

Van Dyke, Nick

From: Greg Sullivan [greg.sullivan@brockwayeng.com]
Sent: Monday, May 02, 2011 1:46 PM
To: Van Dyke, Nick
Subject: RE: reitsma
Attachments: 600DOC000.PDF

Nick,

I have made the necessary changes to my analysis. Thanks for the second pair of eyes on it.

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From: Van Dyke, Nick [mailto:Nick.VanDyke@idwr.idaho.gov]
Sent: Tuesday, April 26, 2011 11:31 AM
To: Greg Sullivan
Subject: RE: reitsma

Greg,

I've reviewed your February 3, 2011 letter and attached information. Some things that may need a further look:

- Comparing the FSA records provided and the Summary of FSA Records attachment, several fields have acreage amounts that appear to be off a bit. See attached.
- There is a slight contradiction on the Estimate of Ground Water vs. Surface Water Irrigation attachment. Table indicates 456.7 acres irrigated, however there is also a reference to 444.2 acres.
- Taking a look at the consumptive use analysis attachment, I've suggested some tweaks (this assumes bullet one is mute and acreage amounts are correct). It removes year 1999 from averaging (because 1999 is not used in the estimate of gw vs. sw), swaps grain for beans in year 2000 for half of the section 13 pivot, and removes acres from year 2001.
- Using the 1.89 afa consumptive value proposed (ignoring questions/tweaks above), how is 45.4 acres to be dried calculated? I come up with 32.7 acres needed to be dried. $(1.89 \text{ afa} * 0.72) = 1.36 \text{ afa}$. $44.4 \text{ af needed} / 1.36 \text{ afa} = 32.7 \text{ acres}$.

Feel free to give me a call when you get a chance and we can discuss.

Nick

From: Greg Sullivan [mailto:greg.sullivan@brockwayeng.com]
Sent: Thursday, April 21, 2011 10:18 AM
To: Van Dyke, Nick
Subject: RE: reitsma

Summary of FSA Records

Loughmiller/ Reitsma
Brockway Engineering
GWS

	1999			Legal Section 12
	Field #	Crop	Acres	
31989	1	Wheat	72.3	NENE/ SENE
	2	Alfalfa	42.6	SWNE
	3	Alfalfa	80.0	NENW/ SENW
	4	Wheat	72.0	NESW/ SESW
	5	Wheat	59.8	NWSE/ SWSE
	6	Wheat	13.9	NESE
32174	7	Wheat	53.5	NESE/ SESE
	1	Alfalfa	73.8	NWNW/ SWNW
	2	Wheat	74.1	NWSW/ SWSW
	Total		542.0	

Section 13				
31444	1	Alfalfa	36.8	NENE
	2	Beans	36.1	NWNE
31907	1	Alfalfa	38.8	SENE
	2	Beans	37.2	SWNE
Total			148.9	
			<u>690.9</u>	

	2000			Section 12
	Field #	Crop	Acres	
31989	1NS	Oats	72.3	NENE/ SENE
	2	Alfalfa	42.6	SWNE
	3	Beans	75.0	NENW/ SENW
	4	Barley	72.0	NESW/ SESW
	5	Beans	50.0	NWSE/ SWSE
	6NS	Oats	13.9	NESE
32174	7NS	Oats	53.5	NESE/ SESE
	1	Beans	57.0	NWNW/ SWNW
	1A	Grass	8.4	NWNW/ SWNW
	1B	Grass	8.4	NWNW/ SWNW
	2	Barley	74.1	NWSW/ SWSW
	Total		527.2	

				Section 13
31444	1	Alfalfa	36.8	NENE
	2	Wheat	36.1	NWNE
31907	1	Alfalfa	38.8	SENE
	2	Wheat	37.2	SWNE
Total			148.9	
			<u>676.1</u>	

	2001			Legal Section 12
	Field #	Crop	Acres	
31989	1	Alfalfa	72.3	NENE/ SENE
	2	Alfalfa	42.6	SWNE
	3	Potatoes	80.0	NENW/ SENW
	4	Fallow	---	NESW/ SESW
	5	Wheat	59.8	NWSE/ SWSE
	6	Alfalfa	13.9	NESE
32174	7	Alfalfa	53.5	NESE/ SESE
	1	Potatoes	73.8	NWNW/ SWNW
	2	Fallow	---	NWSW/ SWSW
	Total		395.9	

