

SANTA MARGARITA RIVER WATERSHED

ANNUAL WATERMASTER REPORT

WATER YEAR 2013-14

UNITED STATES OF AMERICA

V.

FALLBROOK PUBLIC UTILITY DISTRICT, ET AL.

CIVIL NO. 51-CV-1247-GPC-RBB

**CHARLES W. BINDER
WATERMASTER
P. O. BOX 631
FALLBROOK, CA 92088
(760) 728-1028
FAX (760) 728-1990**

August 2015

TABLE OF CONTENTS

	<u>Page No.</u>
SECTION 1 – SUMMARY	1
SECTION 2 – INTRODUCTION	5
2.1 Background	5
2.2 Authority	5
2.3 Scope	5
SECTION 3 – SURFACE WATER AVAILABILITY AND USE	7
3.1 Surface Flow.....	7
3.2 Surface Water Diversions	13
3.3 Water Storage	13
SECTION 4 – SUBSURFACE WATER AVAILABILITY	19
4.1 General.....	19
4.2 Extractions.....	19
4.3 Water Levels.....	21
4.4. Groundwater Storage	26
4.4.1 Santa Margarita Groundwater Basin	26
4.4.2 Murrieta-Temecula Groundwater Basin	28
4.4.3 Anza Groundwater Basin	31
SECTION 5 – IMPORTS/EXPORTS	33
5.1 General.....	33
5.2 Water Year 2013-14	37
5.3 Water Years 1966 through 2014.....	37
5.4 Lake Skinner.....	42
5.5 Diamond Valley Lake.....	43
SECTION 6 – WATER RIGHTS	45
6.1 General.....	45
6.2 Appropriative Surface Water Rights	47
6.3 Fallbrook PUD Changes of Point of Diversion and Place of Use for Permit No. 11356	51
6.4 Federal Reserved Water Rights for Cahuilla and Ramona Indian Reservations.....	52
6.5 Federal Reserved Water Rights for Pechanga Indian Reservation	53

SECTION 7 – WATER PRODUCTION AND USE	55
7.1 General.....	55
7.2 Water Purveyors.....	56
7.2.1 Anza Mutual Water Company	56
7.2.2 Eastern Municipal Water District	59
7.2.3 Elsinore Valley Municipal Water District.....	62
7.2.4 Fallbrook Public Utility District.....	62
7.2.5 Lake Riverside Estates	63
7.2.6 Metropolitan Water District of Southern California	63
7.2.7 Rainbow Municipal Water District	63
7.2.8 Rancho California Water District	63
Vail Appropriation	64
Imported Water Return Flows.....	66
Division of Local Water	69
7.2.9 Western Municipal Water District	72
Murrieta Division.....	72
Improvement District A	73
7.2.10 U. S. Marine Corps - Camp Pendleton.....	73
7.2.11 U. S. Naval Weapons Station, Fallbrook Annex.....	74
7.3 Indian Reservations.....	74
7.3.1 Cahuilla Indian Reservation	75
7.3.2 Pechanga Indian Reservation	75
7.3.3 Ramona Indian Reservation.....	76
7.4 Small Water Systems	76
7.5 Irrigation Water Use.....	76
SECTION 8 – UNAUTHORIZED WATER USE	77
8.1 General.....	77
8.2 Unauthorized Small Storage Ponds.....	77
8.3 Rancho California Water District Water Use.....	77
8.4 Exportation of Treated Wastewater Derived from Native Waters	78

SECTION 9 – THREATS TO WATER SUPPLY 79

9.1 General..... 79

9.2 High Nitrate Concentrations..... 79

9.3 Potential Overdraft Conditions 80

9.4 Salt Balance 81

9.5 High Arsenic Concentrations 83

9.6 High Fluoride Concentrations 83

9.7 High Manganese Concentrations 83

9.8 Quagga Mussel 84

SECTION 10 – WATER QUALITY..... 87

10.1 Surface Water Quality..... 87

10.2 Groundwater Quality..... 87

SECTION 11 – COOPERATIVE WATER RESOURCE MANAGEMENT
AGREEMENT 93

11.1 General..... 93

11.2 Required Flows..... 96

11.3 Water Quality..... 97

11.4 Monitoring Programs 97

SECTION 12 – FIVE YEAR PROJECTION OF WATERMASTER OFFICE TASKS,
EXPENDITURES AND REQUIREMENTS 101

12.1 General..... 101

12.2 Normal Tasks 101

12.3 Additional Tasks 101

12.4 Projected Expenditures..... 102

SECTION 13 – WATERMASTER OFFICE BUDGET 103

13.1 Comparison of Budget and Actual Costs for 2013-14..... 103

13.2 Proposed Budget for 2015-16..... 103

LIST OF TABLES

	<u>Page No.</u>
Table 3.1 Stream Gaging Stations.....	8
Table 3.2 Measured Surface Water Flow 2013-14	9
Table 3.3 Surface Diversions to Storage for Vail Lake	14
Table 3.4 Surface Water Diversions to Storage for Lake O’Neill	15
Table 3.5 Surface Water Diversions to Use.....	16
Table 3.6 Water in Storage	17
Table 4.1 Water Production by Substantial Users	20
Table 4.2 Groundwater Storage at Camp Pendleton	27
Table 4.3 Changes in Groundwater Storage Murrieta-Temecula Groundwater Area (Water Budget Method)	29
Table 4.4 Changes in Groundwater Storage Murrieta-Temecula Groundwater Area (Groundwater Level Method)	30
Table 5.1 Storage in State Water Project and Colorado River Reservoirs.....	34
Table 5.2 Imports/Exports 2013-14.....	38
Table 5.3 Total Dissolved Solids Concentration of Imported Water.....	39
Table 5.4 Imports/Exports 1966 through 2014.....	40
Table 6.1 Appropriative Water Rights, Permits & Licenses.....	48
Table 6.2 Pre-1914 Appropriative Water Rights	50
Table 7.1 Water Production and Use	57
Table 7.2 Definitions of Water Use by Municipal Water Purveyors.....	58
Table 7.3 Water Deliveries to Temecula Valley Regional Water Reclamation Facility Service Area	61
Table 7.4 Rancho California Water District, Permit 7032 Operations	65
Table 7.5 Rancho California Water District, Rancho Division Return Flow Credits 2013-14	67
Table 7.6 Rancho California Water District, Santa Rosa Division Return Flow Credits 2013-14	68
Table 7.7 Percent Production from Younger Alluvium In Rancho California Water District Wells	70
Table 7.8 Rancho California Water District Well Production From Younger and Older Alluvium.....	71

WATERMASTER
SANTA MARGARITA RIVER WATERSHED

Table 10.1 Ranges in Average Daily Concentration of Dissolved Oxygen, pH, Specific Conductance and Temperature at Santa Margarita River Near Temecula	88
Table 11.1 Monthly Summary of Required Flows, Discharges, Credits and Accounts, Cooperative Water Resource Management Agreement 2014 calendar year	94
Table 11.2 Monthly Summary of Required Flows, Discharges, Credits and Accounts, Cooperative Water Resource Management Agreement 2013 calendar year	95
Table 13.1 Comparison of Watermaster Budget and Actual Costs for 2013-14.....	104
Table 13.2 Proposed Watermaster Budget for 2015-16	105

LIST OF FIGURES

	<u>Page No.</u>
1.1 Local Production 2005 through 2014.....	2
1.2 Imports 2005 through 2014	2
1.3 Total Production 2005 through 2014	3
3.1 Annual Streamflow for Santa Margarita River Near Temecula.....	11
3.2 Annual Precipitation for Wildomar Gage	12
4.1 Water Level Elevations Well No. 8S/2W-12H1.....	21
4.2 Water Level Elevations Well No. 10S/4W-7J1	22
4.3 Water Level Elevations Well No. 7S/3W-20C9.....	23
4.4 Water Level Elevations Well No. 7S/3E-21G1	24
4.5 Water Level Elevations Pechanga Indian Reservation Wells.....	25
5.1 Storage in State Water Project 2005 through 2014.....	35
5.2 Storage in Colorado River Reservoirs 2005 through 2014.....	35
10.1 Total Dissolved Solids Concentration RCWD Well 8S/2W-12K.....	89
10.2 Total Dissolved Solids Concentration Camp Pendleton Well 10S/4W-7A2	90
10.3 Nitrate Concentration Camp Pendleton Well 10S/4W-7A2	91

APPENDICES

Appendix A - Production and Use Water Year 2013-14

Table A-1	Eastern Municipal Water District
Table A-2	Elsinore Valley Municipal Water District
Table A-3	Fallbrook Public Utility District
Table A-4	Metropolitan Water District
Table A-5	Pechanga Indian Reservation
Table A-6	Rainbow Municipal Water District
Table A-7	Rancho California Water District
Table A-8	U.S.M.C. - Camp Pendleton
Table A-9	U. S. Naval Weapons Station, Fallbrook Annex
Table A-10	Western Municipal Water District – Murrieta Division
Table A-11	Miscellaneous Water Production and Import

Appendix B - Production and Use Water Years 1965-66 through 2013-14

Table B-1	Eastern Municipal Water District
Table B-2	Elsinore Valley Municipal Water District
Table B-3.1	Fallbrook Public Utility District
Table B-3.2	Fallbrook Public Utility District
Table B-4	Fallbrook Public Utility District (Wastewater)
Table B-5	Metropolitan Water District
Table B-6	Pechanga Indian Reservation
Table B-7	Rainbow Municipal Water District
Table B-8	Rancho California Water District
Table B-9	U.S.M.C. - Camp Pendleton
Table B-10	U. S. Naval Weapons Station, Fallbrook Annex
Table B-11	Western Municipal Water District – Murrieta Division
Table B-12	Miscellaneous Water Production and Import

Appendix C - Substantial Water Users 2013-14

Appendix D - Water Quality Data

	<u>Last Published</u>	
Table D-1	Surface Streams Sampled by Camp Pendleton	1992-93
Table D-2	Surface Streams Sampled by Rancho California Water District	1998-99
Table D-2.1	Nutrient Sampling by Rancho California Water District	2002-03
Table D-3	Wells in Western Municipal Water District - Murrieta Division	2013-14
Table D-4	Wells in Rancho California Water District	2013-14
Table D-5	Wells on Indian Reservations	2013-14
Table D-6	Wells on Camp Pendleton	2013-14
Table D-7	Eastern Municipal Water District	1992-93
Table D-8	Eastern Municipal Water District	1992-93
Table D-9	Eastern Municipal Water District	1992-93
Table D-10	Eastern Municipal Water District	1993-94
Table D-11	Wells in Domenigoni Valley	1994-95
Table D-12	Surface Water Sampled by USGS on Cahuilla Creek	2013-14

**Appendix E – Cooperative Water Resource Management Agreement
Required Flows and Accounts – Calendar Year 2014**

**Appendix F – Annual Report Issues Subordinated During Effective Period
of the Cooperative Water Resource Management Agreement**

**Appendix G – Independent Auditor’s Report for Water Year 2013-14 and Report to
the Steering Committee, dated January 21, 2015**

MAP

Major Water Purveyors

Bound at back of Report

SECTION 1 – SUMMARY

Section 1 - A summary of the Santa Margarita River Watershed Annual Watermaster Report for the 2013-14 Water Year.

Section 2 - This Annual Watermaster Report is prepared pursuant to 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 are determined by the Court to add to, support, or contribute to the Santa Margarita River stream system. The Watershed is adjudicated, as to all underground waters, basins, surface flow, streams and subsurface flows that add to, support, or contribute to the Santa Margarita River stream system. Local vagrant groundwaters that do not support the Santa Margarita River stream system are outside Court jurisdiction.

Section 3 - Surface water flows varied in Water Year 2013-14. Flows for long-term stations on Murrieta Creek at Temecula, Santa Margarita River near Temecula, and Santa Margarita River at Ysidora were 40%, 59% and 20% of their long-term averages, respectively. Flows at Temecula Creek near Aguanga were 9% of the long-term average. Direct surface diversions to use totaled 695 acre feet, which reflects a decline of 27 acre feet from the prior year. The total quantity of water in storage in the Watershed on September 30, 2014, was 456,393 acre feet, of which 17,884 acre feet were Santa Margarita River water and 438,509 acre feet were imported water.

Section 4 - Groundwater extractions were 41,636 acre feet during 2013-14 as shown on Table 4.1, compared to 42,621 acre feet in 2012-13. Water purveyors pumped 35,457 acre feet, and 6,179 acre feet were pumped by other substantial users. Total local production, including groundwater extractions and surface diversions in 2013-14 was 42,331 acre feet. This compares with 43,343 acre feet in 2012-13, and represents a decline of two percent. Total annual local production for use for the period 2005 through 2014 is shown on Figure 1.1.

Section 5 - During 2013-14, 81,785 acre feet of net imports were distributed for use within the Watershed, as shown on Table 5.2. This compares with 74,889 acre feet in 2012-13, and represents an increase of nine percent. Annual imports for the period 2005 through 2014 are shown on Figure 1.2 and Table 5.4. Exports of wastewater and native water for use outside the Watershed in 2013-14 were 18,518 acre feet. This compares with 18,325 acre feet in 2012-13, and represents an increase of one percent.

Section 6 - Water rights consist primarily of riparian and overlying rights. Other rights include appropriative rights and federal reserved rights. Water purveyors in the Santa Margarita River Watershed also exercise groundwater appropriative rights. Except for surface water appropriative rights, water rights generally have not been quantified in the Watershed. Appropriative surface water rights on file with the State Water Resources Control Board amount to 990,719 gallons per day. This corresponds to 1.53 cubic feet per second (cfs) or 3.04 acre feet per day of direct diversion rights and 54,313.5 acre feet of active storage rights.

Figure 1.1

**SANTA MARGARITA RIVER WATERSHED
LOCAL PRODUCTION 2005 THROUGH 2014**

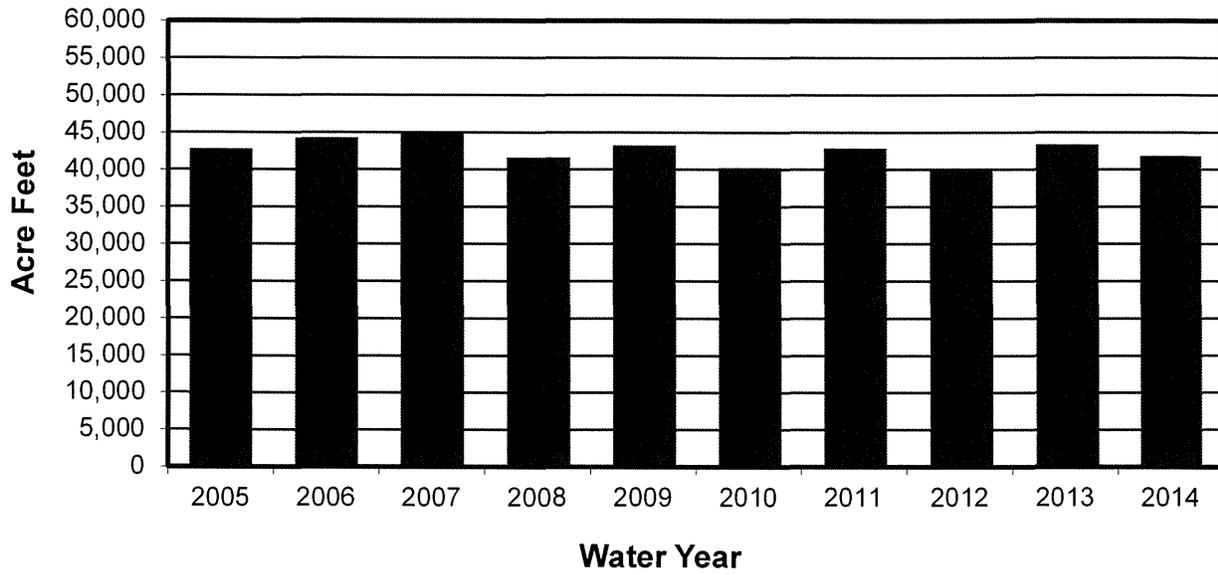
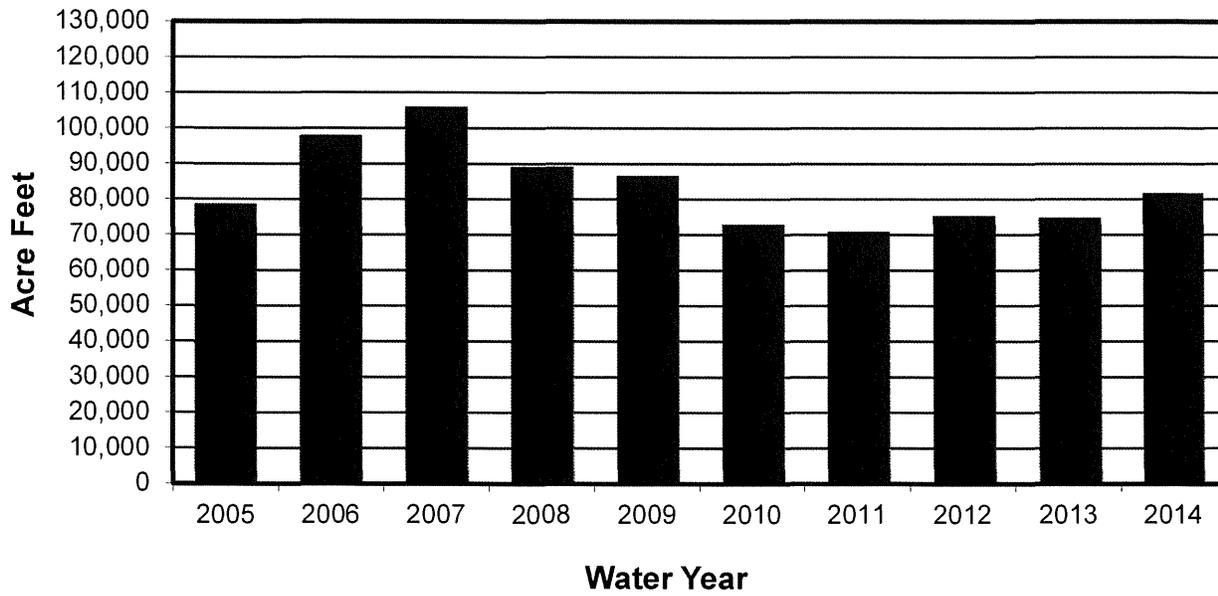


Figure 1.2

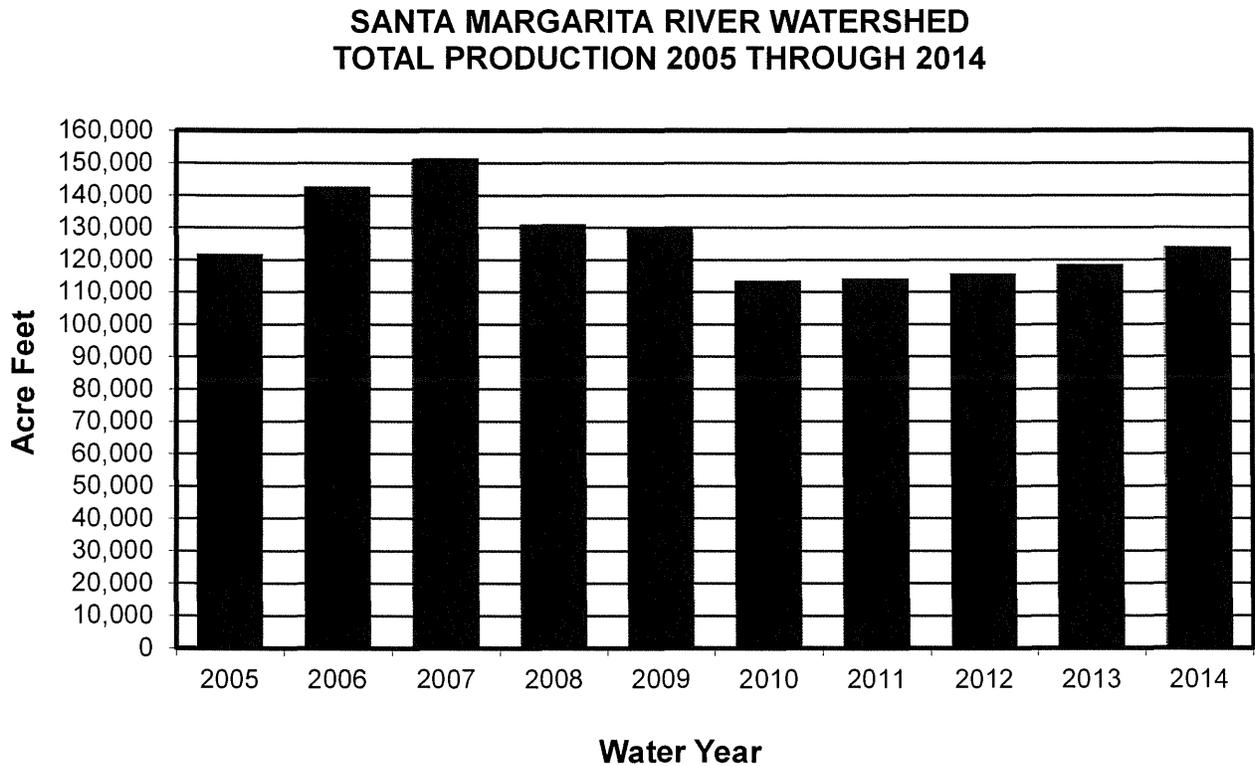
**SANTA MARGARITA RIVER WATERSHED
IMPORTS 2005 THROUGH 2014**



Section 7 – Total imported supplies plus local production during Water Year 2013-14 totaled 123,617 acre feet compared to 118,232 acre feet reported in 2012-13. Of that quantity, 40,288 acre feet were used for agriculture; 19,276 acre feet were used for commercial purposes; 52,587 acre feet were used for domestic purposes; 24 acre feet were discharged to Murrieta Creek; 51 acre feet were discharged to Santa Gertrudis Creek; and 4,051 acre feet were discharged by Rancho California WD from Metropolitan Water District of Southern California (MWD) Outlet WR-34 during 2013-14, pursuant to the Cooperative Water Resource Management Agreement (CWRMA). It is noted, commercial use includes 442 acre feet of recycled water and thus the commercial use of production is 18,834 acre feet. The overall system loss was 4,755 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. These data are shown on Table 7.1.

Total annual production for the period 2005 through 2014 is shown on Figure 1.3.

Figure 1.3



Section 8 - Use of water from small storage ponds may be unauthorized. Camp Pendleton has taken the position that exportation of treated wastewater, the source of which is the native waters of the Santa Margarita River system, without legal authority for such exportation, is an unauthorized use of water.

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. Additional threats have been recently identified, including high concentrations of nitrates, arsenic, fluoride and manganese in the Murrieta-Temecula area, as well as the discovery of the Quagga mussel in imported supplies.

Section 10 - The U. S. Geological Survey (USGS) monitored surface water quality at the Temecula gaging station on the Santa Margarita River.

Groundwater samples from wells were analyzed for water quality by Camp Pendleton, Western MWD - Murrieta Division, Rancho California WD, and the Pechanga Band during 2013-14. The two primary constituents of interest are nitrates and total dissolved solids (TDS). The Basin Plan Objective for TDS of 750 mg/l was exceeded in all seven of the wells sampled at Camp Pendleton. One well sampled by Rancho California WD showed concentrations exceeding 750 mg/l.

Section 11 - The Cooperative Water Resource Management Agreement between Camp Pendleton and Rancho California Water District was approved by the District Court on August 20, 2002. During the 2014 calendar year, Rancho California WD discharged 4,009 acre feet into the Santa Margarita River to meet flow requirements under the Agreement.

Section 12 - Projected Watermaster expenditures for the next five years are listed.

Section 13 – The actual Watermaster costs for Water Year 2013-14 were \$653,001 compared to the Court approved budget of \$658,840, resulting in a favorable variance of \$5,839. A total Watermaster budget for Water Year 2015-16 is proposed to be \$716,100. This budget includes \$473,625 for the Watermaster Office and \$242,475 for operation of gaging stations and groundwater monitoring by USGS.

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 an adjudication 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 provides 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 issued an Order appointing the 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 that at the conclusion of 2013-14 was comprised of representatives from the United States, Eastern Municipal Water District, Fallbrook Public Utility District, Metropolitan Water District of Southern California, Pechanga Band of Luiseño Mission Indians, Western Municipal Water District, and Rancho California Water District. The purposes of the Steering Committee are 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 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 the various water users within the Watershed and 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.

Page Intentionally Blank

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 2013-14, the USGS operated 13 stations under an agreement with the Watermaster. These include three stations where Riverside County Flood Control and Water Conservation District shares the local costs with the Watermaster. In addition to stream flows, the USGS also measures water surface elevation and precipitation at Vail Lake.

The USGS also operates several stations in the Watershed under contract with Camp Pendleton. These include stream gaging stations on Fallbrook Creek and on the outlet channel and spillway for Lake O'Neill. The USGS operated a tidal water level recorder at the mouth of the Santa Margarita River from October 1989 until October 20, 2010, when it was removed.

Monthly flows for stations in Water Year 2013-14 are shown on Table 3.2. Those flows consist of final USGS discharge determinations approved for publication by the USGS. Official USGS discharges for Water Year 2013-14 are published by the USGS at the following website: <http://waterdata.usgs.gov/ca/nwis/sw>.

In considering the historical record of flow at these stations, it should be recognized that the long-term averages include variations in Watershed conditions such as 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 was published annually by the USGS in hard copy form through Water Year 2003-04. For subsequent years, the gaging station descriptions can be found at the website provided above.

TABLE 3.1

SANTA MARGARITA RIVER WATERSHED
STREAM GAGING STATIONS THROUGH WATER YEAR 2013-14

Station Name	Station No.	Area Sq. Miles	Entity	Period Of Record
Temecula Creek Near Aguanga	11042400	131	USGS	August 1957 to Present
Wilson Creek Above Vail Lake Near Radac	11042490	122	USGS	October 1989 to September 1994
Temecula Creek At Vail Dam	11042520	320	USGS	February 1923 to October 1977
Vail Lake Near Temecula (Reservoir Storage)	11042510	320	USGS	October 1948 to Present
Pechanga Creek Near Temecula	11042631	13.1	USGS	October 1987 to Present
Warm Springs Creek Near Murrieta	11042800	55.4	USGS	October 1987 to Present
Murrieta Creek Near Murrieta	11042700	30.0	USGS	October 1997 to Present
Santa Gertrudis Creek Near Temecula	11042900	90.2	USGS	October 1987 to Present
Murrieta Creek At Temecula	11043000	222	USGS	October 1924 to Present
Santa Margarita River Near Temecula	11044000	588	USGS	February 1923 to Present
Rainbow Creek Near Fallbrook	11044250	10.3	USGS	November 1989 to Present
Santa Margarita River At FPUD Sump 1/	11044300	620	USGS	October 1989 to Present
Sandia Creek Near Fallbrook	11044350	21.1	USGS	October 1989 to Present
Santa Margarita River Tributary Near Fallbrook	11044600	0.52	USGS	October 1961 to September 1965
DeLuz Creek Near DeLuz	11044800	33.0	USGS	October 1992 to Present
DeLuz Creek Near Fallbrook 2/	11044900	47.5	USGS/ USMC	October 1951 to September 1967 October 1989 to September 1990 April 2002 to February 2003
Santa Margarita River Near DeLuz Station	11045000	705	USGS	October 1924 to September 1926
Fallbrook Creek Near Fallbrook 3/	11045300	6.97	USGS/ USMC	October 1993 to Present
Santa Margarita River At Ysidora 4/	11046000	723	USGS	February 1923 to Present

1/ Record includes measurements for Santa Margarita near Fallbrook (#11044500) for October 1924 to September 1980.

2/ Recorded by USMC, Camp Pendleton October 1967 to 1977.

3/ Recorded by USMC, Camp Pendleton for October 1964 to September 1977 and October 1989 to September 1993.

4/ Station temporarily operated as SMR at USMC Diversion Dam near Ysidora (#11045050) from February 26, 1999 to September 27, 2001.

WATERMASTER
SANTA MARGARITA RIVER WATERSHED

TABLE 3.2
SANTA MARGARITA RIVER WATERSHED
MEASURED SURFACE WATER FLOW

2013-14
Quantities in Acre Feet

GAGING STATION	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	WATER YEAR TOTAL	ANNUAL AVERAGE THROUGH 2013	YEARS OF RECORD THROUGH 2013
Temecula Creek Near Aguanga (11042400)	14	35	60	59	69	172	48	11	1	0	0	0	469	5,440	56
Pechanga Creek Near Temecula 1/ (11042631)	0	0	0	0	2	0	0	0	0	0	0	0	2	444	26
Warm Springs Creek Near Murrieta (11042800)	1	1	51	0	180	997	5	3	0	0	9	0	1,247	3,050	26
Murrieta Creek Near Murrieta 2/, 3/ (11042700)	0	0	0	0	347	493	0	0	0	0	0	0	840	3,064 4,430	6 (2008-2013) 8 (1998-2005)
Santa Gertrudis Creek Near Temecula (11042900)	0	16	33	0	173	225	0	0	0	0	1	0	448	2,680	26
Murrieta Creek At Temecula (11043000)	30	7	6	3	983	3,006	10	4	4	3	3	0	4,059	10,191	89
Santa Margarita River Near Temecula (11044000)	185	179	202	606	1,996	3,822	589	326	274	264	272	244	8,959	15,292 20,390	65 (1949-2013) 26 (1923-48)
Rainbow Creek Near Fallbrook (11044250)	10	17	33	14	119	94	15	3	4	2	1	8	320	2,580	24
Santa Margarita River At FPUD Sump (11044300)	228	238	326	696	1,772	4,667	656	390	310	223	248	226	9,980	29,540	24
Sandia Creek Near Fallbrook (11044350)	66	83	105	115	140	652	202	139	96	70	81	44	1,793	6,660	24
DeLuz Creek Near DeLuz (11044800)	0	0	0	0	12	557	0	0	0	0	0	0	569	8,060	21
Fallbrook Creek Near Fallbrook (11045300)	0	1	1	0	10	84	11	1	1	1	2	1	113	1,144 1,462 5/	25 (1989-2013) 12 (1965-76)
Santa Margarita River At Ysidora (11046000)	0	0	0	0	292	5,479	295	173	0	0	0	124	6,363	31,952 4/ 31,390	65 (1949-2013) 26 (1923-48)

1/ In summer 2006, gaging location was moved upstream 0.4 miles from prior location to current location 100 feet upstream of Metropolitan Water District pipe crossing, 0.4 miles upstream of the Rainbow Canyon Road/Old Highway 395 Bridge.

