

IRRIGATION REQUIREMENT ANALYSIS

Banks Island

DRAFT

Water Rights
3-2000 & 3-4009

By

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Associated Earth Sciences

July 15, 2006

ASSOCIATED EARTH SCIENCES, Inc.

SEPTIC SOILS EVALUATIONS - STORM DRAIN SOILS DATA - SOIL SURVEYS - SOIL WETLAND INVESTIGATIONS
RIVER/POLE SAMPLING - GEOLOGY INVESTIGATIONS - SITE INVESTIGATION

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July 15, 2006

**Field Water Requirement Analysis
George Colwell Property
Banks Island
Payette, Idaho**

DRAFT

Water Rights: 3-2006 and 3-4009

A request was made by Dana Hofstetter to make an analysis of the on-farm irrigation requirements for two water right parcels on the Banks Island property in the Snake River. Also requested were the conveyance losses associated with this parcel. The property is entirely in flood-irrigated pasture. Because of high river flows I was unable to visit the property to evaluate soil conditions onsite. Therefore, I utilized data from the Payette County Area Soil Survey. The bulk of the pasture portion of the island is one soil, Baldock silt loam. There is one other delineation of Clems fine sandy loam. I cut that area out and it is noted on the map as field 1A. I would suggest that a field evaluation be made of actual soil conditions to determine if they are different from soils as mapped. Conveyance losses were based on ditch sizing provided me by an e-mail from Jennifer Dean dated April 13, 2006.

Field Headgate Water Requirement

Soil survey data was utilized to calculate available water holding capacity of the soils. The Allen and Brockway evapotranspiration tables were used to derive crop water requirements. The soils and ET factors were combined to calculate the Management Allowed Deficit (MAD). Physical properties tables printed from the NRCS database are provided in the resource data section of the report. Adjustments to AWC for organic matter and salts were not required for the subject soils. Field boundaries were determined visually from 2004 color aerial photography. Area of each field was calculated by the Arc View program. Direction of irrigation was assumed from the imagery and length of run is indicated on the field boundary map. If needed, these assumptions can be adjusted after a field visit is accomplished.

The FURROW program was used to determine the efficiency values used in the calculations. The program was run using 24-hour sets and scaled field lengths. The 1020 foot length of run on field 1 dictates a 24-hour set. To make sets uniform across the entire island I used 24-hours for all fields. This decision was based on the logistics of access to the island to change sets. I started with inflow rates of 10 GPM and made FURROW runs until no output occurred.

DRAFT

The FIELD IRRIGATION REQUIREMENT spreadsheet developed by IDWR was used to calculate the requirement for each field. I created a FIR worksheet for each field and a composite for all four fields. Copies of FURROW runs and the FIR spreadsheet for each field are included. The efficiency and water requirement values for each field were summarized and are shown in the MAD worksheet.

Conveyance losses

Conveyance losses were based on ditch sizing provided me by an e-mail from Jennifer Dean dated April 13, 2006. Length and location of ditches were determined from the imagery. The Worstell system of estimating canal losses based on top width of the ditch was used to estimate losses. An “i” value (seepage rate) for the formula was determined to be 0.8 feet per day from the table on page 36 of the Hubble report. This value reflects losses for the silt loam soils present. The “Conveyance Loss Table” incorporates the formula and yields a CFS seepage loss for each segment and a summary for the entire system.

Summary

Calculations based on this evaluation resulted in the following Field Irrigation Requirement (FIR) values:

2.56 CFS

1.63 miner's inch

Losses from conveyance system:

0.04 CFS

Total diversion requirement calculations:

Field Irrigation Requirement + conveyance loss = total diversion requirement in CFS

Converting to miners inch per acre –

Total diversion requirement in CFS divided by acres = miners inch per acre
0.02

$2.56 + 0.04 = 2.60 \text{ cfs (1.64 miners inch per acre)}$

Resource Data

Soils & Climate



Soil Map Legend

Payette County, Idaho

Map Symbol	Soil Name
Ba	Baldock silt loam
CIB	Clems fine sandy loam, 0 to 3 percent slopes

Symbol: **Ba**
Map Unit Name: **Baldock silt loam, 0 to 2 percent slopes**

Composition:

