SANTA MARGARITA RIVER WATERSHED

ANNUAL WATERMASTER REPORT

WATER YEAR 1996-97

UNITED STATES OF AMERICA
VS.
FALLBROOK PUBLIC UTILITY DISTRICT, ET AL

CIVIL NO. 1247 - SD-T

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July 1998

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WATERMASTER
SANTA MARGARITA RIVER WATERSHED

SECTION 1 - SUMMARY

Section 1 - A summary of the Santa Margarita River Watershed Annual Watermaster Report for the 1996-97 Water Year.

Section 2 - This Annual Watermaster Report is prepared pursuant to Section II of the U. S. District Court Order dated March 13, 1989. The Court has retained jurisdiction over all surface flows of the Santa Margarita River Watershed and all underground waters determined by the Court to be subsurface flow of streams or creeks or which is determined by the Court to add to, support or contribute to the Santa Margarita River stream system. Thus imported waters, whether in storage in Lake Skinner or being transported through the Watershed, are outside Court jurisdiction, along with local, vagrant groundwaters that do not support the Santa Margarita River stream system.

Section 3 - Surface water flows were below normal in 1996-97, with flows for most long-term stations at approximately 50 percent of the long-term average flow. Surface diversions to irrigation use totaled 1,102 acre feet compared with 950 acre feet in 1995-96. The total quantity of water in storage in the Watershed on September 30, 1997, was 60,332 acre feet, of which 19,619 acre feet was Santa Margarita River water and 40,713 acre feet was imported water.

Section 4 - Groundwater extractions were 49,579 acre feet compared to 50,785 acre feet in 1995-96. Water purveyors pumped 43,042 acre feet and 6,537 acre feet were pumped by other substantial users.

Section 5 - During 1996-97, 49,247 acre feet of water were imported and distributed in the Santa Margarita River Watershed by eight purveyors. This compares with 43,689 acre feet in 1995-96 and represents a 13 percent increase from 1995-96. Net exports, including wastewater, were 5,283 acre feet.

Section 6 - Water rights during the 1950's and 1960's consisted primarily of riparian and overlying rights. Other rights included appropriative rights and federal reserved rights. More recently, water purveyors in the Watershed have begun exercising groundwater appropriative rights. Appropriative surface water rights on file with the State Water Resources Control Board (SWRCB) amount to 906,892 gallons per day which corresponds to 1.4 cfs or 2.78 acre feet per day of direct diversion rights and 44,315.5 acre feet of active storage rights.

Section 7 - Total imported supplies plus local production totaled 99,928 acre feet compared to 95,424 reported in 1995-96. Of that quantity, 52,386 acre feet were used for agriculture; 7,134 acre feet were used for commercial purposes; and 33,387 acre feet were used for domestic purposes; 2,978 acre feet were discharged to Murrieta Creek; 3,644 acre feet of fresh water were exported; 1,354 acre feet were recharged resulting in an overall system gain of 955 acre feet. System gain or loss is the result of many factors including errors in measurement, differences between periods of use and periods of production, leakage and unmeasured uses.

Section 8 - The United States has raised a number of issues regarding unauthorized water use by Rancho California WD including violation of the 1940 Stipulated Judgment and rediversion and use of water from Vail Lake not in accord with terms of Permit 7032. During 1996-97, representatives of Rancho California WD and the United States continued negotiation to resolve the issues.

Section 9 - Threats to water supply include high nitrate levels in Rainbow Creek and Anza Valley in past years, potential overdraft conditions in the Murrieta-Temecula and Anza groundwater basins, and salt balance issues in the upper Watershed.

Section 10 - Water quality data in the Watershed for 1996-97 are presented in Appendix D.

Section 11 - Projected Watermaster tasks for the next five years are listed.

Section 12 - A total Watermaster budget of $265,950 is proposed for the 1998-99 Water Year. This budget includes $162,300 for the Watermaster Office and $103,650 for operation of gaging stations by the U. S. Geological Survey (U.S.G.S.).

SECTION 2 - INTRODUCTION

2.1 Background

On January 25, 1951, the United States of America filed Complaint No. 1247 in the United States District Court for the Southern District of California to seek a judicial determination of all respective water rights within the Santa Margarita River Watershed. The Final Judgment and Decree was entered on May 8, 1963, and appealed to the U. S. Court of Appeals. A Modified Final Judgment and Decree was entered on April 6, 1966. Among other things, the Decree provided that the Court:

> . . . retains continuing jurisdiction of this cause as to the use of all surface waters within the watershed of the Santa Margarita River and all underground or sub-surface waters within the watershed of the Santa Margarita River, which are determined in any of the constituent parts of this Modified Final Judgment to be a part of the sub-surface flow of any specific river or creek, or which are determined in any of the constituent parts of this Modified Final Judgment to add to, contribute to, or support the Santa Margarita River stream system.

In March 1989, the Court appointed James S. Jenks as Watermaster to administer and enforce the provisions of the Modified Final Judgment and Decree and subsequent orders of the Court. The appointing Order described the Watermaster's Powers and Duties as well as procedures for funding and operating the Watermaster's Office. Also in 1989, the Court appointed a Steering Committee which at the conclusion of 1996-97 was comprised of representatives from the United States, Eastern Municipal Water District, Fallbrook Public Utility District, Metropolitan Water District of Southern California, Pechanga Tribe, and Rancho California Water District. The purpose of the Steering Committee is to assist the Court, to facilitate litigation, and to assist the Watermaster.

2.2 Authority

Section II of the appointing Order requires that the Watermaster submit a written report containing his findings and conclusions to the Court promptly after the end of each water year.

2.3 Scope

The subjects addressed in this report are responsive to Section II of the appointing order. Information and data contained in this report are based on information reported to the Watermaster by others. Therefore, the Watermaster does not guarantee the completeness and accuracy of the information presented in this report although most of the data presented are based on measurements. Estimates by the Watermaster are so noted.

WATERMASTER
SANTA MARGARITA RIVER WATERSHED

SECTION 3 - SURFACE WATER AVAILABILITY AND USE

3.1 Surface Flow

Over the years, flows in the Santa Margarita River Watershed have been measured at the stations listed on Table 3.1. A number of these stations have been discontinued. During Water Year 1996-97 the U.S.G.S. operated 12 stations under an agreement with the Watermaster and operated one station (Fallbrook Creek) under an agreement with Camp Pendleton. In considering the historical record of flow at these stations, it should be recognized that the long term average flows are subject to variations in watershed conditions including level of development, groundwater production, return flows, impoundments and vegetative use as well as hydrologic conditions, changes in gaging station locations and other factors. Descriptions of the various historical locations of gaging stations may be found in the publication, *Water Resources Data - California*, which is published annually by the U.S.G.S.

Monthly flows for stations in Water Year 1996-97 are shown on Table 3.2. That table lists U.S.G.S. estimates of discharges available at the time this report is published. Official U.S.G.S. estimates of discharges for 1996-97 will be published by the U.S.G.S. in its annual Water Resources Data report.

Total flows at four long-term stations for Water Years 1995-96 and 1996-97 are compared with the average for the stations in the tabulation below. Average flows for the Santa Margarita River stations near Temecula and near Ysidora are shown for two periods: before Vail Dam was constructed (1923 to 1948), and after Vail Dam was constructed (1948 to date).

	TOTAL FLOW		AVERAGE FLOW
	1995-96 Acre Feet	1996-97 Acre Feet	Through 1996 Acre Feet
Temecula Creek Near Aguanga	4,387	3,315	6,140 (1957-96)
Murrieta Creek At Temecula	2,246	5,325	9,297 (1925-96)
Santa Margarita River Near Temecula	4,522	7,725	14,050 (1949-96) 20,390 (1923-48)
Santa Margarita River Near Ysidora (various locations)	11,177	26,454	27,843 (1949-96) 31,390 (1923-48)

TABLE 3.1

SANTA MARGARITA RIVER WATERSHED

STREAM GAGING STATIONS

1996-97

STATION NAME	STATION NO.	AREA SQ MI	RECORDED BY	PERIOD OF RECORD 1920	1930	1940	1950	1960	1970	1980	1990
Temecula Creek Near Aguanga	11042400	131	USGS		8/57						
Wilson Creek Above Vail Lake	11042490	122	USGS							10/89	10/94
Temecula Creek At Vail Dam	11042520	320	USGS	2/23					10/77		
Vail Lake at Temecula (Reservoir Storage)	11042510	320	USGS			10/48					
Pechanga Creek Near Temecula	11042631	13.8	USGS							10/87	
Warm Springs Creek Near Murrieta	11042800	55.4	USGS							10/87	
Santa Gertrudis Creek Near Temecula	11042900	90.1	USGS							10/87	
Murrieta Creek At Temecula	11043000	222	USGS	10/25							
Santa Margarita River Near Temecula	11044000	588	USGS	2/23							
Rainbow Creek Near Fallbrook	11044250	10.3	USGS								9/89
Sandia Creek Near Fallbrook	11044350	21.1	USGS								9/89
Santa Margarita River At FPUD Sump	11044300	620	USGS	10/24						9/80	9/89
Santa Margarita River Tributary Near Fallbrook	11044600	0.52	USGS					10/61 9/65			
DeLuz Creek Near DeLuz 1/	11044800	33	USGS/NRO				2/51	67 69	77		9/89
Santa Margarita River Near DeLuz Station	11045000	705	USGS	10/24 - 9/26							
Fallbrook Creek 2/ Near Fallbrook	11045300	6.97	USGS/NRO					10/64	9/76	12/88	
Santa Margarita River At Ysidora	11046000	723	USGS	3/23							
			WATER YEAR ENDING	1920	1930	1940	1950	1960	1970	1980	1990

All Stations Recorded by USGS
1/ Recorded by USMC, Camp Pendleton October 1966 to 1977
2/ Recorded by USMC, Camp Pendleton prior to October 1993

TABLE 3.2

SANTA MARGARITA RIVER WATERSHED

MEASURED SURFACE WATER FLOW

1996-97

Quantities in Acre Feet

GAGING STATION	DRAINAG AREA SQ MI	MONTH OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	WATER YEAR TOTAL	ANNUAL AVERAGE THRU 1996	YEARS OF RECORD THRU 1996
Temecula Creek Near Aguanga	131	181	309	362	1,060	394	267	230	110	108	90	86	118	3,315	6,140	39
Pechanga Creek Near Temecula	13.8	0	3	0	8	0	0	0	0	0	0	0	0	11	890	9
Warm Springs Creek Near Murrieta	55.4	1	40	36	212	30	7	0	0	0	0	0	5	332	3,770	9
Santa Gertrudis Creek Near Temecula	90.2	4	115	152	609	31	121	0	0	0	0	0	40	1,072	3,520	9
Murrieta Creek At Temecula	222	173	661	397	2,710	146	92	304	257	120	120	163	182	5,325	9,297	72
Santa Margarita River Near Temecula	588	242	1,070	534	3,840	250	230	379	356	211	188	186	239	7,725	14,050 20,390	48 (1949-96) 26 (1923-48)
Rainbow Creek Near Fallbrook	10.3	21	203	167	824	201	80	38	25	9	4	4	36	1,613	3,710	7
Sandia Creek Near Fallbrook	21.1	32	206	499	1,770	1,070	443	247	133	99	42	16	31	4,588	8,580	7
Santa Margarita River At FPUD Sump	620	358	1,450	1,130	5,680	868	505	729	376	145	278	214	305	12,038	42,420	7
DeLuz Creek Near DeLuz	33	0	83	619	2,610	715	213	137	44	7	0	0	0	4,428	3,770 N/A 17,690	25 (1951-77) Except 1968 (1989-90) 4 (1992-96)
Santa Margarita River At Ysidora	723	0	2,410	2,750	14,510	4,140	1,720	617	282	25	0	0	0	26,454	27,843 31,390	48 (1949-96) 26 (1923-48)
Fallbrook Creek Near Fallbrook	6.97	2	199	197	636	122	67	48	24	9	2	2	5	1,312	2,080 *	13 (1965-77) 7 (1990-96)

* Includes wastewater flows
N/A - Not Applicable

The foregoing tabulation indicates that, except for the station at Ysidora, flows in 1996-97 were approximately 50 percent of the post-Vail Dam average flow. Flow at the Ysidora station was 95 percent of the long-term average.

Monthly flows shown in Table 3.2 consist primarily of naturally occurring surface runoff except for Rancho California WD discharges into Temecula and Murrieta Creeks. These discharges are pursuant to Section Eleventh of the 1940 Stipulated Judgment which requires maintenance of three cubic feet per second (cfs) flow at the Santa Margarita River near Temecula station between May 1 and October 31 of each year. Total flow at that station for October 1996 and May through September 1997 are shown below:

Month	Monthly Discharge Acre Feet	Average Daily Flow CFS
October 1996	242	3.9
May 1997	356	5.8
June 1997	211	3.6
July 1997	188	3.1
August 1997	186	3.0
September 1997	239	4.0
TOTAL	1,422	3.9

During 1996-97, Rancho California WD released 2,978 acre feet into Murrieta Creek of which 1,800 acre feet were released between October 1 and 31, 1996, and between May 1 and September 30, 1997. Of the 1,800 acre feet released in October 1996 and May through September 1997, 926 acre feet were from wells and 874 acre feet were from the System River Meter. The System River Meter refers to discharges directly from Rancho California WD's distribution system into Murrieta Creek at a location just upstream from the Murrieta Creek gaging station.

3.2 Surface Water Diversions

Surface diversions to surface water storage and groundwater storage during 1995-96 and 1996-97 are shown in Table 3.3. Diversions to surface storage at Vail Lake and Lake O'Neill are computed as being equal to inflow less spill. In addition, diversion to surface storage at Vail Lake excludes inflow during the period from May 1 through October 31 when Permit 7032 does not allow such diversions. Inflow to Vail is calculated as the sum of evaporation, spill, releases and change of storage. Inflow into Vail Lake during the period when diversions are not permitted is released and not credited to groundwater storage. Representatives of the United States do not agree with this method of calculation. Surface diversions to irrigation, estimated consumptive use, losses and returns for 1996-97 are shown in Table 3.4.

TABLE 3.3

SANTA MARGARITA RIVER WATERSHED
SURFACE WATER DIVERSIONS TO STORAGE
1996-97
Quantities in Acre Feet

Surface Water Storage

	Vail Lake		Lake O'Neill	
	1995-96	1996-97	1995-96	1996-97
Storage end of prior year	28,630	19,790	720	600
Inflow - Total	5,221	4,957	716[1]	1,588[2]
Inflow to be Bypassed	1,068	787	0	0
Spill	0	0	0	0
Diversions to Surface Storage	4,153[3]	4,170[3]	716[4]	1,588[4]
Annual Evaporation	3,566	3,365	362	370
Releases - Total	10,495	2,512	0	786
Release to GW Storage	9,427[5]	1,725[5]	0	786
Apparent Seepage to GW	0	0	474	283
Change of Storage	- 8,840	- 920	- 120	+ 149
Storage End of Year	19,790	18,870	600	749

Groundwater Storage

Recharge Release from Storage Facility	9,427	1, 725	0	786
Direct Recharge	0	0	1,099	3,637

1 0 AF diverted from the Santa Margarita River and 716 acre feet inflow from Fallbrook Creek
2 0 AF diverted from the Santa Margarita River and 1,588 AF estimated inflow from Fallbrook Creek drainage area
3 Inflow less Spill less Inflow (Oct 1 to Oct 31 and May 1 to Sept 30)
4 Inflow less Spill
5 Total Release less Inflow to be bypassed

TABLE 3.4

SANTA MARGARITA RIVER WATERSHED
SURFACE WATER DIVERSIONS TO IRRIGATION
1996-97
Quantities in Acre Feet

	Surface Diversions	Consumptive Use[1]	Losses[2]	Returns[3]
Pechanga Indian Res.	4	2.7	0.4	0.9
Prestininzi	18	12	2	4
Blue Bird Ranch	31	21	3	7
Chambers	5	3.4	0.5	1.1
Cal June, Inc.	180	122	18	40
Cottle/Strange	338	228	34	76
Missionary Foundation	200	135	20	45
Agri-Empire, Inc. Kohler Canyon	54	37	5	12
Papac	38	26	4	8
Sage Ranch Nursery	100	68	10	22
Borel	67	45	7	15
Margarita Land and Development Co.	67	45	7	15
TOTAL	1,102	745.1	110.9	246

1 Consumptive use equals 75% of Diversions less Losses
2 Losses equal 10% of Diversions
3 Returns equal 25% of Diversions less Losses

3.3 Water Storage

Major water storage facilities in the Santa Margarita River Watershed are listed on Table 3.5, together with the water in storage on September 30, 1996, and September 30, 1997. Total Santa Margarita River stream system water in storage at the end of Water Year 1996-97 totaled 19,619 acre feet, compared to 20,390 acre feet at the end of the previous year. Imported water in storage in Lake Skinner operated by Metropolitan Water District of Southern California (MWD) is also shown on Table 3.5. Imported water is not under Court jurisdiction.

TABLE 3.5

SANTA MARGARITA RIVER WATERSHED
WATER IN STORAGE
1996-97
Quantities in Acre Feet

Santa Margarita River Storage	Total Capacity	Water in Storage 9/30/96	9/30/97
Dunn Ranch Dam	90	0	0
Upper Chihuahua Creek Reservoir	± 47	2 E	0
Vail Lake	49,370	19,790	18,870
Lake O'Neill	1,200	600	749
Subtotal	50,707	20,390	19,619
Imported Water Storage			
Lake Skinner	44,000	40,583	40,713
TOTAL STORAGE	94,707	60,973	60,332

E - Estimated

SECTION 4 - SUBSURFACE WATER AVAILABILITY

4.1 General

Much of the water from the Santa Margarita River stream system is obtained by pumping subsurface water. The Court has identified two basic types of subsurface water in its interlocutory judgments. One type is vagrant, local, percolating waters that do not add to, support or contribute to the Santa Margarita River or its tributaries. Such waters have been determined to be outside the continuing jurisdiction of the Court. These waters are typically found in the basement complex and/or residuum deposits in the Watershed. Wells tapping these deposits typically have low yields.

Other subsurface waters were found by the Court to add to, contribute to and support the Santa Margarita River and/or its tributaries. Aquifers containing such waters have been designated by the Court as younger alluvium and older alluvium. Younger alluvial deposits are commonly exposed along streams and in valleys. Older alluvium may be found underneath younger alluvium and is not limited to areas along stream channels. Older alluvium may or may not be exposed at ground surface. The use of subsurface water found in younger and older alluvium is generally under the continuing jurisdiction of the Court and is reported upon in this report.

4.2 Extractions

Production of Santa Margarita River water by substantial water users in the Watershed from all sources is listed on Table 4.1 by hydrologic area along with estimated consumptive use and return flows. Substantial water users include water purveyors as well as private irrigators who irrigate eight acres or more or use an equivalent quantity of water.

In 1996-97 production by purveyors totaled 43,042 acre feet, compared to 43,714 acre feet in 1995-96. Monthly quantities are shown in Appendix A and annual production for water years between 1966 and 1997 is shown in Appendix B.

Subsurface extractions by private irrigators are based on the irrigated acreage and reported in Appendix C. These groundwater extractions were 6,537 acre feet in 1996-97. Of the subsurface extractions, 75 percent is estimated to have been consumed and 25 percent to have been return flow. Return flow is that portion of the total deliveries that is not consumed.

In addition to groundwater production by water purveyors and private irrigators, surface diversions are also listed on Table 4.1 as well as total production of Santa Margarita River water.

TABLE 4.1

SANTA MARGARITA RIVER WATERSHED

SANTA MARGARITA RIVER WATER PRODUCTION BY SUBSTANTIAL USERS

1996-97

HYDROLOGIC AREA	WATER PURVEYOR PRODUCTION ACRE FEET	OTHER IRRIGATED ACRES	IRRIGATION PRODUCTION ACRE FEET	TOTAL GROUNDWATER PRODUCTION ACRE FEET	SURFACE WATER DIVERSIONS ACRE FEET	TOTAL PRODUCTION ACRE FEET	ESTIMATED CONSUMPTIVE USE ACRE FEET 1/	ESTIMATED RETURN FLOW ACRE FEET
Wilson Creek Above Aguanga GWA Includes Anza Valley *(Lake Riverside, (Anza MWC, Cahuilla)*	301	1,886 2/	2,186	2,487	0	2,487	1,865	622
Temecula Creek Above Aguanga GWA *(Butterfield Oaks MHP)*	9	598	1,114	1,123	92	1,215	904	311
Aguanga GWA	83 *(Outdoor Resorts)*	592	940	1,023	538	1,561	1,130	431
Upper Murrieta Creek	0	0	0	0	0	0	0	0
Lower Murrieta Creek	0	425	42	42	167	209	144	65
Murrieta-Temecula GW	36,345 *(RCWD, MCWD, EMWD, Pechanga)*	1,228	1,729	38,074	3	38,077	28,558	9,519
Santa Margarita River Below the Gorge								
Deluz Creek	0	205	418	418	55	473	351	122
Sandia Creek	0	126	75	75	180	255	178	77
Rainbow Creek	0	0	0	0	0	0	0	0
Santa Margarita River	6,304 *(USMC)*	20	33	6,337	67	6,404	1,471	3,221
TOTAL	**43,042**	**5,080**	**6,537**	**49,579**	**1,102 3/**	**50,681**	**34,601**	**14,369**

1/ Estimated consumptive use is equal to 75% of groundwater production plus 75% of surface diversions less 10% except for Camp Pendleton where net export of 1,711 acre feet is excluded and return flows include measured wastewater returns

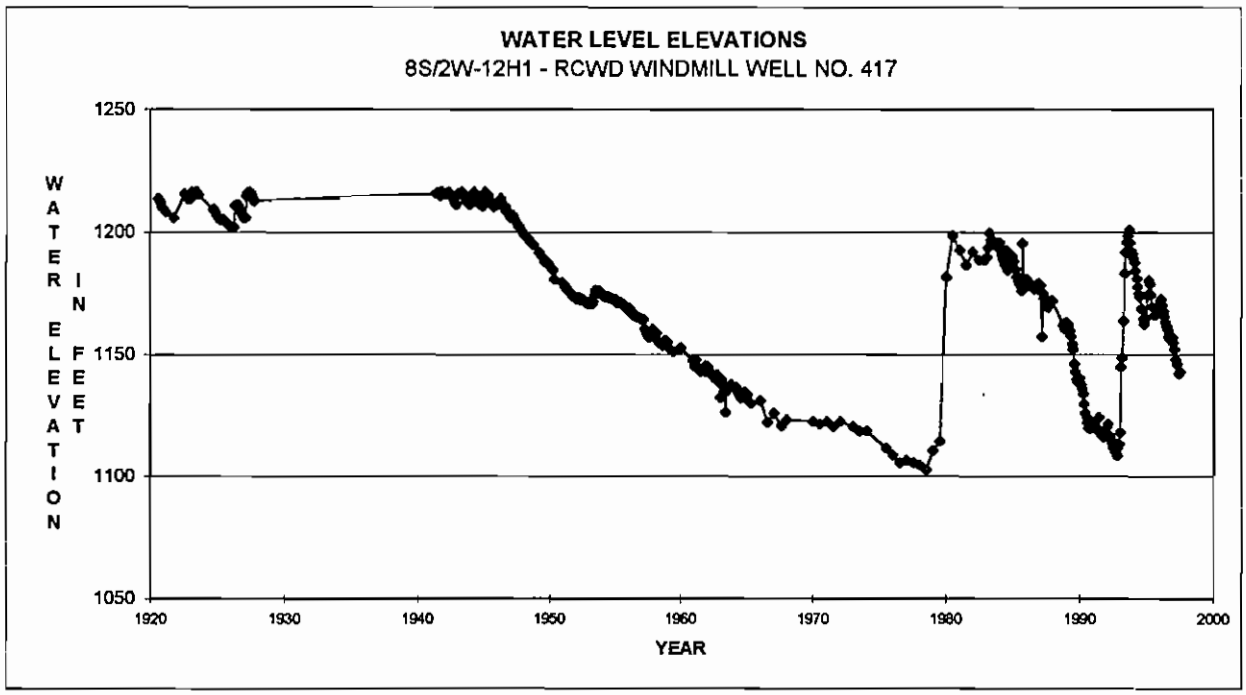
2/ Includes lands overlying deep aquifer in Anza Valley

3/ Includes surface diversion for irrigation, commercial and domestic use.

4.3 Water Levels

Water levels in selected wells in the Watershed are measured periodically by various entities. Historical water levels in five wells at various locations in the Watershed are shown in this report on Figures 4.1, 4.2, 4.3, 4.4 and 4.5. Figure 4.1 shows water levels in Well No. 8S/2W-12H1 (Windmill Well) located in the Rancho California WD service area downstream from Vail Lake. Note the extended drawdown from 1945 to 1978, the major recoveries during the wet years in 1980 and 1993, and the effect of dry years after 1980 and in 1994. After reaching an elevation of 1198.1 feet at the end of 1993, levels declined 56.8 feet by the end of 1996-97 (an elevation of 1141.27 feet).

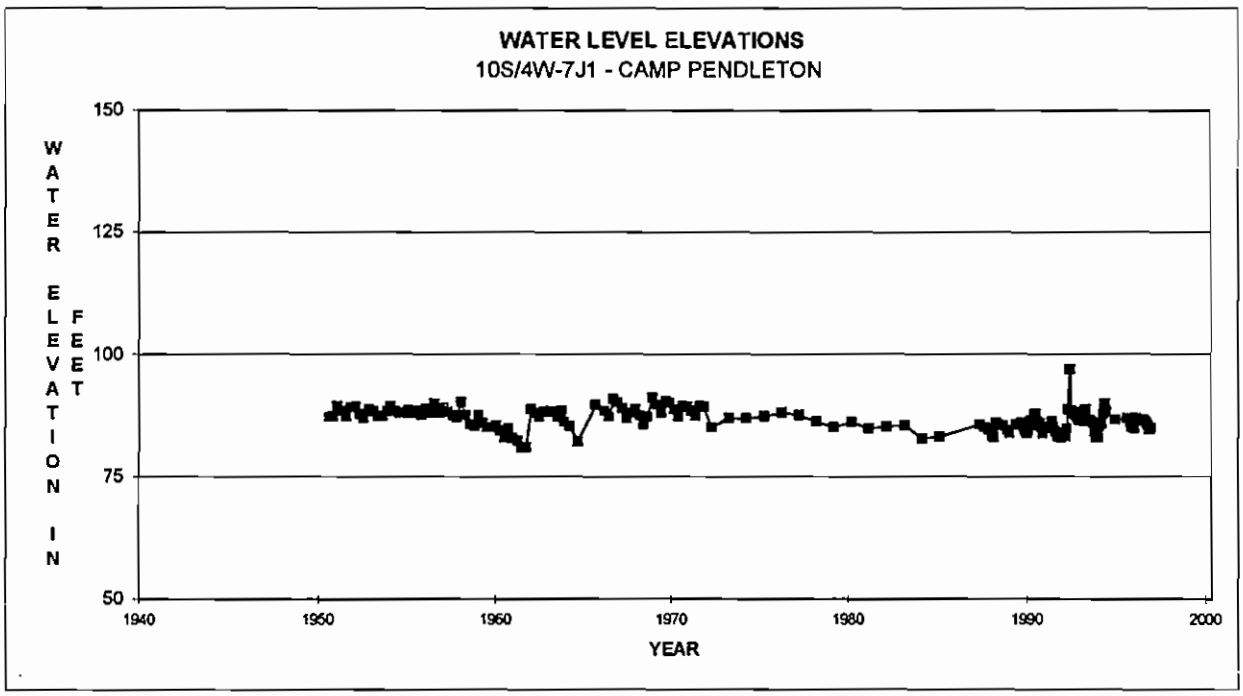
FIGURE 4.1



Collar El. 1216.7 Feet; Depth 515 Feet; Drilled in Alluvium
Ref: RCWD reports (1920-97)

Figure 4.2 shows water levels at Well No. 10S/4W-7J1 at Camp Pendleton, a monitoring well located in the Upper Sub-basin. Water levels since 1950 show no long-term trends. Fluctuations in recent years illustrate recharge during the winter months and drawdown each summer, with the water levels generally between 82 and 90 feet in elevation. Water levels in Well 7J1 declined 0.9 feet between the fall of 1996 and the fall of 1997.

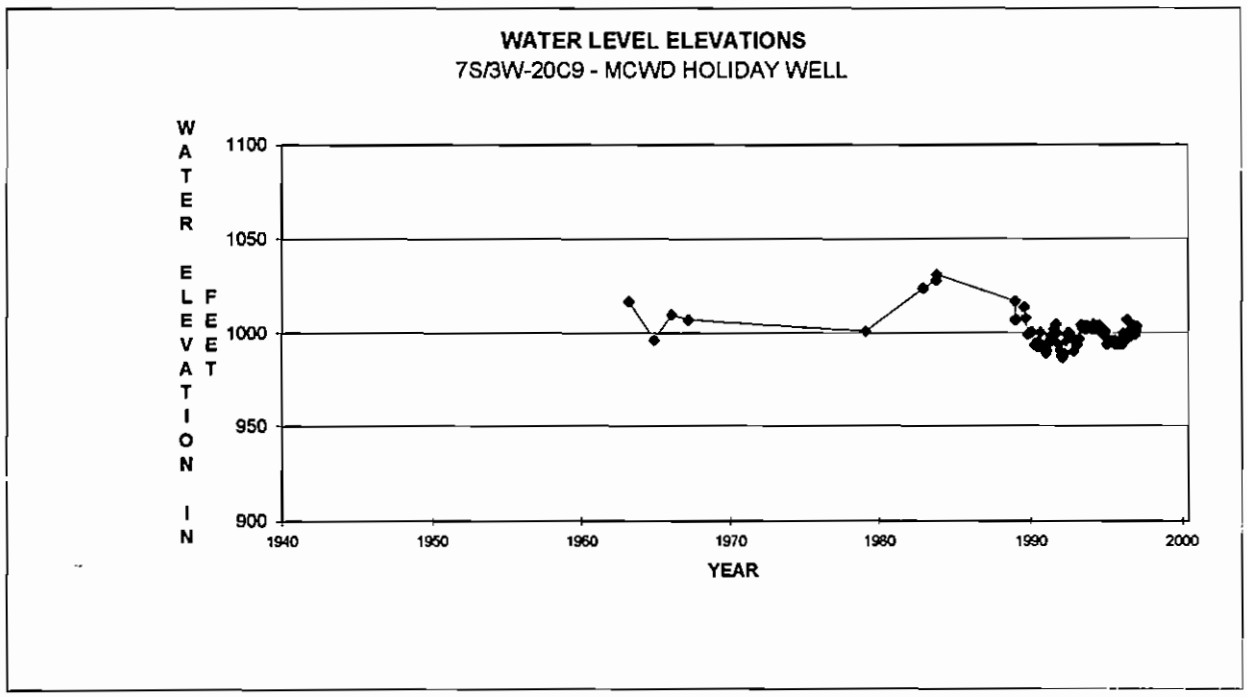
FIGURE 4.2



Ground El. 93 Feet; Depth 138.8 Feet; Perf. Unknown; Drilled in Alluvium
Camp Pendleton Records (1950-72) (1988-97); Leeds Hill Study (1973-85) Dates Estimated

Figure 4.3 shows water levels from production Well No. 7S/3W-20C9 (Holiday Well) in the Murrieta County Water District service area. Water levels in this well rose 9.8 feet since the fall of 1996. Water levels in the Lynch Well, 7S/3W-17R2, which serves as a monitoring well and had no production in 1996-97, rose 6 feet.

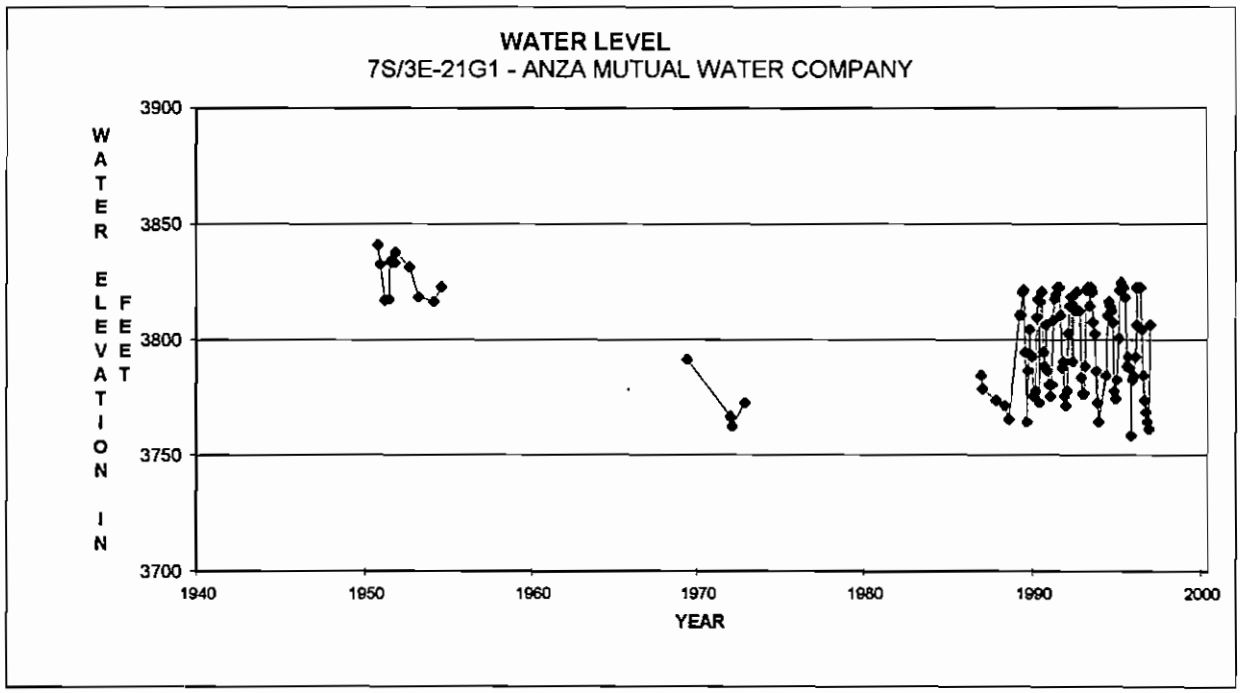
FIGURE 4.3



Ground El. 1090 Feet; Depth 307 Feet; Perf. 60 - 307 Feet
Murrieta County Water District Records

Figure 4.4 shows water levels for Well No. 7S/3E-21G1, Anza Mutual Water Company's Well No. 1, a production well located in the Anza Valley. Water levels in this well rose 22 feet this year. Recent measurements show annual 50 foot fluctuations in groundwater levels at this well, partly in response to the operation of nearby irrigation wells. The year end measurement for 1996-97 occurred three days after a tropical storm passed through the area. This storm reduced the need for irrigation pumping in nearby wells, thus it is not surprising that the groundwater levels were near the upper part of the fluctuation range.

FIGURE 4.4

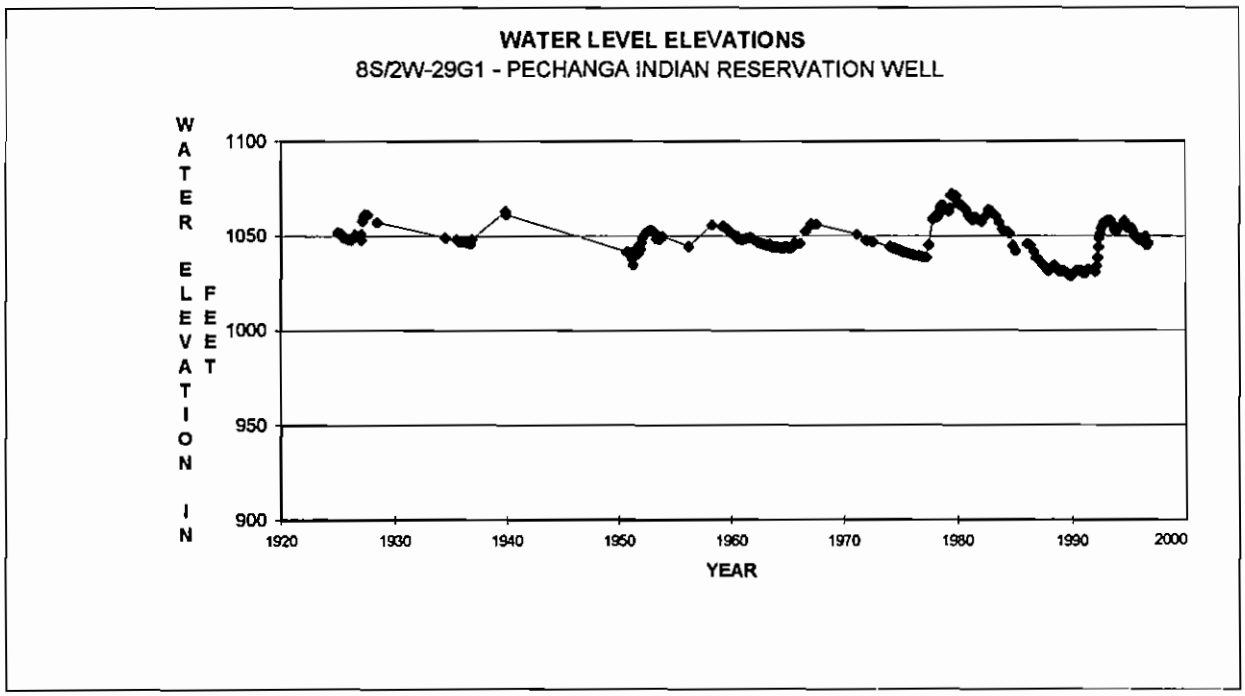


Ground El. 3862.6 Feet; Depth 260 Feet; Perf. 20 - 260 Feet; Drilled in Alluvium
Anza Mutual Water Co. Well No. 1 (1987-97); DWR Bulletin 91-22 (1950-73)

Figure 4.5 shows water levels at Well No. 8S/2W-29G1, located in Wolf Valley on the Kelsey Tract of the Pechanga Indian Reservation. The well is not used for water production and its depth as measured in 1972 was 159 feet. Water levels collected since 1925 reflect unconfined groundwater levels.

