

Monterey Peninsula Water  
Management District  
P.O. BOX 85  
MONTEREY CA 93940

FINAL  
REPORT

TO THE

CALIFORNIA COASTAL COMMISSION

BY

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

COASTAL ZONE  
INFORMATION CENTER

RE

AVAILABLE WATER SUPPLY AND DEMAND

MONTEREY PENINSULA, CALIFORNIA

This publication was prepared with financial assistance from the U. S. Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, under the provisions of the Federal Coastal Zone Management Act of 1972, as amended, and from the California Coastal Commission under the provisions of the Coastal Act of 1976.

March 1979

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March 30, 1979

Mr. Michael Fischer, Executive Director  
California Coastal Commission  
631 Howard Street, 4th Floor  
San Francisco, CA 94105

Attention: Jack Liebster

SUBJECT: Submission of Final Report RE Available Water  
Supply and Demand

Dear Mr. Fischer:

Pursuant to our agreement as amended, please find attached a copy of the Final Report to the California Coastal Commission by the Monterey Peninsula Water Management District Re Available Water Supply and Demand. This Final Report satisfies the four work items enumerated in our Agreement and constitutes the District's submission to the Coastal Commission.

In summary, the Final Report concludes that sufficient water resources are available to satisfy new growth on the Cal-Am Service Area for the next 14 years. This projection is based on current demands of 15,000 acre feet (AF) per year, future available supply of 22,000 AF per year and a constant growth rate of 3% per year. The Final Report proposes Model Ordinances to extend the time span during which excess capacity is available, however, as of this time no jurisdiction within the District has adopted the proposed ordinances.

It should be noted that the accuracy of the estimates of water supply and demand used in the Final Report are constrained by both lack of adequate data and conflicting available data. The Monterey Peninsula Water Management District will be conducting extensive investigations to improve the available information base and will periodically revise the conclusions

Mr. Michael Fischer  
California Coastal Commission  
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reached in this Final Report. This Final Report should not be considered definitive until additional research is conducted.

Sincerely,

*William R. Gianelli*

William R. Gianelli  
Chairman

BB:jw



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## CHAPTER I

### INTRODUCTION

On October 1, 1978, the Monterey Peninsula Water Management District and the California Coastal Commission entered into an agreement whereby the District agreed to supply to the Commission a report, evaluating the available water supply and demand within its jurisdiction, which is suitable for use by the Commission to aid in the development and evaluation of Local Coastal Programs (LCP) on the Monterey Peninsula.

Specifically the final report is to include:

- 1) The District's best estimate of water available to consumers within the District area, and a procedure by which the estimate of the available water supply may be revised.
- 2) The amounts of water used by each city and the County within the District, and the amounts of water projected to be used by such entities as best can be determined.
- 3) A set of procedures, such as model ordinances, that could be used by individual municipalities and the County to assure that the water demands of development remain within the available water supply.
- 4) In the event the cities and the County are not able to agree on what constitutes an equitable system for sharing the available water supply, the report shall describe the major points of agreement or disagreement, together with any comments the District may have in connection therewith.

This Final Report satisfies items 1 and 2 of the Coastal Commission Agreement by establishing estimates of water supply and demand in Chapters II and III respectively. Model Ordinances as required by item 3 were proposed by the District in the Draft Report (February 13, 1979) and submitted to the cities and Monterey County for consideration. With the exception of the Cities of Carmel and Sand City, each jurisdiction reviewed these proposed ordinances and commented. However, as of this time no agreement has been reached among the jurisdictions as to what constitutes an equitable system for sharing the available water supply. Letters from the jurisdictions and other interested parties have been appendicized along with the District's comments on points raised.

It should be noted that the accuracy of estimates of water supply and demand used in this Final Report are constrained by both lack of adequate data and conflicting available data. The

Monterey Peninsula Water Management District will be conducting extensive investigations to improve the available information base and will periodically update the conclusions reached in this report which is based on available data.

## CHAPTER II

### WATER SUPPLY AND PRESENT USE

#### A. WATER SUPPLY

##### 1. Overview

The Monterey Peninsula Water Management District covers the area illustrated on figure 1. The major water supplier inside the District is California American Water Company (Cal/Am), whose boundaries are illustrated on figure 2. According to the Monterey County Department of Health<sup>1</sup>, 297 non-Cal/Am wells and 11 mutuals draw water within the Cal/Am service area. In addition, the Seaside Municipal Water System is interconnected with Cal/Am and serves approximately 750 residences in Seaside. The balance of the District is serviced by Water West, several mutual water companies and uncounted additional private wells. Since the entire coastal zone portion of the District is served by Cal/Am and insufficient supply and demand information is available concerning the areas outside Cal/Am, this report will concentrate analysis inside the Cal/Am service area. The research required to fully evaluate water demand and supply conditions outside the Cal/Am service area but inside the District boundaries is beyond the scope of this agreement.

##### 2. Existing Water Sources for the Cal/Am Service Area

At present there are three principal sources of water for the Monterey Peninsula Area: (a) the surface supply of the Carmel River; (b) the underground supply of the Carmel River groundwater basin; and (c) the underground supply from the Seaside aquifer. Clayton(6)<sup>2</sup> has recently summarized the various studies that have been made concerning the amount of water available from these sources. However, these studies have been based on limited data, and are not definitive.

The most authoritative estimates made to date are those of the State Department of Water Resources (DWR), contained in their 1974 "Zone 11 Investigation,"(13) in testimony before the Public Utilities Commission(16), and in a letter of 16 December 1977 to the Monterey County Flood Control and Water Conservation District(14). These estimates were used with only minor modifications by the California PUC in its order of 8 August 1978 in the matter of Case No. 9530, investigating, among other things, the water available to the California American Water Company (Cal/Am) for service in the Monterey area.

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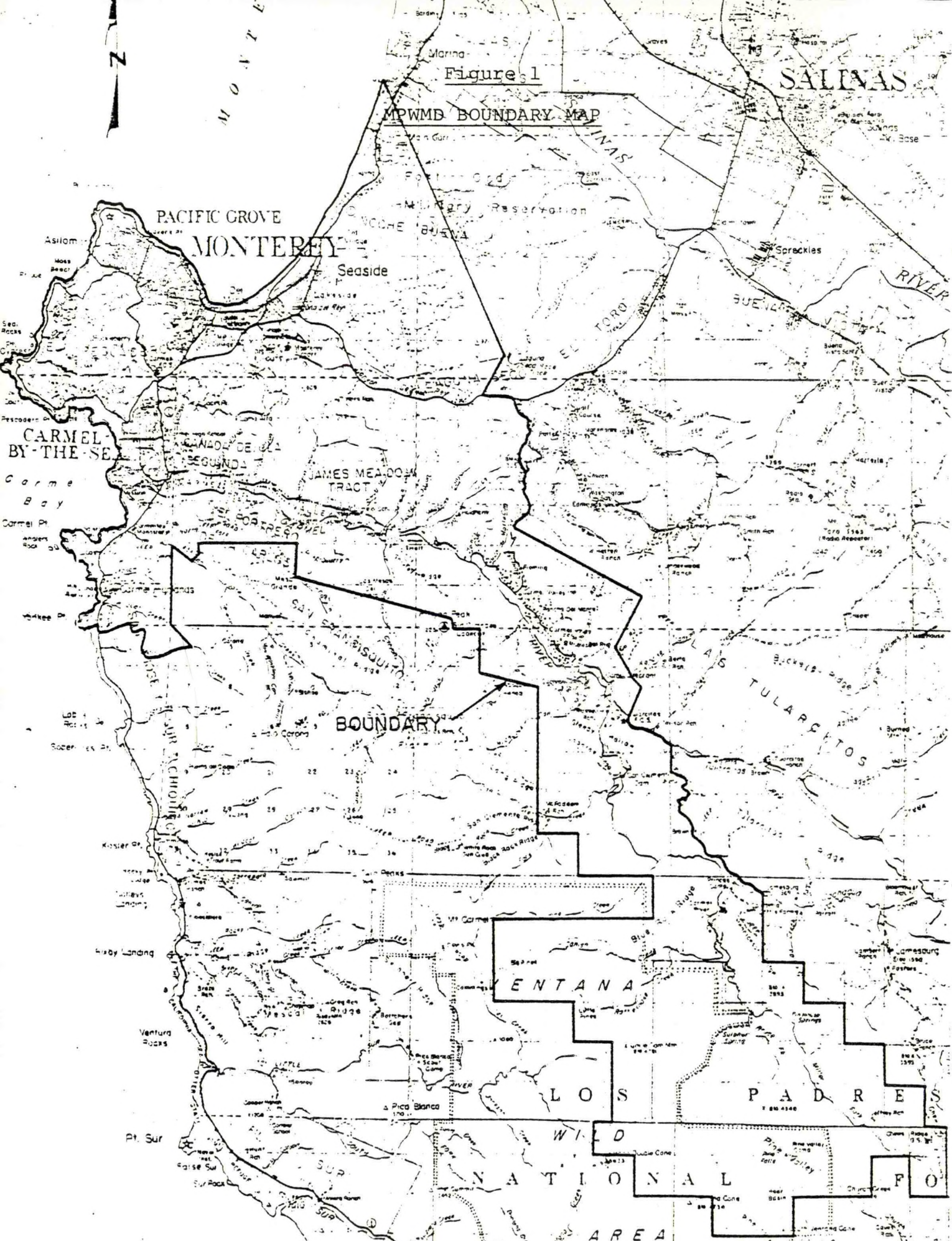
<sup>1</sup> Walter Wong, 1/4/78

<sup>2</sup> References provided in parentheses refer to numbers in bibliography.



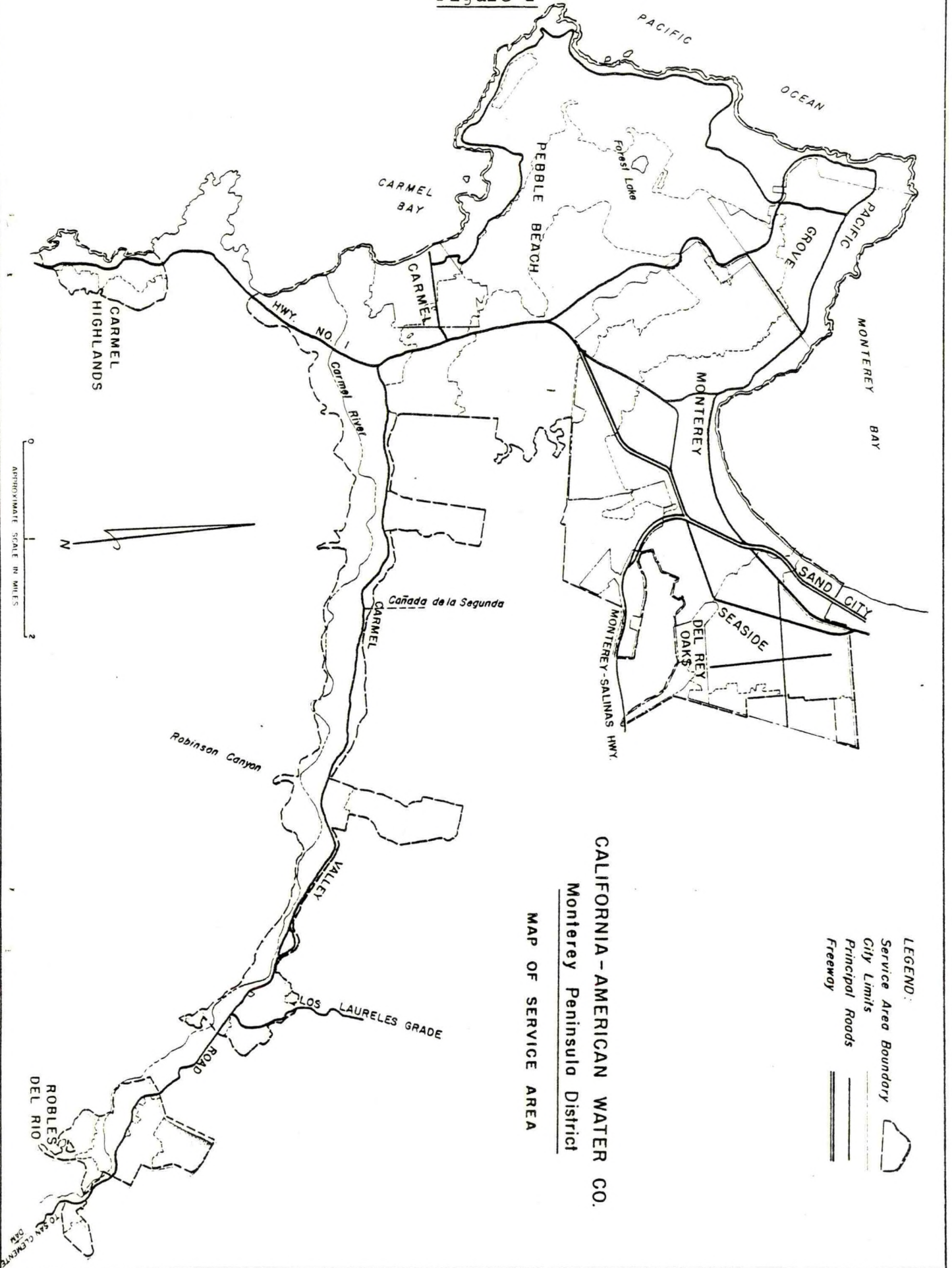
Figure 31

MPWMB BOUNDARY MAP



0 1 2 3 4  
 SCALE IN MILE

Figure 2



LEGEND:  
Service Area Boundary  
City Limits  
Principal Roads  
Freeway

CALIFORNIA - AMERICAN WATER CO.  
Monterey Peninsula District  
MAP OF SERVICE AREA

The PUC found that "...the maximum total amount of water that can now prudently be produced and delivered by Cal/Am's existing facilities in a normal year is 18,000 acre-feet per year, determined as follows:

From the Carmel River	9,000 acre feet
From the Carmel Valley Aquifer	7,000 acre feet
From the Seaside Aquifers	<u>2,000</u> acre feet
	18,000 acre feet"

The PUC also noted that Cal/Am has begun procedural work on four new wells in the lower Carmel Valley and a related iron removal plant, with a planned capacity of 5,000 acre feet per year. The PUC went on to find that "With that additional supply Cal/Am could produce and deliver 22,000 acre feet of water annually."