Named soil:	Baldock silt loam
Contrasting inclusions:	15% Bowman, Chance, Moulton, and Notus

Setting:

Position on Landscape:	low terraces and bottoms
Elevation:	2100 to 2350 feet
Average Precipitation:	9 to 12 inches
Average Annual Temperature:	50 to 52 degrees
Frost Free Season:	140 to 160 days

Typical Profile:

0-23 inches - gray silty loam
24-48 inches - substratum, light brownish-gray silt loam
49-60 inches - substratum, light brownish-gray fine sandy loam

Soil Properties:

Root Zone Depth	more than 60 inches
Drainage:	somewhat poorly drained
Permeability:	moderately slow
Available Water:	10 to 13 inches for the profile
Seasonal water table depth:	fluctuates between 3 to 5 feet

Runoff:	slow
Hazard of Erosion:	slight or none
Capability Unit:	3w irrigated

Symbol: **CIB**
Map Unit Name: **Clems fine sandy loam, 0 to 3 percent slopes**

Composition:
Named soil: Clems fine sandy loam
Contrasting inclusions: 15% Owyhee

Setting:
Position on Landscape: intermediate terraces
Elevation: 2200 to 2500 feet
Average Precipitation: 9 to 11 inches
Average Annual Temperature: 50 to 52 degrees
Frost Free Season: 140 to 160 days

Typical Profile:
0-9 inches - grayish-brown fine sandy loam
10-33 inches - subsoil, brown fine sandy loam
34-52 inches - substratum, light brownish-gray fine sandy loam
53-60 inches - substratum, light-gray and white silt loam

Soil Properties:
Root Zone Depth: more than 60 inches
Drainage: well-drained
Permeability: moderately rapid
Available Water: 8 to 10 inches for the profile
Seasonal water table depth: none

Runoff: slow
Hazard of Erosion: slight to moderate
Capability Unit: 2e irrigated

Table H. - Engineering Index Properties

Payette County, Idaho

Absence of an entry indicates that the data were not estimated.

Map Symbol and Soil Name	Depth	USDA Texture	Classification		Fragments		Percent Passing Sieve Number				Liquid Limit	Plasticity Index
			Unifed	AASHTO	>10	3-10	4	10	40	200		
					Inches	Inches						
					Pct	Pct						
Ba:												
Baldock	0-11	Silt Loam	CL-ML ML	A-4	0	0	90-100	90-100	75-100	55-90	20-30	NP-10
	11-48	Loam	CL	A-4	0	0	90-100	90-100	75-100	55-85	20-30	5-15
		Silt Loam	CL-ML	A-6								
	48-60	Fine Sandy Loam	SM	A-2	0	0	75-100	75-100	50-80	25-50	20-25	NP-5
		Sandy Loam		A-4								
Bowman	---				---	---	---	---	---	---	---	---
Chance	---				---	---	---	---	---	---	---	---
Moulton	---				---	---	---	---	---	---	---	---
Notus	---				---	---	---	---	---	---	---	---
CIB:												
Clems	0-9	Fine Sandy Loam	SM	A-4	0	0	100	95-100	75-85	40-50	20-30	NP-5
	9-52	Fine Sandy Loam	SM	A-4	0	0	100	95-100	75-100	35-50	20-30	NP-5
		Sandy Loam										
	52-60	Silt Loam	ML	A-4	0	0	100	95-100	90-100	75-85	25-35	NP-10
Owyhee	---				---	---	---	---	---	---	---	---

Table J1b. - Physical Properties of the Soils

Payette County, Idaho

Entries under "Erosion Factors--T" apply to the entire profile. Entries under "Wind Erodibility Group" and "Wind Erodibility Index" apply only to the surface layer. Absence of an entry indicates that data were not estimated.

