Van Bussum, Monica

From: Keith C. Wilson [kwilson@rockymountainenvironmental.com]
Sent: Thursday, June 16, 2011 3:16 PM
To: Van Bussum, Monica
Subject: RE: Water Supply Bank rental - Knife River Corp.
Attachments: ESPA-Binder.pdf

Monica,
I've attached the ESPA Analysis for the Knife River – St Anthony Project.

The volume of 2.9 afa is a Consumptive Use Volume so the Volume of 22-7336 is also a consumptive use Volume. I made the assumption that the crop has been Alfalfa – Less Frequent Cuttings.

Please let me know if you need any additional information.

Keith C. Wilson
Senior Water Rights Analyst
kwilson@rockymountainenvironmental.com

From: Van Bussum, Monica [mailto:Monica.VanBussum@idwr.idaho.gov]
Sent: Wednesday, June 15, 2011 12:14 PM
To: Keith C. Wilson
Subject: RE: Water Supply Bank rental - Knife River Corp.

Hi Keith,

That email I sent with the Mitigation Analysis Tool was quite large and I just want to confirm you received it. Thanks!

FYI – the Knife River – Idaho Falls rental approval should go out tomorrow or Friday for signature and payment.

Monica

From: Keith C. Wilson [mailto:kwilson@rockymountainenvironmental.com]
Sent: Wednesday, June 15, 2011 11:04 AM
To: Van Bussum, Monica
Subject: RE: Water Supply Bank rental - Knife River Corp.

Monica,

Thanks. I get that done and hopefully sent to you by the end of the day.

In your previous email you referenced ***Mitigation Analysis Tool.*** I would appreciate a copy of this tool & instructions on how it is used, and how it differs from the ESPA Analysis.

Thanks,
Keith C. Wilson
Senior Water Rights Analyst
kwilson@rockymountainenvironmental.com

From: Van Bussum, Monica [mailto:Monica.VanBussum@idwr.idaho.gov]
Sent: Wednesday, June 15, 2011 10:52 AM
To: Keith C. Wilson
Subject: RE: Water Supply Bank rental - Knife River Corp.

Hi Keith,

You'll be looking at using 22-7336 as the "from well" for the model run for the Knife River-St. Anthony rental. The entirety of 22-7336 is in the Bank and available for rental.

Monica

From: Keith C. Wilson [mailto:kwilson@rockymountainenvironmental.com]
Sent: Tuesday, June 14, 2011 10:27 AM
To: Van Bussum, Monica
Subject: RE: Water Supply Bank rental - Knife River Corp.

Monica,
I've attached the ESPA Analysis for the **Knife River – Idaho Falls** plant just in case Kristin did not include one with the Water Bank Application.

I am assuming that you will run the ESPA Analysis for the the **Knife River – St. Anthony** plant since I do not have the information as to what water rights in the Water Bank that could be leased from the Water Supply Bank.

Keith C. Wilson
Senior Water Rights Analyst
kwilson@rockymountainenvironmental.com

From: Van Bussum, Monica [mailto:Monica.VanBussum@idwr.idaho.gov]
Sent: Monday, June 13, 2011 4:02 PM
To: Keith C. Wilson
Cc: Kristin Moore
Subject: RE: Water Supply Bank rental - Knife River Corp.

Hi Keith,

Thanks for providing this clarification. As mentioned in my last email, we will need ESPA model runs (and the Mitigation Analysis Tool if required to be run) for each application within 14 days. Please let me know if you have any questions. Thanks!

Monica

From: Keith C. Wilson [mailto:kwilson@rockymountainenvironmental.com]
Sent: Monday, June 13, 2011 9:46 AM
To: Van Bussum, Monica
Cc: Kristin Moore
Subject: RE: Water Supply Bank rental - Knife River Corp.

Monica,
There are two Bank Rental applications:
A. Knife River – ***Idaho Falls*** plant: Plant location (S½NE¼ & N½SW¼ Sec 36, T02N, R37E)
Transfer 3 acres of water right 35-7310A
Knife River will be requesting a rental from the Bank for the same 3 acre Transfer.
The Bank Application was sent with the cover letter dated 06/09/2011.
So it is likely that you will receive the application either today or tomorrow.
will talk with Kristin Moore about getting:
1) the data entry, 2) graphs, 3) calculated effects tab and 4) mitigation analysis tool if mitigation would be required

B. Knife River – ***St. Anthony*** plant: (Plant location SE¼SE¼ Sec 11, T07N, R40E approximately 42 miles North of *Knife River – Idaho Falls plant*

No Water Right Transfer needed
Lease water from the Water Bank for two years.

