



DRAFT
ADDITIONAL ANALYSIS

to the
NEWHALL RANCH SPECIFIC PLAN
and
WATER RECLAMATION PLANT
FINAL ENVIRONMENTAL IMPACT REPORT

Project# 94087
SCH# 95011015

Volume I

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April 2001

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Volume II

Appendix 1.0

- (a) Peremptory Writ of Mandate issued by the Kern County Superior Court
- (b) Letter to the Honorable Board of Supervisors, County of Los Angeles, from Lloyd W. Pellman, County Counsel, dated August 17, 2000, and Resolution of the Board of Supervisors of the County of Los Angeles Partially Setting Aside Certification of the Environmental Impact Report and Land Use Approvals for the Newhall Ranch Specific Plan and Water Reclamation Plant and Requiring Further Actions in Compliance with Court Ruling
- (c) Notice of Preparation of Additional Analysis
- (d) Responses to Notice of Preparation of Additional Analysis

Appendix 2.1

- (a) Ventura County Transportation Commission Letter to Austin-Foust Associates, Inc., dated October 4, 2000
- (b) *Newhall Ranch Supplemental Traffic Analysis*, Ventura County Impact Analysis, Austin-Foust Associates, Inc., February 5, 2001
- (c) Austin-Foust Associates, Inc., Technical Memorandum: City of Fillmore Letter, dated February 22, 2001
- (d) Austin-Foust Associates, Inc., Technical Memorandum: Port Hueneme Access Study, dated February 1, 2001

Appendix 2.2

- (a) *Save Open-Space and Agricultural Resources - Ventura County SOAR*
- (b) *City of Fillmore Ordinance No. 00-750 "Fillmore Greenbelt"*
- (c) *Impact Sciences, Inc., Technical Memorandum: Salt Creek Wildlife Movement, dated April 2001*
- (d) *Plant and Animal Species Lists - Newhall Ranch (Various Years Since 1993)*
- (e) *Résumés of Biologists*
- (f) *Impact Sciences, Inc., and Gatzke, Dillon & Ballance, Technical Memorandum dated March 2001: Analysis of the Applicability and Accuracy of Certain Sources Cited in David Magney's "Newhall Ranch Notice of Preparation Submittal"*

Appendix 2.3

- (a) *Newhall Ranch Santa Clara River HEC-RAS Calculations, Sikand Engineering Associates, June 28, 2000*

Volume III

Appendix 2.4

- (a) *Newhall Ranch Engineering Design Summary and Report for Bridge Crossings of the Santa Clara River, Sikand Engineering Associates, July 19, 2000, and Revised August 7, 2000*
- (b) *Draft Minutes of the Significant Ecological Area Technical Advisory Committee (SEATAC) Meeting of January 8, 2001*

Appendix 2.5

- (a) *2000 Urban Water Management Plan ("UWMP"), dated December 2000, prepared for CLWA and three of the four retail water purveyors in Santa Clarita Valley: Santa Clarita Water Company, Newhall County Water District and Valencia Water Company, including, a technical memorandum prepared by Richard C. Slade & Associates, LLC, dated November 16, 2000 (Appendix C to the UWMP), and a letter from Joseph C. Scalmanini, Luhdorff and Scalmanini Consulting Engineers, dated December 15, 2000, regarding review of the groundwater components of the UWMP (Appendix D to the UWMP)*
- (b) *1999 Santa Clarita Valley Water Report, prepared by the Upper Santa Clara Valley Water Committee, dated February 2000*
- (c) *Assessment of the Hydrogeologic Feasibility of Injection and Recovery of Water in the Saugus Formation, Santa Clarita Valley, California, February 2001, by Richard C. Slade & Associates, LLC, including, the Technical Appendix Hydrogeologic Conditions in the Saugus Formation, Santa Clarita Valley, California, February 2001, by Richard C. Slade & Associates, LLC*
- (d) *Newhall Ranch ASR Impact Evaluation, prepared by CH2MHill, February 2001*