Map Symbol and Soil Name	Depth	Sand	Silt	Clay	Moist Bulk Density	Permeability (Ksat)	Available Water Capacity	Linear Extensi- bility	Organic Matter	Erosion Factors			Wind Erodi- bility Group	Wind Erodi- bility Index
										Kw Kw	Kf Kf	T T		
	In	Pct	Pct	Pct	g/cc	In/Hr	In/in	Pct	Pct					
Ba: Baldock	0-11	---	---	12-22	1.20-1.40	0.6-2	0.16-0.21	0.0-2.9	1.0-2.0	.32	.32	5	4L	86
	11-48	---	---	18-27	1.25-1.40	0.6-2	0.16-0.21	0.0-2.9	0.0-0.5	.32	.32			
	48-60	---	---	5-15	1.35-1.50	2-6	0.09-0.15	0.0-2.9	0.0-0.5	.10	.10			
Bowman	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Chance	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Moulton	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Notus	---	---	---	---	---	---	---	---	---	---	---	---	---	---
ClB: Clems	0-9	---	---	8-18	1.50-1.70	2-6	0.13-0.15	0.0-2.9	1.0-2.0	.32	.32	5	3	86
	9-52	---	---	8-18	1.50-1.70	2-6	0.13-0.15	0.0-2.9	0.0-0.5	.32	.32			
	52-60	---	---	5-15	1.40-1.60	0.2-0.6	0.19-0.21	0.0-2.9	0.0-0.5	.49	.49			
Owyhee	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table J2. - Chemical Properties of the Soils

Payette County, Idaho

Absence of an entry indicates that data were not estimated.

Map Symbol and Soil Name	Depth	Cation Exchange Capacity	Effective Cation Exchange Capacity	Soil Reaction	Calcium Carbon- ate	Gypsum	Salinity	Sodium Adsorp- tion Ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	mmhos/cm	
Ba:								
Baldock	0-11	10-20	---	7.9 - 8.4	15-25	0	2.0-4.0	20-30
	11-48	15-25	---	7.4 - 9.0	5-15	0	2.0-4.0	10-20
	48-60	5.0-15	---	7.9 - 8.4	5-15	0	2.0-4.0	0-10
Bowman	---	---	---	---	---	---	---	---
Chance	---	---	---	---	---	---	---	---
Moulton	---	---	---	---	---	---	---	---
Notus	---	---	---	---	---	---	---	---
CIB:								
Clems	0-9	5.0-20	---	6.6 - 8.4	0	0	0.0-2.0	0
	9-52	5.0-15	---	6.6 - 8.4	0	0	0.0-2.0	0
	52-60	5.0-10	---	7.9 - 8.4	15-25	0	0.0-2.0	0-5
Owyhee	---	---	---	---	---	---	---	---

80th Percentile Values of Monthly ET (mm/day)