It should be noted that both the 18,000 acre feet present capacity and the 22,000 acre feet projected capacity figures are based on the assumption that private wells within Cal/Am's service area require an additional 2,000 acre feet annually. In addition, it should be noted that Seaside Municipal Water System draws approximately 500 acre feet of water annually to serve an area of Seaside outside of Cal/Am's service area. Estimates of supply for other areas outside of Cal/Am's service area but inside of the Monterey Peninsula Water Management District boundaries are not available but are not expected to be significant except at full buildout.

Pending completion of new studies of the Carmel Valley and Seaside aquifers, the Monterey Peninsula Water Management District does not find it necessary to revise these estimates, although uncertainties that justify new studies are noted below and in Appendix A.

(a) Carmel River Surface Supply

Regulation of the surface flow of the Carmel River is accomplished by the Los Padres and San Clemente Dams owned by Cal/Am. The usable storage as determined by Cal/Am is 1280 acre feet for San Clemente and 2740 acre feet for Los Padres, but preliminary reports by the USGS\* indicate that Los Padres lost 500 to 600 acre feet of capacity last winter to sedimentation triggered by the Marble-Cone fire. The DWR estimated that with these dams the surface flow of the Carmel River can provide 9,500 acre feet per year(13). This was reduced to 9,000 acre feet by the PUC(15), and particularly in view of the recent sedimentation in Los Padres Reservoir it seems appropriate to use the lower figure. Recent experience shows that this amount of water will not be available every year, as the surface flow and storage provided only 6,185 acre feet in calendar year 1976, and 2,706 acre feet in 1977.\*\* As shown

\* Progress report to MPWMD by USGS.

\*\* Cal/Am

in Appendix A, available data are not adequate to allow good estimates of the probabilities of very dry years, but a log-probability plot of 31 years of data (1939-69) suggests that there is about a 2 or 3% chance that the "natural flow" in the river at the San Clemente site will be less than 9,000 acre feet in a water year (October-September), and about a 0.5% chance that it will be less than 5,000 acre feet.

(b) Carmel Valley Groundwater Supply

A number of different estimates have been made of the amount of water available from the Carmel Valley groundwater basin, which is for practical purposes the alluvial aquifer of the Carmel River. These estimates, reviewed by Clayton, vary from 5,000 to 15,000 acre feet per year. The most authoritative estimate is that developed in the DWR's 1974 "Zone 11 Investigation," (13) which states that "The ground water basin in the Carmel Valley could provide a sustained annual yield of about 15,000 acre feet if the basin water level is lowered an additional 10 feet." The DWR reviewed ground water data from the aquifer at the end of the recent drought, and in a letter to the Monterey County Flood and Water Conservation District (14) concluded that the 1974 report did not need to be updated. The DWR's estimate cannot be considered definitive, however, because it is based in part on assumptions that have not yet been tested. Because Cal/Am's existing wells are located in the mid-valley and upper valley, less is known about the aquifer in the lower valley, where new wells must be drilled to realize the 15,000 acre feet sustained annual yield. Ground water in the Lower (seaward) part of the valley, however, does contain significant quantities of iron.

The rapid recovery of ground water levels after the recent drought proves that the rate of recharge in the upper and mid-valley is very high, but there is some question about the rate of recharge in the lower valley. Cal/Am's consultant, Russell Mount of the firm of Dames and Moore, testified in one of the PUC hearings (15) that a confining layer of clay and muck divides the aquifer into upper and lower layers more or less continuously from the area around Schulte well, near mid-valley, to the ocean. Pump tests clearly establish the existence of this layer around Schulte well, and in testimony before the Monterey County Planning Department this fall, Mount said that pump tests on the Canada well near the seaward end of the exploitable aquifer also show the existence of such a layer, although it seems to be more permeable in this area.

If this layer is more or less continuous in the lower valley, then the DWR's estimate of the recharge capacity of the aquifer, and accordingly of the sustained annual yield, is probably too high.

Another uncertainty arises because the DWR based its estimate of a sustained annual yield of 15,000 acre feet in part on an estimate that the useful storage capacity of the aquifer was about 52,500 acre feet (testimony of Richard

Meffley, in PUC Decision No. 84527), but the behavior of the aquifer during the recent drought suggests that the DWR may have overestimated the storage capacity of the aquifer, perhaps by overestimating its specific yield. The winter of 1974-75 was moderately wet, so it is reasonable to assume that the aquifer was fully recharged in the spring of 1975. Between the spring of 1975 and the end of 1977, when the DWR estimated that 20,000 acre feet of water remained in useful storage, Cal/Am pumped about 11,500\* acre feet from its Carmel Valley wells. Allowing 2,000 acre per year net use for other users, and 2,000 acre feet per year for seepage to the ocean and evapotranspiration, only 23,500 acre feet were removed from the aquifer, so even if there had been no recharge at all about 9,000 acre feet of the DWR's 52,500 are unaccounted for which indicates less capacity of the ground water basin or errors in the inflow-outflow equation.

Because of such uncertainties, the MPWMD has contracted with the United States Geological Survey (USGS) for a detailed computer simulation of the Carmel Valley aquifer, that will incorporate data that will be obtained when Cal/Am drills and tests new wells in the lower Carmel Valley. When completed in 1981 or 1982, this simulation model will provide estimates of well yield and water table level for any specified conditions as well as capacity of the ground water basin, so it should be possible to develop much better estimates of the annual yield obtainable within given constraints of ground water level and streamflow.

The DWR estimated in 1974(13) that net local use of groundwater in the Carmel basin is approximately 2,000 acre feet per year, so that 13,000 acre feet should be available to Cal/Am. The PUC reduced this estimate to 12,000 acre feet in its August 1978 decision. Cal/Am has applied for use permits for four new wells in the lower valley, for which an Environmental Impact Report is being prepared. Additional iron removal facilities will also be constructed to bring the water from these wells up to an acceptable quality.

#### (c) Seaside Aquifer

Of the three sources of water supply available currently to Cal/Am, the Seaside wells are the most uncertain in terms of the safe yield which can safely be extracted from them. The DWR report of 1974(13) indicates a safe yield of about 2,000 ac/ft from the Seaside well. The report points out the proximity of these wells to the ocean and indicates the need to monitor carefully for any evidences of sea water intrusion. The 1977 up-date by DWR indicates that the production of these wells could be continued at a somewhat higher

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\* Cal/Am

rate than assumed in its prior 1974 report, without apparent adverse effects.

One of the difficulties in assessing the yield of the Seaside aquifer is the uncertainty of its recharge capabilities. The USGS and MPWMD are contemplating further study of the Seaside aquifer in the hopes of determining with more certainty the safe yield from this source.

The PUC in its August order assumed that Cal/Am could continue to withdraw 2,000 ac/ft per year from the Seaside aquifer without adverse consequences. Until further evidence is developed concerning the yield of the Seaside aquifer, it seems prudent to assume the lower yield utilized by the PUC in determining the amount of water available to Cal/Am. In the meantime, an additional observation well appropriately placed would assist in giving advance warning of any sea water intrusion into the production wells.

### 3. Possible Future Water Sources

Additional water supply for the Monterey Peninsula could be generated from the following sources: (a) expanded surface supply in Carmel Valley, (b) imported surface supply, (c) reclaimed wastewater runoff, (d) desalinization or (e) conservation. Following is a review of each source:

#### (a) Expanded Surface Supply in Carmel Valley

As the Monterey Peninsula Water Management District examines ways to meet the future needs of its area it will be considering the construction of additional dams and reservoirs on the Carmel River. Studies are currently in progress by the San Francisco District of the U. S. Army Corps of Engineers concerning the possibility of constructing a new, large dam on the Carmel River at the San Clemente site. In a 1977 progress report on its studies, the Corps estimated that 17,000 acre feet of new yield could be developed with a 1st staged capacity of 97,500 ac/ft, and 34,000 acre feet of new yield with a 154,000 ac/ft capacity reservoir. It is expected that these figures may be modified by the Corps in its final report.

In December, 1969, Kennedy Engineers(18) prepared a report for Cal/American Water Company in which they analyzed three possible sites on the Carmel River for a new dam. Various sizes of dams were considered in the Kennedy studies with reservoirs varying in size of between 15,500 ac/ft capacity and 145,000 ac/ft with corresponding yields between 16,500 ac/ft and 43,000 ac/ft. However, the yields set forth by Kennedy are believed to be on the high side since no provisions were made for the by-pass of fishery flows.

(b) Imported Surface Water Supply Sources

Reconnaissance studies of the possibility of importing water from the Arroyo Seco River have been conducted by the Corps of Engineers (19), but the Corps has recently determined that a dam on the Arroyo Seco would not provide enough flood control benefits to justify federal participation. However, there is strong support in the Salinas Valley for a dam on the Arroyo Seco, and other methods of funding will doubtless be explored. Monterey County has filed for water rights on this source for both areas of the county.

The federal San Felipe Project contemplates some delivery of water to northern Monterey County for agricultural purposes, but it does not include any service to Monterey Peninsula. It may be possible to modify the project by asking the Congress of the United States to revise the project service area if that were determined to be feasible. There are uncertainties with respect to the adequacy of the water supply for the San Felipe Project which made its feasibility for additional service uncertain.

(c) Reclaimed Wastewater/Runoff

Urban runoff and sanitary sewer flows generated from the Monterey Peninsula largely are dumped into Monterey Bay. It may be possible to recycle these waters for non-potable uses as a supplement to potable supplies. At this time insufficient information is available concerning the economic feasibility of this alternative.

Runoff can also be captured on a site by site basis for non-potable uses. Technology exists for capturing roof and site drainage and for storage of this collected drainage in cisterns. Such water could be stored during the rain season for landscaping or other uses during the heavy demand periods of summer and fall. This system could be used on residences, schools, government offices, golf courses, etc. for both onsite and possibly adjacent site applications. This alternative deserves analysis for implementation by new construction and the District should encourage retrofitting of existing structures/sites.

(d) Desalinization

Sea water demineralization is a technologically feasible source of potable water and is currently used in arid climate areas. However, the techniques currently available consume large amounts of energy and do not appear to be cost effective. This alternative may become less competitive

with increasing energy costs unless technological innovations become available.

(e) Conservation

The recent drought experience in California has demonstrated the potential value of active conservation as a means of stretching available supply. Many communities reduced total water consumption. This technique requires extensive public education and continued effort to achieve sustained results but generates a substantial return for the investment.

B. PRESENT USE

The quantity of water supplied by Cal/Am from 1972 to August 1978 and the source of that water is presented in table 1. It should be noted that the Peninsula was under a limited rationing program in 1976, and under a severe rationing program in 1977. The rationing program in 1976 was necessary because of inadequate transportation facilities of the Company to deliver the water from its sources to the service area. This situation was corrected by the construction of the La Canada pipeline and the Begonia iron removal plant. In 1977 lack of water supply due to an extremely dry year necessitated the drastic rationing program. Most of the rationing program was terminated early in 1978 when adequate rainfall and runoff occurred. Most analysts expect that water consumption will increase above 1978 usage on a per capita basis but stabilize below the usage figures established before the drought. Assuming that this normalizing process stabilizes closer to 1975 usage than 1978 usage, Cal/Am water demand for 1979 would be around 15,000 acre feet per year.

In addition to Cal/Am's deliveries, the Seaside Municipal system delivered approximately 454 acre feet in 1976. No data is currently available on 1977 or 1978 deliveries for the Seaside system.

Eleven mutual water companies and 297 private wells also draw water from within the Cal/Am service area. The 1974 DWR investigation(13) estimated that 150 wells used a net of 2,000 acre feet per year. These figures were not adjusted in the PUC order and in light of the lack of monitoring evidence the 2,000 acre feet figure is used for the purposes of this report. Thus, present usage inside the Cal/Am service are:

Cal/Am Deliveries	15,000 AF
Seaside Water	500 AF
Private Wells	<u>2,000 AF</u>
	17,500 AF



TABLE 1

WATER SERVED BY CALIFORNIA WATER COMPANY  
TO MONTEREY PENINSULA

	<u>Surface Supply Los Padres &amp; San Clemente</u>	<u>Carmel Valley Wells</u>	<u>Seaside Wells</u>	<u>Total Production</u>	<u>Forest Lake &amp; Pacific Grove Reservoirs</u>	<u>Total System Uses</u>
1972	6982 AF	4519 AF	4699 AF	16200 AF	-17 AF	16183 AF
1973	8690 AF	3021 AF	3976 AF	15687 AF	+ 6 AF	15693 AF
1974	8821 AF	2656 AF	3592 AF	15069 AF	+14 AF	15083 AF
1975	9084 AF	2819 AF	3399 AF	15302 AF	+58 AF	15360 AF
1976	6185 AF	5632 AF	4228 AF	16045 AF	-39 AF	16006 AF
1977	2706 AF	3129 AF	2694 AF	8529 AF	-60 AF	8469 AF
1978	7018 AF	3210 AF	1718 AF	11946 AF	-97 AF	12044 AF

NOTE: These figures do not include an estimated 2,000 AF consumed by private wells for local use or an estimated 500 AF consumed by customers in the Seaside Municipal Water System.