2/ Previously published as Murrieta Creek at Tenaja Road.

3/ Continuous record stopped on February 22, 2005, due to bridge construction. Only discharge measurements were taken from February 2005 until September 2007.

4/ Includes record of two years at Santa Margarita River at USMC Diversion Dam near Ysidora station.

5/ Includes wastewater flows.

WATERMASTER
 SANTA MARGARITA RIVER WATERSHED

Total flows at four long-term stations, for Water Years 2012-13 and 2013-14, are compared with their averages in the tabulation below. Average flows for the Santa Margarita River stations near Temecula and near Ysidora are shown for two periods: before and after Vail Dam was constructed (1923 to 1948, and 1949 to 2013).

	<u>TOTAL FLOW</u>		<u>AVERAGE FLOW</u>
	<u>2012-13 Acre Feet</u>	<u>2013-14 Acre Feet</u>	<u>Through 2013 Acre Feet</u>
Temecula Creek Near Aguanga	861	469	5,440 (1957-2013)
Murrieta Creek At Temecula	1,287	4,059	10,191 (1925-2013)
Santa Margarita River Near Temecula	4,220	8,959	15,292 (1949-2013) 20,390 (1923-1948)
Santa Margarita River At Ysidora*	2,266	6,363	31,952 (1949-2013) 31,390 (1923-1948)

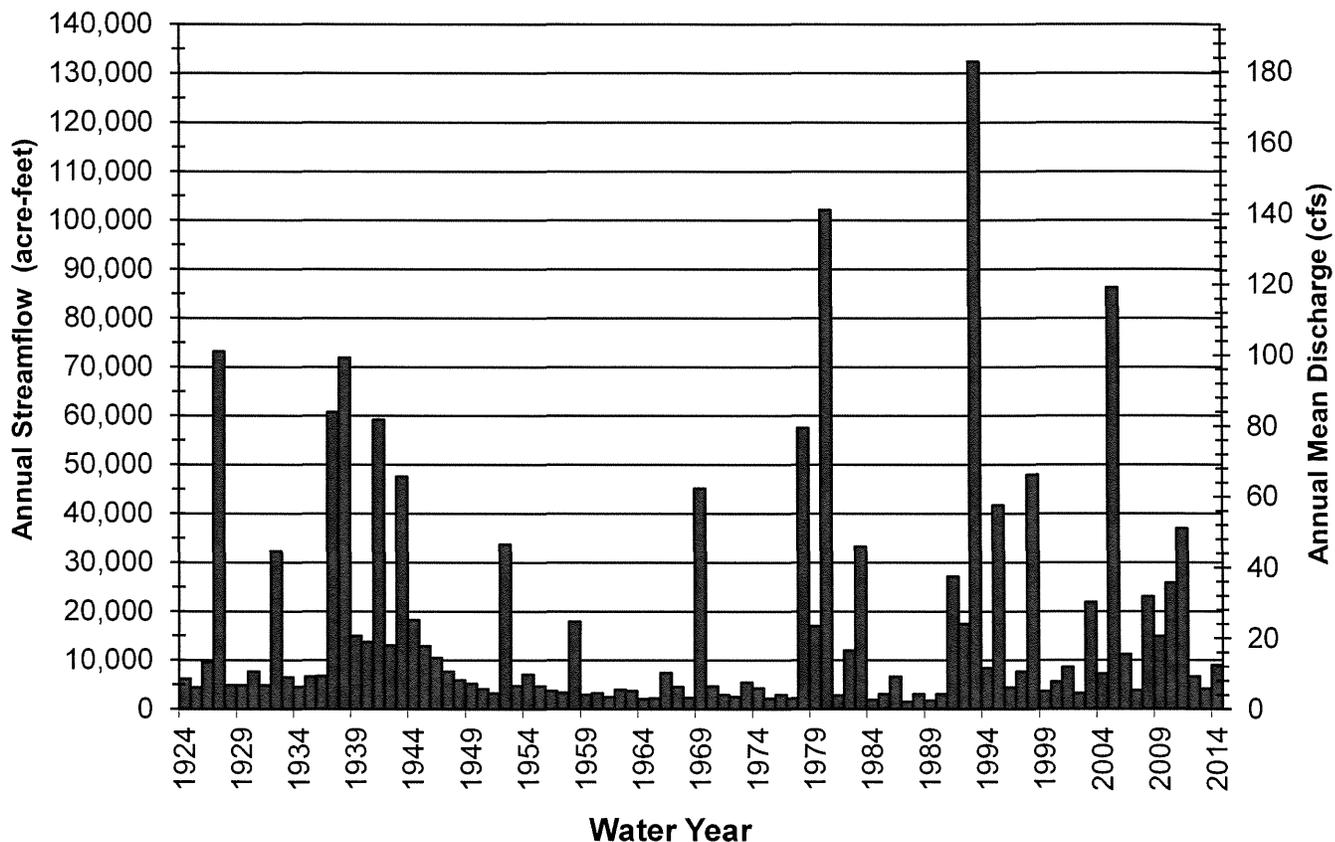
* At various locations

The foregoing tabulation indicates the flows for Water Year 2013-14 were below normal for three of the four stations. Flows for long-term stations on Temecula Creek near Aguanga, Murrieta Creek at Temecula, Santa Margarita River near Temecula and Santa Margarita River at Ysidora were 9%, 40%, 59% and 20% of their long-term averages, respectively.

The Santa Margarita River near Temecula station is of particular interest relative to discharge requirements specified in the CWRMA between Camp Pendleton and Rancho California WD, as described in Section 11. The long-term time series for annual streamflow for Santa Margarita River near Temecula is provided on Figure 3.1, showing the 2013-14 flows were in the third quartile and 212% greater than the flows for the prior year.

Figure 3.1

**Annual Streamflow for Santa Margarita River near Temecula
 (USGS Gaging Station No. 11044000)
 1924 through 2014**

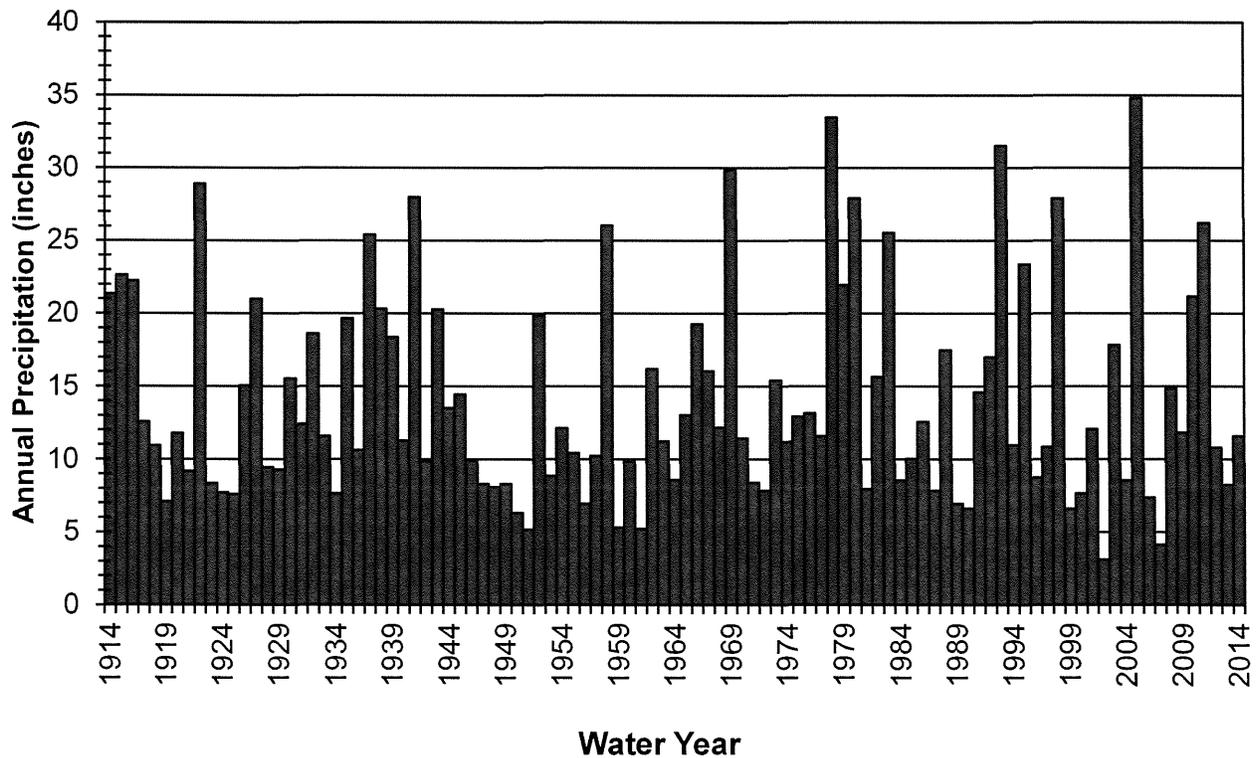


It is also interesting to review long-term precipitation records relative to long-term streamflow. Figure 3.2 shows the long-term time series for annual precipitation for the Wildomar gage maintained by the Riverside County Flood Control and Water Conservation District. The Wildomar gage is specified in the CWRMA for determining hydrologic year types in establishing Rancho California WD discharge requirements to meet flows for the Santa Margarita River near Temecula. The long-term average precipitation for the Wildomar gage for the period 1914 through 2014 is 14.03 inches. The reported precipitation for Water Year 2013-14 is 11.60 inches, which is in the second quartile for the period of record.

Monthly flows shown on Table 3.2 consist primarily of naturally occurring surface runoff, including return flows, except for Rancho California WD discharges into the Santa Margarita River and Murrieta Creek. Most of the Rancho California WD discharges are pursuant to the CWRMA. During Water Year 2013-14, the total discharges from MWD Meter WR-34 into the Santa Margarita River equaled 4,051 acre feet. The outlet from WR-34 is located just upstream from the Santa Margarita River near Temecula gaging station. In 2009, Rancho California WD extended a pipeline from its distribution system to discharge at the same location as the outlet WR-34. During Water Year 2013-14, there were no discharges from the potable connection to the Santa Margarita River and no discharges to Murrieta Creek from the System River Meter.

Figure 3.2

**Annual Precipitation for Wildomar Gage
 1914 through 2014**



During 2013-14, Rancho California WD also released 24 acre feet from wells into Murrieta Creek, and 51 acre feet from wells into Santa Gertrudis Creek.

3.2 Surface Water Diversions

Surface diversions to surface water storage and groundwater storage are shown on Table 3.3 for Vail Lake and Table 3.4 for Lake O'Neill. In general, diversions to surface storage at Vail Lake and Lake O'Neill are computed as being equal to inflow less spill, however, 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 Lake 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.

Direct surface diversions for Water Year 2013-14 are shown on Table 3.5. The use is primarily irrigation. Estimated consumptive uses, losses and returns are also shown.

3.3 Water Storage

Major water storage facilities in the Santa Margarita River Watershed are listed on Table 3.6, together with the water in storage on September 30, 2013 and September 30, 2014. Total Santa Margarita River stream system water in storage at the end of Water Year 2013-14 totaled 17,884 acre feet, compared to 21,224 acre feet at the end of the previous year. Imported water in storage in Lake Skinner and Diamond Valley Lake, both operated by MWD, is also shown on Table 3.6.

TABLE 3.3

SANTA MARGARITA RIVER WATERSHED
SURFACE WATER DIVERSIONS TO STORAGE FOR VAIL LAKE
2013-14

Quantities in Acre Feet

	Surface Water Storage		
	2011-12	2012-13	2013-14
Storage End of Prior Year	29,390	26,560	20,780
Inflow - Total	2,964	1,947	1,662
Inflow to be Bypassed ^{1/}	906	645	726
Spill	0	0	0
Diversions to Surface Storage ^{2/}	2,058	1,302	936
Annual Evaporation	4,893	4,468	4,161
Releases - Total	901	3,259	811
Release to GW Storage ^{3/ 4/}	(5)	2,614	85
Change of Storage	(2,830)	(5,780)	(3,310)
Storage End of Year	26,560	20,780	17,470
	Groundwater Storage		
Recharge Release from Vail Lake	0	2,614	85
Recovered Vail Lake Recharge Water from GW Storage ^{5/}	5	2,614	85

Data reported by Rancho California WD except end of year storage reported by USGS.

1/ Inflow to be bypassed Oct 1 through Oct 31 and May 1 through Sept 30.

2/ Inflow less Spill less Inflow to be Bypassed.

3/ Total Release less Inflow to be Bypassed.

4/ Vail Lake operations shown in Table 3.3 reflect water year operations to be consistent with reporting in the Annual Watermaster Report. However, Permit 7032 specifies calendar year reporting and a continuous operating season of May through October for bypasses overlapping two water years. The value of 85 acre feet for Release to GW Storage is correct but misleading because the bypass season continues into October 2014. Inspection of Rancho California WD records for May through October 2014 shows total Inflow to be Bypassed in the amount of 650 acre feet with total Releases of 749 acre feet, resulting in 99 acre feet of excess releases during the Permit bypass season of May through October 2014.

5/ See Table 7.4.

TABLE 3.4

SANTA MARGARITA RIVER WATERSHED
SURFACE WATER DIVERSIONS TO STORAGE FOR LAKE O'NEILL
2013-14

Quantities in Acre Feet

	<u>Surface Water Storage</u>		
	2011-12 <i>7/</i>	2012-13 <i>7/</i>	2013-14
Storage End of Prior Year	642	646	444
Inflow - Total	2,248 ^{1/}	1,832 ^{2/}	1,669 ^{3/}
Spill	8	0	0
Diversions to Surface Storage	2,240 ^{4/}	1,832 ^{4/}	1,669 ^{4/}
Annual Evaporation	364	379	405
Releases - Total	107	792	825
Release to GW Storage	107	792	825
Apparent Seepage to GW	1,765 ^{5/}	863 ^{5/}	469 ^{5/}
Change of Storage	4	(202)	(30)
Storage End of Year	646	444	414
	<u>Groundwater Storage</u>		
Recharge Release from Lake O'Neill	1,872 ^{6/}	1,655 ^{6/}	1,294 ^{6/}
Deliveries to Recharge Ponds	559	420	156
Indirect Recharge from Ditch System	881	1,170	1,236
TOTAL	3,312	3,245	2,686

1/ 1,657 AF diverted from the Santa Margarita River, 341 AF estimated inflow from Fallbrook Creek, 141 AF from local runoff, and 109 AF from rainfall on lake surface.

2/ 1,505 AF diverted from the Santa Margarita River, 159 AF estimated inflow from Fallbrook Creek, 77 AF from local runoff, and 91 AF from rainfall on lake surface.

3/ 1,449 AF diverted from the Santa Margarita River, 113 AF estimated inflow from Fallbrook Creek, 36 AF from local runoff, and 71 AF from rainfall on lake surface.

4/ Inflow less Spill.

5/ Includes seepage losses, leakage through flashboards and gates, and unaccounted for water.

6/ Includes Release to GW Storage and Apparent Seepage to GW from Lake O'Neill.

7/ Dredging operations for Lake O'Neill occurred during Water Year 2012. The preparation for and the actual dredging operation affected various operations for Lake O'Neill during Water Years 2011, 2012, and 2013 to varying levels within each particular year, including timing and amount of diversions from Santa Margarita River for both deliveries to Lake O'Neill and the recharge ponds, and Recharge Release from Lake O'Neill.

TABLE 3.5

SANTA MARGARITA RIVER WATERSHED
SURFACE WATER DIVERSIONS TO USE

2013-14

Quantities in Acre Feet

DIVERTER	Surface Diversions	Consumptive Use 1/	Loss 2/	Return 3/
Blue Bird Ranch	31.5	21.2	3.2	7.1
James Carter	52.0	35.1	5.2	11.7
Chambers Family, LLC	8.0	5.4	0.8	1.8
Serafina Holdings, LLC	0.0	0.0	0.0	0.0
Sage Ranch Nursery	100.0	67.5	10.0	22.5
Rose Lake, LLC	0.0	0.0	0.0	0.0
Val Verde Partners	56.8	38.3	5.7	12.8
Wilson Creek Development, LLC	400.0	270.0	40.0	90.0
Cahuilla Indian Reservation	5.6	3.8	0.6	1.2
San Diego State University	41.3	27.9	4.1	9.3
TOTAL	695.2	469.2	69.6	156.4

1/ Consumptive Use equals 75% of Diversions less Losses.

2/ Losses equal 10% of Diversions.

3/ Returns equal 25% of Diversions less Losses.

TABLE 3.6

SANTA MARGARITA RIVER WATERSHED
WATER IN STORAGE
 2013-14
 Quantities in Acre Feet

Santa Margarita River Storage	Total Capacity 1/	Water in Storage	
		9/30/2013	9/30/2014
Dunn Ranch Dam	90	0	0
Upper Chihuahua Creek Reservoir	47	0	0
Vail Lake	49,370	20,780	17,470
Lake O'Neill	<u>1,670</u>	<u>444</u>	<u>414</u>
SUBTOTAL	51,177	21,224	17,884
Imported Water Storage			
Lake Skinner	44,000	39,741	33,547
Diamond Valley Lake	<u>810,000</u>	<u>603,304 R</u>	<u>404,962</u>
SUBTOTAL	854,000	643,045	438,509
TOTAL STORAGE	905,177	664,269	456,393

1/ Capacity shown is current capacity reported by owner. Original capacity or decreed capacity may not be reflected in this table.

R - Revised

Page Intentionally Blank

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 the interlocutory judgments incorporated into the 1966 Modified Final Judgment and Decree. 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.

Other subsurface waters were found by the Court to add to, support and contribute to 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

Total 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. Recovery of imported water that has been directly recharged is not included on Table 4.1. 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 2013-14, production by water purveyors totaled 35,457 acre feet, compared to 35,998 acre feet in 2012-13. Monthly quantities are shown in Appendix A and annual production for the period 1966 through 2014 is shown in Appendix B.

The quantities of subsurface extractions by private irrigators are based on the irrigated acreage and the crop type. These quantities are reported in Appendix C to total 6,179 acre feet in 2013-14. Of the subsurface extractions, 75 percent is estimated to have been consumptively used and 25 percent to have been return flow. Return flow is that portion of the total deliveries that is not consumed. Although return flows average about 25 percent, such flows are affected with the type of use (domestic, commercial and irrigation), the type of irrigation application (drip, micro-sprinkler, furrow), and exports from watersheds.

WATERMASTER
SANTA MARGARITA RIVER WATERSHED

TABLE 4.1

SANTA MARGARITA RIVER WATERSHED
SANTA MARGARITA RIVER WATER PRODUCTION BY SUBSTANTIAL USERS
2013-14

HYDROLOGIC AREA	WATER PURVEYOR PRODUCTION ACRE FEET	OTHER IRRIGATED ACRES *	OTHER IRRIGATION PRODUCTION ACRE FEET *	TOTAL GROUNDWATER PRODUCTION ACRE FEET	SURFACE WATER DIVERSIONS ACRE FEET *	TOTAL PRODUCTION ACRE FEET	ESTIMATED CONSUMPTIVE USE ACRE FEET 1/, 2/	ESTIMATED RETURN FLOW ACRE FEET 2/
Wilson Creek	465	689 ^{3/}	1,769	2,234	6	2,240	1,680	560
Above Aguanga GWA <i>(Lake Riverside,</i> <i>Includes Anza Valley (Anza MWC, Cahuilla, Ramona)</i>								
Temecula Creek	27	310	961	988	0	988	741	247
Above Aguanga GWA <i>(Quiet Oaks MHP)</i>								
Aguanga GWA	635	483	1,612	2,247	457	2,704	1,994	710
<i>(Outdoor Resorts,</i> <i>Jojoba Hills)</i>								
Upper Murrieta Creek	0	0	0	0	0	0	0	0
<i>(Warm Springs Creek above 7S/3W-14)</i>								
Lower Murrieta Creek	0	310	44	44	100	144	100	44
<i>(Santa Gertrudis/Tucalota Creek above 7S/2W-18 --</i> <i>Includes FPUD Diversion from Lake Skinner)</i>								
Murrieta-Temecula GWA	28,516	710	1,175	29,691	52	29,743	22,303	7,440
<i>(RCWD**, WMWD (Murrieta Division),</i> <i>EMWD, Pechanga and Hawthorn)</i>								
Santa Margarita River Below the Gorge								
DeLuz Creek	0	326	484	484	39	523	389	134
Sandia Creek	0	65	130	130	0	130	98	32
Rainbow Creek	0	0	0	0	0	0	0	0
Santa Margarita River	5,814	20	4	5,818	41	5,859	1,923	645
<i>(USMC)</i>								
TOTAL	35,457	2,913	6,179	41,636	695 ^{4/}	42,331	29,228	9,812

1/ Estimated consumptive use is equal to 75% of Total Groundwater Production plus 75% of Surface Diversions less 10% (CU = .75(GW + .90 * SW)).

2/ Camp Pendleton consumptive use and return flow calculated for portion of production used within Santa Margarita River Watershed.

3/ Includes lands overlying deep aquifer in Anza Valley.

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

* Data taken from Appendix C.

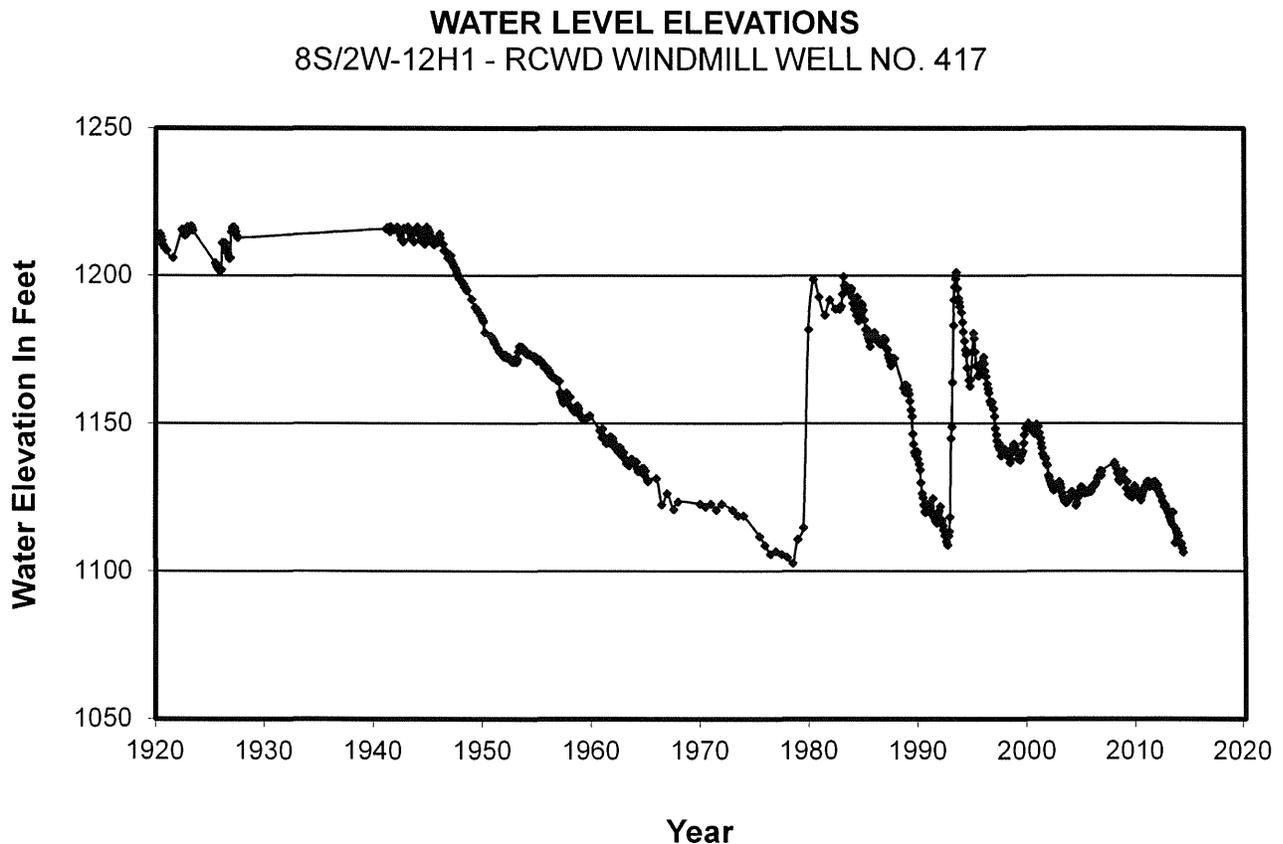
** RCWD pumped an additional 289 AF that was exported to the San Mateo Watershed.

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 relatively dry years after 1980 and after 1993. Water levels declined by 13.7 feet between September 30, 2013 and September 30, 2014. It should be noted that the Windmill Well is located in Pauba Valley about 1.5 miles downslope from the Valle de los Caballos (VDC) recharge area, where releases from Vail Lake as well as imported water are recharged. In Water Year 2013-14, 12,069 acre feet of imported water were recharged in the VDC of which 100 percent was recovered in the same year. As shown on Appendix Table A-7, an additional 264 acre feet of previously recharged import water was recovered from groundwater storage in Water Year 2013-14.

Figure 4.1

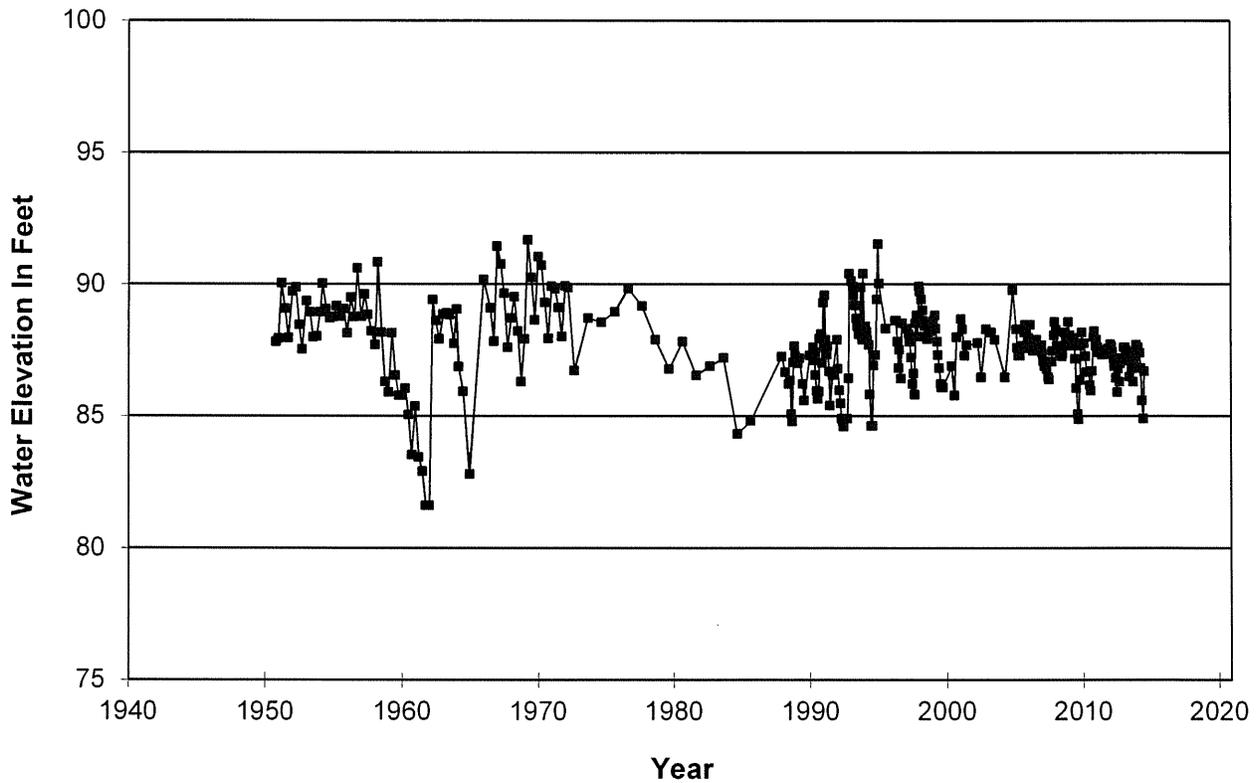


Collar El. 1216.7 Feet; Depth 515 Feet; Drilled in Alluvium
Ref: RCWD reports (1920-2013)

Figure 4.2 shows water levels at Camp Pendleton in Well No. 10S/4W-7J1, a monitoring well located in the Upper Sub-basin. Fluctuations in recent years illustrate recharge during the winter months and drawdown each summer, with the water levels ranging from approximately 82 to 92 feet in elevation. Water levels in Well 7J1 declined 0.5 feet in the period between September 2013 and September 2014.