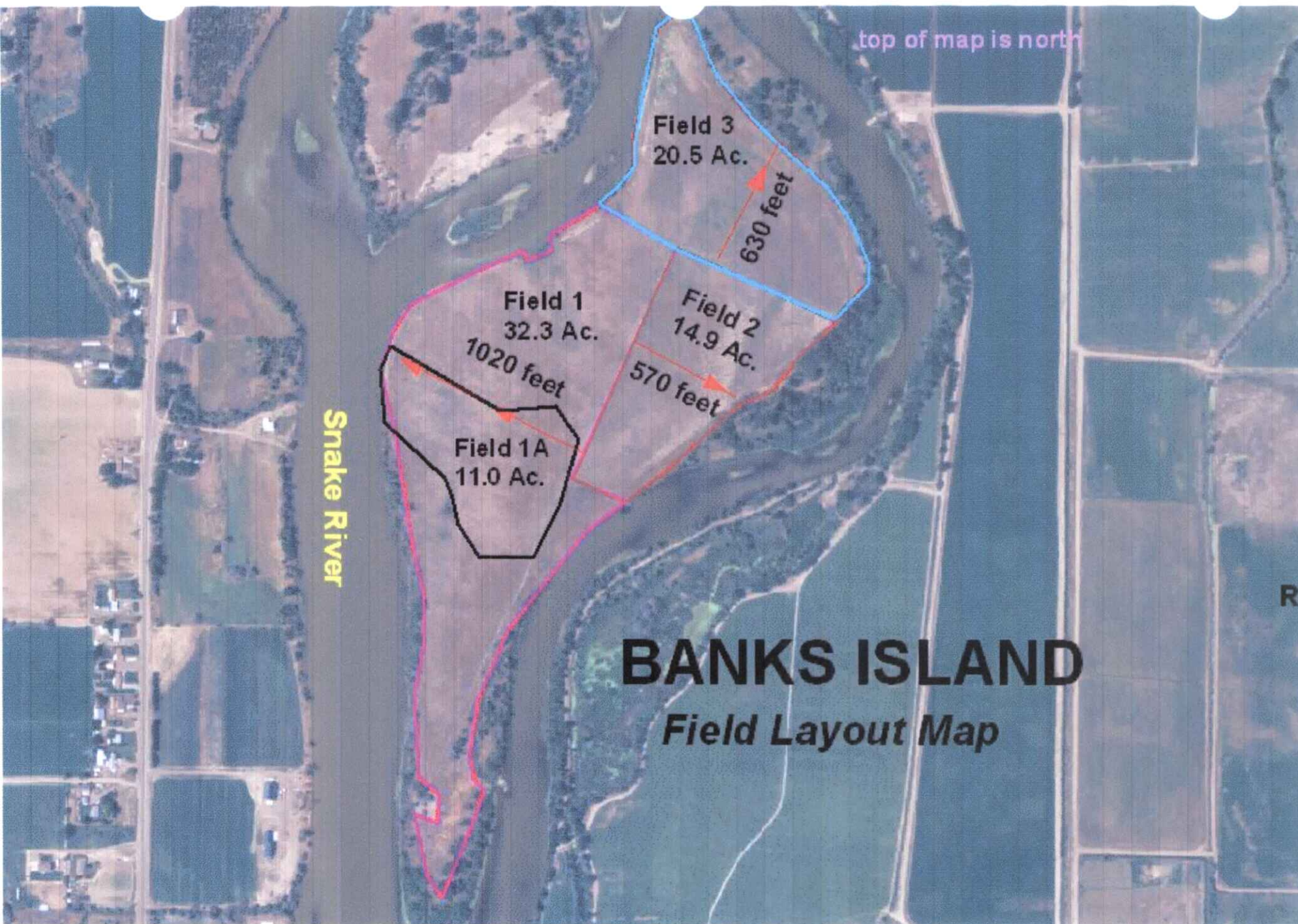
Station: Payette

		ETR	ALFH	ALFS	BEANS	F CRN	SILGE	S CRN	PEAS	POTAT	SBEET	SGRAN	WGRAN	PAST	ORCHD	VEGES	ONION	HOPS
March	AVE ET	2.29		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.69	1.24	0.79	0.00	0.00	0.00	0.00
March	STDD ET	0.29		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.16	0.10	0.00	0.00	0.00	0.00
March	80PCT ET	2.53	U	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77	1.37	0.87	0.00	0.00	0.00	0.00
			S															
April	AVE ET	4.78	E	3.74	0.00	0.00	0.00	0.00	1.52	1.44	1.44	1.54	4.54	3.45	2.03	0.00	1.54	1.50
April	STDD ET	0.36		0.28	0.00	0.00	0.00	0.00	0.11	0.11	0.11	0.11	0.34	0.26	0.15	0.00	0.11	0.11
April	80PCT ET	5.08		3.98	0.00	0.00	0.00	0.00	1.61	1.53	1.53	1.63	4.83	3.67	2.16	0.00	1.63	1.59
			E															
May	AVE ET	6.38	T	5.73	1.91	1.91	1.91	1.91	4.27	2.64	1.93	5.02	6.38	4.91	4.03	2.10	3.13	4.47
May	STDD ET	0.41	R	0.37	0.12	0.12	0.12	0.12	0.28	0.17	0.13	0.33	0.41	0.32	0.26	0.14	0.20	0.29
May	80PCT ET	6.73		6.04	2.01	2.01	2.01	2.01	4.51	2.78	2.04	5.30	6.73	5.18	4.25	2.22	3.30	4.71
June	AVE ET	8.01	F	6.82	4.05	3.71	3.71	3.79	5.92	6.34	4.23	7.99	8.01	6.16	6.56	4.86	5.25	7.59
June	STDD ET	0.40	O	0.34	0.20	0.18	0.18	0.19	0.30	0.32	0.21	0.40	0.40	0.31	0.33	0.24	0.26	0.38
June	80PCT ET	8.35	R	7.11	4.22	3.86	3.86	3.95	6.17	6.61	4.41	8.33	8.35	6.42	6.84	5.06	5.47	7.91
July	AVE ET	8.77		5.30	8.08	8.02	8.02	7.97	2.41	7.24	8.60	7.25	6.19	6.76	7.46	6.97	6.87	8.34
July	STDD ET	0.27	A	0.16	0.25	0.25	0.25	0.25	0.07	0.22	0.27	0.22	0.19	0.21	0.23	0.21	0.21	0.26
July	80PCT ET	9.00	L	5.43	8.29	8.23	8.23	8.18	2.47	7.43	8.83	7.44	6.35	6.94	7.65	7.15	7.05	8.56
			F															
August	AVE ET	7.27	A	2.95	3.52	6.66	6.66	6.27	0.00	5.33	7.08	1.48	1.20	5.60	6.18	5.68	5.82	6.90
August	STDD ET	0.31	L	0.13	0.15	0.29	0.29	0.27	0.00	0.23	0.31	0.06	0.05	0.24	0.27	0.25	0.25	0.30
August	80PCT ET	7.53	F	3.06	3.65	6.90	6.90	6.50	0.00	5.52	7.34	1.53	1.24	5.80	6.41	5.89	6.03	7.15
			A															
September	AVE ET	5.48		1.40	0.58	3.94	3.94	0.00	0.00	2.48	4.65	0.00	0.00	4.22	4.55	3.44	4.24	4.93
September	STDD ET	0.34		0.09	0.04	0.24	0.24	0.00	0.00	0.15	0.29	0.00	0.00	0.26	0.28	0.21	0.26	0.30
September	80PCT ET	5.77	H	1.48	0.61	4.14	4.14	0.00	0.00	2.61	4.89	0.00	0.00	4.44	4.79	3.62	4.46	5.18
			A															
October	AVE ET	3.21	Y	0.33	0.00	0.86	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.47	2.04	0.00	0.00	0.00
October	STDD ET	0.25		0.03	0.00	0.07	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.19	0.16	0.00	0.00	0.00
October	80PCT ET	3.42		0.36	0.00	0.92	0.00	0.00	0.00	0.00	2.13	0.00	0.00	2.63	2.17	0.00	0.00	0.00