As shown on Figure 4.5 the groundwater levels have fluctuated within a 44 foot range above and below elevation 1050 feet in response to wet years and dry periods.

FIGURE 4.5



Ground El. 1091.1 Feet; Depth 159.1 Feet
U.S. Geological Survey Records

Changes in water levels in the above noted wells between the end of the previous water year and the end of the 1997 water year are shown below:

Well	Water Elevation 1996 Feet	Water Elevation 1997 Feet	Change in Water Level Feet
8S/2W-12H1	1160.3	1141.27	Down 19.03
10S/4W-7J1	85.7	84.8	Down 0.90
7S/3W-20C9	994.0	1003.8	Up 9.80
7S/3E-21G1	3784.6	3806.6	Up 22.00
8S/2W-29G1	1049.5	1047.6	Down 1.90

4.4. Changes in Groundwater Storage

During 1996-97, Rancho California WD, working with a joint Camp Pendleton-Rancho California WD Technical Advisory Committee, continued efforts to develop, calibrate and verify a groundwater model of the Murrieta-Temecula Groundwater Area. During the verification stage, the model will be used to help depict historical conditions including historical changes in groundwater storage. When completed, it is hoped the model will be capable of estimating groundwater conditions under various operating scenarios.

SECTION 5 - IMPORTS/EXPORTS

5.1 General

Court Orders require the Watermaster to determine the quantities of imported water used in the Watershed. Most of the water imported into the Santa Margarita River Watershed is by MWD for sale to local districts. MWD obtains its water from the State Water Project (SWP) and the Colorado River. Both the SWP and the Colorado River system have major storage reservoirs to provide long-term carryover storage. The quantities of water in storage at the end of the water year in the major reservoirs in each system are shown on Table 5.1. It may be seen that during Water Year 1996-97 water in storage in the SWP decreased from 4.08 million acre feet on September 30, 1996, to 3.18 million acre feet on September 30, 1997. Storage on September 30, 1997, corresponds to about 60 percent of the total SWP storage capacity.

Unlike the SWP, water in storage in the Colorado River system increased from 50.2 million acre feet on September 30, 1996, to 54.7 million acre feet on September 30, 1997. On September 30, 1997, those reservoirs contained 85 percent of their total capacity, the most in storage on that date in recent years.

Projections of water availability on the SWP for the coming year (1998) are prepared by the State Department of Water Resources on a monthly basis from February through May. The May 1, 1997, report indicates that statewide October 1 through May 1 precipitation is 160 percent of average, and the SWP has approved delivery of 100 percent of 1998 requests.

The following entities imported water directly or indirectly from MWD into the Santa Margarita River Watershed:

Eastern Municipal Water District
Elsinore Valley Municipal Water District
Fallbrook Public Utility District
Rainbow Municipal Water District
Rancho California Water District
U. S. Naval Weapons Center
Western Municipal Water District

In addition to deliveries through member agencies, MWD, pursuant to a Court Order, delivered 591 acre feet of water for irrigation of lands in Domenigoni Valley within the Santa Margarita Watershed during 1996-97. MWD also imported 2,891 acre feet for use as construction water for the Eastside Reservoir Project, and 39 acre feet for groundwater recharge.

TABLE 5.1

SANTA MARGARITA RIVER WATERSHED
STORAGE IN STATE WATER PROJECT AND COLORADO RIVER RESERVOIRS
Thousands of Acre Feet

Reservoir	Total Capacity	Water in Storage - September 30 1990	1991	1992	1993	1994	1995	1996	1997
Oroville	3,540	1,163	1,399	1,317	2,666	1,683	2,897	2,736	2,140
San Luis (State Share)	1,060	100	385	381	944	394	1,067	740	462
Pyramid	171	163	164	159	156	160	168	158	163
Castaic	324	268	296	257	263	237	297	284	237
Silverwood	73	67	68	68	68	68	54	40	73
Perris	132	116	120	117	120	110	126	126	105
Total	5,300	1,877	2,432	2,299	4,217	2,652	4,609	4,084	3,180
Percent of Capacity		35%	46%	43%	80%	50%	87%	77%	60%

MAJOR COLORADO RIVER RESERVOIRS

Reservoir	Total Capacity	Water in Storage - September 30 1990	1991	1992	1993	1994	1995	1996	1997
Flaming Gorge	3,789	3,082	3,391	3,106	3,471	2,887	3,488	3,364	3,599
Blue Mesa	941	618	700	604	720	615	782	686	761
Navajo	1,709	1,361	1,586	1,579	1,625	1,400	1,556	1,203	1,543
Powell	27,000	16,252	14,699	14,085	18,825	17,772	22,311	21,155	22,802
Mead	28,537	20,144	19,233	19,416	21,379	19,930	20,714	21,614	23,769
Mohave	1,818	1,488	1,571	1,623	1,375	1,467	1,635	1,578	1,674
Havasu	648	562	556	548	579	571	588	597	580
Total	64,442	43,507	41,736	40,961	47,974	44,642	51,074	50,197	54,728
Percent of Capacity		68%	65%	64%	74%	69%	79%	78%	85%

In addition to MWD imports, water is also imported into the Santa Margarita River Watershed from adjacent watersheds. Such importation occurs from the Santa Ana Watershed where Elsinore Valley MWD pumps water from wells outside the Santa Margarita River Watershed but delivers water to a portion of its service area that is inside the Santa Margarita River Watershed.

At Camp Pendleton, there is a pipeline connection to wells located in the Las Flores Creek Watershed to the north of the Santa Margarita River Watershed. Water can be either imported or exported through that line, depending on relative water demands and pumping capacities.

Exportations from the Santa Margarita River Watershed include water pumped at Camp Pendleton that is used in the San Luis Rey River Watershed to the south or in the Las Flores Creek Watershed to the north. Some of the water exported at Camp Pendleton is returned to the Watershed as wastewater. Wastewater from the Fallbrook area and the Naval Weapons Station located on Camp Pendleton is exported by the Fallbrook Public Utility District and wastewater in the Elsinore Valley MWD is exported by that district.

Eastern MWD uses a 24-inch pipeline along Winchester Road to transport wastewater from the Temecula Valley Regional Water Reclamation Facility to areas within the Watershed for reuse as well as for export of up to 10 MGD from the Watershed. A total of 2,319 acre feet of treated wastewater was exported by Eastern MWD in 1996-97, as compared to 2,466 acre feet exported in 1995-96, a decrease of six percent.

The following paragraphs of this report describe imports during Water Year 1996-97 and during the 1966-1997 period. There is also discussion of MWD's existing Lake Skinner operations as well as proposed operations of the Eastside Reservoir Project.

5.2 Water Year 1996-97

During 1996-97, 49,247 acre feet of water were imported and distributed in the Santa Margarita River Watershed by eight purveyors. This compares with 43,689 acre feet in 1995-96 and represents a 13 percent increase. Water quantities imported into and exported from the Santa Margarita River Watershed for months during Water Year 1996-97 are listed on Table 5.2.

Water quality of the imported supplies in 1996-97 as reflected by measurements in the average monthly total dissolved solids at the Skinner Treatment Plant effluent line is shown on Table 5.3, together with the percent of imported water obtained from the SWP.

TABLE 5.2

SANTA MARGARITA RIVER WATERSHED

IMPORTS/EXPORTS

1996-97

Quantities in Acre Feet

	IMPORTS									EXPORTS							
											CAMP PENDLETON						
YEAR MONTH	EASTERN MWD	ELSINORE VALLEY MWD	FALLBROOK PUD	MWD 1/	RAINBOW MWD	RANCHO CAL WD	U.S. NAVAL WS	WESTERN MWD 2/	TOTAL IMPORTS	EXPORTS	WASTEWATER RETURNS	NET EXPORT	U.S. NAVAL WS	EASTERN MWD	ELSINORE VALLEY MWD	FALLBROOK PUD	TOTAL EXPORTS
1996																	
OCT	326	389	778	190	173	2,444	7	3	4,310	328	118	210	0.3	230	19	93	552
NOV	320	261	425	74	150	454	4	2	1,690	215	128	87	0.4	209	18	90	404
DEC	(97)	186	215	77	96	63	9	2	551	190	173	17	0.4	54	21	83	175
1997																	
JAN	94	176	160	93	45	0	8	2	578	169	181	(12)	1.7	17	20	89	116
FEB	105	132	282	301	36	143	10	1	1,010	156	154	2	0.6	19	17	60	99
MAR	173	316	665	369	68	1,118	8	2	2,719	266	155	111	0.4	234	19	79	443
APR	423	313	722	307	111	1,488	6	2	3,372	321	153	168	0.3	421	19	68	676
MAY	594	395	860	270	111	2,626	12	3	4,871	368	170	198	0.3	202	18	94	512
JUNE	599	557	833	439	147	3,282	12	3	5,872	411	168	243	0.4	131	20	80	474
JULY	623	461	1,005	309	137	4,030	7	3	6,575	405	175	230	0.3	167	19	94	510
AUG	1,245	505	1,052	422	156	6,241	12	4	9,637	446	177	269	0.3	303	17	99	688
SEPT	584	592	897	670	199	5,103	14	3	8,062	368	180	188	0.3	332	19	92	631
TOTAL	4,989	4,283	7,894	3,521	1,429	26,992	109	30	49,247	3,643	1,932	1,711	6	2,319	226	1,021	5,283

1/ Metropolitan Water District direct deliveries in Domenigoni Valley
2/ Improvement District A - Rainbow Canyon Only (WR-13)

TABLE 5.3

SANTA MARGARITA RIVER WATERSHED
TOTAL DISSOLVED SOLIDS
CONCENTRATION OF IMPORTED WATER
1996-97

YEAR MONTH	TOTAL DISSOLVED SOLIDS */1* MG/L	PERCENT STATE PROJECT WATER %
1996		
OCT	599	12
NOV	650	2
DEC	655	2
1997		
JAN	653	0
FEB	661	0
MAR	653	0
APR	583	20
MAY	554	31
JUNE	544	22
JULY	515	26
AUG	524	26
SEPT	548	22

1/ As measured in the Skinner Treatment Plant Effluent line.

5.3 Water Years 1966-1997

Water quantities imported by districts into the Santa Margarita River Watershed during Water Years 1966-1997 are shown on Table 5.4. Total imports to these districts are measured, however some districts serve lands outside the Watershed. For these districts, which include Eastern MWD, Elsinore Valley MWD, Fallbrook PUD and Rainbow MWD, the portion delivered in the Santa Margarita River Watershed must be estimated.

Review of the historical trend of total imports shown on Table 5.4 indicates significant year to year variations because of relatively low imports in wet years and higher imports in dry years, combined with an underlying growth rate to serve increasing municipal water demands in the Murrieta-Temecula area.

Exports over the 1966-1997 period are also shown on Table 5.4. These include estimated water exports on Camp Pendleton less estimated wastewater returns, as well as an estimate of exports by the Fallbrook Public Utility District and the Naval Weapons Station after 1983, and Elsinore Valley MWD after 1986. Exports by Eastern MWD were initiated in 1992-93. Exports do not include water that naturally flows from the Santa Margarita River into the Pacific Ocean.

5.4 Lake Skinner

Lake Skinner is a 44,000 acre foot reservoir constructed by MWD on Tucalota Creek, within the Santa Margarita River Watershed. The purpose of Lake Skinner is to provide regulatory and emergency storage capacity for water imported to southern California. A Memorandum of Understanding and Agreement on Operation of Lake Skinner (MOU), dated November 12, 1974, approved by the Court on January 16, 1975, contains provisions to protect Santa Margarita River Watershed water users from potential effects of Lake Skinner on either subsurface or surface flows.

Protection against a decrease in subsurface flows caused by the dam is afforded by a provision in the MOU that requires that MWD release water from Lake Skinner into Tucalota Creek if groundwater levels in Well AV-28B fall below an elevation of 1356.64 feet. During August 1997, water levels in Well AV-28B reached a low of 1355.98 feet, 0.66 feet below the minimum elevation. As a result, MWD released a total of 10.60 AF in 1996-97 to maintain groundwater levels. Releases continued into 1997-98.

The MOU also provides that all local surface inflow that enters Lake Skinner will be released into Tucalota Creek. In its 1980 modification the MOU provides that local surface inflow is to be determined by using the hydrologic equation for Lake Skinner that is specified in the MOU. That equation is used to determine inflow and the related release for large flood events. However, in many years the local inflow is small compared to the large

TABLE 5.4

SANTA MARGARITA RIVER WATERSHED

IMPORTS/EXPORTS

Quantities in Acre Feet

	IMPORTS									EXPORTS							
										CAMP PENDLETON							
YEAR	EASTERN MWD	ELSINORE VALLEY MWD	FALLBROOK PUD 1/	MWD 2/	RAINBOW MWD	RANCHO CAL WD	U.S. NAVAL WS	WESTERN MWD 3/	TOTAL IMPORTS	EXPORTS	WASTEWATER RETURNS	NET EXPORT	U. S. NAVAL WS	EASTERN MWD	ELSINORE VALLEY MWD	FALLBROOK PUD	TOTAL EXPORTS
1966	1,604	N/R	3,351		1,308	0	0	24	6,287	3,251 *	974	2,277	0	0	0	0	2,277
1967	1,630	N/R	2,852		1,095	0	0	20	5,597	3,180 *	1,243	1,937	0	0	0	0	1,937
1968	1,464	N/R	3,423		1,377	0	0	27	6,291	3,368 *	1,214	2,154	0	0	0	0	2,154
1969	1,741	N/R	2,837		1,253	0	0 E	25	5,856	3,276 *	1,170	2,106	0	0	0	0	2,106
1970	1,417	N/R	3,538		1,689	0	0 E	31	6,675	3,809 *	1,113	2,696	0	0	0	0	2,696
1971	1,383	N/R	3,405		1,650	0	76 E	34	6,548	3,527 *	1,090	2,437	0	0	0	0	2,437
1972	1,470	N/R	3,918		2,037	0	115 E	34	7,572	3,543	1,168	2,375	0	0	0	0	2,375
1973	1,533	N/R	3,210		1,616	0	115 E	30	6,504	3,544	1,187	2,357	0	0	0	0	2,357
1974	1,601	N/R	3,967		2,049	0	115 E	36	7,768	3,532	1,140	2,392	0	0	0	0	2,392
1975	1,969	N/R	3,597		1,247	0	115 E	34	6,962	3,098	1,530	1,568	0	0	0	0	1,568
1976	2,493	N/R	4,627		2,239	119	115 E	35	9,628	3,619	1,497	2,122	0	0	0	0	2,122
1977	2,947	N/R	5,212		2,343	1,645	115 E	24	12,486	3,194	1,416	1,778	0	0	0	0	1,778
1978	2,551	569	5,202		2,188	5,774	115 E	26	16,425	3,071	1,283	1,788	0	0	0	0	1,788
1979	1,894	712	5,723		2,348	7,009	115 E	24	17,824	4,756	1,427	3,329	0	0	0	0	3,329
1980	1,192	696	6,404		2,489	10,126	115 E	25	21,047	3,651	1,405	2,246	0	0	0	0	2,246
1981	716	798	8,543		3,153	15,282	115 E	34	28,642	3,892	1,249	2,643	0	0	0	0	2,643
1982	1,112	678	7,079		2,460	13,378	115 E	34	24,856	3,761	1,273	2,488	0	0	0	0	2,488
1983	1,211	658	6,720		2,190	5,752	115 E	26	16,672	3,000	1,242	1,758	26 E	0	0	1,003	2,787
1984	699	816	8,506		3,068	6,716	115 E	26	19,948	3,243	1,120	2,123	26 E	0	0	1,032	3,181
1985	679	808	7,831		3,410	7,158	102	27	20,015	3,377	1,200	2,177	26 E	0	0	1,060	3,263
1986	760	882	8,585		2,945	11,174	94	34	24,474	3,326	981	2,345	16 P	0	0	1,096	3,457
1987	1,155	938	8,656		3,390	7,564	116	38	21,855	3,444	1,799	1,645	28	0	4	1,129	2,805
1988	2,047	1,032	8,033		2,985	17,854	120	38	32,108	3,457	1,872	1,585	28	0	55	1,154	2,820
1989	3,746	1,341	9,066		3,003	22,895	128	24	40,203	3,418	1,446	1,972	23	0	74	1,181	3,250
1990	5,601	2,255	10,103		3,818	22,030	145	22	43,974	2,971	1,451	1,520	27	0	114	1,271	2,932
1991	9,479	2,421	7,962		2,904	21,238	109	20	44,133	2,168	1,219	949	13	0	134	960	2,056
1992	8,593	2,190	7,893		2,277	16,931	99	25	38,008	2,426	1,548	878	7	0	140	1,083	2,108
1993	5,393	1,914	6,925		1,965	11,411	117	30	27,755	2,329	1,926	403	16	539 *	150	1,255	2,363
1994	7,150	3,221	7,250		1,651	16,386	73	37	35,768	2,702	1,501	1,201	5	3,058 *	170	1,068	5,502
1995	4,825	3,117	6,538	547	1,661	15,108	125	29	31,750	2,781	1,611	1,170	12	3,908	185	1,153	6,428
1996	4,960	4,181	7,993	1,005	1,815	23,600	100	35	43,689	3,577	1,493	2,084	5	2,466	213	1,035	5,803
1997	4,989	4,283	7,894	3,521	1,429	26,992	109	30	49,247	3,643	1,932	1,711	6	2,319	226	1,021	5,283

1/ Includes DeLuz Heights MWD prior to 1991
2/ Metropolitan Water District direct deliveries in Domenigoni Valley
3/ Improvement District A - Rainbow Canyon Only (WR-13)
N/R - Not Reported
E - Estimate
P - Partial year data
* Revised

quantities of imported water inflow and outflow at Lake Skinner. The error of measurement for these large inflows and outflows is larger than the local inflow in many instances. Accordingly, MWD also monitors the flow in Tucalota Creek, Rawson Creek and Middle Creek during storms and uses those observations to determine when to apply the hydrologic equation.

During 1996-97, local runoff into and the related releases from Lake Skinner totaled 31.1 acre feet. Monthly releases were as follows:

Month	Release Acre Feet
January 1997	13.0
February	18.1
TOTAL (1996-97)	31.1

In addition to releases of water mandated by the MOU, MWD also released 33 acre feet of water for maintenance and/or operational purposes during 1996-97.

5.5 Eastside Reservoir Project

During 1996-97, MWD proceeded with construction of a major storage facility located in Diamond and Domenigoni Valleys within the Santa Margarita River Watershed. The facility will consist of three dams, one each at the east and west ends of Domenigoni/Diamond Valley and a saddle dam at the low point on the north rim. The east dam will divert surface and groundwater flows from a 4.2 square mile drainage area in the Santa Margarita River Watershed, known as Goodhart Canyon, into the Santa Ana River Watershed. The west dam will intercept existing westward surface and groundwater flows from an additional 13.19 square mile area. These intercepted groundwater flows may or may not be offset by seepage losses from the reservoir when filled.

MWD does not have a water right to store local waters in the reservoir, so a Memorandum of Understanding and Agreement on Operation of Domenigoni Valley Reservoir (MOU) was developed which was approved by the Court on January 19, 1995. Among other things, the MOU provides:

> The quantity and quality of surface runoff that would flow past the West Dam in the absence of the Reservoir will be determined and a like quantity of water of similar quality will be released from the Reservoir or San Diego Canal (SDC) into Warm Springs Creek.

The MOU indicates that the required releases would be determined by measuring the surface inflows into a detention basin to be constructed near the East Dam. A quantity equal to 4.1 times the measured flow will be released from the West Dam into the existing drainage of Warm Springs Creek.

Prior to construction of the detention basin, surface runoff will be conveyed past the west dam construction site and released into the downstream drainage system which has been improved by MWD. During 1996-97, surface runoff was negligible.

Although all surface waters within the Santa Margarita River Watershed in Domenigoni and Diamond Valley are subject to the continuing jurisdiction of the Court, groundwater contained within the younger alluvium, north of the south line of Section 9, Township 6 South, Range 2 West, SBM is not considered by the Court to be a part of the Santa Margarita River system as long as groundwater levels are below an elevation of 1400 feet. During 1996-97 groundwater elevations in Well MO-6, which is located along the south line of Section 9, declined from 1356.7 feet at the beginning of the water year to 1355.3 feet in September 1997.

WATERMASTER
SANTA MARGARITA RIVER WATERSHED

SECTION 6 - WATER RIGHTS

6.1 General

Water is used in the Santa Margarita River Watershed under a variety of water rights. In the early 1960's, the U. S. District Court in its Interlocutory Judgments described water rights in the Watershed as primarily riparian rights and overlying rights. Riparian rights belong to owners of land parcels located adjacent to streams in the Watershed or overlying younger alluvium deposits generally along the stream channels. Overlying rights were divided by the Court into two categories based on the location where the water is obtained and used. Water extracted from lands where subsurface waters add to, contribute to and support the Santa Margarita River stream system was found to be subject to the continuing jurisdiction of the Court. Lands in this category were identified by the Court and listed in Interlocutory Judgments. In general, these parcels of land overlie younger or older alluvium deposits.

The other category of overlying use applies to parcels of land where subsurface flows do not add to, contribute to or support the Santa Margarita River stream system. These parcels were also identified by the Court and found to be outside the continuing jurisdiction of the Court. In general, these lands overlie basement complex or residuum deposits.

The Court also described a number of other rights in the Watershed. These included surface water appropriative water rights that have been administered by the State of California since 1914. These rights are discussed in the following subsection of this report.

In Interlocutory Judgment No. 41, the Court found that the United States reserved rights to the use of the waters of the Santa Margarita River stream system which under natural conditions would be physically available on the Cahuilla, Pechanga and Ramona Indian Reservations, including rights to the use of groundwaters sufficient for the present and future needs of the Indians residing thereon. In Interlocutory Judgment No. 44, the Court recognized and reserved water rights for lands within the Cleveland and San Bernardino National Forests and for lands being administered pursuant to the Taylor Grazing Act.

Since the early 1960's there have been substantial changes in water use in the Watershed, especially in the Murrieta-Temecula Groundwater Area. During the 1950's and early 1960's when this case was under active litigation, most of the water use in the Murrieta-Temecula area consisted of individual property owners pumping water for use on their own properties. However, in 1965, the Rancho California WD was formed. The District developed Agency Agreements with most of the landowners within the District. In

these Agency Agreements, the landowners "...without transferring any water rights and privileges pertaining to said land...." designated the District as their exclusive agent for the development and management of their water supply.

Thus, many landowners within the Rancho California WD are now not exercising their overlying rights. Instead, Rancho California WD pumps groundwater and uses it throughout the District area under an appropriative groundwater right, with the consent of most of the overlying landowners.

A number of other water purveyors, including Murrieta CWD and Eastern MWD, also pump under groundwater appropriative rights.

Another change from the early 1960's is the large scale importation of water into the Santa Margarita River Watershed by Rancho California WD. A portion of such importation finds its way into the groundwater aquifers. The legal status of return flows from imported supplies as well as direct recharge of imported water was clarified by the final judgment in *City of Los Angeles v. City of San Fernando, et al.*, 1975 14 Cal. 3rd 199. This decision in the Supreme Court of the State of California made two major findings with respect to imported water.

The first was that agencies have the right to recharge and store imported water in a groundwater basin and to extract the imported water for use, subject to applicable state and federal laws. In addition, agencies that import and deliver water to lands overlying a groundwater basin have a continuing right to extract the return flow from such water. The return flow is that portion of the imported supply that percolates into the groundwater basin. In the San Fernando case this portion was found to range from 20 percent to 35.7 percent of the imported supplies.

The Rancho Division of the Rancho California WD overlies the Murrieta-Temecula Groundwater Area. Thus a portion of the import supply delivered to the Rancho Division of Rancho California WD percolates into the underlying aquifers. The first water pumped by Rancho California WD in the ensuing year constitutes recapture of such return flows.

Imported water is also supplied to the Santa Rosa Division within Rancho California WD, however only a relatively small part of this division overlies the Murrieta-Temecula Groundwater Area. Thus there is less imported water return flow from the Santa Rosa Division.

Classification of Rancho California WD supplies into various water right categories is discussed in Section 7 of this Report.

6.2 Appropriative Surface Water Rights

Another broad category of water rights used in the Watershed is surface water appropriative rights. Since 1914, these rights have been administered by the SWRCB.

A list of current permits, licenses and other active rights obtained from the SWRCB is shown on Table 6.1. A permit by the SWRCB authorizes construction of a project, sets terms for the project's completion and development of water use and may impose other conditions. After the permittee demonstrates that construction is complete, water is being put to use and the permit conditions have been met, the SWRCB can issue a license. The license remains in effect as long as the license conditions are met and the water is put to beneficial use.

Total direct diversion rights and active storage rights from creeks in the Watershed are summarized below:

	Direct Diversions Gallons Per Day	Storage Acre Feet
Cahuilla Valley	720	5
Cottonwood Creek	485,000	60
Cutea Creek	5,825	---
DeLuz Creek	4,700	100
Fern Creek	213,000	100
Kohler Canyon	158,000	40
Long Canyon Spring	89	---
Rainbow Creek	---	0.5
Rattlesnake Canyon	12,000	---
Temecula Creek	25,820	40,000
Sandia Canyon	---	8
Sourdough Spring	55	---
Santa Margarita River	133	4,000
Nelson Creek	1,550	---
TOTAL	906,892	44,313.5

These direct diversion rights of 906,892 gallons per day correspond to 1.4 cfs or 2.78 acre feet per day.

TABLE 6.1

SANTA MARGARITA RIVER WATERSHED

APPROPRIATIVE WATER RIGHTS

PERMITS AND LICENSES

I.D. NO.	OWNER	FILING DATE	SOURCE OF WATER	POINT OF DIVERSION	AMOUNT	USE	STATUS
6629	William H. & Sandra J. Cyrus	4/9/30	Coahuila Valley	Sec. 4, 7S, 3E	DD-720 gpd	D	License
6893	Earl C. & Mamie LaBine	2/13/31	Temecula Creek	Sec. 20, 9S, 2E	DD-820 gpd	D/I	License
7035	Nyla Lawler	8/10/31	Cutca Creek	Sec. 29, 9S, 1E	DD-5725 gpd	D/I	License
7731	Earl C. & Mamie LaBine	11/02/33	Temecula Creek	Sec. 20, 9S, 2E	DD-7200 gpd	D/I	License
9137	Goodarz Irani	10/07/37	Temecula Creek	Sec. 12, 9S, 1E	DD-400 gpd	D	License
9291	Luis Olivos	5/13/38	Nelson Creek	Sec. 23, 8S, 5W	DD-1550 gpd	D	License
10806	James R., Phyllis & Bruce Grammer	4/22/44	Temecula Creek	Sec. 34, 9S, 2E	DD-2880 gpd	D	License
11161	Roy C. Pursche & J. Zink	9/26/45	Rattlesnake Canyon	Sec. 28, 9S, 2E	DD-12,000 gpd	D/I	License
11518	Rancho California Water District	8/16/46	Temecula Creek	Sec. 10, 8S, 1W	ST-40,000 AF	D/I/R	Permit
11587	U. S. Bureau of Reclamation	10/11/46	Santa Margarita River	Sec. 12, 9S, 4W	ST-10,000 AF	D/I/M	Permit
12178	U. S. Bureau of Reclamation	11/28/47	Santa Margarita River	Sec. 12, 9S, 4W	ST-10,000 AF	D/I/M	Permit
12179	U. S. Bureau of Reclamation	11/28/47	Santa Margarita River	Sec. 12, 9S, 4W	ST-10,000 AF	D/I/M	Permit
13505	David H. & Kathleen C. Lypps	12/12/49	Cottonwood Creek	Sec. 30, 8S, 4W	DD-0.75 cfs & ST-42 AF	R/S	License
17239	Ward Family Trust	8/15/56	Temecula Creek	Sec. 20, 9S, 2E	DD-120 gpd	D/E	License
20507	David H. & Kathleen C. Lypps	11/24/61	Cottonwood Creek	Sec. 19, 8S, 4W Sec. 30, 8S, 4W	ST-18 AF	I/R	License
20608	Richard F. & Rosabel L. Matthews	2/13/62	DeLuz Creek	Sec. 20, 8S, 4W	ST-100 AF	D/I/R	License
20742	U. S. Cleveland National Forest	4/24/62	Sourdough Spring	Sec. 25, 9S, 1E	DD-55 gpd	E	License
21074	U. S. Cleveland National Forest	12/07/62	Cutca Spring	Sec. 17, 9S, 1E	DD-100 gpd	S/W	License
21471A	U. S. Department of Navy	9/23/63	Santa Margarita River	Sec. 5, 10S, 4W Sec. 2, 11S, 5W	ST-4,000 AF	D/I/M/Z	License
21471B	U. S. Bureau of Reclamation	9/23/63	Santa Margarita River	Sec. 32, 9S, 4W	ST-165,000 AF	D/I/M/Z	Permit
27756	James R. Grammer	5/23/83	Temecula Creek	Sec. 3, 10S, 2E	DD-14,400 gpd	I/S	Permit
28133	Charles F. Ruggles	5/14/84	Cahuilla Creek	Sec. 15, 8S, 2E	ST-5AF	E/H/I/R/S	Permit

OTHER RIGHTS

05751S/Federal	U. S. Cleveland National Forest	1/01/70	Long Canyon Spring	Sec. 16, 9S, 1E	DD-89 gpd	E/R/S/W
000024/State	Judge Dial Perkins	12/26/86	Santa Margarita River	Sec. 12, 9S, 4W	DD-133.3 gpd	D
000751/State	Lawrence Butler	5/31/67	Fern Creek	Sec. 31, 8S, 4W	DD-0.33 cfs ST-100 AF	I
011411/State	Agri Empire, Inc.	5/16/84	Kohler Canyon	Sec. 33, 9S, 2E	DD-0.245 cfs ST-40 AF	I/S
012235/State	William A. & Lois D. Cunningham	8/27/85	DeLuz Creek	Sec. 4, 9S, 4W	DD-4700 gpd	D/I
001583/Stock	George F. Yackey	12/27/77	Sandia Canyon	Sec. 25, 8S, 4W	ST-8.0 AF	S
002380/Stock	Chris R. & Jeanette L. Duarte	12/16/77	Rainbow Creek	Sec. 12, 9S, 3W	ST-0.5 AF	S

KEY TO USE: *DD - Direct Diversion* *D - Domestic* *R - Recreation* *E - Fire Protection* *H - Fish Culture*
ST - Diversion to Storage *I - Irrigation* *M - Municipal* *S - Stockwatering* *Z - Other*
W - Fish & Wildlife Protection and/or Enhancement

Storage rights shown in Table 6-1 include 195,000 acre feet of storage rights on the Santa Margarita River held by the U. S. Bureau of Reclamation (ID Nos. 11587, 12178, 12179, and 21471B) which have not been exercised. The time period during which these rights must be exercised has recently been extended by the SWRCB to December 31, 2007.

Table 6.1 also lists other rights recognized by the SWRCB. These rights generally are based on Statements of Water Diversion and Use that have been filed with the SWRCB. Such statements include one by the United States on behalf of the Cleveland National Forest, which states that the diversion and use of water from Long Canyon Spring is made pursuant to a withdrawal and reservation of the land and resources for National Forest System purposes as of February 14, 1907.

Besides the federal filing, there are also Statements of Water Diversion and Use filed by individuals. Three of these statements represent riparian or pre-1914 appropriative diversions from DeLuz Creek, Fern Creek and Santa Margarita River that have been reported to the SWRCB. The other statement represents a pre-1914 appropriative right to divert water from a spring in Kohler Canyon into a 40 acre foot reservoir.

The last two rights noted on Table 6.1 represent filings made in 1977 pursuant to Subchapter 2.5 to Chapter 3 of Title 23 of the California Code of Regulations. That subchapter deals with Water Rights for Stockponds.

In addition to appropriative rights under SWRCB jurisdiction, there are a number of nonstatutory appropriative rights that were established prior to 1914. These rights continue to be used to support diversions of water from the Santa Margarita River stream system. Such rights, which are listed in the various Interlocutory Orders developed in this litigation, are shown on Table 6.2.

In 1990-91, in Order No. 91-07, the SWRCB revised its Order No. 89-25 entitled, "Order Adopting Declaration of Fully Appropriated Stream Systems and Specifying Conditions for Acceptance of Applications and Registrations." These Orders list the Santa Margarita River stream system as fully appropriated "from the confluence of the Santa Margarita River and the Pacific Ocean upstream including all tributaries where hydraulic continuity exists."

The consequences of this Order are as follows:

1. The Board is precluded from accepting any application to appropriate water from the Santa Margarita River System except where the proposed appropriation is consistent with conditions contained in the Declaration.

TABLE 6.2

SANTA MARGARITA RIVER WATERSHED
PRE - 1914 APPROPRIATIVE WATER RIGHTS
Listed in Interlocutory Decrees

LISTED OWNER	CURRENT OWNER	DATE OF APPROPRIATION	SOURCE OF WATER	POINT OF DIVERSION	AMOUNT	USE
Anderson, Nina B.	Nezami, Mohammed	April 11, 1892	Fern Creek	NW 1/4 Of SE 1/4 Sec 31, T8S, R4W	32 gpm	Irrigation
Butler, Lawrence W. and Mary C.	Vanginkel, Norman Tr and Vanginkel, Deborah San Diego Gas & Electric	Sept. 23, 1896	Fern Creek	NW 1/4 Of SE 1/4 Sec 31, T8S, R4W	Capacity of 8 inch pipe	Irrigation
Wilson, Samuel M. and Hazel A.	Shirley, Robert G. and Bobbi J.	Aug. 3, 1911	DeLuz Creek	NW 1/4 Of SW 1/4 Sec 32, T8S, R4W	50 miner's inches 65 AF/Yr	Irrigation
United States	United States	1883	Santa Margarita River	Sec 5, T10S, R4W	20 cfs 1200 AF/Yr	Domestic Irrigation Stock Water

2. Initiation of a water right pursuant to the Water Rights Permitting Reform Act of 1988 (Water code Section 1228 et seq.)–that is, by registering small use domestic appropriations–is precluded, except where the proposed appropriation is consistent with conditions contained in the Declaration. Small use domestic appropriations refer to uses which do not exceed direct diversions of 4,500 gallons per day or diversion by storage of 10 acre feet per year for incidental aesthetic, recreational, or fish and wildlife purposes.

3. Pursuant to Water Code Section 1206(a) the Board is authorized, but not required, to cancel pending applications where inconsistent with conditions contained in the Declaration; previous Orders implement a procedure for disposition of such applications pending on the effective date of the Declaration.

The Order provides for reconsideration of the Order either upon petition of an interested party or upon the Board's own motion.

WATERMASTER
SANTA MARGARITA RIVER WATERSHED

SECTION 7 - WATER PRODUCTION AND USE

7.1 General

Water production and use data were obtained from several types of substantial users including water purveyors, Indian Reservations, mobile home parks and private landowners. Substantial water users are those who irrigate eight or more acres or who produce or use an equivalent quantity of water.

Major water purveyors who reported production and use data in 1996-97 Water Year are listed as follows:

Anza Mutual Water Company
Eastern Municipal Water District
Elsinore Valley Municipal Water District
Fallbrook Public Utility District
Lake Riverside Estates
Metropolitan Water District of Southern California
Murrieta County Water District
Rainbow Municipal Water District
Rancho California Water District
U. S. Marine Corps, Camp Pendleton including U.S. Naval Weapons Station, Fallbrook Annex
Western Municipal Water District

Lake Riverside Estates is listed with major water purveyors although it produces make-up water for losses from Lake Riverside and does not deliver water to customers.

In addition to the major purveyors, there are a number of smaller water systems in the Watershed. Of these, Butterfield Oaks Mobile Home Park, and Outdoor Resorts Rancho California, Inc. (formerly Vacation Valley RV Resort) are substantial users.

Three Indian Reservations, the Cahuilla, Pechanga and Ramona, are noted in Interlocutory Judgment No. 41, the Judgment that deals with Water Rights on Indian Reservations in the Watershed. Estimates and/or measurements of water production and use are reported for the Cahuilla and Pechanga Indian Reservations; the Ramona Reservation has no reported water use.

A portion of a fourth Reservation, the Pauma Mission Reserve Tract of the Pauma Yuima Band of Mission Indians, is also located within the Watershed. However, these lands overlie basement complex, which waters have been found by the Court to not add to, support or contribute to the Santa Margarita River stream system.

The final category of water users are private landowners who use water primarily for irrigation use.

The water use data collected for the 1996-97 Water Year are summarized on Table 7.1. Total imported supplies plus local production totaled 99,928 acre feet compared to 95,424 reported in 1995-96. Of that quantity, 52,386 acre feet were used for agriculture; 7,134 acre feet were used for commercial purposes; and 33,387 acre feet were used for domestic purposes; 2,978 acre feet were discharged to Murrieta Creek; 3,644 acre feet of fresh water were exported; 1,354 acre feet were recharged resulting in an overall system gain of 955 acre feet. System gain or loss is the result of many factors including errors in measurement, differences between periods of use and periods of production, leakage and unmeasured uses.