- (e) Agreements for the Reservation of Water, effective March 12, 2001, between (1) BLC Farmlands, LLC, and The Newhall Land and Farming Company, and (2) WV Acquisition Corp. and The Newhall Land and Farming Company.
- (f) Downstream Water Users proposal to DWR involving the conservation of the Castaic Creek flood flows, including: 1966 agreement between DWR and Newhall Land and Farming Company (Exhibit 1); 1967 agreement between DWR and United Water Conservation District (Exhibit 2); and 1978 agreement between DWR and Downstream Water Users (Exhibit 3)
- (g) Letter from California Department of Health Services to Calgon Carbon Corporation, dated December 29, 1999, and Calgon Carbon Corporation literature regarding perchlorates
- (h) Department of Health Services, Drinking Water Field Operations Branch, *Water Permit Amendment No. 04-16-01PA-000*, La Puente Valley County Water District, February 15, 2001
- (i) Assignment Agreement, effective March 22, 2001, between The Newhall Land and Farming Company and Vidler Water Company, Inc., regarding the agreement entitled "Agreement Between Vidler Water Company, Inc., and Semitropic Water Storage District and its Improvement Districts for a Vidler-Semitropic Water Banking and Exchange Program" dated October 8, 1998 (the "Semitropic Agreement")
- (j) Memoranda regarding additional ASP information, Including: CH2MHill Technical Memorandum No. 1, dated February 27, 2001: Newhall Ranch ASR: Impact Analysis Using Current Pumping Volumes for Non-Project Wells; and CH2MHill Memorandum, dated March 27, 2001: Review of Ventura County's Comments on the NOP
- (k) Correspondence regarding Castaic Lake Stormwater, including: United Water Conservation District fax transmittal, dated March 30, 2001, and United Water Conservation District letter, dated March 29, 2001, to Department of Water Resources; and Castaic Lake Water Agency cover letter, dated March 29, 2001, and Castaic Lake Water Agency Agreement Letter, dated March 27, 2001, to United Water Conservation District
- (l) *2000 Santa Clarita Valley Water Report*, prepared by the Upper Santa Clara Valley Water Committee, dated March 2001
- (m) Information regarding The Newhall Land and Farming Company's Agricultural Water Use, Los Angeles County, California, 1996 to 2000
- (n) "CALFED Bay-Delta Program - Annual Report 2000" presented by Patrick Wright, Director, CALFED Bay-Delta Program (as published in California Water Law & Policy by CLE International)
- (o) "New Directions in California Water Management, The CALFED Record of Decision in Historical Context," Timothy H. Quinn, Deputy General Manager, Metropolitan Water District of Southern California (presented at the California Water Law & Policy Conference, April 5-6, 2001)
- (p) "State to Develop Health Goal, Seeks Scientific Review of Chromium 6 in Drinking Water," press release dated March 27, 2001, State of California, Office of Environmental Health Hazard Assessment
- (q) *Critical Water Shortage Contingency Plan*, Governor's Advisory Drought Planning Panel, December 29, 2000

Appendix 3.0

- (a) *Bird Surveys in the Proposed Riverwood Project Area, Near Valencia, California*, Daniel Guthrie W.M. Keck Science Center, August 26, 1999
- (b) *Survey for Arroyo Southwestern Toad for Newhall Ranch*, RECON Consultants, July 12, 1999
- (c) *Federal Register*, February 7, 2001, U.S. Department of the Interior, Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for the Arroyo Toad; Final Rule
- (d) *Federal Register*, March 13, 2001, U.S. Department of the Interior, Endangered and Threatened Wildlife and Plants; Final Determinations of Critical Habitat for the California Red-Legged Frog; Final Rule
- (e) A Petition to the State of California Fish and Game Commission regarding the San Fernando Valley Spineflower and Petition Evaluation
- (f) White Papers Regarding California Red-Legged Frog and Southwest Arroyo Toad

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APPENDIX 2.5(m)

**Information Regarding The Newhall Land and Farming Company's
Agricultural Water Use, Los Angeles County, California, 1996 to 2000**

**The Newhall Land and Farming Company's Agricultural Water Use
Los Angeles County, California
1996 to 2000**

This information has been prepared in order to determine the Newhall Land and Farming Company's historic agricultural water use in Los Angeles County.