Hopefully this will clear up any confusion.

Keith C. Wilson
Senior Water Rights Analyst
kwilson@rockymountainenvironmental.com

From: Van Bussum, Monica [mailto:Monica.VanBussum@idwr.idaho.gov]
Sent: Friday, June 10, 2011 4:50 PM
To: Keith C. Wilson
Cc: Cefalo, James
Subject: Water Supply Bank rental - Knife River Corp.

Hi Keith,

I've received the Knife River Corporation rental application to the Water Supply Bank and have identified a possible leased right to use. However, this will need the ESPA model run and, of course, mitigation may be required. We have been requesting that consultants run the model because of IDWR staffing levels. Would you mind running the model and sending me PDFs of 1) the data entry, 2) graphs, 3) calculated effects tab and 4) mitigation analysis tool if mitigation would be required?

I spoke with James Cefalo, who is Watermaster for Water District 100 and one of our IDWR Eastern Regional Office staff, and he said your office had filed a transfer application stating that a Bank application had been filed to rent 35-7310A. I don't see 35-7310A mentioned on the rental application and that is a possibility to rent but of course we would need a model run. It does seem a little counterintuitive to move such a small amount of 35-7310A all the way from Basin 35 to Basin 22, however.

Another possible candidate for the rental is 22-7336, which is located much closer to the proposed rental POU. Would you want to use that right instead?

Either way, we will need you to submit a model run with the required data. When you run the model, please model only the period anticipated for the Bank rental. I can give you 14 days to provide the model run, but please call me if you have questions or might need extra time. Thanks!

Monica

MONICA VAN BUSSUM
Sr. Water Resource Agent
Coordinator, State Water Supply Bank
Idaho Department of Water Resources
322 East Front Street
PO Box 83720
Boise, ID 83720-0098
(208) 287-4907
Fax: (208) 287-6700

Knife River – St. Anthony – Water Bank

ESPA Attachment (Page 1 of 9)

ESPA Ground Water Rights Transfer Spreadsheet Data Summary

TRANSFER NO: Water Bank
TRANSFER NAME: Knife River - St Anthony

PREPARED BY: Keith C Wilson Rocky Mountain Environmental
DATE: 16-Jun-11
Transfer Tool Version Version 3.1

BLUE CELLS ARE SET UP FOR USER ENTRIES

WATER RIGHTS INVOLVED:

Group 1 Transfer Rights		Group 2 Additional Mitigation Rights	
Right No.	Priority Date	Right No.	Priority Date
22-7336	10/22/1980		

HISTORIC BENEFICIAL USE:

Trans/Mit. Rights (group no.)	Acres to Dry Up (ac)	Beneficial Use (afa/yr)	Total (af/yr)
22-7336	1.5	2.4	3.6
		Consumptive	
		Use Volume	

MITIGATION NOTES:

All Volumes are Consumptive Use

MODEL CELL LOCATIONS:

	TO WELL	FROM1 WELL	FROM2 WELL	FROM3 WELL
ROW	54	61	0	0
COLUMN	190	184	0	0

	Start Date		End Date		Water Use		Acres	
	Season	Year	Season	Year	Annual (af/yr)	Trimester (af/trimester)	Authorized (acres)	Notes
TO Well (Projected Use)	Spring	2011	Spring	2130	3.6	1.2	0.0	1/3 Spring Trimester = 1.2 af/tri.... 2/3 Summer Trimester = 2.4 af/tri... Winter Trimester = 0.0 af/tri.
FROM1 Well (With Transfer)	Summer Spring	1980 2011	Winter Spring	2010 2130	3.6 0	1.2 0.0	1.5 0.0	1/3 Spring Trimester = 1.2 af/tri.... 2/3 Summer Trimester = 2.4 af/tri. Winter Trimester = 0.0 af/tri.
FROM1 Well (Without Transfer)	Summer	1980	Spring	2130	3.6	1.2	1.5	

Calculations:

Volume for The Knife River – St. Anthony Project of 2.9 afa is a consumptive use volume so it is necessary to determine the amount of Water Right 22-7336 needed to provide a consumptive use volume:

