III. MANAGE WATER PRODUCTION

Cooperative operation plans and quantification of California American Water (CAW) and non-CAW water production within the Monterey Peninsula Water Resource System (MPWRS) is necessary for proper water resources management and protection of the natural resources of the Carmel River basin. In the Five-Year Mitigation Program, Riparian Mitigation #1 is based on conservation and "water distribution management to retain water in the Carmel River" (Finding No. 389-A). This section describes various management activities of the District designed to maximize streamflow and groundwater storage in the Carmel River system.

A. Memorandum of Agreement

Description and Purpose

The original Memorandum of Agreement (MOA) between the California Department of Fish and Game (CDFG), CAW, and the District was developed in July 1983 to balance CDFG's requirement to conserve and protect the fish and wildlife resources of the state and CAW's responsibility to supply water to the citizens of the communities of the Monterey Peninsula. This MOA is modified each year to reflect specific storage conditions and inflow projections at Los Padres and San Clemente Reservoirs in the Upper Carmel River watershed. Specifically, the MOA addresses the release of water into the Carmel River from San Clemente Dam and was originally designed to maximize surface flow to the Narrows during the low-flow season. In addition to specifying minimum flow releases from San Clemente Dam, the MOA limits CAW diversions from San Clemente Dam to the Carmel Valley Filter Plant (CVFP) and directs how CAW pumps water from the Lower Valley Wells. Normally, the MOA is formulated in May and remains in force until the end of December. The agreement may be modified or extended by mutual consent of all the parties.

Implementation and Activities During 2005-2006

- **2005 MOA** – The 2005 MOA was developed on April 25, 2005, approved by the District Board on May 16, 2005 and signed by all the MOA representatives by September 26, 2005.[1] Based on storage conditions and expected reservoir inflows, it was agreed that CAW would maintain minimum flows in the Carmel River at the Sleepy Hollow Weir of 20 cubic feet per second (cfs) in May and June, 11 cfs in July, 8 cfs in August, 7 cfs in September, and 6 cfs during the period from October through December 2005. The 2005 MOA included terms to limit CAW diversions at San Clemente Dam during low-flow periods, except during an emergency, as defined in SWRCB Order WRO 2002-0002, allow production from CAW's Russell Wells at a maximum rate of 0.5 cfs, and limit operation of CAW wells in the Carmel Valley above Robinson Canyon Road Bridge during low-flow periods and require CAW to make reasonable efforts to operate the lower Carmel Valley wells in sequence from the most downstream well, progressing upstream as wells are needed and available for production.
- **2006 MOA** – The 2006 MOA was developed on May 4, 2006, approved by the District

1 Although all the parties did not sign the 2005 MOA until September 26, 2005, the operations, terms and conditions of the agreement were followed beginning on June 1, 2005, as if the agreement was in effect.

Board on June 22, 2006 and signed by all the MOA representatives by July 25, 2006. Based on storage conditions and expected reservoir inflows, it was agreed that CAW would maintain minimum flows in the Carmel River at the Sleepy Hollow Weir of 10 cfs in June through September and 8 cfs during the period from October through December 2005. The 2006 MOA included terms to limit CAW diversions at San Clemente Dam during low-flow periods, except during an emergency, as defined in SWRCB Order WRO 2002-0002, allow production from CAW's Russell Wells at a maximum rate of 0.5 cfs, and limit operation of CAW wells in the Carmel Valley above Robinson Canyon Road Bridge during low-flow periods and require CAW to make reasonable efforts to operate the lower Carmel Valley wells in sequence from the most downstream well, progressing upstream as wells are needed and available for production.

B. Quarterly Water Supply Strategy and Budget

Description and Purpose

Under Ordinance No. 19, which was adopted in December 1984, the District was required to develop an annual water supply strategy. This strategy included estimates of projected demands and proposed production targets for the CAW system. The strategy was designed to limit CAW surface water diversions from the Carmel River to no more than 35 percent of total CAW production. Based on the District strategy, CAW developed a water supply budget specifying monthly production targets.

