

APPENDIX C. Daily and Weekly Reports on Flows and Kualapuu Reservoir Depth

Daily Reports by the MIS Manager. West portal tunnel flow (mgd) is the total amount of water collected from Waikolu valley. Kaluakoi Well 17 inflow and outflow (mgd) are water removed and injected into the MIS, respectively. The Kualapuu reservoir depth is in feet. The MIS outflow (mgd) is the amount of water being removed and used by the consumers. The difference of the west portal flow and the MIS outflow is an estimate of reservoir storage (+) or depletion (-) without evaporation. The difference was calculated from the daily reports.

Date	Tunnel	Kaluakoi (well 17)		Reservoir	MIS	Difference
	West Portal	Inflow	Outflow	Depth	Outflow	In - Out
3/6/01	2.25	na	1.00	4.60	2.95	-1.70
3/7/01	2.25	na	0.80	4.44	2.83	-1.38
3/8/01	2.25	na	0.00	4.20	2.90	-0.65
3/9/01	4.25	na	1.00	4.05	2.52	0.73
3/12/01	2.55	na	1.02	4.43	2.06	-0.53
3/13/01	2.87	na	1.12	4.48	3.50	-1.75
3/14/01	3.86	na	1.05	4.56	2.76	0.05
3/15/01	3.85	na	0.98	4.60	1.70	1.17
3/16/01	4.99	na	0.87	4.65	2.38	1.74
3/19/01	3.28	na	1.22	4.69	1.00	1.05
3/20/01	7.74	na	0.88	4.88	2.30	4.56
3/28/01	4.00	na	1.11	5.00	1.81	1.09
3/29/01	4.15	na	0.95	4.99	2.59	0.62
3/30/01	4.64	na	1.04	5.00	2.91	0.69
4/2/01	4.09	na	0.76	5.18	2.62	0.71
4/3/01	0.81	na	0.76	4.98	2.62	-2.57
4/4/01	0.90	na	1.04	4.92	2.24	-2.38
4/6/01	0.90	na	1.52	4.74	2.94	-3.56
4/9/01	0.90	na	0.34	4.73	1.15	-0.59
4/11/01	4.73	na	0.82	4.90	1.61	2.30
4/12/01	4.60	na	0.99	4.87	2.28	1.33
4/17/01	4.70	na	1.02	5.95	2.19	1.49
4/18/01	4.86	na	1.00	6.00	1.87	1.99
4/19/01	4.07	na	1.11	6.01	1.70	1.26
4/20/01	13.07	na	1.06	6.27	2.56	9.45
4/24/01	7.53	na	0.97	6.08	2.49	4.07
4/25/01	12.09	na	1.05	6.63	2.88	8.16
4/26/01	12.93	na	1.07	7.06	2.90	8.96
4/27/01	4.10	na	1.03	7.80	2.44	0.63
4/30/01	7.65	na	0.92	8.21	2.87	3.86
5/1/01	4.23	na	0.99	8.21	2.81	0.43
5/2/01	4.50	na	0.72	8.40	2.23	1.55
5/3/01	5.32	na	0.00	8.40	2.48	2.84
5/4/01	3.54	na	0.44	8.47	2.29	0.81
5/7/01	3.49	na	0.80	8.68	2.24	0.45
5/8/01	4.02	na	0.70	8.68	2.80	0.52
5/9/01	4.15	na	0.98	8.60	2.90	0.27

APPENDIX C (continued)

Date	Tunnel West Portal	Kaluakoi (well 17)		Reservoir Depth	MIS Outflow	Difference In - Out
		Inflow	Outflow			
5/10/01	4.13	na	1.12	8.62	2.35	0.66
5/11/01	4.26	na	1.09	8.65	2.67	0.50
5/14/01	4.21	na	1.02	8.60	2.70	0.50
5/15/01	4.20	na	0.97	8.58	2.87	0.36
5/16/01	4.30	na	1.15	8.55	2.81	0.34
5/17/01	4.71	na	1.04	8.56	2.76	0.91
5/18/01	4.39	na	0.98	8.58	2.58	0.83
5/22/01	4.39	na	1.32	8.64	2.58	0.49
5/23/01	4.31	na	0.11	8.66	2.70	1.50
5/29/01	3.58	na	1.17	8.68	2.84	-0.43
6/1/01	3.89	na	0.52	8.80	2.58	0.79
6/4/01	3.88	na	1.08	8.85	2.84	-0.04
6/5/01	3.89	na	1.13	8.85	2.89	-0.13
6/6/01	3.93	na	1.01	8.84	2.64	0.28
6/7/01	3.85	na	1.07	8.87	2.50	0.28
6/8/01	3.81	na	1.07	8.90	2.84	-0.10
6/12/01	3.62	na	0.80	8.83	2.57	0.25
6/13/01	3.65	na	1.51	8.85	2.72	-0.58
6/14/01	3.64	na	1.15	8.79	2.88	-0.39
6/15/01	3.85	na	0.99	8.80	2.70	0.16
6/18/01	3.45	na	1.48	8.75	2.85	-0.88
6/19/01	3.46	na	1.16	8.74	2.79	-0.49
6/21/01	3.33	na	1.01	8.48	2.70	-0.38
6/22/01	3.44	na	1.26	8.73	2.88	-0.70
6/25/01	3.65	na	1.17	8.75	2.84	-0.36
6/26/01	3.88	na	0.87	8.75	2.84	0.17
6/27/01	3.83	na	na	8.69	4.32	-0.49
6/29/01	3.69	na	1.26	8.74	4.31	-1.88
7/2/01	3.67	na	0.89	8.72	3.88	-1.10
7/3/01	3.68	na	1.15	8.71	3.96	-1.43
7/5/01	3.89	2.33	0.73	8.70	3.99	1.50
7/6/01	3.85	na	1.03	8.68	4.27	-1.45
7/10/01	3.79	na	na	8.65	3.81	-0.02
7/12/01	3.32	na	1.17	na	3.86	-1.71
7/13/01	3.33	na	1.05	8.56	3.92	-1.64
7/16/01	3.34	1.64	0.62	8.50	3.44	0.92
7/17/01	3.46	1.07	1.18	8.50	3.87	-0.52
7/18/01	3.38	1.16	1.16	8.48	3.91	-0.53
7/19/01	3.50	1.09	1.16	8.46	3.89	-0.46
7/20/01	4.98	1.12	1.17	8.52	3.82	1.11
7/23/01	5.81	2.22	1.17	8.65	3.59	3.26
7/24/01	3.55	1.01	1.15	8.64	3.76	-0.35
7/25/01	3.48	1.01	1.16	8.62	3.78	-0.45
7/26/01	3.49	1.04	1.16	8.61	3.76	-0.39
7/27/01	3.58	1.14	1.16	8.62	3.70	-0.14
7/30/01	4.01	2.08	1.16	8.68	3.79	1.14