1. Consumptive Use Values of Water Right 22-7336 = 2.4 ac-ft/ac/season
2. Acres of 22-7336 to provide 2.9 afa = 1.21 acres
3. To facilitate calculations round acres to the next half acre = 1.5 acres
4. Consumptive use Volume for 1.5 ac = 3.6 afa
5. Volume Spring Trimester = 1.2 ac-ft/trimester
6. Volume Summer Trimester = 2.4 ac-ft/trimester
7. Volume Winter Trimester = 0.0 ac-ft/trimester

ET_{Idaho} 2009: Evapotranspiration and Consumptive Irrigation Water Requirements for Idaho

Rexburg Ricks College (NWS --107644)

Data as 06-15-2011

Alfalfa - less frequent cuttings
Precipitation Deficit

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Growing Season[a]	Non Growing Season[b]	Annual
Mean	mm/day												mm		
Monthly[c]	-0.31	-0.25	0.20	0.70	3.54	5.33	4.60	4.97	3.42	1.40	-0.37	-0.38	**726**	-36	708

Irrigation Consumption Crop =	*Alfalfa (Less Frequent Cuttings)*
Precipitation Deficit P_{Def} (mm) =	726
Mean Irr. Requirement (ac-ft/ac/seas.) =	2.38 *ac-ft/ac/seas.*

Water Right 22-7336 - Crop Consumptive Use = 2.38 = 2.4 ac-ft/ac/season
1.64 cfs 287 afa for 82.0 ac
= 3.5 ac-ft/ac/season

Acres of Water Right 22-7336 to provide the 2.9 ac-ft/ac/season with a 2.4 ac-ft/ac/season consumptive use:

Acres = (2.9 ac-ft/ac/season) ÷ (2.4 ac-ft/ac/season) = 1.21 acres
Round 1.21 acres up to next half acre:
Total Acres = 1.5 acres of Water Right 22-7336

Consumptive Volume for 1.5 acres @ 2.4 ac-ft/ac/season:

Volume = (1.5 ac) x (2.4 ac-ft/ac/season) = 3.6 afa

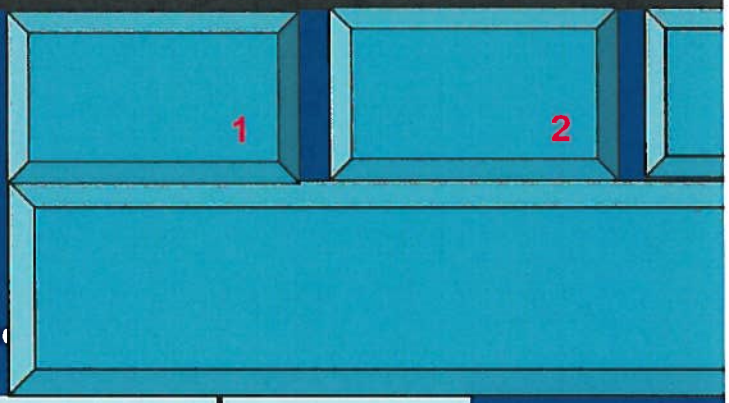
Volume Spring Trimester = (3.6 afa) X (1/3) = 1.2 ac-ft/trimester