Monthly production and use data for major water purveyors are attached to this report as Appendix A. Uses are listed under agricultural, commercial and domestic categories. The definition of what constitutes agricultural, commercial and domestic use varies for the different purveyors in the Watershed. Accordingly definitions of these uses for major water purveyors are shown on Table 7.2. It is noted also that much of the non-agricultural water use in the Watershed can also be considered municipal use, which includes both the domestic and commercial uses shown in tables in this report. Similar data for Water Years 1966-1997 are summarized in tables presented in Appendix B. Appendix C presents information on substantial users outside purveyor service areas.

7.2 Water Purveyors

Anza Mutual Water Company

Anza Mutual Water Company's service area is in the eastern part of the Watershed in the Anza Valley. Production is from two wells: Well No. 1 drilled in 1951 and perforated from 20 feet to 260 feet; and Well No. 2 drilled later to a depth of 287 feet and perforated in the bottom 130 feet. Production for 1996-97 was 22 acre feet from Well No. 1 and 22 acre feet from Well No. 2 for a total production of 44 acre feet. The depth of water in Well No. 1 ranged from 40 feet to 101 feet.

Interlocutory Judgment No. 33 divides aquifers in Anza Valley at this location into two categories: the shallow aquifer and the deep aquifer. Based on information available to the Court the shallow aquifer was determined to include the younger and older alluvial deposits in the Anza Groundwater Basin and extend to a maximum but variable depth of approximately 100 feet. The deep aquifer underlies the shallow aquifer in an area about one-half mile in width and two miles in length, within portions of Sections 16, 17, 21, 22, 27 and 28 of Township 7 South, Range 3 East, SBM. Anza Mutual Water Company's wells are within the area of the deep aquifer. From the perforated intervals in the wells, it may be concluded that most of the production from Well No. 1 and all of the production from Well No. 2 are from the deep aquifer. Interlocutory Judgment No. 33 concluded that waters

TABLE 7.1

SANTA MARGARITA RIVER WATERSHED

WATER PRODUCTION AND USE

1996-97

Quantities in Acre Feet

	PRODUCTION			USE					
	LOCAL	IMPORT	TOTAL	AG	COMM	DOM	LOSS	TOTAL	WATER RIGHT
WATER PURVEYORS									
Anza Mutual Water Company	44	0	44	0	0	40	4 1/	44	Appropriative
Eastern MWD	408	4,989	5,397	0	0	5,226	171	5,397	Appropriative
Elsinore Valley MWD	0	4,283	4,283	0	0	3,855	428 1/	4,283	—
Fallbrook PUD	0	7,894	7,894	4,351	536	2,713	294	7,894	Appropriative
Lake Riverside Estates	234	0	234	0	234 2/	0	0	234	Appropriative
Metropolitan Water District	0	3,521	3,521	591	2,891	0	39 3/	3,521	—
Murrieta CWD	638	0	638	76	96	379	87	638	Appropriative
Rainbow MWD	0	1,429	1,429	1,139	0	160	130	1,429	—
Rancho California WD	35,131	26,992	62,123	38,287	3,350	18,635	1,851 4/	62,123	Various
U.S.M.C. - Camp Pendleton	6,304	0	6,304	416	----- 5/	2,020	3,868 1/ 6/	6,304	Appropriative/ Riparian
U.S. Naval Weapons Station	0	109	109	0	----- 5/	99	10 1/	109	—
Western MWD	0	30	30	0	27	0	3 1/	30	—
INDIAN RESERVATIONS									
Cahuilla	309	0	309	286	0	23	0	309	Overlying/ Reserved
Pechanga	171	0	171	0	----- 5/	154	17 1/	171	Overlying/ Reserved
MOBILE HOME PARKS/CAMPGROUNDS									
Butterfield Oaks Mobile Home Park	9	0	9	0	0	8	1 1/	9	Riparian/ Overlying
Outdoor Resorts Rancho California, Inc.	83	0	83	0	0	75	8 1/	83	Overlying
OTHER SUBSTANTIAL USERS	7,350 7/	0	7,350	7,240	0	0	110 8/	7,350	
TOTAL	**50,681**	**49,247**	**99,928**	**52,386**	**7,134**	**33,387**	**7,021**	**99,928**	

1/ Assumes 10% loss
2/ Recreation Use
3/ Groundwater recharge at Eastside Reservoir
4/ Includes 2,978 acre feet discharged into Murrieta Creek, 1,315 acre feet used for direct recharge, and a system gain of 2,442 acre feet
5/ Listed with Domestic uses
6/ Includes exports of 3,644 acre feet
7/ 1,102 acre feet for surface diversion plus 6,728 acre feet from groundwater as shown in Appendix C minus 309 acre feet on the Cahuilla Reservation and minus 171 acre feet on the Pechanga Reservation
8/ 10% of surface diversions

TABLE 7.2

SANTA MARGARITA RIVER WATERSHED
DEFINITIONS OF WATER USE
BY MUNICIPAL WATER PURVEYORS
1996-97

DISTRICT	AGRICULTURAL	DOMESTIC	COMMERCIAL
EASTERN MUNICIPAL WATER DISTRICT	A commercial enterprise producing a crop/livestock on at least 5 acres and able to accept a delivery of at least 24 consecutive hours	Single family, multiple units and agricultural uses of less than 5 acres	Not reported
FALLBROOK PUBLIC UTILITY DISTRICT	AG - A commercial enterprise producing a crop/livestock/fowl on at least 1 acre fully used for ag purposes; can include incidental domestic use related to residency AG/DOM - Water used for both ag and domestic purposes	Single family, multi-unit and large domestic residences and the first 20,000 gallons used by an ag/domestic meter	Offices, businesses, schools and hydrants
RAINBOW MUNICIPAL WATER DISTRICT	AG- 1 acre or more of plantable, resalable products DOM/AG - Same as Ag with a house on the parcel	DOMESTIC - Homes	Generally no commercial use in district
RANCHO CALIFORNIA WATER DISTRICT	AG - 1 acre or more of plantable, resalable products GOLF - Outside water use at golf courses VINEYARDS - Outside irrigation for vineyards LANDSCAPE - Landscaping around freeways, parking lots, office buildings, median strips,	DOMESTIC - Homes MULTIPLE - Apartments and Condominiums	COMMERCIAL - Office buildings, industrial users other than agri-businesses FLOATING - Fire hydrants used during construction CONSTRUCTION - Other fire hydrants used for grading UNMETERED - Construction accounts used for finish construction work MISCELLANEOUS - Schools, fire departments, parks, government agencies DETECTOR CK. METERS - Only used when there is a fire
MURRIETA COUNTY WATER DISTRICT	Agricultural uses and irrigation for crops	Homes and multiple units	Businesses, public agencies, schools and construction
USMC, CAMP PENDLETON	Irrigation - Water used for ag purposes, not landscaping, golf courses or parks	Camp Supply - Includes landscaping, golf courses parks and commercial use	Reported under Camp Supply

contained in the deep aquifer did not add to, support or contribute to the Santa Margarita River stream system and were, therefore, declared to be outside the Court's jurisdiction.

Thus, most of the water produced by the Anza Mutual Water Company is outside the Court's jurisdiction. The relatively small portion pumped from the shallow aquifer in Well No. 1 is pumped under a groundwater appropriative right.

Eastern Municipal Water District

Eastern MWD is a member agency of MWD and its service area includes a portion of the Rancho California WD. Within the Watershed, the District wholesales water to Rancho California WD and also sells water directly to consumers. Water sold to Rancho California WD is listed in this report as imported water to the Rancho California WD service area.

Eastern MWD's service area outside Rancho California WD is located in the northern part of the Watershed. Water for their service area is imported or produced locally from groundwater.

Imports, not including water wholesaled to Rancho California WD or delivered to Elsinore Valley MWD, totaled 6,798 acre feet. A portion of that import amounting to 1,809 acre feet was exported from the Santa Margarita River Watershed resulting in net import to the watershed of 4,989 acre feet. These data are shown in Appendix A.

Groundwater production for the 1996-97 Water Year in the Santa Margarita River Watershed totaled 408 acre feet from Well 7S/3W-15N which is 345 feet deep. The well is generally perforated between the depths of 106 and 333 feet. Recent static water levels in Eastern MWD's well have varied from a depth of 102 feet in December 1987, to as low as 150 feet in November, 1996. The most recent static depth measurement is 138 feet in August 1997. The well is located within the Murrieta-Temecula Groundwater Area where the older alluvium is at ground surface. Thus the well produces water from the older alluvium and under groundwater appropriative rights.

Disposition of reclaimed wastewater from the Temecula Valley Regional Water Reclamation Facility (Facility) for Water Years 1995-96 and 1996-97 is shown below:

	1995-96*		1996-97	
	Quantity	Percent	Quantity	Percent
	AF	%	AF	%
Used in Santa Margarita	2,979	50	3,126	49
Used outside Santa Margarita	2,466	41	2,319	37
Reuse	5,445	91	5,445	86
Unaccounted for Production	527	±9	882	14
TOTAL PRODUCTION	5,927	100	6,327	100

* Revised

It can be noted that the quantities of reclaimed wastewater used within the Santa Margarita River Watershed increased from 2,979 acre feet in 1995-96 to 3,126 acre feet in 1996-97. During the same period reuse outside the Santa Margarita River Watershed decreased from 2,466 acre feet to 2,319 acre feet. Unaccounted for production increased from 527 acre feet to 882 acre feet. Such production evaporates or percolates or goes into storage in storage ponds near Winchester. In 1996-97, thirty-seven percent of reclaimed wastewater produced at the Facility was exported.

Because of concerns about the potential export of native Santa Margarita water, the sources of water supply to the Facility service area were determined and are shown on Table 7.3 for years since 1991. In 1995, 1996 and 1997, the proportion of groundwater being supplied to the service area has been about 55 percent. In 1996-97, the proportion of treated wastewater reused in the watershed (49%) was somewhat less than the proportion of native groundwater in the supply to the service area (55.5%). It is expected that the increase in wastewater reuse observed between 1996 and 1997 in the Santa Margarita Watershed will continue. In addition, the initiation of the 2 MGD live stream discharge demonstration project in December 1997 should also increase the percentage of reuse in the watershed.

Estimates of water production and use for the period 1966-1997 are shown in Appendix B.

TABLE 7.3

SANTA MARGARITA RIVER WATERSHED

WATER DELIVERIES TO TEMECULA VALLEY REGIONAL WATER RECLAMATION FACILITY SERVICE AREA

	WATER YEAR ENDING													
	1991		1992		1993		1994		1995		1996		1997	
Eastern MWD	AF	%	AF	%	AF	%	AF	%	AF	%	AF	%	AF	%
Deliveries to TVRWRF Service Area														
1. Groundwater	456		527		524		232		182		299		408	
2. Import	4,249		3,499		3,810		4,145		4,017		4,960		4,989	
3. Total	4,705		4,026		4,334		4,377		4,199		5,259		5,397	
Rancho California WD														
Deliveries to TVRWRF Service Area														
1. Groundwater	2,470		3,469		4,920		6,320		7,041		8,629		9,038	
2. Import	3,231		2,656		2,145		1,926		1,806		2,377		2,591	
3. Total	5,701		6,125		7,065		8,246		8,847		11,006		11,629	
Total Deliveries to TVRWRF Service Area														
1. Groundwater	2,926	28.1%	3,996	39.4%	5,444	47.8%	6,552	51.9%	7,223	55.4%	8,928	54.9%	9,446	55.5%
2. Import	7,480	71.9%	6,155	60.6%	5,955	52.2%	6,071	48.1%	5,823	44.6%	7,337	45.1%	7,580	44.5%
3. Total	10,406	100.0%	10,151	100.0%	11,399	100.0%	12,623	100.0%	13,046	100.0%	16,265	100.0%	17,026	100.0%

NOTE: Prior to 1996, EMWD imports are based on sales data; 1996 and following years are based on discharges from EM-17.

Elsinore Valley Municipal Water District

Elsinore Valley MWD provides water to its service area around Lake Elsinore, a portion of which is within the Santa Margarita River Watershed. Elsinore Valley MWD obtains its supply from ten wells, all located outside the Santa Margarita River Watershed, and also imports MWD water through Eastern MWD and Western MWD.

The District reports that 4,283 acre feet were imported into the portion of their service area that is inside the Santa Margarita River Watershed in 1996-97. Also during 1996-97, approximately 226 acre feet of wastewater were exported from that same area.

Fallbrook Public Utility District

In 1996-97, Fallbrook PUD imported 14,005 acre feet through its contract with the San Diego County Water Authority as shown in Appendix A. Of this quantity, 2,688 acre feet were delivered to the former DeLuz area which is entirely within the Santa Margarita River Watershed. Of the remaining importations it is estimated that 46 percent, or 5,206 acre feet, were delivered to lands inside the Santa Margarita River Watershed. The remainder was delivered to lands in the adjacent San Luis Rey River Watershed. Thus, imports to the Watershed totaled 7,894 acre feet in 1996-97.

In addition to importations, the District has three wells; however, in 1996-97, there was no pumpage from these wells.

All three of these wells are located along the East Fork of DeLuz Creek in an area that has younger alluvium at the ground surface. Interlocutory Judgment No. 32 indicates that this stringer of alluvium varies in width from 100 feet to one-fourth mile and at no place is greater than 50 feet in depth. The well logs for these wells indicate depths of alluvium of 32 feet, 31 feet and 32 feet respectively. Below these depths the wells penetrate fractured granite that composes the basement complex. These wells are cased and sealed with cement grout to depths of 50, 51 and 51.5 feet respectively. Thus it may be concluded that all of the water from these wells originates in the granite fractures. Interlocutory Judgment No. 32 declares that waters found in the basement complex (fractured granite) are vagrant, local, percolating waters not part of the Santa Margarita River stream system and outside the Court's jurisdiction.

Production during the period 1966 to 1997 included direct diversions from the Santa Margarita River for water years before 1972 as well as imported water and well production as shown in Appendix B.

Lake Riverside Estates

Lake Riverside Estates pumps water from Well No. 7S/2E-32C1, into Lake Riverside to make up evaporation losses. Production for 1996-97 was 234 acre feet. The production well was drilled in 1962 and is located in an area of younger alluvium in the Cahuilla Groundwater Basin. The driller's log shows sand and clay for the entire well depth of 338 feet.

Interlocutory Judgment No. 33 indicates that the owners of lands in the Cahuilla Groundwater Basin have correlative overlying rights to the use of the groundwater that is the basis for this production.

Metropolitan Water District of Southern California

Pursuant to a Court Order, MWD delivered 591 acre feet of imported water for irrigation of lands in Domenigoni Valley during 1996-97. MWD also imported 2,891 acre feet for use as construction water for the Eastside Reservoir Project and 39 acre feet for groundwater recharge.

Murrieta County Water District

Murrieta CWD serves the area in the vicinity of the town of Murrieta in Riverside County. In Water Year 1996-97, Murrieta CWD produced 638 acre feet of water as shown in the following tabulation and in Appendix A.

Well Designation	Well Name	1996-97 Production Acre Feet	Casing Depth Feet	Water Depth Feet	Well Depth Feet	Perforated Interval Feet
7S/3W-20C9	Holiday	209	25	83 - 94	307	60 - 307
7S/3W-20G5	House	136	50	115 - 137	298	120 - 252
7S/3W-17R2	Lynch	0	26	46 - 55	212	172 - 212
7S/3W-18J2	North	102	50	142 - 155	650	240 - 260 500 - 640
7S/3W-20D	South	191	50	115 - 135	446	120 - 446

All of these wells are located in the Murrieta-Temecula Groundwater Area. Interlocutory Judgment No. 30 indicates that in Murrieta Valley the younger alluvium deposits extend in various depths to a maximum of approximately 30 feet from the ground surface.

The Court noted that it was impossible, based on evidence available in 1962, to determine with exactness the depth of the younger alluvial deposits throughout the Valley. However, it did decide that subsequent findings could be made, if needed, because the Court would retain continuing jurisdiction. Older alluvial deposits are found below the younger alluvium.

Four of the five Murrieta CWD wells are perforated at depths of 120 feet or more. One of the Murrieta CWD wells has perforations beginning at a depth of 60 feet. This depth is well below the maximum depth of younger alluvium found by the Court in 1962. In addition, water depths in the well with perforations at 60 feet ranged from 83 to 94 feet in 1996-97. Accordingly all of Murrieta CWD well production is from the older alluvium under a groundwater appropriative right.

Production for the period between 1966 and 1997 is shown in Appendix B.

Rainbow Municipal Water District

Rainbow MWD is located in San Diego County in the south-central part of the Watershed. In recent years about ten percent of the District's imported supply is delivered to the portion of the District's service area inside the Watershed. Most of the District is in the San Luis Rey River Watershed. As shown in Appendix A, total deliveries of imported water in the Watershed in 1996-97 amounted to 1,429 acre feet.

Total imports to the District for years between 1966 and 1997, as well as the estimated portion served inside the Santa Margarita River Watershed, are shown in Appendix B.

Rancho California Water District

Rancho California WD serves water to a 99,600 acre service area in the central portion of the Watershed. The District produced water from 45 wells in 1996-97 and also imported water, as shown in Appendix A. Use is also shown in Appendix A under the categories of agriculture, commercial and domestic. In Water Year 1996-97, 35,131 acre feet of local supplies were pumped from the Murrieta-Temecula Groundwater Area and 26,992 acre feet were imported for total production of 62,123 acre feet not including 1,725 acre feet of water released from Vail Dam for recharge. During 1996-97, 2,978 acre feet were released into Murrieta Creek. No water was released into Temecula Creek.

The District reclaimed and reused 693 acre feet of wastewater during the year, in addition to 1,708 acre feet obtained from Eastern MWD for reuse.

Rancho California WD produces groundwater under a variety of rights as follows:

1. Recovery of water appropriated at Vail Lake
2. Recovery of import return flows and recharged imported water
3. Groundwater appropriative rights

Vail Appropriation

Rancho California WD's Vail Dam appropriative rights are described in Application No. 11518 as amended on June 17, 1947, and Permit 7032. That right provides that the District may store up to 40,000 acre feet in Vail Reservoir each year between November 1 and April 30, subject to applicable limitations, and that the water so stored may be used for irrigation and domestic uses incidental to farming operations on 3,797 acres of land between May 1 and October 31. Such use may be by direct diversion from Vail Lake or by recovery with wells of water released from Vail and spread downstream in Pauba Valley.

The place of use for irrigation and domestic use is described as follows:

Sections 5, 6, 7 and 18; T8S, R1W
Sections 1, 10 through 21, 28 and 29; T8S, R2W
Sections 13 and 24; T8S, R3W.

In 1971, the Permit was amended to add recreational use at Vail Reservoir within Section 10, T8S, R1W.

As previously mentioned, 1,725 acre feet were released from Vail during 1996-97. Releases from Vail for groundwater recharge for the period 1980 to 1997 are shown on Table B-6.

Water use in the Permit 7032 service area is shown on Table 7.4. This use will be compared with well production from the younger alluvium in a later section of this report.

Representatives of the United States contend that storage of water in Vail Lake, and the related recharge and rediversion operations, may exceed Rancho California WD's share of the Santa Margarita River flow as allocated under the 1940 Stipulated Judgment.

TABLE 7.4

SANTA MARGARITA RIVER WATERSHED
RANCHO CALIFORNIA WATER DISTRICT
PERMIT 7032 AREA WATER USE
1996-97

Quantities in Acre Feet

MONTH YEAR	AG	COMM	DOM	TOTAL
1996				
OCT	159	13	111	283
NOV	242	10	80	332
DEC	184	8	56	248
1997				
JAN	49	6	38	93
FEB	13	5	31	49
MAR	46	4	26	76
APR	135	7	53	195
MAY	116	8	77	201
JUNE	152	10	109	271
JULY	175	12	104	291
AUG	219	13	128	360
SEPT	166	11	117	294
TOTAL	1,656	107	930	2,693

Imported Water Return Flows

During 1996-97, Rancho California WD imported 25,677 acre feet of water for direct use compared to 23,600 acre feet in 1995-96. Quantities of imported water delivered to the Rancho Division and the Santa Rosa Division are shown below for Water Years 1995-96 and 1996-97.

	Rancho Division Imports		Santa Rosa Division Imports		Total Imports	
Month	1996	1997	1996	1997	1996	1997
October	647	502	1,133	1,942	1,780	2,444
November	131	84	567	370	698	454
December	41	0	245	63	286	63
January	34	0	286	0	320	0
February	0	0	0	143	0	143
March	0	50	0	1,068	0	1,118
April	475	241	1,199	1,247	1,674	1,488
May	1,001	674	1,910	1,952	2,911	2,626
June	1,295	1,089	2,562	2,193	3,857	3,282
July	1,308	1,388	3,104	2,642	4,412	4,030
August	1,175	1,939	2,923	3,571	4,098	5,510
September	928	1,295	2,636	3,224	3,564	4,519
Total	7,035	7,262	16,565	18,415	23,600	25,677

Return flows for 1996-97 based on imported water use in the Rancho Division are computed as shown on Table 7.5 and on Table 7.6 for the Santa Rosa Division.

In those tables, imported water is allocated to agricultural, commercial and domestic uses in each of eight hydrogeologic areas in the Rancho Division service area. This allocation is the proportion of the total deliveries to each use that is made up of imported water. In 1996-97, 22.28 percent of the supply to the Rancho Division was imported and 65.29 percent of the supply to the Santa Rosa Division was imported.

In general the Santa Rosa Division does not overlie the groundwater area. However there are several areas classified as being in the Santa Rosa Division that do overlie the groundwater area and generate return flows from imported supplies. Data from most of these lands have been reported since December 1991.

TABLE 7.5

SANTA MARGARITA RIVER WATERSHED
RANCHO CALIFORNIA WATER DISTRICT
RETURN FLOW CREDIT
1996-1997
RANCHO DIVISION
Quantities in Acre Feet

	HYDROGEOLOGIC AREAS								
	0 NO HYDRO-GEO CODE	1 MURRIETA WOLF 1/2 QYAL 1/2 QTOAL	2 SANTA GERTRUDIS QYAL	3 LOWER MESA QTOAL	4 PAUBA QYAL	5 SOUTH MESA QTOAL	6 UPPER MESA QTOAL	7 PALOMAR QTOAL	TOTAL
AGRICULTURAL *									
Total Use	3,670.25	1,069.53	284.00	2,628.87	972.02	1,260.99	2,281.61	2,057.83	14,225.11
% Import	22.28	22.28	22.28	22.28	22.28	22.28	22.28	22.28	22.28
Import Use	817.56	238.24	63.26	585.59	216.52	280.89	508.24	458.39	3,168.70
% Credit	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00
Credit	269.80	78.62	20.88	193.25	71.45	92.69	167.72	151.27	1,045.67
COMMERCIAL									
Total Use	12.74	1,058.81	381.33	1,239.73	9.86	119.18	32.36	0.13	2,854.15
% Import	22.28	22.28	22.28	22.28	22.28	22.28	22.28	22.28	22.28
Import Use	2.84	235.85	84.94	276.15	2.20	26.55	7.21	0.03	635.77
% Credit	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Credit	0.28	23.59	8.49	27.62	0.22	2.65	0.72	0.00	63.58
DOMESTIC									
Total Use	726.94	2,100.19	410.26	8,831.72	208.66	1,940.10	868.46	353.58	15,439.92
% Import	22.28	22.28	22.28	22.28	22.28	22.28	22.28	22.28	22.28
Import Use	161.93	467.83	91.39	1,967.30	46.48	432.17	193.45	78.76	3,439.30
% Credit	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Credit	40.48	116.96	22.85	491.82	11.62	108.04	48.36	19.69	859.83
TOTAL USE	4,409.93	4,228.53	1,075.59	12,700.32	1,190.54	3,320.28	3,182.43	2,411.54	32,519.17
TOTAL									
Total Import	982.33	941.92	239.59	2,829.05	265.20	739.60	708.90	537.18	7,243.77
Total Credit	310.56 **	219.16	52.22	712.69	83.29	203.39	216.80	170.96	1,969.07
Total Credit Qyal		109.58	52.22		83.29				245.09
Total Credit Qtoal		109.58		712.69		203.39	216.80	170.96	1,413.42

* Includes golf course and landscape irrigation
** This credit not applied to either Qyal or Qtoal

TABLE 7.6

SANTA MARGARITA RIVER WATERSHED
RANCHO CALIFORNIA WATER DISTRICT
RETURN FLOW CREDIT
1996-1997
SANTA ROSA DIVISION
Quantities in Acre Feet

	HYDROGEOLOGIC AREAS			
	1 MURRIETA WOLF 1/2 QYAL 1/2 QTOAL	3 LOWER MESA QTOAL	8 RTS 279, 280 & 285 1/4 QYAL 3/4 QTOAL	TOTAL
AGRICULTURAL *				
Total Use	9.14	0.00	1,593.71	1,602.86
% Import	65.29	65.29	65.29	
Import Use	5.97	0.00	1,040.46	1,046.43
% Credit	33.00	33.00	33.00	
Credit	1.97	0.00	343.35	345.32
COMMERCIAL				
Total Use	2.27	0.54	334.78	337.59
% Import	65.29	65.29	65.29	
Import Use	1.48	0.36	218.56	220.40
% Credit	10.00	10.00	10.00	
Credit	0.15	0.04	21.86	22.04
DOMESTIC				
Total Use	0.14	0.00	1,241.62	1,241.76
% Import	65.29	65.29	65.29	
Import Use	0.09	0.00	810.60	810.69
% Credit	25.00	25.00	25.00	
Credit	0.02	0.00	202.65	202.67
TOTAL USE	11.55	0.54	3,170.12	3,182.21
TOTAL				
Total Import Use	7.54	0.36	2,069.62	2,077.51
Total Credit	2.14	0.04	567.86	570.03
Total Credit Qyal	1.07		141.96	143.03
Total Credit Qtoal	1.07	0.04	425.89	427.00

* Includes golf course and landscape irrigation

The percentage of imported water that becomes return flow varies according to the use as follows:

Agricultural Use	33%
Commercial Use	10%
Domestic Use	25%

Based on the foregoing factors, the return flow credit for 1996-97 is computed to be 1,969.07 acre feet for the Rancho Division and 570.03 acre feet for the Santa Rosa Division, as shown on Tables 7.5 and 7.6 respectively.

Some of the hydrogeologic areas overlie older alluvium and some overlie younger alluvium. Comparison of exposures of younger alluvium with maps of the District's hydrogeologic areas indicates that the Santa Gertrudis, Pauba and half of the Murrieta-Wolf areas overlie younger alluvium. The area of the Santa Rosa Division that overlies the groundwater area is one-fourth in the younger alluvium and three-fourths in the older alluvium. Import return flows in these areas can be credited against pumping from the younger alluvium. These credits for 1996-97 for the Rancho Division are 245.09 acre feet and 143.03 acre feet for the Santa Rosa Division, as shown on Tables 7.5 and 7.6 respectively.

Rancho California WD imported an additional 1,315 acre feet of water for groundwater recharge in 1996-97.

Division of Local Water

During 1996-97, Rancho California WD pumped 35,131 acre feet of groundwater. Some of this water was pumped from the younger alluvium and some from the older alluvium. The Court determined that water in both the younger alluvium and older alluvium add to, contribute to and support the Santa Margarita River stream system. The primary reason for differentiating between younger alluvium and older alluvium production is that, in California, production from the younger alluvium is generally considered to be governed by water rights which apply to the regulation of surface waters. Production from the older alluvium is generally considered to be governed by regulations which apply to groundwater.

The younger alluvial deposits were determined by the Court to be those deposits laid down by stream action after the course of the Santa Margarita River shifted to its present westerly flow through the Temecula Gorge to the Pacific Ocean. The areal extent of the younger alluvium is shown on various maps developed during the litigation such as U. S. Exhibit 15L. The Court reported that the depth of the younger alluvial deposits could not be determined with exactness. However the Court did indicate that based on evidence available to the Court in 1962, the maximum depth of the younger alluvium in the Murrieta Valley was approximately 30 feet. Similarly in Pauba Valley, the Court stated that the

evidence indicated a maximum depth of 130 feet. The Court also noted that it would retain continuing jurisdiction in the case so that subsequent findings could be made if required.

Identification of the younger alluvium during the litigation was based on the finding that the younger alluvium was part of the surface stream system. Thus the underground channel banks were formed by the contact with the older alluvium and the bed of the channel was defined as the first significant clay layer. The well logs that were used to identify the depth of the younger alluvium on U. S. Exhibit 16 were reviewed. These logs indicated that the top of clay layers varying in thickness from 2 to 205 feet had been used to define the depth of the younger alluvium.

U. S. Exhibit 16 also shows that the depth of the younger alluvium progressively thins to the west so that the deepest younger alluvium was found in the easterly portion of the Pauba Valley. Subsequent to the Court's findings in the early 1960's, additional wells have been constructed by Rancho California WD and many additional geologic studies have been conducted.

In 1995 well logs and geophysical logs of all Rancho California WD wells were reviewed by representatives of the United States and Rancho California WD to determine the depths of the younger alluvium. There was general agreement between the parties about the depth of the younger alluvium in production wells, except for ten wells shown on Table 7.7 of the 1994-95 report. The remaining disagreements relate to differences about the magnitude of the clay layer needed to define the base of the younger alluvium, the importance of neighboring wells, and general concepts about the overall geologic setting.

The depths of younger alluvium used in this report to determine the Rancho California WD production from the younger alluvium are shown on Table 7.7, together with each well location, seal depth, perforated interval and the percent of each well which produces from the younger alluvium.

There are a number of factors that can be considered in allocating total well production between the younger alluvium and older alluvium. These factors include relative permeability of the younger and older alluvium, water levels, perforated intervals and the presence of clay layers.

Although the Court has found that the younger alluvium is more permeable than the older alluvium, few data are available to indicate the magnitude of such differences. Even if tests had been conducted at one site, there could be significant variations at other locations in the groundwater area.

TABLE 7.7

SANTA MARGARITA RIVER WATERSHED
DEPTH OF YOUNGER ALLUVIUM IN RANCHO CALIFORNIA WATER DISTRICT WELLS

RCWD WELL NO.	LOCATION TOWNSHIP/ RANGE/ SECTION	SEAL DEPTH FEET	PERFORATED INTERVAL FEET	DEPTH YOUNGER ALLUVIUM FEET	PERCENT YOUNGER ALLUVIUM %		REMARKS
106	7S/3W-26R1	55	130-210; 250-310; 340-440; 700-740; 780-980	0	0.0%	Murrieta	No. 108 Winchester, clay 0'-40'
107	7S/3W-26J1	55	60-120; 190-260; 280-300; 390-590	58	0.0%	Murrieta	No. 105 - gravel & clay 58'-84'
108	7S/3W-25E1		60-110; 190-280; 350-410; 430-450; 470-490; 530-590	55	0.0%	Murrieta	Formerly No. 109 gravel/sandy clay 55'-70'
109	8S/2W-17J1	52	70-150; 170-210	75	5.6%		Brown clay and gravel 75' to 105'
110	8S/1W-6K1	54	75-155	165	100.0%		Clay 165'-190'. Prior to 10/23/97 perf int. 70-150; 200-240; 320-380; 420-460
113	7S/2W-25H1	52	96-136; 275-462; 482-542	Shallow	0.0%		
115	8S/1W-6H	Unknown	60-120; 140-180; 226-326	150	45.5%		See No. 116
116	8S/1W-6J	Unknown	60-120; 140-200; 220-260; 270-330; 370-390	150	46.7%		Clay 150'-170'
119	8S/2W-19J	55	170-260; 300-470		0.0%	Wolf Valley	Perforated below 170'
123	8S/1W-7B	55	100-260; 300-380; 420-500	135	18.9%		Brown Sand Clay 135'-210'
129	7S/2W-20L	Unknown	180-290; 416-480; 520-600	Shallow	0.0%	Santa Gertrudis Creek	Qyal very shallow along Santa Gertrudis Creek
132	8S/1W-7D	55	70-390; 430-500	135	25.5%		Brown Clay Streaks 135'-175'
135	7S/3W-27M10	55	70-170	50	0.0%	Murrieta Valley	Silty clay 50'-69'
141	8S/2W-11P	55	120-190; 215-235; 270-380; 430-510	104	0.0%		Silt & sand 104'-185'; Well 11L1 is 112'
144	7S/3W-27D	55	983-1123; 1143-1283; 1343-1483; 1503-1743	25	0.0%	Murrieta Valley	Sand with silty clay 25'-45'
154	8S/1W-5L2	50	50-220	110	35.3%		Basalt fragments Geophysical log
205	7S/3W-35A	96	150-1000	10	0.0%	Santa Gertrudis/ Murrieta Valley	Sandy clay 10'-20'
210	8S/2W-12K	None	48-228	160	93.3%		Clay cobblestones 160'-167', 175'-227'
218	8S/2W-20B5	27	48-289	40	0.0%		Old 28; clay with sand layer 40'-60'; now monitoring wells 427, 428 and 429
466	8S/3W-1P2	Unknown	106-822	49	0.0%	Long Canyon	Old 219, Cantarini, hard clay 49'-60'
220	7S/3W-26Q1	34	114-450	58	0.0%		Clay 58' - 73'
467	8S/2W-12K1	Unknown	50-100; 100-140	140	100.0%		Old 221, JK, Exh. 16, Monitoring well since 1983
223	8S/2W-20C1	Unknown	48-250	60	7.5%	Wolf Valley	CAT Well; east of Wildomar Fault; nearby Exh 16 wells 17Q @62' & 17M @55' are also east of the Wildomar Fault
224	8S/2W-15D	Unknown	48-250	106	37.4%		Old Well 50, clay 106'-138'
230	8S/2W-11J1	Unknown	24-31; 32.5-34; 35-40; 61-65; 70-76; 80-85; 86.5-91; 92.5-98.5	>119	100.0%		Old Well 30, depth of well is 119'
231	8S/2W-20B6	55	80-120; 150-270	35	0.0%		Old 104, P-34, Clay 20'-23'; 35'-41'; East of Wildomar Fault
232	8S/2W-11J3	51	95-135; 175-215; 235-295	135	28.6%		Old 111, 105, P-31; coarse sand & clay 135' - 155'
233	8S/2W-12K2	51	95-135; 175-215; 235-295	145	28.6%		Old 112, P32; sand and clay at 145'-220'
234	8S/2W-11P1	52	80-100; 120-140; 200-240; 280-320; 340-400	125	15.6%		Brown Clay at 125'; sand and clay at 125'-140'
235	8S/3W-1Q1	55	Unknown	Shallow	0.0%	Long Canyon	
240	8S/2W-11L1	Unknown	48-298	112	27.8%		Old Well No. 40; clay 112'-136'
301	7S/3W-18Q1	93	140-280; 280-520; 540-640	26	0.0%	Murrieta	Old JR1; blue clay 26'-32'

The allocation of production could be based on the saturated thickness of the younger alluvium relative to the saturated thickness in the older alluvium. This approach would reduce the quantities estimated from the younger alluvium if water levels lower. Water levels vary throughout the year and are influenced by the rate of well production and the time between well shut off and the time of measurement.

Thus, use of saturated thickness would complicate the computation and require use of varying water level data.

In this report the portion of production from the younger alluvium is computed using the ratio of the perforated interval in younger alluvium to the net perforated interval throughout the well. The net perforated interval was computed for each well by subtracting the thickness of clay layers located within the perforated interval from the total perforated interval. In this way a single percentage can be computed for each well to apply to all production from the well.

Production from the younger alluvium and older alluvium for 1996-97 using the percentages noted in Table 7.7 is presented in Table 7.8. It may be noted that 2,807 acre feet were pumped from the younger alluvium and 32,324 acre feet were pumped from the older alluvium in 1996-97.

Representatives of the United States dispute the foregoing presentation of the depth of and production from the younger alluvium in the Pauba, and Murrieta Valleys.

This production of 2,807 acre feet from the younger alluvium as shown on Table 7.8 may be compared with import return flows shown on Tables 7.5 and 7.6, direct recharge of imported water, recharge from Vail into the younger alluvium, and authorized uses in the Permit 7032 service area.

In 1996-97 there were total return flow credits of 388.12 acre feet and direct recharge of 1,315 acre feet of imported water. Also in 1996-97, 1,725 acre feet were released from Vail and recharged to groundwater storage. That recharge plus the unrecovered portions of recharge in prior years is sufficient to offset the authorized use of 1,656 acre feet of water used for agricultural purposes within the Permit 7032 service area. The import return flow credits and the direct recharge of imported water can be used to offset the commercial and domestic uses as follows:

TABLE 7.8

SANTA MARGARITA RIVER WATERSHED

RANCHO CALIFORNIA WATER DISTRICT
WELL PRODUCTION FROM YOUNGER AND OLDER ALLUVIUM

1996-97

Quantities in Acre Feet

WELL NO.	QYAL	QTOAL	TOTAL
101	0.00	302.00	302.00
102	0.00	752.00	752.00
105	0.00	0.00	0.00
106	0.00	619.00	619.00
108	0.00	819.00	819.00
109	42.22	711.78	754.00
110	0.00	0.00	0.00
113	0.00	498.00	498.00
117	0.00	0.00	0.00
118	0.00	715.00	715.00
119	0.00	569.00	569.00
120	0.00	1,165.00	1,165.00
121	0.00	518.00	518.00
122	0.00	212.00	212.00
123	0.00	0.00	0.00
124	0.00	120.00	120.00
125	0.00	498.00	498.00
126	0.00	1,381.00	1,381.00
128	0.00	988.00	988.00
129	0.00	14.00	14.00
130	0.00	764.00	764.00
131	0.00	829.00	829.00
132	441.92	1,291.09	1,733.00
133	0.00	492.00	492.00
135	0.00	1,328.00	1,328.00
138	0.00	1,941.00	1,941.00
139	0.00	1,754.00	1,754.00
140	0.00	1,167.00	1,167.00
141	0.00	505.00	505.00
143	0.00	446.00	446.00
144	0.00	539.00	539.00
145	0.00	826.00	826.00
149	0.00	0.00	0.00
151	0.00	562.00	562.00
155	0.00	308.00	308.00
201	0.00	0.00	0.00
203	0.00	548.00	548.00
204	0.00	0.00	0.00
205	0.00	33.00	33.00
207	0.00	18.00	18.00
208	0.00	121.00	121.00
209	0.00	0.00	0.00
210	1,461.08	104.92	1,566.00
211	0.00	1,067.00	1,067.00
212	0.00	0.00	0.00
215	0.00	254.00	254.00
216	0.00	0.00	0.00
217	0.00	1,008.00	1,008.00
231	0.00	0.00	0.00
232	146.15	364.85	511.00
233	715.57	1,786.43	2,502.00
234	0.16	0.84	1.00
235	0.00	1,654.00	1,654.00
301	0.00	3.00	3.00
302	0.00	345.00	345.00
309	0.00	2,382.00	2,382.00
TOTAL	**2,807.09**	**32,323.91**	**35,131.00**

Total production from younger alluvium	2,807
Less authorized Vail agricultural use	1,656
Subtotal	1,151
Less import return flow credit	388
Less import direct recharge	1,315
Import Carryover	552

Thus there was no unauthorized use under Permit 7032 in 1996-97, and 552 acre feet of imported supplies remain available to offset younger alluvium production in future years.

