Appendix H

Water Supply and Demand Information for Analysis

- **Appendix H.1:** Recycled Water Project Production (Water Years 1995–2010) and Rainfall Data.
- **Appendix H.2:** Potable Water Demand Estimates.
- **Appendix H.3:** Carmel River, Seaside Basin Withdrawals, and Cumulative Monterey Peninsula Water Supply and Demand Estimates.

H.1

Recycled Water Project Production (Water Years 1995–2010) and Rainfall Data

Appendix H.1

Recycled Water Project Production Water Years 1995 – 2010 and Rainfall Data

Summary

The proposed project will create demand for potable water. Recycled water is proposed for use in irrigating turf at the relocated Driving Range, but would not increase over current use. The Applicant proposes to use a portion of its existing water entitlement to supply the project and also has been selling a part of its water entitlement for use by third parties. The water entitlement was derived due to the Applicant's funding of the Recycled Water Plant.

In order to understand the impact of the project's demand (as well as the demand of purchasers of part of the Applicant's water entitlement) in combination with the effect of the Recycled Water Project overall on water supply conditions, the production capacity of the CAWD/PBCSD Recycled Water Project must be understood and quantified.

Spreadsheets in this appendix present pertinent data related to CAWD/PBCSD Recycled Water Project production. "Water Year" denotes the 12-month period starting in October through September. For example, Water Year 1995 is the period inclusive of October 1994 through September 1995.

Table H.1-1 presents Recycled Water Project Annual Production Averages, rainfall, and dry season (April-October) rainfall data for Water Years 1995 to 2010. Additional calculations are also provided in this table to estimate the amount of potable water being supplied to the Recycled Water Project between 1996 and 2006, because this was included in the baseline estimates of existing demand used to calculate the amount of new supply needed for the regional water supply project.

Table H.1-2 presents Rainfall Averages for the Monterey Peninsula near the DMF/PDP Project Area from 1950 to 2010.

References

Carmel Area Wastewater District/Pebble Beach Community Services District. 1995 – 2010. CAWD/PBCSD Production Reports for the Recycled Water Project, 1995 to 2010.

Hopkins Marine Station. 1950 – 1994. Precipitation data 1950 - 1994 from Hopkins Marine Station, Monterey Weather Station #5795.

Monterey Peninsula Water Management District (MPWMD). 2006b. Existing Water Needs of Cal-Am Customers within MPWMD Boundaries and Non-Cal-Am Producers within the Seaside Groundwater Basin Adjusted for Weather Conditions during Water Years 1996 through 2006. October.

National Weather Service Climatological Station, Monterey, California. 1995 – 2010. Precipitation data 1995- 2010 from National Weather Service Climatological Station, Monterey, California 93940 (elevation 385'), accessed via web at: www.weather.nps.navy.mil/renard_wx. Hard copy not available. Only available on the web.

Table H.1-1
CAWD/PBCSD Recycled Water Project
Water Production Annual Average, Water Years 1995 - 2010

Water Year	Recycled	Potable	Total	%Recycled	Rainfall	Rainfall Year Type
1995	615	178	792	78%	28.4	Wet
1996	552	384	936	59%	21.0	Average
1997	782	327	1109	71%	21.7	Average
1998	590	111	701	84%	47.4	Wet
1999	667	235	902	74%	20.1	Average
2000	769	299	1068	72%	21.0	Average
2001	599	373	972	62%	19.2	Average
2002	734	303	1037	71%	15.6	Dry
2003	721	308	1030	70%	18.4	Average
2004	791	435	1226	65%	16.4	Dry
2005	674	207	881	77%	30.5	Wet
2006	768	152	920	83%	24.8	Wet
2007	918	160	1078	85%	14.1	Critically Dry
2008	1023	110	1133	90%	14.4	Critically Dry
2009	991	64	1055	94%	17.5	Average
2010	903	0	903	100%	23.9	Wet
1995 to 2010 Average	756	228	984	77%	22.1	
1950 to 2010 Average Rainfall					19.4	
1996 - 2006	695	285	980		23.3	For comparison to MPWMD estimates used for EIR for Coastal Water Project/Regional Water Supply Project
1996 - 2006, Adjusted for Average Year	713	292	1005			Uses MPWMD + 2.6% adjustment to long-term.
1996 - 2006, Adjusted for Dry Year	731	300	1031			Used MPWMD + 5.2% adjustment
1996 - 2006, Adjusted for Critically Dry Year	749	307	1056			Used MPWMD + 7.8% adjustment

Source: CAWD/PBCSD Production Reports, 1995 - 2010; MPWMD 2006 for adjustment factors.
Rainfall data from sources in Table H.1-2

Table H.1-2
Monterey Peninsula Rainfall Near DMF/PDP Project Area 1950 - 2010 (inches)

Water Year	Total	Water Year	Total
1950	14.3	1981	16.0
1951	7.2	1982	29.9
1952	29.7	1983	40.3
1953	14.1	1984	14.5
1954	16.4	1985	16.9
1955	14.8	1986	21.2
1956	23.0	1987	12.1
1957	16.2	1988	12.1
1958	28.9	1989	15.3
1959	15.6	1990	14.1
1960	11.6	1991	13.9
1961	10.9	1992	17.8
1962	14.4	1993	30.1
1963	13.8	1994	14.0
1964	13.7	1995	28.4
1965	19.4	1996	21.0
1966	18.1	1997	21.7
1967	29.6	1998	47.4
1968	13.3	1999	20.1
1969	28.2	2000	21.0
1970	16.0	2001	19.2
1971	18.0	2002	15.6
1972	10.5	2003	18.4
1973	27.6	2004	16.4
1974	24.0	2005	30.5
1975	16.2	2006	24.8
1976	10.7	2007	14.1
1977	9.8	2008	14.4
1978	29.2	2009	17.5
1979	18.8	2010	23.9
1980	24.3	2011	NA
Average 1950 to 2010			19.4
Average 1995 to 2010			22.1

Note: For Water Years. Precipitation 1950 - 1994 from Hopkins Marine Station, Monterey Weather Station #5795; ; Precip. 1995- 2010 from National Weather Service Climatological Station, Monterey, California 93940 (elevation 385'), accessed via web at: www.weather.nps.navy.mil/renard_wx.

H.2
Potable Water Demand Estimates

Appendix H.2

Potable Water Demand Estimates

Introduction

The Proposed Project will create demand for potable water. Potable water would be used for project development uses.

Spreadsheets in this appendix present the estimated potable and recycled water demand used for the impact analysis in Section 3.12, "Water Supply and Demand."

Scenarios Evaluated

A total of four water year types were evaluated to examine water demand. The results of this analysis are shown in tables described below (except for the 2030 scenario) and also described in Appendix H.3.

- **Wet Year.** This scenario was designed to be representative of a wet year in which rainfall is less than that in an average year and thus that water demand is also less than an average year. For estimating recycled water production for wet water year types, Water Years 1995, 1998, 2005, 2006 and 2010 were selected for this scenario as these years had rainfall totals 15% or more than the 1950 to 2010 average. For potable water demand, it was assumed that wet year demand was 5% less than average year demand.
- **Average Year.** This scenario was designed to be representative of an average year in which rainfall is average and thus that water demands are also average. . For estimating recycled water production for average water year types, the average of 1995 to 2010 was used, but was adjusted by 2.6% to reflect that the 1995 to 2010 was relatively wetter than the 1950 to 2010 average using the MPWMD adjustment factor used to estimate existing demand for the regional water supply project (MPWMD 2006). Potable water demand was estimated using the factors described below for Table H.2-2B.
- **Dry Year** This scenario was designed to be representative of a dry year in which rainfall is drier than in an average year and thus that water demands are higher than an average year. For estimating recycled water production, Years 2002 and 2004 were selected for this analysis as these years had rainfall 15% to 25% less than the 1950 to 2010 average. For potable water demand, it was assumed that wet year demand was 5.2% greater than average year demand based on the dry year adjustment made by MPWMD in estimating water demands for the regional water supply project (MPWMD 2006).
- **Critically Dry Year** This scenario was designed to be representative of a very dry year in which rainfall is much drier than in an average year and thus water demands are much higher than an

average year. For estimating recycled water project production in this scenario, Years 2007 and 2008 were selected for this analysis as these years had rainfall more than 25% less than the 1950 to 2010 average. For potable water demand, it was assumed that demand was 7.8% greater than average year demand based on the critically dry year adjustment made by MPWMD in estimating water demands for the regional project (MPWMD 2006).

A total of four scenarios were evaluated to examine project demand in future years. Each scenario was analyzed for the four water year types described above. The results of this analysis are shown in tables described below.