It is important to first understand that we do not have meters on our pumps to measure actual water use. Water use on our agricultural lands is calculated utilizing Southern California Edison (SCE) pump tests to estimate total acre-feet of pumpage. Total acre-feet of pumpage is then allocated to each crop based on crop type and historical use. Budgets are prepared each year for each crop and reconciled at the end of the year based on the actual acre-feet pumped. We also calculate water use with the assistance of CIMIS (California Irrigation Management Information System) data, which aids us in projecting water needs and spreading use for the various crops we produce (see more detailed discussion below). It is also important to understand that there can be significant variations in actual water use each year primarily due to the actual number of acres farmed, the type of crops, the amount and distribution of rainfall, and temperatures.

Generally, water use for each crop tends to be significantly higher on our land in Los Angeles County than on our land in Ventura County. The basic reason is that the water demand for crops tends to decline dramatically in cooler coastal areas, and our operations are the farthest inland in Ventura County and continue into Los Angeles County. In addition to a much warmer climate, our land in Los Angeles County receives less rainfall than other parts of the County, its soils are sandier and extremely sandy in some cases, and most of its irrigation systems are older and less efficient. In addition, we often use some water in Los Angeles County on dryland acreage for crop emergence, which increases overall water use, and is reflected in regular irrigated crops and is not shown separately. In addition, vegetables, other row crops, alfalfa and sudan pasture are grown on the Newhall Ranch in Los Angeles County year round with several growing cycles on vegetable acreage, which requires irrigation throughout the entire year.

Using CIMIS, we calculated a comparison to its estimated water use by crop in Los Angeles County for the past five years (1996 to 2000) by relying on data from the CIMIS station in Piru (Ventura County) and weather data collected to determine the evapotranspiration (ET) of a base crop, which is usually grass with full ground cover, and is used as the basis to calculate the actual water needs of other crops. The

CIMIS program takes into consideration all weather factors, which determine a plant's water demand. The base ET for Piru for the most recent 12 months (prior to February, 2001) is 62.75 inches of water per year, which is the actual consumption of the base crop (see Exhibit 1). Annual evapotranspiration has varied from 56.39 inches to 63.08 inches over the past five calendar years. To convert that to the various crops in the area, crop coefficients are applied (again see Exhibit 1), which are established by the University of California to determine the ET of the specific crop for any given year. The application efficiency of the irrigation system is then considered to determine the acre-feet (or inches) of water required to meet the crop's needs. The application of efficiency is primarily a function of irrigation methods and soil types, which can vary greatly and can have a very large input on the amount of water, which must be pumped in order to deliver and make available to a plant the water it actually needs. Crop coefficients in our area for citrus are 0.7. Crop coefficients for most vegetables, alfalfa and sudan/pasture are 1.0. We estimate its application efficiencies to be 70 percent for vegetables due primarily to the use of more efficient sprinkler application of water, 60 percent for citrus due to the use of contour furrow irrigation, and 50 percent for alfalfa and sudan/pasture due to strip check surface irrigation and very sandy soils. Given those assumptions, the water demands for our crops, based on the most recent 12 months of CIMIS data (year 2000), would be 7.41 acre-feet (AF)/acre for vegetables, 6.05 AF/acre for citrus, and 10.37 AF/acre for alfalfa and sudan/pasture.

To compare actual estimated water usage in Los Angeles County by crop, actual crop acres planted each year can be multiplied by the crop demand based on the CIMIS calculation. As shown in **Table 1**, water demand in Los Angeles County based on the CIMIS calculation would have averaged 7,038 AF over the past five years. These overall water usage calculations are also cross-checked and correlated based on the actual amount of water pumped on an annual basis by Newhall Land and Farming Company pumps. This correlation has confirmed the CIMIS calculations each year.