APPENDIX C (continued)

Date	Tunnel West Portal	Kaluakoi (well 17)		Reservoir Depth	MIS Outflow	Difference In - Out
		Inflow	Outflow			
7/31/01	3.94	1.13	1.16	8.67	3.62	0.29
8/1/01	3.88	1.10	1.15	8.66	3.75	0.08
8/2/01	3.98	1.10	1.13	8.67	3.80	0.15
8/3/01	4.06	1.09	1.14	8.66	3.73	0.28
8/6/01	3.98	2.19	1.16	8.69	3.86	1.15
8/7/01	4.09	1.14	1.17	8.68	3.74	0.32
8/8/01	3.65	1.05	1.02	8.67	3.93	-0.25
8/9/01	3.27	1.02	1.02	8.66	3.85	-0.58
8/10/01	3.29	1.08	1.00	8.65	3.87	-0.50
8/13/01	3.10	2.08	1.01	8.59	3.77	0.39
8/14/01	3.08	1.05	1.73	8.55	3.92	-1.52
8/16/01	3.07	1.05	0.91	8.54	3.77	-0.56
8/20/01	4.30	3.17	2.37	8.59	3.46	1.65
8/22/01	6.85	1.10	1.07	8.59	3.83	3.05
8/23/01	4.48	1.16	1.13	8.60	3.88	0.63
8/27/01	3.69	3.18	1.97	8.58	3.66	1.24
8/28/01	3.87	1.13	1.11	8.56	3.62	0.27
8/29/01	3.27	1.08	1.14	8.51	3.73	-0.52
8/30/01	3.28	0.00	1.13	8.49	3.82	-1.67
8/31/01	3.09	0.57	1.15	8.46	3.72	-1.21
9/4/01	3.06	4.70	2.31	8.38	3.56	1.89

APPENDIX C (continued)

Weekly Reports by the MIS Manager. The rainfall (inch) is from Waikolu valley at the 900-ft elevation. West portal tunnel flow (mgd) correlated and increased with rainfall in the valley. The MIS outflow (mgd) is the amount of water being removed and used by the consumers. The Kualapuu reservoir depth is in feet. Kaluakoi Well 17 is the hours of pumping having a capacity of about 1,650 gpm.

Week Period		Waikolu Rainfall	West Portal Flow	MIS Outflow	Reservoir Depth	Kaluakoi's Well 17
3/11/01	3/17/01	?	29.23	18.03	4.69	59
3/5/01	3/12/01	?	25.00	16.65	4.43	33
2/25/01	3/3/01	?	15.75	17.72	6.80	42
2/11/01	2/17/01	1.91	32.69	15.42	6.90	53
2/4/01	2/8/01	0.11	19.95	15.80	5.67	35
1/28/01	2/3/01	0.34	20.34	20.96	6.30	48
1/21/01	1/27/01	0.50	23.94	22.90	6.60	50
1/14/01	1/20/01	1.06	20.57	23.68	6.94	36
1/7/01	1/3/01	1.33	18.07	17.32	7.37	53
12/31/00	1/6/01	1.81	23.99	17.73	7.88	32
12/24/00	12/30/00	0.05	17.44	23.50	7.85	5
12/17/00	12/25/00	2.18	23.94	20.69	7.82	0
12/10/00	12/16/00	0.09	21.11	20.97	8.19	65
12/3/00	12/9/00	0.11	18.81	21.49	8.67	40
11/27/00	12/4/00	0.30	15.50	18.81	9.01	12
11/19/00	11/24/00	?	27.67	21.79	10.00	97
11/12/00	11/18/00	?	27.67	21.79	10.00	97
11/5/00	11/11/00	?	20.64	16.70	10.70	102
10/29/00	11/4/00	?	41.43	20.95	10.04	101
10/22/00	10/28/00	1.75	28.85	25.5	8.95	102
10/15/00	10/21/00	0.11	26.54	22.74	9.18	96
10/8/00	10/14/00	0.22	27.05	21.64	9.85	92
10/1/00	10/7/00	0.89	27.72	20.37	9.50	99
9/24/00	9/30/00	1.54	28.64	20.88	9.79	102
9/17/00	9/23/00	0.08	22.09	25.73	9.08	59
9/10/00	9/16/00	0.12	30.22	22.30	10.00	137
9/3/00	9/9/00	0.84	25.88	19.99	10.04	49
8/27/00	9/2/00	0.58	23.60	23.92	10.09	88
8/20/00	8/26/00	0.89	32.17	20.67	10.48	94
8/13/00	8/19/00	0.05	31.89	28.96	9.19	103
8/6/00	8/12/00	0.06	34.72	27.08	9.89	86
7/30/00	8/5/00	1.24	51.06	19.90	10.94	51
7/23/00	7/29/00	0.45	46.13	23.60	10.51	102
7/16/00	7/22/00	0.46	33.94	27.95	10.56	130
7/9/00	7/15/00	0.49	36.02	25.29	10.33	113
7/2/00	7/8/00	0.43	37.92	24.43	10.62	119
6/25/00	7/1/00	0.73	36.56	25.24	10.60	100