Western Municipal Water District

Western MWD wholesales imported water to Rancho California WD and also serves water to its Improvement District A near the southern boundary of Riverside County along I-15 freeway. Deliveries to Rancho California WD are included under Rancho California WD.

In Water Year 1996-97, imports to Improvement District A amounted to approximately 30 acre feet.

Deliveries to Improvement District A through turnout WR-13 for the period 1966 to 1997 are shown in Table 5.4.

U. S. Marine Corps - Camp Pendleton

Camp Pendleton is located on the coastal side of the Santa Margarita River Watershed. Water is provided by 10 wells that produced 6,304 acre feet in Water Year 1996-97. This production is from the younger alluvium and is based on riparian and appropriative rights. Of this quantity, 3,644 acre feet were exported out of the Watershed as shown in Appendix A.

A portion of the exported water amounting to 1,932 acre feet was returned to the Santa Margarita River Watershed as wastewater.

Production and estimated use inside and outside the Watershed, as well as wastewater returns, are shown in Appendix B for the period 1966-1997.

In addition to the operations at Camp Pendleton involving diversions from the Santa Margarita River, water is also imported by the Naval Weapons Station (NWS). The NWS occupies about 9,148 acres in the north eastern part of Camp Pendleton. Since 1969 the NWS has relied on imported water delivered via Fallbrook PUD for its supply. Wastewater is exported from the NWS and the Watershed via an outfall line also used by the Fallbrook Public Utility District. In 1996-97, 109 acre feet were imported of which 6 acre feet of wastewater were exported, as shown in Appendix A. Imports and use between 1966 and 1997 are shown in Appendix B.

7.3 Indian Reservations

Water use information about the three Indian Reservations in the Watershed is described in the following sections:

Cahuilla Indian Reservation

In general, domestic water use on the Cahuilla Indian Reservation is not measured, however reports indicate that 162 people reside on the Reservation. These residents use water primarily for domestic purposes as well as for livestock watering and grazing. Annual domestic water use, based on 125 gallons per capita per day, amounts to a total annual use of about 23 acre feet from wells listed in Appendix C.

The foregoing estimate is for total domestic water use on the Reservation. A portion of this use may not be under Court jurisdiction, but the estimate will be used until individual well production quantities are available to allow determination of the portion under Court jurisdiction. The estimated domestic use is included on Table 4.1 under water purveyor production.

An additional quantity (no more than 5 AF) was put to commercial use at a casino; however this water was pumped from well 7S/2E-26B3 which overlies basement complex and is outside court jurisdiction.

In 1996-97, 160 acres were leased for irrigation use. Crops included 80 acres of oats and 80 acres of potatoes. Water was supplied from the Agri-Empire, Inc. water system that includes six wells at various locations in the Anza Valley based on overlying and reserved rights. One of the wells in the Agri-Empire water system (7S/3E-28A2) is located on the Reservation.

Pechanga Indian Reservation

During 1996-97, water well production by the Pechanga Water System amounted to 167.5 acre feet. In addition, it is estimated that a spring produced about 3.5 acre feet during the year for a total production of 171 acre feet. Information about system wells and the spring is shown in the following tabulation:

Well/Spring Designation	Name	Water Depth Feet	Well Depth Feet	Perf. Interval * Feet
28R1	Ball Park	91 - 158	1,000	130 - 220
28Q6	Sea Bee	221 - 238	610	—
29A1	Kelsey Tract	45 - 50	348	—
36	Spring	N/A	N/A	N/A
29B10	Eduardo	—	—	—

* Information about construction of some of the wells is not available.

The wells listed above are in areas of younger alluvium at ground surface. The depth of the younger alluvium in Wolf Valley was estimated by representatives of Rancho California WD and the United States for Rancho California WD Wells No. 117 (8S/2W-20E) and No. 119 (8S/2W-19J) to be in the range of 120 to 170 feet in depth. Thus, based on available well construction data, some of the production is from the younger alluvium and some from the older alluvium. Under state law production from the wells that originate in the older alluvium can be considered to be under a groundwater appropriative right or an overlying right, depending on the circumstances at each well.

Under federal law, production from wells that originate in either the younger or older alluvium can be considered to be under a federal reserved right, in accordance with Interlocutory Judgment No. 41 which provides as follows in Order No. 7:

> *IT IS FURTHER ORDERED, ADJUDGED AND DECREED that the United States of America intended to reserve, and did reserve, rights to the use of the waters of the Santa Margarita River stream system which under natural conditions would be physically available on the Pechanga Indian Reservation, including rights to the use of ground waters sufficient for the present and future needs of the Indians residing thereon with priority dates*

of June 27, 1882, for those lands established by the Executive Order of that date; January 9, 1907, for those lands transferred by the Executive Order of that date; August 29, 1893, for those lands added to the Reservation by Patent on that date; and May 25, 1931, for those lands added to the Reservation by Patent of that date.

Ramona Indian Reservation

The Ramona Indian Reservation occupies 560 acres of land of which 321 acres are inside the Watershed. The Ramona Reservation has no reported water use and a reported resident population of two.

7.4 Mobile Homes/Campgrounds

There are a number of mobile home parks in the Watershed. These range from relatively permanent structures, to those catering to recreational vehicles and campgrounds. Water production from wells is shown on Table 7.1 for Butterfield Oaks Mobile Home Park, and Outdoor Resorts Rancho California, Inc. (formerly Vacation Valley).

7.5 Irrigation Water Use

Estimated water production reported by substantial users for irrigation in the Santa Margarita River Watershed is shown on Table 7.1 to be 7,350 acre feet. This estimate was based on reported irrigated acreage and includes 1,102 acre feet of surface diversions as shown in Appendix C.

SECTION 8 - UNAUTHORIZED WATER USE

8.1 General

From time to time there are complaints of unauthorized water uses of various types in the Watershed. Such complaints are investigated when they are brought to the attention of the Watermaster. The status of the current list of unauthorized uses is described as follows:

8.2 Unauthorized Small Storage Ponds

Many small dams and reservoirs have been constructed on streams in the Watershed. The legal basis for these ponds is described in the 1988-89 Watermaster Report. Basically, the Court has held that storage of water in ponds less than 10 acre feet in capacity and used for stock watering is a valid use of riparian water. The Court has also held that:

> The temporary or non-seasonal impoundment by riparian owners for the purpose of providing a head for irrigation or for the purpose of temporarily accumulating sufficient water to make possible efficient irrigation is a proper riparian use of water.

Criteria for determining non-seasonal storage of irrigation water have yet to be developed.

8.3 Rancho California Water District Water Use

A number of unauthorized water use issues have been raised by the United States. These issues and action to investigate and/or correct the issues are as follows:

1. Violation of the 1940 Stipulated Judgment - United States' representatives have indicated their belief that the provisions of the 1940 Stipulated Judgment have been violated in two respects by Rancho California WD:

   A. Storage of water in Vail Lake and the related recharge and rediversion operations exceed the portion of the Santa Margarita River flow allocated to Rancho California WD by the Stipulated Judgment.

   B. Production of water by Rancho California WD from the older alluvium should be included with surface water in determining whether water use by Rancho California WD exceeds that portion allocated to Rancho California WD by the Stipulated Judgment.

   Rancho California WD disagrees with each of these contentions.

During 1996-97 representatives of Rancho California WD and the United States continued to discuss these issues in meetings of an Attorneys' Group and a Technical Committee. The purpose of the Attorneys' Group is to develop solutions to the water right issues that have divided the two parties. The Technical Committee is to agree on technical facts that can assist the Attorneys' Group in resolving issues related to the 1940 Stipulated Judgment, as well as Permit 7032 issues described in the following section.

2. Rediversion and Use Not in Accord with Terms of Permit 7032 - As noted in Section 7 of this report, the place of use, rediversion facilities and the type of use of water appropriated under Rancho California WD's Application No. 11518 and Permit 7032 have changed since the Application was filed in 1947.

Use of water under Permit 7032 is limited to irrigation, domestic use incidental to farming operations and recreation. Such use for municipal and industrial purposes represents an unauthorized use.

As noted in the previous section of this report, there was no unauthorized use of water under Permit 7032 in 1996-97. However, in prior years water appropriated under Permit 7032 was either used outside the designated place of use or partially used within the designated service area for commercial and/or domestic use, neither of which is authorized under Permit 7032.

Accordingly, Rancho California WD initiated the process of changing Permit 7032 on September 1, 1992, by filing a Notice of Intent to Adopt a Negative Declaration for a Petition for Change to the SWRCB, Division of Water Rights, relative to Appropriations Water Permit 7032.

On January 15, 1993, the United States in a petition filed with the Superior Court of the State of California for Riverside County alleged that the District had violated the California Environmental Quality Act (CEQA) by adopting the Negative Declaration. On April 12, 1994, the Court denied the United States' petition and declared that Rancho California WD had complied with CEQA by adopting the Negative Declaration. On August 11, 1994, the parties jointly requested an extension of time for the filing of an appeal pending current settlement negotiations. The appellate Court granted an extension of the process which has subsequently been extended to August 17, 1998.

On January 13, 1993, the District filed a Petition for Change in the points of rediversion, the place of use and the purpose of use with the SWRCB. The Petition for Change was protested by Camp Pendleton, U. S. Fish and Wildlife Service, the U. S. Bureau of Indian Affairs, and the California Sportfishing Alliance.

In March 1993, Camp Pendleton filed a Complaint with the SWRCB that Rancho California WD was violating the terms of Permit 7032 regarding place, season and purpose of use. On May 25, 1993, the SWRCB advised that it would process the Complaint prior to acting on the District's Petition for Change.

A representative from the SWRCB visited the area in July 1993, and completed a draft staff Report of Investigation. Prior to release of the staff report the SWRCB agreed to a joint request by the parties that the issuance of the report be deferred to allow the parties to continue to negotiate a settlement of the issues. In 1995, and in 1996, the SWRCB agreed to joint requests that the SWRCB hold in abeyance any actions related to the United States' complaint against Rancho California WD. The SWRCB's agreement was based on the fact that the parties are actively seeking a negotiated settlement to all outstanding issues. The SWRCB requested that they be provided with a status report on the negotiations prior to August 1, 1996, a date later extended to August 15, 1997, and again to August 15, 1998.

8.4 Other Potential Unauthorized Uses

United States' representatives also contend that water is being pumped from the younger alluvium without permit outside Pauba Valley and that there is pumping in violation of Court adjudications from the older alluvium.

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SECTION 9 - THREATS TO WATER SUPPLY

9.1 General

General threats to the long-term water supply in the Santa Margarita River Watershed, which have been described in previous Watermaster Reports, are as follows:

1. High nitrate concentrations in Rainbow Creek and in Anza Valley.

2. Potential overdraft conditions at various locations in the Santa Margarita River Watershed.

3. Potentially adverse salt balance conditions in the upper Santa Margarita River area.

9.2 High Nitrate Concentrations

In past years high concentrations of nitrate have been measured in Anza Valley and on Rainbow Creek. However no measurements from Anza Valley are available for 1996-97.

During 1996-97, Mission Resource Conservation District published its final report entitled, "Rainbow Creek Non-Point Source Nitrate Reduction Project." The report presented stream flow measurements and specific conductance, pH, nitrate and phosphorus data from five sampling stations along Rainbow Creek collected between October 1995 and September 1996. These data were summarized in the 1995-96 report.

The data show that average nitrate concentrations in Rainbow Valley regularly exceeded the drinking standard of 45 mg/l as nitrate. Concentrations downstream at the Willow Glen sampling site were normally less than the standard, averaging 26.2 mg/l. However, nitrate concentrations at a site on Rainbow Creek about 1.1 miles downstream from the Willow Glen site at the mouth of Rainbow Creek generally exceed drinking water standards, averaging 46.8 mg/l. Thus the report concludes that there is a significant nitrate source between the two sampling sites, along the lower mile of Rainbow Creek. The District has proposed a follow-up project that would identify and monitor sources of nitrate loadings in the lower reaches of Rainbow Creek, and implement educational programs concerning soil fertility, septic tanks, and watershed protection.

9.3 Potential Overdraft Conditions

Previous Watermaster reports have noted concerns about overdraft conditions in Anza Valley and in the Murrieta-Temecula area.

The 1989-90 Watermaster Report described a water supply study, conducted by a consultant to Riverside County, which concluded that Anza Valley water use in 1986 was approximately equal to the perennial yield and that as of 1986 useable groundwater in storage approximated 56,000 acre feet. No further studies relative to groundwater use in Anza Valley are available. Groundwater levels for Anza Mutual Water Company's Well No. 1 (7S/3E-21G1) located in Anza Valley rose 22 feet between September 1996 and October 1997. A graph showing water levels in this well is included in this Report as Figure 4.4. It can be noted that the water elevation of 3806.6 feet this year is within the general range observed since the early 1970's.

No recent published studies of safe yield are available for the Murrieta-Temecula area. Groundwater resources in much of the area are being managed by Rancho California WD. The District prepares an annual groundwater production program with the goal of developing the maximum perennial yield from the basin. The District monitors historical water levels and well production in each of several hydrogeologic subareas. That data, combined with other information including water quality, natural and artificial recharge, pump settings, and well construction factors, are used to develop a recommended production program. Production rates are commonly lowered in subareas where water levels have declined over several years, and production rates are increased in areas where decline has not occurred. As a final check the recommended production rates are checked using the latest version of the RCWD groundwater model.

Groundwater level data for three wells in the Murrieta-Temecula Groundwater Area are included in this report as Figures 4.1, 4.3 and 4.5. The Windmill Well (8S/2W-12H1) located at the eastern part of Pauba Valley fell 19 feet in 1996-97. Well 7S/3W-20C9 in the Murrieta CWD area rose 9.8 feet from last year. Well 8S/2W-29G1 on the Pechanga Indian Reservation in Wolf Valley was down 1.9 feet from last year. As can be seen from the long term hydrographs, groundwater levels have fluctuated within broad limits in recent years.

9.4 Salt Balance

A key issue in management of a groundwater basin is potential build up of salts and related increases in total dissolved solids that decreases the usability of waters in a basin. Thus consideration must be given to measures that allow export of salts from a basin to offset the salt load in water entering the groundwater basin.

A 2 MGD Demonstration Project involving discharge of treated wastewater into the Santa Margarita River system by Rancho California Water District is expected to be implemented in late 1997. This project will provide cost-effective disposal of wastewater from the upper Santa Margarita River area, assist in controlling salt balance in the Murrieta-Temecula Groundwater Area, and supplement water supplies to the Santa Margarita River system downstream of Temecula.

In a separate project, Eastern MWD exported 2,319 acre feet of treated wastewater from the watershed in 1996-97. At an average total dissolved solids concentration of 650 mg/l there are approximately 1,768 pounds of salt in every acre foot of wastewater. Thus in 1996-97, approximately 2,050 tons of salt were exported by EMWD.

In addition to export of treated wastewater, the salt balances of the Murrieta-Temecula groundwater area and the lower Santa Margarita River groundwater area are affected by discharges from wells into Murrieta Creek. In 1996-97 wells discharged 1,907 acre feet, as shown below, together with estimated total dissolved solids in the water.

Well No.	Release Acre Feet	TDS mg/l	Sample Date
101	8	480	8/9/96
102	41	700	6/20/95
108	1	300	5/13/97
118	11	560	9/16/96
121	518	640	7/24/97
135	1328	1155*	5/6/97 & 9/17/97
Total	1907		

* Average of May and September concentrations

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SECTION 10 - WATER QUALITY

10.1 Surface Water Quality

During 1996-97 there was extensive sampling of surface water quality by Rancho California WD. Portions of these data are shown in Appendix Table D-2. Weekly samples were collected from the Santa Margarita River at the Temecula gaging station and analyzed for total dissolved solids (TDS) and nitrate. TDS concentrations below 600 mg/l were recorded on January 17 and April 23, 1997. The January reading followed high flows of 569 cfs a few days earlier. The April reading occurred during a month when Rancho California WD released 491 acre feet to the River. The highest TDS reading was 900 mg/l on March 5, 1997, when flow was 2.8 cfs.

Nitrate concentrations as nitrogen at the Temecula gaging station ranged from a low of 0.3 mg/l on July 16 and 23 to a high of 1.7 mg/l on February 5, 1997. All measurements of nitrate were well below the drinking water standard of 10 mg/l as N.

In July, August and September, 1997, Rancho California WD also collected samples at four additional locations in the Santa Margarita River system including Murrieta Creek, Willow Glen, DeLuz Crossing and the Estuary. Among other things, these samples were also analyzed for TDS and Nitrate as N.

Surface water quality data collected in prior years by Camp Pendleton and Eastern MWD are listed in earlier Watermaster reports.

The U. S. Geological Survey has published water quality data including specific conductance, pH, temperature and dissolved oxygen for the Santa Margarita River at the mouth near Oceanside and in the Estuary since 1993-94.

10.2 Groundwater Quality

During 1996-97 water quality data were collected from wells by Murrieta County WD, Rancho California WD, the U.S.G.S. for wells on Indian Reservations, and the U.S.M.C. at Camp Pendleton.

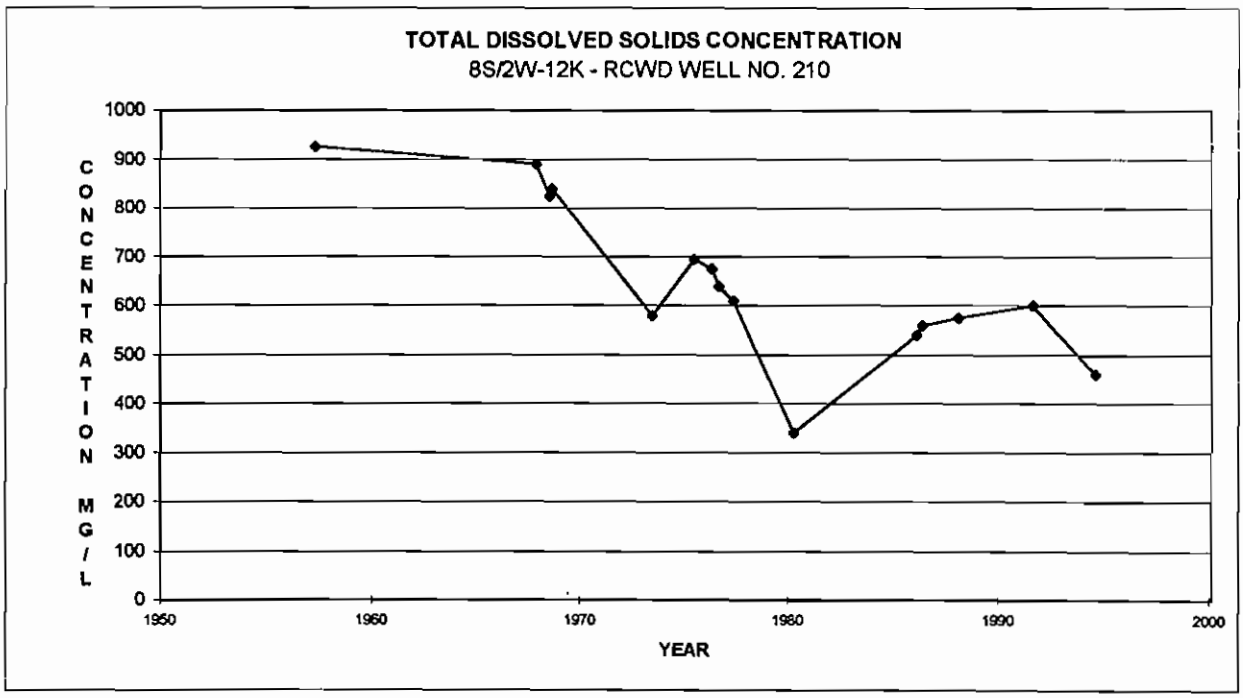
Water quality samples were collected from four wells in Murrieta County Water District as shown in Appendix Table D-3. All samples were analyzed for nitrates. The samples from the House, North and South wells showed concentrations of less than 3 mg/l of NO_3. One sample from the Holiday well showed a concentration of 55 mg/l of NO_3 as compared to a drinking water standard of 45 mg/l as NO_3. Subsequent samples from the Holiday well were in the 21 - 25 mg/l range.

Water quality data for Rancho California WD wells are shown in Appendix Table D-4. New data were collected from 40 wells during 1996-97. Of the 40 wells, 17 wells were analyzed for nitrates only. In these wells, nitrate concentrations ranged from 0.2 to 53 mg/l as NO_3, with the drinking water standard being 45 mg/l as NO_3. The reading of 53 mg/l was a February 1997 sample from Well 129. Measurements prior to February 1997 ranged from 9 to 13 mg/l. There has been no production form the well since November 1996. Samples from the remaining 23 wells were subjected to standard chemical analysis: TDS concentrations increased in nine wells, decreased in eleven wells, two wells had no previous analysis, and one well stayed the same. The increases in concentrations ranged from 15 to 180 mg/l and averaged 68 mg/l. Decreases ranged from 5 to 210 mg/l and also averaged 68 mg/l.

The TDS in Well No. 135 decreased from 2670 mg/l in 1990 to 1050 mg/l in May 1997 and 1260 mg/l in September 1997. These concentrations of total dissolved solids are unusually high compared to other wells in the area. This reduction is not included in the foregoing average. Nitrate concentration in the 23 wells ranged from 1.3 to 22 mg/l nitrate.

Historical total dissolved solids concentrations for RCWD Well 210 are shown on Figure 10.1 for samples collected since 1957 when the well was constructed. The figure shows a decline in TDS from approximately 900 mg/l for the first two samples collected to the 500-600 mg/l range in recent years.

FIGURE 10.1

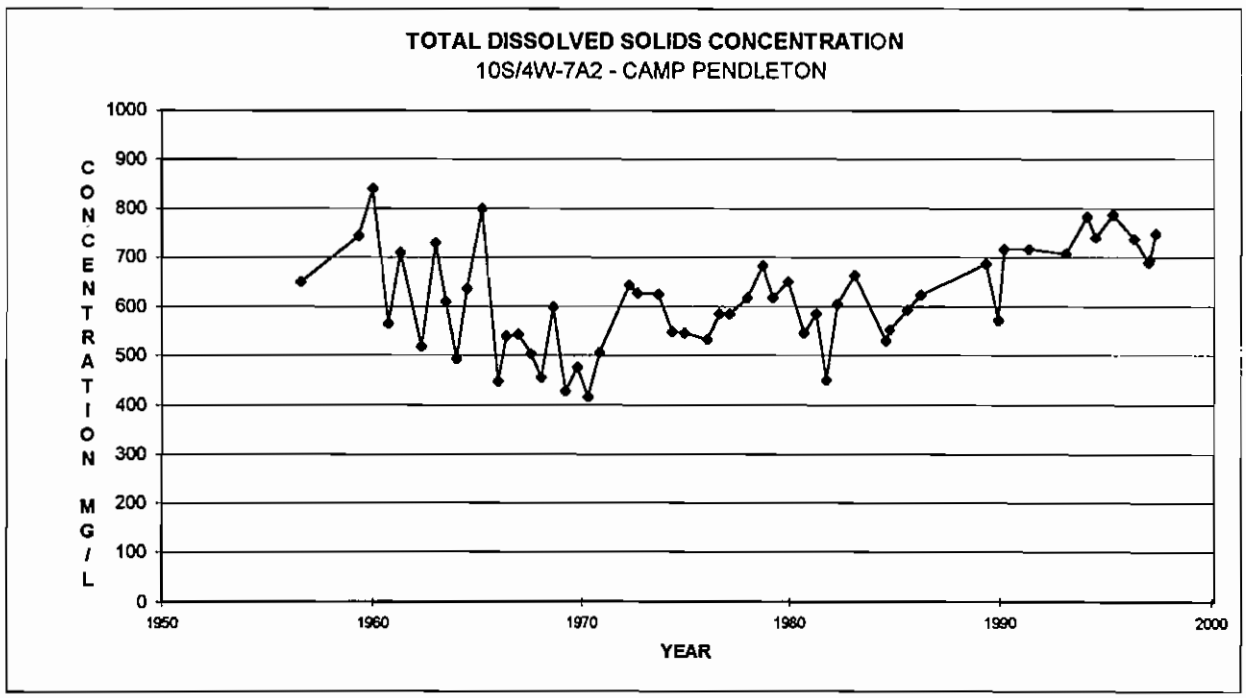


Appendix Table D-5 shows water quality data collected by the U.S.G.S. from wells on Indian Reservations. In 1996-97 samples were collected from four wells on the Pechanga Indian Reservation and subjected to standard chemical analysis. Concentrations of the various constituents were consistent with historical results, it being noted that nitrate concentration in Well No. 8S/2W-28Q2 had declined to 8.9 mg/l as N from 11 mg/l as N last year.

During 1996-97 samples of groundwater were collected from nine wells at Camp Pendleton as shown on Appendix Table D-6. These wells were subjected to standard chemical analysis, with results generally consistent with the historical results.

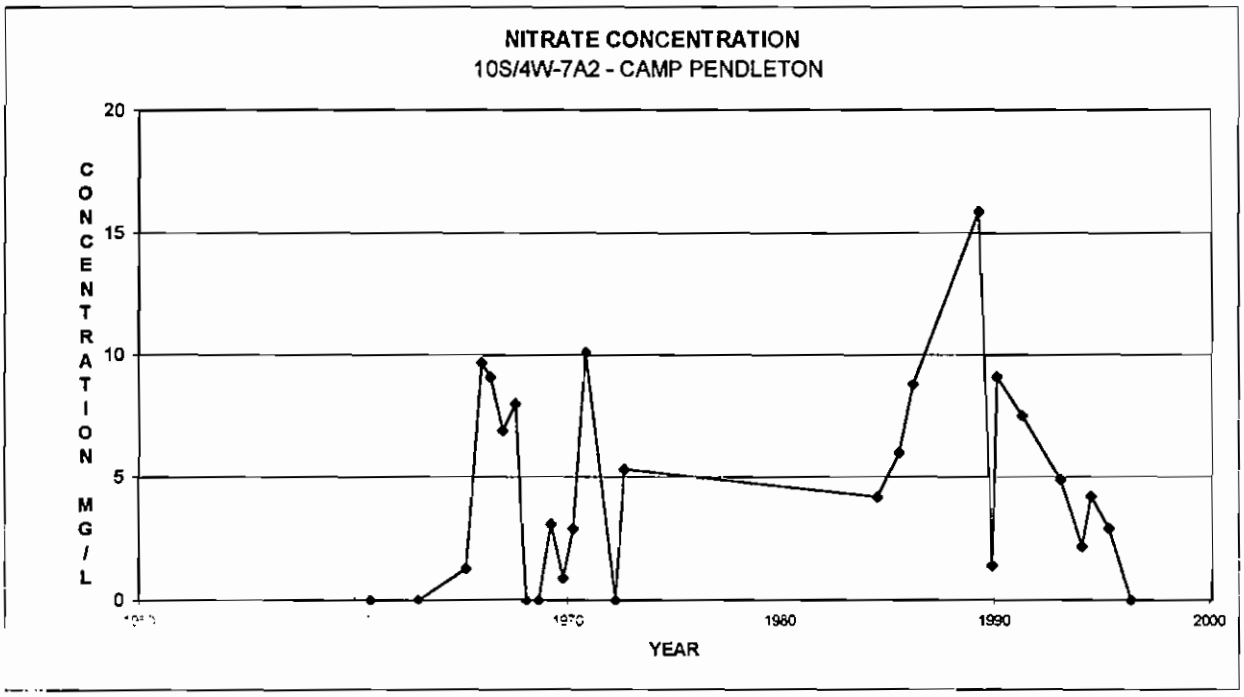
Historical total dissolved solids concentration for Camp Pendleton Well 7A2 are shown on Figure 10.2 for samples collected since the mid-1950's. The figure shows a decline between the mid-1950's and 1970, then a period of increasing concentration to the current levels in the 700-800 mg/l range.

FIGURE 10.2



Historical nitrate concentrations for the same well (7A2) are shown on Figure 10.3 to fluctuate widely between zero and as much as 16 mg/l for the period since about 1960.

FIGURE 10.3



SECTION 11 - FIVE YEAR PROJECTION OF WATERMASTER OFFICE TASKS, EXPENDITURES AND REQUIREMENTS

11.1 General

Projected tasks over the next five years are listed below in two categories: normal tasks, which are part of the usual Watermaster office operation; and additional tasks, which are foreseen but are not part of the normal office operations.

11.2 Normal Tasks

Tasks that are normally part of the Watermaster Office operation are as follows:

1. Update List of Substantial Users
2. Collect Water Production, Use, Import and Availability Data
3. Collect Well Location, Construction and Water Level Data
4. Administer Water Rights
5. Collect Water Quality Data
6. Monitor Water Quality and Water Right Activities
7. Administer Lake Skinner and Eastside Reservoir MOU's
8. Administer Steering Committee Matters
9. Prepare Court Reports/Budgets
10. Monitor Streamflow and Water Quality Measuring
11. Data Management

11.3 Additional Tasks

Tasks that have been identified but which are not part of normal operations are as follows:

1. Assist with Resolution of RCWD/Camp Pendleton Water Rights Issues
2. Determine Changes in Subsurface Storage
3. Determine Salt Balance
4. Prepare List of All Water Users Under Court Jurisdiction
5. Prepare Inventory of Ponds and Reservoirs

11.4 Projected Expenditures

Projected expenditures for the current year and over the next five years are listed as follows:

		Projected Expenditures		
		Watermaster Office	Gaging Station	Total
Current Year	1997/98	$161,300	$102,900	$264,200
Projected Years	1998/99	$162,300	$103,650	$265,950
	1999/2000	$170,400	$108,800	$279,200
	2000/2001	$178,900	$114,200	$293,200
	2001/2002	$187,800	$119,900	$307,700
	2002/2003	$197,200	$125,900	$323,100

SECTION 12 - WATERMASTER OFFICE BUDGET 1998-99

A total Watermaster Budget of $265,950 for the Water Year ending September 30, 1999, is shown below.

This budget includes $162,300 for the Watermaster Office and $103,650 for U.S.G.S. gaging station operations. The budgeted cost for gaging station operation is based on the annual renewal of an agreement between the Watermaster and the U. S. Geological Survey.

	APPROVED BUDGET CURRENT YEAR 1997-98 $	PROPOSED BUDGET 1998-99 $
Watermaster Office		
Rent	9,600	9,600
Accounting Services	4,000	4,000
Supplies	800	1,000
General Liability & Professional Insurance	3,200	3,200
Printing	1,300	1,300
Audit	3,200	3,200
Publications	800	2,000
Clerical/Data Management	43,000	43,000
Telephone	1,400	1,400
Miscellaneous Operating/Maintenance	1,500	1,500
Mileage/Travel	500	500
Office Equipment and Software	2,500	2,000
Watermaster		
Consulting Services	77,000	77,000
Automobile Expense	3,000	3,000
Travel Reimbursement	9,500	9,600
SUBTOTAL WATERMASTER OFFICE	**$ 161,300**	**$ 162,300**
USGS Gaging Station Operation and Maintenance	$ 102,900	$ 103,650
TOTAL	**$ 264,200**	**$ 265,950**

SANTA MARGARITA RIVER WATERSHED

ANNUAL WATERMASTER REPORT

WATER YEAR 1996-97

APPENDIX A

WATER PRODUCTION AND USE

WATER YEAR 1996-97

JULY 1998

TABLE A-1

SANTA MARGARITA RIVER WATERSHED
MONTHLY WATER PRODUCTION AND USE

EASTERN MUNICIPAL WATER DISTRICT
1996-97
Quantities in Acre Feet

	PRODUCTION					USE						RECLAIMED WASTEWATER				
MONTH YEAR	WELLS	IMPORT 1/	EXPORT FROM SMRW	NET IMPORT	TOTAL	AG 2/	COMM	DOM 3/	TOTAL	LOSS	TOTAL USE	REUSE IN SMRW	REUSE OUTSIDE SMRW	RELEASE TO RIVER	RECHARGE	TOTAL
1996																
OCT	49	881	555	326	375	0	0	884	884	(509)	375	319	230	0	0	549
NOV	40	740	420	320	360	0	0	741	741	(381)	360	201	209	0	0	410
DEC	20	238	335	(97)	(77)	0	0	23	23	(100)	(77)	107	54	0	0	161
1997																
JAN	56	244	150	94	150	0	0	143	143	7	150	41	17	0	0	58
FEB	55	107	2	105	160	0	0	154	154	6	160	67	19	0	0	86
MAR	21	174	1	173	194	0	0	185	185	9	194	331	234	0	0	565
APR	54	457	34	423	477	0	0	485	485	(8)	477	487	421	0	0	908
MAY	35	638	44	594	629	0	0	640	640	(11)	629	395	202	0	0	597
JUNE	16	599	0	599	615	0	0	584	584	31	615	318	131	0	0	449
JULY	0	784	161	623	623	0	0	745	745	(122)	623	346	167	0	0	513
AUG	16	1,347	102	1,245	1,261	0	0	561	561	700	1,261	288	303	0	0	591
SEPT	46	589	5	584	630	0	0	81	81	549	630	226	332	0	0	558
TOTAL	408	6,798	1,809	4,989	5,397	0	0	5,226	5,226	171	5,397	3,126	2,319	0	0	5,445

1/ Does not include deliveries to Rancho California Water District or Elsinore Valley Municipal Water District

2/ Figures are 95% of water pumped and imported to allow for 5% loss

3/ Figures are 95% of water pumped and imported to allow for 5% loss

TABLE A-2

SANTA MARGARITA RIVER WATERSHED
MONTHLY WATER PRODUCTION AND USE

FALLBROOK PUBLIC UTILITY DISTRICT

1996-97

Quantities in Acre Feet

	PRODUCTION							USE						WASTEWATER		
MONTH YEAR	WELLS	TOTAL DISTRICT IMPORT	DELUZ AREA IMPORT	FALLBROOK AREA IMPORT	SMRW IMPORT 1/	TOTAL SMRW IMPORT	TOTAL PRODUCTION	AG	COMM	DOM	TOTAL IN SMRW	LOSS*	TOTAL USE IN SMRW	FROM SMRW	FROM U.S.N.W.S.	EXPORTED FROM SMRW
1996																
OCT	0	1,324	313	1,011	465	778	778	497	48	305	850	(72)	778	94	0.31	93
NOV	0	760	140	620	285	425	425	292	42	202	536	(111)	425	91	0.42	90
DEC	0	397	60	337	155	215	215	120	23	168	311	(96)	215	83	0.44	83
1997																
JAN	0	328	16	312	144	160	160	29	21	110	160	0	160	90	1.70	89
FEB	0	525	75	450	207	282	282	80	19	121	220	62	282	61	0.57	80
MAR	0	1,242	173	1,069	492	665	665	237	33	126	396	269	665	80	0.38	79
APR	0	1,269	256	1,013	466	722	722	404	46	221	671	51	722	68	0.29	68
MAY	0	1,563	261	1,302	599	860	860	436	55	225	716	144	860	94	0.25	94
JUNE	0	1,458	301	1,157	532	833	833	496	60	316	872	(39)	833	80	0.35	80
JULY	0	1,772	352	1,420	653	1,005	1,005	546	64	274	884	121	1,005	94	0.29	94
AUG	0	1,828	390	1,438	662	1,052	1,052	622	59	350	1,031	21	1,052	99	0.25	99
SEPT	0	1,539	351	1,188	546	897	897	592	66	295	953	(56)	897	93	0.33	92
TOTAL	0	14,005	2,688	11,317	5,206	7,894	7,894	4,351	536	2,713	7,600	294	7,894	1,027	6	1,021

1/ Approximately 46% of the Fallbrook area is within the Santa Margarita River Watershed

*Loss = Total production less total use

TABLE A-3

SANTA MARGARITA RIVER WATERSHED
MONTHLY WATER PRODUCTION AND USE

MURRIETA COUNTY WATER DISTRICT

1996-97

Quantities in Acre Feet

	PRODUCTION	USE					
MONTH YEAR	WELLS	AG	COMM	DOM	TOTAL DELIVERED	LOSS *	TOTAL USE
1996							
OCT	60	8	11	35	54	6	60
NOV	37	7	7	28	42	(5)	37
DEC	27	4	5	19	28	(1)	27
1997							
JAN	25	2	4	16	22	3	25
FEB	27	1	2	4	7	20	27
MAR	39	4	5	22	31	8	39
APR	53	6	7	29	42	11	53
MAY	64	8	10	38	56	8	64
JUNE	71	8	11	45	64	7	71
JULY	77	8	12	46	66	11	77
AUG	80	8	10	46	64	16	80
SEPT	78	12	12	51	75	3	78
TOTAL	638	76	96	379	551	87	638