Volume Summer Trimester = (3.6 afa) X (2/3) = 2.4 ac-ft/trimester

ENHANCED GROUND-WATER R

UNIVERSITY OF IDAHO - IDAHO WATER RESOURCES RESEARCH INSTIT

Cells this color are set up for user entries



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

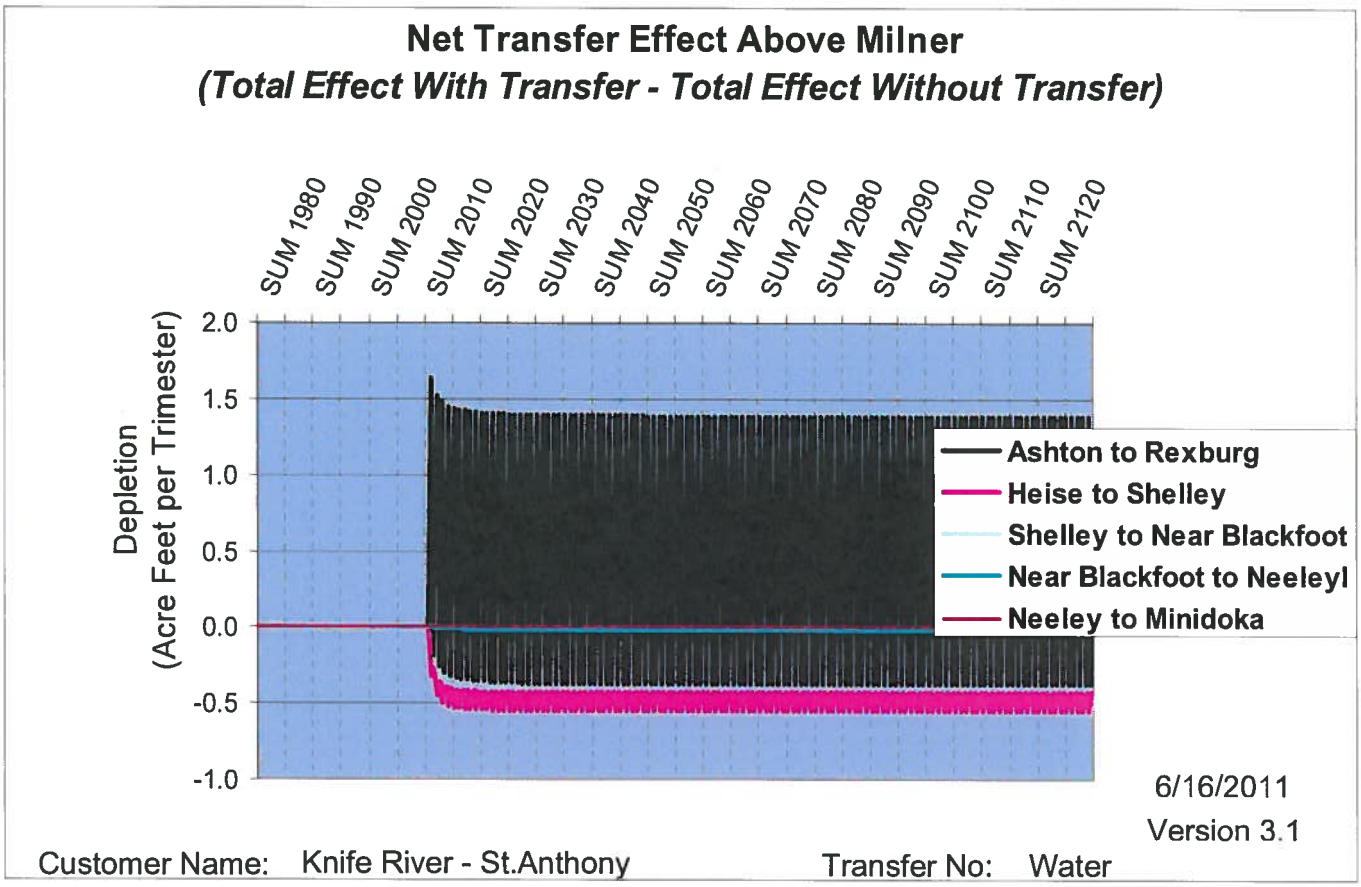
YEAR 1980
SEASON SUMMER

TRANSFER NO: Water Bank
TRANSFER NAME Knife River - St.Anth

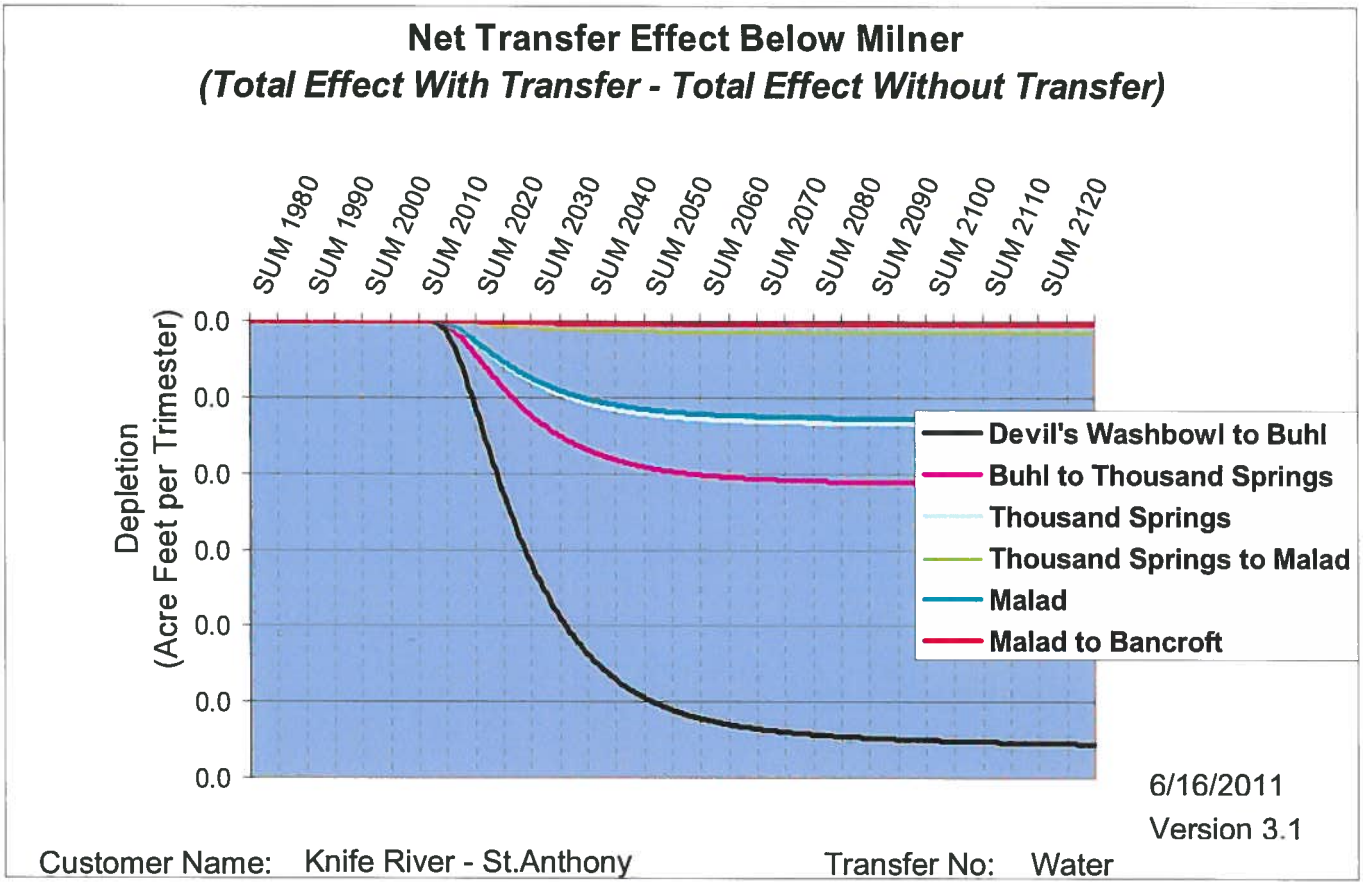
ENTER CELL LOCATIONS:	'TO' CELL	'FROM1' CELL	'FROM2' CELL	'FROM3' CELL
ROW	54	61	0	0
COLUMN	190	184	0	0