No estimates of current water use have been established for the area outside of the Cal/Am service area.

C. SUPPLY UPDATE PROCEDURE

The District is currently monitoring existing supply sources and conducting research on existing and potential sources of supply. The District is required by its enabling act to annually revise the estimates of supply established in this report to account for new information. In addition, the District is proposing to establish a monitoring system (see Chapter IV) that would provide an estimate of the commitments for new water granted by local government to developments so that a projection of short term water demand will be possible.

## CHAPTER III

### WATER DEMAND

#### A. OVERVIEW

This chapter evaluates present and projected water usage for each city and the unincorporated area within the District. The water demand figures presented are "best guess" estimates of usage based on available data. There has been no attempt to deal with reduction of future demand based on increased conservation activity or development of non-potable substitutes. The subject of non-potable water demand is beyond the scope of this present report, but will be included in future refinements of demand projections.

#### B. PRESENT DEMAND

As detailed in section B of Chapter II, a total water delivery figure for all areas inside of the Water Management District is not available. Total recorded usage inside of the Cal/Am service area, including private wells and water delivered by Seaside Municipal Water Service and estimated 1979 usage are as follows:

#### Recorded and Estimated Water Usage for Cal/Am Area

<u>Year</u>	<u>Cal/Am Delivery (Acre Feet)</u>	<u>Private Wells (Acre Feet)</u>	<u>Seaside Water (Acre Feet)</u>	<u>Total Demand (Acre Feet)</u>
1975	15360	2000 (est)	454 (est)	17814
1976	16006	2000 (est)	454 (est)	18460
1977	8469	2000 (est)	454 (est)	10923
1978	12044	2000 (est)	454 (est)	14498
1979	15000 (est)	2000 (est)	500 (est)	17500

The 1979 estimate is lower than the 1975 and 1976 delivery figures because consumption habits appear to have been modified by the rationing program. The 1977 usage is lower than the 1979 estimate because of the mandatory rationing imposed during the drought.

Current (1978) figures are not available from Cal/Am on the amount of water used by each jurisdiction within its service area. 1975 figures are presented below:

#### 1975 Water Usage in the Cal/Am Area

<u>Jurisdiction</u>	<u>Cal/Am Delivery (Acre Feet)</u>	<u>Private Wells (Acre Feet)</u>	<u>Seaside Water (Acre Feet)</u>	<u>Total Demand (Acre Feet)</u>
Carmel	896.4	0	0	896.4
Del Rey Oaks	216.7	0	0	216.7

1975 Water Usage in the Cal/Am Area (Cont'd)

<u>Jurisdiction</u>	<u>Cal/Am Delivery (Acre Feet)</u>	<u>Private Wells (Acre Feet)</u>	<u>Seaside Water (Acre Feet)</u>	<u>Total Demand (Acre Feet)</u>
Monterey	5001.6	0	0	5001.6
Pacific Grove	1979.2	0	0	1979.2
Sand City	56.0	0	0	56.0
Seaside	2140.9	0	454	2594.9
Monterey County	<u>4668.4</u>	<u>2,000</u>	<u>0</u>	<u>6668.4</u>
Totals	14,959.2*	2,000	454	17,413.2*

The areas outside of the Cal/Am service area and inside the management district include unincorporated county lands and a portion of Fort Ord. Fort Ord has an independent water supply system. The balance of the area is served by an unknown number of private wells, mutuels, and by Water West. The Rancho Del Monte Unit of Water West delivered 127 AF of water to 384 connections in 1978. Monterey County does not have exact information, but estimates that 12 mutuels with 13 wells and 262 connections serve customers in this area.

C. PROJECTED DEMAND

1. Background

The PUC Decision of August 1978 appended Cal/Am's "water consumption projection" table R-1 and concluded that assumed supply "may be adequate" to serve all present and potential customers of the Monterey District of Cal/Am in a normal year even after a full 100 percent buildout in Cal/Am's present service territory. The R-1 projections state that total demand at full buildout would be 22,415 AF excluding deliveries to private wells and demand by Seaside Municipal Water. The R-1 projects by jurisdiction are as follows:

Cal/Am Water Demand Projection

<u>Jurisdiction</u>	<u>100% Buildout Water Demand (Acre Feet Per Year)</u>
Monterey	7,364
Pacific Grove	2,153
Carmel	995
Seaside	2,475
Sand City	147
Del Rey Oaks	291
Unincorporated Areas	<u>8,990</u>
Total	22,415 (Excludes Private Wells & Seaside Water)

\* This figure does not include leakage within the Cal/Am System prior to meter registry.

These figures, however, were contested during the PUC hearings and subsequently because Cal/Am projected new connections only in "unserved" areas. This assumes that existing "served" areas will not experience growth or demand additional water. This assumption is not valid for both commercial and residential "served" areas since property owners under various zoning districts may intensify the use of their property. Seaside, for example, was projected to receive only 441 additional connections under R-1, whereas zoning would allow for up to 7,000 new dwelling units and up to 1,500,000 square feet of new commercial. Additionally, Cal/Am's projections of future usage in now unserved areas is based on the assumption that new development will occur at the same "density of services per acre" and the same "average acre per service per square foot" as experienced in the "served" area of that jurisdiction. These assumptions may not be valid if new growth develops more densely than the existing community or demands more water per service than the existing average consumption. Thus, Cal/Am's projection appears to be an underestimate of future water demand.

## 2. Summary of Water Demand Projection

The District has worked with a technical subcommittee of staff members from each jurisdiction to develop new water demand projections. Each jurisdiction supplied estimates of potential residential and commercial growth and participated in an extensive usage survey to determine demand per residential unit and per square foot of commercial (non-residential) building.

The District's best guess of projected water demand resulting from this information is summarized on table 2. The Summary table projects total water demand by jurisdiction at the year 2000 and at full 100 percent buildout. Demand estimates for the coastal zone the Cal/Am service area and Water Management District area are provided for each time frame. It should be noted that the estimates are for total demand regardless of who delivers the water. That is, they represent the total water needed to service projected levels of growth. 1976 Cal/Am actual delivery figures are presented as a point of reference to compare with the estimates of future demand.

The Summary indicates that water demand will be substantially greater than projected by Cal/Am in their R-1 estimate. The Summary indicates that demand within the Cal/Am area will be 25,683 AF by the year 2000 and 44,930 AF at full buildout compared to Cal/Am's estimate of 22,415 at full buildout; both estimates exclude demand from private wells and the Seaside municipal system. Thus, water demand would increase by 72% by 2000 and by 200% upon full buildout.

Table 2

## WATER DEMAND PROJECTIONS SUMMARY BY JURISDICTION

in Acre Feet per Year

Jurisdiction	Cal/Am(1975) Usage	Year 2,000				Full Build Out			
		Coast.Zone Area	Cal/Am Area	MPWMD Area	MPWMD Area	Coast.Zone Area	Cal/Am Area	MPWMD Area	MPWMD Area
Carmel-by-the-Sea	896	1,257	1,257	1,257	1,367	1,367	1,367	1,367	
Del Rey Oaks	217	0	382	382	0	382	382	382	
Monterey	5,002	2,871	10,296	10,296	3,005	10,872	10,872	10,872	
Monterey County	4,668	2,487	5,778	7,454	6,499	15,998	28,357	28,357	
Pacific Grove	1,979	1,107	3,077	3,077	1,250	7,142	7,142	7,142	
Sand City	56	813	813	813	1,219	1,219	1,219	1,219	
Seaside	2,141	233	3,903	4,223	1,163	7,774	8,094	8,094	
Airport District	Not Available	0	176	176	0	176	176	176	
Totals	14,959	8,345	25,683	27,657	14,504	44,930	57,810	57,810	

### 3. Methodology

The demand estimates presented in the Summary table were derived from existing data and new data generated through a survey. Limitations in existing data and the size sample used in the survey undoubtedly have introduced some error into the estimates. These limitations are discussed in this section and recommendations for revising the estimates are provided in subsection 4.

#### a. Residential Component

Each jurisdiction provided estimates of single family and multi-family development by the year 2000 and at full buildout. The critical assumptions employed in these projections is presented in table 3.

Demand per unit for both single family units and multi-family units was derived from a survey of the water usage from typical dwellings. Each jurisdiction was requested to provide the address of single family dwellings; a sample of 291 dwellings was obtained from these submissions. In addition, several large apartment and condominium complexes were selected to determine the demand for multi-family units. Water usage for these dwellings was then determined from 1975 actual water deliveries recorded by Cal/Am.

The single family dwelling water demand figures vary significantly from jurisdiction to jurisdiction as follows:

#### Single Family Dwelling Water Demand

<u>Jurisdiction</u>	<u>Demand AF/yr</u>	<u>Demand Gallons/Day</u>
Carmel	.2805	250
Del Rey Oaks	.3399	303
Monterey	.3351	299
Monterey County	.5178	462
Pacific Grove	.3102	276
Sand City	.2195	196
Seaside	.4347	386

This variation appears to correspond to the average number of people per household and the physiography of the various jurisdictions.

The multi-family dwelling demand figures were based on a sample of 173 units again using 1975 Cal/Am data. The technical subcommittee weighted this sample against figures obtained for duplexes, triplexes, and fourplexes to chose a demand per unit figure of .1534 acre feet per year or 137 gallons per day for all jurisdictions with the exception of Carmel Valley. Monterey County plans for Carmel Valley indicate that the condominium will be the basic multiple dwelling unit. The water demand per unit factor for Carmel Valley condominiums is based on

Table 3

Critical Residential Assumptions

Each jurisdiction supplied an estimate of projected single dwelling units and multiple dwelling units for (a) year 2000, and (b) total buildout, as follows:

Carmel:	(a) historic projection of dwelling units per year, (b) full buildout at zoning
Del Rey Oaks:	(a) and (b) developed area as is, undeveloped area at zoning
Monterey:	(a) Monterey County Transportation Corridor Study adjusted by City of Monterey Public Facility Study, (b) full buildout at zoning
Monterey County:	(a) updated 1995 Socio-Economic Forecasts, 1976, (b) adopted plans at full buildout
Pacific Grove:	(a) MCTC Corridor Study, medium density alternative adjusted for residential potential in commercial area, (b) full buildout at zoning
Sand City:	(a) developed area as is, undeveloped areas at zoning, (b) full buildout at zoning
Seaside:	(a) and (b) full buildout at zoning



water usage for the year 1975 using 222 samples, averaging 63,867 gallons or .1960 acre feet per year per unit.

Residential Demand per jurisdiction was then calculated by multiplying the number of units projected times the appropriate demand per unit figure. Residential projections for the year 2000 are presented in table 4. Full Buildout residential projections are presented in table 5.

b. Commercial Component

Each jurisdiction provided estimates of commercial (non-residential) building area (square footage) for the year 2000 and at full buildout. The critical assumptions employed in these projections is presented in table 6.

Demand per square foot of commercial (non-residential) building area was derived from a water usage survey of commercial uses and an analysis of the commercial water deliveries to several jurisdictions. The survey of commercial uses examined the water demand by commercial facilities such as Del Monte Shopping Center. This data, however, excludes commercial activities such as golf courses, hotels, industry and institutional. Therefore, total commercial water delivery to three jurisdictions was divided by the existing square footage of commercial building to get a demand figure. Based on the airport's figure of .0001 AF per square foot, Sand City's figure of .00033 AF per square foot and Seaside's figure of .0005 AF/SF/year, it was determined that the remaining jurisdictions would be assigned a factor of .0005 AF/SF/year. An analysis for each jurisdiction was not conducted since only the above three jurisdictions had available figures on existing square footage of commercial buildings. The .0005 AF/SF/yr figure is probably conservative for Monterey and Carmel since these cities have heavy water users in their commercial districts.

More accurate estimates of commercial demand could be provided if each jurisdiction were to inventory existing commercial building area. In addition, Cal/Am would need to keep separate records for non-residential users; Cal/Am's present breakdown of commercial figures includes apartments on master meters.

Commercial demand per jurisdiction was then calculated by multiplying the projected square footage times the appropriate demand per square foot factor. Commercial projections for the year 2000 are presented in table 7. Commercial projections for full buildout are presented in table 8.