Figure 4.2

WATER LEVEL ELEVATIONS
10S/4W-7J1 - CAMP PENDLETON *



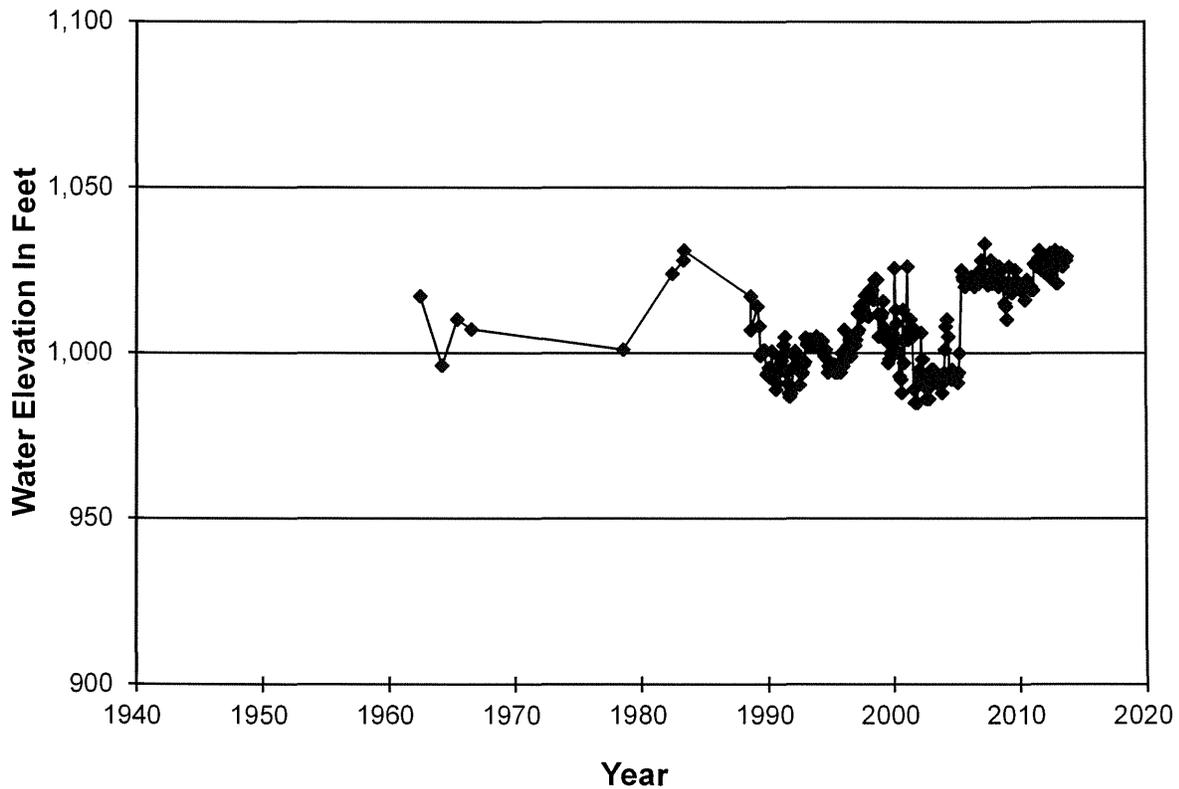
Ground El. 93.8 Feet; Depth 141 Feet; Perf. Unknown; Drilled in Alluvium
Camp Pendleton Records (1950-72) (1988-2013); Leeds Hill Study (1973-85) Dates
Estimated

* Data shown for Well No. 10S/4W-7J1 except for period October 1999 through
September 2007 data shown for Well No. 10S/4W-7J4.

Figure 4.3 shows water levels from Holiday Well No. 7S/3W-20C9 in the Murrieta Division service area of Western MWD. The Holiday Well was used as a production well until February 2006, but now is used only as a monitoring well. Water levels in this well rose by three feet between September 30, 2013 and September 30, 2014.

Figure 4.3

WATER LEVEL ELEVATIONS
7S/3W-20C9 - WMWD HOLIDAY WELL

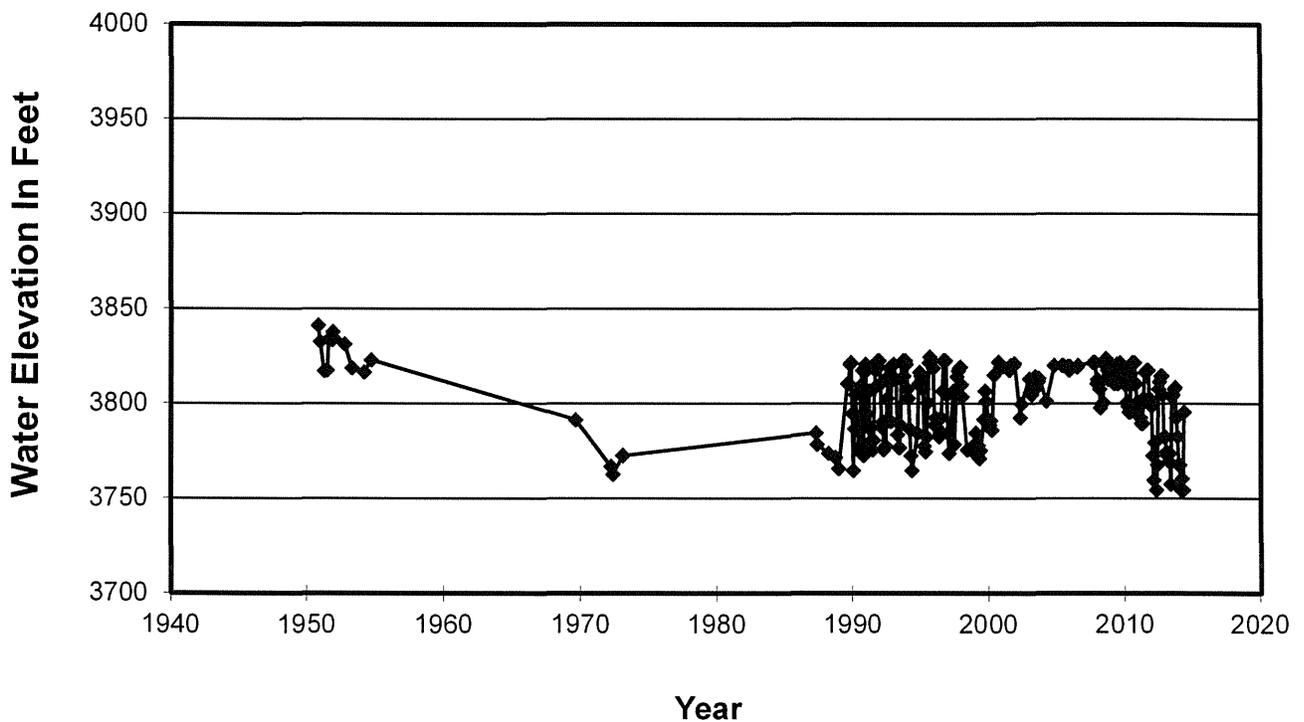


Ground El. 1090 Feet; Depth 307 Feet; Perf. 60 - 307 Feet
Western Municipal Water District

Figure 4.4 shows water levels for Well No. 7S/3E-21G1, Anza Mutual Water Company Well No. 1, a production well located in the Anza Valley. Water levels in this well rose by 38 feet between September 30, 2013 and September 30, 2014. As may be noted from Figure 4.4, recent measurements show annual 50 foot fluctuations in groundwater levels at this well, partly in response to the operation of nearby irrigation wells.

Figure 4.4

WATER LEVEL ELEVATIONS ¹
7S/3E-21G1 - ANZA MUTUAL WATER COMPANY WELL NO. 1

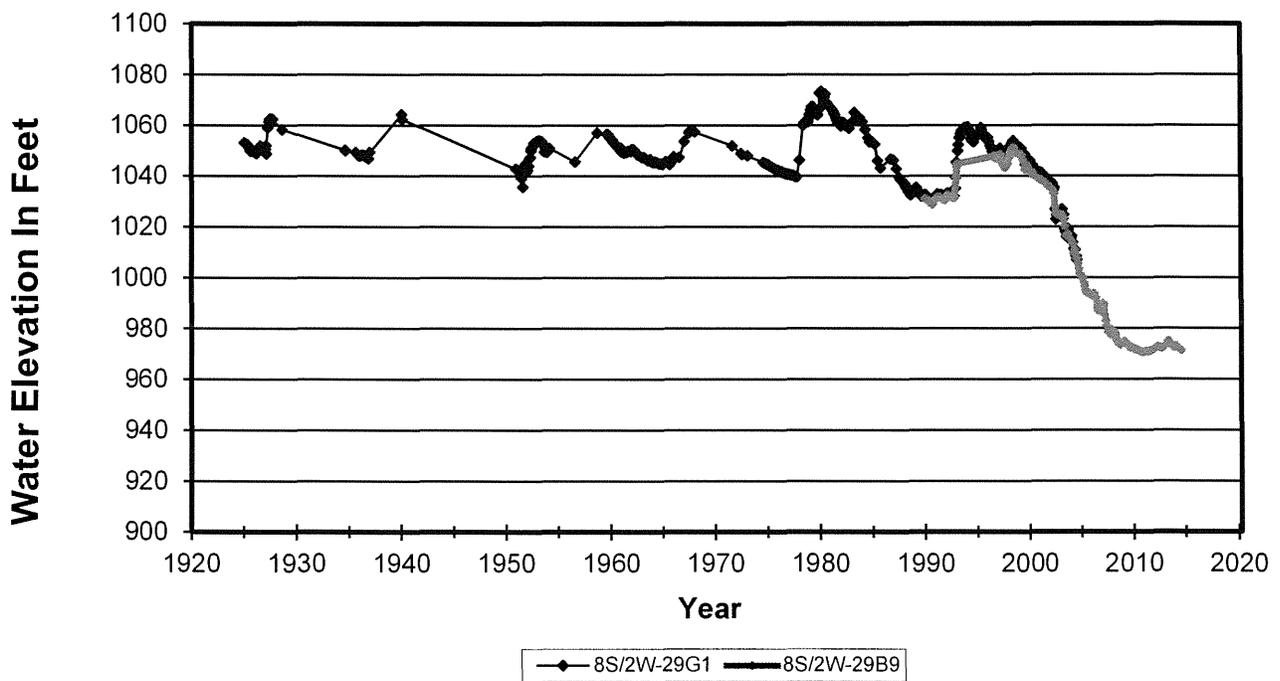


¹ Static water levels plotted after April 1999
Ground El. 3862.6 Feet; Depth 260 Feet; Perf. 20 - 260 Feet; Drilled in Alluvium
Anza Mutual Water Co. Well No. 1 (1987-2013); DWR Bulletin 91-22 (1950-73)

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. Water levels collected since 1925 reflect unconfined groundwater levels. As shown on Figure 4.5, the groundwater levels have fluctuated within an approximate 40 foot range above and below elevation 1,050 feet in response to wet years and dry periods until recently. In November 2004, this well went dry due to the preceding relatively dry hydrological conditions and pumping of the nearby New Kelsey Well on the Pechanga Reservation. In order to continue to monitor water levels on the Pechanga Indian Reservation, water levels for Well No. 8S/2W-29B9 are also shown on Figure 4.5. Well No. 8S/2W-29B9 is completed in the younger alluvium. As shown on Figure 4.5, water levels for Well No. 8S/2W-29B9 coincide with water levels for the common period of record for Well No. 8S/2W-29G1. Water levels in Well 8S/2W-29B9 declined by 2.7 feet in 2013-14.

Figure 4.5

**WATER LEVEL ELEVATIONS
PECHANGA INDIAN RESERVATION WELLS**



8S/2W-29G1: Ground El. 1091.1 Feet; Depth 159.1 Feet
8S/2W-29B9: Ground El. 1075.93 Feet; Depth 113.0 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 2013-14 Water Year are shown below:

<u>Well</u>	<u>Water Elevation 2013 Feet</u>	<u>Water Elevation 2014 Feet</u>	<u>Change in Water Level Feet</u>	
RCWD 8S/2W-12H1	1,120.0	1,106.3	Down	13.7
USMC 10S/4W-7J1	87.2	86.7	Down	0.5
WMWD 7S/3W-20C9	1,026.0	1,029.0	Up	3.0
Anza MWC 7S/3E-21G1	3,757.6	3,795.6	Up	38.0
Pechanga IR 8S/2W-29B9	*974.1	971.4	Down	2.7

* Revised

4.4. Groundwater Storage

Bulletin 118 Update 2003 prepared by the State of California Department of Water Resources describes three groundwater basins in the Santa Margarita River Watershed: Santa Margarita Valley, Temecula Valley, and Coahuila (Cahuilla) Valley. These basins are also known as the Santa Margarita Groundwater Basin, the Murrieta-Temecula Groundwater Basin, and the Anza Groundwater Basin. Groundwater storage in each of these basins is described in this section.

4.4.1 Santa Margarita Groundwater Basin

The Santa Margarita Groundwater Basin is located along the Santa Margarita River at Camp Pendleton and includes three sub-basins: Upper, Chappo, and Ysidora. Useable groundwater storage is summarized on Table 4.2. Table 4.2 shows that the total combined storage for all the sub-basins between the depths of 5 and 100 feet is 48,100 acre feet. However, much of that storage is below sea level. Thus, the useable capacity is considered to be 28,700 acre feet as shown on Table 4.2. In 2013-14, useable groundwater storage in place was computed for all three sub-basins to be 24,911 acre feet. The useable storage in place for the three sub-basins amounted to 24,677 acre feet in 2012-13. Thus, there was an increase in groundwater storage in place of 234 acre feet for the water year. It may be noted that classification of storage as useable is made without allowances for maintenance of riparian habitat.

TABLE 4.2
SANTA MARGARITA RIVER WATERSHED
GROUNDWATER STORAGE AT CAMP PENDLETON
2013-14
Quantities in Acre Feet

	Sub-basin			Total
	Upper	Chappo	Ysidora	
I. Available Storage				
A. Total Storage ^{1/}	12,500	27,000	8,600	48,100
B. Useable Storage	12,500	15,000 ^{2/}	1,200 ^{3/}	28,700
II. Unused Storage				
A. Wells used for Depth	10S/4W-7J1	10S/4W-18L1 ^{4/}	11S/5W-11D4	
B. Land Surface Elevation - Feet ^{5/}	93.8	75.9	18.8	---
C. Depth to Water - Feet ^{6/}	7.1	13.8	10.5	---
D. Depth below 5 Feet	2.1	8.8	5.5	---
E. Average Area - Acres ^{7/}	840	2,520	1,060	---
F. Specific Yield ^{8/}	0.216	0.130	0.090	---
G. Unused Storage below 5 Feet	381	2,883	525	3,789
III. Useable Storage in Place ^{9/}	12,119	12,117	675	24,911
IV. Useable Storage in Place 2012-13	12,210	11,782	685	24,677
V. Change in Storage 2013-14	(91)	335	(10)	234

1/ Computed by USGS (Worts, F. C., Jr. and Boss, R. F., *Geology and Ground-Water Resources of Camp Pendleton, CA, July 1954*) as the storage between depths of 5 and 100 feet.

2/ Storage between 5 foot depth and sea level.

3/ Storage between 5 foot depth and 10 feet above sea level.

4/ Well 10S/4W-18L1 was destroyed during 2012, depth to water extrapolated from measurements for Well 10S/5W-13G1.

5/ Reported by Camp Pendleton based on NAVD88 datum.

6/ Reported by Camp Pendleton as average values for month of September unless noted otherwise.

7/ Average area estimated over depth interval for unused storage.

8/ From Worts and Boss for depth interval of 5 to 50 feet.

9/ Useable storage includes stored water reserved for riparian habitat; however specific amount stored for such purposes not delineated.

4.4.2 Murrieta-Temecula Groundwater Basin

The Murrieta-Temecula Groundwater Basin is located along Murrieta and Temecula creeks in the Upper Santa Margarita River Watershed. Total groundwater storage at the end of Water Year 2001 was computed for each of 22 hydrologic sub-areas that make up the Groundwater Basin. These computations were based on the areal extent of each sub-area, the thickness of each of three aquifers, (younger alluvium, Pauba aquifer and Temecula aquifer), a specific yield for each aquifer, and the depth to water in each aquifer at the end of the water year. Specific yields were based on unconfined conditions for all aquifers. The total groundwater storage in the uppermost 500 feet as of September 30, 2001, was estimated at 1,340,556 acre feet.

Since 2001, annual changes in groundwater storage have been computed using two different methodologies for comparison; a water budget method and a groundwater level method.

The water budget method determines the change in storage as the difference between the major elements of inflow and outflow for the groundwater area. Table 4.3 shows the changes for Water Years 2010 through 2014. The change in groundwater storage for Water Year 2013-14, using the water budget method, is calculated as a decline of 12,895 acre feet.

The groundwater level method is based on the changes in water levels in key wells in hydrologic sub-areas. Changes in storage under the groundwater level method for Water Years 2010 through 2014 are shown on Table 4.4. The change in groundwater storage for Water Year 2013-14, using the groundwater level method, is calculated as a decline of 10,477 acre feet.

The foregoing two methods are based on independent measurements and estimates. The estimates from the two methods are generally comparable for the period 2001 through 2014. However, the estimates from the two methods for certain years indicate differences in the results. It will take testing over a number of years under varying hydrologic conditions to refine these approaches. Such testing may include comparing the estimates obtained from these two methods with values computed with the groundwater model that is used for implementation of the CWRMA between Camp Pendleton and Rancho California WD.

TABLE 4.3

SANTA MARGARITA RIVER WATERSHED
CHANGES IN GROUNDWATER STORAGE
MURRIETA-TEMECULA GROUNDWATER AREA
Water Budget Method
Quantities in Acre Feet

<u>Elements of Inflow</u>	<u>Water Year Ending</u>				
	2010	2011	2012	2013	2014
Releases from Vail ^{1/}	1,372	3,732	901	3,259	811
Releases from Lake Skinner ^{2/}	156	471	0	51	61
Freshwater Releases to Stream ^{3/}	3,913	4,399	3,708	2,530	4,126
Reclaimed Water Released to Stream ^{4/}	0	0	0	0	0
Recharged Imported Water ^{5/}	12,858	13,873	14,643	11,395	12,069
Return Flow from RCWD Groundwater Production ^{6/}	8,441	8,409	8,984	8,904	9,048
Return Flow from Import Direct Use ^{7/}	2,999	2,668	3,015	3,457	3,920
Return Flow from Applied Wastewater ^{8/}	1,582	1,391	1,288	1,349	1,399
Underflow and Tributary Inflow ^{9/}	30,674	47,957	4,119	2,149	6,777
Subtotal	61,995	82,900	36,658	33,094	38,211
<u>Elements of Outflow</u>					
Riparian Evapotranspiration and Underflow ^{10/}	508	508	508	508	508
Total RCWD Groundwater Production ^{11/}	36,698	36,560	39,060	38,763	39,413
Net Pumping by Others ^{12/}	2,042	2,002	2,138	2,277	2,226
Surface Outflow ^{13/}	25,894	36,922	6,737	4,220	8,959
Subtotal	65,142	75,992	48,443	45,768	51,106
<u>Change in Groundwater Storage</u>	(3,147)	6,908	(11,785)	(12,674)	(12,895)

1/ Table 3.3, Total Releases.

2/ Section 5.4.

3/ Table A-7, SMR Release.

4/ Table A-7, Reclaimed Wastewater, Murrieta Creek Discharge (ceased October 18, 2002).

5/ Table A-7, Footnote 3.

6/ Table 7.8, Total Production less releases to streams, times 0.23.

7/ Rancho Division Direct Use Imports, Table A-7 Footnote 4, times 0.23.

8/ The sum of: (Reclaimed Wastewater Table A-7, Reuse in SMRW) plus (Table A-1, Reuse in SMRW), times 0.23.

9/ Murrieta Creek at Temecula Flow times 1.6697 which is based on a correlation between Murrieta Creek at Temecula flow and Tributary Inflow, Areal Recharge and Subsurface Inflow for the period 1977-1998 as shown in Table II-10, Vol. II, Geology and Hydrology, Surface and Ground Water Model of the Murrieta-Temecula Ground Water Basin, California, dated January 31, 2003.

10/ Table II-10, Vol. II, Geology and Hydrology, Surface and Ground Water Model of the Murrieta-Temecula Ground Water Basin, California, dated January 31, 2003.

11/ Table 7.8 Total Production.

12/ The sum of Groundwater Production from: [Table A-1 (EMWD), A-5 (Pechanga IR), A-10 (WMWD Murieta Division, previously A-5), Appendix C, Murrieta-Temecula Groundwater Area], times .77.

13/ Table 3.2 Santa Margarita River near Temecula.

TABLE 4.4

SANTA MARGARITA RIVER WATERSHED
 CHANGES IN GROUNDWATER STORAGE
 MURRIETA-TEMECULA GROUNDWATER AREA
 Groundwater Level Method

Sub-area	Key Aquifer	Specific Yield/ Storativity	Key Well	Aquifer Area Acres	Water Depth at End of Water Year					Change in Depth					Change in Storage in Water Year					
					Feet					Feet					Acre Feet					
					2010	2011	2012	2013	2014	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014	
1	Temecula	0.0036	510	6/	1371	199.60	211.71	215.40	225.00	233.50	(1.58)	(12.11)	(3.69)	(9.60)	(8.50)	(8)	(60)	(18)	(47)	(42)
2	Pauba	0.0398	439		479	28.67	26.00	30.75	37.40	42.40	6.06	2.67	(4.75)	(6.65)	(5.00)	116	51	(91)	(127)	(95)
3	Pauba	0.0309	146		802	28.62	26.22	29.61	33.52	39.44	5.76	2.40	(3.39)	(3.91)	(5.92)	143	59	(84)	(97)	(147)
4	Pauba	0.0350	101	2/, 3/	694	79.04	161.11	175.15	175.32	155.87	34.33	(82.07)	(14.04)	(0.17)	19.45	834	(1,993)	(341)	(4)	472
5	Pauba	0.0319	102	2/, 4/	1322	119.52	84.98	62.05	79.20	128.18	0.22	34.54	22.93	(17.15)	(48.98)	9	1457	967	(723)	(2,066)
6	Pauba	0.0698	495		1562	96.55	89.12	78.76	70.80	64.80	9.40	7.43	10.36	7.96	6.00	1025	810	1130	868	654
7	Pauba	0.0012	211		719	153.00	118.00	108.66	101.00	118.00	7.02	35.00	9.34	7.66	(17.00)	6	30	8	7	(15)
8	Qyal	0.20	492		339	28.47	28.60	27.79	28.03	28.85	(0.12)	(0.13)	0.81	(0.24)	(0.82)	(8)	(9)	55	(16)	(56)
	Pauba	0.0891	492		496	28.47	28.60	27.79	28.03	28.85	(0.12)	(0.13)	0.81	(0.24)	(0.82)	(5)	(6)	36	(11)	(36)
9	Temecula	0.0036	410		2066	333.96	338.00	318.00	321.08	336.80	0.64	(4.04)	20.00	(3.08)	(15.72)	5	(30)	149	(23)	(117)
10	Qyal	0.20	426		1438	38.29	33.04	40.05	39.60	38.70	2.83	5.25	(7.01)	0.45	0.90	814	1510	(2,016)	129	259
	Pauba	0.0746	426		1165	38.29	33.04	40.05	39.60	38.70	2.83	5.25	(7.01)	0.45	0.90	246	456	(609)	39	78
11	Qyal	0.20	422		1405	63.39	62.60	65.00	67.20	71.19	(1.07)	0.79	(2.40)	(2.20)	(3.99)	(301)	222	(674)	(618)	(1,121)
	Pauba	0.0634	422		1413	63.39	62.60	65.00	67.20	71.19	(1.07)	0.79	(2.40)	(2.20)	(3.99)	(96)	71	(215)	(197)	(357)
12	Qyal	0.20	417		1769	92.65	87.66	93.00	96.74	111.15	(1.46)	4.99	(5.34)	(3.74)	(14.41)	(517)	1765	(1,889)	(1,323)	(5,098)
	Pauba	0.0422	417		752	92.65	87.66	93.00	96.74	111.15	(1.46)	4.99	(5.34)	(3.74)	(14.41)	(46)	158	(169)	(119)	(457)
13	Qyal	0.20	484	2/, 5/	898	50.58	27.48	55.25	77.16	74.12	(0.01)	23.10	(27.77)	(21.91)	3.04	(2)	4149	(4,987)	(3,935)	546
	Pauba	0.0198	484	2/, 5/	398	50.58	27.48	55.25	77.16	74.12	(0.01)	23.10	(27.77)	(21.91)	3.04	0	182	(219)	(173)	24
14	Temecula	0.0036	462		2084	416.80	408.50	409.80	421.20	364.57	6.40	8.30	(1.30)	(11.40)	56.63	48	62	(10)	(86)	425
15	Temecula	0.0036	464		1347	326.00	328.50	329.60	330.20	332.40	(0.70)	(2.50)	(1.10)	(0.60)	(2.20)	(3)	(12)	(5)	(3)	(11)
16	Temecula	0.0036	509	7/	1967	511.70	521.60	527.30	532.20	543.70	(8.10)	(9.90)	(5.70)	(4.90)	(11.50)	(57)	(70)	(40)	(35)	(81)
17	Temecula	0.0036	139	1/	2008	512.74	530.39	536.90	547.74	570.91	---	(17.65)	(6.51)	(10.84)	(23.17)	---	(128)	(47)	(78)	(167)
18	Pauba	0.0967	129		1546	221.44	225.96	230.25	234.11	240.48	(4.05)	(4.52)	(4.29)	(3.86)	(6.37)	(605)	(676)	(641)	(577)	(952)
19	Temecula	0.0036	466		1562	314.00	325.22	336.22	325.26	340.81	(16.30)	(11.22)	(11.00)	10.96	(15.55)	(92)	(63)	(62)	62	(87)
20	Pauba	0.0738	493		3231	274.78	275.51	279.64	279.49	286.12	(4.03)	(0.73)	(4.13)	0.15	(6.63)	(961)	(174)	(985)	36	(1,581)
21	Pauba	0.1392	463		2303	54.80	53.80	54.40	56.00	57.40	0.66	1.00	(0.60)	(1.60)	(1.40)	212	321	(192)	(513)	(449)
*	Pauba	0.0325	Lynch	1/	1008	71.00	72.00	77.00	**	**	(2.00)	(1.00)	(5.00)	---	---	(66)	(33)	(164)	---	---
TOTAL																691	8,049	(11,113)	(7,564)	(10,477)

1/ Well not measured for year with dashes; Sub-area excluded for change in storage calculation for years with no measurement.

2/ Data for Wells 101, 102, and 484 were revised for years 2009 and 2010.

3/ Key Well 101 designated for Sub-area 4 in Year 2011; previously Well 401 designated as the Key Well.

4/ Key Well 102 designated for Sub-area 5 in Year 2011; previously Well 402 designated as the Key Well.

5/ Key Well 484 designated for Sub-area 13 in Year 2011; previously Well 414 designated as the Key Well.

6/ Key Well 510 for Sub-area 1 renamed in Year 2012; previously the well was named as Well 301.

7/ Key Well 509 for Sub-area 16 renamed in Year 2012; previously the well was named as Well 209.

* Sub-area is located within Murrieta Division of Western MWD; Sub-areas 1 through 21 are located in Rancho California WD.

** No water level data for the Lynch Well was provided by Western Municipal Water District for Water Year 2012-13, due to incorrect groundwater level readings.

4.4.3 Anza Groundwater Basin

The Anza Groundwater Basin is located along Cahuilla Creek in the upper portion of the Santa Margarita River Watershed.

The most recent study that determined storage volumes was conducted by Riverside County in 1990. That study concluded that the groundwater storage of about 182,200 acre feet in 1950 had decreased to about 165,000 acre feet in 1986. The study also concluded that “. . . basin hydrogeologic features, production facilities’ conditions, and locations/depths of storage . . .” limited the useable portion to 40% of the groundwater storage or about 56,200 acre feet in 1986.

During Water Years 2005 through 2009, groundwater level measurements were made by the USGS in Anza Valley under contract with the Bureau of Indian Affairs. In 2013, the USGS resumed groundwater level measurements as part of a study on behalf of the High Country Conservancy as the Local Project Sponsor under a California Department of Water Resources Integrated Regional Water Management (IRWM) Planning Grant. Rancho California WD is the managing agency for the Upper Santa Margarita Watershed IRWM Planning Region and contracted with the USGS to conduct the groundwater level measurements. The data from these measurements are available at the USGS website: <http://nwis.waterdata.usgs.gov/ca/nwis/gwlevels>.

The wells included in the program can be located by selecting the latitude-longitude box selection criteria and specifying the following bounds:

North Latitude - 33° 37' 00"
South Latitude - 33° 30' 00"
West Longitude - 116° 48' 00"
East Longitude - 116° 38' 00"

Page Intentionally Blank

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 delivered by Metropolitan Water District of Southern California (MWD) 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 indicated on Table 5.1. Total storage in the SWP for the last ten years is shown graphically on Figure 5.1. Similarly, total storage for the Colorado River Reservoirs for the last ten years is shown on Figure 5.2. It may be seen from Table 5.1 that during Water Year 2013-14, water in storage in the SWP decreased from 2.51 million acre feet on September 30, 2013, to 1.69 million acre feet on September 30, 2014. Storage on September 30, 2014 corresponds to about 32 percent of the total SWP storage capacity.

Water in storage in the Colorado River system remained at the same level as the prior year at 29.6 million acre feet on September 30, 2014. On September 30, 2014, those reservoirs contained 46 percent of their total combined capacity.