TRIMESTER OF ACTIVITY	TO WELL Projected Use AF/TRIMESTER	FROM1 WELL With Transfer AF/TRIMESTER	FROM1 WELL Without Transfer AF/TRIMESTER	FROM2 WELL With Transfer AF/TRIMESTER	FROM2 WELL Without Transfer AF/TRIMESTER
SUM 1980	0	2	2	0	0
WIN 1980	0	0	0	0	0
SPR 1981	0	1	1	0	0
SUM 1981	0	2	2	0	0
WIN 1981	0	0	0	0	0
SPR 1982	0	1	1	0	0
SUM 1982	0	2	2	0	0
WIN 1982	0	0	0	0	0
SUM 2010	0	2	2	0	0
WIN 2010	0	0	0	0	0
SPR 2011	1	0	1	0	0
SUM 2011	2	0	2	0	0
WIN 2011	0	0	0	0	0
SPR 2012	1	0	1	0	0
SUM 2012	2	0	2	0	0
WIN 2012	0	0	0	0	0
SPR 2128	1	0	1	0	0
SUM 2128	2	0	2	0	0
WIN 2128	0	0	0	0	0
SPR 2129	1	0	1	0	0
SUM 2129	2	0	2	0	0
WIN 2129	0	0	0	0	0
SPR 2130	1	0	1	0	0