APPENDIX C (continued)

Week Period		Waikolu Rainfall	West Portal Flow	MIS Outflow	Reservoir Depth	Kaluakoi's Well 17
6/18/00	6/24/00	0.25	36.21	26.64	10.85	94
6/11/00	6/17/00	0.00	32.97	25.27	11.12	67
6/4/00	6/10/00	0.17	45.07	26.12	14.97	154
5/28/00	6/3/00	0.13	26.04	25.57	11.53	59
5/21/00	5/27/00	0.06	30.00	26.73	11.94	76
5/7/00	5/13/00	1.40	31.50	23.83	13.01	73
4/30/00	5/6/00	0.04	25.54	24.74	12.73	123
4/23/00	4/29/00	1.01	29.28	19.48	13.28	29
4/16/00	4/22/00	1.04	27.50	21.00	13.02	96
4/9/00	4/15/00	1.59	33.50	17.50	13.21	95
4/2/00	4/8/00	3.34	37.50	7.02	13.07	114
3/26/00	4/1/00	5.27	68.78	22.84	10.48	2
3/19/00	3/25/00	1.18	36.92	29.87	8.75	139
3/12/00	3/18/00	0.00	35.33	30.06	8.03	98
3/5/00	3/11/00	0.26	37.43	28.02	9.23	121
2/26/00	3/4/00	0.10	39.24	28.88	9.91	115
2/19/00	2/25/00	0.15	33.06	29.25	10.59	90
2/12/00	2/18/00	1.06	16.00	32.11	11.39	0
2/5/00	2/11/00	0.00	30.86	26.83	12.84	89
1/29/00	2/4/00	1.10	26.71	23.05	17.28	94
1/22/00	1/28/00	1.56	30.13	29.77	13.58	91
1/15/00	1/21/00	2.41	56.50	22.94	13.92	50
1/8/00	1/14/00	1.45	26.00	25.15	11.40	118
1/1/01	1/7/00	0.38	?	15.20	10.88	95
12/25/99	12/31/99	2.56	40.37	32.87	10.87	100

APPENDIX D. Statistical Analysis of Rainfall (inch) at 900-ft Elevation and Pumping (mgd) of Wells 23 and 24 on the Depth (ft) of Well 4

Rainfall readings corresponding to the Well 4 depth was correlated to shifting the date of the rainfall occurrence 0, 1, 2, 3, 4, 5, 6 and 7 days (RAINFALL, RF1, RF2, RF3, RF4, RF5, RF6 and RF6) ahead. For example, the rainfall of 0.92 inch occurring on April 14, 1996 was RAINFALL and correlated to the well reading of -32 ft on the same day, while RF1 was the rainfall on April 14, 1996 but correlated to the well reading on April 15, 1996. Stepwise regression was using the software Statistix 7 by Analytical Software. The analysis was conducted twice with variable entry and exit probabilities of 0.05 and 0.10 levels. The results are shown in this appendix. The source of data used in the statistical analyses is Water Resource Associate (1999) in Appendix A of that report.

Statistix 7 Output – 0.05 Probability Level

STEPWISE REGRESSION OF Depth (ft) of Well 4
 UNFORCED VARIABLES: PUMPAGE RAINFALL RF1 RF2 RF3 RF4 RF5 RF6 RF7

P to ENTER 0.0500
 P to EXIT 0.0500

STEP	VARIABLE	COEFFICIENT	T	P	R SQ	MSE
1	CONSTANT	-39.2258	-73.61		0.0000	152.491
2	CONSTANT	-31.9666	-47.45		0.2828	109.578
	PUMPAGE	-9.43603	-14.52	0.0000		
3	CONSTANT	-32.9090	-49.03		0.3282	102.820
	PUMPAGE	-9.33533	-14.83	0.0000		
	RAINFALL	2.77073	6.01	0.0000		

RESULTING VARIABLE	STEPWISE COEFFICIENT	MODEL STD ERROR	STUDENT'S T	P	VIF
-					
CONSTANT	-32.9090	0.67117	-49.03	0.0000	
PUMPAGE	-9.33533	0.62961	-14.83	0.0000	
1.0					
RAINFALL	2.77073	0.46076	6.01	0.0000	
1.0					

CASES INCLUDED 537 R SQUARED 0.3282 MSE 102.820
 MISSING CASES 14 ADJ R SQ 0.3257 SD 10.1400

APPENDIX D (continued)

VARIABLES NOT IN THE MODEL
CORRELATIONS

VARIABLE	MULTIPLE	PARTIAL	T	P
RF1	0.1606	0.0417	0.96	0.3353
RF2	0.0842	-0.0230	-0.53	0.5950
RF3	0.0824	-0.0353	-0.82	0.4146
RF4	0.0896	0.0768	1.78	0.0760
RF5	0.0905	0.0773	1.79	0.0740
RF6	0.0336	0.0215	0.50	0.6200
RF7	0.0184	-0.0449	-1.04	0.3004

Statistix 7 Output – 0.10 Probability Level

STEPWISE REGRESSION OF Depth (ft) of Well 4
UNFORCED VARIABLES: PUMPAGE RAINFALL RF1 RF2 RF3 RF4 RF5 RF6 RF7

P to ENTER 0.1000
P to EXIT 0.1000

STEP	VARIABLE	COEFFICIENT	T	P	R SQ	MSE
1	CONSTANT	-39.2258	-73.61		0.0000	152.491
2	CONSTANT	-31.9666	-47.45		0.2828	109.578
	PUMPAGE	-9.43603	-14.52	0.0000		
3	CONSTANT	-32.9090	-49.03		0.3282	102.820
	PUMPAGE	-9.33533	-14.83	0.0000		
	RAINFALL	2.77073	6.01	0.0000		
4	CONSTANT	-33.1596	-48.46		0.3323	102.397
	PUMPAGE	-9.31391	-14.82	0.0000		
	RAINFALL	2.69800	5.84	0.0000		
	RF5	0.83759	1.79	0.0740		