* Loss = Total production less total delivered

TABLE A-4

SANTA MARGARITA RIVER WATERSHED
MONTHLY WATER PRODUCTION AND USE

RAINBOW MUNICIPAL WATER DISTRICT
1996-97
Quantities in Acre Feet

	PRODUCTION			USE				
MONTH YEAR	LOCAL	IMPORT TO WATERSHED	TOTAL IN WATERSHED	AG	COMMERCIAL/ DOMESTIC	TOTAL DELIVERIES	LOSS*	TOTAL USE
1996								
OCT	0	173	173	146	11	157	16	173
NOV	0	150	150	122	14	136	14	150
DEC	0	96	96	79	8	87	9	96
1997								
JAN	0	45	45	34	7	41	4	45
FEB	0	36	36	27	6	33	3	36
MAR	0	68	68	55	7	62	6	68
APR	0	111	111	88	13	101	10	111
MAY	0	111	111	86	15	101	10	111
JUNE	0	147	147	115	19	134	13	147
JULY	0	137	137	105	19	124	13	137
AUG	0	156	156	121	21	142	14	156
SEPT	0	199	199	161	20	181	18	199
TOTAL	0	1,429	1,429	1,139	160	1,299	130	1,429

*Loss = 10% of use

TABLE A-5

SANTA MARGARITA RIVER WATERSHED

MONTHLY WATER PRODUCTION AND USE

RANCHO CALIFORNIA WATER DISTRICT

1996-97

Quantities in Acre Feet

	PRODUCTION					USE									RECLAIMED WASTEWATER		
	-------LOCAL-------																
MONTH YEAR	WELLS IN GWA	WELLS OUT GWA	VAIL RELEASE (1)	IMPORT	TOTAL	AG	COMM	DOM	SMR RELEASE (2)	VAIL RECHARGE	IMPORT RECHARGE	TOTAL USE	LOSS (3)	TOTAL	REUSE IN SMRW (4)	EXPORT	RECHARGED
1996																	
OCT	3,586	0	(46)	2,444	5,984	4,285	428	1,997	312	(46)	0	6,976	(992)	5,984	57	0	0
NOV	2,821	0	0	454	3,275	3,573	286	1,566	185	0	0	5,590	(2,315)	3,275	31	0	0
DEC	1,423	0	0	63	1,486	1,903	230	1,148	15	0	0	3,296	(1,810)	1,486	7	0	0
1997																	
JAN	954	0	590	0	1,544	549	159	801	127	590	0	2,226	(682)	1,544	2	0	0
FEB	2,021	0	873	143	3,037	215	134	594	157	873	0	1,973	1,064	3,037	13	0	0
MAR	3,960	0	262	1,118	5,340	1,105	151	866	203	262	0	2,387	2,953	5,340	0	0	0
APR	4,245	0	0	1,488	5,733	3,039	253	1,163	491	0	0	4,946	787	5,733	59	0	0
MAY	4,001	0	61	2,626	6,688	3,948	332	1,636	484	61	0	6,461	227	6,688	79	0	0
JUNE	4,415	0	(8)	3,282	7,689	4,483	330	2,114	412	(8)	0	7,331	358	7,689	93	0	0
JULY	3,513	0	16	4,030	7,559	5,101	337	2,228	283	16	0	7,965	(406)	7,559	86	0	0
AUG	1,650	0	15	6,241	7,906	5,506	383	2,536	152	15	731	9,323	(1,417)	7,906	121	0	0
SEPT	2,542	0	(38)	5,103	7,607	4,580	347	2,186	157	(38)	584	7,816	(209)	7,607	145	0	0
TOTAL	35,131	0	1,725	26,992	63,848	38,287	3,350	18,635	2,978	1,725	1,315	66,290	(2,442)	63,848	693	0	0

(1) Vail releases and the related Vail recharge are computed as Total Release less Inflow to be bypassed

(2) 0 AF into Temecula Creek; 1,907 AF into Murrieta Creek from Wells 101, 102, 108 118, 121 and 135; and 1,071 AF from System River Meter

(3) Loss = Total production less total use

(4) Does not include EMWD reclaimed wastewater production

TABLE A-6

SANTA MARGARITA RIVER WATERSHED
MONTHLY WATER PRODUCTION AND USE

U.S.M.C. - CAMP PENDLETON
1996-97
Quantities in Acre Feet

	PRODUCTION			USE						RECLAIMED WASTEWATER		
MONTH YEAR	AG LOCAL	CAMP SUPPLY	TOTAL	AGRICULTURE 1/ IN SMRW	AGRICULTURE 1/ OUT SMRW	CAMP SUPPLY 2/ IN SMRW	CAMP SUPPLY 2/ OUT SMRW	TOTAL EXPORT	TOTAL 3/ IN SMRW	RECHARGED IN SMRW 4/	IMPORT 5/ RECHARGED IN SMRW	TOTAL RECHARGED IN SMRW
1996												
OCT	170	392	562	66	104	168	224	328	234	90	118	208
NOV	20	358	378	8	12	155	203	215	163	74	128	203
DEC	12	319	331	5	7	135	184	191	140	82	173	255
1997												
JAN	16	277	293	6	10	118	159	169	124	90	181	270
FEB	15	252	267	6	9	105	147	156	111	73	154	227
MAR	71	391	462	28	43	168	223	266	196	76	155	231
APR	93	466	559	36	57	202	264	321	238	78	153	231
MAY	105	531	636	41	64	227	304	368	268	80	170	251
JUNE	128	583	711	50	78	250	333	411	300	95	168	264
JULY	125	580	705	49	76	251	329	405	300	100	175	276
AUG	200	566	766	78	122	242	324	446	320	74	177	251
SEPT	111	523	634	43	68	223	300	368	266	75	180	255
TOTAL	1,066	5,238	6,304	416	650	2,244	2,994	3,644	2,660	988	1,932	2,920

1/ Agricultural water use is divided with 39% used inside the SMRW and 61% used outside

2/ Camp Supply water use inside the SMRW equals 44% of sum of Camp Supply production plus Naval Weapons Station Import, minus the NWS Import (SMRW CS = .44 {CS+NWS Imp} - NWS Imp.)

3/ Assumes no losses

4/ Discharge from Plant Nos. 3 plus 8 plus 29.17 acre feet per month from Plant No. 13

5/ Discharge from Plant No. 1 plus discharge from Pond 2, plus excess of Plant No. 13 over 29.17 acre feet per month

TABLE A-7

SANTA MARGARITA RIVER WATERSHED
MONTHLY WATER PRODUCTION AND USE

U. S. NAVAL WEAPONS STATION, FALLBROOK ANNEX

1996-97
Quantities in Acre Feet

	PRODUCTION			USE				WASTEWATER
MONTH YEAR	LOCAL	IMPORT TO WATERSHED 1/	TOTAL	AG	COMMERCIAL/ DOMESTIC	LOSS 2/	TOTAL USE	EXPORTED
1996								
OCT	0.0	7.3	7.3	0.0	6.6	0.7	7.3	0.3
NOV	0.0	3.7	3.7	0.0	3.4	0.3	3.7	0.4
DEC	0.0	8.7	8.7	0.0	7.9	0.8	8.7	0.4
1997								
JAN	0.0	7.8	7.8	0.0	7.1	0.7	7.8	1.7
FEB	0.0	9.7	9.7	0.0	8.8	0.9	9.7	0.6
MAR	0.0	7.8	7.8	0.0	7.1	0.7	7.8	0.4
APR	0.0	6.3	6.3	0.0	5.7	0.6	6.3	0.3
MAY	0.0	12.4	12.4	0.0	11.3	1.1	12.4	0.3
JUNE	0.0	12.4	12.4	0.0	11.3	1.1	12.4	0.4
JULY	0.0	7.3	7.3	0.0	6.6	0.7	7.3	0.3
AUG	0.0	12.4	12.4	0.0	11.3	1.1	12.4	0.3
SEPT	0.0	13.5	13.5	0.0	12.3	1.2	13.5	0.3
TOTAL	0.0	109.3	109.3	0.0	99.4	9.9	109.3	5.6

1/ - Import via Fallbrook Public Utility District

2/ - Loss = 10% of Use

TABLE A-8

SANTA MARGARITA RIVER WATERSHED

MISCELLANEOUS WATER PRODUCTION AND IMPORTS

1996-97

Quantities in Acre Feet

	IMPORT	PRODUCTION				
MONTH YEAR	WESTERN MWD IMPORTS TO IMPROVEMENT DISTRICT A	ANZA MUTUAL WATER COMPANY	OUTDOOR RESORTS RANCHO CALIFORNIA, INC.[1]	BUTTERFIELD OAKS MOBILE HOME PARK	LAKE RIVERSIDE ESTATES	PECHANGA INDIAN RESERVATION
1996						
OCT	2.90	4.54	5.03	0.19	20.81	14.25 E
NOV	2.00	1.62	2.01	0.12	16.91	13.80 E
DEC	1.90	1.50	0.50	0.12	4.23	7.51
1997						
JAN	1.60	1.14	0.70	0.12	0.00	6.48
FEB	1.30	1.47	3.06	0.19	2.22	10.16
MAR	2.10	2.33	6.62	0.25	7.34	8.80
APR	2.60	3.33 E	9.33	0.25	19.95	10.96
MAY	2.70	5.29 E	12.24	0.33	18.29	13.89
JUNE	2.90	3.83	15.94	0.42	35.25	15.97
JULY	3.50	7.28	6.78	0.44	34.58	18.53
AUG	3.70	6.84	12.33	0.37	31.55	27.78
SEPT	3.20	4.70	8.88	0.25	42.43	19.36
SUBTOTAL				3.04		167.49
				7.50 *		3.50 **
TOTAL	30.40	43.87	83.42	10.54	233.56	170.99

E - Estimate

[1] Formerly Vacation Valley RV Resort

* Estimated non-metered lawn watering

** Surface Diversion

SANTA MARGARITA RIVER WATERSHED

ANNUAL WATERMASTER REPORT

WATER YEAR 1996-97

APPENDIX B

WATER PRODUCTION AND USE

WATER YEAR 1965-66 TO WATER YEAR 1996-97

JULY 1998

TABLE B-1

SANTA MARGARITA RIVER WATERSHED
ANNUAL WATER PRODUCTION AND USE

EASTERN MUNICIPAL WATER DISTRICT
Quantities in Acre Feet

	PRODUCTION					USE						RECLAIMED WASTEWATER				
WATER YEAR	WELLS	IMPORT 1/	EXPORT FROM SMRW	NET IMPORT	TOTAL	AG 2/	COMM	DOM 3/	TOTAL	LOSS	TOTAL USE	REUSE IN SMRW	REUSE OUTSIDE SMRW	RELEASE TO RIVER	RECHARGE	TOTAL
1966	0	1,604	0	1,604	1,604	1,520	0	4	1,524	80	1,604	0	0	0	100	100
1967	0	1,630	0	1,630	1,630	1,544	0	4	1,548	82	1,630	0	0	0	100	100
1968	0	1,464	0	1,464	1,464	1,386	0	5	1,391	73	1,464	0	0	0	100	100
1969	0	1,741	0	1,741	1,741	1,648	0	6	1,654	87	1,741	0	0	0	100	100
1970	0	1,417	0	1,417	1,417	1,340	0	7	1,346	71	1,417	0	0	0	101	101
1971	0	1,383	0	1,383	1,383	1,306	0	8	1,314	69	1,383	0	0	0	119	119
1972	0	1,470	0	1,470	1,470	1,388	0	8	1,396	74	1,470	0	0	0	242	242
1973	0	1,533	0	1,533	1,533	1,447	0	10	1,456	77	1,533	0	0	0	217	217
1974	0	1,601	0	1,601	1,601	1,511	0	10	1,521	80	1,601	0	0	0	193	193
1975	0	1,969	0	1,969	1,969	1,859	0	11	1,871	98	1,969	0	0	0	253	253
1976	145	2,493	0	2,493	2,638	2,356	0	150	2,506	132	2,638	134	0	0	155	289
1977	431	2,947	0	2,947	3,378	2,723	64	423	3,209	169	3,378	244	0	0	70	314
1978	375	2,551	0	2,551	2,926	2,409	0	371	2,780	146	2,926	300	0	0	75	375
1979	289	1,894	0	1,894	2,183	1,784	0	290	2,074	109	2,183	350	0	0	147	497
1980	281	1,192	0	1,192	1,473	1,116	0	283	1,399	74	1,473	375	0	0	220	595
1981	282	716	0	716	998	663	0	285	948	50	998	375	0	0	304	679
1982	321	1,112	0	1,112	1,433	1,038	0	323	1,361	72	1,433	375	0	0	386	761
1983	106	1,211	0	1,211	1,317	1,131	0	120	1,251	66	1,317	375	0	0	466	841
1984	236	699	0	699	935	644	0	244	888	47	935	400	0	0	525	925
1985	314	679	0	679	993	624	0	319	943	50	993	450	0	0	585	1,015
1986	229	760	0	760	989	700	0	239	940	49	989	600	0	0	509	1,109
1987	89	1,155	0	1,155	1,244	638	0	543	1,182	62	1,244	650	0	0	554	1,204
1988	4	2,047	0	2,047	2,051	524	0	1,424	1,948	103	2,051	650	0	0	650	1,300
1989	685	3,746	0	3,746	4,431	1,146	0	3,064	4,209	222	4,431	1,058	0	0	1,636	2,694
1990	492	8,578	2,977	5,601	6,093	978	0	4,810	5,788	305	6,093	1,567	0	0	2,160	3,727
1991	456	16,621	7,142	9,479	9,935	851	0	8,587	9,438	497	9,935	1,282	0	0	2,272	3,554
1992	527	13,486	4,893	8,593	9,120	29	0	8,635	8,664	456	9,120	1,323	0	245	2,385	3,953
1993	524	7,287	1,894	5,393	5,917	38	0	5,585	5,621	296	5,917	1,876	539	192	2,020	4,627
1994	232	10,082	2,932	7,150	7,382	0	0	7,013	7,013	369	7,382	2,787	3,058	0	0	5,845
1995	182	11,539	6,914	4,625	4,807	16	0	4,551	4,567	240	4,807	2,154	3,908	0	0	6,062
1996 *	299	11,730	6,770	4,960	5,259	0	0	4,996	4,996	263	5,259	2,979	2,466	0	0	5,445
1997	406	6,798	1,809	4,989	5,397	0	0	5,226	5,226	171	5,397	3,126	2,319	0	0	5,445

* Revised

1/ Does not include deliveries to Rancho California Water District or Elsinore Valley Municipal Water District

2/ Figures are 95% of water pumped and imported to allow for 5% loss

3/ Figures are 95% of water pumped and imported to allow for 5% loss

TABLE B-2

SANTA MARGARITA RIVER WATERSHED
ANNUAL WATER PRODUCTION AND USE

FALLBROOK PUBLIC UTILITY DISTRICT

Quantities in Acre Feet

	PRODUCTION							USE				
WATER YEAR	WELLS	TOTAL DISTRICT IMPORT	DELUZ AREA IMPORT	FALLBROOK AREA IMPORT	SMRW IMPORT 1/	TOTAL SMRW IMPORT	TOTAL PRODUCTION	AG	COMM/ DOM	TOTAL IN SMR	LOSS /2	TOTAL USE IN SMRW
1966	176	11,169	0	11,169	3,351	3,351	3,404	2,735	328	3,063	341	3,404
1967	16	9,508	0	9,508	2,852	2,852	2,857	2,253	319	2,572	285	2,857
1968	13	11,411	0	11,411	3,423	3,423	3,427	2,554	531	3,085	342	3,427
1969	178	9,458	0	9,458	2,837	2,837	2,891	1,787	814	2,601	290	2,891
1970	305	11,794	0	11,794	3,538	3,538	3,630	2,649	617	3,266	364	3,630
1971	7	11,350	0	11,350	3,405	3,405	3,407	2,386	681	3,067	340	3,407
1972	0	13,054	0	13,054	3,916	3,916	3,916	2,749	775	3,524	392	3,916
1973	0	10,610	38	10,572	3,172	3,210	3,210	2,156	732	2,888	322	3,210
1974	0	12,911	134	12,777	3,833	3,967	3,967	2,703	868	3,571	396	3,967
1975	0	11,492	213	11,279	3,384	3,597	3,597	2,420	816	3,236	361	3,597
1976	0	13,147	431	12,716	4,196	4,627	4,627	3,200	965	4,165	462	4,627
1977	20	13,435	587	12,848	4,625	5,212	5,232	3,536	1,174	4,710	522	5,232
1978	97	12,626	651	11,975	4,551	5,202	5,299	3,504	1,265	4,769	530	5,299
1979	187	12,865	961	11,904	4,762	5,723	5,910	3,820	1,498	5,318	592	5,910
1980	192	13,602	1,191	12,411	5,213	6,404	6,596	4,258	1,678	5,936	660	6,596
1981	87	16,878	1,994	14,884	6,549	8,543	8,630	5,688	2,144	7,832	798	8,630
1982	0	13,270	1,805	11,465	5,274	7,079	7,079	4,614	1,862	6,476	603	7,079
1983	0	12,298	1,969	10,329	4,751	6,720	6,720	4,320	1,871	6,191	529	6,720
1984	0	15,429	2,609	12,820	5,897	8,506	8,506	5,814	2,077	7,891	615	8,506
1985	0	14,256	2,358	11,898	5,473	7,831	7,831	5,187	2,135	7,322	509	7,831
1986	0	15,383	2,794	12,589	5,791	8,585	8,585	5,698	2,319	8,017	568	8,585
1987	0	15,313	2,986	12,327	5,670	8,656	8,656	5,793	2,281	8,074	582	8,656
1988	28	14,460	2,559	11,901	5,474	8,033	8,061	5,181	2,348	7,529	532	8,061
1989	94	16,179	3,007	13,172	6,059	9,066	9,160	5,620	2,706	8,326	834	9,160
1990	15	17,568	3,745	13,823	6,358	10,103	10,118	6,275	2,878	9,153	965	10,118
1991	46	13,939	2,871	11,068	5,091	7,962	8,008	5,146	2,314	7,460	548	8,008
1992	45	13,698	2,950	10,748	4,943	7,893	7,938	5,285	2,201	7,486	452	7,938
1993	86	12,695	2,010	10,685	4,915	6,925	7,011	4,329	2,349	6,678	333	7,011
1994	83	13,124	2,246	10,878	5,004	7,250	7,333	4,282	2,666	6,948	385	7,333
1995	3	11,620	2,208	9,412	4,330	6,538	6,541	3,818	2,798	6,316	225	6,541
1996	0	14,168	2,733	11,435	5,260	7,993	7,993	4,411	3,247	7,658	335	7,993
1997	0	14,005	2,688	11,317	5,206	7,894	7,894	4,351	3,249	7,600	294	7,894

/1 Total SMRW production equals SMRW Import plus 30% local (1966-1971)

/2 Loss = Total production less total use
(Neglects change in Storage at Red Mtn After 1985)

TABLE B-3

SANTA MARGARITA RIVER WATERSHED
ANNUAL WASTEWATER PRODUCTION AND DISTRIBUTION

FALLBROOK PUBLIC UTILITY DISTRICT
Quantities in Acre Feet

WATER YEAR	TOTAL WASTEWATER PRODUCTION	PERCENT WASTEWATER FROM SMRW	WASTEWATER FROM SMRW	WASTEWATER FROM U.S.N.W.S.		WASTEWATER EXPORTED FROM SMRW	PERCENT WASTEWATER FROM SLR WATERSHED 1/	WASTEWATER IMPORTED FROM SLR WATERSHED
1966	395	81	320	0		0	19	75
1967	460	80	368	0		0	20	92
1968	524	80	419	0		0	20	105
1969	588	79	465	0		0	21	123
1970	652	78	509	0		0	22	143
1971	717	78	559	0		0	22	158
1972	782	77	602	0		0	23	180
1973	847	76	644	0		0	24	203
1974	912	75	684	0		0	25	228
1975	976	75	732	0		0	25	244
1976	1,040	74	770	0		0	26	270
1977	1,105	73	807	0		0	27	298
1978	1,170	72	842	0		0	28	328
1979	1,234	72	888	0		0	28	346
1980	1,298	71	922	0		0	29	376
1981	1,363	70	954	0		0	30	409
1982	1,428	69	985	0		0	31	443
1983	1,492	69	1,029	26	E	1,003	0	0
1984	1,556	68	1,058	26	E	1,032	0	0
1985	1,621	67	1,086	26	E	1,060	0	0
1986	1,685	66	1,112	18	P	1,094	0	0
1987	1,750	66	1,155	27		1,128	0	0
1988	1,815	65	1,180	25		1,155	0	0
1989	1,881	64	1,204	22		1,182	0	0
1990	1,952	66	1,298	27		1,271	0	0
1991	1,622	60	973	11		962	0	0
1992	1,730	63	1,090	7		1,083	0	0
1993	2,051	62	1,271	16		1,255	0	0
1994	1,834	58	1,073	5		1,068	0	0
1995	1,941	60	1,165	12		1,153	0	0
1996	1,799	58	1,040	5		1,035	0	0
1997	1,780	58	1,027	6		1,021	0	0

NOTE: Measured quantities available for Total Wastewater in Water Year 1969 and July 1989
All other quantities are estimated (1966 - 1989)
Prior to 1983, Wastewater was discharged into Fallbrook Creek.
After 1983, Wastewater is discharged into an ocean outfall

1/ - San Luis Rey Watershed
E - Estimated
P - Partial Year Data

TABLE B-4

SANTA MARGARITA RIVER WATERSHED
ANNUAL WATER PRODUCTION AND USE

MURRIETA COUNTY WATER DISTRICT

Quantities in Acre Feet

	PRODUCTION	USE					
WATER YEAR	WELLS	AG	COMM	DOM	TOTAL DELIVERED	LOSS *	TOTAL USE
1966	41	0	0	37	37	4	41
1967	45	0	0	41	41	4	45
1968	54	0	0	49	49	5	54
1969	54	0	0	49	49	5	54
1970	73	0	0	66	66	7	73
1971	83	3	0	72	75	8	83
1972	111	10	0	91	101	10	111
1973	92	11	0	72	84	8	92
1974	132	14	0	107	120	12	132
1975	153	18	0	121	139	14	153
1976	117	22	0	84	106	11	117
1977	170	21	0	134	155	15	170
1978	169	19	0	135	154	15	169
1979	197	19	0	180	179	18	197
1980	218	20	0	178	198	20	218
1981	265	30	0	211	241	24	265
1982	230	21	0	188	209	21	230
1983	216	14	0	182	196	20	216
1984	304	26	0	250	276	28	304
1985	308	19	0	261	280	28	308
1986	305	22	0	255	277	28	305
1987	326	23	0	273	296	30	326
1988	303	13	35	262	275	28	303
1989	286	11	72	262	344	(4)	340
1990	465	13	76	266	355	110	465
1991	459	15	88	250	353	106	459
1992	492	6	122	302	430	62	492
1993	508	4	105	323	432	76	508
1994	512	10	103	324	437	75	512
1995	521	12	86	312	420	101	521
1996	629	88	110	373	571	58	629
1997	638	76	96	379	551	87	638

* Loss = Total production less total delivered

TABLE B-5

SANTA MARGARITA RIVER WATERSHED
ANNUAL WATER PRODUCTION AND USE

RAINBOW MUNICIPAL WATER DISTRICT
Quantities in Acre Feet

	PRODUCTION			USE				
WATER YEAR	LOCAL	IMPORT TO DISTRICT	TOTAL IN WATERSHED 1/	AG 2/	COMMERCIAL/ DOMESTIC 3/	TOTAL DELIVERIES	LOSS 4/	TOTAL USE
1966	0	14,538	1,308	1,049	140	1,189	119	1,308
1967	0	12,167	1,095	878	117	995	100	1,095
1968	0	15,301	1,377	1,104	147	1,252	125	1,377
1969	0	13,917	1,253	1,005	134	1,139	114	1,252
1970	0	18,764	1,689	1,354	181	1,535	154	1,689
1971	0	18,338	1,650	1,324	177	1,500	150	1,650
1972	0	22,633	2,037	1,634	218	1,852	185	2,037
1973	0	17,955	1,616	1,296	173	1,469	147	1,616
1974	0	22,768	2,049	1,643	219	1,863	186	2,049
1975	0	13,856	1,247	1,000	133	1,134	113	1,247
1976	0	24,878	2,239	1,796	240	2,035	204	2,239
1977	0	26,038	2,343	1,879	251	2,130	213	2,343
1978	0	24,312	2,188	1,755	234	1,989	199	2,188
1979	0	26,084	2,348	1,883	251	2,134	213	2,347
1980	0	27,660	2,489	1,997	266	2,263	226	2,489
1981	0	35,036	3,153	2,529	337	2,866	287	3,153
1982	0	27,334	2,460	1,973	263	2,236	224	2,460
1983	0	24,957	2,190	1,735	256	1,991	199	2,190
1984	0	32,526	3,068	2,483	306	2,789	279	3,068
1985	0	28,612	3,410	2,798	302	3,100	310	3,410
1986	0	29,023	2,945	2,353	324	2,677	268	2,945
1987	0	29,449	3,390	2,765	317	3,082	308	3,390
1988	0	29,070	2,985	2,372	342	2,714	271	2,985
1989	0	32,034	3,003	2,385	345	2,730	273	3,003
1990	0	34,612	3,818	3,003	468	3,471	347	3,818
1991	0	27,754	2,904	2,276	364	2,640	264	2,904
1992	0	26,056	2,277	1,877	193	2,070	207	2,277
1993	0	23,766	1,965	1,655	132	1,787	178	1,965
1994	0	22,173	1,651	1,368	133	1,501	150	1,651
1995	0	20,935	1,661	1,398	112	1,510	151	1,661
1996	0	24,835	1,815	1,487	163	1,650	165	1,815
1997	0	24,638	1,429	1,139	160	1,299	130	1,429

1/ 1966 through 1982 estimated to be 9% of total district imports

2/ 1966 through 1982 estimated to be 80.2% of total deliveries to watershed

3/ 1966 through 1982 estimated to be 10.7% of total deliveries to watershed

4/ Loss = 10% of use

TABLE B-6

SANTA MARGARITA RIVER WATERSHED
ANNUAL WATER PRODUCTION AND USE

RANCHO CALIFORNIA WATER DISTRICT

Quantities in Acre Feet

	PRODUCTION						USE								RECLAIMED WASTEWATER		
	LOCAL																
YEAR	WELLS IN GWA	WELLS OUT GWA	VAIL RELEASE	VAIL IRRIGATION 1/	IMPORT	TOTAL 2/	AG	COMM	DOM	SMR RELEASE	VAIL RECHARGE	IMPORT RECHARGE	TOTAL USE	LOSS 3/	TOTAL	REUSE IN SMRW	EXPORT	RECHARGE
1966		0	0	185 *	0	185					0	0						
1967	4,288	0	0	1,136 *	0	5,424					0	0			5,424	0	0	0
1968	5,100	0	0	398 *	0	5,498					0	0			5,498	0	0	0
1969	3,617	0	0	697 *	0	4,314					0	0			4,314	0	0	0
1970	6,721	0	0	840 *	0	7,561					0	0			7,561	0	0	0
1971	7,960	0	0	1,541 *	0	9,501					0	0			9,501	0	0	0
1972	8,369	0	0	203 *	0	8,572					0	0			8,572	0	0	0
1973	7,726	0	0	524 *	0	8,250					0	0			8,250	0	0	0
1974	10,163	0	0	1,066 *	0	11,229					0	0			11,229	0	0	0
1975	10,357	0	0	369 *	0	10,726					0	0			10,726	0	0	0
1976	11,809	0	0	50 *	119	11,978					0	0			11,978	0	0	0
1977	10,522	0	0	0	1,845	12,367					0	0			12,367	0	0	0
1978	8,930	0	0	0	5,774	14,704					0	0			14,704	0	0	0
1979	11,371	0	0	0	7,009	18,380					0	0			18,380	0	0	0
1980	12,621	0	10,944	0	10,126	33,691					10,944	0			33,691	0	0	0
1981	15,612	0	6,802	0	15,282	37,696					6,802	0			37,696	0	0	0
1982	12,631	0	6,058	0	13,378	32,067					6,058	0			32,067	0	0	0
1983	16,577	98	12,113	715	5,752	35,255					12,113	0			35,255	0	0	0
1984	25,660	4	6,612	1,144	6,716	40,136					6,612	0			40,136	0	0	0
1985	24,373	0	5,027	1,201	7,158	37,759					5,027	0			37,759	0	0	0
1986	26,997	0	8,722	1,053	11,174	47,946					8,722	0			47,946	0	0	0
1987	33,735	0	8,089	273	7,564	49,661					8,069	0			49,661	48	0	0
1988	21,367	0	4,844	0	17,854	44,065					4,844	0			44,065	82	0	0
1989	26,131	0	0	0	22,895	49,026	25,533	3,316	13,198	852	0	2,294	45,193	3,833	49,026	158	0	0
1990	33,241	0	0	0	22,030	55,271	27,643	3,940	14,916	902	0	0	47,401	7,870	55,271	133	0	0
1991	26,503	0	6,253	0	21,238	53,994	32,924	2,941	10,603	785	6,253	701	54,207	(213)	53,994	352	0	0
1992	29,968	0	2,244	0	16,931	49,143	30,651	2,406	9,672	683	2,244	0	45,656	3,487	49,143	374	0	0
1993	31,029	0	31,704	0	11,411	74,144	29,265	2,141	10,618	519	31,704	0	74,247	(103)	74,144	378	0	0
1994	32,725	0	8,469	0	16,386	57,580	32,534	2,322	12,370	467	8,469	0	56,162	1,418	57,580	1,936	0	0
1995	33,111	0	11,158	0	15,108	59,377	31,081	2,526	13,779	1,464	11,158	0	63,754	(631)	63,123	1,753	0	0
1996	36,086	0	9,427	0	23,600	69,113	35,912	2,752	16,330	2,149	9,427	0	66,570	2,543	69,113	2,264	0	0
1997	35,131	0	1,725	0	26,992	63,848	38,287	3,350	18,635	2,978	1,725	1,315	66,290	(2,442)	63,848	693 (4)	0	0

1/ Figures from 1966 to 1972 supplied by USGS; 1972 to 1996 supplied by RCWD

2/ Total production = Wells, Total Diversions and Import

3/ Loss = Total production less total use

4/ Does not include EMWD reclaimed wastewater production

* - Irrigation 1966 to 1976 by pumping from Vail Lake

TABLE B-7

SANTA MARGARITA RIVER WATERSHED
ANNUAL WATER PRODUCTION AND USE

U.S.M.C. - CAMP PENDLETON
EXCLUDING NAVAL WEAPONS STATION SHOWN ON B-8
Quantities in Acre Feet

	PRODUCTION			USE						RECLAIMED WASTEWATER		
WATER YEAR	AG LOCAL	CAMP SUPPLY	TOTAL	AGRICULTURE 1/ IN SMRW	AGRICULTURE 1/ OUT SMRW	CAMP SUPPLY 2/ IN SMRW	CAMP SUPPLY 2/ OUT SMRW	TOTAL EXPORT	TOTAL 3/ IN SMRW	RECHARGED IN-SMR 4/	IMPORT 5/ RECHARGED IN SMRW	TOTAL RECHARGED IN SMRW
1966	1,101	4,605	5,706	429	672	2,026	2,579	3,251	2,455	919	974	1,893
1967	796	4,811	5,607	310	486	2,117	2,694	3,180	2,427	914	1,243	2,156
1968	986	4,939	5,925	385	601	2,172	2,767	3,368	2,557	866	1,214	2,080
1969	940	4,821	5,761	367	573	2,058	2,763	3,276	2,485	1,019	1,170	2,189
1970	1,106	5,481	6,587	431	675	2,347	3,134	3,809	2,778	1,032	1,113	2,145
1971	819	5,291	6,110	319	500	2,264	3,028	3,527	2,583	921	1,090	2,011
1972	817	5,323	6,140	319	498	2,278	3,045	3,543	2,597	900	1,168	2,068
1973	1,003	5,121	6,124	391	612	2,189	2,932	3,544	2,580	949	1,187	2,137
1974	909	5,202	6,111	355	554	2,224	2,978	3,532	2,579	915	1,140	2,055
1975	757	4,593	5,350	295	462	1,957	2,636	3,098	2,252	989	1,530	2,519
1976	885	5,384	6,269	345	540	2,305	3,079	3,619	2,650	949	1,497	2,447
1977	994	4,506	5,500	388	606	1,918	2,588	3,194	2,306	942	1,416	2,358
1978	176	5,177	5,353	69	107	2,213	2,964	3,071	2,282	1,164	1,283	2,446
1979	1,070	7,213	8,283	417	653	3,109	4,104	4,756	3,527	1,065	1,427	2,493
1980	835	5,495	6,330	326	509	2,353	3,142	3,651	2,679	1,101	1,405	2,506
1981	1,464	5,240	6,704	571	893	2,241	2,999	3,892	2,812	1,119	1,249	2,368
1982	1,447	5,024	6,471	564	883	2,146	2,878	3,761	2,710	982	1,273	2,254
1983	942	4,215	5,157	367	575	1,790	2,425	3,000	2,157	1,252	1,242	2,494
1984	1,078	4,501	5,579	420	658	1,916	2,585	3,243	2,336	1,323	1,120	2,443
1985	1,069	4,764	5,833	417	652	2,039	2,725	3,377	2,456	1,419	1,200	2,619
1986	953	4,807	5,760	372	581	2,062	2,745	3,326	2,434	1,259	981	2,240
1987	1,098	4,838	5,936	428	670	2,064	2,774	3,444	2,492	1,367	1,799	3,166
1988	1,223	4,721	5,944	477	746	2,010	2,711	3,457	2,487	1,523	1,872	3,396
1989	856	5,044	5,900	334	522	2,148	2,896	3,418	2,482	1,301	1,446	2,747
1990	855	4,228	5,083	333	522	1,779	2,449	2,971	2,112	1,277	1,451	2,728
1991	554	3,159	3,713	216	338	1,329	1,830	2,168	1,545	1,070	1,219	2,289
1992	898	3,254	4,152	350	548	1,376	1,878	2,426	1,726	933	1,548	2,481
1993	1,067	2,879	3,946	416	651	1,201	1,678	2,329	1,617	1,049	1,926	2,975
1994	1,471	3,150	4,621	574	897	1,345	1,805	2,702	1,919	1,034	1,501	2,535
1995	985	3,768	4,753	384	601	1,588	2,180	2,781	1,972	980	1,473	2,453
1996	1,000	5,199	6,199	390	610	2,232	2,967	3,577	2,622	951	1,493	2,444
1997	1,066	5,238	6,304	416	650	2,244	2,994	3,644	2,660	988	1,932	2,920

1/ Agricultural water use is divided with 39% used inside the SMRW and 61% used outside.
2/ Camp Supply water use inside the SMRW equals 44% of sum of Camp Supply production plus Naval Weapons Station Import, less the NWS Import for years beginning 1969. Prior to 1969 44% was used inside the SMRW and 56% was used outside.
3/ Assumes No Losses
4/ Wastewater Recharged in SMR equals effluent from Plants 3, 8 and 13 (partial).
5/ Wastewater Import Recharged in SMRW equals effluent from Plant 1 plus the portion of the effluent from Plant 2 returned to the SMRW via Pond 2 plus the portion of the effluent from Plant 13 not included in 4/.
No record available for effluent from Plant 2 returned to SMRW for 1966-1974 and 1982 - June 1990.
Calculation of import recharged in Santa Margarita River from Plant 2 is based on zero when no record is available.