Table 4

## RESIDENTIAL WATER DEMAND PROJECTIONS: YEAR 2000

Jurisdiction	H <sub>2</sub> O Demand per unit	Unit	Coastal Zone Area		Cal/Am Service Area		Mont. Pen. H <sub>2</sub> O Mgt. Dst.	
			# Units	H <sub>2</sub> O Demand	# Units	H <sub>2</sub> O Demand	# Units	H <sub>2</sub> O Demand
Carmel-by-the-Sea	.2805 AF	SDU	3,000	842 AF	3,000	842 AF	3,000	842 AF
1976: 2927 du	.1534 AF	MDU	407	62 AF	407	62 AF	407	62 AF
Del Rey Oaks	.3399 AF	SDU	0	0 AF	640	218 AF	640	218 AF
1976: 577 du	.1534 AF	MDU	0	0 AF	250	38 AF	250	38 AF
Monterey	.3351 AF	SDU	259	89 AF	5,395	1,808 AF	5,395	1,808 AF
1976: 11,337 du	.1534 AF	MDU	710	109 AF	9,049	1,388 AF	9,049	1,388 AF
Monterey County	.5178 AF	SDU	3,602	1,865 AF	8,819	4,566 AF	10,634	5,506 AF
1976: 9208 du	.1960 AF	MDU	153	30 AF	1,330	261 AF	4,987	977 AF
Pacific Grove	.3102 AF	SDU	1,526	473 AF	4,778	1,482 AF	4,778	1,482 AF
1976: 7525 du	.1534 AF	MDU	1,304	200 AF	4,863	746 AF	4,863	746 AF
Sand City	.2195 AF	SDU	100	22 AF	100	22 AF	100	22 AF
1976: 100 du	.1534 AF	MDU	400	61 AF	400	61 AF	400	61 AF
Seaside	.4347 AF	SDU	0	0 AF	3,469	1,508 AF	4,205	1,828 AF
1976: 7365 du	.1534 AF	MDU	0	0 AF	7,932	1,217 AF	7,932	1,217 AF
Totals			11,461	3,751 AF	50,432	14,220 AF	56,640	16,194 AF

Table 5

## RESIDENTIAL DEMAND PROJECTIONS: FULL BUILDOUT

Jurisdiction	H2O Demand per Unit	Unit	Coastal Zone Area		Cal-Am Service Area		Mont. Pen. H2O District	
			# Units	Demand	# Units	Demand	# Units	Demand
Carmel-by-the-Sea	.2805 AF	SDU	3,000	842 AF	3,000	842 AF	3,000	842 AF
1976: 2927 du	.1534	MDU	1,125	173	1,125	173	1,125	173 AF
Del Rey Oaks	.3399	SDU	0	0	640	218	640	218 AF
1976: 577 du	.1534	MDU	0	0	250	38	250	38 AF
Monterey	.3351	SDU	300	101	5,030	1,686	5,030	1,686 AF
1976: 11,337 du	.1534	MDU	1,500	230	13,600	2,086	13,600	2,086 AF
Monterey County	.5178	SDU	11,230	5,815	26,351	13,645	44,222	22,898 AF
1976: 9208 du	.1960	MDU	468	92	3,938	772	19,786	3,878 AF
Pacific Grove	.3102	SDU	1,732	537	4,847	1,504	4,847	1,504 AF
1976: 7525 du	.1534	MDU	1,442	221	7,690	1,180	7,690	1,180 AF
Sand City	.2195	SDU	100	22	100	22	100	22 AF
1976: 100 du	.1534	MDU	895	137	895	137	895	137 AF
Seaside	.4347	SDU	0	0	3,469	1,508	4,205	1,828 AF
1976: 7365 du	.1534	MDU	0	0	7,932	1,217	7,932	1,217 AF
Totals			21,792	8,170 AF	78,867	25,626 AF	113,322	37,705 AF

Table 6

Critical Commercial Assumptions

Each jurisdiction supplied an estimate of projected commercial square footage of building for (a) year 2000, and (b) total buildout, as follows:

Carmel:	(a) and (b) commercial zoned area times 75% lot coverage times 2 stories
Del Rey Oaks:	(a) and (b) commercial zoned area times 33% lot coverage
Monterey:	(a) and (b) <u>1.</u> no private development of existing military, school or fairground property, <u>2.</u> C-0, C-1, C-3 zoning at 35% lot coverage times 2 stories, <u>3.</u> C-3 at 35% coverage times 1 story, <u>4.</u> Industrial Research at 25% coverage times <u>2</u> stories, <u>5.</u> C-2 SC at 25% coverage times 2 stories, <u>6.</u> Planned Community projects approved or submitted for review, <u>7.</u> Urban Renewal PC according to urban renewal plan at 35% coverage times 2 stories
Monterey County:	(a) commercial zone area times 25% coverage times 60%, (b) commercial zone area times 25%
Pacific Grove:	(a) existing commercial square footage times 1.25, (b) commercial area times 60% coverage times 5 stories
Sand City:	(a) existing square footage plus $\frac{1}{2}$ of undeveloped area times 50% coverage, (b) existing square footage plus 50% coverage of undeveloped commercial area
Seaside:	(a) commercial area times 33% coverage, (b) commercial area times 50% coverage times 3 stories
Airport District:	(a) and (b) master plan projection

Table 7

## COMMERCIAL WATER DEMAND PROJECTIONS: YEAR 2000

Jurisdiction	% Coverage	Coastal Zone Area		Cal-Am Service Area		Mont. Pen. H <sub>2</sub> O Mgt. Dist.	
		Bld. Sq. Ft.	H <sub>2</sub> O Demand	Bld. Sq. Ft.	H <sub>2</sub> O Demand	Bld. Sq. Ft.	H <sub>2</sub> O Demand
Carmel-by-the-Sea	75% x 2 *.0005 AF	706,652	353 AF	706,652	353 AF	706,652	353 AF
Del Rey Oaks	33% *.0005 AF	0	0	251,719	126	251,719	126 AF
Monterey	33% x 2 *.0005 AF	5,350,000	2,675	14,200,000	7,100	14,200,000	7,100 AF
Monterey County	25% *.0005 AF	1,184,396	592	1,901,000	951	1,901,000	951 AF
Pacific Grove	60% x 5 *.0005 AF	866,600	433	1,697,100	849	1,697,100	849 AF
Sand City	50% .0003 AF	2,200,000	730	2,200,000	730	2,000,000	730 AF
Seaside	33% x 5 .0005 AF	465,000	233	2,356,402	1,178	2,356,402	1,178 AF
Airport District	----- .0001	0	0	1,757,000	176	1,757,000	176 AF
Totals (comm.)		10,772,648	4,594 AF	25,069,873	11,463 AF	25,069,873	11,463 AF
Totals (resid.)			3,751 AF		14,220 AF		16,194 AF
Total Water Demand - Year 2,000			8,345 AF		25,683 AF		27,657 AF

\* estimated factor

Table 8

## COMMERCIAL WATER DEMAND PROJECTIONS: FULL BUILDOUT

Jurisdiction	% Coverage	Coastal Zone Area		Cal-Am Service Area		Mont. Pen. H <sub>2</sub> O Mgt. Dist.	
		Bldg. Sq. Ft.	H <sub>2</sub> O Demand	Bld. Sq. Ft.	H <sub>2</sub> O Demand	Bld. Sq. Ft.	H <sub>2</sub> O Demand
Carmel-by-the-Sea	75% x 2 *.0005 AF	706,652	353 AF	706,652	353 AF	706,652	353 AF
Del Rey Oaks	33% *.0005 AF	0	0	251,719	126	251,719	126 AF
Monterey	33% x 2 *.0005 AF	5,350,000	2,675	14,200,000	7,100	14,200,000	7,100 AF
Monterey County	25% *.0005 AF	1,184,396	592	3,162,442	1,581	3,162,442	1,581 AF
Pacific Grove	60% x 5 *.0005 AF	981,900	491	8,917,110	4,459	8,917,110	4,459 AF
Sand City	50% .0003 AF	3,300,000	1,060	3,300,000	1,060	3,300,000	1,060 AF
Seaside	33% x 5 .0005 AF	2,325,000	1,163	10,098,864	5,049	10,098,864	5,049 AF
Airport District	---- .0001 AF	0	0	1,757,000	176	1,757,000	176 AF
Totals (comm.)		12,847,948	6,334 AF	42,393,787	19,904 AF	42,393,787	19,904 AF
Totals (resid.)			8,170 AF		25,626 AF		37,705 AF
Total Water Demand - Full Buildout			14,504 AF		44,930 AF		57,810 AF

\* estimated factor

#### 4. Recommended Revision Work Program

The following items should be addressed to refine the demand estimates to reduce error in future updates:

- (1) Each jurisdiction should calculate actual square footage for present commercial building.
- (2) Each jurisdiction should keep a cumulative record on new residential single family dwellings and multiple dwelling units and on the building square footage of new commercial.
- (3) Cal/Am should readjust their ledger system to segregate all residential into single dwelling units and multiple dwelling units from commercial, for each jurisdiction.
- (4) The WMD should refine the single dwelling unit and multiple dwelling unit water demand per unit for each jurisdiction.

## CHAPTER IV

### MODEL ORDINANCES

#### A. OVERVIEW

This chapter outlines possible ordinances that could be used by each city and the County to assure that water demands of development remain within the available water supply. Two distinct ordinances are proposed<sup>1</sup>: (1) a Water Allocation Growth Management Ordinance, and (2) a Water Conservation Ordinance. The Water Allocation Growth Management Ordinance (presented in Section B of this chapter) would be voluntarily established growth management tool based on the availability of water to support growth. The Water Conservation Ordinance (presented in Section C) is a set of standards to reduce water consumption in new development.

Each ordinance has been drafted with the premise that the entire area of each jurisdiction should comply with the ordinance rather than just the Coastal Zone Area. Aside from the technical difficulties of establishing fair share equivalents for subareas of each jurisdiction, procedures to manage water only within the Coastal Zone would not protect the water resource. The only jurisdiction not treated accordingly is the County, since its boundaries exceed the area of the Monterey Peninsula. For the purposes of the ordinances, the unincorporated County area inside of Cal/Am shall be included.

Another major premise of the two ordinances is voluntary and mutual adoption of the ordinances by each jurisdiction. First, the ordinances are voluntary because each jurisdiction must determine how it wishes to manage growth within its available fair share of water supply. Second, the ordinances are mutually binding -- that is, all jurisdictions must adopt and adhere to the ordinances to make the system work.

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<sup>1</sup> Four additional procedures were reviewed but are not included in this report including topics of public education, formation of new water districts/mutuals, well drilling and generation of new supply. Each of these areas will be addressed in future work by the Water Management District.



## B. WATER ALLOCATION GROWTH MANAGEMENT ORDINANCE

The District's proposed Water Allocation Growth Management Ordinance is presented in figure 3 (pages 31-33). It is a model ordinance designed for adoption by each jurisdiction. It is divided into six effective components as follows:

Section 1. VOLUNTARY LIMIT ON USE OF WATER - This section establishes the maximum growth in the use of water allowed in each jurisdiction. This section envisions that controls by the local jurisdiction will be established to prevent more new development than the supply can handle. The amount of water allocated to the jurisdiction to accommodate new growth will be based on a "fair share" system established among the jurisdictions.

Section 2. METHOD OF LIMITATION - This section establishes general plan and zoning ordinance amendments on an annual basis as the mechanism for adjusting growth rate.

Section 3. MUTUALITY OF LIMITATION - This section establishes limitations on changing rates of water usage without the mutual agreement of all jurisdictions. This provision would assure each jurisdiction that its good faith effort was being followed by all other jurisdictions<sup>1</sup>.

Section 4. REPORT OF PRESENT AND PROJECTED USES - This section establishes a reporting system whereby each jurisdiction presents information on water use and growth for the preceding year. Information from this reporting system will be used by the District to refine the allocation system.

Section 5. AVAILABILITY OF REPORT - This section is an assurance to each jurisdiction that the performance of all jurisdictions will be open to review.

Section 6. GROWTH MANAGEMENT PLAN - This section embodies the premise that each jurisdiction should determine for itself the best use of water including the location of new development.

The Water Allocation Growth Management Ordinance is predicated on a "fair share" allotment of water to be determined by agreement among the jurisdictions. The allotment is necessitated by the misbalance of projected demand in excess of projected supply. Given this expected shortage situation, the

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<sup>1</sup> This section may have questionable legal feasibility in light of the doctrine established by the courts in Morrison Homes VS the City of Pleasanton. This doctrine would void any contract that surrenders properly municipal functions such as growth control. The Water Management District is seeking an opinion as to whether this doctrine would void Section 3 as drafted.

allocation procedure establishes an equitable system for sharing the amount of water that is available. If the projected supply estimate is increased through any of the sources reviewed in Chapter II, then the allocation to each jurisdiction can be increased proportionally.

No one fair share system can be established as the "best" system since each system results in more water to some jurisdictions and less water to other jurisdictions. Thus, the District has identified the 9 following systems as possible allocations:

SYSTEM 1. 1976 Population - Percentage of total supply apportioned to each jurisdiction according to 1976 population (from the Special State Census).

SYSTEM 2. 1975 Water Use - Percentage of water use within Cal/Am as of 1975.

SYSTEM 3. Projected Water Use Year 2000 - Percentage of water use projected in year 2000 as established in Chapter III of this report.

SYSTEM 4. Projected Water Use at Full Buildout - Percentage of water use projected at full buildout (zoning or General Plan) as established in Chapter III of this report.

SYSTEM 5. 1976 Population/Projected Water Use at Year 2000 - One half the percentage obtained by system 1 plus one half the percentage obtained by system 3. (This system and the next four system weight alternatives against other alternatives.)

SYSTEM 6. 1975 Water Use/Projected Water Use Year 2000 - One half the percentage from system 2, plus one half the percentage from system 3.

SYSTEM 7. 1976 Population/Projected Water Use Buildout - One half the percentage from system 1 plus one half the percentage from system 4.

SYSTEM 8. 1975 Water Use Plus Projected Water Use Buildout - One half the percentage from system 2 plus one half the percentage from system 4.

SYSTEM 9. 1976 Population/1975 Water Use - One half the percentage from system 1 plus one half the percentage from system 2.

Based on census data, Cal/Am water delivery figures and the projections made in Chapter III, each of these systems have

been converted into the share percentages presented in Table 9 (page 34). It should be noted that the District is presenting these 9 possible systems for discussion among the jurisdictions and is willing to evaluate additional systems proposed.