ET and standard deviation data (AVE ET and STDD ET) taken from Appendix E (unpublished) of Brockway, C.E., and R.G. Allen, 1983, Estimating Consumptive Irrigation Requirements for Crops in Idaho, Idaho Water and Energy Resources Research Institute.

80th Percentile ET values (80PCT ET) calculated based on Walpole, R.E., and R.H. Meyers, 1985, third edition, PROBABILITY AND STATISTICS FOR ENGINEERS AND SCIENTISTS, New York: Macmillan Publishing Company, pp. 132-144 and 574.

Field Requirement Calculations



Management Allowed Deficit (by soil)

Project: Big Banks Island

Date: 7/15/06

Rights:

Crop: pasture

Root Zone: 36"

Stress Point: 50%

Soil	Map Unit Symbol	Profile AWC	MAD
Baldock	Ba	7.2	3.6
Clems	Clb	5.4	2.7

Soil Profile Available Water

Soil Name: Baldock

Map Symbol: Ba

Crop: pasture

Root Zone: 36"

Horizon Thickness	AWHC in/in	AWC in layer
36	0.2	7.2
		0.0
		0.0
		0.0
		0.0
		0.0
		0.0
		0.0
TOTAL	-	7.2

Soil Profile Available Water

Soil Name: Clems

Map Symbol: Clb

Crop: pasture

Root Zone: 36"

Horizon Thickness	AWHC in/in	AWC in layer
36	0.15	5.4
		0.0
		0.0
		0.0
		0.0
		0.0
		0.0
		0.0
		0.0
TOTAL	-	5.4

On-farm Requirement Summary

Big Banks Island

Water Right 3-2003

Field Number	Field Acres	Run Length	Representative Soil Series	Intake Family	MAD Value	Efficiency (%)	Total Field Requirement (CFS)
1	32.3	1020	Baldock	0.5	3.6	49	0.89
1A	11.0	1020	Clems	0.55	2.7	34	0.41
2	14.9	570	Baldock	0.5	3.6	25	0.74
3	20.5	630	Baldock	0.5	3.6	49	0.52
TOTAL	79						2.56
Total on-farm requirement in miner's inches per acre							1.63
CFS per acre requirement for parcel							0.03