The California Department of Water Resources prepares projections of water availability in the SWP for the coming year (2015) on a monthly basis from February through May. The report DWR Bulletin 120-4-15 dated May 1, 2015, indicated that statewide precipitation October 1 through April 30, 2015 was 70 percent of average compared to 50 percent last year. As of May 1, 2015, the SWP allocation for 2015 will meet twenty percent of contractors' 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 Station – Fallbrook Annex
- Western Municipal Water District

TABLE 5.1

**SANTA MARGARITA RIVER WATERSHED
STORAGE IN STATE WATER PROJECT
AND COLORADO RIVER RESERVOIRS**

Thousands of Acre Feet 1/

STATE WATER PROJECT RESERVOIRS											
Reservoir	Total Capacity	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Oroville	3,540	2,877	2,833	1,568	1,097	1,337	1,755	3,045	1,977	1,633	1,076
San Luis (State Share)	1,060	925	911	445	200	224	415	874	389	283	214
Pyramid	171	160	163	166	163	166	164	164	169	167	168
Castaic	324	306	266	313	268	200	260	284	264	285	108
Silverwood	73	72	72	73	71	70	70	71	71	72	71
Perris	132	82	72	66	69	62	61	66	72	73	55
Total	5,300	4,422	4,317	2,631	1,868	2,059	2,725	4,504	2,942	2,513	1,692
Percent of Capacity		83%	81%	50%	35%	39%	51%	85%	56%	47%	32%

MAJOR COLORADO RIVER RESERVOIRS											
Reservoir	Total Capacity	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Flaming Gorge	3,789	3,177	3,130	3,063	3,024	3,394	3,154	3,467	3,030	2,818	3,284
Blue Mesa	941	588	667	687	650	651	609	699	340	348	599
Navajo	1,709	1,516	1,420	1,510	1,319	1,314	1,412	1,327	1,035	933	1,081
Powell	27,000	11,939	11,917	11,929	14,509	15,463	15,267	17,593	13,929	10,934	12,286
Mead	28,537	15,219	13,887	12,505	12,013	10,933	10,092	12,977	13,135	12,362	10,121
Mohave	1,818	1,573	1,584	1,545	1,586	1,501	1,575	1,610	1,606	1,624	1,645
Havasu	648	554	555	576	584	564	560	585	561	560	583
Total	64,442	34,566	33,160	31,815	33,685	33,820	32,669	38,258	33,636	29,579	29,599
Percent of Capacity		54%	51%	49%	52%	52%	51%	59%	52%	46%	46%

1/ Storage reported for end of water year on September 30.

Figure 5.1

STORAGE IN STATE WATER PROJECT
Water Years 2005 through 2014
Total Capacity is 5.3 Million Acre Feet

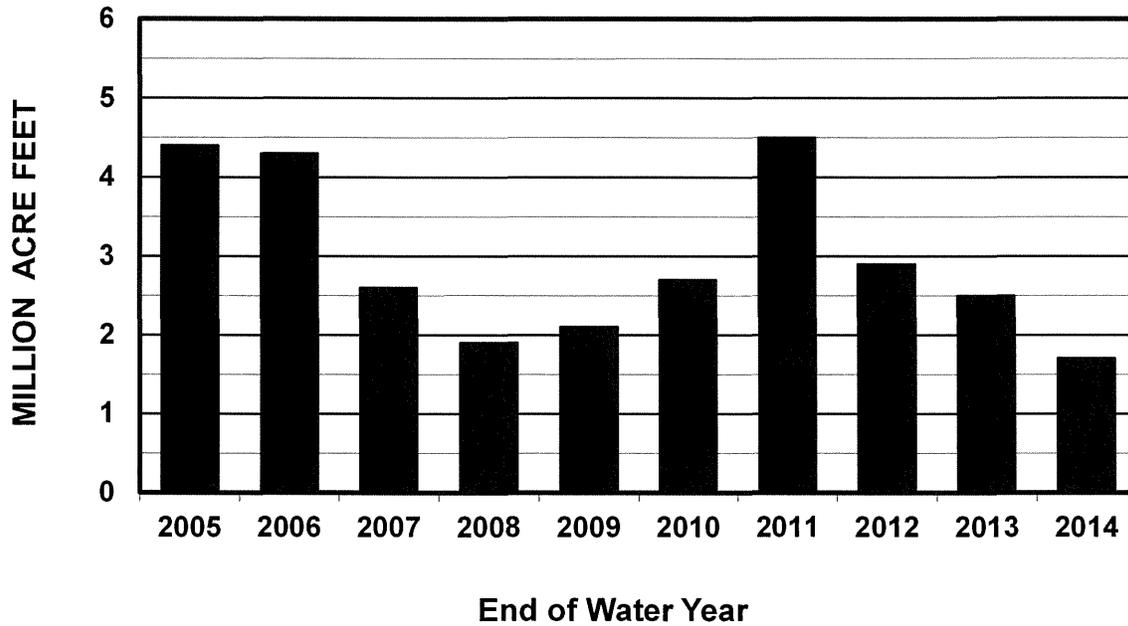
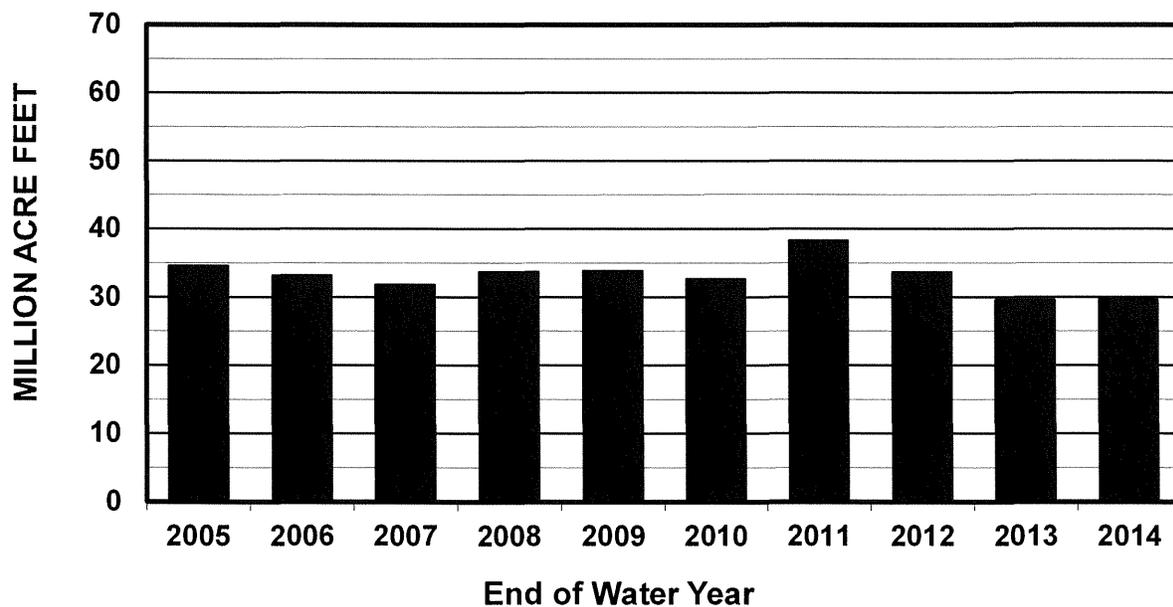


Figure 5.2

STORAGE IN COLORADO RIVER RESERVOIRS
Water Years 2005 through 2014
Total Capacity is 64.4 Million Acre Feet



In addition to net deliveries through member agencies, MWD, pursuant to a Court Order, imported 1,074 acre feet of water into the Santa Margarita River Watershed for irrigation of lands in Domenigoni Valley during 2013-14.

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 delivers water to a portion of its service area that is inside the Santa Margarita River Watershed. Elsinore Valley MWD obtains its supply from imports or from wells outside 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. The wastewater that is derived from the exported potable water is returned to the Watershed for treatment at the Southern Region Tertiary Treatment Plant. Recycled water is used for irrigation both within and outside the Watershed. Treated wastewater in excess of recycled use is exported for discharge at the Oceanside Outfall. Wastewater from the Fallbrook area and the Naval Weapons Station is exported by the Fallbrook Public Utility District and wastewater in the Elsinore Valley MWD is exported by Elsinore Valley MWD. Rancho California WD exports water into the San Mateo Creek Watershed.

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. Eastern MWD uses a second, 48-inch pipeline along Palomar Valley for delivery of recycled water for reuse and export from the Watershed. Rancho California WD also delivers wastewater to the Palomar Pipeline under an agreement with Eastern MWD to provide coordinated operation of their respective wastewater systems and thus such wastewater originating from Rancho California WD can also be reused or exported through the operation of the Palomar Pipeline by Eastern MWD. The exported wastewater can be reused outside the Watershed, delivered to storage facilities or discharged to Temescal Creek. In 2013-14, Eastern MWD did not export wastewater for discharge to Temescal Creek. During 2013-14, Rancho California WD had no deliveries of wastewater to the Palomar Pipeline and thus no export of wastewater for discharge to Temescal Creek can be attributed to wastewater originating from Rancho California WD.

The following paragraphs of this report describe imports and exports during Water Year 2013-14 and during the period 1966 through 2014. A discussion of MWD's Lake Skinner and Diamond Valley Lake operations is also provided.

5.2 Water Year 2013-14

During Water Year 2013-14, a total of 81,785 acre feet of net imported supplies were distributed for use in the Watershed. This compares with 74,889 acre feet in 2012-13 and represents an increase of approximately nine percent. The term net imports is used because several entities report gross imports into the Santa Margarita River Watershed but due to system configurations and operations, a portion of the gross imports may be transported to serve areas outside of the Watershed. Thus, the net imports reflect the quantities of imported supplies used within the Santa Margarita River Watershed. Net imports into the Watershed are listed on Table 5.2 for Water Year 2013-14.

The water exported from the Watershed for 2013-14 primarily includes wastewater except for Camp Pendleton and Rancho California WD. As described in Section 7, Camp Pendleton exports native water for use outside the Watershed. Also, Rancho California WD exports groundwater as part of a blended water supply to serve customers in the San Mateo Watershed. Exports from the Watershed for 2013-14 were 18,518 acre feet as shown on Table 5.2. This compares to 18,325 acre feet in 2012-13 and represents an increase of about one percent.

The quality of the water supplies imported through the MWD system in 2013-14 is indicated by the average monthly total dissolved solids at the Skinner Treatment Plant effluent line as shown on Table 5.3. The table also shows the percent of imported water obtained from the SWP.

5.3 Water Years 1966 through 2014

Water quantities imported by districts into the Santa Margarita River Watershed during Water Years 1966 through 2014 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 with 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 period 1966 through 2014 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 Fallbrook PUD and the Naval Weapons Station after 1983, and Elsinore Valley MWD after 1986. Exports by Eastern MWD were initiated in 1992-1993, and Rancho California WD began quantifying export of water in 2002-03. Exports do not include water that naturally flows from the Santa Margarita River into the Pacific Ocean.

TABLE 5.2

**SANTA MARGARITA RIVER WATERSHED
IMPORTS/EXPORTS**

2013-14
Quantities in Acre Feet

NET IMPORTS

EXPORTS

3/

YEAR MONTH	EASTERN MWD	ELSINORE VALLEY MWD	FALLBROOK PUD	MWD 1/	MURRIETA DIVISION WESTERN MWD	RAINBOW MWD	RANCHO CAL WD	U. S. NAVAL WS	WESTERN MWD 2/	TOTAL NET IMPORTS	----- CAMP PENDLETON -----			U.S. NAVAL WS	EASTERN MWD 6/	ELSINORE VALLEY MWD	FALLBROOK PUD	RANCHO CAL WD 7/	TOTAL EXPORTS
											EXPORTS 4/	WASTEWATER RETURNS 5/	NET EXPORT						
2013																			
OCT	1,416	1,071	733	96	133	192	3,438	4	3	7,086	469	97	372	0	1,034	111	81	35	1,633
NOV	1,208	503	600	61	107	161	2,221	3	2	4,866	413	78	335	0	1,058	106	82	36	1,617
DEC	914	259	372	22	68	89	1,782	5	2	3,513	394	75	319	0	1,112	110	76	17	1,634
2014																			
JAN	1,053	538	514	45	95	95	3,080	4	3	5,426	427	79	348	0	1,010	108	77	19	1,562
FEB	1,020	456	571	51	79	103	2,252	3	2	4,536	387	72	315	0	832	97	62	31	1,337
MAR	801	380	362	62	87	104	2,268	4	2	4,070	411	82	329	1	1,124	109	83	17	1,663
APR	1,122	508	464	111	127	98	4,084	4	3	6,521	407	83	324	0	967	104	77	13	1,485
MAY	1,565	663	675	150	190	135	5,499	5	3	8,885	494	114	380	1	989	108	77	20	1,575
JUNE	1,621	771	793	110	136	197	5,733	6	4	9,371	514	109	405	1	886	103	79	18	1,492
JULY	1,759	798	788	120	141	180	6,152	6	4	9,948	529	112	417	1	928	119	74	22	1,561
AUG	1,803	748	871	141	120	211	4,997	7	4	8,902	464	96	368	1	937	119	70	36	1,531
SEPT	1,602	718	835	105	124	167	5,097	7	3	8,659	466	102	364	1	867	113	58	25	1,428
TOTAL	15,884	7,413	7,578	1,074	1,407	1,732	46,603	58	35	81,785	5,375	1,099	4,276	6	11,744	1,307	896	289	18,518

1/ Metropolitan Water District direct deliveries in Domenigoni Valley as shown on Table A-4.

2/ Improvement District A - Rainbow Canyon Only (WR-13).

3/ All exports are wastewater except as noted for Camp Pendleton and Rancho California WD.

4/ Agricultural and Camp Supply use outside the SMRW, recycled use outside the SMRW, plus export to Oceanside Outfall as shown on Table A-8.

5/ Estimated as recycled percentage of Camp Supply use outside the SMRW as shown on Table A-8.

6/ Includes Other Reuse shown on Table A-1, which includes changes of storage in Winchester and Sun City storage ponds, evaporation and percolation losses, and discharges to Temescal Creek in the Santa Ana Watershed.

7/ Includes groundwater used in San Mateo Watershed and wastewater exported via Palomar Valley pipeline.

TABLE 5.3

SANTA MARGARITA RIVER WATERSHED
TOTAL DISSOLVED SOLIDS
CONCENTRATION OF IMPORTED WATER

YEAR MONTH	TOTAL DISSOLVED SOLIDS MG/L		PERCENT STATE PROJECT WATER	
	1/		2/	
	<u>2012-13</u>	<u>2013-14</u>	<u>2012-13</u>	<u>2013-14</u>
2013				
OCT	358	513	66	18
NOV	342	520	77	15
DEC	336	526	78	12
2014				
JAN	345	560	80	10
FEB	391	576	65	0
MAR	399	538	64	15
APR	482	574	36	6
MAY	523	574	22	8
JUNE	528	493	18	32
JULY	522	411	20	55
AUG	524	451	18	46
SEPT	516	551	21	25

1/ As measured in the Skinner Treatment Effluent line.

2/ Skinner Plant treated a blend of California State Project Water and Colorado River water.

TABLE 5.4

SANTA MARGARITA RIVER WATERSHED
IMPORTS/EXPORTS

NET IMPORTS

Quantities in Acre Feet

EXPORTS

5/

WATER YEAR	EASTERN MWD	ELSINORE VALLEY MWD	FALLBROOK PUD 1/	MWD 2/	MURRIETA DIVISION WESTERN MWD	RAINBOW MWD	RANCHO CAL WD 3/	U.S. NAVAL WS	WESTERN MWD 4/	TOTAL IMPORTS	----- CAMP PENDLETON -----			U. S. NAVAL WS	EASTERN MWD	ELSINORE VALLEY MWD	FALLBROOK PUD	RANCHO CAL WD 7/	TOTAL EXPORTS
											EXPORTS	WASTEWATER RETURNS	NET EXPORT						
1966	1,604	N/R	3,351	0	0	1,308	0	0	24	6,287	3,251	974	2,277	0	0	0	0	N/R	2,277
1967	1,630	N/R	2,852	0	0	1,095	0	0	20	5,597	3,180	1,243	1,937	0	0	0	0	N/R	1,937
1968	1,464	N/R	3,423	0	0	1,377	0	0	27	6,291	3,368	1,214	2,154	0	0	0	0	N/R	2,154
1969	1,741	N/R	2,837	0	0	1,253	0	0 E	25	5,856	3,276	1,170	2,106	0	0	0	0	N/R	2,106
1970	1,417	N/R	3,538	0	0	1,689	0	0 E	31	6,675	3,809	1,113	2,696	0	0	0	0	N/R	2,696
1971	1,383	N/R	3,405	0	0	1,650	0	76 E	34	6,548	3,527	1,090	2,437	0	0	0	0	N/R	2,437
1972	1,470	N/R	3,916	0	0	2,037	0	115 E	34	7,572	3,543	1,168	2,375	0	0	0	0	N/R	2,375
1973	1,533	N/R	3,210	0	0	1,616	0	115 E	30	6,504	3,544	1,187	2,357	0	0	0	0	N/R	2,357
1974	1,601	N/R	3,967	0	0	2,049	0	115 E	36	7,768	3,532	1,140	2,392	0	0	0	0	N/R	2,392
1975	1,969	N/R	3,597	0	0	1,247	0	115 E	34	6,962	3,098	1,530	1,568	0	0	0	0	N/R	1,568
1976	2,493	N/R	4,627	0	0	2,239	119	115 E	35	9,628	3,619	1,497	2,122	0	0	0	0	N/R	2,122
1977	2,947	N/R	5,212	0	0	2,343	1,845	115 E	24	12,486	3,194	1,416	1,778	0	0	0	0	N/R	1,778
1978	2,551	569	5,202	0	0	2,188	5,774	115 E	26	16,425	3,071	1,283	1,788	0	0	0	0	N/R	1,788
1979	1,894	712	5,723	0	0	2,348	7,009	115 E	24	17,824	4,756	1,427	3,329	0	0	0	0	N/R	3,329
1980	1,192	696	6,404	0	0	2,489	10,126	115 E	25	21,047	3,651	1,405	2,246	0	0	0	0	N/R	2,246
1981	716	798	8,543	0	0	3,153	15,282	115 E	34	28,642	3,892	1,249	2,643	0	0	0	0	N/R	2,643
1982	1,112	678	7,079	0	0	2,460	13,378	115 E	34	24,856	3,761	1,273	2,488	0	0	0	0	N/R	2,488
1983	1,211	658	6,720	0	0	2,190	5,752	115 E	26	16,672	3,000	1,242	1,758	26 E	0	0	1,003	N/R	2,787
1984	699	816	8,506	0	0	3,068	6,716	115 E	26	19,946	3,243	1,120	2,123	26 E	0	0	1,032	N/R	3,181
1985	679	808	7,831	0	0	3,410	7,158	102	27	20,015	3,377	1,200	2,177	26 E	0	0	1,060	N/R	3,263
1986	760	882	8,585	0	0	2,945	11,174	94	34	24,474	3,326	981	2,345	16 P	0	0	1,096	N/R	3,457
1987	1,155	938	8,656	0	0	3,390	7,564	116	36	21,855	3,444	1,799	1,645	26	0	4	1,129	N/R	2,805
1988	2,047	1,032	8,033	0	0	2,985	17,854	120	36	32,108	3,457	1,872	1,585	26	0	55	1,154	N/R	2,820
1989	3,746	1,341	9,066	0	0	3,003	22,895	128	23	40,202	3,418	1,446	1,972	23	0	74	1,181	N/R	3,250
1990	5,601	2,255	10,103	0	0	3,818	22,030	145	22	43,974	2,971	1,451	1,520	27	0	114	1,271	N/R	2,932
1991	9,479	2,421	7,962	0	0	2,904	21,238	109	21	44,134	2,168	1,219	949	13	0	134	960	N/R	2,056
1992	8,593	2,190	7,893	0	0	2,277	16,931	99	25	38,008	2,426	1,548	878	7	0	140	1,083	N/R	2,108
1993	5,393	2,964 R	6,925	0	0	1,965	11,411	117	31	28,806 R	2,329	1,926	403	16	705	150	1,255	N/R	2,529
1994	7,150	3,232 R	7,250	0	0	1,651	16,386	73	37	35,779 R	2,702	1,501	1,201	5	3,159	170	1,068	N/R	5,603
1995	4,625	3,127 R	6,538	547	0	1,661	15,108	125	29	31,760 R	2,781	1,611	1,170	12	3,908	185	1,153	N/R	6,428
1996	4,960	4,197 R	7,993	1,005	0	1,815	23,600	100	35	43,705 R	3,577	1,493	2,084	5	2,993	213	1,035	N/R	6,330
1997	3,284	4,296 R	7,894	3,521	0	1,429	26,992	109	30	47,555 R	3,643	1,932	1,711	6	3,201	226	1,021	N/R	6,165
1998	5,117	5,100	6,382	5,023	0	1,601	19,584	97	31	42,935	3,742	2,073	1,669	8	4,513	247	1,482	N/R	7,919
1999	4,327	6,133 R	7,430	3,781	0	1,727	34,490	111	41	58,040 R	3,558	2,130	1,428	5	4,133	254	1,377	N/R	7,197
2000	7,256	7,174 R	9,365	712	0	2,217	55,409	104	42	82,279 R	4,072	2,115	1,957	7	3,649	279	1,419	N/R	7,311
2001	5,948	6,215 R	8,398	689	0	1,804	41,823	73	59	65,009 R	3,653	2,075	1,578	8	4,457	310	1,392	N/R	7,745
2002	8,117	7,596	9,580	595	0	1,676	54,148	97	64	81,873	3,701	1,950	1,751	9	5,325	412	1,225	N/R	8,722
2003	9,062	7,091	9,130	495	102	1,510	50,744	88	42	78,264	3,767	1,688	2,079	10	7,636	483	1,359	64	11,631
2004	9,138	8,438	11,749	766	330	1,888	62,408	73	50	94,840	4,951 6/	0	4,951	8	9,115	600	1,329	312	16,315
2005	10,858	8,215	8,108	556	75	1,610	47,614	40	62	77,138	4,625 6/	0	4,625	16	11,676	927	1,417	1,574	20,235
2006	14,161	9,819	10,573	506	316	1,851	60,611	64	66	97,967	4,912 6/	0	4,912	8	10,906	938	1,395	1,379	19,538
2007	15,398	10,811	12,292	660	723	2,262	63,818	70	45	106,079	5,152 6/	0	5,152	12	10,553	837	891	364	17,809

TABLE 5.4
SANTA MARGARITA RIVER WATERSHED
IMPORTS/EXPORTS

NET IMPORTS

Quantities in Acre Feet

EXPORTS

5/

WATER YEAR	EASTERN MWD	ELSINORE VALLEY MWD	FALLBROOK PUD 1/	MWD 2/	MURRIETA DIVISION WESTERN MWD	RAINBOW MWD	RANCHO CAL WD 3/	U.S. NAVAL WS	WESTERN MWD 4/	TOTAL IMPORTS	----- CAMP PENDLETON -----			U. S. NAVAL WS	EASTERN MWD	ELSINORE VALLEY MWD	FALLBROOK PUD	RANCHO CAL WD 7/	TOTAL EXPORTS
											EXPORTS	WASTEWATER RETURNS	NET EXPORT						
2008	14,952	9,951	8,920	493	2,180	1,790	50,683	82	54	89,105	4,774 6/	0	4,774	11	12,789	901	799	361	19,635
2009	14,472	9,075	8,557	607	1,654	1,852	50,270	74	51	86,612	5,362 8/	1,119	4,243	12	12,027	1,069	829	367	18,547
2010	13,552	7,926	7,183	385	1,462	1,453	40,894	69	62	72,986	5,143 8/	1,075	4,068	7	11,829	1,120	926	318	18,268
2011	14,392	7,425	6,234	336	1,642	1,492	39,411	45	52	71,029	5,516 8/	1,441	4,075	8	12,381	1,130	901	302	18,797
2012	15,063	7,398	7,254	466	1,371	1,892	41,900	48	48	75,440	5,595 8/	1,672	3,923	9	12,550	1,205	928	284	18,898
2013	15,751	7,158	7,357	892	1,365	1,713	40,571	47	35	74,889	5,367 8/	1,254	4,113	3	11,775	1,245	900	289	18,325
2014	15,884	7,413	7,578	1,074	1,407	1,732	46,603	58	35	81,785	5,375 8/	1,099	4,276	6	11,744	1,307	896	289	18,518

1/ Includes DeLuz Heights MWD prior to 1991.

2/ Metropolitan Water District direct deliveries in Domenigoni Valley plus miscellaneous maintenance releases beginning 2009.

3/ For period 2003 to present, values shown are net imports excluding imported water delivered to San Mateo Watershed.

4/ Improvement District A - Rainbow Canyon Only (WR-13).

5/ All exports are wastewater except as noted for Camp Pendleton and Rancho Cal WD.

6/ Includes export of native water plus wastewater from in-basin use.

7/ Includes groundwater used in San Mateo Watershed and wastewater exported to Santa Ana Watershed.

8/ Includes export of native water plus recycled water.

N/R - Not Reported

P - Partial year data

E - Estimate

R - Revised

5.4 Lake Skinner

Lake Skinner is a 44,000 acre foot reservoir constructed by MWD on Tualota 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. MWD does not have a water right to store or divert local water in Lake Skinner. Accordingly, 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 MWD release water from Lake Skinner into Tualota Creek if groundwater levels in Well AV-28B fall below an elevation of 1356.64 feet. During Water Year 2013-14, MWD released 61 acre feet for the specific purpose of groundwater replenishment to ensure the groundwater elevation in Well AV-28B was maintained above the indicated threshold elevation. For comparison purposes, the groundwater elevation was 1357.45 feet on September 26, 2014, a decline of 0.05 feet compared to 1357.50 feet on September 27, 2013.

In addition, operations at Lake Skinner periodically require miscellaneous maintenance releases from Lake Skinner into Tualota Creek that also replenish groundwater levels. In 2013-14, MWD did not release any additional maintenance releases from Lake Skinner into Tualota Creek. Also MWD periodically makes maintenance releases from various points throughout the MWD distribution system. In 2013-14, MWD did not discharge any maintenance releases from the distribution system.

The MOU also provides that all local surface inflow that enters Lake Skinner will be released into Tualota 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 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 Tualota Creek, Rawson Creek and Middle Creek during storms and uses those observations to supplement the hydrologic equation.

On February 16, 2005, the Court approved an Order Amending the MOU to provide for diversion from Lake Skinner on Fallbrook PUD's behalf after specified releases are made, according to State Water Resource Control Board Permit 11356 and the amended Lake Skinner MOU. In 2013-14, MWD records show no local inflow to Lake Skinner and subsequently there were no required releases in accordance with the MOU. In 2013-14, no water was accumulated in Lake Skinner for diversion to Fallbrook PUD.

5.5 Diamond Valley Lake

Diamond Valley Lake is located in Diamond and Domenigoni Valleys within the Santa Margarita River Watershed. The lake was created by 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 West Dam intercepts flows in the headwaters of Warm Springs Creek, a tributary of the Santa Margarita River through Murrieta Creek. The drainage area for the headwaters of Warm Springs Creek above the West Dam is 17.2 square miles.

MWD does not have a water right to store local waters in the reservoir, now known as Diamond Valley Lake, so a Memorandum of Understanding and Agreement on Operation of Domenigoni Valley Reservoir (MOU) was developed and 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 specifies that the required releases into Warm Springs Creek will be determined by measuring the surface water inflows into Goodhart Canyon Detention Basin. The detention basin receives surface water inflows from Goodhart Creek, which is located in an adjoining watershed that is tributary to the Santa Ana River. The drainage area of Goodhart Creek upstream of the detention basin is 4.2 square miles. The rainfall-runoff characteristics of the Goodhart Creek drainage area were determined to be the same as the rainfall-runoff characteristics of the Warm Springs Creek headwaters above the West Dam. Thus the required releases into Warm Springs Creek are equal to 4.1 times the measured inflow into Goodhart Canyon Detention Basin, as determined as the ratio of the drainage areas for the respective watersheds.

The total required releases into Warm Springs Creek during 2013-14 were 1.442 acre feet.

Although all surface waters within the Santa Margarita River Watershed in Domenigoni Valley and Diamond Valley are subject to the continuing jurisdiction of the Court, groundwater contained within the 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 2013-14, groundwater elevations in Well MO-6, which is located along the south line of Section 9, rose 1.29 feet from 1364.93 feet at the beginning of the water year to 1366.22 feet on October 2, 2014.

During 2013-14, there were no injections into the Domenigoni Valley groundwater basin pursuant to Agreements for Mitigation of Groundwater. However, pursuant to a Court Order, MWD imported 1,074 acre feet of water into the Santa Margarita River Watershed for irrigation of lands in Domenigoni Valley. As previously noted, the groundwater in the Domenigoni Valley groundwater basin is outside this Court's jurisdiction when groundwater levels are below an elevation of 1400 feet.

Page Intentionally Blank

SECTION 6 - WATER RIGHTS

6.1 General

The Santa Margarita River Watershed is adjudicated in accordance with the Modified Final Judgment and Decree filed on April 6, 1966, in the U.S. District Court, Southern District of California in *U.S.A. v. Fallbrook Public Utility District, et al.* Water is used in the Watershed under a variety of water rights, as more specifically described in the Interlocutory Judgments incorporated into the Modified Final Judgment and Decree, 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 Court has stated that the issue of apportionment of water rights has not been presented to the Court, but the Court would litigate the apportionment if and when in the future it becomes necessary to do so.

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 groundwater, 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. 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 not exercising their overlying rights. Instead, Rancho California WD pumps groundwater and uses it throughout the District area as agent on behalf of the landowners.

