APPENDIX D

Model Simulated Water Budget Data

Table D-1. Model Simulated Water Budget: 1940-2010.

Stress Period	Year	Model Simulated Recharge	Pumpage into Model [1]	Constant Heads In [2]	Total Water Budget Inflows	Constant Heads Out [3]	Pumpage Out of Model	ET	Total Water Budget Outflows	Annual Change In Storage	Cumulative Change In Storage
1	1940	83,508	10,270	10,616	104,422	24,700	70,469	9,259	104,428	0	0
2	1941	109,148	10,270	10,127	129,545	25,760	96,128	13,844	135,732	-6,187	-6,187
3	1942	72,130	10,270	9,981	92,380	25,542	109,589	11,517	146,648	-54,267	-60,454
4	1943	88,276	10,270	9,755	108,302	26,006	116,009	8,782	150,797	-42,496	-102,949
5	1944	91,354	10,270	10,057	111,709	26,458	112,972	10,066	149,496	-37,787	-140,736
6	1945	114,244	10,270	9,960	134,474	26,341	130,164	10,159	166,664	-32,190	-172,926
7	1946	120,948	10,270	9,725	140,944	26,601	138,129	11,388	176,119	-35,175	-208,101
8	1947	78,441	10,270	9,850	98,560	26,778	152,415	7,294	186,486	-87,926	-296,027
9	1948	93,350	10,270	10,050	113,698	27,348	162,485	5,853	195,687	-81,988	-378,016
10	1949	111,244	10,270	10,136	131,650	29,364	170,775	7,571	207,710	-76,060	-454,076
11	1950	110,259	10,270	10,143	130,672	31,041	168,742	5,241	205,024	-74,352	-528,427
12	1951	103,338	10,270	11,072	124,679	31,201	225,986	5,862	263,049	-138,370	-666,797
13	1952	102,340	10,270	11,986	124,624	30,544	265,707	6,352	302,604	-177,980	-844,777
14	1953	97,837	10,270	12,393	120,499	30,389	277,037	3,984	311,410	-190,910	-1,035,688
15	1954	182,809	10,270	12,076	205,155	31,314	277,049	5,948	314,312	-109,157	-1,144,845
16	1955	204,768	10,270	11,917	226,955	32,255	278,500	6,232	316,987	-90,033	-1,234,877
17	1956	82,351	10,270	12,124	104,773	31,706	292,314	3,545	327,566	-222,794	-1,457,671
18	1957	125,649	10,270	12,023	147,942	30,905	302,572	7,281	340,758	-192,816	-1,650,487
19	1958	141,065	10,270	11,428	162,763	30,700	307,861	8,954	347,515	-184,750	-1,835,237
20	1959	161,583	10,270	12,072	183,926	30,042	313,858	6,857	350,758	-166,833	-2,002,070
21	1960	150,051	10,270	11,794	172,144	30,025	334,014	7,017	371,055	-198,912	-2,200,982
22	1961	178,055	10,270	11,725	200,050	29,996	324,109	6,382	360,487	-160,436	-2,361,418
23	1962	132,022	10,270	11,750	154,042	29,526	339,437	5,019	373,982	-219,942	-2,581,360
24	1963	161,962	10,270	11,865	184,097	29,058	335,574	5,708	370,340	-186,242	-2,767,602
25	1964	206,838	10,270	11,715	228,851	27,869	326,087	5,883	359,839	-130,989	-2,898,591
26	1965	197,976	10,270	12,103	220,348	26,767	346,795	8,478	382,040	-161,693	-3,060,284

Table D-1. Model Simulated Water Budget: 1940-2010 (cont.).