- **2011 Existing Conditions.** Existing conditions are defined in terms of the current level of withdrawals from the Carmel River and the Seaside Aquifer and the current level of water demand served by Cal-Am. Non-Cal-Am water users are presumed to derive their water from the Carmel River, Seaside Aquifer, or other sources but are not included in the analysis as they are not presumed to be served by Cal-Am who would supply water to the proposed project. Under this scenario, the proposed project would be supplied by water from the Carmel River up to the end of 2016. Existing conditions are based on data in Appendix H.3.
- **2017 Scenario A (Regional Water Supply Project on Time)**. This scenario evaluates water supply and demand conditions in 2017, presuming that the regional water supply project is completed as proposed in the Final EIR for the Coastal Water Project (CPUC 2009) to replace water from the Carmel River that is above Cal-Am's existing water rights and water from the Seaside Aquifer in excess of Cal-Am's adjudicated ultimate allocation. Under this scenario, the proposed project would be supplied by water from either the Carmel River or the regional water supply project.
- **2017 Scenario B (No Regional Water Supply Project or Alternative.** This scenario evaluates water supply and demand conditions in 2017, presuming that the regional water supply project (or an equivalent alternative) is not completed by 2017 to replace water from the Carmel River that is above Cal-Am's existing water rights and water from the Seaside Aquifer in excess of Cal-Am's adjudicated ultimate allocation. Under this scenario, the proposed project would be supplied by water from the Carmel River, but due to regional supply shortfalls would be subject to water rationing as would all existing demand. This scenario would also apply to interim years between the start of 2017 and when a regional water supply project (or an equivalent alternative) would be completed.
- **2017 Scenario C (Alternative to Regional Water Supply Project).** This scenario evaluates water supply and demand conditions in 2017, presuming that and equivalent to the regional water supply project is completed by the end of 2016 to replace water from the Carmel River that is above Cal-Am's existing water rights and water from the Seaside Aquifer in excess of Cal-Am's adjudicated ultimate allocation. The amount of production is assumed to the same as that proposed with the regional water supply project. Under this scenario, the proposed project would be supplied by water from either the Carmel River or the alternative to the regional water supply project. Since the assumed production of the alternative supply project is the same as the regional water supply project, this alternative is the same in terms of water supply and demand as 2017 Scenario A but varies in terms of environmental impact as analyzed in Section 3.12, Water Supply and Demand.
- **2030 Scenario.** This scenario evaluates water supply and demand conditions in 2030. Existing and new water demands are included in the analysis. The scenario evaluates conditions with only Phase 1 of the regional water supply project and with both Phase 1 and Phase 2. Under this scenario, the proposed project would be supplied by water from either the Carmel River or the regional water supply project. This scenario is evaluated in Appendix H.3.

Analysis Results

The results of the analysis of potable water demand are presented in the following summary tables and are based on the subsequent tables discussed and presented below.

Table H.2-1A summarizes project increases in potable water use for different water year types.

Table H.2-1B summarizes project increases in potable water use combined with the demand from other use of the remaining Applicant's entitlement for different water year types.

Table H.2-1C-1 summarizes increases in withdrawals from the Carmel River resultant from project demand compared to 2011 Existing Conditions.

Table H.2-1C-2 summarizes increases in withdrawals from the Carmel River in 2017 resultant from project demand presuming the regional water supply project (or an equivalent) is completed in 2016 compared to 2011 Existing Conditions (2017 Scenarios A and C).

Table H.2-1C-3 summarizes increases in withdrawals from the Carmel River in 2017 resultant from project demand presuming no regional water supply project (or equivalent) is completed in 2016 compared to 2011 Existing Conditions (2017 Scenario B).

Table H.2-1D-1 summarizes increases in withdrawals from the Carmel River resultant from project and other entitlement demand compared to 2011 Existing Conditions. This evaluation examines conditions through 2016 and presumes no other new withdrawals from the Carmel River.

Table H.2-1D-2 summarizes increases in withdrawals from the Carmel River in 2017 resultant from project and other entitlement demand presuming the regional water supply project (or an equivalent) is completed in 2016 compared to the 2011 Existing Conditions (2017 Scenarios A and C). This evaluation examines conditions in 2017 and presumes no other new withdrawals from the Carmel River.

Table H.2-1D-3 summarizes increases in withdrawals from the Carmel River in 2017 resultant from project demand presuming no regional water supply project (or equivalent) is completed in 2016 compared to 2011 Existing Conditions (2017 Scenario B). This evaluation examines conditions in 2017 and presumes no other new withdrawals from the Carmel River.

Direct Potable Water Demand Estimates

Potable water demand estimates are based in part on the water demand estimated by the applicant's consultant (WWD 2011), but has been modified in several ways and supplemented. First, the factor for the additional units at the Inn and Lodge was revised to be 0.21 AFY/unit (instead of 0.10 AFY/unit) because these units are assumed to meet the luxury hotel definition used by MPWMD. Second, the applicant's estimate used an average of 0.50 AFY/residence for residential lots less than 0.5 acre but this analysis used 0.80 AFY/resident for these lots based on the DMF Average from the 1997 EIR. Third, the factors for the pool and the spa salon were both changed to a MPWMD factor. Also, an estimate has been provided for increased irrigation demand along Highway 1/68, because this area, which was not included in the applicant's estimate. The area of increased irrigation outside the existing right of way has not been identified by the applicant, it has been presumed to be 2 acres.

Table H.2-2A summarizes potable water use of the Proposed Project.

Table H.2-2B presents the estimate of project potable water use.

Table H.2-2C summarizes potential use of the applicant's entitlement by other residential users including information about the remaining entitlement outside of the project for other residential use.

References

County of Monterey. 1997. Pebble Beach Lot Program Final Environmental Impact Report. Prepared by EIP Associates. San Francisco, CA.

Monterey Peninsula Water Management District (MPWMD). 2011. Monthly Entitlement Report for September 2011. October 17.

_____. 2006b. Existing Water Needs of Cal-Am Customers within MPWMD Boundaries and Non-Cal-Am Producers within the Seaside Groundwater Basin Adjusted for Weather Conditions during Water Years 1996 through 2006. October.

_____. No Date. Non-Residential Water Release Form and Water Permit Application.

Pebble Beach Company (PBC). 2011. Certification under Order WR 2009-0060, as amended by Order WR 2010-0001. October 18.

WWD 2011. Water Analysis ~ PLN100138 ~ Spyglass Hotel Alternative and Residential Lots Alternative. June 24.

Table H.2-1A With Project Increases in Water Use	
	Acre-Feet
Low Use (Wet Year)	
Project Direct Potable Use	128
Average Use (Average Rainfall Year)	
Project Direct Potable Use	135
High Use (Dry Year)	
Project Direct Potable Use	142
Very High Use (Critically Dry Year)	
Project Direct Potable Use	145
Source: Table H.2-2B	

Table H.2-1B Project Demand Plus Other Entitlement Demand (in Acre-Feet)	
Low Use (Wet Year)	
Project Direct Demand	128
Other Entitlement Demand	138
Total Demand	266
Average Use (Average Rainfall Year)	
Project Direct Demand	135
Other Entitlement Demand	145
Total Demand	280
High Use (Dry Year)	
Project Direct Demand	142
Other Entitlement Demand	153
Total Demand	294
Very High Use (Critically Dry Year)	
Project Direct Demand	145
Other Entitlement Demand	156
Total Demand	301
Source: Tables H.2-2B and H.2-2C	

Table H.2-1C-1
Project Changes in Withdrawals from the Carmel River (through 2016)
Relative to 2011 Existing Conditions

Low Use (Wet Year)	
2011 Existing Conditions (1)	*10,393*
Project Demand	128
Withdrawal	*10,521*
Change over 2011 Existing Condition	**128**
Average Use (Average Rainfall Year)	
2011 Existing Conditions (3)	*11,205*
Project Demand	135
Withdrawal	*11,340*
Change over 2011 Existing Condition	**135**
High Use (Dry Year)	
2011 Existing Conditions (4)	*11,489*
Project Demand	142
Withdrawal	*11,631*
Change over 2011 Existing Condition	**142**
Very High Use (Critically Dry Year)	
2011 Existing Conditions (5)	*11,773*
Project Demand	145
Withdrawal	*11,918*
Change over 2011 Existing Condition	**145**

Notes:
(1) Wet Year = Water Years 1995, 1998, 2005, 2006, and 2010.
(2) All 2011 Baseline = Existing 2011 Conditions plus remaining unused portion of Applicant's entitlemnet (325 AF)
(3) Average = Average of 1995 to 2010 conditions, adjusted by MPWMD (2006) factor of 2.6% to reflect relative wetter conditions than long-term averages (see Appendix G).
(4) Dry = Average of 1995 to 2010 conditions, adjusted by MPWMD (2006) factor or 5.2%.
(5) Critically Dry = Average of 1995 to 2010 conditions, adjusted by MPWMD (2006) factor of 7.8%.