TABLE B-8

SANTA MARGARITA RIVER WATERSHED
ANNUAL WATER PRODUCTION AND USE

U. S. NAVAL WEAPONS STATION, FALLBROOK ANNEX

Quantities in Acre Feet

	PRODUCTION			USE				WASTEWATER
WATER YEAR	LOCAL	IMPORT TO WATERSHED 1/	TOTAL	AG	COMMERCIAL DOMESTIC	LOSS 2/	TOTAL USE	EXPORTS
1966	87	0	87	0	79	9	87	0
1967	92	0	92	0	83	9	92	0
1968	108	0	108	0	97	11	108	0
1969	138	0	138	0	113	25	138	0
1970	152	0	152	0	125	27	152	0
1971	39 P	76 E	115	0	100	15	115	0
1972	0	115 E	115	0	105	10	115	0
1973	0	115 E	115	0	105	10	115	0
1974	0	115 E	115	0	105	10	115	0
1975	0	115 E	115	0	105	10	115	0
1976	0	115 E	115	0	105	10	115	0
1977	0	115 E	115	0	105	10	115	0
1978	0	115 E	115	0	105	10	115	0
1979	0	115 E	115	0	105	10	115	0
1980	0	115 E	115	0	105	10	115	0
1981	0	115 E	115	0	105	10	115	0
1982	0	115 E	115	0	105	10	115	0
1983	0	115 E	115	0	105	10	115	26 E
1984	0	115 E	115	0	105	10	115	26 E
1985	0	102	102	0	93	9	102	26 E
1986	0	94	94	0	85	9	94	18 P
1987	0	116	116	0	105	11	116	27
1988	0	120	120	0	109	11	120	25
1989	0	128	128	0	116	12	128	22
1990	0	145	145	0	132	13	145	27
1991	0	109	109	0	99	10	109	11
1992	0	99	99	0	90	9	99	7
1993	0	117	117	0	106	11	117	16
1994	0	73	73	0	66	7	73	5
1995	0	125	125	0	114	11	125	12
1996	0	100	100	0	91	9	100	5
1997	0	109	109	0	99	10	109	6

1/ - Estimate 1969-1984 - Records not available
2/ - Loss = 10% of Use
E - Estimate
P - Partial year data

WATERMASTER
SANTA MARGARITA RIVER WATERSHED

SANTA MARGARITA RIVER WATERSHED

ANNUAL WATERMASTER REPORT

WATER YEAR 1996-97

APPENDIX C

SUBSTANTIAL USERS OUTSIDE

ORGANIZED WATER SERVICE AREAS

JULY 1998

APPENDIX C

SANTA MARGARITA RIVER WATERSHED
SUBSTANTIAL USERS OUTSIDE ORGANIZED WATER SERVICE AREAS

CURRENT OWNER	ADDRESS	ASSESSOR PARCEL NO.	PARCEL ACREAGE	ACRES IRRIGATED 96-97	IRRIGATED CROP 96-97	WELL/ DIVERSION LOCATION TWP/RNG/SEC	WELL PRODUCTION AC. FT	SURFACE DIVERSION AC. FT
AGUANGA GROUNDWATER AREA								
Clawson, Gary A.	43425 Sage Road Aguanga, Ca. 92536	917-050-009 917-050-007 581-070-013 581-150-013 581-150-016 581-070-014	309.74 82.19 43.10 120.56 25.37 158.08	Total | of | | 30.00	 Alfalfa	 8S/1E-7N(1) 8S/1E-7N(2) 8S/1E-7Q(1) 8S/1E-7Q(2)	 Total of | 90.00	
Cottle, Thomas C.	42551 Hwy 79 Aguanga, Ca. 92536	583-040-028 583-040-029 583-040-024 583-040-025 583-040-026 583-040-027	25.52 19.89 23.48 23.12 23.16 22.84	Total | of | 46.00 and 20.00	 Oats Pasture	 8S/1E-19K 8S/1E-19G4 8S/1E-29L Diversion	 79.40 	 88.00
Strange, Owen W. and Elizabeth G. Trustees, Strange Living Trust of 4-15-88	m/t P.O. Box 1974 Rancho Santa Fe, Ca. 92067 43023 Hwy 79 Aguanga, CA 92536	583-040-022 583-040-021 583-130-001-3 583-120-001-2 583-060-003-9	97.78 13.45 80.00 120.00 41.60	Total | of | 101.00	 Oats, Bermuda, Alfalfa, and Permanent pasture	8S/1E-19Q(1) 8S/1E-29L Diversion	150.00 Domestic 	 250.00
Twin Creek Ranch/ Chester M. Mason Family Trust	c/o Jim Holden P. O. Box 519 Corona, Ca. 91718 44201 Hwy 79 Aguanga 44735 Hwy 79 Aguanga	583-120-081 583-120-083 583-120-084 583-150-001 583-140-014 583-140-015 583-140-016 583-140-018 583-140-020 583-140-019	17.29 88.09 179.39 80.00 48.03 40.00 40.00 10.09 10.15 10.00	15.00 65.00 30.00 15.00 15.00 15.00 35.00 38.00 0.00 0.00 0.00	Small Grains Small Grains Small Grains Row Crops Small Grains Row Crops Row Crops Small Grains	 8S/1E-28N1 8S/1E-28N(2) 8S/1E-29H 8S/1E-33F 8S/1E-33G1 8S/1E-33B	 Total | | of | | | | 553.00	
Vrieling, Gerrit J. and Betty J.	m/t 15015 Cheshire La Mirada, Ca. 90638 45203 Hwy 371 Aguanga	583-240-022	10.00	9.00	Pistachios	8S/1E-23N	9.90	

APPENDIX C

SANTA MARGARITA RIVER WATERSHED
SUBSTANTIAL USERS OUTSIDE ORGANIZED WATER SERVICE AREAS

CURRENT OWNER	ADDRESS	ASSESSOR PARCEL NO.	PARCEL ACREAGE	ACRES IRRIGATED 96-97	IRRIGATED CROP 96-97	WELL/ DIVERSION LOCATION TWP/RNG/SEC	WELL PRODUCTION AC. FT	SURFACE DIVERSION AC. FT
AGUANGA GROUNDWATER AREA (Cont)								
Harris, Homer N. and Dolores G.	44444 Sage Road Aguanga, CA 92536	581-160-014	17.73	Total Of 15.00	Citrus	8S/1E-18J(1)	0.20	
						8S/1E-18J(2)	0.25	
		581-160-015	7.42	5.00	Fruit and			
		581-150-009	7.00	10.00	Walnuts	8S/1E-18H(1)	2.00	
						8S/1E-18H(2)	0.20	
		581-180-022	30.00	0.00				
		581-180-004	20.00	0.00				
		581-180-020	20.00	0.00		8S/1E-17M		
		581-180-021	2.15			8S/1E-17E	15.00	
Valeywide Recreation and Parks District	901 W. Esplanade Ave San Jacinto, CA 92582	581-170-009	7.82	7.82	Grass	Used 8S/1E-17E	owned by Harris	
Missionary Foundation, Inc.	44350 Sage Road Aguanga, CA 92536	581-170-011	290.03	100.00 (Irrigated by Diversion)	Row Crops	8S/1E-17B	0.00	
						8S/1E-17H	Domestic	
		581-180-009	120.00	0.00				
		581-190-001	320.00	0.00				
		581-120-006	200.00	5.00	Citrus	8S/1E-8K2	40.50	
				10.00	Deciduous Fruit			
				5.00	Row Crops and Grapes			
		581-070-005	640.00	0.00		8S/1E-9Q - Diversion		200.00
TOTAL AGUANGA GROUNDWATER AREA				**591.82**			**940.45**	**538.00**

APPENDIX C

SANTA MARGARITA RIVER WATERSHED
SUBSTANTIAL USERS OUTSIDE ORGANIZED WATER SERVICE AREAS

CURRENT OWNER	ADDRESS	ASSESSOR PARCEL NO.	PARCEL ACREAGE	ACRES IRRIGATED 96-97	IRRIGATED CROP 96-97	WELL/ DIVERSION LOCATION TWP/RNG/SEC	WELL PRODUCTION AC. FT	SURFACE DIVERSION AC. FT
TEMECULA CREEK ABOVE AGUANGA GROUNDWATER AREA								
Agri-Empire, Inc.	m/t P. O. Box 490	113-090-01	377.07	Total				
	San Jacinto, CA 92383	113-090-03	21.48	|				
		113-090-05	541.22	|				
		113-100-01	389.81	|		9S/2E-11B - Diversion (E)		0.00
		113-130-01	150.09	|		9S/2E-17		
E - Estimated		113-140-03	196.54	of		9S/2E-16N2	169.00	
				|		9S/2E-16M	104.00	
				|		9S/2E-16F1	45.00	
				|		9S/2E-16N1	0.00	
				|		9S/2E-16F2	16.00	
				|		9S/2E-16K - Diversion		54.00
		113-140-04	503.24	|				
		113-140-05	45.09	|				
		113-140-06	93.94	|				
		114-020-09	37.16	165.00	Potatoes			
		114-030-08	331.79	|	and	9S/2E-22	62.00	
		114-030-26	42.87	190.00	Oats			
* Land leased from	37126 Hwy 79	113-140-01 *	358.62	Total		9S/2E-16B(1)	Total	
Arlie W. and	Warner Springs, CA 92086			of		9S/2E-16B(2)	of	
Coral R. Bergman				|		9S/2E-16G	200.00	
		113-140-02 *	38.75	80.00	Potatoes			
		114-020-12	108.78	0.00				
		114-030-10	41.51	0.00				
		113-130-03	115.75	0.00				
		113-130-04	39.65	0.00				
Ward, Alvis A	m/t 2 Rue Biarritz	112-030-58	69.83	20.00	Pasture	9S/1E-1Q(1)	240.00	
	Newport Beach, CA 92660			33.00	Grain/Grass	9S/1E-1Q(2)	Domestic	
	38790 Highway 79	112-030-22	24.77	0.00				
	Warner Springs, CA 92086	112-030-38	40.00	0.00		9S/1E-12A	Domestic	
Ward, Donald F.	38790 Highway 79	112-030-67	67.41	10.00	Oats/Sudan	Used 9S/1E-1Q(1) on Alvis Ward's Property		
	Warner Springs, CA 92086							
		112-030-58	160.00	0.00	Pasture	9S/1E-1M - Diversion		0.00
Papac, Andrew	m/t 2030 Santa Anita Ave	113-060-012	63.21	20.00	Bermuda Grass	9S/2E-7D	38.00	
and Olga	South El Monte, CA 91733					9S/2E-7E - Diversion		38.00
	38642 Highway 79							
	Warner Springs, CA 92086							
Templeton, Robert D.	35490 Highway 79	114-120-042	78.41	0.00		9S/2E-35D1		
and Linda K.	Warner Springs, CA 92086					9S/2E-35D1		
		114-070-007	76.42	23.00	Potatoes	9S/2E-27R1	Total	
						9S/2E-27R2	of	
						9S/2E-27J	240.00	
(Land Leased to Agri-Empire, Inc.)		114-080-014	42.51	42.00	Potatoes			
		114-080-013	21.30	15.00	Potatoes			
TOTAL TEMECULA CREEK ABOVE AGUANGA GROUNDWATER AREA				**598.00**			**1,114.00**	**92.00**

APPENDIX C

SANTA MARGARITA RIVER WATERSHED
SUBSTANTIAL USERS OUTSIDE ORGANIZED WATER SERVICE AREAS

CURRENT OWNER	ADDRESS	ASSESSOR PARCEL NO.	PARCEL ACREAGE	ACRES IRRIGATED 96-97	IRRIGATED CROP 96-97	WELL/ DIVERSION LOCATION TWP/RNG/SEC	WELL PRODUCTION AC. FT	SURFACE DIVERSION AC. FT
WILSON CREEK ABOVE AGUANGA GROUNDWATER AREA								
ANZA VALLEY								
Greenwald, Alvin G.	6010 Wilshire Blvd #500	573-180-001	156.38	156.38	Row Crops	7S/3E-17E	312.56	
				150.00	Potatoes Grown by Agri-Empire for 6 mos.			
	Los Angeles, CA 90036	576-070-001	70.00	70.00	Pasture	7S/3E-20N	266.00	
Agri-Empire, Inc.	P.O. Box 490 San Jacinto, CA 92383							
	Section 8	573-090-005	45.17	Total of				
		573-100-002	27.79	70.00	Grain			
	Section 10	575-050-044	14.36	0.00				
		575-050-045	14.36	0.00				
		575-060-002	113.49	0.00		7S/3E-11N4	287.00	
						7S/3E-11P3	255.00	
	Section 13	575-100-037	57.80	0.00				
	Section 14	575-110-021	143.75	Total of	Oats	7S/3E-14D1	218.00	
		575-110-027	54.45	200.00				
		575-310-002	39.09	0.00		7S/3E-14C2	228.00	
		575-310-011	80.00	0.00				
		575-310-012	80.00	0.00				
		575-310-013	17.46	0.00				
		575-310-027	17.46	0.00				
	Section 15	575-080-014	9.92	Total				
		575-080-015	4.35	|				
		575-080-017	9.75	|				
		575-080-018	10.13	|				
		575-080-019	31.29	|				
		575-080-021	20.00	|				
		575-080-022	20.00	|				
		575-080-024	20.00	|				
		575-080-027	20.00	|				
		575-090-010	38.80	170.00	Oats			
	Section 17	573-180-011	39.74	0.00				

APPENDIX C

SANTA MARGARITA RIVER WATERSHED
SUBSTANTIAL USERS OUTSIDE ORGANIZED WATER SERVICE AREAS

CURRENT OWNER	ADDRESS	ASSESSOR PARCEL NO.	PARCEL ACREAGE	ACRES IRRIGATED 96-97	IRRIGATED CROP 96-97	WELL/ DIVERSION LOCATION TWP/RNG/SEC	WELL PRODUCTION AC. FT	SURFACE DIVERSION AC. FT
WILSON CREEK ABOVE AGUANGA GROUNDWATER AREA								
ANZA VALLEY (Cont)								
Agri-Empire, Inc. (Cont)								
	Section 20	576-060-009	8.26	Total				
		576-060-031	16.09	of				
		576-060-033	79.45	|				
		576-060-037	41.41	85.00	Oats			
		576-070-003	80.00	and				
		576-070-005	116.57	160.00	Potatoes			
	Section 21	576-080-003	133.72	Total of				
		576-100-029	40.00	140.00	Oats			
* Land leased from		576-110-001 *	160.00	40.00	Oats and			
Louise Phebe Hamilton Tr				40.00	Potatoes			
P. O. Box 102, Anza, CA 92306								
		576-110-002	28.00	0.00				
		576-110-004	50.00	0.00				
		576-110-006	19.29	0.00		7S/3E-21R3	278.00	
		576-110-007	17.82	0.00				
		576-110-008	17.00	0.00				
		576-110-009	18.41	0.00				
	Section 22	575-120-012	88.03	Total of				
		575-130-003	19.55	70.00	Oats			
		575-130-006	40.89	0.00				
		575-130-008	18.56	Total				
		575-130-009	20.06	of				
		575-130-010	20.07	|				
		575-130-011	19.19	75.00	Oats			
		575-130-012	18.18	|				
		575-130-013	19.02	and				
		575-130-014	19.00	|				
		575-130-015	17.56	80.00	Potatoes			
* Leased from Emil & Anna Caldwell		575-120-018*	20.45	Total				
and Laurine Silver		575-120-019*	20.45	|				
56925 Yucca Trl, Yucca Vly, CA 92284		575-120-032*	4.69	|				
		575-120-033*	4.68	of				
		575-120-034*	4.68	|				
		575-120-035*	4.28	60.00	Potatoes			
*Leased from Dionisios & Irini Argyros		575-120-028*	4.68	Total				
2813 Monogram Ave, Long Beach, CA 90815		575-120-029*	4.68	of				
		575-120-030*	4.68	|				
		575-120-031*	4.23	20.00	Potatoes			
	Section 23	575-140-019	105.04	90.00	Oats			

APPENDIX C

SANTA MARGARITA RIVER WATERSHED
SUBSTANTIAL USERS OUTSIDE ORGANIZED WATER SERVICE AREAS

CURRENT OWNER	ADDRESS	ASSESSOR PARCEL NO.	PARCEL ACREAGE	ACRES IRRIGATED 96-97	IRRIGATED CROP 96-97	WELL/ DIVERSION LOCATION TWP/RNG/SEC	WELL PRODUCTION AC. FT	SURFACE DIVERSION AC. FT
WILSON CREEK ABOVE AGUANGA GROUNDWATER AREA								
ANZA VALLEY (Cont)								
Agri Empire, Inc. (Cont)								
Cahuilla Indian Reservation	Section 27	576-130-001*	640.00	80.00	Potatoes			
	Section 28	576-120-003*	640.00	80.00	Oats	7S/3E-28A2 (Formerly designated (as 7S/3E-27D1)	286.00	
* Land leased to Agri-Empire, Inc.								
	Domestic and Commercial Wells Reported by Bureau of Indian Affairs						Total	
	Wells in Basement Complex	Wells out of Watershed	Wells with QYAL and/or QTOAL					
	7S/2E-14L1	8S/3E-2A1	7S/2E-14J1	7S/2E-28Q1	7S/3E-31L2			
	7S/2E-25D1	8S/3E-2B1	S/2E-14M1	7S/2E-33C1	7S/3E-34N1			
	7S/2E-26B1	8S/3E-2D1	S/2E-14M2	7S/2E-33E1	7S/3E-34Q1			
	7S/2E-26B2	8S/3E-2E1	7S/2E-14R1	7S/2E-33N1	8S/2E-4D1			
	7S/2E-26B3	8S/3E-2G1	7S/2E-23A1	7S/3E-27C1	8S/2E-4N1			
	7S/2E-34E1	8S/3E-2H1	7S/2E-23D1	7S/3E-27C2	8S/2E-4N2			
	7S/2E-36A1		7S/2E-23F1	7S/3E-27H1	8S/2E-4P1			
	7S/2E-36J1		7S/2E-23G1	7S/3E-27M1	8S/2E-4R1			
	7S/2E-36R1		7S/2E-23H1	7S/3E-28A1	8S/2E-4R2			
	7S/3E-26A1		7S/2E-23K1	7S/3E-28A2	8S/3E-5Q1			
	7S/3E-29Q1		7S/2E-23M1	7S/3E-28D1	8S/3E-6J1		of	
	7S/3E-30H1		7S/2E-23P1	7S/3E-29C1				
	7S/3E-31A1		7S/2E-23O1	7S/3E-29M1				
	7S/3E-31N1		7S/2E-25C1	7S/3E-3OP1				
	7S/3E-31Q1		7S/2E-25F1	7S/3E-3OQ1				
	7S/3E-32D1		7S/2E-25R1	7S/3E-3OR1				
	7S/3E-32D2		7S/2E-28E1	7S/3E-3OR2				
	8S/3E-6B1		7S/2E-26L1	7S/3E-3OR3				
	8S/3E-6B2		7S/2E-27A1	7S/3E-31C1				
	8S/3E-6G1		7S/2E-27H1	7S/3E-31F1				
	8S/3E-6R1		7S/2E-28N1	7S/3E-31L1			23.00	
SUBTOTAL ANZA VALLEY				**1,836.38**			**2,153.56**	**0.00**
WILSON CREEK ABOVE AGUANGA GROUNDWATER AREA								
LEWIS VALLEY								
Green Shell Company	39850 Sage Road Hemet, CA 92343	571-080-012	80.00	50.00	Olive Trees	7S/1E-20Q	55.00	
SUBTOTAL LEWIS VALLEY				**50.00**			**55.00**	**0.00**
TOTAL WILSON CREEK ABOVE AGUANGA GROUNDWATER AREA				**1,886.38**			**2,208.56**	**0.00**

APPENDIX C

SANTA MARGARITA RIVER WATERSHED
SUBSTANTIAL USERS OUTSIDE ORGANIZED WATER SERVICE AREAS

CURRENT OWNER	ADDRESS	ASSESSOR PARCEL NO.	PARCEL ACREAGE	ACRES IRRIGATED 96-97	IRRIGATED CROP 96-97	WELL/ DIVERSION LOCATION TWP/RNG/SEC	WELL PRODUCTION AC. FT	SURFACE DIVERSION AC. FT
MURRIETA-TEMECULA GROUNDWATER AREA								
Poyorena, Thomas J.	m/t 22145 Grand Ave Wildomar, CA 92395 21853 Palomar St.	369-510-022	18.79	14.00	Pasture	6S/4W-35P	53.20	
International Immunology, Inc.	m/t 25549 Adams Ave Murrieta, CA 92362	909-060-020 909-170-010 909-170-011	9.33 9.55 27.77	 20.00	 Pasture	 7S/3W-21K	 8.00	
Temecula Ranchos c/o Chester Rowell and Roger Rowell	m/t 2100 Tulare St #405 Fresno, CA 93271 45055 Rio Linda Road Rancho California Road La Serena Way Temecula, CA 92390	952-240-001 952-230-002 943-230-001 943-230-003 942-230-003 943-040-006 943-080-001 943-080-002	429.43 48.92 109.34 14.17 37.83 20.00 94.49 26.50	378.46 41.20 107.00 13.00 37.00 18.00 89.00 29.00	Citrus Citrus Citrus Citrus Citrus Citrus Citrus Citrus	8S/2W-14P1 8S/2W-14F 7S/2W-26L 7S/2W-28L	265.00 200.00 220.00 220.00	
Anza Grove	c/o McMillan Farm Mgt. 29379 Rancho Cal. Rd #201 Temecula, CA 92390	942-180-002 942-240-003 942-240-004 942-240-005	40.28 40.83 40.83 39.31	Total of 155.00 and 6.00	 Citrus Grapes	 7S/2W-26B1	 181.00	
Bear Valley Vineyard Co., Ltd. AND Manley Bear Valley Partners	c/o McMillan Farm Mgt. 29379 Rancho Cal. Rd #201 Temecula, CA 92390	904-050-080 904-030-021 904-030-020 904-060-009 904-060-008 904-060-010	17.51 90.12 2.38 129.46 48.00 153.47	0.00 90.00 0.00 0.00 36.00 0.00	 Wine Grapes Wine Grapes 	 7S/3W-18Q 	 139.00 	
DiBernardo, Louis J.	m/t 35925 Rancho Cal. Rd Temecula, CA 92591 38695 Highway 79 Warner Springs, CA 92086	917-240-015-7 917-240-014-6 917-150-006-1 917-150-002-7	20.00 60.00 120.00 117.76	Total of 160.00 10.00	 Citrus and Apples	 8S/1W-21K(1) 8S/1W-21K(2) 8S/1W-21P(1) 8S/1W-21P(2)	 Total of 343.00	
Boots, Clydene	P. O. Box 321 Murrieta, CA 92362 25555 Washington Ave Murrieta, Ca. 92564	909-090-019 909-100-017	16.66	14.00	Pasture	7S/3W-21P	60.00	

APPENDIX C

SANTA MARGARITA RIVER WATERSHED
SUBSTANTIAL USERS OUTSIDE ORGANIZED WATER SERVICE AREAS

CURRENT OWNER	ADDRESS	ASSESSOR PARCEL NO.	PARCEL ACREAGE	ACRES IRRIGATED 96-97	IRRIGATED CROP 96-97	WELL/ DIVERSION LOCATION TWP/RNG/SEC	WELL PRODUCTION AC. FT	SURFACE DIVERSION AC. FT
MURRIETA-TEMECULA GROUNDWATER AREA (Cont)								
Carson, David M. and Carol J.	25471 Hayes Ave Murrieta, CA 92362	909-260-036	8.87	7.00	Pasture	7S/3W-29G	39.90	
		909-260-042	4.31	3.50	Pasture			
Pechanga Indian Reservation								
	Domestic and Commercial Wells Reported by Bureau of Indian Affairs						Total	
	Wells in Basement Complex	Wells out of SMR Watershed	Wells with QYAL and/or QTOAL					
			8S/2W-28J1	8S/2W-34B3				
			8S/2W-28J2	8S/2W-34B4				
			8S/2W-28P1	8S/2W-34C1				
			8S/2W-28Q1	8S/2W-34D1				of
			8S/2W-28Q2	8S/2W-34E1				
			8S/2W-28Q4	8S/2W-34F1				
			8S/2W-28Q6	8S/2W-34F2				
			8S/2W-28Q7	8S/2W-34F3				
			8S/2W-28R1	8S/2W-34F4				
			8S/2W-29A1	8S/2W-34F7				
			8S/2W-29B10	8S/2W-35D1				
					Domestic Use	142.80		
					Commercial Use	24.70		
					TOTAL USE		167.50	3.50
TOTAL MURRIETA-TEMECULA GROUNDWATER AREA				**1,228.16**			**1,896.60**	**3.50**

APPENDIX C

SANTA MARGARITA RIVER WATERSHED
SUBSTANTIAL USERS OUTSIDE ORGANIZED WATER SERVICE AREAS

CURRENT OWNER	ADDRESS	ASSESSOR PARCEL NO.	PARCEL ACREAGE	ACRES IRRIGATED 96-97	IRRIGATED CRDP 96-97	WELL/ DIVERSION LOCATION TWP/RNG/SEC	WELL PRODUCTION AC. FT	SURFACE DIVERSION AC. FT
SANTA MARGARITA RIVER BELOW GORGE								
DE LUZ CREEK								
Ezor, Albert E. and Sylvia L.	m/t 31421 Cavendish Dr. Los Angeles, CA 90064	101-271-17	47.79	8.00 2.00	Avocados Vegetables	8S/4W-29D(1) 8S/4W-29D(2)	25.00 Total	
Bryant, Warren and Lori	40724 DeLuz Rd Fallbrook, CA 92028	101-271-19 101-271-20 101-271-21 101-271-22	19.08 5.02 11.86 6.41	Total of 8.00	 Pasture	8S/4W-29E(1) 8S/4W-29E(2)	30.40 Total	
Prestininzi, Pete and Dorothy N.	2525 E. Mission Road Fallbrook, CA 92028 Richmond Truck Trail and DeLuz Murrieta Road	101-220-12 101-210-53	31.63 50.44	12.00	Avocados and Citrus	8S/4W-20A(1) 8S/4W-20H(1) 8S/4W-20H(2) 8S/4W-20A(2) 8S/4W-20H(3) 8S/4W-20A - Diversion	6.00 6.00 6 00	18.00
Raley, Harold R. and Mary E.	41125 DeLuz Rd Fallbrook, CA 92028	101-210-11	15.23	8.50 0.50	Avocados Citrus	8S/4W-20Q(1) 8S/4W-20Q(2)	21.60 Total	
Herbel, John and Jeraldine	41257 DeLuz Rd Fallbrook, CA 92028	101-210-12	30.28	10.00 18.00 2.00	Avocados Citrus Row crops	8S/4W-20Q(1) 8S/4W-20Q(2) 8S/4W-20Q(3)	Total of 66.20	
Wagner, Wilbur A. and Shirley A.	41128 DeLuz Fallbrook, CA 92028	101-210-23 101-210-22	17.19 4.55	11.00 0.50 3.00 3.00	Avocados Citrus Persimmons Persimmons	 8S/4W-20P(1) 8S/4W-20P(2) 8S/4W-20P(3)	 5.00 0.00 25.00	
Chambers, Robert R. and Clytia M.	m/t 11439 Laurelcrest Dr. Studio City, CA 91604 40888 DeLuz-Murrieta Rd.	101-571-03	41.72	19.00	Flowers	8S/4W-28A 8S/4W-28A - Diversion	40.00	5.00
Welburn, Douglas J. and Sue	40787 DeLuz Murrieta Rd. Fallbrook, CA 92028 40751 DeLuz Murrieta Rd	101-571-08	26.98	7.00	Row Crops	8S/4W-28G1	25.00	
Nezami, Mohammed Bluebird Ranch	2193 Calle Rociada Fallbrook, CA 92028	101-312-02 101-312-01	58.17 82.29	45.00 5.00 42.00	Flowers Avocados Flowers	8S/4W-31K(1) 8S/4W-31K(2) 8S/4W-31K(3) 8S/4W-31L 8S/4W-31L - Diversion	Total of 162.18	31.48
SUBTOTAL DELUZ CREEK				**204.50**			**418.38**	**54.48**

APPENDIX C

SANTA MARGARITA RIVER WATERSHED
SUBSTANTIAL USERS OUTSIDE ORGANIZED WATER SERVICE AREAS

CURRENT OWNER	ADDRESS	ASSESSOR PARCEL NO.	PARCEL ACREAGE	ACRES IRRIGATED 96-97	IRRIGATED CROP 96-97	WELL/ DIVERSION LOCATION TWP/RNG/SEC	WELL PRODUCTION AC. FT	SURFACE DIVERSION AC. FT
SANTA MARGARITA RIVER BELOW GORGE (Cont)								
SANDIA CREEK								
Cal June, Inc.	P. O. Box 9551 No. Hollywood, CA 91609 40376 Sandia Creek Fallbrook, CA 92028	101-360-40	126.32	50.00 75.00 1.00	Avocados Fruit Citrus	8S/4W-25P(1) 6S/4W-25P(2) 6S/4W-25P(3) 8S/4W-25P(4) 8S/4W-25P(5) 8S/4W-25P - Diversion	Total Well Production of 75.00	180.00
SUBTOTAL SANDIA CREEK				**126.00**			**75.00**	**180.00**
SANTA MARGARITA RIVER								
Henderson, Leland	m/t Margarita Land & Development PO Box 584 Fallbrook, CA 92088 47981 & 47991 Willow Glen Rd Temecula, CA 92390	918-040-10 918-060-17	120.00 40.00	Total of 20.00	Citrus and Avocados	8S/3W-33Q1 8S/3W-33Q(2) 8S/3W-33Q - Diversion	29.24 3.75	67.15
SUBTOTAL SANTA MARGARITA RIVER				**20.00**			**32.99**	**67.15**
TOTAL SANTA MARGARITA RIVER BELOW GORGE				**350.50**			**526.37**	**301.63**

APPENDIX C

SANTA MARGARITA RIVER WATERSHED
SUBSTANTIAL USERS OUTSIDE ORGANIZED WATER SERVICE AREAS

CURRENT OWNER	ADDRESS	ASSESSOR PARCEL NO.	PARCEL ACREAGE	ACRES IRRIGATED 96-97	IRRIGATED CROP 96-97	WELL/ DIVERSION LOCATION TWP/RNG/SEC	WELL PRODUCTION AC. FT	SURFACE DIVERSION AC. FT
LOWER MURRIETA								
Robertson, Richard and Janice (Sage Ranch Nursery)	m/t P. O. Box 7060 Hemet, CA 92545 42525 E. Benton Rd.	571-020-046	81.09	0.00				
		571-020-047	40.60	0.00				
		571-020-048	36.75	0.00				
		571-020-049	148.86	0.00		7S/3E-7D	4.00	
		571-520-007	109.50	Total				
		571-520-008	99.43	|				
		571-520-009	80.23	of				
		571-520-010	78.20	|				
		470-210-007	53.62	|				
		470-220-004	121.00	400.00	Olive trees	7S/3E-7E - Diversion		100.00
Zamora, John and Linda	39800 E. Benton Rd. Temecula, CA 92390	915-120-18	37.74	10.00	Pasture	7S/1W-10R(1) 7S/1W-10R(2) 7S/1W-10R(3) 7S/1W-10R(4) 7S/1W-10R(5) 7S/1W-10R(6)	Total of | 38.00 Domestic	
Ann Borel and A. Ray Borel	m/t 37623 Leon Road Murrieta, CA 92363	914-770-003	109.30	15.00	Pasture	7S-2W-8P - Diversion		67.00
TOTAL LOWER MURRIETA				**425.00**			**42.00**	**167.00**
GRAND TOTAL				**5,079.86**			**6,727.98**	**1,102.13**
GRAND TOTAL	(Not including Indien Reservation Domestic and Commercial Use)			**5,079.86**			**6,537.48**	**1,098.63**

SANTA MARGARITA RIVER WATERSHED

ANNUAL WATERMASTER REPORT

WATER YEAR 1996-97

APPENDIX D

WATER QUALITY DATA

JULY 1998

TABLE D-2

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

SURFACE STREAMS SAMPLED BY RANCHO CALIFORNIA WATER DISTRICT

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO	NO3
Temecula Creek	03/13/87	890	575	—	—	76	—	68	—	—	<.1 @N
At Hwy 79	05/08/87	1180	750	—	—	115	—	78	—	—	<.1 @N
	09/04/87	1350	895	—	—	134	—	110	—	—	.2 @N
	01/20/88	660	370	—	—	55	—	43	—	—	.2 @N
DeLuz Creek	08/21/86	1220	760	*94	44	92	2	193	165	204	17
At Dios Rio Road	11/25/86	1200	740	92	42	92	4	175	195	146	39
	03/13/87	1090	670	—	—	85	—	165	—	—	4 @N
	05/08/87	1130	700	—	—	94	—	200	—	—	9 @N
	09/04/87	1110	755	—	—	92	—	95	—	—	3.4 @N
	01/20/88	1250	775	—	—	100	—	142	—	—	11.7 @N
Sandia Creek at	08/21/86	1070	680	88	42	78	2	174	140	198	15
Buenos Campos	11/25/86	1130	685	92	44	73	2	165	150	207	16
	03/13/87	1130	660	—	—	73	—	160	—	—	2.7 @N
	05/08/87	1130	725	—	—	80	—	182	—	—	14 @N
	09/04/87	1110	690	—	—	75	—	90	—	—	3.4 @N
	01/20/88	1160	720	—	—	99	—	132	—	—	5.6 @N
Murrieta Creek	08/21/86	850	510	66	15	96	4	96	135	372	10
At Gaging Station	11/25/86	890	520	62	18	103	3	109	81	259	3
	04/02/87	870	515	—	—	99	—	104	—	—	.2 @N
	05/08/87	850	790	—	—	102	—	9	—	—	.2 @N
	09/04/87	730	445	—	—	84	—	45	—	—	.7 @N
	01/20/88	830	525	—	—	85	—	109	—	—	.7 @N

* - Laboratory reported as 940

* - Laboratory reported as 940

TABLE D-2 (cont'd)

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

SURFACE STREAMS SAMPLED BY RANCHO CALIFORNIA WATER DISTRICT

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO	NO3
Santa Margarita	08/21/86	880	540	70	15	96	2	110	115	198	5
River at	11/25/86	1050	600	110	24	85	3	103	105	311	4
Gaging Station	04/02/87	1050	660	—	—	87	—	107	—	—	.7 @N
	05/08/87	1050	630	—	—	93	—	98	—	—	1.1 @N
	09/04/87	1000	640	—	—	88	—	100	—	—	<1 @N
	01/20/88	790	400	—	—	84	—	89	—	—	.7 @N
	06/29/94	—	—	—	—	—	—	—	—	—	0.3 @N
	07/06/94	—	—	—	—	—	—	—	—	—	0.3 @N
	07/13/94	—	—	—	—	—	—	—	—	—	<0.1 @N
	07/20/94	—	—	—	—	—	—	—	—	—	0.3 @N
	07/27/94	—	—	—	—	—	—	—	—	—	0.1 @N
	08/03/94	—	—	—	—	—	—	—	—	—	0.2 @N
	08/16/94	—	—	—	—	—	—	—	—	—	<0.1 @N
	08/24/94	—	—	—	—	—	—	—	—	—	0.6 @N
	08/31/94	—	—	—	—	—	—	—	—	—	0.4 @N
	09/07/94	—	—	—	—	—	—	—	—	—	0.3 @N
	09/14/94	—	—	—	—	—	—	—	—	—	0.9 @N
	09/21/94	—	—	—	—	—	—	—	—	—	0.7 @N
	09/27/94	—	—	—	—	—	—	—	—	—	0.4 @N
	10/06/94	—	—	—	—	—	—	—	—	—	<0.1 @N
	10/11/94	—	—	—	—	—	—	—	—	—	0.4 @N
	10/19/94	—	—	—	—	—	—	—	—	—	0.4 @N
	10/26/94	—	—	—	—	—	—	—	—	—	0.7 @N
	11/02/94	—	—	—	—	—	—	—	—	—	0.6 @N
	11/09/94	—	—	—	—	—	—	—	—	—	0.5 @N
	11/16/94	—	—	—	—	—	—	—	—	—	0.6 @N
	11/23/94	—	—	—	—	—	—	—	—	—	0.5 @N
	11/30/94	—	—	—	—	—	—	—	—	—	0.6 @N
	12/07/94	—	—	—	—	—	—	—	—	—	0.7 @N
	12/14/94	—	—	—	—	—	—	—	—	—	0.8 @N
	12/21/94	—	—	—	—	—	—	—	—	—	1.0 @N
	12/29/94	—	—	—	—	—	—	—	—	—	0.8 @N
	01/04/95	—	—	—	—	—	—	—	—	—	0.6 @N
	01/11/95	—	—	—	—	—	—	—	—	—	0.7 @N
	01/18/95	—	—	—	—	—	—	—	—	—	4.8 @N
	01/26/95	—	390	—	—	—	—	—	—	—	0.5 @N

TABLE D-2 (cont'd)

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

SURFACE STREAMS SAMPLED BY RANCHO CALIFORNIA WATER DISTRICT

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO	NO3
Santa Margarita River at Gaging Station (cont'd)	02/01/95	—	750	—	—	—	—	—	—	—	1.0 @N
	02/08/95	—	940	—	—	—	—	—	—	—	1.5 @N
	02/15/95	—	440	—	—	—	—	—	—	—	1.1 @N
	02/22/95	—	765	—	—	—	—	—	—	—	0.9 @N
	03/01/95	—	765	—	—	—	—	—	—	—	1.1 @N
	03/08/95	—	575	—	—	—	—	—	—	—	1.3 @N
	03/15/95	—	625	—	—	—	—	—	—	—	1.1 @N
	03/22/95	—	600	—	—	—	—	—	—	—	0.8 @N
	03/29/95	—	680	—	—	—	—	—	—	—	0.9 @N
	04/05/95	—	715	—	—	—	—	—	—	—	0.3 @N
	04/12/95	—	645	—	—	—	—	—	—	—	0.9 @N
	04/19/95	—	550	—	—	—	—	—	—	—	1.0 @N
	04/26/95	—	765	—	—	—	—	—	—	—	1.2 @N
	05/03/95	—	735	—	—	—	—	—	—	—	1.0 @N
	05/10/95	—	760	—	—	—	—	—	—	—	0.7 @N
	05/17/95	—	760	—	—	—	—	—	—	—	0.9 @N
	05/24/95	—	835	—	—	—	—	—	—	—	1.1 @N
	05/31/95	—	910	—	—	—	—	—	—	—	1.2 @N
	06/07/95	—	950	—	—	—	—	—	—	—	1.7 @N
	06/14/95	—	900	—	—	—	—	—	—	—	0.8 @N
	06/21/95	—	1000	—	—	—	—	—	—	—	1.5 @N
	06/28/95	—	940	—	—	—	—	—	—	—	1.3 @N
	07/06/95	—	880	—	—	—	—	—	—	—	0.9 @N
	07/12/95	—	910	—	—	—	—	—	—	—	0.9 @N
	07/19/95	—	910	—	—	—	—	—	—	—	0.8 @N
	07/26/95	—	895	—	—	—	—	—	—	—	0.8 @N
	08/02/95	—	980	—	—	—	—	—	—	—	1.4 @N
	08/09/95	—	935	—	—	—	—	—	—	—	1.4 @N
	08/16/95	—	925	—	—	—	—	—	—	—	0.7 @N
	08/23/95	—	905	—	—	—	—	—	—	—	0.8 @N
	08/30/95	—	865	—	—	—	—	—	—	—	0.8 @N
	09/06/95	—	740	—	—	—	—	—	—	—	<0.2 @N
	09/13/95	—	870	—	—	—	—	—	—	—	1.0 @N
	09/20/95	—	885	—	—	—	—	—	—	—	0.5 @N
	09/27/95	—	900	—	—	—	—	—	—	—	0.7 @N