The resulting change is that Rancho California WD presently produces groundwater in the Murrieta-Temecula Groundwater Area under a variety of rights: (1) recovery of water appropriated at Vail Lake, (2) recovery of import return flows and recharged imported water, (3) groundwater appropriative rights, and (4) as agent on behalf of the overlying landowners. Classification of Rancho California WD supplies into these various water right categories is discussed in Section 7 of this Report. Related to the change associated with Rancho California WD production is the increased production by Western MWD within its Murrieta Division. As discussed in Section 7 of this Report, all groundwater production in the Murrieta Division by Western MWD is classified as production from the older alluvium under a groundwater appropriative right.

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. 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.

Camp Pendleton representatives contend that the Court has jurisdiction over imported water to the full extent that imported water, as well as its use, its returns and its products, affects in any significant manner the water rights within the Watershed over which the Court has traditionally asserted its jurisdiction. Other parties dispute the Court's jurisdiction over imported water.

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 State Water Resources Control Board (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 water diversion, sets terms for the water 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.

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

	<u>Direct Diversions</u> <u>Gallons Per Day</u>	<u>Storage</u> <u>Acre Feet</u>
Cahuilla Valley	720	5
Cottonwood Creek	485,000	60
Cutca 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	13,050	40,000
Tucalota Creek	---	10,000
Sandia Canyon	---	8
Sourdough Spring	55	---
Santa Margarita River	96,730	4,000
Nelson Creek	<u>1,550</u>	<u>---</u>
TOTAL	990,719	54,313.5

These direct diversion rights of 990,719 gallons per day correspond to 1.53 cfs or 3.04 acre feet per day.

WATERMASTER
SANTA MARGARITA RIVER WATERSHED

TABLE 6.1

SANTA MARGARITA RIVER WATERSHED
APPROPRIATIVE WATER RIGHTS

PERMITS AND LICENSES

APPLICATION I.D.	OWNER	FILING DATE	SOURCE OF WATER	POINT OF DIVERSION	AMOUNT	USE	STATUS
A006629	William H. & Sandra J. Cyrus	4/9/30	Coahuila Valley	Sec. 4, 7S, 3E	DD-720 gpd	D	License
A007035	Nyla Lawler Trust	8/10/31	Cutca Creek	Sec. 29, 9S, 1E	DD-5725 gpd	D/I	License
A009137	JR SA, LLC	10/07/37	Temecula Creek	Sec. 12, 9S, 1E	DD-400 gpd	D	License
A009291	Richard W. Long	5/13/38	Nelson Creek	Sec. 23, 8S, 5W	DD-1550 gpd	D	License
A010806	James R., Phyllis & Bruce Grammer	4/22/44	Temecula Creek	Sec. 34, 9S, 2E	DD-2880 gpd	D	License
A011161	Roy C. Pursche & Barbara Booth	9/26/45	Rattlesnake Canyon	Sec. 28, 9S, 2E	DD-12,000 gpd	D/I	License
A011518	Rancho California Water District	8/16/46	Temecula Creek	Sec. 10, 8S, 1W	ST-40,000 AF	D/I/IN/M/R	Permit
A011587 1/	U. S. Bureau of Reclamation	10/11/46	Santa Margarita River	Sec. 12, 9S, 4W	ST-10,000 AF	D/I/M	Permit
A012178	Fallbrook Public Utility District	11/28/47	Tucalota Creek	Sec. 3, 7S, 2W	ST-10,000 AF	D/I/M	Permit
A012179 1/	U. S. Bureau of Reclamation	11/28/47	Santa Margarita River	Sec. 12, 9S, 4W	ST-10,000 AF	D/I/M	Permit
A013505	Robert R. Baum	12/12/49	Cottonwood Creek	Sec. 30, 8S, 4W	DD-0.75 cfs & ST-42 AF	R/S	License
A017239	Nancy A. Wiley	8/15/56	Temecula Creek	Sec. 20, 9S, 2E	DD-120 gpd	D/E	License
A020507	Robert R. Baum	11/24/61	Cottonwood Creek	Sec. 19, 8S, 4W Sec. 30, 8S, 4W	ST-18 AF	I/R	License
A020608	Pete and Dorothy Prestininzi	2/13/62	DeLuz Creek	Sec. 20, 8S, 4W	ST-100 AF	D/I/R	License
A020742	U. S. Cleveland National Forest	4/24/62	Sourdough Spring	Sec. 25, 9S, 1E	DD-55 gpd	E	License
A021074	U. S. Cleveland National Forest	12/07/62	Cutca Spring	Sec. 17, 9S, 1E	DD-100 gpd	S/W	License
A021471A	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
A021471B 1/	U. S. Bureau of Reclamation	9/23/63	Santa Margarita River	Sec. 32, 9S, 4W	ST-165,000 AF	D/I/M/Z	Permit
A027756	James R. Grammer	5/23/83	Temecula Creek	Sec. 3, 10S, 2E	DD-9,650 gpd	I/W	License
A028133	B&E Inv., Inc.	5/14/84	Cahuilla Creek	Sec. 15, 8S, 2E	ST-5AF	E/H/I/R/S	Permit

OTHER RIGHTS

F005751S*	U. S. Cleveland National Forest	1/01/70	Long Canyon Spring	Sec. 16, 9S, 1E	DD-89 gpd	E/R/S/W
S000024**	Judge Dial Perkins	12/26/86	Santa Margarita River	Sec. 12, 9S, 4W	DD-133.3 gpd	D
S000751**	Lawrence Butler	5/31/67	Fern Creek	Sec. 31, 8S, 4W	DD-0.33 cfs ST-100 AF	I
S011411**	Agri Empire, Inc.	5/16/84	Kohler Canyon	Sec. 33, 9S, 2E	DD-0.245 cfs ST-40 AF	I/S
S012235**	Lenny F. Kuszmaui	8/27/85	DeLuz Creek	Sec. 4, 9S, 4W	DD-4700 gpd	D/I
S014009**	San Diego State University	6/7/93	Santa Margarita River	Sec. 27, 8S, 3W	DD-0.15 cfs	D/I/Z
001583***	George F. Yackey	12/27/77	Sandia Canyon	Sec. 25, 8S, 4W	ST-8.0 AF	S
002380***	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
IN - Industrial W - Fish & Wildlife Protection and/or Enhancement

NOTES: * Federal Filing ** Statement of Diversion and Use *** Stock Filing

1/ These three water rights (A011587, A012179, and A021471B) were assigned to the U.S. Bureau of Reclamation by Fallbrook Public Utility District and the Department of the Navy in 1974 for purposes of developing the Santa Margarita River Project for the benefit of Fallbrook Public Utility District and the Department of the Navy Marine Corps Base Camp Pendleton.

Storage rights shown in Table 6.1 include 185,000 acre feet of storage rights on the Santa Margarita River held by the U. S. Bureau of Reclamation that have not been exercised. These three water rights (A011587, A012179, and A021471B) were assigned to the U.S. Bureau of Reclamation by Fallbrook Public Utility District and the Department of the Navy in 1974 for purposes of developing the Santa Margarita River Project for the benefit of Fallbrook Public Utility District and Department of the Navy Marine Corps Base, Camp Pendleton. The deadline for exercising these rights is currently set at December 31, 2008. On November 14, 2008, the U. S. Bureau of Reclamation filed petitions for time extensions for completion of beneficial use under the three permits. On September 14, 2009, change petitions were filed to amend the permits to conform to the Santa Margarita Conjunctive Use Project being developed jointly by the U. S. Bureau of Reclamation, Department of the Navy Marine Corps Base, Camp Pendleton, and Fallbrook Public Utility District. Those extension and change petitions have been accepted and in accordance with SWRCB Order 2009-0063-EXEC they are under consideration in tandem.

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 other entities. Four 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 non-statutory 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.

On November 19, 1998, the SWRCB adopted Order No. 98-08 entitled "Order Revising Declaration of Fully Appropriated Stream Systems" to revise its prior Order Nos. 89-25 and 91-07. These Orders list the Santa Margarita River stream system as fully appropriated "from the mouth of the Santa Margarita River at the Pacific Ocean upstream including all tributaries where hydraulic continuity exists."

WATERMASTER
 SANTA MARGARITA RIVER WATERSHED

TABLE 6.2

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

INTERLOCUTORY JUDGMENT	LISTED OWNER	CURRENT OWNER	DATE OF APPROPRIATION	SOURCE OF WATER	POINT OF DIVERSION	AMOUNT	USE
NO. 32	Anderson, Nina B.	Poladian, Jacqueline	April 11, 1892	Fern Creek	NW 1/4 of SE 1/4 Sec 31, T8S, R4W	32 gpm	Irrigation
NO. 32	Butler, Lawrence W. and Mary C.	Vanginkel, Norman Tr and Vanginkel, Deborah Tr 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
NO. 32	Wilson, Samuel M. and Hazel A.	Shirley, Bobbie	Aug. 3, 1911	DeLuz Creek	NW 1/4 of SW 1/4 Sec 32, T8S, R4W	50 miner's inches 65 AF/yr	Irrigation
NO. 24	United States	United States	1883	Santa Margarita River	Sec 5, T10S, R4W	20 cfs 1200 AF/yr	Domestic Irrigation Stock Water

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.
2. Initiation of a water right, pursuant to the Water Rights Permitting Reform Act of 1988 (Water Code Section 1228 *et seq.*), 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 that 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.

6.3 Fallbrook PUD Changes of Point of Diversion and Place of Use for Permit No. 11356

On November 20, 2001, the Chief of the Division of Water Rights of the State Water Resources Control Board authorized an Order Approving Changes in Source Point of Diversion, Place of Use and Amending the Permit (No. 11356). The permit allows Fallbrook PUD to divert and store up to 10,000 acre feet per year at Lake Skinner. The Court approved an Order Amending the Memorandum of Understanding and Agreement on Operation of Lake Skinner on February 16, 2005. The Amendment provides for such diversions from Lake Skinner after specified releases are made.

On December 18, 2009, Fallbrook PUD filed a petition for a time extension for completion of beneficial use under Permit No. 11356. The petition was accepted and noticed by the SWRCB on February 23, 2009, and no protests were filed.

On May 25, 2013, the SWRCB issued Order WR 2013-0007-EXEC with an amended Permit No. 11356 extending the time to apply the water to full beneficial use by December 31, 2048.

6.4 Federal Reserved Water Rights for Cahuilla and Ramona Indian Reservations

The Cahuilla and Ramona Indian Reservations are both located in the Anza area. The Court found in Interlocutory Judgment No. 41 that the United States reserved water rights for the reservations as specified below.

Order No. 3 in Interlocutory Judgment No. 41 specifies for the Cahuilla Indian Reservation the following:

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 which under natural conditions would be physically available on the Cahuilla 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 December 27, 1875, for lands transferred by the Executive Order of that date; March 14, 1887, for lands transferred by the Executive Order of that date; December 29, 1891, for lands transferred by the Executive Order of that date.

Order No. 1 in Interlocutory Judgment No. 41 specifies for the Ramona Indian Reservation the following:

IT IS ORDERED, ADJUDGED AND DECREED that the United States of America when it established the Ramona Indian Reservation intended to reserve and did reserve rights to the use of waters of the Santa Margarita River stream system which under natural conditions would be physically available on the Ramona Reservation, including rights to the use of ground waters, sufficient for the present and future needs of the Indians residing thereon with a priority date of December 29, 1891.

On October 6, 2006, the Cahuilla Band of Indians filed a Motion to Intervene as Plaintiff-Intervenor in *United States of America v. Fallbrook Public Utility District, et al.* The Cahuilla Band also filed a Complaint asking the Court to quantify its federal reserved water rights by confirming elements of the water rights as declared and decreed by the Court in Interlocutory Judgment No. 41. On October 16, 2006, the Ramona Band of Cahuilla filed a similar motion and Complaint. On January 22, 2007, the Court issued an Order granting the Motions to Intervene and filing the Complaints in Intervention. On February 25, 2009, the Court ordered the Cahuilla Band and Ramona Band as plaintiffs to serve by April 30, 2009, all water right holders subject to the Court's jurisdiction within the entire Watershed. Service was completed and the parties commenced settlement negotiations. On April 1, 2009, the Cahuilla and Ramona Bands filed motions to dismiss claims against certain downstream defendants and to file second amended complaints to limit the claims to the Anza-Cahuilla Groundwater Area. On April 29, 2009, the Court issued an Order granting the motions. The parties are progressing with settlement negotiations and Court proceedings for quantification of each Band's federal reserved water rights based on the Second Amended Complaints.

6.5 Federal Reserved Water Rights for Pechanga Indian Reservation

The Court found in Interlocutory Judgment No. 41 that the United States reserved water rights for the Pechanga Indian Reservation in accordance with 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 transferred 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.

In 1974, the Pechanga Band of Luiseño Mission Indians filed a Motion to Intervene as a Plaintiff-Intervenor in *United States of America v. Fallbrook Public Utility District, et al.*, and in 1975 the Court granted the Motion. Rather than filing a complaint asking the Court to quantify its federal reserved water rights, the Pechanga Band is in the process of resolving its claims to water rights in the Santa Margarita River Watershed through a comprehensive settlement agreement with the United States and principal water districts, including Rancho California WD, Eastern MWD, and Metropolitan Water District. On December 17, 2009, Pechanga and Rancho California WD announced an agreement on a framework, developed with the assistance of Metropolitan Water District and the United States Federal Negotiating Team, to resolve Pechanga's water rights claims. On April 27, 2009, Pechanga and Rancho California WD agreed to a Settlement Conceptual Agreement and on June 11, 2009, the Rancho California WD Board approved the Settlement Conceptual Agreement. On November 16, 2009, the parties announced the Pechanga Water Rights Settlement Agreement was finalized. On December 11, 2009 and January 26, 2010, the Pechanga Indian Water Rights Settlement Act was introduced in the United States House of Representatives and Senate, respectively. The proposed legislation was reintroduced in the Senate on June 25, 2013, and in the House of Representatives on June 26, 2013. In April 2014, the Senate Committee on Indian Affairs reported the Senate bill (S. 1219) to the full chamber recommending further consideration of an amended bill but the legislation was not enacted. The parties are now in the process of revising the agreement and draft legislation in anticipation of Congressional and Court approvals.

Page Intentionally Blank

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. Private landowners who qualify as 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 the 2013-14 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
- Rainbow Municipal Water District
- Rancho California Water District
- U. S. Marine Corps, Camp Pendleton
- U.S. Naval Weapons Station, Fallbrook Annex
- Western Municipal Water District

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

In addition to the major purveyors, there are a number of smaller water systems in the Watershed. Of these, Quiet Oaks Mobile Home Park, Jojoba Hills SKP Resort, Rancho California Outdoor Resorts, and Hawthorn Water System are substantial users.

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

A portion of a fourth Reservation, the Pauma Mission Reserve Tract of the Pauma Yuima Band of Luiseño Mission Indians, is also located within the Watershed. However, this Reservation was not included in Interlocutory Judgment No. 41.

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

The water use data collected for Water Year 2013-14 is summarized on Table 7.1. Total imported supplies plus local production totaled 123,617 acre feet compared to 118,232 acre feet reported in 2012-13. Of that quantity, 40,288 acre feet were used for agriculture; 19,276 acre feet were used for commercial purposes; 52,587 acre feet were used for domestic purposes; 24 acre feet were discharged to Murrieta Creek; 51 acre feet were discharged to Santa Gertrudis Creek; and 4,051 acre feet were discharged by Rancho California WD during 2013-14, pursuant to the CWRMA. It is noted, the commercial use for Pechanga includes 442 acre feet of recycled water and thus this amount is double counted on Table 7.1 relative to production from the Santa Margarita River Watershed. Actual commercial use of production from the Watershed is 18,834 acre feet, reflecting the reduction of 442 acre feet of recycled water used by Pechanga. In order for the totals to balance on Table 7.1, the 442 acre feet of recycled water is subtracted from the indicated loss for Pechanga as reflected in Footnote 13 for Table 7.1.

The overall system loss was 4,755 acre feet, or 3.8% of total production. 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 agricultural, commercial and domestic uses varies for the different purveyors in the Watershed. The definitions for agricultural, commercial and domestic uses have varied over the years for the different purveyors in the Watershed. Water use definitions for all major water purveyors were updated and reconciled for Water Year 2013-14. The reconciliation resulted in near uniformity in water use definitions among the major water purveyors. Accordingly, definitions of these uses for major water purveyors are shown on Table 7.2. Similar data for Water Years 1966 through 2014 are summarized in tables presented in Appendix B. As noted above, water use definitions were updated in Water Year 2013-14 and thus water use reported for certain purveyors for prior years on the Appendix B tables can vary significantly as compared to the use categories for 2013-14. The reader is referred to Table 7.2, published in each annual report, to determine the particular use definitions for any particular year in question. Appendix C presents information on substantial users outside purveyor service areas.

7.2 Water Purveyors

7.2.1 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 Water Year 2013-14 was approximately 29 acre feet from Well No. 1 as shown on Appendix Table A-11. Well No. 2 was not in use for 2013-14. Water levels in Well No. 1 rose 38 feet from last year.

WATERMASTER
SANTA MARGARITA RIVER WATERSHED

TABLE 7.1

SANTA MARGARITA RIVER WATERSHED
WATER PRODUCTION AND USE

2013-14

Quantities in Acre Feet

	PRODUCTION				USE 1/			TOTAL	WATER RIGHT
	WELL/ SURFACE	IMPORT	TOTAL	AG	COMM	DOM	LOSS		
WATER PURVEYORS									
Anza Mutual Water Company	29	0	29	0	0	26	3 ^{2/}	29	Appropriative
Eastern MWD	0	15,884	15,884	142	3,553	11,395	794	15,884	Appropriative
Elsinore Valley MWD	0	7,413	7,413	16	1,693	5,601	103	7,413	-----
Fallbrook PUD	0	7,578	7,578	4,688	359	2,129	402	7,578	Appropriative
Lake Riverside Estates	379	0	379	0	379 ^{3/}	0	0	379	Appropriative
Metropolitan Water District	0	1,074 ^{15/}	1,074	1,074	0 ^{4/}	0	0	1,074	-----
Murrieta Division of Western MW	951	1,407	2,358	0	657	1,640	61	2,358	Appropriative
Rainbow MWD	0	1,732	1,732	1,410	----- ^{8/}	191	131	1,732	-----
Rancho California WD	26,123 ^{5/}	46,603 ^{6/}	72,726	26,154	10,956	28,925	6,691 ^{7/}	72,726	Various
U.S.M.C. - Camp Pendleton	5,814	0	5,814	0	----- ^{9/}	2,271	3,543 ^{2/10/}	5,814	Appropriative/ Riparian
U.S. Naval Weapons Station	0	58	58	0	----- ^{9/}	53	5 ^{2/}	58	-----
Western MWD Improvement Dist Through Rancho California WD	0	35	35	0	31	0	4 ^{2/}	35	-----
INDIAN RESERVATIONS									
Cahuilla	60	0	60	6 ^{16/}	5	49	0	60	Overlying/Reserved
Pechanga	936	0	936	0	1,133	162	(359) ^{13/}	936	Overlying/Reserved
Ramona	2	0	2	0	0	2	0	2	Overlying/Reserved
SMALL WATER SYSTEMS									
Quiet Oaks Mobile Home Park	27	0	27	0	10	14	3 ^{2/}	27	Riparian/Overlying
Outdoor Resorts	560	0	560	0	500	54	6 ^{2/}	560	Overlying
Jojoba Hills SKP Resort	75	0	75	0	0	67	8 ^{2/}	75	Overlying
Hawthorn Water System	9	0	9	0	0	8	1 ^{2/}	9	Appropriative
OTHER SUBSTANTIAL USERS	6,868 ^{11/}	0	6,868	6,798	0	0	70 ^{12/}	6,868	
TOTAL	41,833	81,784	123,617	40,288	19,276	52,587	11,466^{14/}	123,617	

1/ Water use definitions for all major water purveyors were updated and reconciled for Water Year 2014. The updated definitions are provided in Table 7.2.

2/ Assumes 10% system loss.

3/ Recreational Use.

4/ Construction use at Diamond Valley Lake.

5/ Includes 26,995 AF production from Older Alluvium plus 85 AF of Vail Recovery minus 289 AF exported to the San Mateo Watershed minus 497 AF pumped into recycled water system minus 171 AF delivered to Pechanga Band.

6/ Includes 31,017 AF direct use; 12,069 AF direct recharge; 4,051 AF from MWD WR-34; and minus 534 AF export.

7/ Includes 24 AF discharged into Murrieta Creek; 51 AF discharged into Santa Gertrudis Creek; 4,051 AF discharged into Santa Margarita River from MWD WR-34; 0 AF from System River Meter; 0 AF from potable connection to WR-34 outlet pipe; (264) AF of import remaining in storage; and a system loss of 2,829 AF.

8/ Listed with Agricultural use.

9/ Listed with Domestic use.

10/ Includes exports of 2,733 AF, brine production of 558 AF and a system loss of 252 AF.

11/ Includes 695 AF for surface diversion plus 6,233 AF from groundwater as shown in Appendix C, minus 60 AF on the Cahuilla Reservation.

12/ Loss is equal to 10% of surface diversions.

13/ Includes a system loss of 83 AF, minus 442 AF of reclaimed wastewater from EMWD, accounted for on Table A-1.

See Table A-5 for Pechanga production and use.

14/ Includes an overall system loss of 4,755 AF. Overall system loss is calculated by estimating the traditional system loss of comparing total production versus total use for each water purveyor.

15/ An additional 61 AF were released by MWD from Lake Skinner into Tucalota Creek for the purpose of groundwater replenishment.

16/ Stock watering.

TABLE 7.2

SANTA MARGARITA RIVER WATERSHED
**DEFINITIONS OF WATER USE
BY MUNICIPAL WATER PURVEYORS**
2013-14

DISTRICT	AGRICULTURAL	DOMESTIC	COMMERCIAL
EASTERN MUNICIPAL WATER DISTRICT	Row crops, orchards, vineyards, sod farms, other commercially grown crops, dairies, horse ranches and other agricultural users, including agricultural allocation for agricultural/domestic meters	Single family and multi-family residential connections, including domestic allocation for agricultural/domestic meters	All other usage including commercial, industrial, institutional, golf courses, parks, recreation, landscaping, temporary and construction
ELSINORE VALLEY MUNICIPAL WATER DISTRICT	Same as EMWD	Same as EMWD	Same as EMWD
FALLBROOK PUBLIC UTILITY DISTRICT	Same as EMWD	Single family and multi-family residential connections, including first 20,000 gallons for agricultural/domestic meters	Same as EMWD
PECHANGA INDIAN RESERVATION	Same as EMWD	Same as EMWD	All other usage including resort, on-Reservation businesses, tribal facilities, commercial, industrial, institutional, golf courses, parks, recreation, landscaping, temporary and construction
RAINBOW MUNICIPAL WATER DISTRICT	Same as EMWD	Single family and multi-family residential connections, including first 20,000 gallons for agricultural/domestic meters	Same as EMWD
RANCHO CALIFORNIA WATER DISTRICT	Same as EMWD	Single family and multi-family residential connections, including first 1,600 cubic feet for agricultural/domestic meters	Same as EMWD
MURRIETA DIVISION OF WESTERN MUNICIPAL WATER DISTRICT	Same as EMWD	Same as EMWD	Same as EMWD
USMC, CAMP PENDLETON	Same as EMWD	Camp Supply - All usage except agricultural	Reported under Camp Supply

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 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.

Accordingly, 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. Data for Water Years 1989 through 2014 are shown on Appendix Table B-12.

7.2.2 Eastern Municipal Water District

Eastern Municipal Water District is a member agency of Metropolitan Water District and its service area includes a portion of the Rancho California Water District and the Murrieta Division of Western Municipal Water District. Within the Watershed, Eastern MWD wholesales water to those districts and also retails water directly to consumers. Water sold to Rancho California WD and the Murrieta Division of Western MWD is not listed in this report as imported water to Eastern MWD.

Eastern MWD's service area outside Rancho California WD and the Murrieta Division of Western MWD is located in the northern part of the Watershed. Water for Eastern MWD's retail service area is all imported with no groundwater production during Water Year 2013-14.

Imports, not including water wholesaled to Rancho California WD or the Murrieta Division of Western MWD, or delivered to Elsinore Valley MWD, totaled 23,935 acre feet. A portion of that import, amounting to 8,051 acre feet, was exported from the Santa Margarita River Watershed for delivery to Eastern MWD's retail customers located outside the Watershed, resulting in net import to the Watershed of 15,884 acre feet. These data are shown on Appendix Table A-1.

WATERMASTER
SANTA MARGARITA RIVER WATERSHED

In addition to importing fresh water, Eastern MWD also reclaims wastewater at its Temecula Valley Regional Water Reclamation Facility. Disposition of wastewater from the Temecula Valley Regional Water Reclamation Facility (TVRWRF) service area for Water Years 2012-13 and 2013-14 is shown below:

<u>Use</u>	<u>2012-13</u>		<u>2013-14</u>	
	<u>Quantity</u>	<u>Percent</u>	<u>Quantity</u>	<u>Percent</u>
	AF	%	AF	%
Reuse in Santa Margarita	2,937	20	2,937	20
Reuse outside Santa Margarita	<u>8,316</u>	<u>56</u>	<u>8,117</u>	<u>55</u>
Subtotal	11,253	76	11,054	75
Discharge to Dissipater at Temescal Creek	683	5	0	0
Other	<u>2,776</u>	<u>19</u>	<u>3,627</u>	<u>25</u>
TOTAL	14,712	100	14,681	100

It can be noted that the quantities of recycled water used within the Santa Margarita River Watershed in Water Year 2013-14 remained at 2,937 acre feet, the same as Water Year 2012-13. During the same period, reuse outside the Santa Margarita River Watershed decreased from 8,316 acre feet to 8,117 acre feet. In 2013-14, it may be concluded that 20 percent of the recycled water was used in the Watershed and 55 percent was used outside the Watershed. No wastewater was discharged to the dissipater at Temescal Creek during Water Year 2013-14. The Other use increased from 2,776 acre feet to 3,627 acre feet. This Other use includes changes of storage in Winchester and Sun City storage ponds, as well as evaporation and percolation losses.

Due to concerns about the potential export of native Santa Margarita water, the sources of water supply to the TVRWRF service area were determined and are shown on Table 7.3. In 2013-14, 22 percent of the supply to the service area was groundwater. Thus, the percent of groundwater supply was greater than the percentage of wastewater reused within the Santa Margarita River Watershed, and on a proportional basis there was some export of native waters.

On August 4, 2009, a Judgment was entered in *United States of America and Fallbrook Public Utility District v. Eastern Municipal Water District and Rancho California Water District* (CV 04-8182 CBM (RNBx), United States District Court, Central District of California) pertaining to the contractual obligations of the 1990 Four Party Agreement and the export of treated wastewater from the Santa Margarita River Watershed. On May 17, 2012, the United States Court of Appeals for the Ninth Circuit issued an Order granting the parties' joint motion to dismiss the appeals in this matter and thus the August 4, 2009 Judgment stands. For purposes of this annual report the export of treated wastewater will be reported consistent with prior annual reports with no changes pursuant to the Judgment. The Watermaster will reevaluate the calculations and reporting to be included in future annual reports.

Estimates of water production and use for Eastern MWD for the period 1966 through 2014 are shown on Appendix Table B-1.

TABLE 7.3

**SANTA MARGARITA RIVER WATERSHED
WATER DELIVERIES TO TEMECULA VALLEY
REGIONAL WATER RECLAMATION FACILITY SERVICE AREA**

	2010		2011		2012		2013		2014	
	AF	%								
Eastern MWD										
TVRWRF Service Area										
1. Groundwater	0		0		0		0		0	
2. Import	13,552		14,392		15,063		15,751		15,884	
3. Total	13,552		14,392		15,063		15,751		15,884	
Rancho California WD										
TVRWRF Service Area										
1. Groundwater 1/	8,641		9,774		7,902		8,802		7,789	
2. Import 2/	10,755		8,770		11,462		10,563		11,577	
3. Total 3/	19,396		18,544		19,364		19,365		19,366	
Total Deliveries to TVRWRF Service Area										
1. Groundwater	8,641	26.2%	9,774	29.7%	7,902	23.0%	8,802	25.1%	7,789	22.1%
2. Import	24,307	73.8%	23,162	70.3%	26,525	77.0%	26,314	74.9%	27,461	77.9%
3. Total	32,948	100.0%	32,936	100.0%	34,427	100.0%	35,116	100.0%	35,250	100.0%

1/ Based on the ratio of groundwater to total production in Rancho Division of RCWD.

2/ Based on the ratio of import to total production in Rancho Division of RCWD.

3/ Total RCWD deliveries in TVRWRF Service Area.

7.2.3 Elsinore Valley Municipal Water District

Elsinore Valley Municipal Water District 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 Watershed, and also imports Metropolitan Water District water through Eastern MWD and Western MWD.

As shown on Appendix Table A-2, Elsinore Valley MWD reports for 2013-14 that 7,413 acre feet were imported into the portion of its service area that is inside the Watershed, and 1,307 acre feet of wastewater were exported from that same area. In 2013-14, Elsinore Valley MWD began using recycled water treated at the Rancho California WD Santa Rosa Water Reclamation Facility via the Eastern MWD Palomar Pipeline through a wheeling agreement. A total of 89 acre feet of recycled water were received via Eastern MWD and 53 acre feet were used within the Watershed.

Production and use for Elsinore Valley MWD for the period 1966 through 2014 are shown on Appendix Table B-2.