RESULTING STEPWISE MODEL

VARIABLE	COEFFICIENT	STD ERROR	STUDENT'S T	P	VIF
CONSTANT	-33.1596	0.68427	-48.46	0.0000	
PUMPAGE	-9.31391	0.62843	-14.82	0.0000	
RAINFALL	2.69800	0.46160	5.84	0.0000	
RF5	0.83759	0.46790	1.79	0.0740	
CASES INCLUDED	537	R SQUARED	0.3323	MSE	102.397
MISSING CASES	14	ADJ R SQ	0.3285	SD	10.1192

APPENDIX D (continued)

VARIABLES NOT IN THE MODEL
CORRELATIONS

VARIABLE	MULTIPLE	PARTIAL	T	P
RF1	0.1757	0.0363	0.84	0.4019
RF2	0.0868	-0.0247	-0.57	0.5684
RF3	0.1001	-0.0399	-0.92	0.3571
RF4	0.1610	0.0672	1.55	0.1209
RF6	0.1453	0.0107	0.25	0.8054
RF7	0.0651	-0.0499	-1.15	0.2494

APPENDIX E. Water Users by Account Number on the MIS for June and July 2001.

The average daily water use was 3.8 mgd for all users for both months. The gallon per acre (gpa) is expressed on a daily basis, inch per acre per day and panfactor (Pf). The panfactor is the ratio of the amount of water used in inches per acre per day to pan evaporation of 0.38 inch per day.

	Acres	June 2001 Gallons	July 2001 Gallons	Total GPA	GPA/day	In/ac/day	Pf
Total	2,931	97,277,000	138,502,000	80,443	1,297	0.05	0.13
Account							
5000	3	317,000	363,000	226,667	3,656	0.13	0.35
5001	3	216,000	246,000	154,000	2,484	0.09	0.24
5002	9	8,000	4,000	1,333	22	0.00	0.00
5003	5	214,000	328,000	108,400	1,748	0.06	0.17
5004	4	0	0	0	0	0.00	0.00
5005	2	7,000	14,000	10,500	169	0.01	0.02
5007	95	0	0	0	0	0.00	0.00
5008	3	0	0	0	0	0.00	0.00
5010	4	228,000	338,000	141,500	2,282	0.08	0.22
5011	2	0	0	0	0	0.00	0.00
5012	35	0	0	0	0	0.00	0.00
5013	3	17,000	55,000	24,000	387	0.01	0.04
5014	30	33,000	102,000	4,500	73	0.00	0.01
5015	2	0	5,000	2,500	40	0.00	0.00
5016	2	0	5,000	2,500	40	0.00	0.00
5017	2	237,000	294,000	265,500	4,282	0.16	0.42
5018	2	0	0	0	0	0.00	0.00
5020	2	7,000	5,000	6,000	97	0.00	0.01
5022	5	105,000	211,000	63,200	1,019	0.04	0.10
5023	2	93,000	70,000	81,500	1,315	0.05	0.13
5024	26	0	1,392,000	53,538	864	0.03	0.08
5025	2	21,000	22,000	21,500	347	0.01	0.03
5026	2	1,000	1,000	1,000	16	0.00	0.00
5027	2	0	0	0	0	0.00	0.00
5028	3	7,000	25,000	10,667	172	0.01	0.02
5029	2	0	0	0	0	0.00	0.00
5029	2	0	0	0	0	0.00	0.00
5030	2	0	0	0	0	0.00	0.00
5031	2	272,000	185,000	228,500	3,685	0.14	0.36
5032	4	0	5,000	1,250	20	0.00	0.00
5033	2	34,000	160,000	97,000	1,565	0.06	0.15
5034	2	0	0	0	0	0.00	0.00
5035	7	0	0	0	0	0.00	0.00
5036	2	21,000	25,000	23,000	371	0.01	0.04
5038	10	0	0	0	0	0.00	0.00
5039	2	0	0	0	0	0.00	0.00
5040	5	662,000	1,111,000	354,600	5,719	0.21	0.55

APPENDIX E (continued)