Table 1
Los Angeles County Agricultural Water Use

Year	Acres	<u>Based on CIMIS*</u>		<u>Water Use</u>
		Crop Type	CIMIS AF	(AF)
2000	55	Alfalfa	10.37	570
	150	Sudan/pasture	10.37	1,556
	722	Isd.vegetables	7.41	5,350
		<i>Subtotal</i>		7,476
1999	55	Alfalfa	10.51	578
	150	Sudan/pasture	10.51	1,577
	709	Isd.vegetables	7.51	5,325
		<i>Subtotal</i>		7,479
1998	115	Alfalfa	9.4	1,081
	100	Sudan/pasture	9.4	940
	590	Isd.vegetables	6.71	3,959
		<i>Subtotal</i>		5,980
1997	160	Alfalfa	10.22	1,635
	103	Sudan/pasture	10.22	1,053
	663	Isd.vegetables	7.3	4,840
		<i>Subtotal</i>		7,528
1996	105	Alfalfa	10.21	1,072
	170	Sudan/pasture	10.21	1,736
	537	Isd.vegetables	7.3	3,920
		<i>Subtotal</i>		6,728
Average for Period				7,038

* Does not include Dryland farming or Christmas Tree use

EXHIBIT 1

Ventura CIMIS Data

Monthly Weather Data for Station #101 Piru

in Region -CCV- Central Coast/Valley

DATE	ETO	PRECIP in.	RAD in. Ly/dy	SOLAR VAPOR		AIR TEMP.		REL. HUM.		DEW PT F	WIND AVE mph	WIND RUN mi	AVE SOIL F
	in.			AVE	MAX	MIN	AVE	MAX	MIN				
				mBars	--Fahrenheit--			-----					
FEB 00	2.18	0.00	1271	9.8	64	44	53	86	54	71	43	5.4	130 55
MAR 00	4.56	0.00	1451	9.2	70	43	56	86	39	62	42	5.9	142 59
APR 00	5.35	0.00	1549	11.1	75	47	61	87	41	62	47	5.7	136 65
MAY 00	7.01	0.00	1625	13.2	80	52	65	85	43	63	51	6.0	144 71
JUN 00	7.69	0.00	1672	15.3	85	55	69	89	41	64	56	6.2	149 77
JUL 00	8.02	0.00	1666	15.0	87	54	69	88	39	62	55	6.0	144 78
AUG 00	7.95	0.00	1596	14.7	92	58	73	82	31	55	55	6.0	143 81
SEP 00	5.83	0.00	1493	13.7	86	56	69	84	37	58	52	6.0	143 75
OCT 00	3.69	0.00	1338	12.2	74	49	61	89	46	69	49	5.2	125 69
NOV 00	3.64	0.00	1315	6.4	71	41	54	71	25	46	32	7.0	168 58
DEC 00	3.80	0.00	1253	5.9	72	45	57	62	23	40	30	7.3	176 58
JAN 01	3.02	0.00	1262	6.2	64	40	51	71	35	53	31	6.6	159 53
TOTALS AND AVERAGES													
	62.75	0.00	1458	11.1	77	49	61	82	38	58	46	6.1	147 67

Monthly Weather Data for Station #152 Camarillo

in Region -CCV- Central Coast/Valley

DATE	ETO	PRECIP in.	RAD in. Ly/dy	SOLAR VAPOR		AIR TEMP.		REL. HUM.		DEW PT F	WIND AVE mph	WIND RUN mi	AVE SOIL F
	in.			AVE	MAX	MIN	AVE	MAX	MIN				
FEB 00	1.78	0.00	1253	11.2	67	47	55	93	55	76	47	3.0	72 58
MAR 00	3.75	0.01	1424	10.5	69	45	55	94	48	71	46	3.2	77 61
APR 00	4.44	1.74	1495	12.5	72	47	59	94	52	74	50	3.2	76 65
MAY 00	5.49	0.03	1561	14.3	74	51	62	94	55	74	54	3.2	76 70
JUN 00	5.97	0.00	1626	16.6	76	56	66	94	59	77	58	3.3	80 74
JUL 00	6.17	0.00	1610	16.2	78	54	65	95	57	76	58	3.0	73 74
AUG 00	5.51	0.00	1545	17.2	80	56	68	94	55	75	59	2.8	66 76
SEP 00	4.20	0.07	1434	16.2	79	55	66	94	53	74	58	2.5	60 73
OCT 00	2.62	0.70	1307	14.5	72	52	62	93	58	77	54	2.6	63 68
NOV 00	2.61	0.00	1297	8.4	69	43	55	83	36	59	39	2.8	66 58
DEC 00	2.13	0.01	1222	8.7	70	45	57	79	39	59	39	2.7	65 55
JAN 01	2.15	3.84	1253	8.0	65	41	53	85	39	62	39	3.0	72 52
TOTALS AND AVERAGES													
	46.80	6.39	1419	12.8	73	49	60	91	50	71	50	2.9	70 65