TABLE D-2 (cont'd)

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

SURFACE STREAMS SAMPLED BY RANCHO CALIFORNIA WATER DISTRICT

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO	NO3
Santa Margarita River at Gaging Station (cont'd)	10/04/95	—	875	—	—	—	—	—	—	—	<0.2 @N
	10/11/95	—	850	—	—	—	—	—	—	—	0.3 @N
	10/18/95	—	815	—	—	—	—	—	—	—	0.6 @N
	10/25/95	—	890	—	—	—	—	—	—	—	0.6 @N
	11/01/95	—	820	—	—	—	—	—	—	—	0.4 @N
	11/08/95	—	960	—	—	—	—	—	—	—	0.8 @N
	11/15/95	—	917	—	—	—	—	—	—	—	1.0 @N
	11/22/95	—	850	—	—	—	—	—	—	—	1.0 @N
	11/29/95	—	788	—	—	—	—	—	—	—	1.0 @N
	12/06/95	—	872	—	—	—	—	—	—	—	0.9 @N
	12/13/95	—	766	—	—	—	—	—	—	—	1.1 @N
	12/20/95	—	846	—	—	—	—	—	—	—	1.1 @N
	12/27/95	—	841	—	—	—	—	—	—	—	1.1 @N
	01/03/96	—	850	—	—	—	—	—	—	—	1.1 @N
	01/10/96	—	830	—	—	—	—	—	—	—	1.1 @N
	01/17/96	—	870	—	—	—	—	—	—	—	1.0 @N
	01/24/96	—	760	—	—	—	—	—	—	—	1.1 @N
	01/31/96	—	470	—	—	—	—	—	—	—	0.8 @N
	02/07/96	—	580	—	—	—	—	—	—	—	1.2 @N
	02/14/96	—	850	—	—	—	—	—	—	—	1.5 @N
	03/06/96	—	840	—	—	—	—	—	—	—	1.7 @N
	03/14/96	—	690	—	—	—	—	—	—	—	1.2 @N
	03/21/96	—	840	—	—	—	—	—	—	—	1.2 @N
	03/27/96	—	830	—	—	—	—	—	—	—	1.4 @N
	04/03/96	—	880	—	—	—	—	—	—	—	1.7 @N
	04/10/96	—	850	—	—	—	—	—	—	—	1.5 @N
	04/17/96	—	880	—	—	—	—	—	—	—	1.7 @N
	04/24/96	—	840	—	—	—	—	—	—	—	1.5 @N
	05/08/96	—	820	—	—	—	—	—	—	—	2.0 @N
	05/16/96	—	820	—	—	—	—	—	—	—	0.8 @N
	05/22/96	—	810	—	—	—	—	—	—	—	0.7 @N
	05/29/96	—	790	—	—	—	—	—	—	—	0.6 @N
	06/12/96	—	810	—	—	—	—	—	—	—	0.6 @N
	06/20/96	—	850	—	—	—	—	—	—	—	0.5 @N
	06/27/96	—	520	—	—	—	—	—	—	—	1.0 @N

TABLE D-2 (cont'd)

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

SURFACE STREAMS SAMPLED BY RANCHO CALIFORNIA WATER DISTRICT

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO	NO3
Santa Margarita River at Gaging Station (cont'd)	07/03/96	—	720	—	—	—	—	—	—	—	0.8@N
	07/10/96	—	750	—	—	—	—	—	—	—	1.0 @N
	07/17/96	—	690	—	—	—	—	—	—	—	0.9 @N
	07/24/96	—	710	—	—	—	—	—	—	—	1.2 @N
	07/31/96	—	700	—	—	—	—	—	—	—	0.9 @N
	08/07/96	—	760	—	—	—	—	—	—	—	0.7 @N
	08/14/96	—	680	—	—	—	—	—	—	—	0.6 @N
	08/21/96	—	700	—	—	—	—	—	—	—	0.6 @N
	09/04/96	—	670	—	—	—	—	—	—	—	1.0 @N
	09/11/96	—	650	—	—	—	—	—	—	—	1.0 @N
	09/18/96	—	600	—	—	—	—	—	—	—	0.9 @N
	09/25/96	—	610	—	—	—	—	—	—	—	1.2 @N
	10/02/96	—	640	—	—	—	—	—	—	—	0.9 @N
	10/09/96	—	630	—	—	—	—	—	—	—	1.2 @N
	10/16/96	—	630	—	—	—	—	—	—	—	1.0 @N
	10/23/96	—	650	—	—	—	—	—	—	—	1.4 @N
	10/31/96	—	690	—	—	—	—	—	—	—	1.5 @N
	11/06/96	—	820	—	—	—	—	—	—	—	1.0 @N
	11/13/96	—	800	—	—	—	—	—	—	—	1.0 @N
	11/20/96	—	830	—	—	—	—	—	—	—	1.0 @N
	11/27/96	—	790	—	—	—	—	—	—	—	1.4 @N
	12/04/96	—	870	—	—	—	—	—	—	—	1.3 @N
	12/18/96	—	830	—	—	—	—	—	—	—	1.5 @N
	12/26/96	—	780	—	—	—	—	—	—	—	1.5 @N
	01/02/97	—	790	—	—	—	—	—	—	—	1.1 @N
	01/17/97	—	590	—	—	—	—	—	—	—	0.9 @N
	01/22/97	—	810	—	—	—	—	—	—	—	1.6 @N
	01/29/97	—	670	—	—	—	—	—	—	—	1.2 @N
	02/05/97	—	830	—	—	—	—	—	—	—	1.7 @N
	02/12/97	—	650	—	—	—	—	—	—	—	1.1 @N
	02/19/97	—	850	—	—	—	—	—	—	—	1.4 @N
	02/26/97	—	830	—	—	—	—	—	—	—	1.6 @N
	03/05/97	—	900	—	—	—	—	—	—	—	1.6 @N
	03/12/97	—	850	—	—	—	—	—	—	—	1.4 @N
	03/19/97	—	830	—	—	—	—	—	—	—	1.4 @N

TABLE D-2 (cont'd)

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

SURFACE STREAMS SAMPLED BY RANCHO CALIFORNIA WATER DISTRICT

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO	NO3
Santa Margarita River at Gaging Station (cont'd)	03/26/97	—	800	—	—	—	—	—	—	—	1.2 @N
	04/02/97	—	670	—	—	—	—	—	—	—	1.3 @N
	04/09/97	—	730	—	—	—	—	—	—	—	1.0 @N
	04/16/97	—	680	—	—	—	—	—	—	—	1.3 @N
	04/23/97	—	570	—	—	—	—	—	—	—	1.0 @N
	05/07/97	—	600	—	—	—	—	—	—	—	1.4 @N
	05/14/97	—	630	—	—	—	—	—	—	—	0.9 @N
	05/21/97	—	650	—	—	—	—	—	—	—	0.7 @N
	05/28/97	—	690	—	—	—	—	—	—	—	0.7 @N
	06/04/97	—	580	—	—	—	—	—	—	—	0.8 @N
	06/11/97	—	640	—	—	—	—	—	—	—	0.9 @N
	06/18/97	—	730	—	—	—	—	—	—	—	0.6 @N
	06/25/97	—	760	—	—	—	—	—	—	—	0.5 @N
	07/02/97	—	710	—	—	—	—	—	—	—	0.8 @N
	07/09/97	—	630	—	—	—	—	—	—	—	0.4 @N
	07/16/97	—	670	—	—	—	—	—	—	—	0.3 @N
	07/23/97	—	630	—	—	—	—	—	—	—	0.3 @N
	07/30/97	—	630	—	—	—	—	—	—	—	0.4 @N
	08/06/97	—	630	—	—	—	—	—	—	—	0.4 @N
	08/13/97	—	600	—	—	—	—	—	—	—	0.4 @N
	08/20/97	—	650	—	—	—	—	—	—	—	0.5 @N
	08/27/97	—	630	—	—	—	—	—	—	—	0.4 @N
	09/03/97	—	630	—	—	—	—	—	—	—	0.4 @N
	09/10/97	—	730	—	—	—	—	—	—	—	0.4 @N
	09/17/97	—	640	—	—	—	—	—	—	—	0.5 @N
	09/24/97	—	660	—	—	—	—	—	—	—	0.5 @N

TABLE D-2 (cont'd)

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

SURFACE STREAMS SAMPLED BY RANCHO CALIFORNIA WATER DISTRICT

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO	NO3
Murrieta Creek	08/20/97	—	ND	—	—	—	—	—	—	—	ND
Meter	09/03/97	—	ND	—	—	—	—	—	—	—	ND
	09/17/97	—	ND	—	—	—	—	—	—	—	0.9 @N
Willow Glen	07/22/97	—	780	—	—	—	—	—	—	—	0.2 @N
	08/19/97	—	720	—	—	—	—	—	—	—	0.2 @N
	09/23/97	—	730	—	—	—	—	—	—	—	0.4 @N
DeLuz Crossing	07/22/97	—	760	—	—	—	—	—	—	—	ND
	08/19/97	—	770	—	—	—	—	—	—	—	ND
	09/23/97	—	810	—	—	—	—	—	—	—	ND
Estuary	07/22/97	—	13,200	—	—	—	—	—	—	—	4.3 @N
	08/19/97	—	16,200	—	—	—	—	—	—	—	2.4 @N
	09/23/97	—	12,600	—	—	—	—	—	—	—	3.2 @N

* - None Detected

TABLE D-3

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

WELLS SAMPLED BY MURRIETA COUNTY WATER DISTRICT

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO3	NO3
Holiday Well	06/16/89	1300	775	122	39	100	2	178	66	372	40
7S/3W-20C09	10/18/91	---	---	---	---	---	---	---	---	---	25
	11/15/91	---	---	---	---	---	---	---	---	---	26
	12/13/91	---	---	---	---	---	---	---	---	---	28
	01/10/92	---	---	---	---	---	---	---	---	---	27
	02/07/92	---	---	---	---	---	---	---	---	---	27
	05/01/92	---	---	---	---	---	---	---	---	---	32
	05/29/92	---	---	---	---	---	---	---	---	---	28
	08/21/92	---	---	---	---	---	---	---	---	---	27
	01/22/93	960	605	83	29	83	2	130	84	278	33
	10/15/93	---	---	---	---	---	---	---	---	---	32
	03/30/94	---	---	---	---	---	---	---	---	---	44
	06/22/94	---	---	---	---	---	---	---	---	---	35
	09/14/94	---	---	---	---	---	---	---	---	---	31
	12/07/94	---	---	---	---	---	---	---	---	---	30
	03/01/95	---	---	---	---	---	---	---	---	---	32
	06/21/95	---	---	---	---	---	---	---	---	---	11
	09/13/95	---	---	---	---	---	---	---	---	---	27
	12/06/95	---	---	---	---	---	---	---	---	---	26
	03/27/96	---	---	---	---	---	---	---	---	---	15
	06/06/96	---	---	---	---	---	---	---	---	---	24
	09/11/96	---	---	---	---	---	---	---	---	---	22
	11/08/96	---	---	---	---	---	---	---	---	---	55
	11/14/96	---	---	---	---	---	---	---	---	---	25
	12/05/96	---	---	---	---	---	---	---	---	---	24
	03/27/97	---	---	---	---	---	---	---	---	---	20
	06/18/97	---	---	---	---	---	---	---	---	---	21

TABLE D-3 (cont'd)

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

WELLS SAMPLED BY MURRIETA COUNTY WATER DISTRICT

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO3	NO3
House Well	06/16/89	660	345	34	3	95	2	87	60	153	<1
7S/3W-20G06	02/27/91	770	—	—	—	—	—	110	65	168	<1
	03/01/91	730	—	—	—	—	—	110	—	—	<1
	03/08/91	680	420	42	5	90	2	110	68	122	<1
	05/10/91	750	—	—	—	—	—	—	—	—	<1
	10/11/91	—	—	—	—	—	—	—	—	—	<1
	11/08/91	—	—	—	—	—	—	—	—	—	<1
	05/22/92	—	—	—	—	—	—	—	—	—	<1
	08/14/92	—	—	—	—	—	—	—	—	—	<1
	01/22/93	720	415	40	5	106	2	100	68	168	<1
	09/07/94	—	—	—	—	—	—	—	—	—	<1
	12/27/95	—	—	—	—	—	—	—	—	—	<1
	03/22/95	—	—	—	—	—	—	—	—	—	<1
	06/14/95	—	—	—	—	—	—	—	—	—	<1
	09/06/95	—	—	—	—	—	—	—	—	—	<1
	12/27/95	—	—	—	—	—	—	—	—	—	<1
	03/20/96	—	—	—	—	—	—	—	—	—	<2
	06/12/96	—	—	—	—	—	—	—	—	—	<2
	09/04/96	—	—	—	—	—	—	—	—	—	<2
	12/26/96	—	—	—	—	—	—	—	—	—	<2
	03/19/97	—	—	—	—	—	—	—	—	—	<2
	06/12/97	—	—	—	—	—	—	—	—	—	<2
Lynch Well	06/16/89	760	410	70	17	55	1	86	30	262	8
7S/3W-17R02											
North Well	06/16/89	730	390	40	7	98	2	98	45	201	<1
7S/3W-18J02	10/25/91	—	—	—	—	—	—	—	—	—	<1
	11/22/91	—	—	—	—	—	—	—	—	—	<1
	05/08/92	—	—	—	—	—	—	—	—	—	<1
	08/28/92	—	—	—	—	—	—	—	—	—	<1
	01/22/93	680	405	39	8	99	2	100	51	183	<1
	10/22/93	—	—	—	—	—	—	—	—	—	<1
	07/08/94	810	520	—	—	87	—	130	53	—	<1
	09/21/94	—	—	—	—	—	—	—	—	—	<1
	12/14/94	—	—	—	—	—	—	—	—	—	<1
	03/08/95	—	—	—	—	—	—	—	—	—	<1
	06/28/95	—	—	—	—	—	—	—	—	—	<1
	09/20/95	—	—	—	—	—	—	—	—	—	<1
	12/13/95	—	—	—	—	—	—	—	—	—	<1
	03/06/96	—	—	—	—	—	—	—	—	—	<2
	06/26/96	—	—	—	—	—	—	—	—	—	<2
	09/18/96	—	—	—	—	—	—	—	—	—	<2
	12/11/96	—	—	—	—	—	—	—	—	—	<2
	06/25/97	—	—	—	—	—	—	—	—	—	<2

TABLE D-3 (cont'd)

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

WELLS SAMPLED BY MURRIETA COUNTY WATER DISTRICT

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO3	NO3
South Well	09/07/90	690	405	62	17	68	2	83	56	229	4
7S/3W-20D	10/04/91	---	---	---	---	---	---	---	---	---	2
	11/01/91	---	---	---	---	---	---	---	---	---	3
	11/26/91	---	---	---	---	---	---	---	---	---	2
	05/15/92	---	---	---	---	---	---	---	---	---	<1
	10/01/93	---	---	---	---	---	---	---	---	---	2
	09/28/94	---	---	---	---	---	---	---	---	---	1
	12/21/94	---	---	---	---	---	---	---	---	---	3
	03/15/95	---	---	---	---	---	---	---	---	---	2
	06/07/95	---	---	---	---	---	---	---	---	---	2
	09/27/95	---	---	---	---	---	---	---	---	---	2
	12/20/95	---	---	---	---	---	---	---	---	---	3
	03/13/96	---	---	---	---	---	---	---	---	---	2
	06/15/96	---	---	---	---	---	---	---	---	---	3
	09/25/96	---	---	---	---	---	---	---	---	---	3
	12/18/96	---	---	---	---	---	---	---	---	---	3
	04/09/97	---	---	---	---	---	---	---	---	---	2
	06/04/97	---	---	---	---	---	---	---	---	---	2
Alson Well 7S/3W-7M	06/06/90	1520	915	138	46	110	1	250	81	433	31
Morris Well 7S/3W-19R	09/07/90	530	280	38	7	68	3	50	49	168	3

TABLE D-4

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

WELLS SAMPLED BY RANCHO CALIFORNIA WATER DISTRICT

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO3	NO3
No. 101	06/01/88	810	495	76	15	79	8	116	16	314	---
7S/3W-34G1	08/05/88	---	---	---	---	---	---	---	---	---	<1
	05/23/90	630	365	30	6	91	2	101	35	107	3
	08/04/93	860	465	76	14	78	2	120	22	275	<1
	08/09/96	820	480	69	14	83	2	110	15	310	<2
No. 102	01/04/89	695	370	9	2	134	1	101	25	195	<1
8S/3W-2Q1	01/15/92	930	615	38	4	160	3	160	55	250	<1
	05/17/95	850	475	21	1	144	1	120	130	98	<1
	06/20/95	1190	700	26	2	207	2	150	220	131	<1
	06/09/97	---	---	---	---	---	---	---	---	---	<2
No. 105	07/06/89	500	280	30	6	66	2	71	22	134	14
7S/3W-25M1	03/17/93	480	310	17	2	80	2	67	22	110	14
No. 106	06/29/88	920	485	38	5	143	3	182	66	70	16
7S/3W-26R1	05/13/92	880	515	35	4	142	2	180	72	110	17
	05/16/95	870	495	32	3	138	2	160	57	116	14
	07/07/97	---	---	---	---	---	---	---	---	---	8
No. 107	04/11/88	490	365	19	4	73	2	69	22	116	15
7S/3W-26J1	05/29/91	950	535	63	15	104	3	130	120	171	11
No. 108	05/25/88	780	455	51	11	96	2	120	68	153	14
7S/3W-25E1	05/29/91	930	500	59	14	104	3	130	110	153	10
	05/13/94	640	395	23	5	100	2	120	51	104	7
	05/16/95	---	---	---	---	---	---	---	---	---	5
	05/13/97	540	300	7	<1	110	<1	110	15	85	4
No. 109	06/01/88	1400	920	136	35	120	4	100	300	296	---
8S/2W-17J1	08/05/88	---	---	---	---	---	---	---	---	---	10
	06/12/91	1330	800	110	26	120	5	120	270	275	9
	06/22/94	1370	1010	138	32	124	5	140	320	287	7
	06/06/95	---	---	---	---	---	---	---	---	---	8
	06/13/97	1440	1010	130	31	140	4	140	330	280	10
	07/16/97	---	---	---	---	---	---	---	---	---	2.2 @N
No. 110	03/31/88	1100	630	70	23	132	6	115	163	268	3
8S/1W-06K1	03/11/93	1010	610	60	21	124	5	110	200	201	3
	04/27/95	---	---	---	---	---	---	---	---	---	1

TABLE D-4 (cont'd)

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

WELLS SAMPLED BY RANCHO CALIFORNIA WATER DISTRICT

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO3	NO3
No. 113	03/28/88	700	400	41	12	87	2	11	20	192	18
7S/2W-25H01	03/21/91	570	290	21	5	79	2	88	17	119	11
	03/03/94	700	410	46	13	86	2	120	25	189	19
	04/27/95	—	—	—	—	—	—	—	—	—	24
	03/20/97	880	500	53	15	96	2	140	33	200	22
No. 118	08/08/90	715	480	14	1	162	1	120	79	101	1
8S/3W-11B	09/26/90	—	—	—	—	—	—	—	—	—	1
	09/10/93	860	525	19	1	178	1	130	94	198	<1
	06/20/95	—	—	—	—	—	—	—	—	—	<1
	09/16/96	970	560	33	2	180	2	120	120	230	<2
	07/23/97	—	—	—	—	—	—	—	—	—	0.2 @N
No. 119	07/16/96	450	280	44	9	35	<1	39	18	180	15
8S/2W-19J	08/14/97	—	—	—	—	—	—	—	—	—	12
No. 120	06/20/90	570	330	6	1	116	1	82	31	113	11
8S/2W-17G	06/10/93	590	340	6	<1	122	1	85	35	104	12
	07/19/96	630	360	6	<1	120	1	88	42	120	14
	06/16/97	—	—	—	—	—	—	—	—	—	10
	08/14/97	—	—	—	—	—	—	—	—	—	9
No. 121	10/27/89	900	475	63	14	99	2	109	28	290	<1
7S/3W-34J	05/19/92	1000	560	72	17	120	3	170	56	270	<1
	07/18/97	—	—	—	—	—	—	—	—	—	ND
	07/24/97	—	640	—	—	—	—	—	—	—	ND
	08/20/97	—	—	—	—	—	—	—	—	—	ND
	09/03/97	—	—	—	—	—	—	—	—	—	ND
No. 122	06/23/97	—	—	—	—	—	—	—	—	—	6
8S/2W-20P1	07/25/97	660	460	64	13	44	1	61	65	190	8
No. 123	06/06/90	1100	690	69	27	132	6	130	170	281	4
8S/1W-7B	06/10/93	1120	690	74	25	136	6	120	190	250	5
	02/05/97	930	550	55	18	110	5	83	130	250	1.3
No. 124	06/20/90	660	380	38	4	92	3	97	48	153	13
8S/2W-11R1	07/22/93	690	430	42	5	89	3	90	57	159	17
	07/18/95	—	—	—	—	—	—	—	—	—	11

ND - None Detected

TABLE D-4 (cont'd)

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

WELLS SAMPLED BY RANCHO CALIFORNIA WATER DISTRICT

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO3	NO3
No. 125	06/20/90	740	425	17	5	132	3	99	54	186	4
8S/2W-12H	06/10/93	770	450	18	5	140	3	150	60	131	3
	06/20/95	—	—	—	—	—	—	—	—	—	2
	06/09/97	—	—	—	—	—	—	—	—	—	2
No. 126	05/04/88	480	290	4	<1	106	<1	53	14	64	<1
8S/2W-15H	07/06/89	500	270	2	1	108	<1	55	11	98	<1
	07/18/95	540	315	1	<1	122	<1	72	11	122	<1
	07/07/97	—	—	—	—	—	—	—	—	—	<2
	07/16/97	—	—	—	—	—	—	—	—	—	0.2@N
	07/23/97	—	—	—	—	—	—	—	—	—	0.2@N
	08/20/97	—	—	—	—	—	—	—	—	—	0.4@N
	09/03/97	—	—	—	—	—	—	—	—	—	0.2@N
	09/17/97	—	—	—	—	—	—	—	—	—	0.2@N
No. 128	07/06/89	400	230	27	3	54	2	59	7	101	25
7/3W-36M	07/08/92	390	230	21	2	59	2	55	1	110	24
	07/20/95	380	275	16	2	66	1	65	10	101	19
	07/07/97	—	—	—	—	—	—	—	—	—	15
No. 129	11/29/89	430	260	16	3	66	2	71	16	92	9
7S/2W-20L	08/08/90	440	280	20	5	64	2	72	14	119	10
	04/01/92	—	—	—	—	—	—	—	—	—	12
	09/10/93	470	275	24	6	60	2	74	16	110	13
	08/09/96	460	270	19	3	67	2	70	15	100	11
	02/04/97	—	—	—	—	—	—	—	—	—	53
No. 130	02/17/88	650	365	16	1	132	1	69	64	0	4
8S/2W-11R	02/14/91	640	365	4	<1	132	1	68	56	122	—
	04/24/91	—	—	—	—	—	—	—	—	—	3
	02/09/94	650	410	3	<1	148	1	81	72	146	4
	05/16/95	—	—	—	—	—	—	—	—	—	4
	02/05/97	780	450	4	<1	170	170	78	82	150	5
	05/14/97	—	—	—	—	—	—	—	—	—	4
No. 131	03/10/88	530	270	4	<1	108	1	57	52	31	1
8S/1W-12J	03/21/91	630	335	7	<1	120	1	74	65	98	3
	03/03/94	660	345	9	<1	124	2	86	73	119	2
	03/30/95	—	—	—	—	—	—	—	—	—	2
	03/20/97	660	370	6	<1	125	1	81	73	100	2
	07/07/97	—	—	—	—	—	—	—	—	—	<2

TABLE D-4 (cont'd)

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

WELLS SAMPLED BY RANCHO CALIFORNIA WATER DISTRICT

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO3	NO3
No. 132	04/18/88	1000	620	94	13	103	6	109	153	235	2
8S/1W-07D	05/08/91	920	590	64	19	110	5	100	160	201	<1
	05/13/94	730	460	50	15	78	5	73	110	195	1
	05/16/95	—	—	—	—	—	—	—	—	—	<1
	07/18/95	860	520	59	17	100	4	90	130	223	1
No. 133	03/28/90	970	605	50	20	112	5	120	131	235	3
8S/1W-7C	03/11/93	970	580	48	19	120	4	110	140	204	3
	06/06/95	—	—	—	—	—	—	—	—	—	2
	07/18/95	850	680	26	10	142	2	120	100	174	2
	06/23/97	—	—	—	—	—	—	—	—	—	3
No. 135	05/24/89	2450	1390	122	65	300	2	410	225	464	33
7S/3W-27M	06/06/90	1540	945	73	36	215	1	250	150	323	13
	12/11/90	4400	2670	270	109	480	4	1030	380	314	<1
	08/06/92	1800	810	63	33	170	1	200	160	281	—
	01/16/97	—	—	—	—	—	—	—	—	—	3.7 @N
	02/04/97	—	—	—	—	—	—	—	—	—	3.5 @N
	02/12/97	—	—	—	—	—	—	—	—	—	4.0 @N
	02/20/97	—	—	—	—	—	—	—	—	—	3.4 @N
	02/25/97	—	—	—	—	—	—	—	—	—	3.4 @N
	03/04/97	—	—	—	—	—	—	—	—	—	3.7 @N
	03/18/97	—	—	—	—	—	—	—	—	—	3.3 @N
	03/25/97	—	—	—	—	—	—	—	—	—	3.5 @N
	04/08/97	—	—	—	—	—	—	—	—	—	3.4 @N
	04/15/97	—	—	—	—	—	—	—	—	—	3.4 @N
	04/22/97	—	—	—	—	—	—	—	—	—	3.5 @N
	05/06/97	1930	1050	97	48	220	2	340	190	360	3.3 @N
	05/14/97	—	—	—	—	—	—	—	—	—	3.4 @N
	05/21/97	—	—	—	—	—	—	—	—	—	3.3 @N
	06/04/97	—	—	—	—	—	—	—	—	—	3.3 @N
	06/11/97	—	—	—	—	—	—	—	—	—	3.3 @N
	06/18/97	—	—	—	—	—	—	—	—	—	3.3 @N
	06/25/97	—	—	—	—	—	—	—	—	—	3.3 @N
	07/02/97	—	—	—	—	—	—	—	—	—	3.3 @N
	09/17/97	1960	1260	—	—	—	—	430	220	—	13
No. 138	10/30/90	460	240	19	2	74	2	71	13	113	18
8S/2W-6F	10/06/93	420	240	11	<1	70	1	56	10	92	14

TABLE D-4 (cont'd)

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

WELLS SAMPLED BY RANCHO CALIFORNIA WATER DISTRICT

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO3	NO3
No. 139	12/29/87	460	295	24	7	65	1	60	11	104	7
7S/2W-32G	11/23/92	450	275	32	9	46	2	60	13	134	20
	12/19/95	500	298	36	12	50	2	72	12	156	2.8
	03/25/97	—	—	—	—	—	—	—	—	—	10
No. 140	02/18/88	560	325	33	10	65	2	77	14	153	13
7S/2W-33F	01/15/92	450	235	11	2	88	1	68	18	107	2
	02/28/95	560	325	36	11	58	2	94	14	140	12
	03/25/97	—	—	—	—	—	—	—	—	—	8
No. 141	01/06/88	780	440	64	11	82	3	65	91	217	13
8S/2W-11P	01/30/92	820	500	63	13	95	3	79	110	238	19
	03/30/95	840	490	58	11	100	3	70	97	241	14
	03/25/97	—	—	—	—	—	—	—	—	—	15
No. 143	01/15/88	670	345	8	2	134	1	91	57	95	11
8S/2W-17J	10/17/90	660	345	25	4	112	2	89	62	140	12
	03/03/94	690	370	24	3	114	2	93	68	131	11
	03/30/95	—	—	—	—	—	—	—	—	—	11
	03/25/97	600	330	15	2	110	1	87	44	89	9
	07/18/97	—	—	—	—	—	—	—	—	—	2.0 @N
	07/23/97	—	—	—	—	—	—	—	—	—	2.0 @N
	08/20/97	—	—	—	—	—	—	—	—	—	2.3 @N
	09/03/97	—	—	—	—	—	—	—	—	—	2.2 @N
	09/17/97	—	—	—	—	—	—	—	—	—	2.0 @N
No. 144	09/14/88	610	335	8	<1	114	1	95	33	92	<1
7S/3W-27D3	12/19/95	730	420	34	1	124	1	120	33	186	<1
No. 145	10/04/90	800	490	43	8	110	2	110	78	171	<1
7S/3W-28C	10/06/93	650	375	23	3	106	1	85	58	146	<1
	11/27/96	650	340	26	2	110	1	87	48	150	<2
	02/04/97	670	370	24	2	110	1	87	55	160	<2
No. 149	06/15/93	—	—	—	—	—	—	—	—	—	5
8S/1W-2C											
No. 149A	08/26/88	950	540	71	211	96	1	115	47	302	18

TABLE D-4 (cont'd)

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

WELLS SAMPLED BY RANCHO CALIFORNIA WATER DISTRICT

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO3	NO3
No. 150	09/29/88	1950	1235	134	29	225	2	290	220	390	15
7S/3W-27P	12/21/91	1000	590	74	17	108	4	130	110	207	—
No. 151	09/20/88	5780	3410	280	114	840	5	1660	670	369	<1
7S/3W-34B											
Abandoned											
No. 151	07/25/91	860	485	53	16	103	4	90	130	183	—
8S/2W-2G	07/28/91	730	400	39	12	100	3	91	58	177	—
	07/29/91	600	340	9	2	122	5	63	34	204	—
	10/17/91	510	295	3	<1	118	1	45	10	137	—
	08/10/94	550	340	3	<1	110	1	59	22	119	<1
	06/16/97	—	—	—	—	—	—	—	—	—	<2
	08/14/97	540	300	2	<1	110	<1	44	10	160	<2
No. 153	12/29/93	804	485	53	18	92	5	86	120	214	<1
8S/1W-5K3											
No. 154	01/28/94	930	530	46	20	106	6	89	130	214	3
8S/1W-5L2											
No. 155	09/16/93	680	355	22	2	108	1	90	64	104	<1
7S/3W-28C	02/23/95	760	445	30	3	126	1	120	82	140	4
	06/06/95	—	—	—	—	—	—	—	—	—	5
	08/14/97	—	—	—	—	—	—	—	—	—	4
No. 158	06/21/94	1090	620	67	23	124	7	120	170	259	—
No. 201	03/28/91	530	315	19	6	83	2	83	16	110	2
7S/2W-27J	03/11/93	460	300	8	2	87	1	51	20	146	<1
No. 202	12/11/88	740	440	47	18	84	3	97	48	223	17
7S/2W-36J1											
No. 203	05/18/88	960	580	50	39	110	4	96	115	275	—
8S/1W-6P1	06/29/88	970	530	44	36	112	4	120	123	250	5
	06/12/91	800	415	21	17	108	3	91	90	174	2
	06/22/94	980	645	59	38	99	4	130	130	256	4
	06/07/95	—	—	—	—	—	—	—	—	—	5
	06/23/97	880	530	31	26	120	3	100	110	230	4

TABLE D-4 (cont'd)

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

WELLS SAMPLED BY RANCHO CALIFORNIA WATER DISTRICT

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO3	NO3
No. 204	05/22/91	740	425	50	12	85	3	120	18	198	19
7S/2W-26G	05/13/94	690	375	37	7	85	3	130	19	125	19
No. 205	03/28/88	500	290	23	3	81	2	83	27	107	21
7S/3W-35A	03/13/91	490	275	22	3	75	2	62	23	113	21
	03/03/94	510	275	20	2	72	2	72	24	104	20
	04/26/95	---	---	---	---	---	---	---	---	---	22
	03/25/97	480	270	20	2	75	2	66	18	110	21
No. 207	09/01/88	510	245	1	<1	108	<1	54	26	82	<1
8S/2W-14B	09/14/88	480	305	3	<1	106	<1	58	23	24	1
	08/14/91	480	245	1	<1	100	<1	52	28	55	<1
	08/10/94	440	285	2	<1	91	1	56	29	76	2
	08/15/97	510	280	2	<1	97	<1	52	25	98	<2
No. 208	09/01/88	680	415	44	15	77	3	119	14	186	18
7S/2W-35M	09/14/88	690	440	44	14	77	3	129	14	183	16
	08/14/91	600	340	23	7	89	2	85	18	162	4
	08/10/94	560	370	22	6	89	2	93	20	156	5
	06/06/95	---	---	---	---	---	---	---	---	---	4
	08/12/96	---	---	---	---	---	---	---	---	---	2
No. 209	05/22/91	790	435	40	14	105	2	150	35	162	8
7S/2W-28J	05/13/94	760	525	64	22	48	3	150	15	153	25
	06/20/95	---	---	---	---	---	---	---	---	---	5
	05/15/97	690	390	10	3	130	<1	110	56	130	1.3
No. 210	04/15/59	1366	---	101	23	150	10	149	200	275	3
8S/2W-12K	01/18/63	1400	926	99	30	17.5	4.5	145	255	329	4
	11/30/67	1415	890	136	5	152	10	146	230	305	3
	07/26/68	1250	825	96	22	144	8	130	190	290	5
	09/06/68	1310	840	82	26	132	5	142	222	276	12
	07/19/73	1200	579	84	21.4	149	6.8	122	237	301	19.7
	08/08/75	1140	695	84	14	150	6	101	190	287	15
	06/22/76	1240	675	76	26	142	7	101	205	278	36
	10/13/76	1120	640	92	22	100	6	110	170	262	5
	06/16/77	1130	610	84	18	114	6	110	170	259	11
	05/20/80	580	340	30	8	75	4	51	67	152	9
	04/03/86	800	540	65	17	86	4.5	75	112	235	3.5
	07/15/86	830	560	72	19	86	4	87	118	250	4
	03/28/88	1030	575	76	22	93	5	99	143	247	4
	09/25/91	1040	600	74	20	120	5	120	160	238	5
	09/19/94	645	460	52	14	79	4	70	100	198	2
	09/16/96	---	---	---	---	---	---	---	---	---	3

TABLE D-4 (cont'd)

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

WELLS SAMPLED BY RANCHO CALIFORNIA WATER DISTRICT

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO3	NO3
No. 211	04/08/97	720	400	67	14	54	1	59	65	220	13
8S/2W-20R1											
No. 212	03/28/88	640	330	42	2	74	3	81	33	146	14
8S/2W-11N	09/25/91	600	320	41	2	82	4	86	35	146	14
No. 215	08/15/90	650	380	40	13	71	3	100	14	162	11
7S/2W-34M	09/26/90	---	---	---	---	---	---	---	---	---	13
	06/22/94	630	400	41	13	67	2	110	16	159	11
	06/16/97	630	370	29	9	81	2	110	16	160	6
	08/15/97	---	---	---	---	---	---	---	---	---	7
No. 216	06/01/88	480	280	25	4	65	2	71	11	134	---
8S/2W-7W	06/29/88	480	275	29	5	59	3	81	7	110	26
	06/12/91	500	285	30	5	59	2	76	9	113	23
	05/27/92	470	285	33	6	53	2	72	10	119	20
No. 217	03/28/88	580	285	8	1	108	1	81	20	113	15
8S/2W-17M1	08/10/88	570	280	8	1	105	1	82	20	55	13
	08/14/91	570	305	17	2	99	2	74	28	134	16
	08/10/94	610	365	20	3	97	2	82	38	134	16
	08/15/97	660	370	20	3	107	1	80	41	130	13
No. 231	08/15/90	1280	805	126	18	120	5	100	310	244	9
8S/2W-20B6	09/26/90	---	---	---	---	---	---	---	---	---	6
	03/04/92	1700	1270	180	51	160	6	140	510	332	5
	06/20/95	1640	1300	171	44	124	6	75	520	287	5.3
No. 232	08/15/90	960	590	71	19	110	5	98	130	235	30
8S/2W-11J3	09/26/90	---	---	---	---	---	---	---	---	---	35
	09/25/91	980	565	74	19	106	5	98	120	244	37
	09/19/94	805	495	54	14	92	4	80	110	207	15
	09/13/96	---	---	---	---	---	---	---	---	---	22
No. 233 (Old 112)	06/15/88	900	535	71	21	100	5	96	136	247	4
8S/2W-12K2	03/27/91	1020	580	66	19	114	5	95	140	247	12
	03/03/94	740	425	50	14	75	4	71	100	186	2
	04/27/95	---	---	---	---	---	---	---	---	---	6
	03/27/97	880	510	57	15	100	4	81	120	220	4

TABLE D-4 (cont'd)