Account	Acres	June 2001 Gallons	July 2001 Gallons	Total GPA	GPA/day	In/ac/day	Pf
5041	15	0	0	0	0	0.00	0.00
5043	3	32,000	141,000	57,667	930	0.03	0.09
5044	30	1,723,000	1,693,000	113,867	1,837	0.07	0.18
5045	11	161,000	588,000	68,091	1,098	0.04	0.11
5046	2	0	0	0	0	0.00	0.00
5047	2	82,000	32,000	57,000	919	0.03	0.09
5048	3	16,000	29,000	15,000	242	0.01	0.02
5049	95	2,899,000	5,750,000	91,042	1,468	0.05	0.14
5050	22	0	0	0	0	0.00	0.00
5051	30	0	1,664,000	55,467	895	0.03	0.09
5052	2	0	0	0	0	0.00	0.00
5053	2	13,000	16,000	14,500	234	0.01	0.02
5055	3	66,000	92,000	52,667	849	0.03	0.08
5056	60	0	0	0	0	0.00	0.00
5058	2	91,000	249,000	170,000	2,742	0.10	0.27
5059	29	2,059,000	1,908,000	136,793	2,206	0.08	0.21
5060	39	1,068,000	10,714,000	302,103	4,873	0.18	0.47
5061	30	2,691,000	3,169,000	195,333	3,151	0.12	0.31
5062	30	1,033,000	1,886,000	97,300	1,569	0.06	0.15
5063	2	111,000	151,000	131,000	2,113	0.08	0.20
5064	5	0	0	0	0	0.00	0.00
5065	2	0	0	0	0	0.00	0.00
5066	3	0	0	0	0	0.00	0.00
5067	2	0	0	0	0	0.00	0.00
5068	3	10,000	12,000	7,333	118	0.00	0.01
5069	90	12,941,000	14,101,000	300,467	4,846	0.18	0.47
5070	26	0	0	0	0	0.00	0.00
5072	3	226,000	269,000	165,000	2,661	0.10	0.26
5073	2	59,000	68,000	63,500	1,024	0.04	0.10
5074	2	60,000	76,000	68,000	1,097	0.04	0.11
5075	23	0	0	0	0	0.00	0.00
5075	3	2,576,000	3,569,000	2,048,333	33,038	1.22	3.20
5078	2	0	5,000	2,500	40	0.00	0.00
5079	2	312,000	266,000	289,000	4,661	0.17	0.45
5080	2	127,000	188,000	157,500	2,540	0.09	0.25
5081	3	0	31,000	10,333	167	0.01	0.02
5082	2	1,000	24,000	12,500	202	0.01	0.02
5083	30	0	638,000	21,267	343	0.01	0.03
5084	2	0	5,000	2,500	40	0.00	0.00
5085	2	16,000	33,000	24,500	395	0.01	0.04
5086	5	0	0	0	0	0.00	0.00
5087	8	0	0	0	0	0.00	0.00
5088	2	0	5,000	2,500	40	0.00	0.00
5089	2	213,000	381,000	297,000	4,790	0.18	0.46
5090	5	0	0	0	0	0.00	0.00
5091	2	6,000	33,000	19,500	315	0.01	0.03

APPENDIX E (continued)

Account	Acres	June 2001 Gallons	July 2001 Gallons	Total GPA	GPA/day	In/ac/day	Pf
5092	2	119,000	273,000	196,000	3,161	0.12	0.31
5093	2	0	0	0	0	0.00	0.00
5095	2	21,000	28,000	24,500	395	0.01	0.04
5095	2	10,000	108,000	59,000	952	0.04	0.09
5097	20	0	0	0	0	0.00	0.00
5099	20	808,000	1,270,000	103,900	1,676	0.06	0.16
5100	2	0	0	0	0	0.00	0.00
5101	15	99,000	185,000	18,933	305	0.01	0.03
5103	2	88,000	227,000	157,500	2,540	0.09	0.25
5104	4	0	0	0	0	0.00	0.00
5105	19	0	0	0	0	0.00	0.00
5107	2	217,000	137,000	177,000	2,855	0.11	0.28
5108	5	147,000	202,000	69,800	1,126	0.04	0.11
5109	2	105,000	45,000	75,000	1,210	0.04	0.12
5110	2	5,000	18,000	11,500	185	0.01	0.02
5111	2	0	0	0	0	0.00	0.00
5112	2	0	0	0	0	0.00	0.00
5113	6	33,000	70,000	17,167	277	0.01	0.03
5115	5	0	0	0	0	0.00	0.00
5117	25	926,000	1,449,000	95,000	1,532	0.06	0.15
5118	2	295,000	335,000	315,000	5,081	0.19	0.49
5119	2	206,000	286,000	246,000	3,968	0.15	0.38
5120	2	293,000	299,000	296,000	4,774	0.18	0.46
5121	2	105,000	62,000	83,500	1,347	0.05	0.13
5122	6	0	86,000	14,333	231	0.01	0.02
5123	30	0	0	0	0	0.00	0.00
5124	21	55,000	56,000	5,286	85	0.00	0.01
5126	2	139,000	186,000	162,500	2,621	0.10	0.25
5127	2	0	172,000	86,000	1,387	0.05	0.13
5128	30	0	0	0	0	0.00	0.00
5129	2	0	0	0	0	0.00	0.00
5130	2	0	5,000	2,500	40	0.00	0.00
5131	150	3,834,000	5,709,000	63,620	1,026	0.04	0.10
5132	2	0	0	0	0	0.00	0.00
5133	3	0	0	0	0	0.00	0.00
5134	2	0	0	0	0	0.00	0.00
5135	2	113,000	64,000	88,500	1,427	0.05	0.14
5136	2	194,000	27,000	110,500	1,782	0.07	0.17
5138	3	0	0	0	0	0.00	0.00
5139	2	19,000	37,000	28,000	452	0.02	0.04
5140	2	56,000	150,000	103,000	1,661	0.06	0.16
5141	12	640,000	507,000	95,583	1,542	0.06	0.15
5142	2	0	0	0	0	0.00	0.00
5143	2	0	0	0	0	0.00	0.00
5144	16	2,172,000	1,210,000	211,375	3,409	0.13	0.33
5145	9	463,000	278,000	82,333	1,328	0.05	0.13

APPENDIX E (continued)