Source: 2011 Existing Conditions from Appendix H.3. Demand data from Table H.2-2B and H.2-2C

Table H.2-1C-2
Project Changes in Withdrawals from the Carmel River
2017 Scenario A: Regional Water Supply Project
Relative to the 2011 Existing Conditions

Low Use (Wet Year)	
2011 Existing Conditions (1)	*10,393*
Cal-Am Maximum Withdrawals per SCWRB Order 2009-0060 (2)	3,376
Project Demand (presuming from Carmel River) (3)	128
Reduction in Cal-Am service to Other Existing Users(4)	-128
Withdrawals with Project (5)	*3,376*
Change over 2011 Existing Condition	**-7,017**
Average Use (Average Rainfall Year)	
2011 Existing Conditions (1)	*11,205*
Cal-Am Maximum Withdrawals per SCWRB Order 2009-0060 (2)	3,376
Project Demand (presuming from Carmel River) (3)	135
Reduction in Cal-Am service to Other Existing Users(4)	-135
Withdrawals with Project (5)	*3,376*
Change over 2011 Existing Condition	**-7,829**
High Use (Dry Year)	
2011 Existing Conditions (1)	*11,489*
Cal-Am Maximum Withdrawals per SCWRB Order 2009-0060 (2)	3,376
Project Demand (presuming from Carmel River) (3)	142
Reduction in Cal-Am service to Other Existing Users(4)	-142
Withdrawals with Project	*3,376*
Change over 2011 Existing Condition	**-8,113**
Very High Use (Critically Dry Year)	
2011 Existing Conditions (1)	*#REF!*
Cal-Am Maximum Withdrawals per SCWRB Order 2009-0060 (2)	3,376
Project Demand (presuming from Carmel River) (3)	145
Reduction in Cal-Am service to Other Existing Users(4)	-145
Withdrawals with Project (5)	*3,376*
Change over 2011 Existing Condition	**#REF!**

Notes:
(1) Existing Condition Water Year scenarios from Table H.2-1A
(2) Cal-Am withdrawals from the Carmel River limited to Cal-Am water rights amount after 12/31/16.
(3) Project can be supplied per water entitlement per allowance in SWRCB order 2006-0090, but not in excess of water right amount.
(4) If project supplied from Carmel River, then Cal-Am will need to supply existing users with an equivalent amount from the regional water supply project. If the project is supplied from the regional water supply project, then the net effect is the same as Cal-Am withdrawals are limited to their existing water rights (3,376 AFY).
(5) Assumes no new demand is met from the Carmel River except that of the project due to Cal-Am limits.

Source: 2011 Existing Conditions from Appendix H.3. Demand data from Table H.2-2B and H.2-2C

Table H.2-1C-3
Project Changes in Cal-Am Withdrawals from the Carmel River
2017 Scenario B: No Regional Water Supply (or Equivalent) /65% Rationing
Relative to the 2011 Existing Conditions

Low Use (Wet Year)	
2011 Existing Conditions (1)	*10,393*
Cal-Am Maximum Withdrawals per SCWRB Order 2009-0060 (2)	3,376
Project Demand At 65% rationing (3)	45
Reduction in Cal-Am service to Other Existing Users (4)	-45
Withdrawals with Project (5)	*3,376*
Change over 2011 Existing Condition	**-7,017**
Average Use (Average Rainfall Year)	
2011 Existing Conditions (1)	*11,205*
Cal-Am Maximum Withdrawals per SCWRB Order 2009-0060 (2)	3,376
Project Demand At 65% rationing (3)	47
Reduction in Cal-Am service to Other Existing Users (4)	-47
Withdrawals with Project (5)	*3,423*
Change over 2011 Existing Condition	**-7,782**
High Use (Dry Year)	
2011 Existing Conditions (1)	*11,489*
Cal-Am Maximum Withdrawals per SCWRB Order 2009-0060 (2)	3,376
Project Demand At 65% rationing (3)	50
Reduction in Cal-Am service to Other Existing Users (4)	-50
Withdrawals with Project (5)	*3,426*
Change over 2011 Existing Condition	**-8,064**
Very High Use (Critically Dry Year)	
2011 Existing Conditions (1)	*#REF!*
Cal-Am Maximum Withdrawals per SCWRB Order 2009-0060 (2)	3,376
Project Demand At 65% rationing (3)	51
Reduction in Cal-Am service to Other Existing Users (4)	-51
Withdrawals with Project (5)	*3,427*
Change over 2011 Existing Condition	**#REF!**

Notes:
(1) Existing Condition Water Year scenarios from Table H.2-1A
(2) Cal-Am withdrawals from the Carmel River limited to Cal-Am water rights amount after 12/31/16.
(3) Project can be supplied per water entitlement per allowance in SWRCB Order WR 2009-0060, but not in excess of water right amount. Presumed project is supplied from Carmel River by Cal-Am, but is subject to rationing like other users. Amount of rationing rounded up to 65% (from 61%) based on calculation of shortffall without regional water supply project (or equivalent by 2017) as shown in Appendix H.3.
(4) Increase of project demand intensifies rationing by equivalent amount.
(5) Assumes no new demand is met from the Carmel River except that of the project due to Cal-Am limits.

Source: 2011 Existing Conditions from Appendix H.3. Demand data from Table H.2-2B and H.2-2C

Table H.2-1D-1
Cumulative Changes in Withdrawals from the Carmel River (through 2016)
Relative to 2011 Existing Conditions

Low Use (Wet Year)	
2011 Existing Conditions (1)	*10,393*
Project Demand	128
Other Water Entitlement Demand	138
Withdrawal	*10,659*
Change over 2011 Existing Conditions	**266**
Average Use (Average Rainfall Year)	
2011 Existing Conditions (3)	*11,205*
Project Demand	135
Other Water Entitlement Demand	145
Withdrawal	*11,485*
Change over 2011 Existing Conditions	**280**
High Use (Dry Year)	
2011 Existing Conditions (4)	*11,489*
Project Demand	142
Other Water Entitlement Demand	153
Withdrawal	*11,783*
Change over 2011 Existing Conditions	**294**
Very High Use (Critically Dry Year)	
2011 Existing Conditions (5)	*11,773*
Project Demand	145
Other Water Entitlement Demand	156
Withdrawal	*12,074*
Change over 2011 Existing Conditions	**301**

(1) Wet Year = Water Years 1995, 1998, 2005, 2006, and 2010.
(2) 2011 baseline = 2011 existing conditions plus remaining unused portion of Applicant's entitlement
(3) Average = Average of 1995 to 2010 conditions, adjusted by MPWMD factor of 2.6% to reflect relative wetter conditions than long-term averages (see Appendix G).
(4) Dry = Average of 1995 to 2010 conditions, adjusted by MPWMD factor or 5.2%
(5) Critically Dry = Average of 1995 to 2010 conditions, adjusted by MPWMD factor of 7.8%.

Source: 2011 Existing Conditions from Appendix H.3. Demand data from Tables H.2-2B, H.2-2C

Table H.2-1D-2
Cumulative Changes in Withdrawals from the Carmel River
2017 Scenario A: Regional Water Supply
Relative to the 2011 Existing Conditions

Low Use (Wet Year)	
2011 Existing Conditions (1)	*10393*
Cal-Am Maximum Withdrawals per SCWRB Order 2006-0090 (2)	3376
Project Demand (3)	128
Other Entitlement Demand (3)	138
Reduction in Cal-Am service to Other Existing Users (4)	-266
Withdrawals with Project and other Entitlement Demand	*3376*
Change over Existing Conditions	**-7017**
Average Use (Average Rainfall Year)	
2011 Existing Conditions (1)	*11205*
Cal-Am Maximum Withdrawals per SCWRB Order 2006-0090 (2)	3376
Project Demand (3)	135
Other Entitlement Demand (3)	145
Reduction in Cal-Am service to Other Existing Users(4)	-280
Withdrawals with Project and other Entitlement Demand	*3376*
Change over Existing Conditions	**-7829**
High Use (Dry Year)	
2011 Existing Conditions (1)	*11489*
Cal-Am Maximum Withdrawals per SCWRB Order 2006-0090 (2)	3376
Project Demand (3)	142
Other Entitlement Demand (3)	153
Reduction in Cal-Am service to Other Existing Users(4)	-294
Withdrawals with Project and other Entitlement Demand	*3376*
Change over Existing Conditions	**-8113**
Very High Use (Critically Dry Year)	
2011 Existing Conditions (1)	*11773*
Cal-Am Maximum Withdrawals per SCWRB Order 2006-0090 (2)	3376
Project Demand (3)	145
Other Entitlement Demand (3)	156
Reduction in Cal-Am service to Other Existing Users(4)	-301
Withdrawals with Project and other Entitlement Demand	*3376*
Change over Existing Conditions	**-8397**

Notes:
(1) Existing Condition Water Year scenarios from Table H.2-1A
(2) Cal-Am withdrawals from the Carmel River limited to Cal-Am water rights amount after 12/31/16.
(3) Project can be supplied per water entitlement per allowance in SWRCB order 2009-0060, but not in excess of water right amount.
(4) If project supplied from Carmel River, then Cal-Am will need to supply existing users with an equivalent amount from the regional water supply project. If the project is supplied from the regional water supply project, then the net effect is the same as Cal-Am withdrawals are limited to their existing water rights (3,376 AFY).