	Section 13			
31444	1	Alfalfa	36.8	NENE
	2	Fallow	---	NWNE
31907	1	Alfalfa	38.8	SENE
	2	Fallow	---	SWNE
	Total		75.6	
			<u>471.5</u>	

	2002			Section 12
	Field #	Crop	Acres	
31989	1	Alfalfa	72.3	NENE/ SENE
	2	Alfalfa	42.6	SWNE
	3	Wheat	80.0	NENW/ SENW
	4	Corn	58.0	NESW/ SESW
	4A	Barley	7.8	NESW
	4B	Barley	7.0	SESW
32174	5	Fallow	---	NESE/ SESE
	6	Alfalfa	13.9	NESE
	7	Alfalfa	53.5	NESE/ SESE
	1	Wheat	73.8	NWNW/ SWNW
	2	Corn	74.1	NWSW/ SWSW
	Total		483.0	

32461	1	Potatoes	128.0	NE 1/4
	2	Oats	7.0	NWNE
	3	Oats	7.0	SWNE
	4	Oats	7.0	SENE
	Total		149.0	
			632.0	

Loughmiller/ Reitsma
Summary of FSA Records
Brockway Engineering

	2003			Legal Section 12
	Field #	Crop	Acres	
31989	1	Alfalfa	72.3	NENE, SENE
	2	Alfalfa	42.6	SWNE
	3	Corn	63.9	NENW/ SENW
	4	Wheat	65.0	NESW/ SESW
	5	Wheat	59.8	NWSE/ SWSE
	6	Alfalfa	13.9	NESE
	7	Alfalfa	53.5	NESE/ SESE
32174	1	Corn	59.7	NWNW/ SWNW
	1A	Grass	7.0	NWNW/ SWNW
	1B	Grass	7.0	NWNW/ SWNW
	2	Wheat	57.4	NWSW/ SWSW
	2A	Grass	7.0	NWSW/ SWSW
	2B	Grass	7.0	NWSW/ SWSW
	Total		516.1	

Section 13			
32461	1	Barley	128.0
	2	Fallow	---
	3	Fallow	---
	4	Fallow	---
	5	Fallow	---
Total			128.0
			644.1

	2005			Legal Section 12
	Field #	Crop	Acres	
32769	1	Alfalfa	74.9	NENE, SENE
	2	Wheat	44.93	SWNE
	3	Barley	15.75	NENW
	4	Barley	7.0	NWNW
	5	Grass	8.1	SWNW
	6	Grass	15.0	SWNW
	7	Barley	138	NW 1/4
	8	Corn	121.92	SW 1/4
	9	Grass	8.2	SWSW
	10	Barley	7.0	SESW
	11	Wheat	59.14	NWSE/ SWSE
	12	Alfalfa	69.92	NESE/ SESE
Total			569.86	

Section 13			
32461	1	Corn	119.7
	2	Wheat	7.0
	3	Wheat	7.28
	4	Wheat	17.59
Total			151.57
			721.43

	2004			Section 12
	Field #	Crop	Acres	
31989	1	Alfalfa	75.1	NENE, SENE
	2	Beans	44.8	SWNE
	3	Potatoes	63.9	NENW/ SENW
	4	Barley	34.2	NENW/ SENW/ NWSW/ SESW
	5	Beans	60.6	NWSE, SWSE
	6	Beans	14.8	NESE
	7	Alfalfa	55.1	NESE/ SESE
32174	8	Barley	65.0	NESW/ SESW
	1	Fallow	8.1	NWNW
	2	Potatoes	59.7	NWNW/ SWNW
	3	Fallow	15.0	SWNW/ NWSW
	4	Barley	57.4	NWSW/ SWSW
Total			530.6	

32461	1	Corn	123.79	
	2	Wheat	7.0	
	3	Wheat	7.28	
	4	Wheat	8.7	
	5	Oats	8.89	
Total			155.66	
			686.26	

Acres Irrigated

1999	690.9
2000	676.1
2001	471.5
2002	632.0
2003	644.1
2004	686.3
2005	721.4

Consumptive Use Analysis

Loughmiller/Reitsma
Brockway Engineering
GWS

Summary of FSA Records and Evapotranspiration and Consumptive Irrigation Water
Requirements for 47-8011A in Section 13

Field	1999	2000	2001	2002	2003	2004	2005
31444 1	Alfalfa	Alfalfa	Alfalfa				
2	Beans	Wheat	Fallow				
31907 1	Alfalfa	Alfalfa	Alfalfa				
2	Beans	Wheat	Fallow				
32461 1				Potatoes	Barley	Corn	Corn
2				Oats	Fallow	Wheat	Wheat
3				Oats	Fallow	Wheat	Wheat
4				Oats	Fallow	Wheat	Wheat
5					Fallow	Oats	