Under Ordinance No. 41, which was adopted in March 1989, development of the water supply strategy and budget was changed from an annual to a quarterly process, and CAW's annual surface water diversions were reduced to a goal of no more than 29 percent of total production. Currently, the quarterly strategy and budget values are developed jointly by CAW, the District, and CDFG in conformance with the annual MOA. The strategy is designed to maximize the long-term production potential and protect the environmental quality of the Carmel Valley and Seaside basins. The budget includes monthly production targets for each of CAW's major production sources -- San Clemente Reservoir, Upper Carmel Valley (UCV) Aquifer, Lower Carmel Valley (LCV) Aquifer, and the Coastal Subareas of the Seaside Basin -- which reflect current and expected system conditions. The quarterly strategies and budgets are developed in December, March, June, and September of each year.

Starting in April 2002, the Quarterly Water Supply Strategy and Budgets were fundamentally changed by the State Water Resources Control Board (SWRCB), which adopted Order WRO 2002-0002 on March 21, 2002, and by the National Marine Fisheries Service (NMFS) and CAW, who signed a Conservation Agreement on September 18, 2001. This order and agreement changed the way that CAW operates its diversions and wells upstream of Robinson Canyon Road Bridge. Specifically, CAW was ordered to:

1. Immediately upon issuance of SWRCB Order WRO 2002-0002, cease withdrawal of water from the San Clemente Dam during low-flow periods except during an emergency. For the purpose of the Order, "low-flow periods" are defined as times

when stream flow in the Carmel River at the Don Juan Bridge gage (RM 10.8) is less than 20 cfs for five consecutive days.

2. Reduce diversions during low-flow periods, from the Scarlett No. 8 Well, Los Laureles Wells Nos. 5 and 6, Panetta Wells, Garzas Wells Nos. 3 and 4, and the Robles Well. Current diversions are 1-7 days per month at each well. Diversions at these wells shall be reduced to a maximum of two eight-hour days per month, except that those wells that currently operate only one eight-hour day per month shall continue to operate at not more than one eight-hour day per month. To the maximum degree practicable, CAW shall operate these wells at night. In consultation with NMFS, FWS, DFG and the District, Cal- Am can operate the Scarlett 8 well incrementally to meet maximum daily demand after using all other available downstream sources at maximum capacity.

3. Install, not later than March 31, 2002, a pump that delivers water from the Begonia Zone to the Carmel Valley Village Zone. The "Begonia Zone" is defined to include water well production facilities in AQ3, AQ4 and the Seaside Groundwater Basin. The "Carmel Valley Village Zone" is defined to include all CAW users upstream from the Del Monte Regulating Station.

4. The Russell Wells shall be limited to a combined total instantaneous diversion rate of not more that 0.5 cfs during low-flow periods.

5. During the low-flow periods, except for 0.5 cfs, all water diverted to Carmel Valley Village Zone shall be water that originates from the Begonia Zone (as defined in Paragraph 3 above).

Implementation and Activities During 2005-2006

During 2005 and 2006, the quarterly strategies and budgets were structured to optimize production from the coastal subareas of the Seaside Basin and minimize impacts from production in the UCV. Beginning in 1998, the quarterly budgets were formulated with an annual production goal of 11,285 AF during the Water Year (October through September of the following year) from the Carmel River Basin, in conformance with goals and requirements established by SWRCB Orders WR 95-10, WR 98-04, and WRO 2002-0002. Releases from San Clemente Reservoir were maximized throughout the year and ground water production in the UCV was limited to periods when sufficient streamflow was available to recharge the aquifer.

Starting in March 2006, the annual limit for CAW's production from its wells in the coastal subareas of the Seaside Groundwater Basin for customers in its main system used in the quarterly budgets was reduced from 4,000 AF per year to 3,504 AF per year based on the final judgment in the basin adjudication. Accordingly, the total annual limit for CAW from the Carmel River and Seaside Groundwater Basins for its main system was set at 14,798 AF.