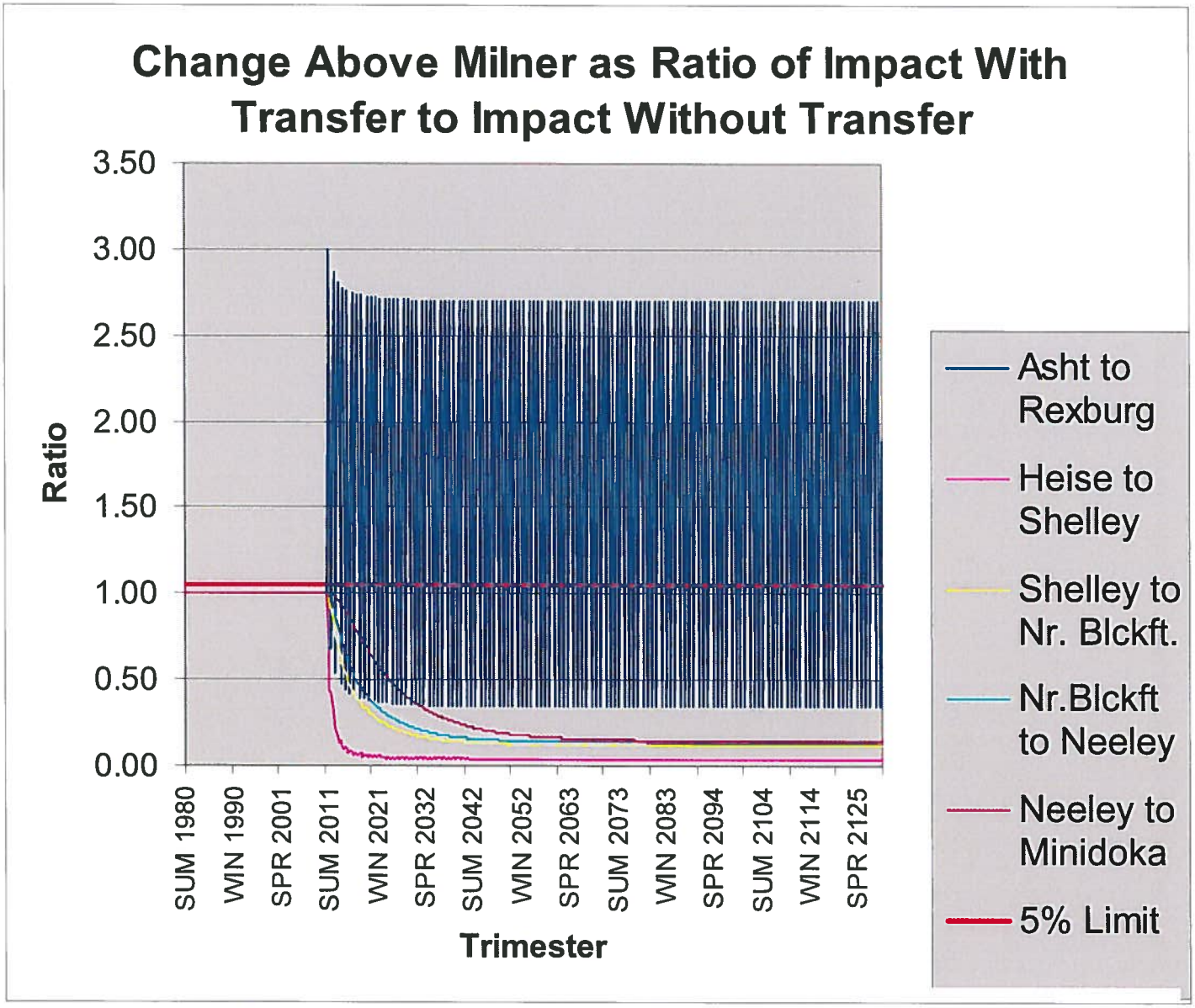
Net Transfer Effect



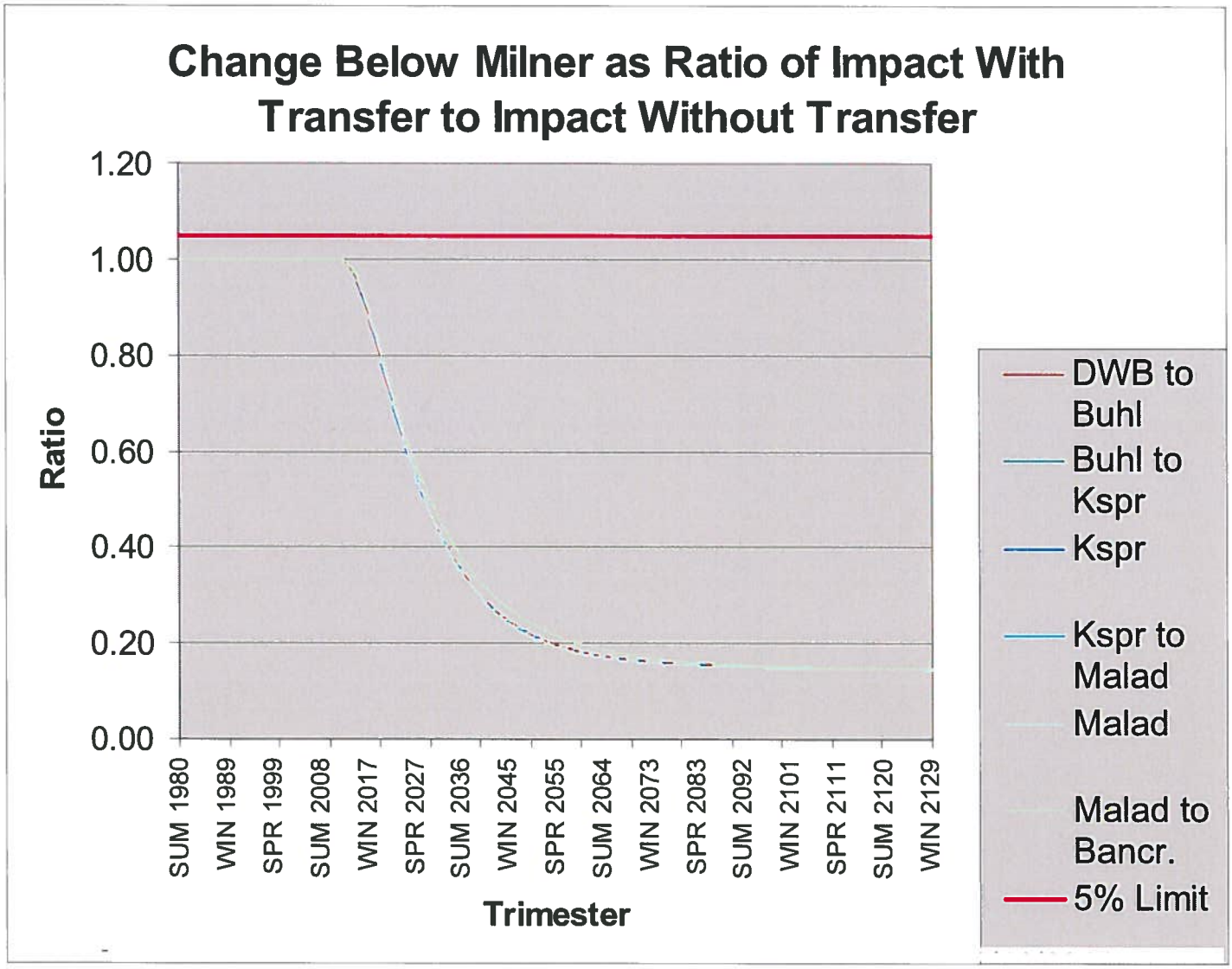
Net Transfer Effect



Change Ratio Graph – Above Milner



Change Ratio Graph – Below Milner



Change Ratio Chart

period	Asht to Rexburg	Heise to Shelley	Shelley to Nr. Blckft.	Nr.Blckft to Neeley	Neeley to Minidoka	DWB to Buhl	Buhl to Kspr	Kspr	Kspr to Malad	Malad	Malad to Bancr.
SPR 2010	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	100.0%
SUM 2010	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	100.0%
WIN 2010	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	100.0%
SPR 2011	2.43	0.75	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	100.0%
SUM 2011	3.00	0.44	0.96	0.99	1.00	1.00	1.00	1.00	1.00	1.00	100.0%
WIN 2011	0.68	0.42	0.91	0.97	1.00	1.00	1.00	1.00	1.00	1.00	100.0%
SPR 2012	2.16	0.33	0.86	0.94	0.99	1.00	1.00	1.00	1.00	1.00	100.0%
SUM 2012	2.86	0.21	0.81	0.91	0.99	1.00	1.00	1.00	1.00	1.00	100.0%
WIN 2012	0.54	0.22	0.76	0.87	0.98	1.00	1.00	1.00	1.00	1.00	99.9%
SPR 2013	2.06	0.18	0.71	0.83	0.97	1.00	1.00	1.00	1.00	1.00	99.8%
SUM 2013	2.81	0.13	0.67	0.79	0.96	1.00	1.00	1.00	1.00	1.00	99.7%
WIN 2013	0.48	0.14	0.63	0.76	0.95	0.99	0.99	0.99	0.99	0.99	99.4%
SPR 2031	1.90	0.04	0.17	0.21	0.34	0.45	0.45	0.45	0.45	0.45	47.8%
SUM 2031	2.70	0.04	0.17	0.20	0.34	0.44	0.44	0.44	0.44	0.44	47.1%
WIN 2031	0.35	0.04	0.17	0.20	0.33	0.44	0.44	0.44	0.44	0.44	46.4%
SPR 2032	1.90	0.04	0.16	0.20	0.33	0.43	0.43	0.43	0.43	0.43	45.7%
SUM 2032	2.70	0.04	0.16	0.20	0.32	0.42	0.42	0.42	0.42	0.42	45.0%
WIN 2032	0.35	0.04	0.16	0.20	0.32	0.42	0.41	0.41	0.41	0.41	44.3%
SPR 2033	1.90	0.04	0.16	0.19	0.31	0.41	0.41	0.41	0.41	0.41	43.7%
SUM 2033	2.70	0.04	0.16	0.19	0.31	0.40	0.40	0.40	0.40	0.40	43.0%
WIN 2033	0.35	0.04	0.16	0.19	0.30	0.40	0.39	0.39	0.39	0.39	42.4%
SPR 2126	1.89	0.04	0.12	0.14	0.14	0.15	0.15	0.15	0.15	0.15	14.6%