Account	Acres	June 2001 Gallons	July 2001 Gallons	Total GPA	GPA/day	In/ac/day	Pf
5146	27	253,000	335,000	21,778	351	0.01	0.03
5148	16	0	0	0	0	0.00	0.00
5150	2	1,048,000	0	524,000	8,452	0.31	0.82
5151	3	43,000	60,000	34,333	554	0.02	0.05
5152	25	0	0	0	0	0.00	0.00
5153	30	44,000	73,000	3,900	63	0.00	0.01
5155	2	0	5,000	2,500	40	0.00	0.00
5156	2	0	0	0	0	0.00	0.00
5157	2	103,000	104,000	103,500	1,669	0.06	0.16
5158	2	0	0	0	0	0.00	0.00
5159	2	379,000	359,000	369,000	5,952	0.22	0.58
5161	5	210,000	436,000	129,200	2,084	0.08	0.20
5162	35	0	0	0	0	0.00	0.00
5163	2	128,000	78,000	103,000	1,661	0.06	0.16
5164	4	12,000	4,000	4,000	65	0.00	0.01
5165	28	1,950,000	3,255,000	185,893	2,998	0.11	0.29
5166	3	163,000	247,000	136,667	2,204	0.08	0.21
5167	2	20,000	25,000	22,500	363	0.01	0.04
5168	2	436,000	557,000	496,500	8,008	0.29	0.78
5169	35	202,000	202,000	11,543	186	0.01	0.02
5170	10	1,053,000	1,273,000	232,600	3,752	0.14	0.36
5171	27	204,000	612,000	30,222	487	0.02	0.05
5172	3	231,000	345,000	192,000	3,097	0.11	0.30
5173	3	30,000	52,000	27,333	441	0.02	0.04
5174	45	2,238,000	5,359,000	168,822	2,723	0.10	0.26
5175	2	85,000	128,000	106,500	1,718	0.06	0.17
5176	35	0	0	0	0	0.00	0.00
5177	3	21,000	121,000	47,333	763	0.03	0.07
5178	40	3,740,000	4,923,000	216,575	3,493	0.13	0.34
5179	2	23,000	25,000	24,000	387	0.01	0.04
5180	4	318,000	501,000	204,750	3,302	0.12	0.32
5181	5	90,000	198,000	57,600	929	0.03	0.09
5182	2	0	0	0	0	0.00	0.00
5183	3	0	0	0	0	0.00	0.00
5184	2	14,000	10,000	12,000	194	0.01	0.02
5185	2	128,000	215,000	171,500	2,766	0.10	0.27
5186	8	2,855,000	4,680,000	941,875	15,192	0.56	1.47
5187	7	0	0	0	0	0.00	0.00
5188	30	532,000	564,000	36,533	589	0.02	0.06
5189	2	1,052,000	1,105,000	1,078,500	17,395	0.64	1.69
5190	90	0	0	0	0	0.00	0.00
5191	460	27,597,000	28,827,000	122,661	1,978	0.07	0.19
5192	180	0	5,000	28	0	0.00	0.00
5193	2	0	0	0	0	0.00	0.00
5194	2	0	0	0	0	0.00	0.00
5195	2	0	0	0	0	0.00	0.00

APPENDIX E (continued)

Account	Acres	June 2001 Gallons	July 2001 Gallons	Total GPA	GPA/day	In/ac/day	Pf
5196	2	0	0	0	0	0.00	0.00
5197	2	10,000	122,000	66,000	1,065	0.04	0.10
5198	3	1,000	0	333	5	0.00	0.00
5199	2	0	0	0	0	0.00	0.00
5200	2	0	0	0	0	0.00	0.00
5201	2	6,000	6,000	6,000	97	0.00	0.01
5202	2	108,000	94,000	101,000	1,629	0.06	0.16
5203	92	1,878,000	7,125,000	97,859	1,578	0.06	0.15
5204	2	89,000	149,000	119,000	1,919	0.07	0.19
5205	2	6,000	0	3,000	48	0.00	0.00
5206	2	0	0	0	0	0.00	0.00
5207	2	0	0	0	0	0.00	0.00
5208	2	0	0	0	0	0.00	0.00
5210	2	0	4,000	2,000	32	0.00	0.00
5211	25	0	0	0	0	0.00	0.00
5212	2	1,050,000	1,128,000	1,089,000	17,565	0.65	1.70
5213	2	0	0	0	0	0.00	0.00
5214	2	38,000	50,000	44,000	710	0.03	0.07
5215	2	8,000	9,000	8,500	137	0.01	0.01
5216	2	194,000	178,000	186,000	3,000	0.11	0.29
5217	2	108,000	207,000	157,500	2,540	0.09	0.25
5218	2	0	0	0	0	0.00	0.00
5219	2	0	7,000	3,500	56	0.00	0.01
5220	2	212,000	216,000	214,000	3,452	0.13	0.33
5221	2	0	282,000	141,000	2,274	0.08	0.22
5223	20	0	0	0	0	0.00	0.00
5224	30	620,000	704,000	44,133	712	0.03	0.07
5226	25	0	0	0	0	0.00	0.00
5227	3	156,000	128,000	94,667	1,527	0.06	0.15
5228	2	62,000	69,000	65,500	1,056	0.04	0.10
5229	2	0	1,000	500	8	0.00	0.00
5230	2	0	0	0	0	0.00	0.00
5231	2	0	0	0	0	0.00	0.00
5232	2	281,000	264,000	272,500	4,395	0.16	0.43
5233	2	117,000	157,000	137,000	2,210	0.08	0.21
5234	2	178,000	334,000	256,000	4,129	0.15	0.40
5235	2	169,000	207,000	188,000	3,032	0.11	0.29
5236	2	6,000	7,000	6,500	105	0.00	0.01
5237	10	1,146,000	1,431,000	257,700	4,156	0.15	0.40
5239	2	0	32,000	16,000	258	0.01	0.03
5240	2	755,000	1,218,000	986,500	15,911	0.59	1.54
5241	2	0	0	0	0	0.00	0.00
5242	2	175,000	250,000	212,500	3,427	0.13	0.33
5243	2	0	1,000	500	8	0.00	0.00
5244	2	298,000	230,000	264,000	4,258	0.16	0.41
5245	10	630,000	1,043,000	167,300	2,698	0.10	0.26

APPENDIX E (continued)

Account	Acres	June 2001 Gallons	July 2001 Gallons	Total GPA	GPA/day	In/ac/day	Pf
5246	2	13,000	40,000	26,500	427	0.02	0.04
5247	2	0	0	0	0	0.00	0.00
5248	2	0	38,000	19,000	306	0.01	0.03
5249	2	0	0	0	0	0.00	0.00
5250	2	55,000	30,000	42,500	685	0.03	0.07
5251	2	57,000	74,000	65,500	1,056	0.04	0.10
5252	2	32,000	62,000	47,000	758	0.03	0.07
5253	12	210,000	235,000	37,083	598	0.02	0.06
5254	2	48,000	80,000	64,000	1,032	0.04	0.10
5255	2	12,000	2,000	7,000	113	0.00	0.01
5256	2	213,000	395,000	304,000	4,903	0.18	0.48
5257	2	704,000	906,000	805,000	12,984	0.48	1.26
5258	2	63,000	33,000	48,000	774	0.03	0.08
5259	2	2,000	2,000	2,000	32	0.00	0.00
5260	2	16,000	9,000	12,500	202	0.01	0.02
5261	2	0	0	0	0	0.00	0.00
5262	2	0	0	0	0	0.00	0.00
5263	5	95,000	27,000	24,400	394	0.01	0.04

APPENDIX F. Water Use and Acreage by Preference DHHL and Non-Preference (Others) Users from July 1989 to June 2000.