Stress Period	Year	Model Simulated Recharge	Pumpage into Model [1]	Constant Heads In [2]	Total Water Budget Inflows	Constant Heads Out [3]	Pumpage Out of Model	ET	Total Water Budget Outflows	Annual Change In Storage	Cumulative Change In Storage
27	1966	203,622	10,270	12,246	226,138	27,231	289,230	9,911	326,372	-100,235	-3,160,519
28	1967	245,769	10,270	12,444	268,482	27,630	318,328	8,719	354,677	-86,191	-3,246,710
29	1968	139,300	10,270	13,316	162,915	26,320	324,920	7,981	359,221	-196,306	-3,443,016
30	1969	146,445	10,270	13,351	170,066	25,124	349,119	6,463	380,706	-210,645	-3,653,660
31	1970	160,811	10,270	14,417	185,499	25,119	363,616	4,501	393,236	-207,734	-3,861,394
32	1971	207,544	10,270	15,450	233,263	25,825	362,488	4,891	393,204	-159,944	-4,021,338
33	1972	196,635	10,297	17,013	223,945	26,570	366,525	5,216	398,311	-174,367	-4,195,706
34	1973	213,060	10,270	17,711	241,040	25,542	364,457	5,575	395,575	-154,533	-4,350,238
35	1974	194,432	10,270	17,914	222,615	24,801	379,085	4,468	408,354	-185,740	-4,535,978
36	1975	182,138	10,270	19,336	211,743	23,959	405,462	3,122	432,542	-220,800	-4,756,778
37	1976	191,950	10,297	19,905	222,153	24,419	385,484	2,860	412,763	-190,612	-4,947,391
38	1977	261,787	10,27-	18,779	290,835	24,518	349,593	3,349	377,460	-86,624	-5,034,014
39	1978	312,993	10,27-	17,534	340,796	25,642	307,683	5,769	339,093	1,703	-5,032,311
40	1979	255,347	10,27-	18,329	283,945	24,291	318,194	5,347	347,832	-63,889	-5,096,200
41	1980	203,286	10,27-	19,653	233,236	23,280	323,720	4,432	351,432	-118,197	-5,214,397
42	1981	227,724	10,270	20,448	258,442	21,731	329,234	4,003	354,968	-96,528	-5,310,925
43	1982	194,423	10,270	20,036	224,730	20,522	293,726	4,219	318,468	-93,735	-5,404,661
44	1983	559,295	10,270	17,560	587,124	21,730	268,526	24,331	314,586	272,544	-5,132,117
45	1984	284,359	10,27-	16,177	310,835	22,406	264,408	30,105	316,918	-6,083	-5,138,200
46	1985	264,238	10,270	17,482	291,990	20,825	287,473	19,952	328,250	-36,254	-5,174,454
47	1986	199,244	10,270	18,332	227,846	20,423	271,460	14,158	306,040	-78,198	-5,252,652
48	1987	182,932	10,270	19,284	212,486	20,357	279,729	11,858	311,944	-99,454	-5,352,106
49	1988	173,409	10,27-	18,859	202,566	18,909	291,167	9,523	319,600	-117,036	-5,469,142
50	1989	158,343	10,270	19,487	188,099	17,830	316,023	6,433	340,286	-152,184	-5,621,325
51	1990	202,087	10,270	19,903	232,260	20,281	271,437	5,672	297,390	-65,132	-5,686,458
52	1991	208,117	10,270	21,272	239,659	17,787	290,817	8,159	316,763	-77,100	-5,763,557
53	1992	204,994	10,27-	20,755	236,047	17,652	274,431	9,478	301,562	-65,511	-5,829,068
54	1993	446,277	10,270	19,639	476,186	20,398	241,924	19,399	281,721	194,463	-5,634,605

Table D-1. Model Simulated Water Budget: 1940-2010 (cont.).

Stress Period	Year	Model Simulated Recharge	Pumpage into Model [1]	Constant Heads In [2]	Total Water Budget Inflows	Constant Heads Out [3]	Pumpage Out of Model	ET	Total Water Budget Outflows	Annual Change In Storage	Cumulative Change In Storage
55	1994	160,879	10,270	21,225	192,374	19,482	297,563	13,910	330,955	-138,580	-5,773,185
56	1995	189,242	10,270	22,017	221,528	18,663	314,729	10,561	343,953	-122,427	-5,895,612
57	1996	138,736	10,270	21,544	170,578	17,583	334,164	7,201	358,948	-188,371	-6,083,983
58	1997	132,372	10,270	21,733	164,375	15,843	330,343	4,166	350,352	-185,979	-6,269,962
59	1998	239,017	10,270	21,573	270,860	14,857	297,405	7,384	319,646	-48,789	-6,318,750
60	1999	181,181	10,270	21,855	213,306	14,287	309,130	6,871	330,287	-116,977	-6,435,727
61	2000	289,622	10,270	20,650	320,570	12,762	320,171	6,438	339,370	-18,799	-6,454,526
62	2001	176,974	10,270	20,965	208,209	14,217	309,788	4,710	328,716	-120,505	-6,575,031
63	2002	186,543	10,270	21,460	218,273	14,856	310,744	2,244	327,844	-109,569	-6,684,600
64	2003	250,237	10,270	19,221	279,729	14,350	317,094	1,704	333,149	-53,417	-6,738,017
65	2004	247,430	10,270	19,034	276,762	14,049	316,022	2,360	332,431	-55,665	-6,793,682
66	2005	297,801	10,270	20,069	328,140	14,488	293,459	3,590	311,537	16,598	-6,777,083
67	2006	346,772	10,270	21,134	378,176	14,831	297,938	4,954	317,723	60,447	-6,716,636
68	2007	301,356	10,270	21,221	332,847	15,208	311,034	4,426	330,668	2,171	-6,714,465
69	2008	310,113	10,270	21,297	341,708	14,176	307,691	4,024	325,891	15,826	-6,698,640
70	2009	279,043	10,270	20,283	309,596	17,751	274,859	2,687	295,296	14,300	-6,684,339
71	2010	341,582	10,270	21,526	373,098	17,571	281,140	2,951	301,661	71,432	-6,612,907
TOTALS		**13,791,007**	**729,384**	**1,141,882**	**15,662,274**	**1,654,332**	**20,086,310**	**534,551**	**22,275,194**	**-6,612,911**	

1) All stress values are in acre-feet per year.
2) Pumpage into the model represents specified groundwater underflow into the model: Altar Valley = 10,200 ac-ft/yr, Falcon Valley = 70 ac-ft/yr.
3) Constant heads in represents groundwater underflow into the model from the Santa Cruz AMA.
4) Constant heads out represents groundwater underflow out the model from the Pinal AMA.