NOTE: the FIR calculator provides a net value of 2.48 CFS

Calculations based on 24 hour sets

INTAKE	DESIGN	FURROW	FURROW	FURROW	INFLOW	APPROXIMATE	ADVANCE	GROSS	NET		DEEP	IRRIGATION
FAMILY	APPLIC.	SLOPE	SPACING	LENGTH	RATE	INFLOW TIME	TIME	IRRIGATION	IRRIGATION	RUNOFF	PERC.	EFFICIENCY
	Inches	Ft/Ft	Feet	Feet	Gpm	Hours	Minutes	Inches	Inches	Inches	In.	%
0.50	3.60	.010	2.00	1020	8.0	24	188.4	9.06	6.98	1.56	3.90	39.74
0.50	3.60	.010	2.00	1020	7.0	24	235.9	7.93	6.61	0.66	3.66	45.42
0.50	3.60	.010	2.00	1020	6.5	24	271.0	7.36	6.38	0.23	3.53	48.91
0.50	3.60	.010	2.00	1020	6.0	24	318.5	6.79	6.38	0.23	3.53	48.91

Field 1

49%

INTAKE	DESIGN	FURROW	FURROW	FURROW	INFLOW	APPROXIMATE	ADVANCE	GROSS	NET		DEEP	IRRIGATION
FAMILY	APPLIC.	SLOPE	SPACING	LENGTH	RATE	INFLOW TIME	TIME	IRRIGATION	IRRIGATION	RUNOFF	PERC.	EFFICIENCY
	Inches	Ft/Ft	Feet	Feet	Gpm	Hours	Minutes	Inches	Inches	Inches	In.	%
0.55	2.70	.010	2.00	1020	8.0	24	206.0	9.06	7.53	0.90	5.46	29.81
0.55	2.70	.010	2.00	1020	7.0	24	261.7	7.93	7.09	0.03	5.20	34.06
0.55	2.70	.010	2.00	1020	6.0	24	360.1	6.79	7.09	0.03	5.20	34.06
0.55	2.70	.010	2.00	1020	6.5	24	303.3	7.36	7.09	0.03	5.20	34.06
0.55	2.70	.010	2.00	1020	7.0	24	261.7	7.93	7.09	0.03	5.20	34.06
0.55	2.70	.010	2.00	1020	7.0	24	261.7	7.93	7.09	0.03	5.20	34.06

Field 1A
11 Ac

34%

INTAKE	DESIGN	FURROW	FURROW	FURROW	INFLOW	APPROXIMATE	ADVANCE	GROSS	NET		DEEP	IRRIGATION
FAMILY	APPLIC.	SLOPE	SPACING	LENGTH	RATE	INFLOW TIME	TIME	IRRIGATION	IRRIGATION	RUNOFF	PERC.	EFFICIENCY
	Inches	Ft/Ft	Feet	Feet	Gpm	Hours	Minutes	Inches	Inches	Inches	In.	%
0.50	3.60	.010	2.00	570	8.0	24	52.6	16.21	7.52	8.56	4.05	22.21
0.50	3.60	.010	2.00	570	9.0	24	47.7	18.24	7.72	10.40	4.24	19.74
0.50	3.60	.010	2.00	570	8.0	24	52.6	16.21	7.52	8.56	4.05	22.21
0.50	3.60	.010	2.00	570	7.0	24	59.6	14.18	7.30	6.73	3.85	25.38
0.50	3.60	.010	2.00	570	8.5	24	49.9	17.22	7.63	9.47	4.15	20.90