The water use by users type was found for December 1989 through June 1994. The DHHL water use and acres are expressed as a percent of the totals.

Year	Month	Water (Million Gallons)			Acres				
		DHHL	Others	Total	DHHL%	DHHL	Others	Total	DHHL%
1989	Jul	na	na	110.00	na	na	na	2,343	na
1989	Aug	na	na	133.23	na	na	na	2,349	na
1989	Sep	na	na	106.29	na	na	na	2,349	na
1989	Oct	na	na	73.41	na	na	na	2,349	na
1989	Nov	na	na	82.85	na	na	na	2,349	na
1989	Dec	36.26	89.61	125.87	28.8	1,607	752	2,359	68.1
1990	Jan	32.46	66.32	98.78	32.9	1,607	752	2,359	68.1
1990	Feb	35.52	66.39	101.91	34.9	1,609	794	2,403	67.0
1990	Mar	12.63	39.44	52.07	24.3	1,614	794	2,408	67.0
1990	Apr	25.46	87.09	112.55	22.6	1,631	796	2,427	67.2
1990	May	42.64	121.46	164.09	26.0	1,620	801	2,421	66.9
1990	Jun	60.79	189.98	250.77	24.2	1,623	798	2,421	67.0
1990	Jul	66.51	174.30	240.81	27.6	1,620	786	2,406	67.3
1990	Aug	60.78	140.67	201.45	30.2	1,620	786	2,406	67.3
1990	Sep	46.09	132.58	178.67	25.8	1,620	793	2,413	67.1
1990	Oct	85.47	153.41	238.88	35.8	1,625	820	2,445	66.5
1990	Nov	60.79	121.04	181.83	33.4	1,635	820	2,455	66.6
1990	Dec	45.98	83.83	129.81	35.4	1,636	820	2,456	66.6
1991	Jan	32.29	58.91	91.20	35.4	1,636	830	2,466	66.3
1991	Feb	26.81	63.77	90.58	29.6	1,636	845	2,481	65.9
1991	Mar	55.52	99.21	154.72	35.9	1,639	866	2,505	65.4
1991	Apr	37.20	91.39	128.59	28.9	1,639	889	2,528	64.8
1991	May	54.45	154.54	208.99	26.1	1,639	959	2,598	63.1
1991	Jun	64.82	170.06	234.88	27.6	1,639	989	2,628	62.4
1991	Jul	73.97	177.39	251.36	29.4	1,614	981	2,595	62.2
1991	Aug	57.72	161.08	218.80	26.4	1,636	1,013	2,649	61.8
1991	Sep	112.71	175.44	288.15	39.1	1,629	963	2,592	62.8
1991	Oct	75.13	151.82	226.95	33.1	1,620	1,043	2,663	60.8
1991	Nov	19.70	70.48	90.18	21.8	1,678	1,073	2,751	61.0
1991	Dec	59.87	119.03	178.90	33.5	1,678	1,085	2,763	60.7
1992	Jan	78.86	120.44	199.30	39.6	1,680	1,155	2,835	59.3
1992	Feb	58.97	94.59	153.56	38.4	1,680	1,155	2,835	59.3
1992	Mar	47.82	94.70	142.52	33.6	1,680	1,220	2,900	57.9
1992	Apr	49.93	98.29	148.22	33.7	1,675	1,222	2,897	57.8
1992	May	64.66	116.48	181.14	35.7	1,675	1,222	2,897	57.8
1992	Jun	112.88	158.47	271.35	41.6	1,675	1,250	2,925	57.3
1992	Jul	73.02	161.94	234.96	31.1	1,680	1,764	3,444	48.8
1992	Aug	78.63	99.31	177.93	44.2	1,680	1,764	3,444	48.8
1992	Sep	58.35	105.94	164.29	35.5	1,680	1,764	3,444	48.8
1992	Oct	46.38	80.10	126.48	36.7	1,680	1,801	3,481	48.3
1992	Nov	65.24	105.60	170.84	38.2	1,680	1,764	3,444	48.8
1992	Dec	64.29	97.78	162.07	39.7	1,680	1,801	3,481	48.3

APPENDIX F (continued)