SUM 2126	2.70	0.03	0.12	0.14	0.14	0.15	0.15	0.15	0.15	0.15	14.6%
WIN 2126	0.35	0.04	0.12	0.14	0.14	0.15	0.15	0.15	0.15	0.15	14.6%
SPR 2127	1.89	0.04	0.12	0.14	0.14	0.15	0.15	0.15	0.15	0.15	14.6%
SUM 2127	2.70	0.03	0.12	0.14	0.14	0.15	0.15	0.15	0.15	0.15	14.6%
WIN 2127	0.35	0.04	0.12	0.14	0.14	0.15	0.15	0.15	0.15	0.15	14.6%
SPR 2128	1.89	0.04	0.12	0.14	0.14	0.15	0.15	0.15	0.15	0.15	14.6%
SUM 2128	2.70	0.03	0.12	0.14	0.14	0.15	0.15	0.15	0.15	0.15	14.6%
WIN 2128	0.35	0.04	0.12	0.14	0.14	0.15	0.15	0.15	0.15	0.15	14.6%
SPR 2129	1.89	0.04	0.12	0.14	0.14	0.15	0.15	0.15	0.15	0.15	14.6%
SUM 2129	2.70	0.03	0.12	0.14	0.14	0.15	0.15	0.15	0.15	0.15	14.6%
WIN 2129	0.35	0.04	0.12	0.14	0.14	0.15	0.15	0.15	0.15	0.15	14.6%
SPR 2130	1.89	0.04	0.12	0.14	0.14	0.15	0.15	0.15	0.15	0.15	14.6%

The most affected and the only reach to exceed the allowable 1.10 or 10.0%, is the Ashton to Rexburg Reach.

Calculated Effects Chart

	Net Transfer Effect (AF/four months)										
	Ashton to Rexburg	Heise to Shelley	Shelley to Nr Blckft	Nr Blckft T Neeley	Neeley to Minidoka	Dev. Wbl. Buhl	Buhl to Kspr	Kspr	Kspr to Malad	Malad	Malad to Bancroft
SPR 2010	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUM 2010	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WIN 2010	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SPR 2011	0.8	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUM 2011	1.6	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WIN 2011	-0.2	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SPR 2012	0.7	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUM 2012	1.5	-0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WIN 2012	-0.3	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SPR 2013	0.6	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUM 2013	1.5	-0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WIN 2013	-0.3	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SPR 2014	0.6	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUM 2014	1.5	-0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WIN 2014	-0.3	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SPR 2061	0.5	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUM 2061	1.4	-0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WIN 2061	-0.4	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SPR 2062	0.5	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUM 2062	1.4	-0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WIN 2062	-0.4	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SPR 2125	0.5	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUM 2125	1.4	-0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WIN 2125	-0.4	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SPR 2126	0.5	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUM 2126	1.4	-0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WIN 2126	-0.4	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SPR 2127	0.5	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUM 2127	1.4	-0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WIN 2127	-0.4	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SPR 2128	0.5	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUM 2128	1.4	-0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WIN 2128	-0.4	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SPR 2129	0.5	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUM 2129	1.4	-0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WIN 2129	-0.4	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SPR 2130	0.5	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

The first year (2011) produces the Maximum Calculated Effect in the Ashton to Rexburg Reach. All reaches are less than the allowable 2.0 ac-ft/trimester so no mitigation is required.