Field	1999	2000	2001	2002	2003	2004	2005
	Acres						
31444 1	36.8	36.8	36.8				
2	36.1	36.1	36.1				
31907 1	38.8	38.8	38.8				
2	37.2	37.2	37.2				
32461 1				128	128.0	123.79	119.7
2				7.0		7.0	7.0
3				7.0		7.28	7.28
4				7.0		8.7	17.59
5						8.9	

From Hollister $P_{(def)}$	beans	381 mm	1.25 ft
	alfalfa	818 mm	2.68 ft
	grain	625 mm	2.05 ft
	corn	527 mm	1.73 ft
	potatoes	494 mm	1.62 ft

Crop Acreage and P_{def} for Section 13

	beans	alfalfa	grain	corn	potatoes	Acreage	AFA
	1.25 Ft	2.68 Ft	2.05 Ft	1.73 Ft	1.62 Ft		
1999	73.3	75.6				148.9	294.5
2000		75.6	73.3			148.9	353.2
2001		75.6				75.6	202.9
2002			21		128	149.0	250.5
2003			128.0			128.0	262.5
2004			31.87	123.79		155.7	279.4
2005			31.87	119.7		151.6	272.3

Total Average	136.8	273.6
2000-2004 Average	131.4	269.7

Average FT/acre P_{def}	2.00
2000-2004 Average FT/acre P_{def}	2.05

134.8 / 270.1
= 2

Loughmiller/Reitsma
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Estimate of Ground Water vs. Surface Water Irrigation

Year	Estimated from Power records		SCRR Deliveries	
	IW-1 (acre-ft)	IW-2 (acre-ft)	Sect. 12 (Lateral 17 Headgate 17-C) (acre-ft)	Sect. 13 (Lateral 17 Headgate 17-B) (acre-ft)
2000	393.82	449.80	265.00	0.00
2001*	400.74	485.91	284.00	0.00
2002	471.39	513.37	236.00	64.00
2003	475.14	545.49	266.00	0.00
2004	429.97	515.50	264.00	210.00
2005	233.37	405.38	430.00	54.00

*In 2001 Loughmiller Inc. took part in the Idaho Power buyout. However, 471.5 acres were still irrigated with ground water and SRCC water. Both the wells and booster pumps were powered with diesel generators. Therefore, the values for the wells are an average of the volumes used in 2000, 2002-2005.

Year	Irr Ac	Total AF	Acre-Feet/Acre	SW %	GW %
2000	676.10	1108.61	1.64	24%	76%
2001*	471.50	1170.65	2.48	24%	76%
2002	632.00	1284.76	2.03	23%	77%
2003	644.10	1286.63	2.00	21%	79%
2004	686.26	1419.46	2.07	33%	67%
2005	721.43	1122.75	1.56	43%	57%
Average	638.57	1232.15	1.96	28%	72%

(Allen & Robinson, 2009) at Hollister

2.05

2000-2004 Average FT/acre Pdf

Average Primary Ground Water Use

72%

1.48

Average FT/acre Pdf of
Primary Ground Water

Water Right Transfer Analysis

Loughmiller/Reitsma
Brockway Engineering
GWS

Irrigation to Stock and Commercial Water Transfer Calculations

Current **14.10 AFA**
Demand **58.50 AFA**
Total Demand Plus % 58.50 AFA **0%**
Additional Water Needed 44.40 AFA

<http://www.kimberly.uidaho.edu/ETIdaho/stcwrstats.php?station=101002&cover=15&stats=Deficit>

Total Acres	146				
CFS	1.87			625 mm	Ground Water & Shares
AFA	584	4 AFA/acre		2.05 ft/season	
Acres sold/ Transferring	30.1			61.77 AFA	
	0.2062 %				

Average Primary Ground Water Use 72% 1.48 Average FT/acre Pdef of Primary Ground Water

Water Right	Amount				Transfer Amount			Remaining Amount		
	cfs	AFA	Acres	Acre Limit	cfs	AFA	Acres	cfs	AFA	Acres
47-8011A	1.87	584	146	146	0.54	44.40	30.1	1.33	463.60	115.9
Totals	1.87	584	146	146	0.54	44.40	30.1	1.33	463.60	115.9