- **CAW Main System Production in Water Year 2006**[2] – During Water Year 2006, CAW produced 14,216 acre-feet (AF) of water from all sources for its main system, including 411 AF diverted from the Carmel River Basin and injected into the Seaside Basin by the District. Totals of 904 AF, 10,049 AF (including the 411 AF injected into the Seaside Basin), and 3,263 AF were produced from CAW wells in the UCV, LCV, and Seaside Basin coastal subareas, respectively. Of the system total, no water was diverted at San Clemente Dam, which represents the third year this has occurred since CAW's record of diversions began in 1915. Currently, CAW's ability to divert at this site is constrained by: (1) sediment nearly filling the reservoir and blocking the intake structure, (2) higher turbidity standards limiting the duration and period of diversion, (3) the Conservation Agreement with NMFS, and (4) SWRCB Order 2002-0002 that restricts diversions during the low-flow season.

C. Well Registration and Reporting Program

Description and Purpose

All owners of wells within the District are required to register and report their annual water production. The purpose of the program is to provide annual aggregate estimates of water production from both CAW and non-CAW well owners in the various ground water production zones in the District. The information provided is used to make decisions regarding management of the limited water resources of the Monterey Peninsula area.

Well owners were formerly allowed to report water production by one of three methods: Water Meter, Land Use, or Power Consumption Correlation. In March 1990, the District adopted Ordinance No. 48 requiring installation of water meters on all large production wells (i.e., those producing 20 or more acre feet per year). In November 1991, District rules were further amended with the adoption of Ordinance No. 56, which extended the metering requirement to all existing medium production wells, defined as those producing between 5 and 20 acre-feet per year (AFY), and all new wells within the District. Ordinance No. 56 also eliminated the Power Consumption Correlation reporting method.

Implementation and Activities During 2005-2006

The District began its Well Registration and Reporting Program in 1980. In 1981 and 1982, the first years of production reporting, well owners were required to report water production twice a year. **Tables III-1** and **III-2** show summaries of reported production from non-CAW and CAW wells in WY 2005 and WY 2006, respectively. It should be noted that the data presented for WY 2005 have been revised since that information was presented in the Annual Mitigation Report for 2005.

Figure III-1 compares reported production from non-CAW and CAW wells and surface diversions located within the MPWRS in WY 2006 with production limits set by the District's Water

[2] Beginning with the 2002-2003 Mitigation Report, CAW production is reported on a Water Year basis, from October 1 of one Calendar Year through September 30 of the following Calendar Year. This is a change from previous annual reports in which the reporting period was July of one year through June of following year. This change makes the mitigation report consistent with reporting requirements under SWRCB Order No. WR 95-10.

Allocation Program. The MPWRS includes the Carmel River Basin, Carmel Valley Alluvial Aquifer and the coastal subareas of the Seaside Groundwater Basin. With respect to the District's Water Allocation Program limits, CAW production from the MPWRS in WY 2006 was 14,218 AF, or 3,243 AF (19.4%) less than the CAW production limit of 17,641 AF that was established by the adoption of Ordinance No. 87 in 1997. Reported non-CAW production from within the MPWRS in WY 2006 was 2,740 AF, or 306 AF (10.0%) less than the non-CAW production limit of 3,046 AF. The combined production from CAW and non-CAW sources in WY 2006 was 16,958 AF, or 3,729 AF (18.0%) less than the 20,687 AF limit set for the MPWRS.

During WY 2006, District staff inspected 25 new water meter installations to ensure compliance with the District's water meter installation standards and guidelines, including two wells that previously reported annual production by the Land Use Method, but were required to have meters installed upon transfer of ownership because the properties were overlying the Carmel Valley Alluvial aquifer. In addition, staff received copies of 21 permits for construction of new wells within the District from the Monterey County Health Department, and advised well owners that MPWMD permits were also needed.