$Lv/dav/2.065=W/sc.m$
 $in.*25.4=mm$
 $(F-32)*5/9=C$
 $mph*.447=m/s$
 $mBars*.1=kPa$

EXHIBIT 1

**Monthly Weather Data for Station #101 Piru
CIMIS Project
in Region -CCV- Central Coast/Valley**

DATE	ETo in.	PRECIP in.	SOLAR VAPOR RAD Ly/dy	AVE mBars	AIR TEMP. MAX MIN AVE --Fahrenheit--	REL. HUM. MAX MIN AVE -----t-----	DEW PT F	WIND AVE mph	WIND RUN mi	AVE SOIL F
JAN 95	2.77	18.58	168	6.7	67 51 58	45 33 40	34	5.1	121	53
FEB 95	3.73	1.42	1294	7.0	74 51 62	47 28 38	35	5.7	136	60
MAR 95	4.16	7.95	1367	11.0	76 53 64	64 41 54	46	4.7	113	62
APR 95	4.96	1.02	1498	9.5	73 45 58	87 36 58	42	4.8	116	68
MAY 95	4.83	0.71	1481	12.5	71 48 59	97 50 73	50	5.6	135	72
JUN 95	6.46	0.35	1580	14.0	80 52 65	94 43 67	53	6.0	143	82
JUL 95	8.41	0.00	1620	15.2	90 57 73	90 33 56	56	7.0	169	89
AUG 95	8.43	0.00	1593	13.5	93 57 73	84 26 50	52	6.7	161	89
SEP 95	6.39	0.00	1483	13.5	89 56 71	86 30 55	52	6.3	150	85
OCT 95	5.01	0.00	1370	11.1	82 50 65	82 30 56	45	6.6	158	76
NOV 95	3.46	0.08	1293	9.8	78 47 60	85 30 57	45	6.6	158	67
DEC 95	2.58	2.56	1224	8.8	69 44 55	86 33 60	40	6.5	156	58
----- TOTALS AND AVERAGES -----										
1995	61.20	32.68	1415	11.1	78 51 64	79 34 55	46	6.0	143	72

JAN 96	2.75	2.28	1248	8.0	67 42 53	86 38 61	39	6.1	148	56
FEB 96	2.13	4.92	1278	11.4	67 46 55	95 54 76	47	5.1	122	59
MAR 96	3.83	2.09	1406	10.4	70 44 56	94 46 68	44	5.3	128	58
APR 96	6.46	0.75	1562	9.6	81 48 64	85 27 50	42	5.5	133	67
MAY 96	6.85	0.20	1601	12.7	80 49 64	95 39 63	51	5.8	140	76
JUN 96	7.24	0.00	1615	14.2	85 52 68	94 39 64	54	6.0	143	80
JUL 96	8.07	0.00	1634	15.6	92 57 73	93 32 57	56	5.8	140	86
AUG 96	7.69	0.00	1577	15.6	93 57 73	92 31 57	56	5.5	132	87
SEP 96	5.57	0.00	1485	15.0	86 54 68	95 35 64	55	5.3	126	83
OCT 96	4.80	2.13	1379	10.8	80 48 63	88 27 55	44	5.6	135	75
NOV 96	3.49	2.40	1279	9.2	72 49 60	78 36 56	40	5.9	143	62
DEC 96	2.42	4.80	1201	9.3	65 46 55	81 47 64	42	5.6	134	57
----- TOTALS AND AVERAGES -----										
1996	61.28	19.57	1439	11.8	78 49 63	90 38 61	48	5.6	135	70