Field 2
25%

INTAKE	DESIGN	FURROW	FURROW	FURROW	INFLOW	APPROXIMATE	ADVANCE	GROSS	NET		DEEP	IRRIGATION
FAMILY	APPLIC.	SLOPE	SPACING	LENGTH	RATE	INFLOW TIME	TIME	IRRIGATION	IRRIGATION	RUNOFF	PERC.	EFFICIENCY
	Inches	Ft/Ft	Feet	Feet	Gpm	Hours	Minutes	Inches	Inches	Inches	In.	%
0.50	3.60	.010	2.00	630	6.0	24	88.1	11.00	6.99	3.79	3.61	32.73
0.50	3.60	.010	2.00	630	5.0	24	114.2	9.17	6.67	2.22	3.35	39.27
0.50	3.60	.010	2.00	630	4.5	24	135.8	8.25	6.47	1.44	3.21	43.64
0.50	3.60	.010	2.00	630	4.5	24	135.8	8.25	6.47	1.44	3.21	43.64
0.50	3.60	.010	2.00	630	4.0	24	168.6	7.33	6.22	0.69	3.05	49.09
0.50	3.60	.010	2.00	630	3.5	24	222.6	6.42	6.22	0.69	3.05	49.09

Field 3

49 %

initials:	HRN	Claimant =	Colwell 65-03617 Field 3
date:	07/13/06	Weather Station =	Payette

0	1.14	1.9176	8.089	11.417	14.15	15.296	12.784	9.7861	5.7967	0
0	1	1.14	0	0	0	0	0	0	0	0
0	1.17	1.13	0	0	0	0	0	0	0	0
0	1.51	1.12	0	0	0	0	0	0	0	0
0	1.84	1.11	0	0	0	0	0	0	0	0
0	2.26	1.1	0	0	0	0	0	0	0	0
0	2.76	1.09	0	0	0	0	0	0	0	0
0	3.26	1.08	0	0	0	0	0	0	0	0
0	3.76	1.07	0	0	0	0	0	0	0	0
0	4.26	1.06	0	0	0	0	0	0	0	0
	4.76	1.05								
	5.51	1.04								
	6.51	1.03								
	7.51	1.02								

Conveyance Loss Calculations



Snake River

Ditch Segment 1
2690 feet

Ditch Segment 2
1200 feet

BANKS ISLAND

Ditch Location Map

top of map is north

Conveyance Evaluation

Banks Island Property

Segment Description	Segment Number	Segment Length	Width in feet (W)	Depth in inches	Seepage CFS/mile (see footnote)	Total Segment Seepage in CFS
Main ditch diversion to NE	1	2690	2	12	0.10672	0.05
Lateral to NW & SE	2	1200	1	12	0.05336	0.01

Total loss from conveyances in CFS

0.07

CFS per acre

0.001

CFS loss for entire island

0.07

Total loss in miner's inches per acre

0.04

Seepage estimated using Worstell method from page 38 of the Hubble Report. $S=0.0667iW$ A value of 0.5 was selected for "i" based on soil survey data.

IN THE MATTER OF)
NOTICE OF CLAIM TO)
A WATER RIGHT NO.(S))

3-2000 and)
3-4009)

State of Idaho)
County of _____)

AFFIDAVIT

Hawley R. Nor being first duly sworn,

deposes and says: All of the information
and data I utilized in my report on
the Banks Island project are correct and
true to the best of my knowledge

[Signature]
(Signature)

Subscribed and sworn to before me this
day 17th of July, 192006.

[Signature]
(Notary Public)

Residing at Boise Idaho.

My Commission Expires 10.20.11.



SEAL

IRRIGATION FLOW RATE QUESTIONNAIRE

THIS INFORMATION IS REQUIRED FOR ANY ADJUDICATION CLAIM(S) FOR WHICH THE IRRIGATION FLOW RATE CLAIMED IS MORE THAN 0.02 CFS PER ACRE (ONE EXCEPTION IS THAT 0.03 CFS PER ACRE MAY BE ALLOWED FOR IRRIGATION OF UP TO 5 ACRES).

CLAIM NO(S). 3-2000 & 3-4009

NAME George Colwell

ADDRESS _____

PHONE _____

1. TOTAL IRRIGATED ACRES SHOWN ON CLAIM(S) REFERENCED ABOVE 79 ACRES.

2. SHOW THE NUMBER OF ACRES OF CROPS GROWN FOR YOUR IRRIGATION SYSTEM(S) DURING A TYPICAL SEASON

	Border	Furrow	Corrugation	Sprinkler	Contour Ditch	Other
Alfalfa						
Beans						
Field Corn						
Silage						
Spring Grain						
Winter Wheat						
Orchard						
Pasture			79			
Potatoes						
Sugar Beets						
Other						