Table D-2. Simulated Annual Change in Storage [1].

Year	Avra Valley Sub-Basin	Cumulative Total	USC Sub-Basin	Cumulative Total
1940	0	0	0	0
1941	-2,452	-2,452	-5,543	-5,543
1942	-6,251	-8,703	-46,199	-51,742
1943	-10,534	-19,237	-31,753	-83,496
1944	-11,578	-30,815	-26,814	-110,310
1945	-8,754	-39,569	-23,367	-133,677
1946	-12,643	-52,212	-23,286	-156,962
1947	-27,392	-79,604	-58,230	-215,192
1948	-36,140	-115,744	-45,986	-261,179
1949	-45,257	-161,001	-32,417	-293,595
1950	-42,583	-203,585	-30,916	-324,511
1951	-79,916	-283,500	-58,547	-383,057
1952	-106,087	-389,587	-70,908	-453,965
1953	-114,210	-503,797	-75,750	-529,716
1954	-98,456	-602,253	-12,572	-542,288
1955	-88,279	-690,532	-1,708	-543,997
1956	-126,779	-817,310	-93,981	-637,978
1957	-125,019	-942,329	-69,964	-707,942
1958	-123,689	-1,066,018	-61,109	-769,051
1959	-125,436	-1,191,454	-39,761	-808,812
1960	-130,909	-1,322,363	-67,612	-876,424
1961	-119,178	-1,441,542	-40,304	-916,728
1962	-116,540	-1,558,082	-102,824	-1,019,552
1963	-115,458	-1,673,540	-70,874	-1,090,426
1964	-109,831	-1,783,371	-20,387	-1,110,813
1965	-113,353	-1,896,724	-49,032	-1,159,845
1966	-88,919	-1,985,643	-11,747	-1,171,592
1967	-102,744	-2,088,387	17,060	-1,154,532
1968	-112,934	-2,201,321	-81,848	-1,236,380
1969	-114,203	-2,315,524	-95,349	-1,331,729
1970	-99,624	-2,415,148	-106,788	-1,438,517
1971	-78,375	-2,493,522	-81,802	-1,520,319
1972	-76,650	-2,570,172	-96,614	-1,616,933
1973	-72,369	-2,642,541	-81,932	-1,698,865
1974	-71,593	-2,714,134	-113,092	-1,811,957
1975	-71,697	-2,785,831	-147,664	-1,959,621
1976	-56,551	-2,842,383	-134,095	-2,093,717
1977	-46,354	-2,888,736	-40,861	-2,134,577
1978	-3,188	-2,891,924	2,861	-2,131,717
1979	-18,513	-2,910,438	-43,404	-2,175,121

Table D-2. Simulated Annual Change in Storage [1] (cont).

Year	Avra Valley Sub-Basin	Cumulative Total	USC Sub-Basin	Cumulative Total
1980	-34,112	-2,944,550	-82,648	-2,257,769
1981	-4,565	-2,949,115	-90,840	-2,348,608
1982	-1,336	-2,950,450	-92,202	-2,440,811
1983	58,953	-2,891,498	201,756	-2,239,054
1984	18,607	-2,872,891	-22,744	-2,261,798
1985	8,406	-2,864,485	-40,102	-2,301,900
1986	14,683	-2,849,802	-91,581	-2,393,481
1987	7,044	-2,842,757	-105,465	-2,498,946
1988	5,746	-2,837,011	-121,147	-2,620,093
1989	5,588	-2,831,423	-154,800	-2,774,893
1990	23,319	-2,808,105	-89,195	-2,864,088
1991	3,836	-2,804,269	-80,534	-2,944,623
1992	13,651	-2,790,618	-79,457	-3,024,080
1993	49,362	-2,741,256	137,182	-2,886,898
1994	-5,907	-2,747,163	-127,546	-3,014,444
1995	-4,719	-2,751,882	-117,650	-3,132,093
1996	-19,585	-2,771,467	-166,307	-3,298,400
1997	-19,623	-2,791,090	-164,809	-3,463,209
1998	5,043	-2,786,046	-56,141	-3,519,349
1999	12,896	-2,773,151	-127,857	-3,647,207
2000	18,342	-2,754,809	-37,391	-3,684,598
2001	4,806	-2,750,002	-124,375	-3,808,973
2002	11,597	-2,738,405	-120,685	-3,929,658
2003	22,996	-2,715,409	-76,836	-4,006,494
2004	29,365	-2,686,044	-84,740	-4,091,234
2005	62,743	-2,623,301	-46,653	-4,137,887
2006	77,356	-2,545,945	-17,043	-4,154,930
2007	43,219	-2,502,727	-40,866	-4,195,796
2008	57,487	-2,445,240	-40,928	-4,236,724
2009	70,796	-2,374,443	-57,275	-4,293,999
2010	86,400	-2,288,043	-14,864	-4,308,863

1). All storage values are in acre-feet...