7.2.4 Fallbrook Public Utility District

The Fallbrook Public Utility District service area is located in both the San Luis Rey River and Santa Margarita River watersheds. In Water Year 2013-14, Fallbrook PUD imported a total of 13,068 acre feet, as shown on Appendix Table A-3. Fallbrook PUD has three wells within the Santa Margarita River Watershed; however, in 2013-14, there was no production from these wells. Additionally, in 2013-14, Fallbrook PUD reported no diversions from Lake Skinner, under Permit No. 11356, resulting in a total district-wide production of 13,068 acre feet. The total production for the portion of Fallbrook PUD service area that is within the Watershed, as shown on Appendix Table A-3, is 7,578 acre feet, or about 58 percent of the total district wide production.

In 2013-14, Fallbrook PUD treated 924 acre feet of wastewater from areas served within the Watershed, of which 22 acre feet were reused in the Watershed, and the remainder was exported. The wastewater production and distribution for 2013-14 is shown on Appendix Table A-3.

Production during the period 1966 through 2014 included direct diversions from the Santa Margarita River prior to 1972, as well as imported water and well production, as shown in Appendix B. During Water Year 2010-11, Fallbrook PUD revised its reporting methods for both water production and wastewater operations. The historical water production and use for the period 1966 through 2010 are provided on Appendix Table B-3.1 reflecting prior reporting methods, particularly for previous estimates associated with the DeLuz portion of the service area. Appendix Table B-3.2 is provided to show the current water production and use reflecting the revised reporting methods. The revised reporting methods include metered deliveries for the reported uses within the Watershed and application of a district-wide loss factor.

The Fallbrook PUD wastewater production and distribution for the period 1966 through 2014 are shown on Appendix Table B-4.

7.2.5 Lake Riverside Estates

Lake Riverside Estates pumps water from Well No. 7S/2E-32C1, into Lake Riverside to replace evaporation losses. Production for 2013-14 was approximately 379 acre feet as shown on Appendix Table A-11. The production well was drilled in 1962 and is located in an area of younger alluvium in the Cahuilla Groundwater Basin. The well was drilled to a 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. Data for Lake Riverside Estates for the period 1989 through 2014 are shown on Appendix Table B-12.

7.2.6 Metropolitan Water District of Southern California

Pursuant to a Court Order, Metropolitan Water District (MWD) imported 1,074 acre feet of water into the Santa Margarita River Watershed for irrigation of lands in Domenigoni Valley. MWD did not import any water for groundwater recharge and there was no water used for construction purposes. As previously noted, the groundwater in the Domenigoni Valley groundwater basin is outside this Court's jurisdiction when groundwater levels are below elevation 1400 feet. This production is shown on Appendix Table A-4, and production for the period 1966 through 2014 is shown on Appendix Table B-5.

7.2.7 Rainbow Municipal Water District

Rainbow Municipal Water District is located in San Diego County in the south-central part of the Watershed. In 2013-14, the District imported a total of 22,926 acre feet of water as shown on Appendix Table A-6. However, most of the District is in the San Luis Rey River Watershed and only about eight percent of the District's imported supply was delivered to the portion of the service area inside the Santa Margarita River Watershed. As shown on Appendix Table A-6, total deliveries of imported water in the Santa Margarita River Watershed in 2013-14 amounted to 1,732 acre feet.

Rainbow Municipal Water District import production for the period 1966 through 2014 is shown on Appendix Table B-7.

7.2.8 Rancho California Water District

Rancho California Water District serves water to a 99,600 acre service area in the central portion of the Watershed. The District produced water from 47 wells in 2013-14, and also imported water as shown on Appendix Table A-7. Use is shown under the categories of agriculture, commercial and domestic. In Water Year 2013-14, well production of native water included 26,412 acre feet from the Murrieta-Temecula Groundwater Area. A portion of the groundwater amounting to 289 acre feet was exported for use in the San Mateo Watershed, resulting in a net well production of 26,123 acre feet.

Import supplies totaled 47,137 acre feet of which 31,017 acre feet were used for direct use; 12,069 acre feet were recharged; and 4,051 acre feet were discharged by the District to the Santa Margarita River from MWD Outlet WR-34 during 2013-14, pursuant to

the CWRMA. A portion of that import amounting to 534 acre feet was exported from the Santa Margarita River Watershed to the San Mateo Watershed, resulting in net import to the Watershed of 46,603 acre feet.

During 2013-14, Rancho California WD use totaled 72,726 acre feet including 26,154 acre feet for agriculture; 10,956 acre feet for commercial; 28,925 acre feet for domestic; 4,126 acre feet were released into Murrieta Creek, Santa Gertrudis Creek and the Santa Margarita River; and 2,829 acre feet were system loss. In 2013-14, a net amount of 264 acre feet of import water was extracted from groundwater storage derived from import recharge in prior years.

In 2013-14, Rancho California WD did not export reclaimed wastewater from the Watershed via EMWD's Palomar Valley Pipeline.

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
4. As agent on behalf of overlying landowners

Vail Appropriation

Rancho California WD's Vail Dam appropriative rights are described in Application No. 11518 as amended on June 17, 1947, and in Permit 7032 originally issued on February 18, 1948. Permit 7032 was subsequently amended on July 28, 1971, and April 22, 2009. The water right provides that the District may store up to 40,000 acre feet in Vail Lake each year between November 1 and April 30, subject to applicable limitations. The water so stored may be used for recreational uses at Vail Lake and municipal, domestic, industrial, and irrigation uses within the entire service area of Rancho California WD. Such uses may be by direct diversion from Vail Lake or by recovery of water released from Vail Lake and spread downstream in Pauba Valley. Points of re-diversion for recovery from underground storage are permitted for 12 production wells: Rancho California WD Well Nos. 109, 110, 123, 132, 152, 153, 157, 158, 210, 232, 233, and 234.

As shown on Table 3.3, there were 85 acre feet of releases from Vail Lake during 2013-14 for groundwater recharge. Releases from Vail Lake for groundwater recharge for the period 1980 through 2014 are shown on Appendix Table B-8.

Permit 7032 operations for 2013-14 are summarized on Table 7.4. The recovery from groundwater recharge for 2013-14 was 85 acre feet corresponding to the amount released from Vail Lake for recharge.

It is noted, with the issuance of the amended Permit 7032 in 2009, the place of use, purposes of use, and permitted points of re-diversion were changed. Accordingly,

TABLE 7.4

SANTA MARGARITA RIVER WATERSHED
RANCHO CALIFORNIA WATER DISTRICT
PERMIT 7032 OPERATIONS
 2013-14
 Quantities in Acre Feet

Diversion to Storage in Vail Lake ^{1/}		936
Release to Groundwater Storage ^{1/}		85
Recovery from Groundwater Storage ^{2/ 3/}		
Younger Alluvium	85	
Older Alluvium	0	
Total	<u> </u>	85
Vail Recharge Account Balance from 2012-13		54,292
Release minus Recovery		0
Vail Recharge Account Balance for 2013-14		54,292

1/ See Table 3.3.

2/ Permitted Points of Re-Diversion RCWD Well Nos. 109, 110, 123, 132, 152, 153, 157, 158, 210, 232, 233 and 234.

3/ Total pumping from Vail recovery wells is greater than amount shown as recovered under Permit 7032. Total pumping from the 12 recovery wells is shown on Table 7.8.

the reporting of Permit 7032 operations needs to be modified to reflect the changed conditions. Table 7.4 was modified in 2009 to reflect the changes subject to further refinement as part of the update of the CWRMA groundwater model. The reporting on Table 7.4 reflects the assumption that all water released from Vail Lake for recharge is recovered from the younger alluvium by pumping from the permitted recovery wells. The remainder of the pumping from the younger alluvium is apportioned to direct import recharge.

Imported Water Return Flows

Return flows for 2013-14, based on imported water use in the Rancho Division and Santa Rosa Division are shown on Tables 7.5 and Table 7.6, respectively.

In the following tables, imported water is allocated to agricultural, commercial and domestic uses in each of eight hydrogeologic areas in the Rancho Division service area and three hydrogeologic areas in the Santa Rosa Division service area. This allocation is the proportion of the total deliveries to each use that is made up of imported water. For 2013-14, 59.70 percent of the supply to the Rancho Division was imported and 64.09 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.

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

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

Based on the foregoing factors, the total return flow credit for 2013-14 is computed to be 4,895.96 acre feet for the Rancho Division and 304.69 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 indicate 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. The credits for 2013-14 are 963.22 acre feet for the Rancho Division and 76.17 acre feet for the Santa Rosa Division, as shown on Tables 7.5 and 7.6, respectively. The total return flow credit for 2013-14 to offset younger alluvium production in future years is 1,039.39 acre feet.

WATERMASTER
SANTA MARGARITA RIVER WATERSHED

TABLE 7.5
SANTA MARGARITA RIVER WATERSHED
RANCHO CALIFORNIA WATER DISTRICT
RETURN FLOW CREDIT
2013-14
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	1,508.10	32.94	0.00	47.66	659.11	125.21	1,410.37	1,129.55	4,912.93
% Import	59.70	59.70	59.70	59.70	59.70	59.70	59.70	59.70	59.70
Import Use	900.35	19.66	0.00	28.45	393.50	74.75	842.00	674.35	2,933.07
% Credit	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Credit	225.09	4.92	0.00	7.11	98.37	18.69	210.50	168.59	733.27
COMMERCIAL									
Total Use	526.97	2,285.48	1,408.29	3,370.08	461.04	773.81	149.68	47.04	9,022.41
% Import	59.70	59.70	59.70	59.70	59.70	59.70	59.70	59.70	59.70
Import Use	314.60	1,364.46	840.76	2,011.98	275.25	461.97	89.36	28.08	5,386.48
% Credit	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Credit	31.46	136.45	84.08	201.20	27.52	46.20	8.94	2.81	538.65
DOMESTIC									
Total Use	1,311.08	2,691.60	2,517.46	11,049.89	709.92	3,852.87	1,636.95	511.46	24,281.23
% Import	59.70	59.70	59.70	59.70	59.70	59.70	59.70	59.70	59.70
Import Use	782.73	1,606.92	1,502.95	6,596.91	423.83	2,300.20	977.27	305.35	14,496.16
% Credit	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Credit	195.68	401.73	375.74	1,649.23	105.96	575.05	244.32	76.34	3,624.04
TOTAL USE	3,346.14	5,010.03	3,925.75	14,467.63	1,830.08	4,751.89	3,197.00	1,688.05	38,216.57
TOTAL									
Total Import Use	1,997.68	2,991.04	2,343.71	8,637.33	1,092.58	2,836.93	1,908.64	1,007.78	22,815.71
Total Credit	452.23 *	543.09	459.81	1,857.54	231.86	639.94	463.76	247.73	4,895.96
Total Credit Qyal		271.55	459.81		231.86				963.22
Total Credit Qtoal		271.55		1,857.54		639.94	463.76	247.73	3,480.51

* This credit not applied to either Qyal or Qtoal

TABLE 7.6

SANTA MARGARITA RIVER WATERSHED
RANCHO CALIFORNIA WATER DISTRICT
RETURN FLOW CREDIT
2013-14
SANTA ROSA DIVISION
Quantities in Acre Feet

HYDROGEOLOGIC AREAS

	1 MURRIETA WOLF 1/2 QYAL 1/2 QTOAL	3 LOWER MESA QTOAL	8 NORTH MURRIETA 1/4 QYAL 3/4 QTOAL	TOTAL
AGRICULTURAL				
Total Use	0.00	0.00	36.03	36.03
% Import	64.09	64.09	64.09	
Import Use	0.00	0.00	23.09	23.09
% Credit	25.00	25.00	25.00	
Credit	0.00	0.00	5.77	5.77
COMMERCIAL				
Total Use	0.00	0.00	1,195.92	1,195.92
% Import	64.09	64.09	64.09	
Import Use	0.00	0.00	766.51	766.51
% Credit	10.00	10.00	10.00	
Credit	0.00	0.00	76.65	76.65
DOMESTIC				
Total Use	0.00	0.00	1,387.13	1,387.13
% Import	64.09	64.09	64.09	
Import Use	0.00	0.00	889.06	889.06
% Credit	25.00	25.00	25.00	
Credit	0.00	0.00	222.26	222.26
TOTAL USE	0.00	0.00	2,619.08	2,619.08
TOTAL				
Total Import Use	0.00	0.00	1,678.66	1,678.66
Total Credit	0.00	0.00	304.69	304.69
Total Credit Qyal	0.00	0.00	76.17	76.17
Total Credit Qtoal	0.00	0.00	228.52	228.52

Rancho California WD imported an additional 12,069 acre feet of water for direct groundwater recharge in 2013-14. The total amount of imported recharge water that was recovered in 2013-14 was 12,333 acre feet. Thus, 264 acre feet of recovered water were derived from groundwater storage.

Division of Local Water

During 2013-14, Rancho California WD pumped 39,413 acre feet of groundwater, comprised of 26,816 acre feet of local water and 12,333 acre feet of recovered imported water. The groundwater is pumped from both the younger alluvium and the older alluvium. The Court determined that water in both the younger alluvium and older alluvium adds to, contributes to and supports 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 that apply to the regulation of surface waters. Production from the older alluvium is generally considered to be governed by regulations that apply to groundwater. Of the 26,816 acre feet of local water, 171 acre feet were delivered to the Pechanga Indian Reservation under the terms of the Wolf Valley Groundwater Management Agreement. This production is shown on Appendix Table A-5.

During joint development of a groundwater model of the area it was necessary to develop estimates of the transmissivity for each aquifer. These estimates were based on pumping tests. The resulting transmissivity values were then used to estimate the relative groundwater production from each aquifer. For Rancho California WD wells, the percent production estimated to originate in the younger alluvium is shown on Table 7.7.

Production from the younger alluvium and older alluvium for 2013-14, using the percentages noted on Table 7.7 is presented on Table 7.8. In 2013-14, 12,418 acre feet were pumped from the younger alluvium and 26,995 acre feet were pumped from the older alluvium. The production of 12,418 acre feet from the younger alluvium, as shown on Table 7.8 is the recovery of 12,333 acre feet of direct import recharge and the recovery of 85 acre feet of Vail Lake recharge.

Imported water carryover to 2014-15 includes the following:

	<u>AF</u>
1. Carryover from 2012-13	* 62,541
2. Direct recharge of imported water in 2013-14	12,069
3. Imported recharge water recovered in 2013-14	(12,333)
4. Import return flow credit for 2013-14	<u>1,039</u>
5. Total carryover to 2014-15	63,316

* Revised

Thus, the Imported Water Carryover Account balance of 63,316 acre feet remains available to offset younger alluvium production in future years.

WATERMASTER
SANTA MARGARITA RIVER WATERSHED

TABLE 7.7

SANTA MARGARITA RIVER WATERSHED
PERCENT PRODUCTION FROM YOUNGER ALLUVIUM IN
RANCHO CALIFORNIA WATER DISTRICT WELLS

RCWD WELL NO.	LOCATION TOWNSHIP/RANGE/SECTION	SEAL DEPTH FEET	PERFORATED INTERVAL FEET	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 1/	84.0%		Brown clay and gravel 75' to 105'
110	8S/1W-6K1	54	75-155	165	97.0%		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%		
116	8S/1W-6J	Unknown	60-120; 140-200; 220-260; 270-330; 370-390	150	94.0%		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 1/	65.0%		Brown Sand Clay 135'-210'
129	7S/2W-20L	Unknown	180-290; 416-480; 520-600	Shallow	0.0%	Santa Gertrudis	Qyal very shallow along Santa Gertrudis
132	8S/1W-7D	55	70-390; 430-500	135	82.0%		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;	104 1/	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'
146	7S/3W-28	50	50-190	42	0.0%	Murrieta	
152	8S/1W-5K	50	70-470; 490-540	130	90.8%		Forebay
153	8S/1W-5K3	50	50-220	170	99.0%		Forebay
154	8S/1W-5L2	50	50-220	110 1/	99.0%	2/	Forebay
157	8S/1W-5L	50	50-210	128	96.8%		Forebay
158	8S/1W-5K	50	50-210	100 1/	96.5%		Forebay
205	7S/3W-35A	50	150-1000	10	0.0%	Santa Gertrudis/ Murrieta Valley	Sandy clay 10'-20'
210	8S/2W-12K	None	48-228	140	94.0%		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
220	7S/3W-26Q1	34	114-450	58	0.0%		Clay 58' - 73'
223	8S/2W-20C1	Unknown	48-250	60 1/	94.0%	Wolf Valley	CAT Well; east of Wildomar Fault; nearby Exh 16 wells 17Q @62' & 17M @55' are also east of Wildomar Fault
224	8S/2W-15D	Unknown	48-250	106 1/	68.0%		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; 92.5-80-120; 150-270	>119	100.0%		Old Well 30, depth of well is 119'
231	8S/2W-20B6	55	80-120; 150-270	35 1/	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 1/	92.0%		Old 111, 105, P-31; coarse sand & clay
233	8S/2W-12K2	51	95-135; 175-215; 235-295	145	88.0%		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 1/	74.0%		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	86.0%		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'
466	8S/3W-1P2	Unknown	106-822	49	0.0%	Long Canyon	Old 219, Cantarini, hard clay 49'-60'
467	8S/2W-12K1	Unknown	50-100; 100-140	140	100.0%		Old 221, JK, Exh. 16, Monitoring well since 1983

1/ Watermaster, Rancho California WD, and Camp Pendleton disagree on the depth of younger alluvium for indicated wells. See discussion in Appendix F.

2/ Percent younger alluvium for Well No. 154 provided by Rancho California WD.

WATERMASTER
SANTA MARGARITA RIVER WATERSHED

TABLE 7.8

SANTA MARGARITA RIVER WATERSHED
RANCHO CALIFORNIA WATER DISTRICT
WELL PRODUCTION FROM YOUNGER AND OLDER ALLUVIUM
2013-14
Quantities in Acre Feet

WELL NO.	QYAL	QTOAL	TOTAL	
101	2/	0.00	668.00	
102	2/, 3/	0.00	326.00	
106	2/	0.00	323.00	
108	2/	0.00	646.00	
109	4/	465.36	88.64	
110	4/	275.48	8.52	
113		0.00	248.00	
118	2/	0.00	1,200.00	
119	1/	0.00	466.00	
120		0.00	1,618.00	
121		0.00	0.00	
122	1/	0.00	437.00	
123	4/	152.10	81.90	
124		0.00	361.00	
125		0.00	0.00	
126		0.00	760.00	
128		0.00	0.00	
129		0.00	0.00	
130		0.00	952.00	
131		0.00	983.00	
132	4/	498.56	109.44	
133		0.00	739.00	
135	3/	0.00	93.00	
138		0.00	2,243.00	
139		0.00	1,316.00	
140		0.00	844.00	
141		0.00	537.00	
143		0.00	857.00	
144		0.00	588.00	
145		0.00	227.00	
146	3/	0.00	34.00	
149		0.00	296.00	
151		0.00	766.00	
152	4/	2,537.86	257.14	
153	4/	2,004.75	20.25	
154		371.25	3.75	
155	3/	0.00	46.00	
156		0.00	904.00	
157	4/	1,515.89	50.11	
158	4/	1,658.84	60.17	
201		0.00	59.00	
203		0.00	797.00	
205		0.00	1,756.00	
207		0.00	0.00	
208		0.00	0.00	
209		0.00	0.00	
210	4/	763.28	48.72	
211	1/	0.00	410.00	
215		0.00	0.00	
216		0.00	0.00	
217		0.00	591.00	
231		0.00	0.00	
232	4/	868.48	75.52	
233	4/	1,116.72	152.28	
234	4/	189.44	66.56	
235		0.00	1,568.00	
301		0.00	0.00	
302		0.00	0.00	
309		0.00	2,313.00	
		12,418.00	26,995.00	39,413.00

1/ A portion of 1,313 acre feet from Well Nos. 119, 122 and 211 was delivered to Pechanga Indian Reservation for their use.

2/ Includes 75 acre feet of releases to streams from Well Nos. 101, 102, 106, 108 and 118.

3/ Includes 497 acre feet pumped directly to the recycled water system from Well Nos. 102, 135, 146 and 155.

4/ Permitted point of re-diversion pursuant to Permit 7032.

7.2.9 Western Municipal Water District

Western Municipal Water District operations within the Santa Margarita River Watershed are comprised of three categories. First, Western MWD wholesales imported water to Rancho California WD. Deliveries to Rancho California WD are included under Rancho California WD. Second, Western MWD serves water to its Murrieta Division in the vicinity of the City of Murrieta. Third, Western MWD serves imported water to its Improvement District A near the southern boundary of Riverside County, along the I-15 freeway. Improvement District A is operated by Rancho California WD under an operations and maintenance contract on behalf of Western MWD.

Murrieta Division

In November 2005, Western MWD merged with the Murrieta County Water District assuming their operations in an area in the vicinity of the City of Murrieta. Prior Watermaster Reports present information under Murrieta County Water District.

All of the Murrieta Division of Western MWD wells are located in the Murrieta-Temecula Groundwater Area. Interlocutory Judgment No. 30 indicates the younger alluvium deposits in Murrieta Valley 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, the Court did retain continuing jurisdiction so that subsequent findings could be made, if needed. Older alluvial deposits are found below the younger alluvium.

Six of the seven Murrieta Division wells are perforated at depths of 106 feet or more. The Holiday Well has perforations beginning at a depth of 60 feet, which is well below the maximum depth of younger alluvium found by the Court in 1962. In addition, there has been no production from the Holiday Well since March 2006. Accordingly, all of Murrieta Division well production is from the older alluvium under a groundwater appropriative right.

In Water Year 2013-14, the Murrieta Division of Western MWD produced 719 acre feet of water from the North Well and 232 acre feet from the renovated New Clay Well for a total well production of 951 acre feet. The New Clay well was brought back online in September 2012, ceased pumping in April 2013 and resumed pumping again in June 2014. Western MWD imported 1,407 acre feet in 2013-14 as shown on Appendix Table A-10.

The following table itemizes the production from the Murrieta Division wells:

Well Designation <u>7S/3W</u>	Well Name	2013-14 Production <u>Acre Feet</u>	End of Water Year Depth to Groundwater in Feet		Well Depth <u>Feet</u>	Perforated Interval <u>Feet</u>
			<u>2013</u>	<u>2014</u>		
20	New Clay	232	250	311	940	300 – 350 370 – 470 680 – 790 830 – 900
20C9	Holiday	0	64	61	307	60 – 307
20G5	House	0	*	*	252	120 – 252
17R2	Lynch	0	*	30	212	172 – 212
18J2	North	719	285	275	650	240 – 460 500 – 640
20D	South	0	178	173	446	120 – 446
7M	Alson	0	*	*	416	106 – 416
TOTAL		951				

* Not reported.

Western MWD's Murrieta Division production for the period 1966 through 2014 is shown on Appendix Table B-11.

Improvement District A

In Water Year 2013-14, imports to Improvement District A amounted to approximately 35 acre feet as shown on Appendix Table A-11. Deliveries to Improvement District A through turnout WR-13 for the period 1966 through 2014 are shown on Appendix Table B-12.

7.2.10 U. S. Marine Corps - Camp Pendleton

Camp Pendleton is located on the coastal side of the Santa Margarita River Watershed. Water was provided by ten wells that produced 5,814 acre feet in Water Year 2013-14. This production is from the younger alluvium and is based on riparian and appropriative rights. In 2013-14, there was no agricultural use and 5,814 acre feet were used for Camp Supply. Camp Supply includes domestic and commercial uses as well as irrigation for landscaping and park areas. Camp Pendleton water use is located both inside and outside the Watershed. A total of 2,523 acre feet were used inside the Watershed and 2,733 acre feet were exported to areas of the Base outside the Watershed. The production and use of water for Camp Pendleton are shown on Appendix Table A-8.

Beginning in December 2008, all wastewater for Camp Pendleton is treated at the Southern Region Tertiary Treatment Plant replacing the regional treatment Plant Nos. 1, 2, 3, and 13. On March 11, 2009, the Regional Water Quality Control Board issued Order No. R9-2009-0021 for a Master Reclamation Permit for the Camp Pendleton Southern Region Tertiary Treatment Plant. Wastewater effluent is discharged to either: (1) approved areas for use of recycled water for irrigation purposes; or (2) the Oceanside Outfall under NPDES Permit No. CA0109347, Order No. R9-2003-0155, and Order No. R9-2008-0096. The approved areas for use of recycled water are located both within and outside the Watershed. In Water Year 2013-14, the total amount of recycled water for Camp Pendleton was 2,113 acre feet as shown on Appendix Table A-8. Of the total amount of recycled water, 29 acre feet were used inside the Watershed; 484 acre feet were used outside the Watershed; and 1,600 acre feet were exported to the Oceanside Outfall. An additional 558 acre feet of brine byproduct from the Southern Advanced Water Treatment Plant were exported to the Oceanside Outfall. The total amount exported to the Oceanside Outfall in 2013-14 was 2,158 acre feet.

Production and estimated use inside and outside the Watershed, as well as wastewater reclamation and use, are shown in Appendix Table B-9 for the period 1966 through 2014. It is noted, the format and reporting shown on Appendix Table B-9 were changed for the Annual Watermaster Report for Water Year 2008-09. Prior reports show for the period 1966 through 2003, reclaimed use inside the Watershed reported as recharged wastewater from ponds and recharge areas. In addition, the prior reports distinguished the source of the recharged wastewater between wastewater treated within or outside the Watershed at the various regional treatment plants. The format and reporting for Water Year 2013-14, on Appendix Tables A-8 and B-9, reflect current and anticipated operations for the foreseeable future. Accordingly, the prior format is obsolete and the reader is directed to prior reports from 2008, and earlier, for additional information regarding historical wastewater operations.

7.2.11 U. S. Naval Weapons Station, Fallbrook Annex

The U. S. Naval Weapons Station (NWS) occupies about 9,148 acres northeast 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, Fallbrook Public Utility District and the Watershed via an outfall line maintained by Fallbrook PUD with an easement across Camp Pendleton. In 2013-14, 58 acre feet were imported of which six acre feet of wastewater were exported, as shown on Appendix Table A-9. Imports and use for the period 1966 through 2014 are shown on Appendix Table B-10.

7.3 Indian Reservations

Water is used on the Indian Reservations in the Watershed in accordance with federal reserved rights described in Section 6. Water use information for the Cahuilla, Pechanga and Ramona Indian Reservations in the Watershed is described in the following sections:

7.3.1 Cahuilla Indian Reservation

In general, domestic water use on the Cahuilla Indian Reservation is not measured; however reports for 2013-14 indicate that 350 people reside on the Reservation. These residents use water primarily for domestic purposes. Annual domestic water use, based on 125 gallons per capita per day, amounts to a total annual use of about 49 acre feet from wells listed in Appendix C. In addition, reports indicate Reservation non-irrigated lands are used for the grazing of 500 cattle. Based on a daily requirement of 10 gallons per head per day, the annual use is estimated to be about six acre feet. An additional five acre feet pumped from well 7S/2E-26B3 were put to commercial use at a casino.

7.3.2 Pechanga Indian Reservation

On December 21, 2006, the Pechanga Band of Luiseño Mission Indians and Rancho California WD entered into a Groundwater Management Agreement for the Wolf Valley Groundwater Basin. The Pechanga Band and Rancho California WD agreed to jointly manage groundwater pumping from the basin and to manage the basin to protect groundwater resources. Among other things, the agreement provides for Rancho California WD to deliver pumped groundwater from its wells to Pechanga.

During 2013-14, Pechanga received 171 acre feet of delivered groundwater from Rancho California WD. In addition, the Pechanga Water System produced 765 acre feet from wells, and received 442 acre feet of recycled water from Eastern MWD, resulting in a total production for Pechanga of 1,378 acre feet. The monthly production and uses for the Pechanga Indian Reservation are shown on Appendix Table A-5. Information about Pechanga Water System wells is shown below:

Well Designation <u>8S/2W</u>	Well Name	End of Water Year Depth to Groundwater in Feet		Well Depth Feet	Perforated Interval Feet
		<u>2013</u>	<u>2014</u>		
29A2	Kelsey	146	154	425	105 - 415
29B10	Eduardo	163	142	697	437 - 687
29B11	Eagle III	178	183	645	275 - 635
29J3	South Boundary	161	147	350	150 - 340
28M5	Cell Tower	120	N/A	518	372 - 432 468 - 508
28R1	Ballpark Well	107	121	1,000	126 - 996
19Q1	Zone V Rock 1	46	48	451	210 - 430

The total groundwater pumping for the Pechanga Water System wells decreased from 798 acre feet in Water Year 2012-13, to 765 acre feet in Water Year 2013-14. The total pumping in Wolf Valley by Rancho California WD Well Nos. 119, 122 and 211, for both the District's use and for delivery to Pechanga, increased from 1,258 acre feet in 2012-13 to 1,313 acre feet in 2013-14. Therefore, the total pumping in Wolf Valley for 2013-14 increased by 22 acre feet.

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 Well No. 495 (8S/2W-20E) and Well No. 119 (8S/2W-19J), to be in the range of 120 to 170 feet in depth. Thus, based on available well construction data, production is from both the younger alluvium and 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.

Production and uses for the Pechanga Indian Reservation for Water Years 1991 through 2014 are shown on Appendix Table B-6.

7.3.3 Ramona Indian Reservation

The Ramona Indian Reservation occupies 560 acres of land of which 321 acres are inside the Watershed. The water supply is provided for domestic use by two individual wells. Total production for 2013-14 is reported as 1.97 acre feet, or approximately two acre feet.

7.4 Small Water Systems

There are a number of small water systems in the Watershed. These range from relatively permanent structures, to those catering to recreational vehicles and campgrounds. Water production from wells is shown on Appendix Table A-11 for Quiet Oaks Mobile Home Park, Hawthorn Water System, Rancho California Outdoor Resorts, and Jojoba Hills SKP Resort. Data for previous Water Years are shown on Appendix Table B-12.