JAN 97	1.89	6.54	1201	10.2	62 46 53	90 56 74	44	5.5	131	55
FEB 97	3.31	0.75	1340	7.5	68 41 54	82 32 55	36	6.2	149	57
MAR 97	5.21	0.00	1459	8.8	78 45 60	84 27 51	40	6.0	145	66
APR 97	6.10	1.93	1550	9.7	76 47 61	85 30 53	42	5.9	142	69
MAY 97	7.51	0.00	1612	14.1	85 54 69	88 37 59	53	6.2	149	79
JUN 97	6.15	0.00	1562	16.2	80 54 67	97 50 72	57	5.8	138	82
JUL 97	6.98	0.00	1564	15.8	86 55 70	93 41 65	56	5.9	141	85
AUG 97	7.21	0.00	1553	16.5	92 59 74	91 34 59	58	5.6	134	88
SEP 97	6.08	0.39	1479	15.7	93 59 73	86 29 54	56	5.4	130	84
OCT 97	5.19	0.00	1392	10.5	81 52 66	76 28 51	43	5.8	139	75
NOV 97	2.56	3.15	1245	10.7	72 47 58	89 42 68	47	5.8	138	64
DEC 97	3.14	7.09	1232	6.5	64 42 53	73 30 48	31	7.7	184	53
----- TOTALS AND AVERAGES -----										
1997	61.34	19.84	1433	11.9	78 50 63	86 36 59	47	6.0	143	71

JAN 98	1.77	2.95	1232	10.1	65 42 52	95 51 76	44	5.3	126	55
FEB 98	1.60	19.17	1256	10.4	61 41 51	99 60 82	45	5.0	121	54

EXHIBIT 1

**Monthly Weather Data for Station #101 Piru
CIMIS Project
in Region -CCV- Central Coast/Valley**

DATE	ETo in.	PRECIP in.	SOLAR RAD Ly/dy	VAPOR AVE mBars	AIR TEMP. MAX MIN AVE --Fahrenheit--	REL. HUM. MAX MIN AVE -----&-----	DEW PT F	WIND AVE mph	WIND RUN mi	WIND AVE SOIL F
MAR 98	3.26	4.06	1393	10.4	68 45 56	90 46 70	45	4.0	96	58
APR 98	4.81	1.46	1484	8.6	71 44 56	76 37 57	40	5.1	123	60
MAY 98	5.41	3.19	1521	10.4	71 48 59	79 42 60	45	5.4	131	66
JUN 98	6.21	0.00	1557	12.4	77 52 64	79 44 61	50	5.8	139	75
JUL 98	8.24	0.00	1641	15.8	90 57 73	83 36 58	56	6.3	152	87
AUG 98	8.16	0.00	1588	15.8	95 60 76	82 30 53	57	6.3	150	89
SEP 98	4.56	0.16	1401	15.9	83 57 68	88 44 67	57	5.4	128	81
OCT 98	5.09	0.00	1389	9.0	79 49 63	75 27 48	40	6.6	158	72
NOV 98	3.46	1.38	1302	8.0	71 45 57	75 31 52	38	7.1	169	62
DEC 98	3.83	0.39	1261	5.3	66 41 54	61 25 39	25	7.9	189	54
----- TOTALS AND AVERAGES -----										
1998	56.39	32.80	1420	11.0	75 49 61	82 39 60	45	5.8	140	68