Source: 2011 Existing Conditions from Appendix H.3. Demand data from Table H.2-2B and H.2-2C

Table H.2-1D-3
Cumulative Changes in Withdrawals from the Carmel River
2017 Scenario B: No Regional Water Supply/65% Rationing
Relative to the 2011 Existing Conditions

Low Use (Wet Year)	
2011 Existing Conditions (1)	*10393*
Cal-Am Maximum Withdrawals per SCWRB Order 2006-0090 (2)	3376
Project Demand At 65% rationing (3)	45
Other Entitlement Demand at 65% rationing (3)	48
Reduction in Cal-Am service to Other Existing Users(4)	-93
Withdrawals with Project and other Entitlement Demand	*3376*
Change over Existing Conditions	**-7017**
Average Use (Average Rainfall Year)	
2011 Existing Conditions (1)	*11205*
Cal-Am Maximum Withdrawals per SCWRB Order 2006-0090 (2)	3376
Project Demand At 65% rationing (3)	47
Other Entitlement Demand at 65% rationing (3)	51
Reduction in Cal-Am service to Other Existing Users(4)	-98
Withdrawals with Project and other Entitlement Demand	*3376*
Change over Existing Conditions	**-7829**
High Use (Dry Year)	
2011 Existing Conditions (1)	*11489*
Cal-Am Maximum Withdrawals per SCWRB Order 2006-0090 (2)	3376
Project Demand At 65% rationing (3)	50
Other Entitlement Demand at 65% rationing (3)	53
Reduction in Cal-Am service to Other Existing Users(4)	-103
Withdrawals with Project and other Entitlement Demand	*3376*
Change over Existing Conditions	**-8113**
Very High Use (Critically Dry Year)	
2011 Existing Conditions (1)	*11773*
Cal-Am Maximum Withdrawals per SCWRB Order 2006-0090 (2)	3376
Project Demand At 65% rationing (3)	51
Other Entitlement Demand at 65% rationing (3)	55
Reduction in Cal-Am service to Other Existing Users(4)	-106
Withdrawals with Project and other Entitlement Demand	*3376*
Change over Existing Conditions	**-8397**

(1) Existing Condition Water Year scenarios from Table H.2-1A
(2) Cal-Am withdrawals from the Carmel River limited to Cal-Am water rights amount after 12/31/16.
(3) Project can be supplied per water entitlement per allowance in SWRCB order 2009-0060, but not in excess of water right amount. Presumed project is supplied from Carmel River by Cal-Am, but is subject to rationing like other users. Amount of rationing rounded up to 65% based on calculation of shortfall (61%) without regional water supply project (or equivalent by 2017) as shown in Appendix H.3.
(4) Increase of project demand intensifies rationing by equivalent amount

Table H.2-2A
Summary of Potable Water Use of Proposed Project and Other Entitlement Demand
(In Acre-Feet/Year)

Proposed Development	Use	
Lodge at Pebble Beach		13.11
Inn at Spanish Bay		12.85
Spyglass Hotel		30.59
Area M Residential		10.00
Other Residential		77.00
Equestrian Center		0.00
Driving Range		0.33
Highway 1/68 Landscaping		0.70
Water Year Type	**Total with Spyglass Hotel**	**Total With Area M Residential**
Wet Year	**127.84**	**108.29**
Average Year	***134.57***	**113.99**
Dry Year	**141.57**	**119.91**
Critically Dry Year	**145.07**	**122.88**

Summary of Other Entitlement Demand Water Use (in Acre-Feet/Year)

Water Year Type	Demand
Wet Year	**138**
Average Year	**145**
Dry Year	**153**
Critically Dry Year	**156**

Source: Tables H.2-2B and H.2-2C.

Table H.2-2B
Potable Water Use of Proposed Project, Average Year

	Units	Number of Units	Use factor (AFY/unit)	Demand (AFY)	MPWMD Factor (AFY/unit)	Type	WWD Factor (AFY/unit)	Notes
Lodge at Pebble Beach								
Colton Building	rooms	20	0.21	4.20	0.21	Lux hote	0.1	Changed to MPWMD factor
Fairway One								
Fairway One - Rooms	rooms	35	0.21	7.35	0.21	Lux hote	0.1	Changed to MPWMD factor
(E) Beirne Water Consumption				-1.00				Same
Meeting Space	SF	2230	0.00053	1.18	0.00053	Meeting hal	0.00053	Same
Office Space	SF	200	0.00007	0.01	0.00007	Office	0.00007	Same
Surface Parking Improvements				0.25				
Subtotal for Fairway One	*AFY*			*7.80*				
The Lodge at Pebble Beach								
Conference Facility	SF	2100	0.00053	1.11	0.00053	Meeting hal	0.00053	Same
Parking Improvements				0.00				No change
Subtotal for Lodge	*AFY*			*1.11*				
Subtotal for Lodge at Pebble Beach	**AFY**			**13.11**				
Inn at Spanish Bay Inn								
Cottages	rooms	40	0.21	8.40	0.21	Lux hote	0.1	Changed to MPWMD factor
Hospitality Building								
Meeting Space	SF	2018	0.00053	1.07	0.00053	Meeting hal	0.00053	Same
Office Space	rooms	487	0.00007	0.03	0.00007	Office	0.00007	Same
Ballroom Addition	SF	1409	0.00053	0.75	0.00053	Meeting hal	0.00053	Same
Conference Room Addition	SF	3960	0.00053	2.10	0.00053	Meeting hal	0.00053	Same
Parking lot landscaping				0.50			0.5	
Subtotal	AFY			**12.85**				
Spyglass Hotel & Spa								
Luxury hotel rooms	rooms	100	0.21	21.00	0.21	Lux hote	0.1	Changed to MPWMD factor
Conference/Meeting Space	SF	5120	0.00053	2.71	0.00053	Meeting hal	0.00053	Same
Pool (52 X 20')	100SF	10.4	0.02	0.21	0.02	Pool	0.2	Changed to MPWMD factor
Office space	SF	1736	0.00007	0.12	0.00007	Office	0.00007	Same
Restaurant/bar/lounge space (6,677 SF)	Seat	100	0.02	2.00	0.02	Seat	0.02	Same
Landscaping estimate				1.00			1.00	
Subtotal Hotel	*AFY*			*27.04*				
Spa Retail	SF	456	0.00007	0.03	0.00007	Retail	0.00007	Same
Spa Office Space	SF	1362	0.00007	0.10	0.00007	Office	0.00007	Same
Spa Salon	Station	8	0.05	0.40	0.05	Station	0.0567	Changed to MPWMD factor
Spa Treatment Rooms	SF	12840	0.00007	2.90	0.00007	Clinic	0.00007	Included wet areas at 2.0 af
Spa Fitness Area	SF	1675	0.00007	0.12	0.00007	Gym	0.00007	Same
Subtotal Hotel	*AFY*			*3.54*				
Subtotal Hotel & Spa	***AFY***			***30.59***				
Area M Residential								
Area M Residentia	Lots	10	1.00	10.00	1.00	> 1.0 acre (EIR 1997)	1.00	Same
Subtotal	AFY			**10.00**				
Residential Areas								
Lots >= 1.0 acres	lots	66	1.00	66.00	1.00	> 1.0 acre (EIR 1997)	1.00	Same
Lots >= 0.5 acres	lots	24	0.50	12.00	0.80	DMF Average	0.50	Used DMF Average instead of WWD factor of 0.50.
(E) Collins residence	lots			-1.00			1.00	
Subtotal	AFY	90		**77.00**				
Equestrian Center								
Equestrian Center	AFY			0.00			0	No change
Subtotal	AFY			**0.00**				
Driving Range								
Public Restroom	Restroom	1	0.139	0.14	0.094	Public toilet + urina	0.139	Used WWD factor as conservative
New use of office space	SF	2655	0.00007	0.19	0.00007	Office		Used MPWMD factor
Subtotal	AFY			**0.33**				
Highway 1/68 Landscaping								
Landscape drip irrigation	Acres	2	0.35	0.70	0.35	Caltrans		Not included in WWD
Subtotal	AFY			**0.70**				
TOTAL - Avg. - With Spyglass Hote	AFY			**134.57**				
Wet Year				127.84				95% of Avg.
Dry Year				141.57				105.2% of Avg.
Critically Dry Year				145.07				107.8% of Avg.

