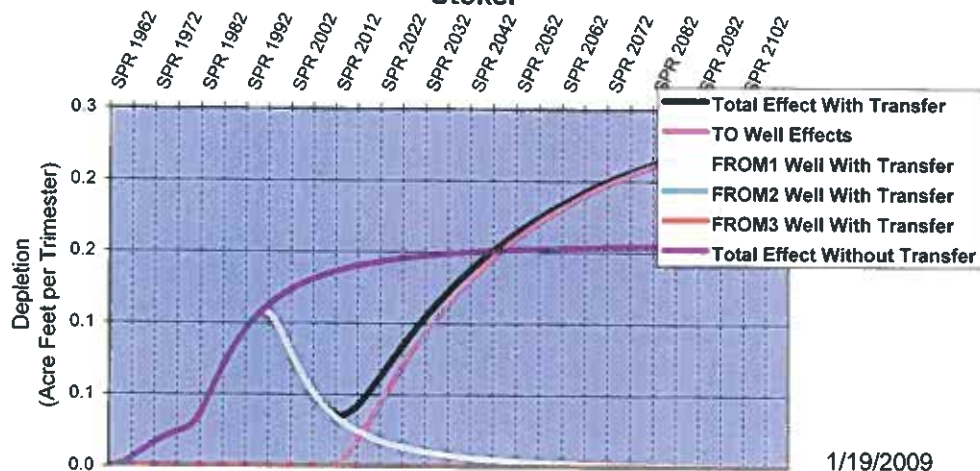
Hydrologic Response-- Malad

Customer Name: **Sage to Stoker** Transfer No: Sage to



Hydrologic Response-- Malad to Bancroft

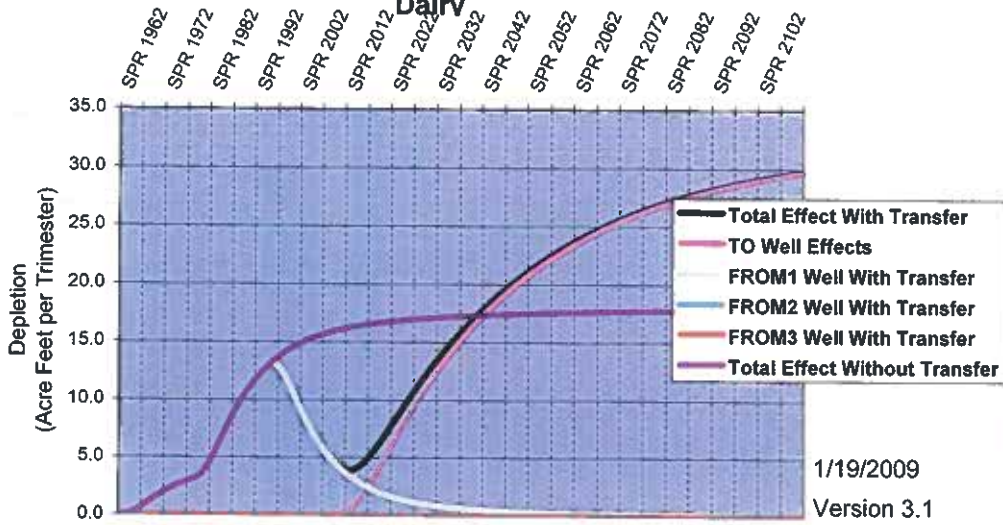
Customer Name: **Sage to Stoker** Transfer No: Sage to



Hydrologic Response--Devil's Washbowl to Buhl

Customer Name: Sage to Stoker Transfer No: Sage to

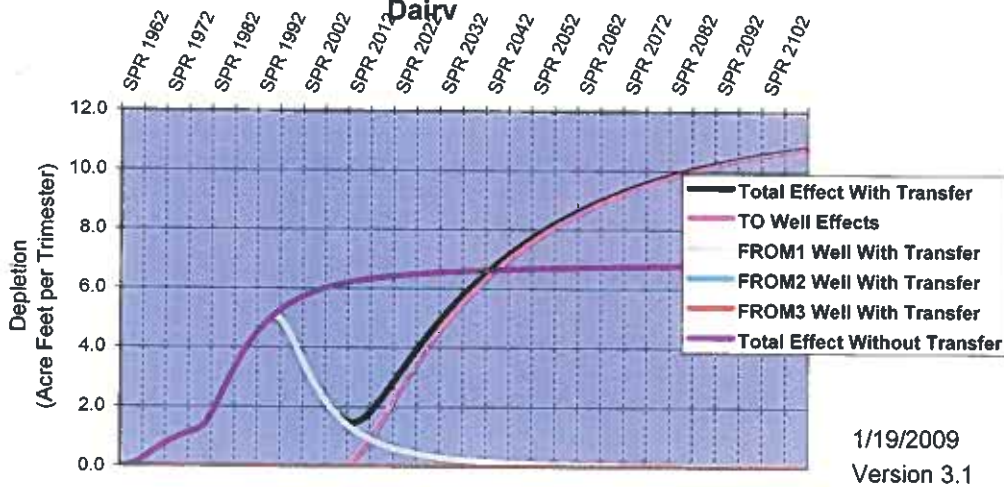
Dairy



Hydrologic Response--Buhl to Thousand Springs

Customer Name: Sage to Stoker Transfer No: Sage to

Dairy



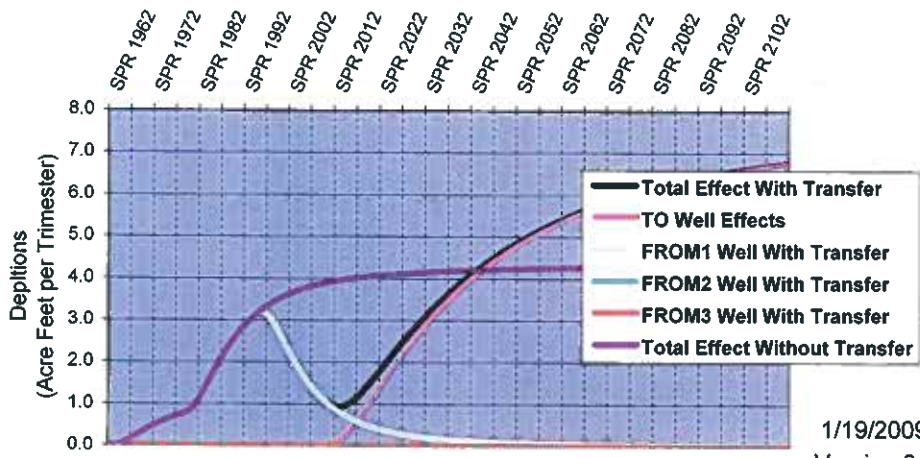
Hydrologic Response--Thousand Springs

Customer Name: Sage to

Transfer No:

Sage to

Stoker



1/19/2009

Version 3.1