U:\Darby\wp\allocation\RY 2006\final\iii_production_wrd.doc
Prepared by Water Resources Division
Finalized: February 28, 2008

Figure III-1

Comparison of Reported CAW and Non CAW Production to Allocation Limits Within the Monterey Peninsula Water Resources System: Water Year 2006

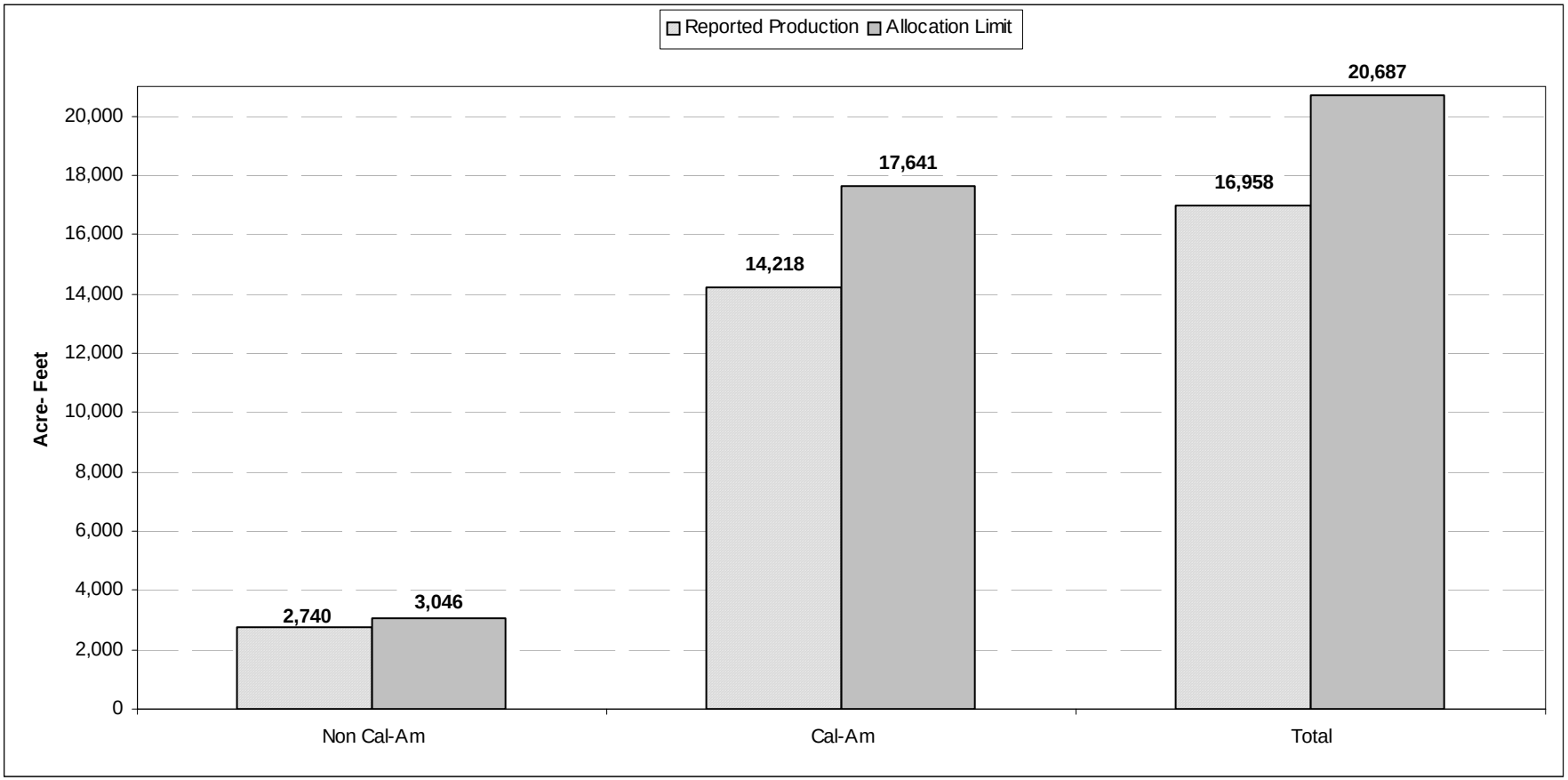

Table III-1
District-Wide Water Production Summary for Water Year 2005

SOURCE AREAS [1, 2]	NON CAL-AM WELLS						CAL-AM WELLS		AQUIFER SUBUNIT TOTALS	
	WATER METER		LAND USE		SUB-TOTAL		WATER METER			
	NO. OF WELLS	PRODUCTION [3] (AF)	NO. OF WELLS	PRODUCTION (AF)	NO. OF WELLS	PRODUCTION (AF)	NO. OF WELLS	PRODUCTION (AF)	NO. OF WELLS	PRODUCTION (AF)
AS1	7	124.2	2	1.3	9	125.5	2	634.4	11	759.9
AS2	44	181.5	36	41.8	80	223.3	0	0.0	80	223.3
AS3	104	***950.1***	53	67.2	157	***1,017.3***	7	7,632.1	164	***8,649.4***
AS4	30	***522.0***	8	3.3	38	***525.3***	1	2,769.6	39	***3,294.9***
SCS	9	846.4	2	1.6	11	847.9	9	3,002.4	20	3,850.3
CAC	7	42.2	9	14.3	16	56.5	0	0.0	16	56.5
CVU	229	483.8	47	47.9	276	531.7	0	0.0	276	531.7
LSS	8	443.2	2	3.5	10	446.6	5	434.5	15	881.2
MIS	70	***378.0***	17	33.0	87	411.0	0	0.0	87	411.0
ACTIVE	508	***3,971.3***	176	213.7	684	***4,185.0***	24	14,473.0	708	***18,658.1***