JAN 99	3.49	2.13	1275	7.3	68 43 55	78 33 53	34	7.7	184	57
FEB 99	3.38	0.59	1331	8.4	66 43 54	85 40 62	38	7.5	181	55
MAR 99	3.71	1.81	1406	9.6	65 41 52	97 47 73	43	6.2	148	61
APR 99	4.78	2.05	1500	9.7	69 43 55	93 44 67	43	5.9	141	64
MAY 99	5.69	0.00	1586	13.4	73 47 60	99 56 78	52	5.8	140	70
JUN 99	6.66	0.00	1659	15.0	79 48 63	100 51 77	55	6.3	151	73
JUL 99	7.88	0.00	1685	16.6	85 55 70	95 44 67	58	6.4	154	79
AUG 99	7.54	0.00	1632	15.3	87 54 69	94 40 64	56	5.9	141	78
SEP 99	5.49	0.00	1509	14.2	82 53 65	88 48 70	53	6.0	143	74
OCT 99	6.49	0.00	1453	8.4	87 53 68	67 21 38	38	7.4	177	69
NOV 99	3.43	0.00	1321	9.0	74 46 58	79 32 56	40	6.8	162	60
DEC 99	4.54	0.00	1292	4.3	71 46 58	47 18 29	24	8.9	215	54
----- TOTALS AND AVERAGES -----										
1999	63.08	6.57	1471	10.9	75 48 61	85 39 61	45	6.7	161	66

JAN 00	2.48	0.00	1238	8.6	66 45 54	78 43 60	38	6.0	144	53
FEB 00	2.18	0.00	1271	9.8	64 44 53	86 54 71	43	5.4	130	55
MAR 00	4.56	0.00	1451	9.2	70 43 56	86 39 62	42	5.9	142	59
APR 00	5.35	0.00	1549	11.1	75 47 61	87 41 62	47	5.7	135	65
MAY 00	7.01	0.00	1623	13.2	80 52 65	85 43 63	51	6.0	144	71
JUN 00	7.69	0.00	1672	15.3	85 55 69	89 41 64	56	6.2	149	77
JUL 00	8.02	0.00	1666	15.0	87 54 69	88 39 62	55	6.0	144	78
AUG 00	7.95	0.00	1596	14.7	92 58 73	82 31 53	55	6.0	143	81
SEP 00	5.83	0.00	1493	13.7	86 56 69	84 37 58	52	6.0	143	75
OCT 00	3.69	0.00	1338	12.2	74 49 61	89 46 69	49	5.2	125	69
NOV 00	3.64	0.00	1315	6.4	71 41 54	71 25 46	32	7.0	168	58
DEC 00	3.80	0.00	1253	5.9	72 45 57	62 23 40	30	7.3	176	58
----- TOTALS AND AVERAGES -----										
2000	62.21	0.00	1456	11.3	77 49 62	82 39 59	46	6.1	146	67

Ly/day/2.065=W/sq.m in.=25.4=mm (F-32)*5/9=c mph*.447=m/s mBars*.1=kPa

EXHIBIT 1

Crop coefficients for various crops in Ventura County

The following table is a listing of various crop coefficients (Kc) for crops approaching complete ground cover. The coefficient will decline with decreasing ground cover in an approximate linear fashion. Three sources of Kc are provided: FAO Bulletin #24, U.C. Leaflets 21427 & 21428, and a Bowen Ratio study done by U.C. Davis by Steve Grotan et al.

Crop	FAO	U.C.	Bowen
Artichoke	1.0		0.70
Beans (green)	1.0	1.1	.92
Beets (table)	1.0		
Carrots	1.1	1.1	1.0
Celery	1.1		
Corn (sweet)	1.15	1.15	
Crucifers	1.15		1.0
Egg plant/Peppers	1.0		
Lettuce	1.0	1.0	0.80
Melons	1.0	1.1	0.90
Onions (green)	0.95	1.0	0.93
Peas	1.15		
Radishes	0.85		
Spinach	1.0		
Tomato	1.15	1.15	
Strawberry			0.71
Citrus/Avocado	0.65- 0.75	0.65	
Citrus			

There is some variability with crop, but most of the values come close to the value of whatever the ET will be, or a Kc of 1.0

Ben Faber
Farm Advisor, Ventura and Santa Barbara Counties
July 30, 1990

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