Assuming 1979 demand for the Cal/Am service area stabilizes at 15,000 acre feet and supply available to Cal/Am is 18,000 acre feet then unused capacity is currently 3,000 acre feet. With the development of the four proposed wells this capacity would be 7,000 acre feet. Table 10 shows the quantity of water that would be received by each jurisdiction for each of the 9 allocation schemes assuming existing delivery capacity by Cal/Am (18,000 AF). Table 11 shows the allocation assuming expanded capacity. It should be noted that these tables exclude water supply to private wells in the Carmel Valley, the area served by Seaside Water System and the balance of the county area outside of Cal/Am.

Figure 3

GROWTH MANAGEMENT WATER ALLOCATION ORDINANCE

City of \_\_\_\_\_

WHEREAS the City of \_\_\_\_\_ and all cities on the Monterey Peninsula within the boundaries of the Monterey Peninsula Water Management District\* have mutually agreed that water must be available to meet the needs of their future growth;

AND WHEREAS the County of Monterey, and the District, have joined in this agreement;

AND WHEREAS both cities and County agree that water within the boundaries of the aforesaid District must be available to meet needs within the Coastal Zone as defined in the Coastal Zone Act and particularly in Government Public Resources Code § 30254;

AND WHEREAS this agreement, this ordinance and like ordinances of the County and the cities within the District are necessary for the completion of the Local Coastal Plan and for the acceptance of that Plan by the Regional State Coastal Commission as contemplated by the Coastal Zone Act;

Now THEREFORE BE IT ORDAINED that:

section 1 Voluntary Limit on Use of Water

The City of \_\_\_\_\_ (hereinafter referred to as "City") shall voluntarily limit the use of water within its boundaries. This limit shall be \_\_\_\_\_ acre feet per annum.

section 2 Method of Limitation

The City shall, upon the enactment of this ordinance, and annually thereafter, review its General Plan and zoning to determine

- (a) present annual use
- (b) projected annual use under its present General Plan and zoning for the next 20 years.

If it appears that reasonable build-out within the next 20 years within the framework of the General Plan and zoning may create a demand for water that will exceed the City's voluntary limit, the City shall amend its General Plan and zoning ordinances so that water demand shall not exceed the voluntary limit within the next 20 years.

\*hereinafter referred to as "District"

Figure 3 (Cont.)

section 3 Mutuality of Limitation

This City is voluntarily imposing upon itself this limitation in return for the consideration of mutually agreed upon limitations by the following cities and the County within the boundaries of the aforesaid District:

Acre feet per year

City of Carmel  
City of Monterey  
City of Pacific Grove  
City of Seaside  
County of Monterey  
City of Sand City  
City of Del Rey Oaks

The limit voluntarily imposed upon each may be amended from time to time to mutual agreement of all.

section 4 Report of Present and Projected Use

Each year on the first day of October the City shall report to the District the actual use of water within its boundaries for the past fiscal year from July first to June thirtieth. The City shall, at the same time, report its projected per annum use over the next twenty years based upon buildout within the framework of its General Plan and zoning by methods agreed upon by the County, the District and the cities within the boundaries of the District. This method is appended as Exhibit A.

This method, and the voluntary limit of each jurisdiction, may be changed, amended or refined from time to time by agreement of the aforementioned parties.

section 5 Availability of Report

The City shall make available a copy of its report to other cities and the public through the District in return for the reports of the County and the Cities within the District.

section 6 Growth Management Plan

The City shall enact a Growth Management Plan as part of its General Plan to direct growth within its boundaries to make the best use of water remaining to it within its voluntary limitation.

Figure 3 (Cont.)

The best use that the City shall define for itself shall take cognizance of the need to set aside water for the uses described in the Coastal Act and particularly Public Resources Code § 30254.

Table 9

## PERCENTAGE ALLOCATION OF WATER AMONG JURISDICTIONS

Jurisdiction	1. 1976 Population	2. 1975 Water Use	3. Projected Water Use Year 2000	4. Projected Water Use Buildout	5. 1976 Population/Use Year 2000	6. 1975 Water Use/Use Year 2000	7. 1976 Population/Use Buildout	8. 1975 Water Use/Use Buildout	9. 1976 Population/1975 Water Use
Carmel	5.2	6.0	4.9	3.1	5.1	5.5	4.1	4.6	5.6
Del Rey Oaks	1.8	1.5	1.5	0.9	1.7	1.5	1.3	1.2	1.7
Monterey City	30.2	33.4	40.1	24.2	35.2	36.8	27.2	28.8	31.8
Monterey County	22.3	31.2	22.5	35.6	22.4	26.9	29.0	33.4	26.8
Pacific Grove	17.8	13.2	12.0	16.0	15.9	12.6	16.9	14.4	15.5
Sand City	0.2	0.4	3.0	2.7	1.6	1.7	1.5	1.6	0.3
Seaside	22.4	14.3	15.2	17.3	18.8	14.8	19.9	15.8	18.3

Table 10

WATER ALLOCATION AMONG JURISDICTIONS ASSUMING  
EXISTING CAPACITY - 18,000 AF  
(Acre Feet/Yr)

Jurisdiction	1. 1976 Population	2. 1975 Water Use	3. Projected Water Use Year 2000	4. Projected Water Use Buildout	5. 1976 Population/Use Year 2000	6. 1975 Water Use/Use Year 2000	7. 1976 Population/Use Buildout	8. 1975 Water Use/Use Buildout	9. 1976 Population/1975 Water Use	Actual 1975 Use	Projected 2000 Use
Carmel	936	1080	882	558	918	990	738	828	1008	896	1257
Del Rey Oaks	324	270	270	162	306	270	234	216	306	217	382
Monterey City	5436	6012	7218	4356	6336	6624	4896	5184	5724	5002	10296
Monterey County	4014	5616	4050	6408	4032	4842	5220	6012	4824	4668	6271
Pacific Grove	3204	2376	2160	2880	2862	2268	3042	2592	2790	1979	3077
Sand City	36	72	540	486	288	306	270	288	54	56	813
Seaside	4032	2574	2736	3114	3384	2664	3582	2844	3294	2145	3903
Total										14959	26175



Table 11

WATER ALLOCATION AMONG JURISDICTIONS ASSUMING  
EXPANDED CAPACITY - 22,000  
(Acre Feet/Yr)

Jurisdiction	1. 1976 Population	2. 1975 Water Use	3. Projected Water Use Year 2000	4. Projected Use Buildout	5. 1976 Population/ Use Year 2000	6. 1975 Water Use/ Use Year 2000	7. 1976 Population/ Use Buildout	8. 1975 Water Use/ Use Buildout	9. 1976 Population/ 1975 Water Use	Actual 1975 Use	Projected 2000 Use
Carmel	1144	1320	1078	682	1120	1210	902	1012	1232	896	1257
Del Rey Oaks	396	330	330	198	374	330	286	264	374	217	382
Monterey City	6644	7348	8822	5324	7740	8096	5984	6336	6996	5002	10296
Monterey County	4906	6864	4050	7832	4928	5918	6380	7348	5896	4668	6271
Pacific Grove	3916	2904	2640	3520	3498	2772	3718	3168	3410	1979	3077
Sand City	44	88	660	594	3520	374	330	352	66	56	813
Seaside	4928	3146	3344	3806	4136	3256	4378	3476	4026	2145	3903
Total										14959	26175

### C. WATER CONSERVATION ORDINANCE

The District's proposed Water Conservation Ordinance is presented in figure 4. The Conservation Ordinance proposed incorporates many of the features already adopted by each of the jurisdictions in 1976 as a result of the distribution problems experienced at that time. However, subsequent to adoption of the 1976 Ordinance individual jurisdictions have modified the original conservation standards. The ordinance proposed for adoption in this report would re-establish uniform water conservation standards for all jurisdictions within the Water Management District.

In addition, the proposed ordinance would establish new standards for uses not covered by the previous ordinances. New standards have been proposed for faucets, hot water piping, fountains, car washes, showers, landscaping, and residential coverage where new construction or repairs requiring a permit are proposed. Existing uses are encouraged to install water saving devices, retrofit existing fixtures and develop gray water systems. A monitoring system is proposed to generate monthly reports to the District concerning development activity in each jurisdiction. Based on the experiences of other Districts in implementing similar standards future reduction in demand could be as high as 100% if the measures were strictly enforced.

FIGURE 4  
WATER CONSERVATION ORDINANCE

City of \_\_\_\_\_

WHEREAS the City of \_\_\_\_\_ and all cities on the Monterey Peninsula within the boundaries of the Monterey Peninsula Water Management District\* have mutually agreed that water must be available to meet the needs of their future growth;

AND WHEREAS the County of Monterey, and the District, have joined in this agreement;

AND WHEREAS both cities and County agree that water within the boundaries of the aforesaid District must be available to meet needs within the Coastal Zone as defined in the Coastal Zone Act and particularly in Government Public Resources Code 30254;

AND WHEREAS this agreement, this ordinance and like ordinances of the County and the cities within the District are necessary for the completion of the Local Coastal Plan and for the acceptance of that Plan by the Regional State Coastal Commission as contemplated by the Coastal Zone Act;

NOW THEREFORE BE IT ORDAINED that: Section 1 Standards for New Development

(a) In all new construction and in all repair or replacement of fixtures or trim requiring a permit, only fixtures and trim not exceeding the following flow rates and/or water usage shall be installed. These rates are based on a static pressure at the fixture of 40 to 50 pounds per square inch (psi).

Water Closets, Tank type	3.5 gallons per flush
Shower Heads	3.0 gallons per minute (GPM)
Lavatory, sink faucets	4.0 gallons per minute (GPM)

(b) In all new construction and in all repair and or replacement of fixtures the following devices shall be installed.

Lavatory, sink faucets	aerators
Hot water piping	insulation
public drinking fountains & faucets of rest rooms intended for public use	metered or self closing faucets
car wash	recycling system
continuous flow equipment (any water connected device requiring a continuous flow of 5 gpm or more)	recycling system
Hotel, Commercial & Institutional shower heads	Time metered valve limiting maximum continuous duration of flow to five (5) minutes.

(c) In all new construction requiring Environmental Review, Use Permit Variance Permit or subdivision map landscaping plans designating water saving features shall be submitted to and approved by the \_\_\_\_\_ (equivalent Design Review Board). All new parks, median strips, landscaped areas surrounding condominiums, townhouses, apartments, commercial complexes, institutions and industrial parks shall have a sprinkler system, where appropriate, operated to minimize water waste.

\* hereinafter referred to as "District"

(d) For all new residential subdivisions maximum impervious surface shall be less than 40% including streets, houses, driveways and other covered areas.

(e) The use of ornamental fountains, permanent wading or swimming pool or other structure making similar use of water, shall be prohibited except when equipped with a recirculating system.

(f) The operation of any water-cooled comfort air-conditioning equipment which does not have water conservation equipment shall be prohibited.

## Section 2 Standards for Existing Uses

(a) Existing uses shall be encouraged not to permit any water to run to waste in any gutter or otherwise.

(b) Existing uses shall be encouraged to install devices to reduce water usage as specified in section 1 herein.

(c) Existing uses shall be encouraged to install devices in existing fixtures to reduce water usage.

(d) Existing uses shall be encouraged to develop gray water systems including cisterns to provide a non-potable supplement for outside watering.

## Section 3 Monthly Report

Monthly, the Building Inspector shall file a report with the Monterey Peninsula Water Management District detailing new permits issued in the preceding month and estimating new water demand based on guidelines established by the District. In addition, said report shall detail permits finalized during the preceding month and permits outstanding but not finalized. The compilation of all monthly reports shall be available to each jurisdiction.