PLEASE COMPLETE ITEMS 3 THROUGH 8 FOR EACH OF THE IRRIGATION SYSTEM TYPES SPECIFIED ABOVE

3. BORDER (COMPLETE BELOW BASED ON PEAK USE)

inflow to border (cfs)	border width (feet)	border length (feet)
field slope (%)	set time (hours)	number of borders per set
frequency (days)		

4. FURROW (COMPLETE BELOW BASED ON PEAK USE)

inflow to furrow (gpm)	furrow spacing (inches)	furrow length (feet)
field slope (%)	set time (hours)	number of furrows per set
frequency (days)		

5. CORRUGATION (COMPLETE BELOW BASED ON PEAK USE)

6 to 7 inflow to corr. (gpm)	24 corr. spacing (inches)	570 to 1020 corr. length (feet)
1% field slope (%)	24 set time (hours)	20 number of corrugations per set
14 frequency (days)		

6. SPRINKLER (COMPLETE BELOW BASED ON PEAK USE)

average nozzle flow (gpm)	nozzle spacing (feet)
lateral length (feet)	lateral spacing (feet)
number of laterals per set	set time (hrs.)
frequency (days)	

7. CONTOUR DITCH (COMPLETE BELOW BASED ON PEAK USE)

inflow to ditch (cfs)	field slope (%)
ditch length (feet)	distance between ditches (feet)
number of ditches per set	set time (hours)
frequency (days)	

8. OTHER IRRIGATION SYSTEM TYPE (specify)
(COMPLETE BELOW BASED ON PEAK USE)

inflow (cfs)	total area irrigated per set (acres)
field slope (%)	set time (hrs.)
frequency (days)	

9.

CONVEYANCE FROM SOURCE TO FARM

UNLINED DITCH-SPECIFY SOIL TYPE

Earthen ditch Silt loam soil

length (feet)

3890

ave. depth from land surface (inches)

12

ave. top width of water surface (inches)

24" (2 foot)

LINED DITCH-SPECIFY TYPE OF LINING

length (feet)

ave. depth from land surface (inches)

ave. top width of water surface (inches)

PIPELINE

length (feet)

diameter (inches)

IS THIS CONVEYANCE SYSTEM SHARED BY OTHER WATER USERS? _____

IF YES, PLEASE DESCRIBE OR SKETCH THE SYSTEM SHOWING THE NUMBER OF WATER USERS, LOCATION OF HEADGATES, LENGTHS ETC.

10. ON-FARM DISTRIBUTION SYSTEM-DRAW A SIMPLE SKETCH OF YOUR ON-FARM WATER DISTRIBUTION SYSTEM. AN AERIAL PHOTO/FARM PLAN WITH THE IRRIGATION SYSTEM SKETCHED ON IT MAY BE USED. THIS SKETCH MUST INCLUDE THE FOLLOWING INFORMATION FOR EACH REACH: LENGTH, TOP WIDTH OF WATER SURFACE, DEPTH FROM LAND SURFACE, SOIL TYPE OR LINING, AND PERCENT OF TOTAL FLOW DURING USE.

See attached maps

11. HAVE YOU CHANGED YOUR IRRIGATION SYSTEM FROM THE ONE HISTORICALLY USED? (FOR EXAMPLE, LAND LEVELING, CHANGING LENGTH OF RUNS, CHANGE FROM FURROW TO SPRINKLER, ETC.) *NO*

IF YES, PLEASE DESCRIBE:

12. HAVE YOU HAD ANY IRRIGATION SYSTEM DESIGN/EVALUATIONS OR FARM SOIL SURVEYS COMPLETED BY THE SOIL CONSERVATION SERVICE, PRIVATE CONSULTANTS, OR IRRIGATION EQUIPMENT DEALERS?

IF YES, PLEASE DESCRIBE OR ATTACH COPIES

13. PLEASE INCLUDE ANY FURTHER COMMENTS WHICH WILL AID IN THE EVALUATION OF YOUR WATER REQUIREMENTS.

PLEASE RETURN FORMS TO:

IDAHO DEPARTMENT OF
WATER RESOURCES
322 EAST FRONT ST
P.O. BOX 83720
BOISE, ID 83720-0098