INACTIVE	261		24		285		20		305	
NOT REPORTING	41		12		53		0		53	
METHOD TOTALS:	810	***3,971.3***	212	213.7	1,022	***4,185.0***	44	14,473.0	1,066	***18,658.1***

NOTES:
1. Shaded areas indicate production within the Monterey Peninsula Water Resources System

2. Source areas are as follows:
   AS1 - UPPER CARMEL VALLEY - San Clemente Dam to Esquiline Bridge
   AS2 - MID CARMEL VALLEY - Esquiline Bridge to Narrows
   AS3 - LOWER CARMEL VALLEY - Narrows to Via Mallorca Bridge
   AS4 - LOWER CARMEL VALLEY - Via Mallorca Bridge to Lagoon
   SCS - SEASIDE COASTAL SUBAREAS
   CAC - CACHAGUA CREEK and UPPER WATERSHED AREAS
   CVU - CARMEL VALLEY UPLAND - Hillsides and Tularcitos Creek Area
   LSS - LAGUNA SECA SUBAREA (Ryan Ranch Area is within LSS)
   MIS - PENINSULA, CARMEL HIGHLANDS AND SAN JOSE CREEK AREAS

3. Any minor numerical discrepancies in addition are due to rounding.

4. 174.93 from the District's Santa Margarita Test Injection Well was delivered to Cal-Am and is shown here as Cal-Am production.

5. Values in bold italics were revised since this information was presented to the Board. The revisions are derived from revisions to values reported by the Water Meter method in AS3 and AS4 and represent a total increase of 130.4 AF.