TOTAL - Avg. With Area M Residentia	AFY			**113.99**				
Wet Year				108.29				95% of Avg.
Dry Year				119.91				105.2% of Avg.
Critically Dry Year				122.88				107.8% of Avg.

Sources: WWD 2011, as modified by ICF as noted in table including MPWMD non-residential factors (2011). Dry and Critically Dry years modified by Dry and Critically Dry modified by factors from MPWMD 2006. DMF Average from 1997 EIR for PBC Lot Program.

Table H.2-2C
Other Entitlement Demand

	Number of Units	Use factor (AFY/unit)	Demand (AFY)	Factor (AFY/unit)	Notes
Existing Vacant Lots					
Future SFD Development	96	0.8	76.8	0.8	DMF Average
Area X and Y					
Future SFD Development	9	0.8	7.2	0.8	DMF Average
Total			84.0		Assumed that such properties would either purchase PBC entitlement or would have to be served by future expansions of the regional water supply project.
PBC Entitlement Allocations					
Total entitlement			365		
Amount in use as of 2011			40		(10.483 - PBC, 29.954 - others)
Remaining entitlement			325		
Entitlement used for project			145		Based on critically dry year estimate (Table G.2-2B)
Remaining entitlement outside of project for other residential use			**145**		MPWMD Ordinance 109 allows up to 175 AF to be sold to DMF benefite properties. As of September 2011, PBC had sold 117 AF, leaving 58 AF more that could be sold. Of the 175 AF, only 30 AF is being used as of 2011 leaving 145 AF that could
Unused entitlement			34		Remaining entitlement not currently being used minus amount to be used for project minus amount of unused DMF benefited properties.

Sources
1) DMF residential development calculations - ICF.
2) DMF Average from 1997 EIR for PBC Lot Program.
2) Entitlement information: PBC 2011. Entitlement Reporting (10/18/11) and MPWMD, 2011, Monthly Entitlement Report, October 17,

H.3

Carmel River, Seaside Basin Withdrawals, and Cumulative Monterey Peninsula Water Supply and Demand Estimates

Appendix H.3

Carmel River, Seaside Basin Withdrawals and Cumulative Monterey Peninsula Water Supply and Demand Estimates

Introduction

This appendix presents the following

- Historical data on withdrawals of water from the Carmel River the California-American Water Company (Cal-Am) and its predecessors and from the Seaside Coastal Basin by Cal-Am.
- Projections of the impact of project demand and other water entitlement demand on Carmel withdrawals
- Estimates of current (2011), and future (2017 and 2030) Monterey Peninsula water supply and demand.

Scenarios Evaluated for Water Supply and Demand

A total of four water year types were evaluated to examine water demand in different water year types. The results of this analysis are shown in tables described below.

- **Wet Year.** This scenario was designed to be representative of a wet year in which rainfall is less than that in an average year and thus that water demand is also less than an average year. For estimating recycled water production for wet water year types, Water Years 1995, 1998, 2005, 2006 and 2010 were selected for this scenario as these years had rainfall totals 15% or more than the 1950 to 2010 average. For potable water demand, it was assumed that wet year demand was 5% less than average year demand.
- **Average Year.** This scenario was designed to be representative of an average year in which rainfall is average and thus that water demands are also average. . For estimating recycled water production for average water year types, the average of 1995 to 2010 was used, but was adjusted by 2.6% to reflect that the 1995 to 2010 was relatively wetter than the 1950 to 2010 average using the MPWMD adjustment factor used to estimate existing demand for the regional water supply project (MPWMD 2006). Potable water demand was estimated using the factors described below for Table H.2-2B.
- **Dry Year** This scenario was designed to be representative of a dry year in which rainfall is drier than in an average year and thus that water demands are higher than an average year. For estimating

recycled water production, Years 2002 and 2004 were selected for this analysis as these years had rainfall 15% to 25% less than the 1950 to 2010 average. For potable water demand, it was assumed that wet year demand was 5.2% greater than average year demand based on the dry year adjustment made by MPWMD in estimating water demands for the regional water supply project (MPWMD 2006).

- **Critically Dry Year** This scenario was designed to be representative of a very dry year in which rainfall is much drier than in an average year and thus water demands are much higher than an average year. For estimating recycled water project production in this scenario, Years 2007 and 2008 were selected for this analysis as these years had rainfall more than 25% less than the 1950 to 2010 average. For potable water demand, it was assumed that demand was 7.8% greater than average year demand based on the critically dry year adjustment made by MPWMD in estimating water demands for the regional project (MPWMD 2006).

A total of four scenarios were evaluated to examine project demand in future years. Each scenario was analyzed for the four water year types described above. The results of this analysis are shown in tables described below.

- **2011 Existing Conditions.** Existing conditions are defined in terms of the current level of withdrawals from the Carmel River and the Seaside Aquifer and the current level of water demand served by Cal-Am. Non-Cal-Am water users are presumed to derive their water from the Carmel River, Seaside Aquifer, or other sources but are not included in the analysis as they are not presumed to be served by Cal-Am who would supply water to the proposed project. Under this scenario, the proposed project would be supplied by water from the Carmel River up to the end of 2016.

- **2017 Scenario A (Regional Water Supply Project on Time)**. This scenario evaluates water supply and demand conditions in 2017, presuming that the regional water supply project is completed as proposed in the Final EIR for the Coastal Water Project (CPUC 2009) to replace water from the Carmel River that is above Cal-Am's existing water rights and water from the Seaside Aquifer in excess of Cal-Am's adjudicated ultimate allocation. Under this scenario, the proposed project would be supplied by water from either the Carmel River or the regional water supply project.

- **2017 Scenario B (No Regional Water Supply Project or Alternative.** This scenario evaluates water supply and demand conditions in 2017, presuming that the regional water supply project (or an equivalent alternative) is not completed by 2017 to replace water from the Carmel River that is above Cal-Am's existing water rights and water from the Seaside Aquifer in excess of Cal-Am's adjudicated ultimate allocation. Under this scenario, the proposed project would be supplied by water from the Carmel River, but due to regional supply shortfalls would be subject to water rationing as would all existing demand. This scenario would also apply to interim years between the start of 2017 and when a regional water supply project (or an equivalent alternative) would be completed.

- **2017 Scenario C (Alternative to Regional Water Supply Project).** This scenario evaluates water supply and demand conditions in 2017, presuming that and equivalent to the regional water supply project is completed by the end of 2016 to replace water from the Carmel River that is above Cal-Am's existing water rights and water from the Seaside Aquifer in excess of Cal-Am's adjudicated ultimate allocation. The amount of production is assumed to the same as that proposed with the regional water supply project. Under this scenario, the proposed project would be supplied by water from either the Carmel River or the alternative to the regional water supply project. Since the assumed production of the alternative supply project is the same as the regional water supply project, this alternative is the same in terms of water supply and demand as 2017 Scenario A but varies in terms of environmental impact as analyzed in Section 3.12, Water Supply and Demand.

- **2030 Scenario.** This scenario evaluates water supply and demand conditions in 2030. Existing and new water demands are included in the analysis. The scenario evaluates conditions with only Phase 1 of the regional water supply project and with both Phase 1 and Phase 2. Under this scenario, the proposed project would be supplied by water from either the Carmel River or the regional water supply project.

Historical Withdrawals

Figure H.3-1 presents a summary of withdrawals from the Carmel River (both surface and groundwater) and the Seaside Basin by Cal-Am and its predecessors from 1916 to 2010.

Projections of Project Withdrawals

The estimates of project demand in Appendix H.2 were used to estimate what project withdrawals from the Carmel River with the project and with other entitlement demand. Comparisons are made to 2011 Existing Conditions.