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

WELLS SAMPLED BY RANCHO CALIFORNIA WATER DISTRICT

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO3	NO3
No. 234 (Old 114)	03/31/88	840	480	54	15	100	4	61	109	241	18
8S/2W-11P	03/27/91	1020	605	69	19	114	5	77	138	256	37
	06/20/95	—	—	—	—	—	—	—	—	—	11
	09/26/96	—	—	—	—	—	—	—	—	—	9
	02/04/97	—	—	—	—	—	—	—	—	—	12
	04/25/97	840	500	56	15	95	4	77	120	230	8
No. 235 (Old 137)	06/24/88	460	310	40	10	41	2	58	10	140	15
8S/3W-1Q1	06/20/90	420	230	22	4	56	2	50	6	128	18
	06/10/93	370	235	15	2	65	2	51	9	113	17
	07/16/96	410	230	16	2	60	1	48	8.9	110	20
	06/09/97	—	—	—	—	—	—	—	—	—	17
No. 301	07/29/92	500	290	20	6	80	1	45	56	143	<1
7S/3W-18Q1	02/27/97	580	350	45	16	48	2	49	54	200	4
	08/15/97	—	—	—	—	—	—	—	—	—	6
No. 302	04/11/88	690	360	36	6	100	1	77	65	192	<1
7S/3W-18H	05/15/91	760	425	58	9	87	2	83	72	220	<1
	05/14/92	—	270	12	2	90	<1	48	48	—	—
	05/05/94	870	530	69	16	84	2	110	88	238	<1
	05/16/95	—	—	—	—	—	—	—	—	—	<1
	07/16/96	530	320	—	—	—	—	60	54	—	2
	05/13/97	560	500	73	14	94	2	110	86	240	<2
No. 309	08/15/90	690	370	19	3	119	2	140	25	73	5
7S/3W-27H	04/11/91	—	—	—	—	—	—	—	—	—	<.001
	09/25/91	730	365	19	2	122	2	150	27	82	5
	08/11/94	730	430	20	2	120	2	160	30	73	5
	02/16/95	—	—	—	—	—	—	—	—	—	18
	07/16/97	—	—	—	—	—	—	—	—	—	1.1@N
	07/23/97	—	—	—	—	—	—	—	—	—	1.2@N
	08/20/97	—	—	—	—	—	—	—	—	—	1.1@N
	09/03/97	—	—	—	—	—	—	—	—	—	1.1@N
	09/18/97	—	—	—	—	—	—	—	—	—	1.1@N

TABLE D-5

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

WELLS ON INDIAN RESERVATIONS

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO3*	NO3
Pechanga Indian Reservation											
8S/2W-28R01	08/03/89	495	286	41	4.0	60	0.9	37	13	177	1.1 @N
	07/26/90	525	296	48	4.8	54	1.0	45	14	191	1.5 @N
	07/17/91	462	261	31	3.2	66	0.8	44	12	155	.8 @N
	07/27/93	445	269	44	4.4	43	0.5	28	14	170	1.9 @N
	08/15/94	421	232	32	3.3	55	0.9	28	11	156	1.5 @N
	08/30/95	375	200	21	2.2	55	0.6	31	11	129	.7 @N
	08/27/96	—	—	—	—	—	—	—	—	—	1.5 @N
	08/13/97	398	241	20	2.1	59	0.62	37	11	130	.572 @N
8S/2W-35D01	08/03/89	660	358	43	5.5	87	1.2	78	35	169	.35 @N
	07/26/90	669	384	41	4.9	92	1.5	82	36	176	.40 @N
	07/17/91	641	371	40	4.4	98	1.7	81	36	175	.39 @N
	07/27/93	638	374	49	5.9	79	1.8	71	27	199	.34 @N
	08/16/94	601	334	30	3.2	95	1.5	71	29	163	.16 @N
	08/30/95	587	322	33	4	81	1.5	68	25	178	.11 @N
	08/27/96	596	352	28	3.3	92	1.4	72	29	167	.10 @N
8S/2W-29A01	08/02/89	346	207	31	11	24	0.4	18	7.0	131	2.0 @N
	07/24/90	354	193	32	11	25	0.4	24	6.7	133	2.0 @N
	07/18/91	361	194	32	10	26	0.4	25	6.0	134	1.8 @N
	08/15/94	383	216	33	12	25	0.5	24	7.7	132	2.6 @N
	08/31/95	363	208	32	11	23	0.4	21	8.1	137	2.6 @N
	08/28/96	—	—	—	—	—	—	—	—	—	2.9 @N
	08/12/97	368	238	32	12	24	0.44	22	7.4	138	3.05 @N
8S/2W-34B04	10/05/89	617	371	51	8.2	67	1	58	30	192	.47 @N
	07/26/90	605	341	50	8	65	1	61	31	194	.50 @n
	07/18/91	564	339	46	7.4	67	1	53	27	185	.87 @N
	07/27/93	267	170	18	2.8	34	0.5	14	9.7	96	1.10 @N
8S/2W-28Q02	10/05/89	629	378	48	19	49	0.7	76	14	169	4.2 @N
	07/26/90	613	383	48	18	47	0.6	75	12	171	3.9 @N
	07/18/91	618	379	49	18	49	0.7	83	14	172	3.0 @N
	07/28/93	620	400	51	20	47	0.7	63	15	174	9.6 @N
	08/17/94	641	396	51	21	50	0.8	60	17	179	11.0 @N
	08/31/95	653	396	53	21	48	0.7	60	19	184	12.0 @N
	08/28/96	—	—	—	—	—	—	—	—	—	11.0 @N
	08/12/97	614	411	47	19	47	0.7	63	15	176	8.9 @N
8S/2W-28Q06	09/17/93	312	200	19	2.9	43	1	16	2.8	126	1.0 @N
	08/30/95	310	174	16	3.4	46	0.6	16	3.8	131	1.4 @N
	08/13/97	300	186	11	1.4	55	0.59	17	2.7	122	1.16 @N

* - Alkalinity as CAC03

TABLE D-5 (cont'd)

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

WELLS ON INDIAN RESERVATIONS

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO3*	NO3
Pechanga Indian Reservation	(Continued)										
8S/2W-20J01	08/15/90	1130	596	100	22	110	2.3	110	200	236	1.3 @N
	12/20/93	868	—	80	16	76	1.4	86	110	—	3.6 @N
8S/2W-20J02	08/15/90	404	216	42	6.3	38	0.8	27	12	159	1.2 @N
	12/20/93	408	—	42	6	35	0.8	29	12	—	1.2 @N
8S/2W-29B02	03/01/90	456	257	5.5	0.14	89	0.8	66	22	100	—
	03/06/90	456	256	5.9	0.13	90	0.7	66	20	99	<0.1 @N
8S/2W-29B03	03/06/90	478	275	14	1.9	84	0.8	65	16	123	<0.1 @N
8S/2W-29B05	03/02/90	397	229	29	9.5	43	1.2	35	4.9	141	1.8 @N
8S/2W-29B06	03/02/90	406	259	34	11	38	0.8	38	10	143	—
	03/06/90	427	240	32	11	40	1.0	40	8.1	148	1.2 @N
8S/2W-29B07	03/07/90	396	230	8.6	2.5	71	0.9	51	11	102	<0.1 @N
	08/16/90	371	199	8.4	1.8	69	0.8	50	14	106	<0.1 @N
8S/2W-29B08	03/07/90	464	272	31	9.4	52	1.2	58	12	134	0.45 @N
	08/16/90	458	261	34	9.1	48	1.1	59	17	135	0.4 @N
8S/2W-29B09	03/07/90	343	210	21	9.2	39	1.0	24	6.7	131	1.3 @N
	08/17/90	317	197	26	10	26	1.1	22	3.4	130	1.6 @N
Cahuilla Indian Reservation											
8S/3E-2K01	07/20/89	531	323	46	11	41	3.4	60	22	136	3.6 @N
	08/01/90	508	310	46	11	38	3.3	60	19	134	3.8 @N
	07/16/91	522	306	50	10	39	3.3	61	21	139	3.7 @N
7S/3E-21L01	08/02/89	1050	675	90	19	100	3.5	84	190	216	3.1 @N
	08/01/90	1020	610	87	18	100	3.4	85	180	217	3.0 @N
	07/17/91	995	636	93	18	100	3.7	95	180	206	2.5 @N
7S/2E-33N	08/02/89	355	206	16	2.1	53	3.5	48	15	78	.73 @N
7S/3E-34E01	07/20/89	338	204	30	5.6	26	5.0	29	7.0	98	3.3 @N
	07/31/91	337	109	31	5.5	25	4.5	31	6.3	99	3.5 @N
	07/16/91	335	209	31	5.9	26	4.7	32	6.3	99	3.5 @N

* - Alkalinity as CAC03

TABLE D-6

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

WELLS ON CAMP PENDLETON

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO3	NO3
10S/5W-26C1	10/60	1060	639	66.5	24.0	116.0	4.5	160	110.0	264.0	trace
(Bldg 2201)	06/62	1190	718	60.0	33.2	123.0	3.8	190	124.0	232.0	1.4
	07/64	1217	734	79.2	27.8	144.0	1.6	180	150.0	248.9	—
	05/65	1485	896	75.2	30.3	158.0	2.4	180	120.0	253.8	0
	01/66	—	808	76.8	33.2	157.0	3.4	170	180.0	292.8	0.62
	06/66	—	684	75.2	26.8	112.0	2.4	128	148.0	263.5	3.9
	01/67	—	856	81.6	26.3	138.0	3.5	162	140.0	310.0	3
	08/67	—	880	99.2	38.1	156.0	3.6	160	230.0	322.1	5.3
	02/68	—	768	65.6	25.4	156.0	3.4	160	164.0	236.7	0
	04/69	—	852	66.0	32.0	162.0	3.2	166	210.0	249.0	0
	11/69	—	844	87.0	31.0	140.0	3.6	164	180.0	262.0	0
	07/70	—	672	99.0	32.0	139.0	3	158	205.0	259.0	2.7
	12/70	1180	712	83.0	28.0	138.0	3	166	170.0	266.0	0
	09/71	1062	640	83.0	27.0	128.0	2.8	136	175.0	278.0	0.4
	05/72	1130	681	56.0	24.0	140.0	2.8	136	165.0	220.0	0
	10/72	1165	703	64.0	27.0	159.0	3.6	132	180.0	293.0	1.8
	10/73	1140	688	72.0	27.0	131.0	3.8	144	190.0	200.0	0.3@N
	02/76	1140	688	70.4	28.3	143.0	3.1	132	182.0	273.3	1.8@N
	09/76	1100	663	67.0	25.0	152.0	2.5	152	131.0	327.0	2.8@N
	03/77	1080	651	67.0	28.0	173.0	3.1	128	160.0	254.0	4.4@N
	10/78	1150	694	70.0	25.0	120.0	3.5	139	145.0	253.8	<1@N
	06/79	1100	663	72.0	27.3	125.0	3	134	142.0	258.6	<1@N
	10/80	1200	693	78.8	23.7	136.0	3.3	172	136.0	273.3	0.2@N
	04/81	1160	737	82.4	22.4	126.0	3.6	140	134.0	268.4	<0.5@N
	11/81	1300	863	97.6	31.5	169.0	2.2	204	209.0	248.9	0.8@N
	11/81	950	573	74.0	18.3	120.0	2.1	144	130.0	224.5	0.3@N
	05/82	1100	663	80.8	26.6	140.0	1.5	181	138.0	268.4	<0.5@N
	03/83	1000	603	84.0	20.5	144.0	3.2	152	143.0	273.3	<0.5@N
	05/84	1150	694	80.0	27.6	126.0	3.1	133	150.0	283.0	0.2@N
	06/85	1100	680	89.0	26.0	140.0	3	150	64.0	440.0	<0.4
	09/85	1242	724	78.0	28.0	122.0	6	154	149.1	244.4	<0.4
	05/86	1387	750	85.2	29.1	130.7	4.3	166	130.8	242.6	<1
	06/89	1302	734	78.1	23.0	85.9	—	136	145.0	212.0	<0.4
	01/91	1271	—	81.0	36.1	152.0	—	166	—	—	<0.04
	06/91	1290	752	99.0	32.4	133.0	—	167	136.0	237.0	<0.4
	03/92	1210	792	91.0	29.8	146.0	—	159	135.0	279.0	<0.4
	06/93	1290	764	68.3	27.5	149.0	—	168	130.0	265.0	<0.4
	03/94	1210	783	100.0	37.1	100.0	—	145	167.0	—	2.2
	08/94	1160	741	87.5	35.5	96.1	—	141	187.0	—	4.23
	06/95	1330	806	97.7	37.4	142.0	—	207	166.0	—	<0.04
	01/96	1300	764	91.0	33.0	140.0	—	177	142.0	363.0	<0.0
	06/96	1300	751	93.0	30.0	130.0	—	164	156.0	252.0	<0.0
	06/97	1215	758	88.0	29.0	130.0	<2	151	148.0	292.0	<2@N

TABLE D-6 (cont'd)

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

WELLS ON CAMP PENDLETON

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO3	NO3
10S/5W-23J1	05/56	1090	685	61.5	24.3	142.0	—	142	110.0	293.0	0.06
(Bldg 2301)	12/56	1060	666	67.0	27.0	96.0	—	124	85.0	274.0	—
	12/57	—	780	66.3	23.9	159.0	—	138	155.0	308.0	10.6
	05/59	1100	691	75.2	25.3	112.0	—	136	152.0	297.7	—
	01/60	1120	704	72.7	27.3	116.5	—	112	144.0	291.0	—
	10/60	1045	657	63.2	21.4	99.0	3.6	140	112.0	242.0	0
	05/61	1280	770	76.0	36.5	136.0	3	124	195.0	299.6	0
	05/62	1133	712	68.8	30.3	136.0	2	128	175.0	275.7	—
	01/63	1111	698	72.0	35.1	127.0	2.8	128	199.0	268.4	—
	06/63	1108	696	78.4	25.4	118.0	2.9	148	130.0	258.6	0@N
	07/64	1165	732	74.4	27.8	128.0	1.2	139	160.0	268.4	—
	05/65	1130	710	80.0	26.4	145.0	2.1	148	120.0	268.4	0.14
	01/66	—	736	88.0	18.1	142.0	2.8	124	155.0	263.5	1.8
	06/66	—	736	75.2	29.3	138.0	2.7	145	175.0	295.2	4.8
	01/67	—	744	76.8	25.9	118.0	3	136	125.0	287.9	2.2
	08/67	—	680	70.4	28.3	128.0	2.3	140	100.0	292.8	8.4
	02/68	—	660	48.0	19.5	130.0	2.8	124	119.0	234.0	6.1
	04/69	—	708	70.0	28.0	126.0	2.5	128	170.0	278.0	0
	11/69	—	684	73.0	28.0	126.0	2.8	138	165.0	273.0	0
	05/70	—	716	74.0	25.0	122.0	0.1	134	170.0	210.0	4.4
	12/70	1090	385	78.0	25.0	126.0	2.6	142	170.0	250.0	3.1
	09/71	1025	644	75.0	38.0	120.0	2.7	124	190.0	229.0	0.9
	05/72	1050	660	75.0	21.0	124.0	2.3	124	155.0	244.0	2.2
	10/73	1140	716	74.0	22.0	128.0	2.8	136	160.0	220.0	0.5@N
	06/74	1060	680	74.0	13.0	131.0	2.9	158	138.0	220.0	0.01@N
	02/76	1050	660	73.6	25.4	136.0	2.9	119	170.0	248.9	2.0@N
	09/76	1100	691	58.0	32.0	146.0	2.6	140	148.0	321.8	2.6@N
	03/77	1080	679	69.0	29.0	110.0	3	128	155.0	259.0	4.3@N
	01/78	1100	691	70.0	23.0	147.0	3	140	135.0	259.0	4.4@N
	10/78	1150	723	74.0	22.0	120.0	2.9	134	149.0	248.9	<1@N
	04/79	1000	628	70.4	22.4	118.0	2.6	122	138.0	239.1	<1@N
	10/80	1150	745	74.0	22.5	128.0	3	152	138.0	239.1	0.2@N
	05/81	1020	580	67.2	17.3	116.0	3.1	132	111.0	205.0	<0.5@N
	03/83	900	599	65.6	19.5	129.0	2.8	136	129.0	234.2	<0.5@N
	12/83	1000	628	72.4	22.4	127.0	2.6	140	150.0	249.0	<0.1@N
	05/84	1100	691	78.8	25.9	120.0	2.8	130	150.0	254.0	0.2@N
	06/85	1100	691	59.0	26.0	130.0	3	140	70.0	440.0	3.5
	09/85	1203	705	66.0	26.0	110.0	6	150	144.0	226.6	<0.4
	06/89	1139	662	71.5	21.7	80.8	—	117	128.0	209.0	<0.4

TABLE D-6 (cont'd)

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

WELLS ON CAMP PENDLETON

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO3	NO3
10S/5W-23J1	01/90	1150	632	90.6	32.4	102.0	—	160	170.0	214.0	<0.5
(Bldg 2301)	01/91	1112	—	73.7	32.0	128.0	—	136	136.0	—	<0.04
(Continued)	06/91	1090	662	87.4	29.7	117.0	—	140	121.0	204.0	<0.4
	03/92	1080	644	74.2	25.8	133.0	—	127	118.0	282.0	1.3
	03/93	1210	674	72.8	24.5	117.0	—	127	124.0	261.0	<0.4
	06/93	1090	670	63.9	25.7	119.0	—	117	128.0	237.0	<0.4
	03/94	1120	683	73.9	27.0	121.0	—	141	130.0	—	<0.4
	08/94	1160	707	78.9	28.2	129.0	—	139	153.0	—	<0.44
	06/95	1160	742	88.2	28.8	131.0	—	165	147.0	—	<0.04
	01/96	1300	690	79.0	29.0	140.0	—	147	131.0	292.0	<0.0
	06/96	1020	674	82.0	29.0	120.0	—	134	129.0	204.0	<0.0
	02/97	1100	650	74.0	27.0	150.0	—	126	172.0	245.0	<2@N
	03/97	1073	630	77.0	28.0	130.0	—	142	134.0	254.0	<2@N
10S/4W-18M4	06/89	1156	688	74.6	24.4	67.9	—	130	138.0	197.0	8.9
(Bldg 2373)	01/90	1120	630	86.4	32.3	101.0	—	156	166.0	210.0	<0.05
	04/90	1160	720	98.8	34.8	107.0	—	152	146.0	218.0	1.4
	01/91	1202	—	84.1	40.5	117.0	—	162	153.0	—	<0.04
	06/91	1180	736	102.0	37.1	106.0	—	163	138.0	197.0	<0.4
	03/94	1020	658	69.6	27.8	104.0	—	135	140.0	—	0.89
	08/94	1110	684	81.4	32.2	178.0	—	144	157.0	—	<0.44
	06/95	1170	679	95.3	35.2	113.0	—	145	116.0	—	13.8
	06/96	1100	682	86.0	32.0	95.0	—	155	261.0	210.0	<0.0
	02/97	1180	640	79.0	32.0	110.0	—	142	162.0	190.0	<2@N
	06/97	1117	709	85.0	33.0	110.0	<5	150	164.0	223.0	<2@N
10S/4W-18E3	06/89	1166	758	80.5	28.1	67.4	—	132	157	198.0	9.5
(Bldg 2393)	01/90	1230	748	97.4	39.7	106.0	—	178	179	226.0	<0.05
	04/90	1190	733	99.6	37.5	112.0	—	159	156	207.0	2.5
	06/91	1130	680	97.6	37.6	100.0	—	139	142	166.0	2.7
	02/94	1180	731	83.3	35.5	104.0	—	142	159	—	11.1
	08/94	1150	725	84.3	35.2	102.0	—	147	164	—	1
	06/95	932	636	75.4	29.1	86.6	—	102	140	—	14
	06/96	1117	710	92.0	36.0	93.0	—	180	297	206.0	<0.0
	02/97	1100	686	89.0	38.0	110.0	—	157	166	220.0	<2@N
	03/97	1116	673	87.0	36.0	110.0	—	147	113	213.0	<2@N
	06/97	1131	779	90.0	37.0	99.0	<5	151	177	199.0	<2@N

TABLE D-6 (cont'd)

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

WELLS ON CAMP PENDLETON

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO3	NO3
10S/4W-7R2	06/89	1281	765	76.5	25.1	82.4	—	149	153	209.0	10.3
(Bldg 2603)	04/90	1270	788	104.0	36.5	126.0	—	173	161	215.0	2.6
	06/91	1400	836	111.0	41.1	130.0	—	195	155	215.0	0.04
	02/94	1260	738	83.3	32.0	131.0	—	169	155	—	<0.04
	08/94	1260	738	84.3	33.7	129.0	—	166	149	—	<0.44
	06/95	1290	897	93.6	35.2	129.0	—	202	164	—	0.69
	02/97	1200	720	84.0	36.0	130.0	—	150	152	240.0	<1@N
	03/97	1143	708	83.0	35.0	130.0	—	152	137	240.0	<2@N
	06/97	1227	831	94.0	34.0	120.0	<5	185	147	247.0	<2@N
10S/4W-7H2	08/56	1060	882	78.0	30.0	112	—	150	82	326.0	—
(Bldg 2671)	01/60	820	500	55.2	14.7	85.0	—	76	98	224.0	—
	10/60	1300	793	74.5	20.5	126.0	4.3	182	116	320.0	—
	05/61	1390	840	100.0	29.2	170.0	3.3	170	135	362.0	—
	05/62	1220	744	70.4	39.0	142.0	2.4	184	86	312.3	—
	01/63	1300	740	65.6	26.4	162.0	2.4	166	153	259.0	0.7
	07/63	1100	671	64.0	25.4	118.0	2.7	148	97	280.6	0.0@N
	01/64	1020	622	70.4	33.2	117.0	2.7	172	98	302.6	3.3
	07/64	1400	854	83.2	27.3	134.0	1.4	164	98	322.1	—
	04/65	1490	909	97.6	23.4	152.0	4.7	196	110	346.5	0.9
	01/66	—	832	102.0	28.0	166.0	3.1	194	88	414.8	6.6
	06/66	—	768	86.4	26.3	150.0	3.1	184	110	331.8	6.9
	01/67	—	768	72.0	29.3	128.0	3.1	174	72	324.5	6.9
	08/67	—	608	57.6	24.4	116.0	2.4	132	70	251.3	10.2
	02/68	—	572	67.2	17.6	105.0	2.4	118	94	251.0	0
	09/68	—	636	74.0	19.0	112.0	3	144	96	268.0	0.4
	04/69	—	820	72.0	33.0	138.0	2.8	180	140	285.0	0.9
	11/69	—	604	66.0	24.0	116.0	2.8	140	110	259.0	1.8
	05/70	—	640	65.0	26.0	115.0	2.4	142	120	183.0	3.1
	09/71	1075	656	77.0	24.0	120.0	2.8	144	125	273.0	1.3
	05/72	1000	610	46.0	24.0	117.0	2.4	140	130	141.0	0
	10/72	1110	677	88.0	26.0	105.0	3.6	144	126	283.0	3.5
	10/73	1120	683	75.0	23.0	118.0	2.7*	132	130	200.0	0.6@N
	06/74	1210	712	72.0	19.0	150.0	3.1	208	112	195.0	0.01@N
	01/75	850	519	61.0	21.0	93.0	2.4	102	95	212.0	2.3@N
	2/766	1200	732	91.2	20.5	126.0	3.2	176	130	244.0	2.6@N
	09/76	1200	732	48.0	29.0	180.0	2.4	192	123	336.7	4.2@N
	03/77	1400	854	94.0	33.0	158.0	2.8	216	140	342.0	2.8@N
	01/78	1000	610	66.0	23.0	100.0	2.7	128	123	205.0	4.4@N
	10/78	1300	793	82.0	31.0	134.0	2.7	160	157	258.6	<1@N
	04/79	1200	732	84.8	28.3	144.0	3.1	164	116	312.3	<1@N

* Reported as 27

TABLE D-6 (cont'd)

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

WELLS ON CAMP PENDLETON

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO3	NO3
10S/4W-7H2	01/80	1450	885	93.0	30.0	163.0	3	196	200	273.0	<1@N
(Bldg 2671)	10/80	1050	591	70.4	21.7	104.0	3.7	140	125	219.6	2.0@N
(Continued)	05/81	1000	645	72.4	21.7	105.0	3.5	128	123	209.8	<0.5@N
	05/82	1330	811	100.8	35.9	176.0	1.6	269	198	263.5	<0.5@N
	03/83	890	669	77.2	23.7	95.0	3.4	132	136	209.8	0.65@N
	12/83	1000	610	70.4	23.7	123.0	2.6	136	150	224.0	0.5@N
	05/84	1100	671	77.2	24.6	116.0	2.7	133	155	244.0	0.2@N
	09/84	1300	650	6.6	29.0	120.0	2.6	200	170	250.0	12
	11/84	1100	671	81.6	23.4	124.0	2.7	149	175	249.0	1.2@N
	05/86	1592	994	104.7	39.7	167.3	4.4	232	167	301.8	<1@N
	06/89	1137	826	79.1	28.5	85.5	—	157	158	246.0	12.6
	01/90	1290	772	96.3	38.6	116.0	—	184	179	252.0	0.9/1.2
	04/90	1320	817	109.0	42.1	128.0	—	177	167	249.0	5.4
	01/91	401	—	87.3	44.4	103.1	—	20.5	179	—	1.07
	03/93	1500	824	92.6	33.1	136.0	—	194	154	277.0	1.8
	03/94	1370	827	103.0	36.4	135.0	—	163	145	—	0.9
	08/94	1270	762	91.1	35.5	129.0	—	162	172	—	5.64
	06/95	1260	771	100.0	35.8	127.0	—	197	178	—	2.8
	06/96	1300	751	96.0	36.0	120.0	—	162	174	247.0	1.1
	02/97	1300	830	100.0	41.0	150.0	—	186	161	186.0	<2@N
	06/97	1323	831	94.0	36.0	140.0	<5	158	149	271.0	2@N
10S/4W-7A2	05/56	920	651	59.0	22.0	100	—	104	94	213.0	—
(Bldg 2673)	05/59	—	745	52.8	16.5	60.3	—	84	41	207.4	—
	01/60	—	840	51.2	17.6	95.0	—	98	92	210.0	—
	10/60	870	566	62.0	23.0	80.0	4.2	110	104	234.0	0
	05/61	1180	710	72.0	34.0	114.0	3.3	104	150	227.0	—
	05/62	797	518	63.2	23.4	75.0	2	100	96	214.7	—
	01/63	1195	730	64.0	24.9	157.0	3.1	162	183	220.0	0
	07/63	574	610	57.6	19.5	85.0	2.7	102	100	244.0	0.3@N
	01/64	760	494	59.2	19.3	82.0	3.3	100	85	253.7	0.5@N
	07/64	980	637	64.0	21.5	94.0	1.4	100	95	241.6	—
	04/65	1230	800	73.3	22.5	106.0	4.5	120	110	248.9	1.3
	01/66	—	448	—	—	86.0	2.5	82	75	190.3	9.7
	06/66	—	540	60.8	21.0	81.0	2.5	102	95	222.0	9.1
	01/67	—	544	60.8	19.5	88.0	2.9	106	69	229.4	6.9
	08/67	—	504	54.4	20.0	79.0	2.1	96	58	214.7	8
	02/68	—	456	60.8	17.6	86.0	2.7	94	78	222.0	0
	09/68	—	600	67.0	18.0	90.0	3	110	96	232.0	0
	04/69	—	428	46.0	18.0	73.0	2.0*	76	90	183.0	3.1
	11/69	—	476	59.0	18.0	88.0	2.7	98	110	198.0	0.9

* Reported as 20

TABLE D-6 (cont'd)

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

WELLS ON CAMP PENDLETON

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO3	NO3
10S/4W-7A2	05/70	—	416	54.0	18.0	79.0	2.6	92	90	151.0	2.9
(Bldg 2673)	12/70	780	507	64.0	16.0	89.0	2.7	100	90	222.0	10.1
(Continued)	05/72	990	644	77.0	24.0	86.0	2.8	116	135	207.0	0
	10/72	965	627	77.0	27.0	94.0	2.9	104	145	239.0	5.3
	10/73	960	624	72.0	19.0	105.0	2.8	112	140	195.0	0.9@N
	06/74	950	548	68.0	19.0	101.0	3.1	138	102	207.0	0.35@N
	01/75	840	546	58.0	22.0	87.0	2.7	98	95	217.0	2.2@N
	02/76	820	533	68.8	20.5	76.0	3	106	88	214.7	2.2@N
	09/76	900	585	48.0	45.0	98.0	2.3	116	112	258.6	3.0@N
	03/77	900	585	70.0	23.0	76.0	2.8	123	113	195.0	2.6@N
	01/78	950	618	64.0	24.0	100.0	2.7	124	108	200.0	4.3@N
	10/78	1050	683	74.0	20.0	80.0	3	113	128	205.0	<1@N
	04/79	950	618	65.6	19.5	98.0	3.1	109	118	190.3	<1@N
	01/80	1000	650	67.0	23.0	99.0	3.1	128	111	187.0	<1@N
	10/80	900	546	67.2	20.5	86.0	3.4	108	86	205.0	2.3@N
	05/81	810	585	57.2	14.4	83.0	3.4	92	84	180.6	0.7@N
	11/81	800	451	57.2	16.3	85.0	2	92	110	185.4	0.5@N
	05/82	930	605	68.8	21.5	97.0	1.6	115	96	205.0	<0.5@N
	03/83	900	663	78.8	23.7	95.0	3.4	132	135	209.8	0.7@N
	09/84	1000	530	51.0	23.0	80.0	2.9	110	110	200.0	4.2
	11/84	850	553	67.2	28.3	73.0	2.9	111	137	190.0	1.7@N
	09/85	1007	593	66.0	26.0	64.0	5.8	124	139	180.6	6
	05/86	1051	623	72.6	26.5	79.5	3.5	131	124	153.6	8.8
	06/89	1073	688	72.1	23.9	59.6	—	120	140	184	15.9
	01/90	1080	572	91.2	34.2	80.2	—	151	178	174	1.4
	04/90	1130	718	111.0	42.1	91.0	—	148	167	175	9.1
	06/91	1190	718	113.0	40.3	93.8	—	173	180	160	7.5
	03/93	1370	708	86.9	32.8	93.3	—	147	93.3	200	4.9
	03/94	1210	783	100.0	37.1	100.0	—	145	167	—	2.2
	08/94	1160	741	87.5	35.5	96.1	—	141	184	—	4.23
	06/95	1200	788	99.4	37.5	101.0	—	173	200	—	2.9
	06/96	1129	739	91.0	37.0	90.0	—	188	312	206	<0.0
	02/97	1100	690	82.0	35.0	140.0	—	127	131	180	<2@N
	03/97	1109	695	91.0	39.0	93.0	—	137	191	166	2.2@N
	06/97	1096	749	89.0	36.0	90.0	<5	138	178	187	2@N

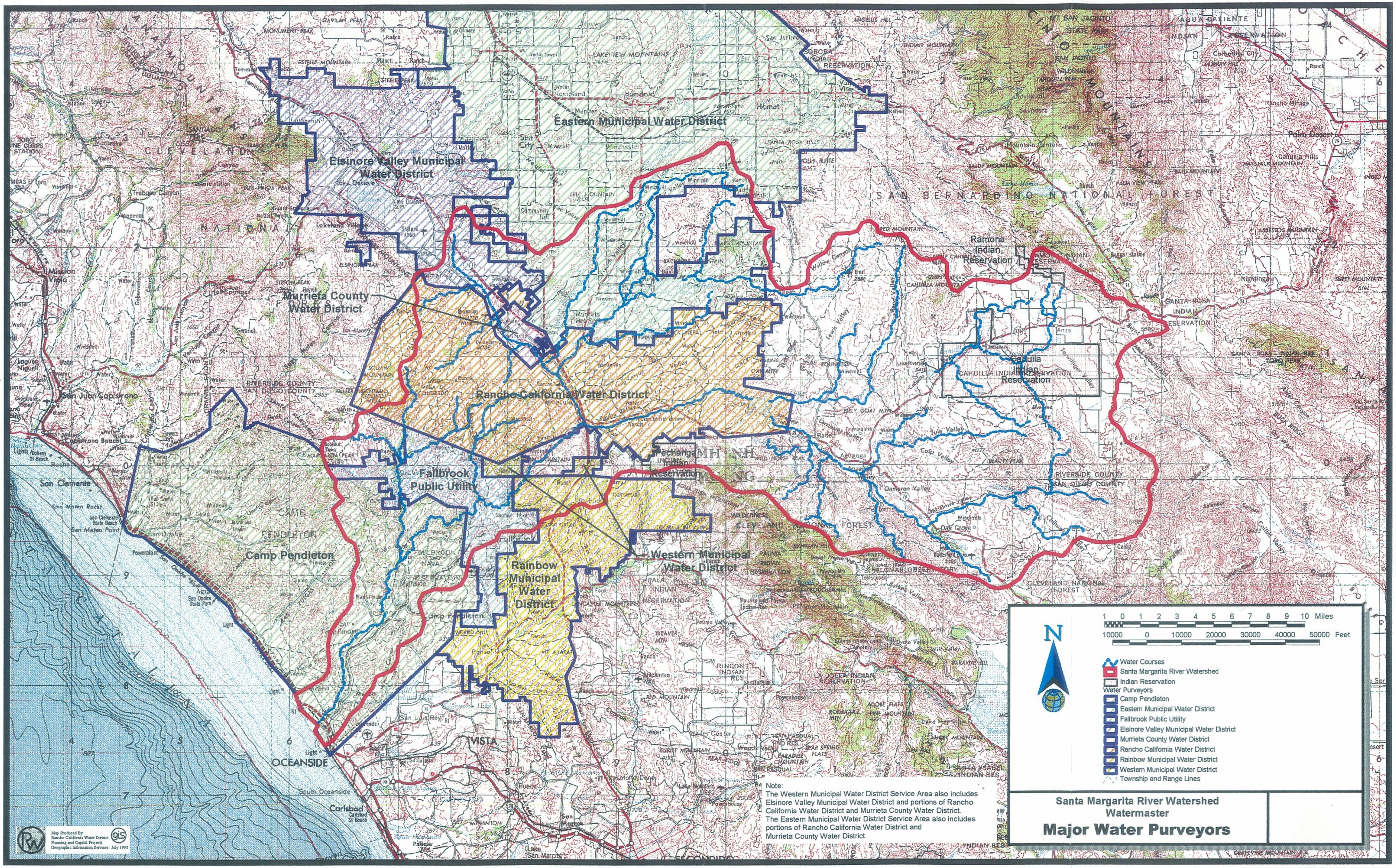
TABLE D-6 (cont'd)

SANTA MARGARITA RIVER WATERSHED
WATER QUALITY DATA

WELLS ON CAMP PENDLETON

Site Location	Date Tested	Specific Conductance umhos	Total Dissolved Solids (mg/l)	Chemical Constituents - mg/l							
				Ca	Mg	Na	K	Cl	SO4	HCO3	NO3
10S/5W-23K2	06/89	1207	698	75.6	22.8	84.0	—	138	137	231	<0.4
(Bldg 33924)	04/90	1240	728	100.0	32.9	129.0	—	158	148	245	1.3
	01/91	1193	—	80.6	35.2	131.0	—	21.3	146	—	<0.04
	06/91	1160	676	88.1	29.6	118.0	—	141	129	224	<0.04
	03/92	1130	705	76.7	26.0	126.0	—	149	125	279	<0.4
	06/92	1130	717	66.8	26.7	124.0	—	146	140	232	<0.4
	03/93	1285	331	72.1	23.8	115.0	—	131	122	273	<0.4
	02/97	1200	780	89.0	32.0	130.0	—	166	165	250	<2@N
	03/97	1230	700	94.0	34.0	140.0	—	187	162	264	<2@N
	06/97	1231	778	91.0	31.0	130.0	<2	171	165	264	<2@N
10S/5W-13R2	01/90	1030	540	*96	26.6	94.8	—	141	130	200	0.7
(Bldg 2363)	06/91	1150	702	98.7	32.0	109.0	—	149	125	288	1.3
	06/93	1130	705	72.0	28.4	107.0	—	140	139	262	0.9
	03/94	1020	658	69.6	27.8	104.0	—	135	140	—	0.89
	06/95	1140	636	92.5	30.7	115.0	—	149	151	—	14.2
	06/96	1103	680	91.0	31.0	100.0	—	148	251	233	<0.0
	06/97	1082	708	85.0	29.0	110.0	<5	135	145	244	<2@N
10S/5W-23G3	06/91	1160	684	83.4	28.3	125.0	—	145	124	223	<0.04
(Bldg 33926)	03/92	1060	674	75.9	24.1	127.0	—	139	111	269	<0.4
	03/93	1182	584	67.8	21.1	110.0	—	135	101	274	<0.4
	06/93	1020	623	60.5	22.4	116.0	—	125	107	225	<0.4
	03/94	1120	665	80.0	25.0	122.0	—	129	117	—	1.8
	08/94	1150	699	78.7	26.4	125.0	—	141	118	—	<0.44
	06/95	1060	673	75.9	23.1	118.0	—	158	114	—	<0.04
	01/96	1200	619	71.0	24.0	120.0	—	139	107	262	<0.0
	07/96	—	—	—	—	—	—	—	—	—	<0.0

* - Reported as .96


Eastern Municipal Water District
Elsinore Valley Municipal Water District
Murrieta County Water District
Rancho California Water District
Fallbrook Public Utility
Camp Pendleton
Rainbow Municipal Water District
Western Municipal Water District
Pechanga Indian Reservation
Ramona Indian Reservation
Cahuilla Indian Reservation
OCEANSIDE
San Clemente
San Juan Capistrano
VISTA
1 0 1 2 3 4 5 6 7 8 9 10 Miles
10000 0 10000 20000 30000 40000 50000 Feet
N
Water Courses
Santa Margarita River Watershed
Indian Reservation
Water Purveyors
Camp Pendleton
Eastern Municipal Water District
Fallbrook Public Utility
Elsinore Valley Municipal Water District
Murrieta County Water District
Rancho California Water District
Rainbow Municipal Water District
Western Municipal Water District
Township and Range Lines
Santa Margarita River Watershed
Watermaster
Major Water Purveyors
Note:
The Western Municipal Water District Service Area also includes Elsinore Valley Municipal Water District and portions of Rancho California Water District and Murrieta County Water District.
The Eastern Municipal Water District Service Area also includes portions of Rancho California Water District and Murrieta County Water District.
Map Produced By
Rancho California Water District
Planning and Capital Projects
Geographic Information Services July 1998