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 6,868 acre feet. This quantity includes 6,179 acre feet of well production and 689 acre feet of surface diversion 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 in accordance with the powers and duties 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 raised by the United States are settled so long as the CWRMA between the United States on behalf of Camp Pendleton and Rancho California Water District is in effect. As further explained in Section 11, many of these issues are described in Appendix F.

One area of past concern pertains to Rancho California WD's petition to the State Water Resources Control Board (SWRCB) to change the place of use, type of use and re-diversion facilities in Permit 7032. On April 22, 2009, the SWRCB issued an order and amended Permit 7032 with the desired changes and conditions to resolve concerns by Camp Pendleton and the U. S. Fish and Wildlife Service. The reporting of Vail Lake operations in accordance with Amended Permit 7032 is provided on Table 3.3 and in Section 7.2.8 under Vail Appropriation, including operations reported on Table 7.4.

8.4 Exportation of Treated Wastewater Derived from Native Waters

Camp Pendleton continues to assert that the exportation of treated wastewater, the source of which is the native waters of the Santa Margarita River System, without a legal basis for such exportation is an unauthorized water use. On May 17, 2013, the United States Court of Appeals for the Ninth Circuit issued an Order granting the parties' joint motion to dismiss the appeals in *United States of America and Fallbrook Public Utility District v. Eastern Municipal Water District and Rancho California Water District* (CV 04-8182 CBM (RNBx), United States District Court, Central District of California) and thus the August 4, 2009 Judgment in this case stands. The Watermaster is reviewing the calculations and reporting of exportation of treated wastewater for possible changes in future annual reports.

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, Anza Valley and the Murrieta-Temecula areas.
2. Potential overdraft conditions at various locations in the Watershed.
3. Potentially adverse salt balance conditions in the upper Santa Margarita River area.
4. High concentrations of arsenic, fluoride, and manganese in the Murrieta-Temecula area.
5. Quagga mussel infestation in imported supplies from the Colorado River system.

9.2 High Nitrate Concentrations

In past years, high concentrations of nitrate have been measured in Anza Valley and in Rainbow Creek. Conditions in Anza Valley were generally described in the 1993-94 report. Additional water quality data for Anza Valley have been collected periodically by the Riverside County Department of Health Services and the USGS.

As described in prior Watermaster reports, in 1999 the Regional Water Quality Control Board, San Diego Region (Regional Board) began preparation of a plan for Total Maximum Daily Loads (TMDLs) for Total Nitrogen and Total Phosphorus on Rainbow Creek. On February 9, 2005, the Regional Board adopted Resolution No. R9-2005-0036, an amendment to the Basin Plan to include the Total Nitrogen and Total Phosphorus TMDLs and implementation plan. The State Water Resources Control Board, on November 16, 2005, and the Office of Administrative Law, on February 1, 2006, subsequently approved the Basin Plan amendment. The U.S. Environmental Protection Agency granted final approval of the TMDLs on March 22, 2006.

The full plan and implementation programs are presented on the Regional Board's website:

http://www.waterboards.ca.gov/sandiego/water_issues/programs/tmdl/s/rainbowcreek.shtml

Recent data show high concentrations of nitrate pose a risk to water supplies from the Murrieta-Temecula Groundwater Area. In January 2006, Western MWD ceased production from the Holiday Well because nitrate concentrations exceeded the Maximum Contaminant Level (MCL) of 45 mg/l. The depth to the top of the perforated interval for the Holiday Well is only 60 feet and the high nitrate concentrations appear to be a result of nearby septic systems and agricultural practices. Concentrations of nitrate for some of the other Western MWD and Rancho California WD wells in the Murrieta-Temecula Groundwater Area have been detected in the range of 20 to 26 mg/l, which is below the MCL. The other Western MWD and Rancho California WD wells have deeper perforated intervals than the Holiday Well.

9.3 Potential Overdraft Conditions

Previous Watermaster reports have noted concerns about overdraft conditions in Anza Valley and in the Murrieta-Temecula Groundwater Area. Previous studies for Anza Valley include 1976 and 1988 reports by the U. S. Geological Survey and a 1990 report by a consultant to Riverside County. No further studies relative to groundwater use in Anza Valley are available. Historical measurements of groundwater levels for Anza Mutual Water Company's Well No. 1 (7S/3E-21G1) located in Anza Valley are plotted in this report on Figure 4.4. Water levels in Anza Mutual Water Company Well No. 1 rose by 38 feet between September 30, 2013 and September 30, 2014.

No recent published studies of safe yield are available for the Murrieta-Temecula Groundwater Area. Groundwater resources in the area are managed by Rancho California WD, Western MWD, and the Pechanga Band. Annual groundwater production programs are prepared with the goal of maximizing production within the apparent safe yield of the basin. Each year, groundwater levels and well production combined with other information including water quality, natural and artificial recharge, pump settings, and well construction factors, are used to develop the recommended production programs for several hydrogeologic sub-areas. Production rates are commonly lowered in sub-areas where water levels have declined over several years, and production rates are increased in sub-areas where decline has not occurred. As a final check, the recommended production rates are checked using the groundwater model for the Murrieta-Temecula Groundwater Area.

In addition, Rancho California WD in cooperation with Camp Pendleton is in the process of developing a multi-level groundwater monitoring network, pursuant to the CWRMA. The purpose of the network is to collect data for use in assessing safe yield operations. In September 2006, the USGS began drilling and constructing the Pala Park Groundwater Monitoring Well as part of this network. The monitoring well was completed with six piezometers and continuous water level recording devices. In 2009, the groundwater monitoring network was expanded to include the Wolf Valley Monitoring Well previously constructed by the USGS under a cooperative program with the Pechanga Band. In 2013, two additional groundwater monitoring wells were constructed by the USGS under contract with Rancho California WD. The two additional wells are the Temecula Creek Groundwater Monitoring Well and the VDC Recharge Basin Groundwater Monitoring Well. Groundwater levels and water quality data for the four monitoring wells are reported in the annual CWRMA report.

Groundwater level data for three additional wells in the Murrieta-Temecula Groundwater Area are included in this report as Figures 4.1, 4.3 and 4.5. Water levels in the Windmill Well (8S/2W-12H1) located at the eastern part of Pauba Valley declined by 13.7 feet in 2013-14. Water levels in Well 7S/3W-20C9 in the Murrieta Division of Western MWD area rose by three feet in 2013-14.

Well 8S/2W-29G1 on the Pechanga Indian Reservation in Wolf Valley became dry at the end of 2003-04. The declining water levels in Well 8S/2W-29G1 appear to be attributed to recent relatively dry hydrologic conditions and pumping of the nearby New Kelsey Well. To allow continued monitoring of water levels on the Reservation, Well No. 29G1 has been replaced with Well No. 8S/2W-29B9 which showed water levels declined 2.7 feet in 2013-14.

9.4 Salt Balance

A key issue in management of a groundwater basin is potential build-up of salts from imported water supplies and use of recycled water. Such a build-up could decrease the usability of waters in a basin. Consideration must be given to measures that allow desalination of water supplies and export of salts from a basin to offset the salt load in water entering the groundwater basin.

The Total Dissolved Solids (TDS) concentration for imported supplies into the Watershed is shown on Table 5.3. During 2013-14, the reported TDS concentration ranged from 411 to 576 mg/l as compared to concentrations for 2012-13 ranging from 336 to 528 mg/l. The increased levels for TDS in 2013-14 are attributed to a greater percentage of the imported supplies derived from the Colorado River compared to supplies from the State Water Project.

The salt balance for the Murrieta-Temecula Groundwater Area is increasingly of interest due to increased imported supplies to meet existing and future demands, and also increased use of reclaimed wastewater for irrigation. The potential salt loading can be illustrated by estimating the total salts imported into the basin by the major purveyors overlying the groundwater area. The net imported supplies for the major purveyors are provided on Table 5.2 and the individual production and use tables are included in Appendix A. Assuming the groundwater area is subject to salt loading from net imports for Eastern MWD, Elsinore Valley MWD, Western MWD (Murrieta Division), and Rancho California WD (Rancho Division); the total net imports for Water Year 2013-14 were 53,817 acre feet. It is noted, imports for a portion of the Rancho California WD, Santa Rosa Division, potentially contribute to salt loading for the groundwater area but such contribution is ignored for this illustration. Applying the monthly TDS concentrations from Table 5.3 to the monthly net imports for these major purveyors results in an estimated total annual salt import for Water Year 2013-14 of 37,700 tons compared to the estimated salt import of 32,200 tons for 2012-13 and 26,400 tons for 2011-12.

WATERMASTER
 SANTA MARGARITA RIVER WATERSHED

The salt balance for the Murrieta-Temecula Groundwater Area is affected by the export of wastewater from the Watershed. In 2013-14, Elsinore Valley MWD exported 1,307 acre feet of wastewater for treatment outside the Watershed. During 2013-14, Eastern MWD exported 8,117 acre feet of treated wastewater for reuse outside the Watershed. Additional treated wastewater may have been exported from the Watershed through recirculation in the system, but such additional amounts have not been determined. At an average TDS concentration of 650 mg/l, there are approximately 1,768 pounds of salt in every acre foot of wastewater. Thus in 2013-14, approximately 8,300 tons of salt were exported by Elsinore Valley MWD and Eastern MWD through the export of 9,424 acre feet of wastewater. For comparison in 2012-13, approximately 9,100 tons of salt were exported with the export of 10,244 acre feet of wastewater.

The use of recycled water for irrigation is also a consideration in evaluating the salt balance for the Murrieta-Temecula Groundwater Area. The reuse within the groundwater area does not import additional salts into the Watershed; rather the source of water supply further concentrates the salts in contrast to relatively lower TDS levels for other sources of water supplies. The total use of recycled water by Eastern MWD, Elsinore Valley MWD, Rancho California WD, and the Pechanga Band within the Santa Margarita River Watershed for 2013-14 was 6,135 acre feet compared to 5,866 acre feet in 2012-13, and compared to 690 acre feet in 1986-87. Assuming an average TDS concentration of wastewater of 650 mg/l, the salt loading for 6,135 acre feet of recycled water is approximately 5,400 tons. It is expected that the use of recycled water within the Watershed will increase in the future.

The salt balances of the Murrieta-Temecula Groundwater Area, the Santa Margarita River, and the groundwater basins on Camp Pendleton are affected by operational and maintenance discharges by Rancho California WD from wells into Murrieta Creek, Temecula Creek and Santa Gertrudis Creek. In 2013-14, wells discharged 75 acre feet, as shown below, together with the TDS for the most recent sample for each well. Additional water quality data for the wells are provided in Appendix D.

Well No.	Release Acre Feet	TDS mg/l	Most Recent Sample Date
101	11	680	9/17/14
102	2	700	6/20/95
106	1	320	7/02/14
108	51	380	8/05/14
118	<u>10</u>	620	9/03/14
Total	75		

The salt balances for the Santa Margarita River, and the groundwater basins on Camp Pendleton, are also influenced by discharges by Rancho California WD of imported supplies into Santa Margarita River as part of make-up flows under the CWRMA. During 2013-14, the discharge of imported supplies to the Santa Margarita River as make-up

flows from outlet WR-34 was 4,051 acre feet. There were no discharges to the Santa Margarita River from the potable connection at WR-34. Discharges from the potable connection are comprised of a blend of groundwater and imported supplies.

In March 2014, Rancho California WD completed the Temecula Valley Basin Salt and Nutrient Management Plan. The plan was prepared pursuant to the State Water Resources Control Board Recycled Water Policy adopted by Resolution No. 2009-0011 on February 3, 2009, as amended by Resolution No. 2013-0003 on January 22, 2013. In November 2013, Camp Pendleton completed the Salt and Nutrient Management Plan, Southern MCB Camp Pendleton, also prepared pursuant to the State Water Resources Control Board Recycled Water Policy cited above.

9.5 High Arsenic Concentrations

The maximum contaminant level (MCL) for arsenic is 10 ug/l. High concentrations of arsenic have been detected in groundwater wells for both the Murrieta Division of Western MWD and Rancho California WD, posing a risk to water supplies in the Murrieta-Temecula Groundwater Area. In November 2007, Western MWD ceased pumping from the New Clay Well due to arsenic levels exceeding the MCL. Pumping from the New Clay Well resumed in September 2012, under an approved monitoring plan after Western MWD completed well renovation measures. Pumping from the New Clay Well was again ceased in April 2013 due to arsenic levels exceeding the MCL. In April 2014, pumping from the New Clay Well was again resumed.

The elevated arsenic levels have significantly impacted groundwater pumping and distribution system operations for Rancho California WD. Two wells have been taken out of production due to arsenic levels exceeding the MCL. In 2013-14, four other wells showed levels exceeding the MCL with the wells still in operation. Three of the wells are operating under approved blending plans and the fourth well is being operated under increased monitoring with preparation of a tentative blending plan.

9.6 High Fluoride Concentrations

The MCL for fluoride is 2 mg/l, and samples exhibiting high concentrations of arsenic often show high concentrations of fluoride in the Murrieta-Temecula Groundwater Area. High levels of fluoride are impacting operations for Rancho California WD. In 2013-14, two wells showed fluoride levels exceeding the MCL with the wells in operation under approved blending plans.

9.7 High Manganese Concentrations

The MCL for manganese is 50 ug/l, and high concentrations of manganese have been detected in wells for both the Murrieta Division of Western MWD and Rancho California WD. In 2013-14, two Rancho California WD wells were in operation under approved manganese sequestering plans. In 2013-14, six groundwater supply wells for Camp Pendleton showed manganese levels exceeding the MCL with groundwater treated under approved treatment plans.

9.8 Quagga Mussel

In early January 2007, the invasive, non-native Quagga mussel was discovered in Lake Mead. Subsequently, upon thorough inspection, MWD discovered the mussel throughout the Colorado River Aqueduct system including in August 2007, finding the mussels in Lake Skinner. To date, no mussels have been found in Diamond Valley Lake.

The Quagga mussel is indigenous to the Ukraine and was discovered in the United States in September 1989 with the first sighting in the Great Lakes. The Quagga mussel is a small freshwater mollusk ranging in size from microscopic in the embryonic state to about two inches in length at the adult stage. The mussels can be transported during the larval stage with currents or running water, and at the adult stage by attaching to hard surfaces, such as boats.

The Quagga mussel is a filter feeder removing food and nutrients from the water column, decreasing the food source for zooplankton and therefore, altering the food web. The filtration of the water also alters water clarity impacting aquatic plants and water chemistry. The economic impact is also significant because these species can rapidly colonize on hard surfaces, clogging water intake structures, pipes, and screens and reducing pumping and distribution capacities. Costs are also associated with maintenance of facilities and control of the species.

Since the discovery of Quagga mussels in the Colorado River Aqueduct and Lake Skinner, MWD has implemented various control activities. In July 2007, the aqueduct was shut down for ten days for inspection, chlorination, and removal of adult populations. Also in July 2007, MWD initiated continuous chlorination in the Colorado River Aqueduct to control the spread of Quagga mussels. Additionally, as part of ongoing maintenance activities for the Colorado River Aqueduct, MWD subsequently shut down the aqueduct in October 2007, January and March 2008, October 2009, and April and May 2010, for approximately three weeks each shutdown, resulting in desiccation of Quagga mussels present at those times. Subsequently, MWD routinely shuts down the aqueduct, once or twice annually, for ongoing maintenance activities and for Quagga mussel desiccation. Releases from Lake Skinner are chlorinated at the outlet tower prior to distribution through the raw water delivery system.

Effective October 10, 2007, Assembly Bill 1683 added Section 2301(a)(1) to the California Fish and Game Code prohibiting the release of Quagga mussels into the waters of the State. Assembly Bill 1683 also requires development of a Quagga mussel control plan. On December 8, 2007, MWD temporarily suspended required releases of water to Tualota Creek from Lake Skinner and Warm Springs Creek from the San Diego Canal near Diamond Valley Lake. These required releases would have been made in accordance with Memoranda of Agreement for releasing native inflows from the reservoirs. On March 6, 2008, MWD provided notice to the parties in *United States of America v. Fallbrook Public Utility District, et al.*, regarding the temporary suspension of required releases of native water inflows from Lake Skinner and Diamond Valley Lake.

On June 23, 2008, MWD provided notice to the parties in *United States of America v. Fallbrook Public Utility District, et al.*, regarding the resumption of required releases of native water inflows from Lake Skinner and Diamond Valley Lake, according to MWD's Action Plan submitted to California Department of Fish and Wildlife on May 30, 2008. On April 5, 2010, the California Department of Fish and Wildlife approved the Quagga Mussel Control Plan for Lake Skinner. MWD is still operating under the May 30, 2008 Action Plan and June 23, 2008 Notice describing provisions for releases to Warm Springs Creek from the State Water Project Eastside Pipeline to meet release requirements at Diamond Valley Lake.

Infestation by the Quagga mussel has also altered Rancho California WD operations in accordance with the CWRMA. Beginning on April 10, 2008, Rancho California WD periodically ceased making releases of raw water from Outlet WR-34 on the MWD Pipeline No. 5 to meet make-up flow requirements for the Santa Margarita River. Alternatively, Rancho California WD releases make-up flows from its treated water distribution system at the System River Meter located just upstream of the Murrieta Creek at Temecula gaging station, or from the potable connection to the WR-34 discharge location. The treated water is de-chlorinated prior to release into Murrieta Creek.

In response to the threat of infestation of Quagga mussel, Rancho California WD has developed three separate control plans that constitute an overall action plan. These plans were updated in 2012 and are comprised of the following: (1) Dreissena Mussel Response and Control Action Plan, (2) Vail Lake Rapid Response Plan, and (3) Vail Lake Conveyance System Dreissena Mussel Control Plan, collectively referred to as the Plans. On September 14, 2012, the California Department of Fish and Wildlife approved the amended Plans that include the following key components:

- Substrate monitoring utilizing coupon sampling equipment at Vail Lake and the Santa Margarita River at a sampling location approximately 100 feet downstream of the Outlet WR-34 for releases of make-up water in accordance with CWRMA.
- Raw MWD water is released into the Santa Margarita River only when chlorination is being performed at Lake Skinner.
- All watercraft vessels, trailers, and equipment are being inspected before launching in Vail Lake.
- Installation of chlorination, filtration, and turbulence devices within the Vail Lake Pipeline to result in 100 percent mortality of mussels passing through the system for delivery of imported supplies to Vail Lake.

SECTION 10 - WATER QUALITY

10.1 Surface Water Quality

The USGS collected continuous water quality measurements for dissolved oxygen, pH, specific conductance, and temperature at the Santa Margarita River near Temecula gaging station during 2013-14. Data collected at the station are published by the USGS. The highest average daily high and the lowest average daily low for each parameter for each month are shown on Table 10.1 for Water Year 2013-14.

Surface water quality data collected by the USGS in 2004-05 for Cahuilla Creek are shown on Appendix Table D-12. No surface water quality data for Cahuilla Creek were collected in 2013-14.

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

10.2 Groundwater Quality

During 2013-14, water quality data was collected from wells at Western MWD – Murrieta Division, Rancho California WD, Pechanga Indian Reservation, and Camp Pendleton.

Western MWD – Murrieta Division sampled two wells in 2013-14 as shown in Appendix Table D-3. Both wells were subjected to standard chemical analysis in addition to samplings for nitrates only. The North Well was sampled 19 times and included nine samples subjected to standard chemical analysis and ten samples subjected to nitrates only. The New Clay Well was sampled eight times and included four samples subjected to standard chemical analysis and four samples analyzed for nitrates only. Concentrations of nitrates were below the Maximum Contaminant Level (MCL) of 45 mg/l with results generally reported to be below, or near, the laboratory detection limit and the highest reported value as 1.6 mg/l.

Water quality data for Rancho California WD wells are shown on Appendix Table D-4. Samples were collected from 40 wells during 2013-14. Of the 40 wells, 23 wells were analyzed for nitrates and TDS only. Nitrate concentrations ranged up to 21 mg/l as nitrate, with the MCL being 45 mg/l as nitrate. Twelve of the remaining wells were subjected to standard chemical analysis, 36 wells were sampled for TDS only, and 14 wells were sampled for nitrates only. Samples from one well (Well 109) showed TDS concentrations exceeding 750 mg/l, the Basin Plan objective. Wells 120 and 158, which showed TDS concentrations exceeding 750 mg/l in prior years, showed reduced TDS concentrations for 2013-14, ranging from 410 to 600 mg/l and 480 to 720 mg/l, respectively. During 2013-14, 21 wells showed TDS concentrations ranging from 500 to 750 mg/l.

TABLE 10.1

SANTA MARGARITA RIVER WATERSHED
**RANGES IN AVERAGE DAILY CONCENTRATION OF
 DISSOLVED OXYGEN, PH, SPECIFIC CONDUCTANCE AND TEMPERATURE
 AT SANTA MARGARITA RIVER NEAR TEMECULA**

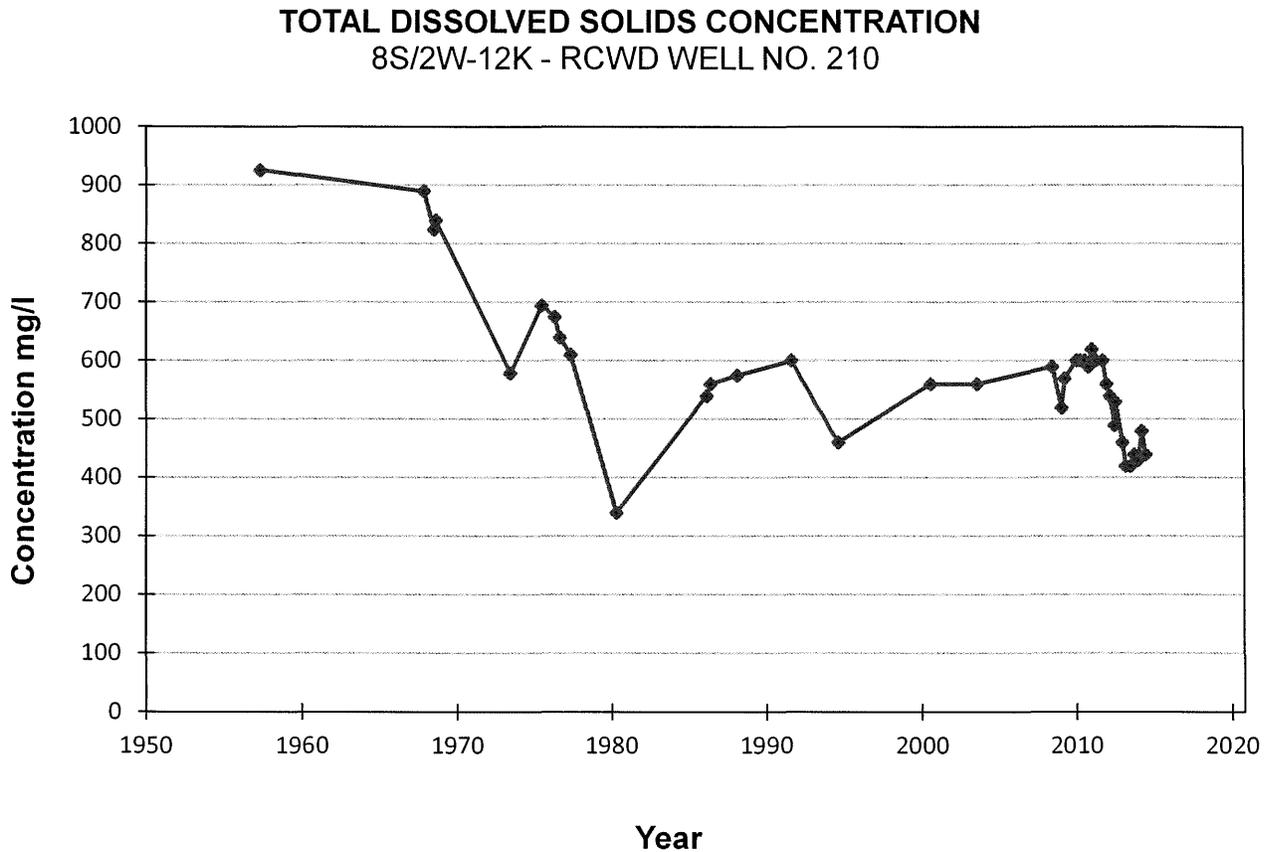
Water Year 2013-14

COLLECTION MONTH/YEAR	DISSOLVED OXYGEN mg/l		pH		SPECIFIC CONDUCTANCE microsiemens/cm		TEMPERATURE Degrees Celsius	
	High	Low	High	Low	High	Low	High	Low
2013								
October	8.8	5.0	8.1	7.6	1,240	823	22.7	16.1
November	9.2	7.4	8.0	7.6	1,650	837	19.4	15.4
December	10.2	8.5	8.2	7.5	1,200	878	16.0	9.5
2014								
January	10.6	10.0	8.2	7.8	983	895	12.8	11.9
February	10.6	5.9	8.0	7.4	1,620	80	16.5	12.3
March	9.9	4.7	8.2	7.5	1,019	316	17.8	12.5
April	9.7	8.4	8.3	8.1	937	893	20.7	17.0
May	9.0	7.5	8.3	7.8	977	789	23.4	18.8
June	9.0	7.6	8.3	7.8	915	731	23.6	19.7
July	8.7	6.4	8.0	7.7	745	671	23.4	20.9
August **	8.5	6.1	8.0	7.7	900	658	26.0	21.8
September	8.1	6.6	8.3	7.8	904	841	26.7	24.4

** - Partial Record: Indicates months with interruptions in record at times due to malfunction of recording equipment. High and low values indicated for days with reported data. Daily data and number of days with no record can be viewed at the following website: http://web10capp.er.usgs.gov/adr06_lookup/search.jsp searching by site number 11044000.

Total dissolved solids concentrations for Rancho California WD 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 samples collected during the 1960's to the 400-600 mg/l range in recent years. Trend analyses for other wells throughout the Murrieta-Temecula area show a mix of increasing and decreasing trends in TDS levels depending upon location and aquifer.

Figure 10.1



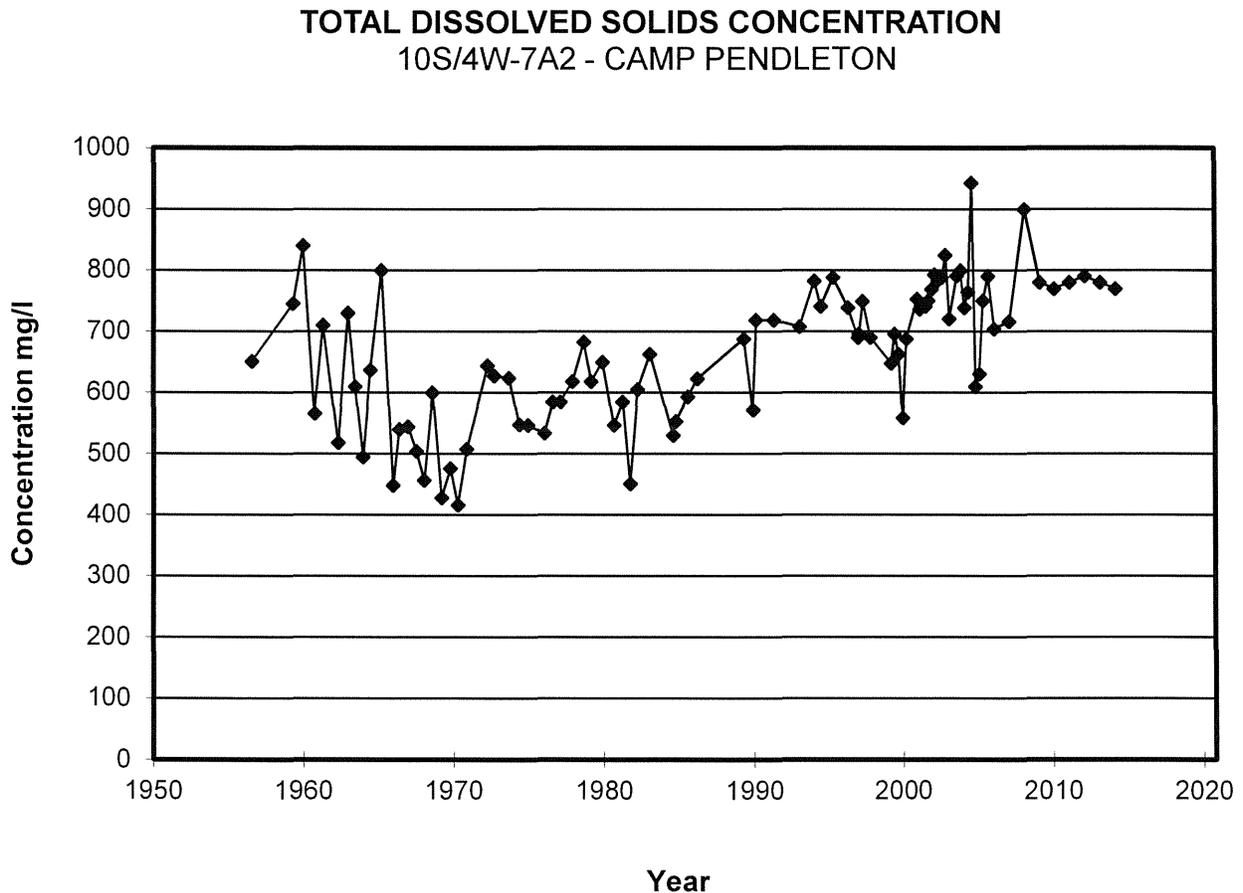
Appendix Table D-5 shows water quality data collected by the USGS from wells on Indian Reservations. In 2013-14, samples were collected from five wells on the Pechanga Indian Reservation. For the Pechanga wells, TDS concentrations ranged from 256 to 339 mg/l.