Table H.3-1 presents a summary of withdrawals from the Carmel River (both surface and groundwater) and the Seaside Basin by Cal-Am and its predecessors from 1916 to 2010.

Table H.3-2 shows what the Cal-Am Carmel River withdrawals would have been between 1995 and 2010 without the Recycled Water Project.

Figure H.3-2 presents annual withdrawal data from the Carmel River by Cal-Am from 1995 to 2010 and shows what the withdrawals would have been without the Recycled Water Project.

Table H.3-3 shows Cal-Am Carmel River withdrawals and defines 2011 Existing Conditions for different water year types using the definitions and adjustments noted above.

Table H.3-4 shows the Carmel River withdrawals through 2016 for different water year types compared to 2011 Existing Conditions.

Figure H.3-3 graphically shows the Carmel River withdrawals through 2016 for different water year types compared to 2011 Existing Conditions.

Table H.3-5A shows the Carmel River withdrawals in 2017 for different water year types compared to 2011 Existing Conditions under 2017 Scenario A/C, meaning conditions with the regional water supply project or an equivalent alternative.

Table H.3-5B shows the Carmel River withdrawals in 2017 for different water year types compared to 2011 Existing Conditions under 2017 Scenario B, meaning conditions without the regional water supply project or an equivalent alternative.

Table H.3-6 shows the water demand and supply conditions for 2011, 2017 (with and without the regional water supply project) and for 2030 taking into account existing and future cumulative demands, new supply scenarios, and the project demand.

References

CPUC. 2009. California American Water Company Coastal Water Project Final EIR. Prepared by ESA. San Francisco, California. October 30, 2009.

MPWMD. 2006a. Water Needs Analysis: Existing Setting and Demand. Special Meeting/Board Workshop. Exhibit 1E: Cal-Am Water Production by Source: 1916-2005. March 23.

_____. 2006b. Existing Water Needs of Cal-Am Customers within MPWMD Boundaries and Non-Cal-Am Producers within the Seaside Groundwater Basin Adjusted for Weather Conditions during Water Years 1996 through 2006. October.

_____. 2004 – 2010. MPWMD Production Reports, Water Years 2003 – 2010.

Seaside Basin Watermaster. 2010. Reported Quarterly and Annual Water Production from the Seaside Groundwater Basin.

Table H.3-1
Production History of Cal-Am and its Predecessors
(Acre-Feet)

Water	Seaside Coastal Basin	Carmel River Basin			Total
Year	Ground Water	Ground Water	Surface Water	Subtotal	
1916	0	0	507	507	507
1917	0	0	547	547	547
1918	0	0	627	627	627
1919	0	0	667	667	667
1920	0	0	756	756	756
1921	0	0	760	760	760
1922	0	0	745	745	745
1923	0	0	888	888	888
1924	0	0	1,007	1,007	1,007
1925	0	0	1,026	1,026	1,026
1926	0	0	4,094	4,094	4,094
1927	0	0	4,538	4,538	4,538
1928	0	0	4,467	4,467	4,467
1929	0	0	4,869	4,869	4,869
1930	0	0	4,431	4,431	4,431
1931	0	0	3,558	3,558	3,558
1932	0	0	4,269	4,269	4,269
1933	0	0	3,761	3,761	3,761
1934	0	0	4,377	4,377	4,377
1935	0	0	4,053	4,053	4,053
1936	0	0	4,072	4,072	4,072
1937	0	0	3,843	3,843	3,843
1938	0	0	4,144	4,144	4,144
1939	0	0	5,258	5,258	5,258
1940	0	15	4,632	4,647	4,647
1941	0	0	5,159	5,159	5,159
1942	0	0	4,529	4,529	4,529
1943	0	0	5,117	5,117	5,117
1944	0	0	5,245	5,245	5,245
1945	0	95	5,367	5,462	5,462
1946	0	424	5,443	5,867	5,867
1947	0	758	5,196	5,954	5,954
1948	0	980	5,329	6,310	6,310
1949	0	114	6,623	6,737	6,737
1950	0	57	6,875	6,931	6,931
1951	0	34	6,967	7,001	7,001
1952	0	0	6,967	6,967	6,967
1953	0	0	7,726	7,726	7,726
1954	0	0	7,953	7,953	7,953
1955	198	0	7,910	7,910	8,108
1956	207	0	8,523	8,523	8,730
1957	244	0	8,455	8,455	8,699
1958	302	0	8,830	8,830	9,132
1959	663	823	8,892	9,715	10,378
1960	743	1,012	8,432	9,443	10,186
1961	968	2,444	7,599	10,043	11,011
1962	797	990	9,053	10,043	10,840
1963	717	620	9,213	9,833	10,550
1964	972	1,090	9,649	10,739	11,711
1965	921	1,365	9,831	11,195	12,116
1966	2,700	2,845	9,082	11,927	14,627
1967	2,638	931	9,546	10,477	13,115
1968	3,482	3,221	7,731	10,952	14,434
1969	2,622	2,765	8,473	11,238	13,860
1970	3,809	3,127	8,552	11,679	15,488
1971	4,309	4,031	7,307	11,338	15,647
1972	4,700	4,519	6,982	11,501	16,201

Table H.3-1
Production History of Cal-Am and its Predecessors
(Acre-Feet)

Water	Seaside Coastal Basin	Carmel River Basin			Total
Year	Ground Water	Ground Water	Surface Water	Subtotal	
1973	3,976	3,021	8,690	11,711	15,687
1974	3,591	2,656	8,821	11,477	15,068
1975	3,400	2,819	9,084	11,903	15,303
1976	4,229	5,632	6,185	11,817	16,046
1977	2,693	3,129	2,706	5,835	8,528
1978	1,719	3,210	7,018	10,228	11,947
1979	1,333	4,966	7,721	12,687	14,020
1980	2,187	3,558	8,953	12,511	14,698
1981	2,219	5,106	9,091	14,197	16,416
1982	1,221	5,156	9,226	14,382	15,603
1983	1,733	4,963	8,915	13,878	15,611
1984	1,594	6,019	9,103	15,122	16,716
1985	1,901	6,460	8,945	15,405	17,306
1986	3,254	7,395	7,008	14,403	17,657
1987	3,465	9,059	5,593	14,652	18,117
1988	3,083	9,445	4,526	13,971	17,054
1989	3,288	6,156	3,888	10,044	13,332
1990	3,336	6,026	2,862	8,888	12,224
1991	2,880	7,120	2,118	9,238	12,118
1992	2,032	8,581	3,013	11,594	13,626
1993	2,144	7,297	4,146	11,443	13,587
1994	2,434	10,245	2,662	12,907	15,341
1995	3,794	5,874	4,162	10,036	13,830
1996	4,319	8,174	3,527	11,701	16,020
1997	4,025	9,688	3,159	12,847	16,872
1998	3,910	8,597	1,557	10,154	14,064
1999	3,982	9,195	1,385	10,580	14,562
2000	3,754	11,092	258	11,350	15,104
2001	3,444	10,700	98	10,798	14,242
2002	3,521	10,893	175	11,068	14,589
2003	3,507	11,299	242	11,541	15,048
2004	3,918	11,282	0	11,282	15,200
2005	3,002	11,036	0	11,036	14,039
2006	3,264	10,954	0	10,954	14,218
2007	3,626	10,486	0	10,486	14,112
2008	3,390	10,835	0	10,835	14,225
2009	2,631	10,286	0	10,286	12,917
2010	3,284	9,786	0	9,786	13,069

Note: Production values for post -WY 1998 are recorded values and do not include reductions for water produced from CRB for injection into SGB.

Sources: http://www.mpwmd.dst.ca.us/asd/board/boardpacket/2006/20060323/01/item1_exh1e.htm
(1) Data for 1916 to 2002 are from MPWMD, 2006a.
(2) Data for Water Years 2003 to 2010 from MPWMD Production Reports for Water Years 2003- 2010, MPWMD 2004 - 2010.