## CHAPTER V

### CONCLUSIONS

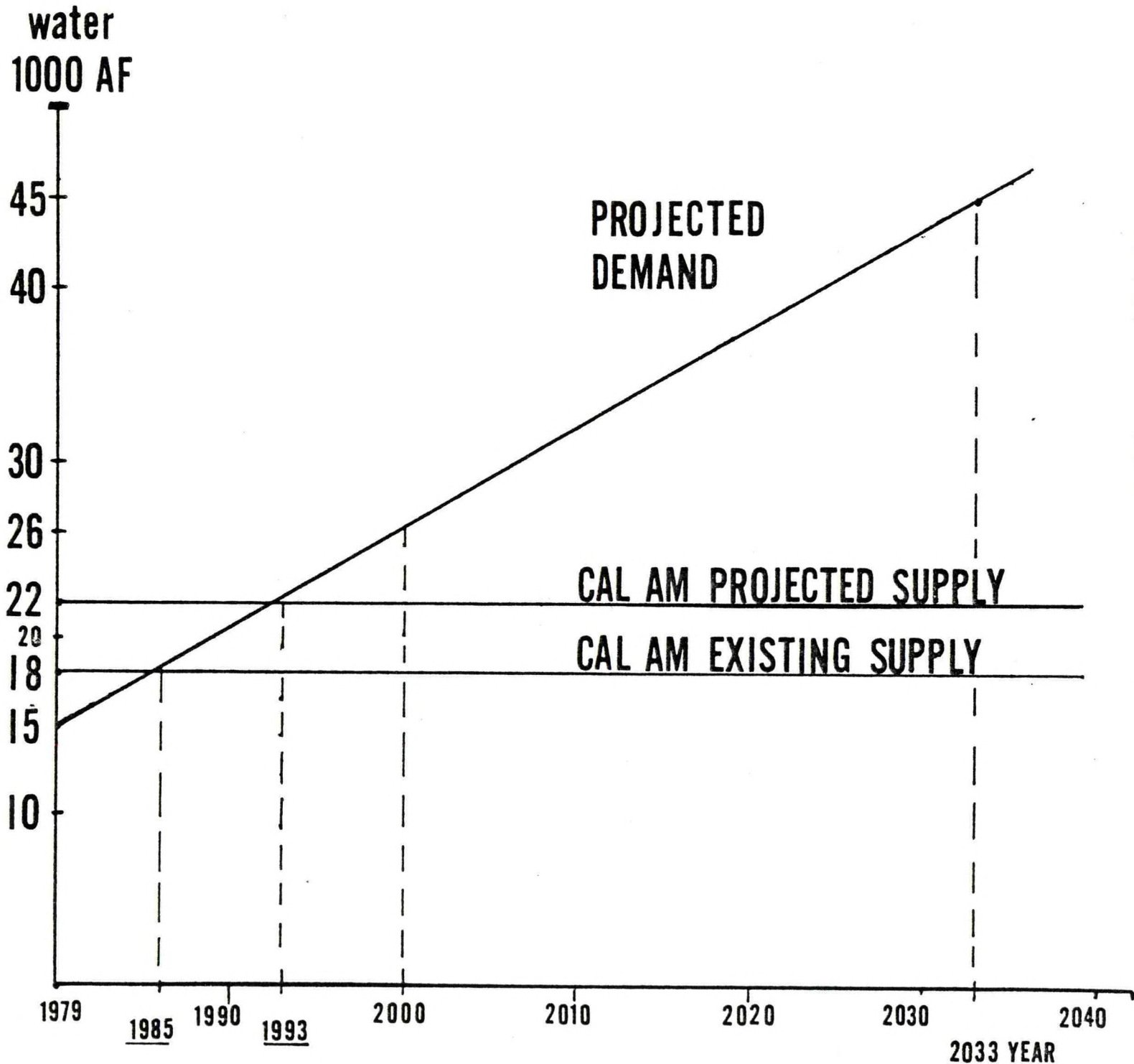
This report establishes that the maximum prudent amount of water that can be delivered by Cal/Am's existing facilities in a normal year is 18,000 acre feet per year. In addition, wells in Carmel Valley presently consume approximately 2,000 acre feet per year and the Seaside Municipal Water System consumes approximately 500 acre feet. Cal/Am has begun the development process for four new wells that would bring Cal/Am's water delivery capacity up to 22,000 acre feet per year. Additional water supply may be available from new surface storage, importation, or reclaimed runoff, however, the feasibility of these sources has yet to be determined.

The 1979 water delivery by Cal/Am is estimated at 15,000 acre feet per year. Cal/Am water demand is projected to increase to 25,683 by the year 2000 and to 44,930 at full buildout according to zoning, assuming all expected growth will be serviced and existing consumption behavior continues. These projections indicate a growth rate in water demand of approximately 3.0 percent per year in the Cal/Am area. It should be noted that this water demand growth rate is independent of population growth rates since both residential and commercial demand has been projected.

Given present Cal/Am consumption at 15,000 AF, future available supply at 22,000 AF and a constant growth rate of 3.0% per year, demand will equal supply in 14 years or in 1993. Figure 5 (page 41) illustrates these projected interrelationships between supply and demand for the Cal/Am service area. This water equilibrium point could be extended in time if new development is slowed or if water use per capita drops. Model Ordinances are proposed in this report that would accomplish these objectives.

# FIGURE 5

## SUPPLY AND DEMAND EQUILIBRIUM



## CHAPTER VI

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## APPENDIX A

### Uncertainties in Water Supply Data

Limited knowledge of the physical properties of the Seaside and Carmel Valley aquifers is one source of uncertainty in estimates of the amount of water available in the Water Management District. Another source of uncertainty is the very large variance in local precipitation and streamflow, which makes it impossible to estimate flow parameters with a high level of confidence from the available hydrological data.

Rainfall records on the Monterey Peninsula extend back at least as far as 1887. However, early records cover only a few sites, and because there is significant spatial variation in the distribution of rainfall from year to year the rainfall at one or a few sites is not an accurate predictor of streamflow. Flow in the Carmel River at the site of San Clemente dam has been measured since the early part of the century, but records up to 1940 were lost in a fire. The Corps of Engineers estimated monthly flows for 1939 and 1940 to develop a 1939-69 record of estimated natural flow at the San Clemente site, which they are using in their current study of a new, large dam. Parameters of the annual flows from this record are given in Table 1, together with annual flows parameters for the geographically adjacent and hydrologically similar Arroyo Seco River. The 1939-69 mean for the Arroyo Seco is less than the 1902-68 mean, so the Corps' estimate of the Carmel River mean is probably low.

The variability of the streamflow is illustrated by Figure 1, which shows the flow in the Arroyo Seco near Soledad for the water years 1902-77. Perhaps the greatest message from the figure is the extent to which the recent drought does not stand out; it is clearly the most severe drought of record, but it also seems part of the "normal" variation.

Figure 2 is a frequency distribution of flows in the Arroyo Seco for 1902-77, which shows that in most years the flow is less than the mean. This tendency is greater in the Carmel than in the Arroyo Seco, and makes the mean a somewhat misleading measure of central tendency. The median, which is not influenced by extreme values, is perhaps a better measure of the "average" streamflow for most purposes.

Because the record of flow in the Arroyo Seco is much longer, a number of studies of the Carmel River have used regression against the Arroyo Seco flow to estimate Carmel River flow

back to 1902. Figure 3 is a plot of the Corp's estimated flow at San Clemente against the measure flow in the Arroyo Seco, together with a least squares regression line. The correlation coefficient is 0.98; however, the Y intercept (the predicted flow in the Carmel with zero flow in the Arroyo Seco) is obvious nonsense. A separate regression of the 14 years in this period when flow in the Arroyo Seco was less than 60,000 acre feet is shown in Figure 4, which is a magnification of the lower left corner of Figure 3. The regression line is almost the same, with the same nonsensical Y intercept, which shows that extremely low flows in the Carmel cannot be estimated by simple regression from flows in the Arroyo Seco, despite the very high correlation coefficient. The points shown for 1972, 76 and 77 give the measured flow at Robles del Rio, below the dams, plus diversions from San Clemente. They were not used in fitting the regression line.

An attribute of the flow in the Arroyo Seco that complicates estimating the probabilities of low flows is a tendency for persistence in low flows; that is, dry years tend to be followed by dry years. Presumably, flow in the Carmel River shows the same tendency. If one looks at the flow in the 31 years from 1902 to 1978 following years with flow in the Arroyo Seco of 100 cfs or less (the USGS data is given in these units; the criteria of 100 was picked for convenience only), one finds that 15 of the 31 years also had flows of 100 cfs or less, although the median flow for the entire record is about 125 cfs. This tendency of a dry year to be followed by another dry year is important, because the water supply problem in the Monterey area comes from series of dry years. The tendency also makes it much more difficult to estimate the probability of droughts of a given severity and more than one year duration. For example, regression against the Arroyo Seco and a log probability plot of the Corp's estimated flow at San Clemente both predict that the natural flow at San Clemente will be greater than 14,500 or 15,000 acre feet in nine years out of ten. Were it not for persistence one could say that the "hundred year two-year drought" would be two years with flows less than 15,000 acre feet, but because of persistence, this underestimates its severity by an unknown amount. However, this is exactly the kind of estimate that it is most important to make.

TABLE 1

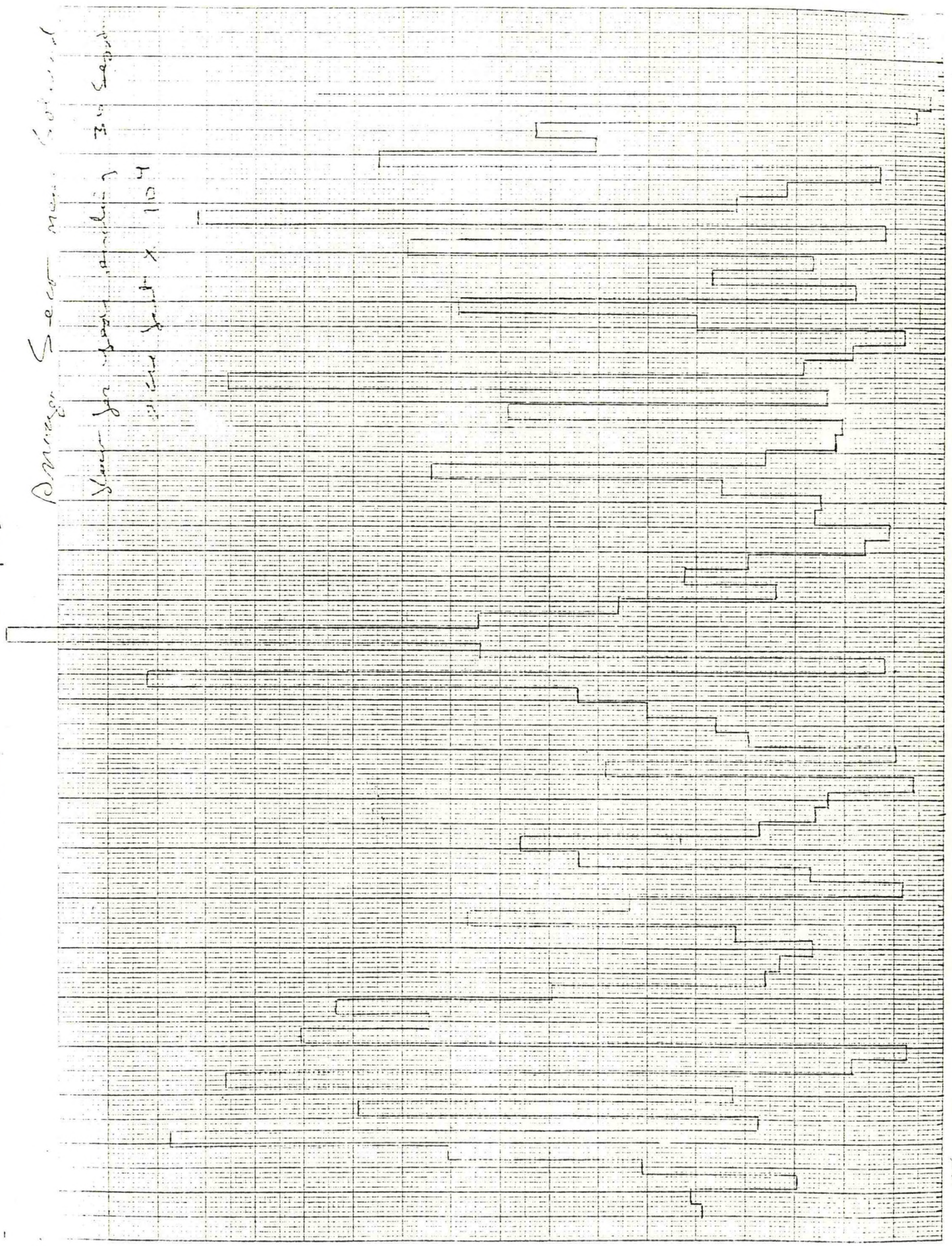
	Median	Mean	Std. Dev.	Skewness	C.V.
Arroyo Seco, 1902-1968	88,325	115,474	87,601	0.1068	0.76
Arroyo Seco, 1939-1969	78,966	110,500	93,756	----	0.84
Carmel, 1939-1969	41,177	61,650	50,590	1.288	0.85

Fish

46 1512

INCH TO THE CENTIMETER  
KLOPFEL & ENGER CO. MADE IN U.S.A.