Year	Month	Water (Million Gallons)				Acres			
		DHHL	Others	Total	DHHL%	DHHL	Others	Total	DHHL%
1993	Jan	41.50	71.89	113.40	36.6	1,680	1,851	3,531	47.6
1993	Feb	58.40	90.11	148.52	39.3	1,679	1,741	3,420	49.1
1993	Mar	77.86	137.18	215.03	36.2	1,679	1,741	3,420	49.1
1993	Apr	102.34	159.60	261.94	39.1	1,679	1,741	3,420	49.1
1993	May	80.00	154.11	234.11	34.2	1,691	1,851	3,542	47.7
1993	Jun	60.63	191.92	252.55	24.0	1,686	1,901	3,587	47.0
1993	Jul	73.00	192.44	265.44	27.5	1,686	1,422	3,108	54.2
1993	Aug	83.65	167.88	251.53	33.3	1,686	1,422	3,108	54.2
1993	Sep	101.11	164.80	265.91	38.0	1,692	1,426	3,118	54.3
1993	Oct	74.64	116.58	191.22	39.0	1,692	1,573	3,265	51.8
1993	Nov	53.48	92.01	145.48	36.8	1,692	1,588	3,280	51.6
1993	Dec	71.76	135.14	206.89	34.7	1,691	1,588	3,279	51.6
1994	Jan	85.08	145.28	230.36	36.9	1,691	1,588	3,279	51.6
1994	Feb	46.02	80.14	126.16	36.5	1,693	1,650	3,343	50.6
1994	Mar	112.37	159.60	271.97	41.3	1,681	1,650	3,331	50.5
1994	Apr	61.82	105.09	166.91	37.0	1,681	1,650	3,331	50.5
1994	May	79.52	164.03	243.55	32.6	1,681	1,650	3,331	50.5
1994	Jun	176.79	282.47	459.25	38.5	1,681	1,650	3,331	50.5
1994	Jul	na	na	192.51	na	na	na	3,108	na
1994	Aug	na	na	166.35	na	na	na	3,108	na
1994	Sep	na	na	164.80	na	na	na	3,120	na
1994	Oct	na	na	123.22	na	na	na	3,280	na
1994	Nov	na	na	92.01	na	na	na	3,280	na
1994	Dec	na	na	135.14	na	na	na	3,279	na
1995	Jan	na	na	145.28	na	na	na	3,279	na
1995	Feb	na	na	80.32	na	na	na	3,343	na
1995	Mar	na	na	159.60	na	na	na	3,314	na
1995	Apr	na	na	105.09	na	na	na	3,331	na
1995	May	na	na	164.03	na	na	na	3,331	na
1995	Jun	na	na	282.70	na	na	na	3,331	na
1995	Jul	na	na	195.92	na	na	na	3,342	na
1995	Aug	na	na	186.40	na	na	na	3,379	na
1995	Sep	na	na	149.78	na	na	na	3,362	na
1995	Oct	na	na	145.59	na	na	na	3,362	na
1995	Nov	na	na	125.07	na	na	na	3,365	na
1995	Dec	na	na	126.23	na	na	na	3,365	na
1996	Jan	na	na	64.10	na	na	na	3,395	na
1996	Feb	na	na	86.55	na	na	na	3,395	na
1996	Mar	na	na	71.21	na	na	na	3,395	na
1996	Apr	na	na	110.01	na	na	na	3,395	na
1996	May	na	na	142.65	na	na	na	3,395	na
1996	Jun	na	na	126.27	na	na	na	3,395	na
1996	Jul	na	na	124.70	na	na	na	3,382	na
1996	Aug	na	na	122.14	na	na	na	3,382	na
1996	Sep	na	na	113.96	na	na	na	3,382	na
1996	Oct	na	na	139.01	na	na	na	3,382	na

APPENDIX F (continued)

Year	Month	Water (Million Gallons)				Acres			
		DHHL	Others	All	DHHL%	DHHL	Others	All	DHHL%
1996	Nov	na	na	51.23	na	na	na	3,382	na
1996	Dec	na	na	79.01	na	na	na	3,382	na
1997	Jan	na	na	51.23	na	na	na	3,382	na
1997	Feb	na	na	95.57	na	na	na	3,358	na
1997	Mar	na	na	70.02	na	na	na	3,358	na
1997	Apr	na	na	95.50	na	na	na	3,358	na
1997	May	na	na	118.59	na	na	na	3,358	na
1997	Jun	na	na	115.58	na	na	na	3,358	na
1997	Jul	na	na	186.81	na	na	na	3,260	na
1997	Aug	na	na	165.38	na	na	na	3,298	na
1997	Sep	na	na	178.22	na	na	na	3,298	na
1997	Oct	na	na	131.14	na	na	na	3,298	na
1997	Nov	na	na	96.68	na	na	na	3,298	na
1997	Dec	na	na	99.68	na	na	na	3,298	na
1998	Jan	na	na	80.30	na	na	na	3,271	na
1998	Feb	na	na	126.29	na	na	na	3,267	na
1998	Mar	na	na	111.52	na	na	na	3,269	na
1998	Apr	na	na	113.27	na	na	na	3,269	na
1998	May	na	na	149.15	na	na	na	3,236	na
1998	Jun	na	na	187.88	na	na	na	3,236	na
1998	Jul	na	na	209.83	na	na	na	3,236	na
1998	Aug	na	na	175.46	na	na	na	3,236	na
1998	Sep	na	na	216.00	na	na	na	3,153	na
1998	Oct	na	na	175.91	na	na	na	3,155	na
1998	Nov	na	na	101.00	na	na	na	3,121	na
1998	Dec	na	na	134.05	na	na	na	3,109	na
1999	Jan	na	na	83.35	na	na	na	3,106	na
1999	Feb	na	na	102.89	na	na	na	3,104	na
1999	Mar	na	na	148.31	na	na	na	3,104	na
1999	Apr	na	na	139.62	na	na	na	3,106	na
1999	May	na	na	237.11	na	na	na	3,108	na
1999	Jun	na	na	173.12	na	na	na	3,108	na
1999	Jul	na	na	151.35	na	na	na	3,106	na
1999	Aug	na	na	206.32	na	na	na	3,129	na
1999	Sep	na	na	199.83	na	na	na	3,105	na
1999	Oct	na	na	171.05	na	na	na	3,075	na
1999	Nov	na	na	180.47	na	na	na	3,079	na
1999	Dec	na	na	111.37	na	na	na	3,079	na
2000	Jan	na	na	116.34	na	na	na	3,079	na
2000	Feb	na	na	123.56	na	na	na	3,079	na
2000	Mar	na	na	158.89	na	na	na	3,079	na
2000	Apr	na	na	89.92	na	na	na	3,079	na
2000	May	na	na	131.22	na	na	na	3,079	na
2000	Jun	na	na	134.50	na	na	na	3,079	na