Table H.3-2
Carmel River Cal-Am Withdrawals With and Without the Recycled Water Project (RWP) (acre-feet)

Year	Type	Cal-Am Carmel River Withdrawals	RWP Historic Reductions	Carmel River Cal-Am Withdrawals without the RWP
1995	Wet	10,036	615	10,651
1996	Average	11,701	552	12,253
1997	Average	12,847	782	13,629
1998	Wet	10,154	590	10,744
1999	Average	10,580	667	11,247
2000	Average	11,350	769	12,119
2001	Average	10,798	599	11,397
2002	Dry	11,068	734	11,802
2003	Average	11,541	721	12,262
2004	Dry	11,282	791	12,073
2005	Wet	11,036	674	11,710
2006	Wet	10,954	768	11,722
2007	Critically Dry	10,486	918	11,404
2008	Critically Dry	10,835	1023	11,858
2009	Average	10,286	991	11,277
2010	Wet	9,786	903	10,689
Avg.	All	10,921	756	11,677
Condition	Wet		710	
Condition	Avg.		726	
Condition	Dry		762	
Condition	Critically Dry		971	

Sources: Cal-Am Carmel River Withdrawals from Table H.3-1. RWP data from Appendix H.1 and represent amount of recycled water used instead of Carmel River water.

Table H.3-3
Existing 2011 Conditions Based on 1995 to 2010 Averages by Water Type
(in Acre-Feet)

Year	Water Year Type	Historic Withdrawals
1995	Wet	10,036
1996	Average	11,701
1997	Average	12,847
1998	Wet	10,154
1999	Average	10,580
2000	Average	11,350
2001	Average	10,798
2002	Dry	11,068
2003	Average	11,541
2004	Dry	11,282
2005	Wet	11,036
2006	Wet	10,954
2007	Critically Dry	10,486
2008	Critically Dry	10,835
2009	Average	10,286
2010	Wet	9,786
1995 to 2010	**Annual Average**	**10,921**
	Water Year Type	**2011 Existing Conditions (1)**
	Wet (2)	*10,393*
	Average (3)	*11,205*
	Dry (4)	*11,489*
	Critically Dry (5)	*11,773*

Notes:
(1) 2011 Existing Conditions = Carmel River withdrawals based on Table H.3-1.
(2) Wet Year = Water Years 1994, 1998, 2005, 2006, and 2010.
(3) Average = Average of 1995 to 2010, adjusted by 2.6% to reflect relative wetter conditions than long-term averages. 2.6% adjustment is the factor used by MPWMD (2006b) to adjust 1996 to 2006 conditions to estimate baseline demand estimates for the regional water supply project due to relatively wetter conditions than long-term averages. The period 1996 to 2006 was slightly wetter (average rainfall of 23.2 inches on the Monterey Peninsula) than the period 1995 to 2010, so the use of the MPWMD factor is conservative.
(4) Dry = Average of 1995 to 2010, adjusted by 5.2%, which is MPWMD (2006b) factor used for dry condition adjustment for the 1996 - 2006 period.
(5) Critically Dry = Average of 1995 to 2010 conditions, adjusted by 7.8%, which is the MPWMD (2006b) factor used for critically dry conditions.

Table H.3-4
Projection of Project Withdrawals from the Carmel River Through 2016
(in Acre-Feet)

Water Year Type	Wet	Average	Dry	Critically Dry
2011 Existing Conditions	10,393	11,205	11,489	11,773
Project Demand	128	135	142	145
Future Other Entitlement Demand	138	145	153	156
Carmel River with Project Demand	10,521	11,340	11,631	11,918
Carmel River with Project and Other Entitlement Demand	10,659	11,485	11,783	12,074
Change with Project	**128**	**135**	**142**	**145**
Change with Project and Other Entitlement Demand	*266*	*280*	*294*	*301*

Sources: Carmel River withdrawals based on Table H.3-3, Project Demand and Future Other Entitlement Data based on data in Appendix H.2.

Table H.3-5A
Cal-Am Withdrawals from the Carmel River
2017 Scenario A/Scenario C: With Regional Supply Project or Equivalent Alternative
(in Acre-Feet)

	Wet	Average	Dry	Critically Dry
2011 Existing Conditions	10,393	11,205	11,489	11,773
Cal-Am Withdrawal Limit per SWRCB Order 2009-0060	3,376	3,376	3,376	3,376
Project Demand	128	135	142	145
Future Other Entitlement Demand	138	145	153	156
Existing Demand Met by Regional Project instead of Carmel River OR Project/Entitlement Demand met by Regional Project	-266	-280	-294	-301
Cal-Am Withdrawals	3,376	3,376	3,376	3,376
Change	**-7,017**	**-7,829**	**-8,113**	**-8,397**

NOTE: Carmel River withdrawals based on Table H.3-2

Table H.3-5B
Cal-Am Withdrawals from the Carmel River
2017 Scenario B: No Regional Supply Project or Equivalent Alternative
(in Acre-Feet)

	Wet	Average	Dry	Critically Dry
2011 Existing Conditions	10,393	11,205	11,489	11,773
Cal-Am Withdrawal Limit per SWRCB Order 2009-0060	3,376	3,376	3,376	3,376
Project Demand at 65% rationing	45	47	50	51
Future Other Entitlement Demand at 65% rationing	32	34	36	37
Reduction in Service to Existing Demand Due to Project + Entitlement Demand	-77	-81	-85	-88
Cal-Am Withdrawals	3,376	3,376	3,376	3,376
Change	**-7,017**	**-7,829**	**-8,113**	**-8,397**

Sources: Carmel River withdrawals based on Table H.3-3, Project Demand and Future Other Entitlement Data based on data in

Table H.3-6
Water Supply and Demand
Monterey Peninsula (1)

	2011	2017 with no RWSP	2017 with RWSP Phase 1	2030 with RWSP Phase 2	Sources and Notes
Water Demand					
Existing demand from Carmel River served by Cal-Am	11,015	11,015	11,015	11,015	CPUC 2009. Average year demand.
Existing demand from Seaside Aquifer served by Cal-Am	3,695	3,695	3,695	3,695	CPUC 2009. Average year demand.
Future Monterey Peninsula Demand		455	455	4,546	CPUC 2009 for 2030 estimate (2)
Marina Coast Water District for former Fort Ord area (outside Cal-Am service Area)				2,700	CPUC 2009.
North County (outside Cal-Am service area				5,900	CPUC 2009.
Proposed Project Demand	135	135	135	135	Average year demand.
Future other PBC Entitlement Demand	145	145	145	145	Average year demand.
Total Demand	***14,990***	***15,444***	***15,444***	***28,136***	
Water Supply					
Carmel River (Cal-am water rights)	3,376	3,376	3,376	3,376	CPUC 2009.
Carmel River (Cal-am interim limit over water rights)	7,909	0	0	0	CPUC 2009. Eliminated at end of 2016 per SWRCB order.
Seaside Aquifer (Cal-Am withdrawals)	3,448	1,474	1,474	1,474	Seaside Groundwater Basin Watermaster, 2010 (3)
Seaside Aquifer Storage and Recovery (ASR)	920	920	920	920	CPUC 2009.
Subtotal Existing Sources	*15,653*	*5,770*	*5,770*	*5,770*	
RWSP: Conservation		0	0	0	CPUC 2009.(4)
RWSP: Sand City Desalination	300	300	300	300	CPUC 2009. Desal facility in operation in May 2010.
RWSP: Regional Urban Water Augmentation Project (RUWAP)		0	1,000	1,000	CPUC 2009.
RWSP: Seaside ASR Expansion		0	380	380	CPUC 2009. MPWMD estimates it may be able to obtain up to 1,000 AFY, but this analysis assumes only the 380 AFY in CPUC 2009.
RWSP: Desalination		0	10,900	10,900	CPUC 2009. Critically dry year supply; in average years would be 8,800 AFY.
RWSP: Groundwater use in critically dry years		0	1,700	1,700	CPUC 2009. Groundwater use in peak periods offset by desalination production in off peak periods
Total Additional Supply (with Phase 1)	*300*	*300*	*14,280*	*14,280*	
Total Supply (with Phase 1)	***15,953***	***6,070***	***20,050***	***20,050***	
Supply/ Demand Balance	**963**	**-9,374**	**4,606**	**-8,086**	
RWSP: Phase 2	0	0	0	10,400	Additional amount beyond Phase 1
Total Additional Supply (with Phase 2)	*15,953*	*6,070*	*20,050*	*20,050*	
Total Supply (with Phase 2)	***15,953***	***6,070***	***20,050***	***30,450***	
Supply/ Demand Balance	**963**	**-9,374**	**4,606**	**2,314**	***(5)***

RWSP = Regional Water Supply Project or Regional Project

Notes:

(1) Does not include existing non-Cal-Am demand or supply. Other existing users not supplied by Cal-Am are presumed to derive water from the Carmel River and the Seaside Aquifer per their existing rights.
(2) Due to current moratorium on most new connections, only limited new hookups are allowed (including pursuant to the entitlement from the PBCSD Recycled Water Project and the Sand City Desalination project and certain areas in the Laguna Seca Subareas). The exact amount of new demand in these areas up to 2017 has not been estimate; 10% of 2030 new demand was assumed for the 2017 scenarios, excluding entitlements from the Recycled Water Project which were accounted for separately below.
(3) 2011 amount shown is for 2011 (~3,202 AFY for the coastal subarea and 246 AFY fro the Laguna Seca subareas.. Allocation reduced to adjudicated rights (1,474 AFY per CPUC 2009) over time. Analysis assumes reduction to 1,474 AFY will occur by 2017 but may occur later in time.
(4) No number assumed in CPUC 2009. Also excluded 300 AFY mentioned in CPUC 2009 for unaccounted water recovery as unproven water savings.
(5) Although a nominal surplus is shown for 2011, >2016 (with RWSP Phase 1) and 2030 (with RWSP Phase 2), the water demand shown is normal-year demand and does not account for dry or critically dry -year demands. Thus, this should not be considered a true surplus in toto but rather, mostly a reserve for use during critical years. RWSP Phase 1, includes 15,200 AFY (including 920 AFY of existing ASR) to meet the immediate needs of the Monterey Peninsula, and replace a previously approved supply for part of, the former Fort Ord, within the MCWD service area. Similarly, the nominal surplus for 2011 and 2030 (with RWSP Phase 2) should not be seen as excess supply but rather reserve for dry or critically-dry years.

Sources:

(1) CPUC, 2009. Final EIR, Coastal Water Project, Chapters 2 and 5.
(2) Project Demand and Other Entitlement Demand from Appendix H.2
(3) Seaside Basin Watermaster. 2010. Reported Quarterly and Annual Water Production from the Seaside Groundwater Basin.

Figure H.3-1
Cal-Am Water Production by Source: 1916-2010

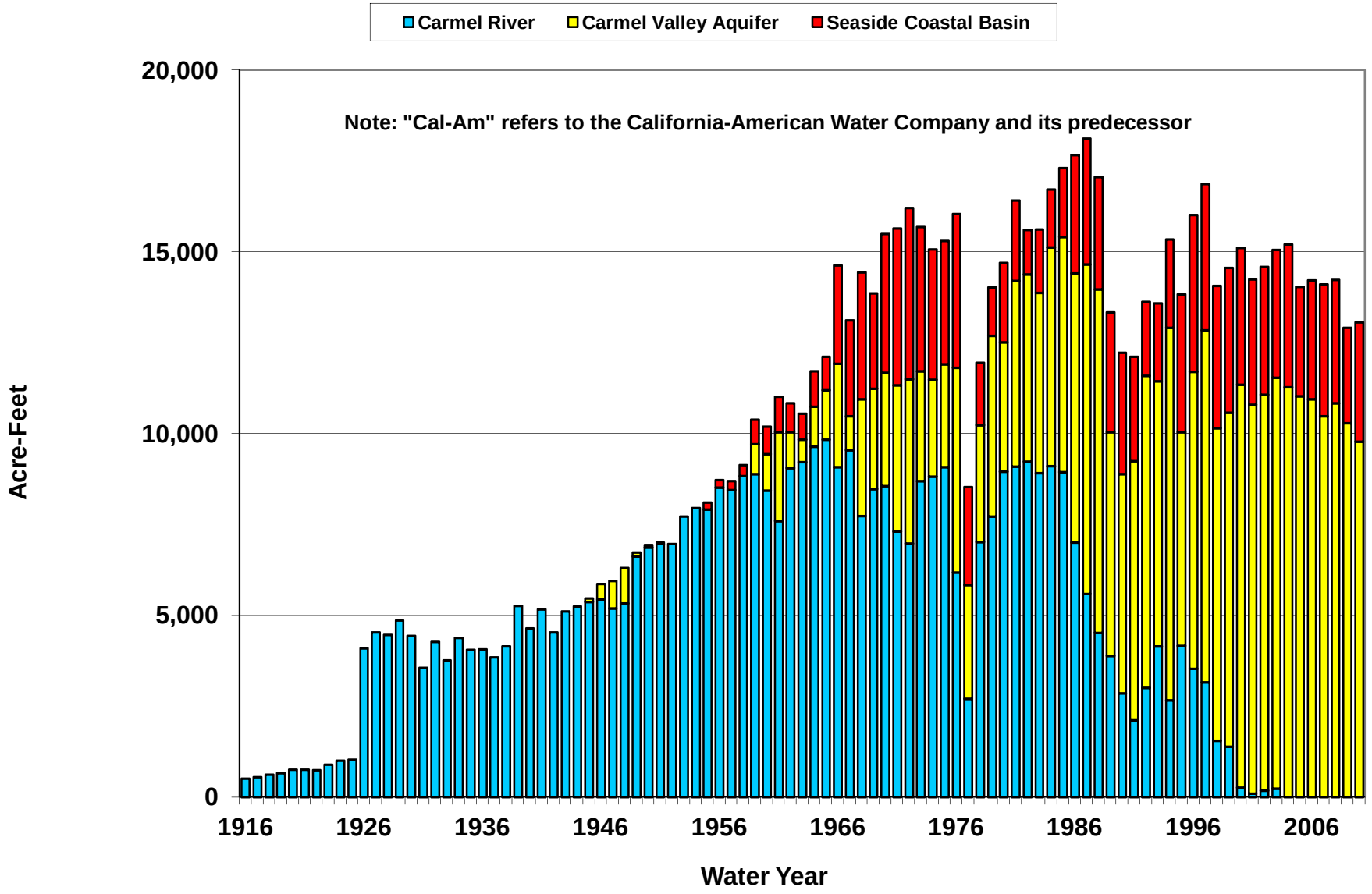

Figure H.3-2: Carmel River Withdrawals with and without the Recycled Water Project, 1995 - 2010 (acre-feet)

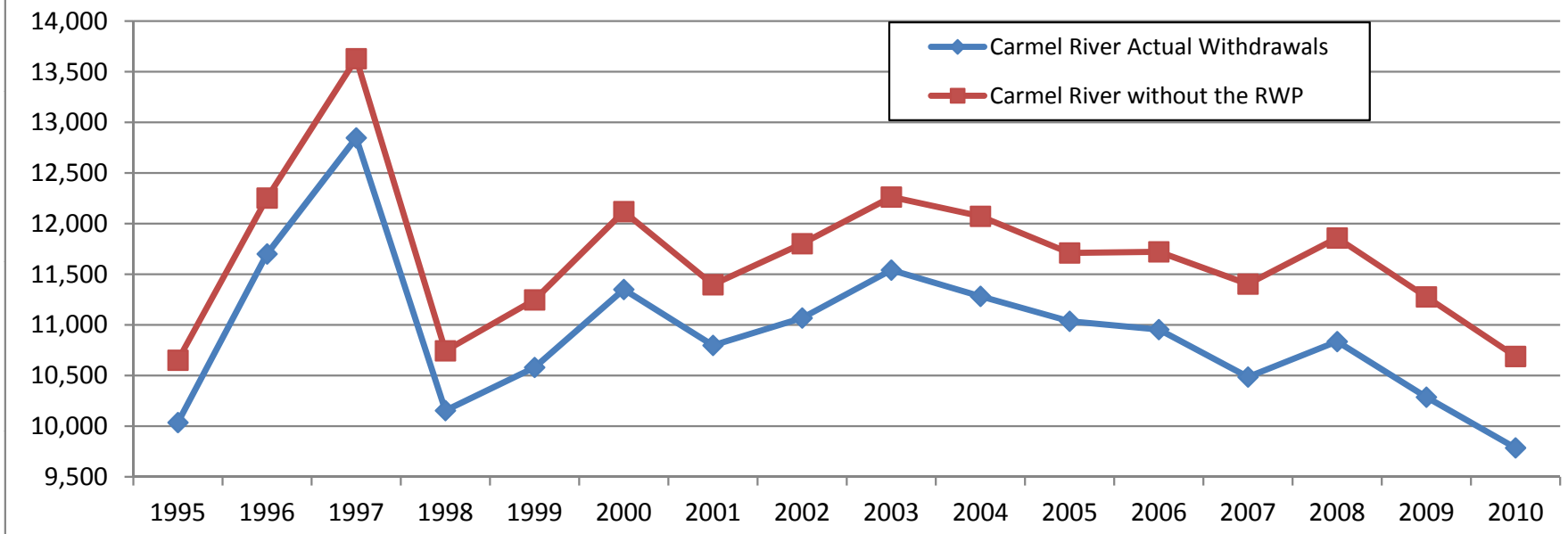

Figure H.3-3:
Cal-Am Carmel River Withdrawals through 2016 with Project