DISTRICT-WIDE PRODUCTION	
SURFACE WATER DIVERSIONS:	
Cal-Am Diversions (San Clemente Dam):	0.0
Non Cal-Am Diversions:	48.7
CAL-AM WELLS:	
SEASIDE:	3,002.4
CARMEL VALLEY:	11,036.1
Within the Water Resources System:	14,038.5
Outside the Water Resources System:	434.5
CAL-AM TOTAL, Wells and Diversion:	14,473.0
NON CAL-AM WELLS:	
Within the Water Resources System:	***2,739.3***
Outside the Water Resources System:	1,445.8
NON CAL-AM TOTAL, Wells and Diversion:	***4,233.8***
GRAND TOTAL:	***18,706.8***

Table III-2
District-Wide Water Production Summary for Water Year 2006

SOURCE AREAS [1, 2]	NON CAW (NON CAL-AM) WELLS						CAW (CAL-AM) WELLS		AQUIFER SUBUNIT TOTALS	
	WATER METER		LAND USE		SUB-TOTAL		WATER METER			
	NO. OF WELLS	PRODUCTION [3] (AF)	NO. OF WELLS	PRODUCTION (AF)	NO. OF WELLS	PRODUCTION (AF)	NO. OF WELLS	PRODUCTION (AF)	NO. OF WELLS	PRODUCTION (AF)
AS1	7	136.0	1	1.2	8	137.2	2	662.8	10	800.0
AS2	48	144.5	36	37.9	84	182.4	1	240.5	85	422.9
AS3	116	925.4	52	61.1	168	986.5	7	7,758.0	175	8,744.5
AS4	33	590.1	8	3.5	41	593.5	1	2,292.4	42	2,885.9
SCS	9	839.2	2	1.6	11	840.7	8	3,263.9	19	4,104.6
CAC	7	40.8	9	14.3	16	55.1	0	0.0	16	55.1
CVU	210	437.6	43	43.2	253	480.8	0	0.0	253	480.8
LSS	8	451.8	2	3.5	10	455.2	4	445.9	14	901.1
MIS	72	364.2	13	31.9	85	396.1	0	0.0	85	396.1
ACTIVE	510	3,929.4	166	198.1	676	4,127.5	23	14,663.4	699	18,790.9
INACTIVE	251		28		279		20		299	
NOT REPORTING	65		21		86		0		86	
METHOD TOTALS:	826	3,929.4	215	198.1	1,041	4,127.5	43	14,663.4	1,084	18,790.9

NOTES:
1. Shaded areas indicate production within the Monterey Peninsula Water Resources System

2. CAW - California American Water

3. Source areas are as follows:
   AS1 - UPPER CARMEL VALLEY - San Clemente Dam to Esquiline Bridge
   AS2 - MID CARMEL VALLEY - Esquiline Bridge to Narrows
   AS3 - LOWER CARMEL VALLEY - Narrows to Via Mallorca Bridge
   AS4 - LOWER CARMEL VALLEY - Via Mallorca Bridge to Lagoon
   SCS - SEASIDE COASTAL SUBAREAS
   CAC - CACHAGUA CREEK and UPPER WATERSHED AREAS
   CVU - CARMEL VALLEY UPLAND - Hillsides and Tularcitos Creek Area
   LSS - LAGUNA SECA SUBAREA (Ryan Ranch Area is within LSS)
   MIS - PENINSULA, CARMEL HIGHLANDS AND SAN JOSE CREEK AREAS

4. Any minor numerical discrepancies in addition are due to rounding.

DISTRICT-WIDE PRODUCTION		
SURFACE WATER DIVERSIONS:		
	CAW Diversions (San Clemente Dam):	0.0
	Non Cal-Am Diversions:	40.0
CAW WELLS:		
	SEASIDE:	3,263.9
	CARMEL VALLEY:	10,953.6
	Within the Water Resources System:	14,217.5
	Outside the Water Resources System:	445.9
	CAW TOTAL, Wells and Diversion:	14,663.4
NON CAW WELLS:		
	Within the Water Resources System:	2,740.4
	Outside the Water Resources System:	1,387.2
	NON CAW TOTAL, Wells and Diversion:	4,167.5
	GRAND TOTAL:	18,830.9