In 2013-14, no samples were collected from wells on the Cahuilla Indian Reservation.

During 2013-14, groundwater samples were collected from seven wells at Camp Pendleton as shown on Appendix Table D-6. All seven wells were subjected to standard chemical analysis. During 2013-14, samples show all seven wells with TDS concentrations exceeding the Basin Plan Objective of 750 mg/l. Five of the seven wells showed TDS concentrations that exceeded those in the prior year, and two wells showed a decline of TDS concentrations compared to the previous year.

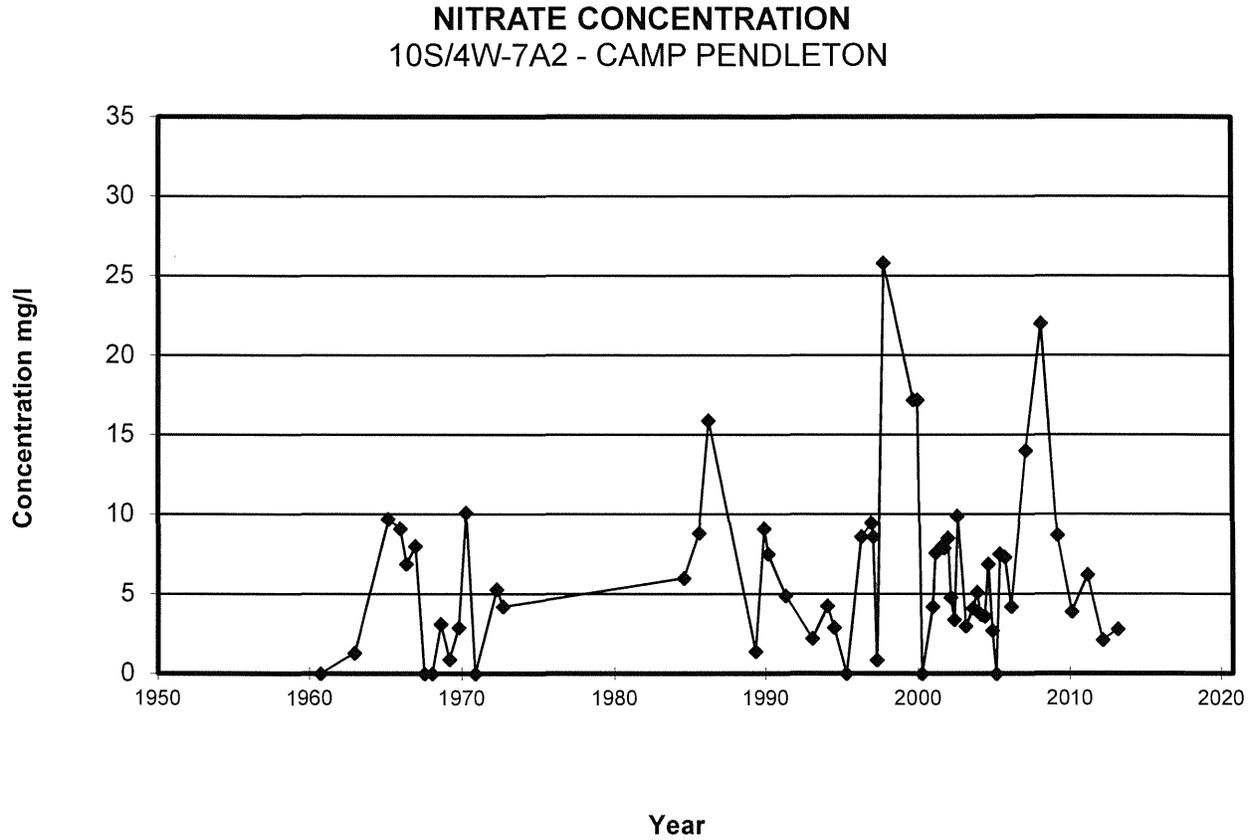
Historical TDS concentrations for Camp Pendleton Well 7A2 are shown on Figure 10.2 for samples collected since mid-1950. The figure shows a decline between mid-1950 and 1970, then a period of increasing concentrations to levels in the 550-950 mg/l range. Analysis of the sample collected in 2013-14 indicated TDS concentrations of 770 mg/l, a decrease of 10 mg/l compared to the sample collected in 2012-13.

Figure 10.2



Historical nitrate concentrations for the same well (7A2) are shown on Figure 10.3. The one sample collected in Water Year 2013-14 showed a nitrate concentration of 2.8 mg/l, an increase from the prior year.

Figure 10.3



SECTION 11 – COOPERATIVE WATER RESOURCE MANAGEMENT AGREEMENT

11.1 General

On August 20, 2002, the Cooperative Water Resource Management Agreement (CWRMA) between Camp Pendleton and Rancho California WD was approved by the Court. The CWRMA provisions specify required accounting will be reported on a calendar year basis and, accordingly, Section 11 and Appendix E present data reported on a calendar year basis. However, the remainder of the Annual Watermaster Report is prepared on a water year basis requiring the CWRMA calendar year reporting to be converted to a water year basis to be incorporated into other sections of the report. The water year period begins on October 1 and concludes on September 30 of the following year.

It is noted that prior Annual Watermaster Reports served as the annual report required under CWRMA. Beginning in calendar year 2011, a separate annual report has been prepared by the Watermaster and submitted to the Court to meet the requirements of CWRMA. Section 11 continues to be included in the Annual Watermaster Report focusing on the accounting and operations related to Make-Up Water releases and flow requirements for the Santa Margarita River at the Gorge. Section 11 also includes an overview of other topics included in the stand-alone Annual CWRMA Report.

The CWRMA provides that on May 1 of each year, the Technical Advisory Committee is to compute a hydrologic index for the year based on streamflow and precipitation between October and April. In May 2014, the hydrologic index was determined and the year classified as a “Below Normal” hydrologic year. The hydrologic year establishes the required flows at the Santa Margarita River near Temecula gaging station for the calendar year. Required flows for 2014, a “Below Normal” year, are listed in Section 5 of the CWRMA and are shown on Table 11.1.

As indicated above, CWRMA calendar year accounting must be converted to a water year basis for other sections of the annual report. The data for October through December 2013 for the various accounts are needed to convert the amounts shown on Table 11.1 to water year values. These data for October through December 2013 were reported in the prior year Annual Watermaster Report. To assist the reader in calculating water year amounts for various CWRMA operations, Table 11.2 in the current report is a repeat of Table 11.1 from the prior year’s report. Additional information concerning the operations underlying the values reported on Table 11.2 can be found in the prior year’s report.

Prior to implementation of the CWRMA, each year there were contentions raised by Camp Pendleton with respect to various aspects of the Annual Watermaster Report. These contentions are settled so long as that agreement is in effect. Accordingly, there is no need to raise those particular issues or publish them in the main text of the annual report or in related correspondence. Rather, the issues are provided in Appendix F.

TABLE 11.1

SANTA MARGARITA RIVER WATERSHED

MONTHLY SUMMARY OF REQUIRED FLOWS,
DISCHARGES, CREDITS AND ACCOUNTS
COOPERATIVE WATER RESOURCE MANAGEMENT AGREEMENT

2014 CALENDAR YEAR - BELOW NORMAL YEAR

Month	USGS Official	USGS Website	Minimum Flow	Section 5 Flows	No. of Days 10-day	Discharge from	Climatic Credits	Camp Pendleton Groundwater Bank 5/	
	Discharge	Daily Discharge	Maintenance					WR-34	Earned
	AF	AF	Requirement	cfs 2/	Running Average is	AF 3/	AF 4/	AF	AF
			cfs 1/		Less than Required				
Jan	605.8	605.8	9.8	8.0	0	599.5	212.0	105.4	5,000.0
Feb	1,995.8	1,995.8	9.8	8.0	0	506.7	168.9	95.2	5,000.0
Mar	3,822.5	3,813.6	9.8	8.0	0	502.4	165.5	105.4	5,000.0
Apr	589.1	583.5	9.8	8.0	0	577.8	202.8	102.0	5,000.0
May	326.5	350.9	5.7	5.7	0	336.0	0.0	0.0	5,000.0
Jun	274.1	291.6	4.9	4.9	0	270.7	0.0	0.0	5,000.0
Jul	264.4	264.6	4.3	4.3	0	248.1	0.0	0.0	5,000.0
Aug	272.1	272.1	4.4	4.4	0	252.3	0.0	0.0	5,000.0
Sep	243.6	243.6	4.1	4.1	0	224.9	0.0	0.0	5,000.0
Oct	235.0	239.8	3.9	3.9	0	216.5	0.0	0.0	5,000.0
Nov	176.1	178.5	3.0	4.5	0	164.4	0.0	90.0	5,000.0
Dec	3,508.6	3,508.6	3.3	5.3	0	109.5	0.0	124.0	5,000.0
CALENDAR									
YEAR	12,313.6	12,348.3			0	4,008.8	749.2	622.0	FULL
TOTAL									

1/ Required flows for January through April are equal to 11.5 cfs less 1.7 cfs of credits (406 AF of Climatic Credit earned in 2013).

2/ The Table in Section 5 of the CWRMA sets forth guaranteed monthly flows at the Gorge once the hydrologic condition for the calendar year is established.

3/ CAP Credits equal the WR-34 discharge in excess of 4,000 AF. Credits earned in 2014 equal to 8.8 AF.

4/ Climatic Credits equal the WR-34 discharges less actual Flow Requirements, which is the flow indicated in Section 5 of the CWRMA less applicable credits but not less than 3.0 cfs.

5/ Camp Pendleton's rights to groundwater equal the flow indicated in Section 5 of the CWRMA less the Actual Flow Maintenance Requirement, which cannot be less than 3.0 cfs. Input to the Groundwater Bank shown but cumulative balance did not increase due to account balance maximum of 5,000 AF.

TABLE 11.2

SANTA MARGARITA RIVER WATERSHED

MONTHLY SUMMARY OF REQUIRED FLOWS,
DISCHARGES, CREDITS AND ACCOUNTS
COOPERATIVE WATER RESOURCE MANAGEMENT AGREEMENT

2013 CALENDAR YEAR - CRITICALLY DRY YEAR

Month	USGS Official Discharge AF	USGS Website Daily Discharge AF	Minimum Flow Maintenance Requirement cfs 1/, 2/	Section 5 Flows cfs 3/	No. of Days 10-day Running Average is Less than Required Flow	Discharge from WR-34 AF 4/	Climatic Credits Earned AF 5/	Camp Pendleton Groundwater Bank 6/	
								Input AF	Cumulative Balance AF
Jan	395.3	395.3	6.5/5.3	4.5	0	291.9	116.0	93.0	5,000.0
Feb	427.0	427.8	5.3	4.5	0	215.0	63.4	84.0	5,000.0
Mar	857.3	857.3	5.6	4.5	0	266.6	96.6	93.0	5,000.0
Apr	333.6	333.6	5.6	4.5	0	310.1	130.1	90.0	5,000.0
May	246.3	234.2	3.8	3.8	0	220.7	0.0	0.0	5,000.0
Jun	197.0	197.4	3.3	3.3	0	186.3	0.0	0.0	5,000.0
Jul	174.1	186.0	3.0	3.0	0	167.7	0.0	0.0	5,000.0
Aug	182.5	185.1	3.0	3.0	0	184.9	0.0	0.0	5,000.0
Sep	179.3	179.3	3.0	3.0	0	185.5	0.0	0.0	5,000.0
Oct	185.5	185.9	3.0	3.0	0	161.3	0.0	0.0	5,000.0
Nov	179.3	179.3	3.0	3.0	0	170.5	0.0	0.0	5,000.0
Dec	201.7	203.3	3.3	3.3	0	201.2	0.0	0.0	5,000.0
CALENDAR YEAR TOTAL	3,558.9	3,564.5			0	2,561.7	406.1	360.0	FULL

- 1/ Required flows for January through April are equal to 11.5 cfs less 5.9 cfs of credits (1,248 AF of Climatic Credit earned in 2012 and 148 AF CAP Credit carried over from 2011).
- 2/ In December 2012, the preliminary winter-time flow requirement for 2013 was calculated as 6.5 cfs; in January 2013, the final winter-time requirement was computed as 5.6 cfs. To make up for excess releases made by the District between January 1-17, 2013, the winter-time flow requirement was reduced from 5.6 cfs to 5.3 cfs for January 18 - February 28.
- 3/ The Table in Section 5 of CWRMA sets forth guaranteed monthly flows at the Gorge once the hydrologic condition for the calendar year is established.
- 4/ CAP Credits equal the WR-34 discharge in excess of 4,000 AF. No CAP Credits earned in 2013.
- 5/ Climatic Credits equal the WR-34 discharges less Actual Flow Requirements, which is the flow indicated in Section 5 of CWRMA less applicable credits but not less than 3.0 cfs.
- 6/ Camp Pendleton's rights to groundwater equal the flow indicated in Section 5 of CWRMA less the Actual Flow Maintenance Requirement, which cannot be less than 3.0 cfs. Input to the groundwater bank shown but cumulative balance did not increase due to account balance maximum of 5,000 AF.

11.2 Required Flows

Under the CWRMA, Rancho California WD guarantees that the ten-day running average of the measured flows at the Santa Margarita River near Temecula gaging station shall meet the required flows for each month during the year. In order to meet the required flows, Rancho California WD discharges Make-Up Water from two primary sources, both discharging into the river at the same location immediately upstream from the USGS gaging station for Santa Margarita River near Temecula. The first primary source of Make-Up Water is raw water from MWD Aqueduct No. 5 discharged at Outlet WR-34. The second primary source of Make-Up Water is from the Rancho California WD treated water distribution system through a potable connection to the WR-34 outlet pipe. In prior years, Make-Up Water was also discharged from the treated water distribution system to Murrieta Creek from two system discharge meters collectively referred to as the System River Meter. The two discharge meters are located on opposite sides of Murrieta Creek, immediately downstream of the USGS gaging station for Murrieta Creek at Temecula, which is located approximately 2,000 feet upstream of the confluence of Temecula Creek and Murrieta Creek. The System River Meter is operable as a secondary source of Make-Up Water if needed.

Flow requirements are based on two-thirds of the median natural flow of the Santa Margarita River at the Gorge for a given hydrologic year type. During the winter period (January through April), Rancho California WD shall maintain a ten-day running average equal to 11.5 cfs, less carry-over credits, less requested foregone Make-Up Water, but not less than 3.0 cfs. Rancho California WD may earn Climatic Credits in Below Normal and Critically Dry years if it has provided Make-Up Water in excess of the Actual Flow Requirement. The Climatic Credit is equal to the Make-Up Water released, less the Actual Flow Requirement, less credits. The Actual Flow Requirement is determined on May 1 of each year and applied retroactively to the flows during the winter period. During the non-winter period (May through December), Rancho California WD shall maintain a ten-day running average equal to the flow requirements specified in the CWRMA as determined on May 1st, less any foregone Make-Up Water agreed to by Camp Pendleton and Rancho California WD. When Rancho California WD is required to provide Make-Up Water in any calendar year in excess of 4,000 acre feet, it may apply CAP Credits for such excess during the following two winter periods. At no time is Rancho California WD required to make up more than 11.5 cfs.

The measured daily flows, the ten-day running average, and the differences between the running average and the required flows are shown in Appendix E. Two listings of daily discharges are shown in the tables in Appendix E: the USGS official discharge and the USGS website discharge. The discharges shown on the website are those that dictate daily decisions regarding the quantities of Make-Up Water required and those discharges are used to compute the ten-day running average. The official discharge is a more refined estimate developed later by the USGS for publication.

The number of days each month when the ten-day running average was less than the required flows is summarized on Table 11.1. For calendar year 2014, there were no days when the running average was less than the required flows under normal CWRMA operations.

During calendar year 2014, the total releases by Rancho California WD to meet CWRMA flow requirements were 4,009 acre feet as shown on Table 11.1. The releases were comprised entirely of raw water from Outlet WR-34. For calendar year 2014, there were no releases from the potable connection at Outlet WR-34.

Climatic Credits of 406 acre feet were used in calendar year 2014, and Climatic Credits of 749 acre feet were earned in calendar year 2014 in accordance with CWRMA provisions. No CAP Credits were used in calendar year 2014 and nine acre feet of CAP Credits were accumulated in calendar year 2014 for use in subsequent years to meet required releases by Rancho California WD.

The CWRMA also provides that Camp Pendleton may acquire rights to groundwater above the Gorge by foregoing its right to Make-Up Water, or to the extent that the Actual Flow Maintenance Requirements are less than the flows in the table in Section 5 of CWRMA. The maximum cumulative balance for the Camp Pendleton groundwater account is 5,000 acre feet. During calendar year 2014, 622 acre feet were calculated as input to the groundwater account but the balance was already at the maximum balance of 5,000 acre feet and no additional water was credited to the account.

11.3 Water Quality

The U. S. Geological Survey continuously monitors four parameters of water quality at the Santa Margarita River near Temecula gaging station, including dissolved oxygen, pH, specific conductance, and temperature. The daily averages for each of these parameters are reported annually. Monthly highs and lows for each parameter are listed in Table 10.1 for the water year ending September 30, 2014.

11.4 Monitoring Programs

The CWRMA provides for the establishment of two monitoring programs: (1) Section 5(g) provides for a program to assess the impacts of operations on water supply, water quality and riparian habitat within Camp Pendleton, and; (2) Section 7(d) provides for a program to assess safe yield operations of Rancho California WD through the use of a multi-level groundwater monitoring network and periodic updates of the CWRMA Groundwater Model.

During 2007-08, Camp Pendleton initiated the Section 5(g) program named as the Lower Santa Margarita River Watershed Monitoring Program (LSMRWM Program) to evaluate whether the increased flows under CWRMA influence threatened and endangered species, riparian and wetland habitats, or water quality downstream. The LSMRWM Program will also support other water quality monitoring and watershed management activities in the Santa Margarita River Watershed. A copy of the Statement

of Work for the LSMRWM Program was provided in the 2007 and 2008 Annual Watermaster Reports. The monitoring was funded for a two-year period and the final report, *Hydrological and Biological Support to Lower Santa Margarita River Watershed Monitoring Program Water Years 2008-2009* was published on February 21, 2010, under a cooperative program between Camp Pendleton and the United States Bureau of Reclamation.

In September 2006, the USGS under contract with Camp Pendleton and Rancho California WD constructed a multi-level monitoring well for the Murrieta-Temecula Groundwater Basin in accordance with Section 7(d) of CWRMA. The Pala Park Groundwater Monitoring Well is located near the confluence of Pechanga and Temecula creeks and was completed to a total depth of 1,499 feet. Six piezometers were installed for continuous water level recording in the saturated zone for the lower five screened intervals and for the upper-most screened interval to detect moisture in the unsaturated zone. The USGS monitoring program for the Pala Park Groundwater Monitoring Well is included in the ongoing Watermaster budget beginning in Water Year 2007-08.

In 2009, the groundwater monitoring program was expanded to include the Wolf Valley Monitoring Well that was previously constructed under a cooperative agreement between the USGS and the Pechanga Band. Two piezometers are installed at the Wolf Valley Well. The groundwater level monitoring for the Wolf Valley Monitoring Well was previously funded by the Pechanga Band, but is now included in the ongoing Watermaster budget beginning in Water Year 2009-10.

In 2013, two additional groundwater monitoring wells were constructed by the USGS under contract with Rancho California WD. The groundwater level monitoring for these additional wells is also included in the ongoing Watermaster budget. The Temecula Creek Groundwater Monitoring Well was drilled in April 2013 to a depth of 1,720 feet, and was completed with five piezometers. The VDC Recharge Basin Groundwater Monitoring Well was drilled in August 2013 to a depth of 1,033 feet, and was completed with six piezometers.

Information concerning the construction of the monitoring wells, groundwater levels, and water quality data can be found at the following website: <http://ca.water.usgs.gov/temecula/>. Information obtained from the website as well as supplemental information for the groundwater monitoring wells is provided in the Annual CWRMA Report.

In 2010, 2011, and 2012, the water quality monitoring program also included collecting data for the two sources of supply for recharge at the head of Pauba Valley: (1) imported supplies for recharge at Rancho California WD VDC Recharge Facilities, and; (2) native supplies from Temecula Creek as sampled at Vail Lake. Funding from the Watermaster budget was used to collect and analyze the data which are provided in the Annual CWRMA Report.

In 2012, the water quality monitoring program also included collecting data from selected groundwater production wells operated by Rancho California WD within Pauba

Valley. These wells were selected to compliment the water quality data for the monitoring wells and the two sources of supply for recharge at the head of Pauba Valley. Previously, groundwater production wells operated by Rancho California WD were included in the 2004 and 2007 sampling programs for the Groundwater Ambient Monitoring and Assessment (GAMA) program implemented by the California State Water Resources Control Board. Data reported for 2013 were collected with funding from the Watermaster budget. In 2013, funding from the Watermaster budget was used to analyze archived, age-dating samples that were collected during 2012. The samples from two groundwater production wells, Well Nos. 109 and 234, were analyzed for tritium and carbon isotopes.

In 2007, Camp Pendleton and Rancho California WD initiated an effort to update the CWRMA Groundwater Model in accordance with Section 7(d). Work on updating the groundwater model was completed in 2014 and 2015 with publication of the April 25, 2014 (revised January 8, 2015) report prepared by GEOSCIENCE Support Services, Inc., entitled *Surface and Ground Water Model of the Murrieta-Temecula Ground Water Basin, California, Model Update and Refinement Report*. The model update included the following: (1) development of GSFLOW which is a coupled surface water and groundwater model that includes a Precipitation-Runoff Modeling System (PRMS) and MODFLOW, (2) refinement of the groundwater model cell size, active/inactive boundaries and locations of recharge and discharge, (3) development of a three-dimensional lithologic model based on lithologic and geophysical borehole logs from wells in the area, (4) refinement of groundwater model layer elevations based on the results from the lithologic model, and (5) update of the surface water and groundwater model with data through 2008.

Page Intentionally Blank

SECTION 12 - FIVE YEAR PROJECTION OF WATERMASTER OFFICE TASKS, EXPENDITURES AND REQUIREMENTS

12.1 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.

12.2 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 Diamond Valley Lake MOU's
8. Administer Steering Committee Matters
9. Prepare Court Reports/Budgets
10. Monitor Streamflow and Water Quality Measuring
11. Data Management
12. Administer Cooperative Water Resource Management Agreement

12.3 Additional Tasks

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

1. Prepare List of All Water Users under Court Jurisdiction
2. Prepare Inventory of Ponds and Reservoirs
3. Determine Salt Balance

12.4 Projected Expenditures

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

Year		Watermaster Office	USGS Groundwater Monitoring	USGS Gaging Stations	Total
Current Year	2014-15	\$446,750	\$43,700	\$189,250	\$679,700
Projected Years	2015-16	\$473,625	\$45,500	\$196,975	\$716,100
	2016-17	\$487,800	\$46,900	\$202,800	\$737,500
	2017-18	\$502,400	\$48,300	\$208,900	\$759,600
	2018-19	\$517,500	\$49,700	\$215,200	\$782,400
	2019-20	\$533,000	\$102,200	\$221,600	\$856,800

SECTION 13 - WATERMASTER OFFICE BUDGET

The budget for the Watermaster Office is established on an annual basis and is approved by the Court upon acceptance of the Annual Watermaster Report. The budget is presently funded from equal assessments paid by the Steering Committee; however, the Court retains the right to assess other parties in the future. An audit is conducted annually by an independent auditor and the independent auditor's report is submitted for review by the parties and the Court as part of the Annual Watermaster Report.

13.1 Comparison of Budget and Actual Costs for 2013-14

The Watermaster Budget for 2013-14 of \$658,840 was approved by the Court upon acceptance of the July 2013 Annual Watermaster Report for Water Year 2011-12. The Independent Auditor's Report and Report to the Steering Committee for Watermaster of the Santa Margarita River Watershed for Fiscal Year Ended September 30, 2014, dated January 21, 2015, are included in Appendix G. A comparison of the budget and actual costs for 2013-14 is shown on Table 13.1. The actual costs for 2013-14 were \$653,001 compared to the budget of \$658,840, resulting in a favorable variance of \$5,839. An explanation of individual line item variances is provided in Appendix G.

13.2 Proposed Budget for 2015-16

The proposed Watermaster Budget for 2015-16 is published in the Annual Watermaster Report for 2013-14 and is determined to be final and accepted by the Court upon noticing and completion of the 30-day period for parties to file an objection to the report. Accordingly, the budget for 2015-16 is referred to in this report as the proposed budget. The proposed Watermaster Budget for 2015-16, along with a comparison to the approved budget for 2014-15 is shown on Table 13.2. The total budget for 2015-16 is \$716,100. This budget includes \$473,625 for the Watermaster Office and \$242,475 for USGS gaging station operations and monitoring. The budgeted cost for services provided by the U.S. Geological Survey is based on the annual renewal of a cooperative agreement with the Watermaster.

TABLE 13.1

SANTA MARGARITA RIVER WATERSHED
COMPARISON OF WATERMASTER BUDGET AND ACTUAL COSTS
WATER YEAR 2013-14

Line Item	<u>Water Year 2013-14</u>			
	Approved Budget 2013-14 1/	Actual Costs 2013-14 2/	Actual Costs Minus Approved Budget 2013-14	
	\$	\$	\$	%
<i>Watermaster Office</i>				
Accounting Services	\$8,800	\$6,073	-\$2,727	-31.0%
Audit	6,300	6,339	39	0.6%
Clerical/Analyst	99,700	96,781	-2,919	-2.9%
Conference/Training	N/A	662	N/A	N/A
Equipment and Furniture	2,000	0	-2,000	-100.0%
Human Resources Services	N/A	0	N/A	N/A
Insurance	600	575	-25	-4.2%
IT System/Computer	10,000	4,248	-5,752	-57.5%
Legal Services	N/A	11,955	N/A	N/A
Miscellaneous	5,915	317	-5,598	-94.6%
Postage	N/A	1,527	N/A	N/A
Printing	10,800	11,207	407	3.8%
Publications	4,200	3,009	-1,191	-28.4%
Rent	18,000	18,000	0	0.0%
Supplies	1,800	2,215	415	23.1%
Telephone	4,200	2,503	-1,697	-40.4%
Travel	900	956	56	6.2%
<i>Watermaster Services</i>				
Consulting Services	219,000	221,328	2,328	1.1%
Travel Reimbursement	27,500	27,906	406	1.5%
SUBTOTAL WATERMASTER OFFICE	\$419,715	\$415,601	-\$4,114	-1.0%
USGS				
Gaging Station	\$150,225	\$149,130	-\$1,095	-0.7%
Surface Water Quality	23,600	23,435	-165	-0.7%
Groundwater Monitoring - Water Levels	43,300	42,990	-310	-0.7%
Groundwater Monitoring - Water Quality	22,000	21,845	-155	-0.7%
SUBTOTAL USGS	\$239,125	\$237,400	-\$1,725	-0.7%
TOTAL	\$658,840	\$653,001	-\$5,839	-0.9%

N/A Budget Item added for 2014-15, not itemized for 2013-14.

1/ Budget for 2013-14 approved by the Court as reported in the Annual Watermaster Report for Water Year 2011-12, published July 2013.

2/ Actual Costs from Financial Statements for period ending September 30, 2014.

TABLE 13.2

SANTA MARGARITA RIVER WATERSHED
PROPOSED WATERMASTER BUDGET FOR WATER YEAR 2015-16

Line Item	Water Year 2015-16			
	Proposed Budget 2015-16	Approved Budget 2014-15	Increase Over Approved Budget 2014-15	
	1/ \$	2/ \$	\$	%
Watermaster Office				
Accounting Services	\$8,400	\$8,600	-\$200	-2.3%
Audit	6,600	6,600	0	0.0%
Clerical/Analyst	115,700	109,300	6,400	5.9%
Conference/Training	1,400	1,200	200	16.7%
Equipment and Furniture	1,000	1,000	0	0.0%
Human Resources Services	800	1,000	-200	-20.0%
Insurance	600	600	0	0.0%
IT System/Computer	10,000	10,000	0	0.0%
Legal Services	20,000	20,000	0	0.0%
Miscellaneous	1,325	2,250	-925	-41.1%
Postage	2,000	1,900	100	5.3%
Printing	10,000	9,000	1,000	11.1%
Publications	3,300	3,200	100	3.1%
Rent	18,000	18,000	0	0.0%
Supplies	1,900	1,800	100	5.6%
Telephone	3,000	3,000	0	0.0%
Travel	1,000	900	100	11.1%
Watermaster Services				
Consulting Services	241,000	222,000	19,000	8.6%
Travel Reimbursement	27,600	26,400	1,200	4.5%
SUBTOTAL WATERMASTER OFFICE	\$473,625	\$446,750	\$26,875	6.0%
USGS				
Gaging Station	\$172,175	\$165,450	\$6,725	4.1%
Surface Water Quality	24,800	23,800	1,000	4.2%
Groundwater Monitoring - Water Levels	45,500	43,700	1,800	4.1%
Groundwater Monitoring - Water Quality	0	0	0	0.0%
SUBTOTAL USGS	\$242,475	\$232,950	\$9,525	4.1%
TOTAL	\$716,100	\$679,700	\$36,400	5.4%

1/ Proposed budget for 2015-16; final budget to be approved by the Court upon acceptance of the Annual Watermaster Report for Water Year 2013-14.

2/ Budget for 2014-15 approved by the Court as reported in the Annual Watermaster Report for Water Year 2012-13, published in July 2014.