Damage Sec. man. Ground  
Year for water sampling 30 Sept  
Water level x 104

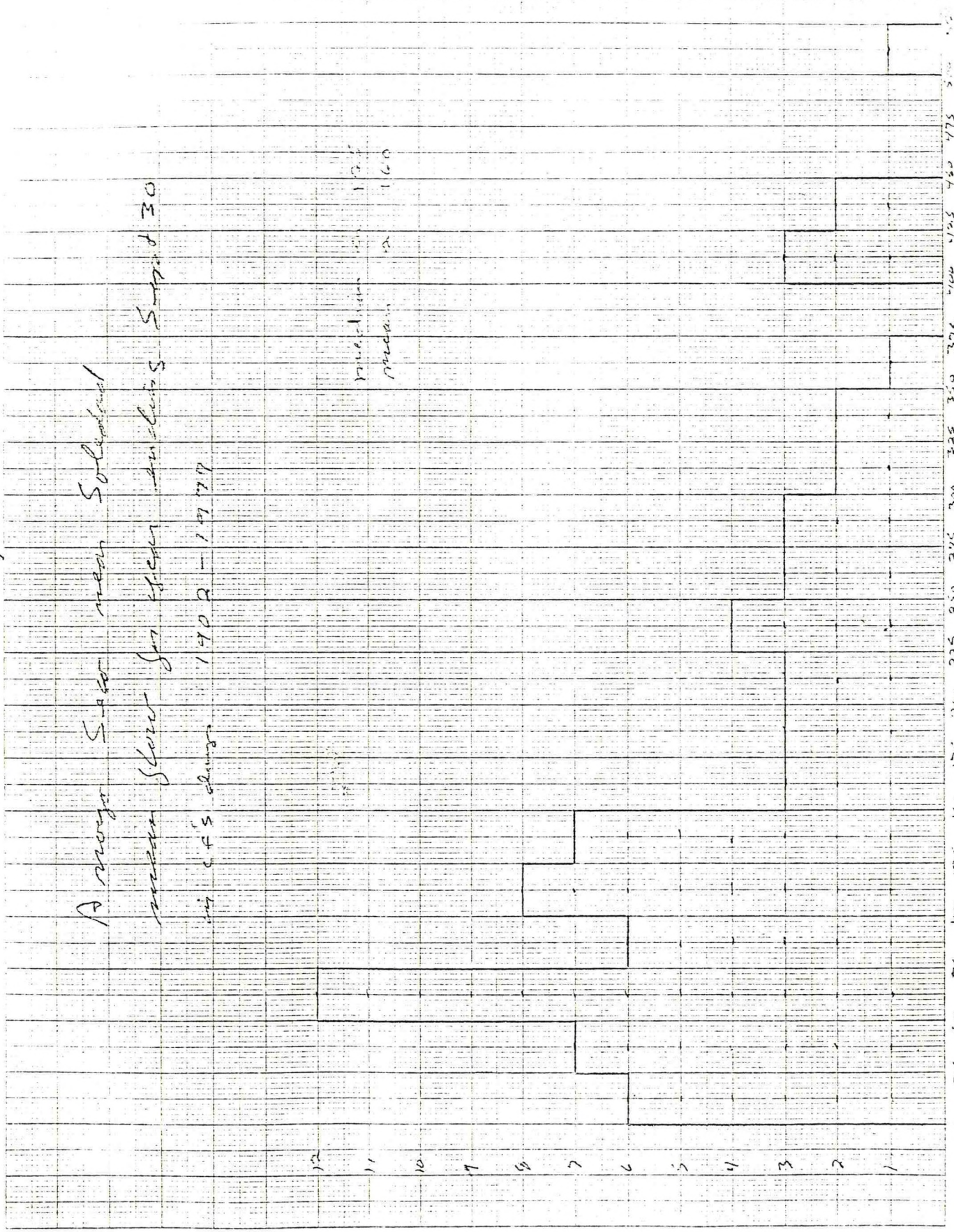


A-3

1905 1910 1915 1920 25 1930 1935 1940 1945 1950 1955 1960 1965 1970 1975

Fig 2

Average Snow mean Solidwood  
 mean Snow for Area including Supt. d 30  
 in CFS change 1902 - 1977



mean 100  
 mean 160

mean Snow CFS change Fig 3

# Fig 3

Cannal Average Station

1937 - 64  
1821 x 10<sup>4</sup>

$$Y = 3,117.1 + 0.5057X$$

$$r = 0.98$$

30

28

26

24

22

20

A-5<sup>1/2</sup>

18

16

14

12

10

8

6

4

2

0

310

32

34

36

38

40

42

44

46

48

50

52

54

56

58

60

62

64

66

68

70

72

74

Average Station



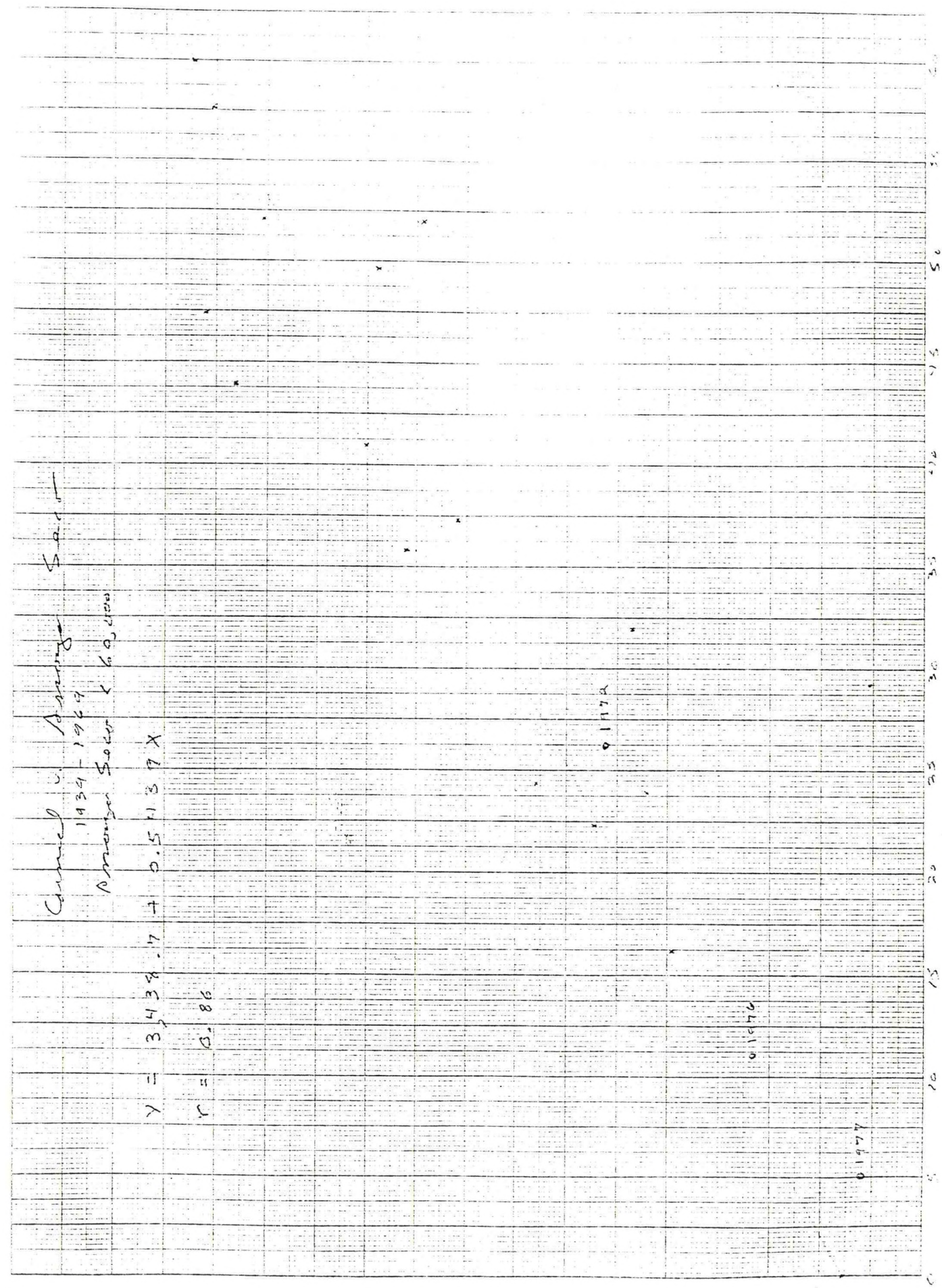
← Y →

Fig 4

Control v. Average  
1934-1964  
Average Factor  $\times 10^3$

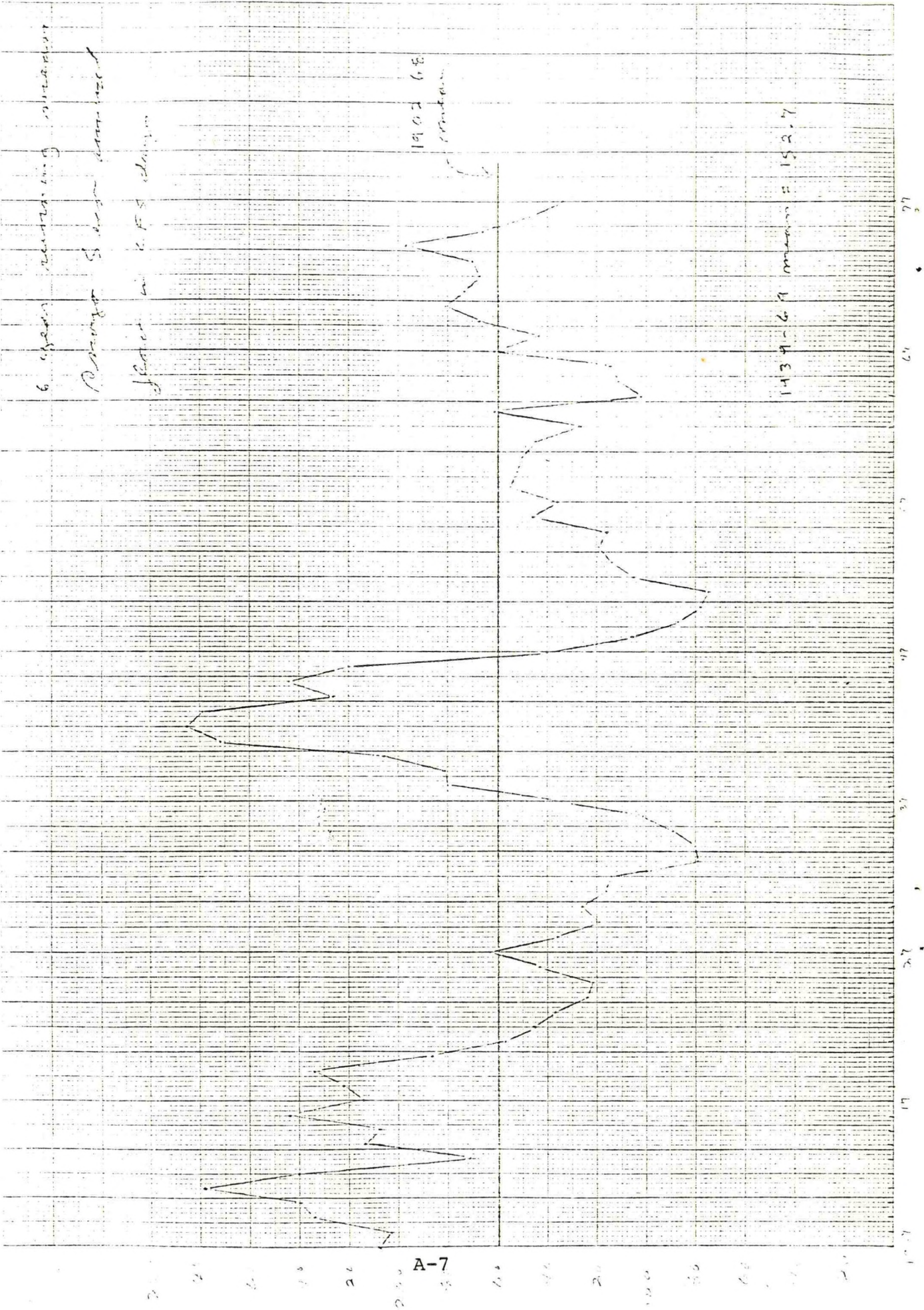
$$Y = 3.438 \cdot X + 0.5137 X$$

$$r = 0.86$$



10<sup>3</sup> X Average Factor

Fig 5



## APPENDIX B

### Catching the Rainfall in the Open Water Shed of the Monterey Peninsula

By W. C. Woodworth, December 1978

THE PROBLEM: Convincing people during the rainy season of the need for water conservation is somewhat like carrying coals to Newcastle -- the interest just isn't there. Yet, there is no better time to begin worrying about and preparing for the next dry spell or drought than when countless gallons of precious fresh water are cascading down peninsula streets and sewers into the Pacific Ocean or Monterey Bay. The irretrievable loss of each acre foot, each gallon, each cupful will not be felt this month or this season -- perhaps not even this year. But the recent experience of an extended drought should have alerted Monterey Peninsulans (and residents of other California communities) to the fragile balance between our rainfall and our water demands. Our problem -- one that relates to each and every one of us -- is: "How do we outfox Mother Nature?"

THE OBJECTIVE: Water conservation goes beyond the purely reactionary expedient of rationing water in times of drought. It requires the husbanding of rainfall during periods of abundance. It requires us to exercise a little foresight to capture and retain our seasonal runoff. It is probably safe to say that our public water facilities are sufficient to sustain life under even the most severe conditions predictable. It is the quality of life which is jeopardized during an extended drought -- our gardens, our landscapes, our playing fields, golf courses, campuses, public parks and the wildlife of which Peninsulans are so justly proud. The objective, then, is to plan and design facilities and institute measures to catch and store runoff for distribution as non-potable water during the dry seasons and periods of drought.

BACKGROUND: The climate in this part of California is essentially a "semi-desert" type with a rain regime which is basically six months wet and six months dry. Unlike northern and eastern California, we cannot rely on delayed runoff from snow melt. Nearly 90% of the rain in our urban and semi-urban areas flows into the ocean or bay within a few hours after falling. The estimated seasonal runoff in these areas has been computed (in acre feet) as follows:



<u>Community</u>	(About Normal)		
	<u>12" Rainfall</u>	<u>18" Rainfall</u>	<u>24" Rainfall</u>
Seaside/Del Rey Oaks	2,000	3,000	4,000
Monterey	6,200	9,300	12,400
Pacific Grove	1,800	2,700	3,600
Del Monte Forest	5,300	7,950	10,600
Carmel	<u>1,300</u>	<u>1,950</u>	<u>2,600</u>
Totals (Acre Feet)	16,610	24,900*	35,210

\*NOTE: Normal projected deliverable potable water = about 22,000 acre feet.

The mid and late summer dry season is the period of heaviest demand -- largely for outdoor use which does not require potable water.

Existing building gutters and storm sewers are not designed to collect water but serve merely as conduits to channel runoff to the bay or ocean. Natural drainage courses frequently cross community boundaries in their gravitational route to the sea.

#### RECOMMENDED PROCEDURES:

Residential and Commercial Participation. Owners of residential and commercial properties can contribute to water collection and storage through the development of tanks and ponds on their premises with the goal of providing 50% of required non-potable water during drought conditions. Municipal planners should encourage or require the development of neighborhood water collection centers.

Municipal Participation. Municipal land use planning should include the design or modification of storm sewers as a basic supply system for non-potable water. Such a system may require the construction of small reservoirs or holding ponds. New buildings and paved parking areas should be evaluated prior to construction to assure that methods are incorporated to channel runoff into municipal water handling and storage systems. Ponds may be incorporated into existing green belt areas which will, in addition to their functional purpose, enhance the environment. Underground storage tanks located on sufficiently high terrain to allow gravity distribution could be incorporated with no long term impairment to the environment. The minimizing or elimination of pumping (through gravity distribution) is in agreement with sound energy conservation -- a growing national problem. Municipal goals should be the accumulation and storage of a six-month supply of water by the end of the wet season (about 30 April).

Coastal Planning Considerations. Coastal land planning should state that the lowest water traps and storage areas should be within the last 100 feet before ocean outfall. Other storage areas should be developed upstream to assure controlled stream flow and flushing. Resulting ponds will provide the attractive side benefit of possible development as small stream fishing areas. In assuring adequate water supply for given coastal developments within a Water District, it is important that technical advisory service be made available to local agencies and planners. The Water District should retain a technical specialist or consultant to provide such a service.

THE FUTURE: Beginning now, a long term committment to the principles of water conservation (at a miniscule cost in comparison to most civic programs) will insure that the natural beauty of the Monterey Peninsula will continue to attract tourists throughout each year. Such a committment will assure that our beautiful area will be largely unaffected by whims of climate and the Monterey Peninsula will remain the envy of other communities who lack the foresight to guarantee their quality of life.

## APPENDIX C

### Comments Received from Reviewing Agencies

With the exception of the Cities of Carmel and Sand City, letters were received from each jurisdiction within the District. These letters are attached in the following order along with Summary Responses by the District:

1. Del Rey Oaks
2. Monterey City
3. Monterey County
4. Pacific Grove
5. Seaside
6. Summary responses by the District



# CITY OF DEL REY OAKS

650 CANYON DEL REY ROAD • DEL REY OAKS, CALIFORNIA 93940

OFFICE OF Mayor

TELEPHONE (408) 394-8511

March 1, 1979

Mr. Wm. Gianelli, Chairman  
Monterey Peninsula Water  
Management District  
23845 Holman Highway  
Carmel, California

Subject: Comments on Draft Report to the  
Coastal Commission Re: Available  
Water Supply and Demand

Dear Mr. Gianelli:

The Council of the City of Del Rey Oaks reviewed the "Draft Report to the Coastal Commission By Monterey Peninsula Water Management District" at its regular meeting held on February 27, 1979.

The Council agreed that the concept of sharing is a good one but that the sharing should be equitable.

Concern was expressed that modest growth within the City was not taken into account as present usage is projected to the year 2000. We have, at present, a new commercial development (Tanaka's Nursery) that relies on water usage to survive. There is also potential for development of some 50+ units which when constructed will cause a significant increase in water consumption for our City.

Motion was made, seconded and carried "That a letter be sent objecting to the lack of provision for modest growth in the existing areas of our City that are presently undeveloped".

Very truly yours,

  
Charles W. Benson  
Mayor

CWB:jad

## CITY OF MONTEREY

To: City Manager  
From: Public Works Director  
Date: March 20, 1979  
Subject:

### COMMENTS ON THE DRAFT REPORT PREPARED BY MONTEREY PENINSULA WATER MANAGEMENT DISTRICT RE AVAILABLE WATER SUPPLY IN DEMAND

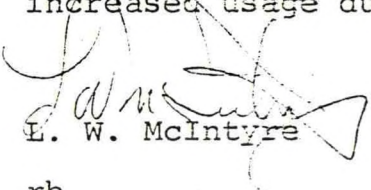
The report does a commendable job in summarizing what has happened and how we have arrived at today's condition with respect to water supply and availability in the California-American service area.

Attempts were made to forecast water demand by each of the jurisdictions in the California-American service area. I am sure that it is possible to get as many different answers as you have people compiling data and, therefore, I look at the figures as an indication rather than as an absolute value.

It would appear that many of the figures were derived by assuming full buildout under current zoning and then for the year 2000 backing off to some lesser amount. I do not feel that full buildout would occur within the time frame indicated nor do I feel that the year 2000 will see the numbers of units developed that are shown in the report. What the report does tell me is that there will come a time when the demand will exceed the supply. I doubt if it would be in 1993 and I don't honestly know if it would occur in 2003 or 2013 either.

One of the major problems is that the supply and demand is based upon California-American's existing service area. What happens to all of the land on the Peninsula and within the boundary of the Water Management District that is not within California-American's service area?

As a background for some of my comments above, Monterey's historic growth rate has run about 7/10 of 1% per year. The residential demand projections would indicate that by the year 2000 water demand would more than double. I find this hard to reconcile. I think that the main feature is that new sources of water should be developed or new methods to contain water that flows on the Peninsula but is lost to the ocean, and that a very accurate check, perhaps even semi-annually, should be made on increased usage due to new development within the service area.

  
E. W. McIntyre

rb

MONTEREY COUNTY'S RESPONSE TO WMD WATER ALLOCATION REPORT:  
PRESENTED AT MEETING OF 3/13/79

The Monterey County Board of Supervisors commends the Monterey Peninsula Water Management District for its report to the California Coastal Commission on the Peninsula water supplies and suggested allocation ordinance. Monterey County is astutely aware of the increasing demands on the entire groundwater supply system. The County strongly urges this District to take all steps necessary to assure that a sound water resource management program is quickly implemented.

In reviewing your draft report the Board of Supervisors has asked for comments from our Technical Advisory ad hoc Committee, consisting of members of Planning, Flood Control, Building Inspection, Agricultural Commissioner, Agricultural Extension, Environmental Health, and Public Works Department. Their response, concurred with by the Board, is as follows:

1. The District should examine the impact by all users of the Carmel Valley groundwater basin. Your report fails to account for the impact of private and public systems using the Valley groundwater other than Cal Am. Within the Cal Am service boundaries there are 11 other public water systems and 297 non-Cal Am wells. It is estimated that the present use of these systems exceeds the PUC specified amount for these systems by approximately 1000 acre-feet per year.
2. The District should cooperate with Monterey County in helping derive a water resource capability plan that will implement the County's Growth Management Policy. Revisions should be updated every two years.
3. The County recommends that the District revise its methodology for calculating demand for commercial usage. You seem to have failed to account for golf course and other commercial usage.
4. Your figures of acre-feet demand of various jurisdictions are inaccurate in the conversion of gallons to acre-feet (page 8).
5. Your figures for single family dwelling water demand in the unincorporated areas do not accurately reflect the actual demand. Your staff has been notified and agrees to a revision on page 18. However, an error in method appears on the graph on page 18.
6. Your point, on page 10, that wastewater can be converted to potable drinking water with existing technology is false. Public Health problems have not been resolved.
7. The proposed water conservation ordinance may limit new building and may cause increased workload for both the Planning and Building Inspection Departments.
8. Recommendations for further data collection will impact on County staff and available County finances. Additional revenue to offset such costs should be addressed.

9. The County urges your water allocation formulas to provide for contingency water storage for crises such as large fires. We urge the District to explore using on site cisterns for trapping rainwater or storage tanks for reclamation water that has received approved treatment.
10. The report should include estimates of additional fresh supply capability by the shifting golf course irrigation from potable water to treated effluent.

Thank you for this opportunity to express our concerns. We hope you will address the points raised. The County looks forward to working with you to protect our vital water system and the environment it supports. If you have any questions or want to discuss these matters further, Mr. Walter Wong, Chairman of the ad hoc Technical Advisory Committee, is available.

Thank you,

A handwritten signature in black ink, appearing to read "Sam Farr", written in a cursive style.

Sam Farr, Chairman  
Monterey County Board of Supervisors



CITY COUNCIL

FLORUS C. WILLIAMS  
MAYOR  
JAMES R. HUGHES, D.D.S.  
GILBERT D. PRESTON, JR.  
MORRIS G. FISHER  
MADELYN A. SLOAN  
MARTIN LARKIN  
ROBERT A. QUINN



GARY W. BALES  
CITY MANAGER  
WILLIAM S. PITT  
DIRECTOR OF FINANCE  
CITY CLERK AND TREASURER  
THEODORE G. MORRIS  
CITY ATTORNEY

CITY OF PACIFIC GROVE

300 FOREST AVENUE  
PACIFIC GROVE, CALIFORNIA 93950  
TELEPHONE (408) 375-9861

March 9, 1979

Mr. William Gianelli  
Chairman, MPWMD  
P. O. Box 85  
Monterey, CA 93940

Dear Mr. Gianelli:

The Pacific Grove City Council in its meeting of March 7th reviewed the draft report regarding available water supply and demand. The City Council asked me to share their comments with you and members of the Water Management District.

The Councilmembers did agree there was a water problem which required a cooperative effort to resolve. The Council indicated they did agree in concept to some form of formula designed to provide a fair share allocation of available water resources. However, they did feel it would be more productive if the Water Management District would select an appropriate formula for water sharing and then submit this to the concerned agencies for their review and comment. The Council felt the Water Management District with its area-wide perspective and non-affiliation with any one jurisdiction would be in a better position to study the problem and to recommend an appropriate formula.

On other features of the report, the Council did indicate they would not be in favor of any system which would require extensive reporting by the cities to the Water Management District. The feeling expressed was that this information is available from the water company, and any reporting system should be geared to obtaining the information from Cal-Am. This concept is especially important in view of Proposition 13 and the limited staff and financial resources of local jurisdictions.

The Council also felt the proposed model ordinances were vague and would require substantial refinement. They were concerned about the requirement of an annual update of zoning and the general plan to project water demand, and they were also concerned about the requirement for a Growth Management Plan. They felt that once an allocation formula is developed, the method of implementation should be left to the individual jurisdictions.

While the utilization of existing water resources is important, the Council expressed the position that the primary objective of the District should be the long-range solution to the water supply problem rather than growth management.

Mr. William Gianelli  
Chairman, MPWMD  
Page 2  
March 9, 1979

The City Council did appoint a committee of Councilmembers Sloan and Fisher to work with City staff and the Water Management District in any further work on this report. We will certainly be available to assist in any way possible, and we do want to indicate our full cooperation to the Water Management District on this very difficult problem. Please keep us advised as to how we may help.

Sincerely yours,

  
FLORUS C. WILLIAMS  
Mayor

FCW/bjv

March 12, 1979

Monterey Peninsula Water  
Management District  
P. O. Box 85  
Monterey, CA 93940

Subject: Comments on Draft Report to the Coastal  
Commission re Water Supply and Demand


Gentlepersons:

Pursuant to your letter dated February 13, 1979, please be advised that the Seaside City Council and staff have reviewed the above referenced draft document. The City Council recognizes the complexities involved in estimating water supply and demand, given the existing data. Additionally, the Council recognizes the many uncertainties and inherent problems with certain of the data contained within this document. Please be advised, however, that the City Council, at their regular meeting of March 1, 1979, took the following action:

The City of Seaside agrees in concept to the proposed growth management water allocation ordinance and will work cooperatively with the District to establish a fair share allocation system for further review by the Council.

Please be assured that the City expects to be involved in all aspects of the development and negotiation process regarding an equitable distribution of available water supply. Should you have any comments or questions, please feel free to contact me at your convenience.

Sincerely,



STANLEY H. HALL  
City Manager

SHH/ae/f

cc: City Council  
Public Works Director  
Community Development Director

## 6. SUMMARY RESPONSE BY THE DISTRICT

Regarding Del Rey Oaks Comments - The Proposed Water Allocation Growth Management Ordinance would establish some fair share system based on agreement between all jurisdictions. Nine systems were examined as alternatives, each of which allow for some additional growth in each community on the Peninsula.

### Regarding City of Monterey's Comments -

3rd paragraph - The reports time estimate of 1993 water equilibrium is based on available data and will be revised as this data is refined.

4th paragraph - Areas outside of Cal/Am have not been evaluated for this report but will be studied to define water supply conditions within the District.

### Regarding Monterey County's Comments -

Point 1 - Given the lack of information on existing extraction rates from private wells, the District will rely on the DWR estimate for this report; however, research will be conducted to revise this figure.

Point 2 - The District will coordinate with the County Growth Management Plan Development.

Point 3 - As detailed on page 26, the District does propose to revise demand estimates for commercial usage as additional data becomes available.

Point 4 - Report is accurate; comment is in error.

Point 5 - The report reflects survey data obtained from the County. There is no graph on page 18.

Point 6 - The statement on page 10 has been deleted.

Point 7 - Future research may require cooperative assistance from reviewing agencies.

Point 8 - The estimates contained in the Final Report are subject to periodic refinement based on new data.

Point 9 - No contingency factor has been built into the allocation formulas, however, the District will be conducting research to determine possible emergency measures including short term rationing, additional storage, new water sources and reserves. Pending these investigations, the formulas may be revised to reflect this concern.

Point 10 - See Appendix B.

Regarding Pacific Grove's Comments -

2nd paragraph - No one system is clearly superior in that each system benefits some jurisdictions at the expense of other jurisdictions. To this end the District has proposed that all jurisdictions negotiate with each other to establish a system that all can live with.

3rd paragraph - The District will explore mechanisms to generate data required for planning that minimize costs to the jurisdictions.

4th paragraph - The proposed ordinance is drafted as a model for consideration which could be refined through mutual negotiation; however, if each jurisdiction is to meet its growth allocation goal, some common implementation format would seem desirable.

5th paragraph - The Water Management District is exploring long range solutions to the water supply problem by evaluating both expansion in supply and reduction in anticipated demand.

Regarding Seaside's Comments - The District will involve the City in any future allocation discussions.