VENTURA COUNTY

WATERWORKS DISTRICT NO. 1

MOORPARK WASTEWATER TREATMENT PLANT

RECLAIMED WATER FEASIBILITY STUDY

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10/9/90

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COUNTY OF VENTURA
Public Works Agency
Attention Mr. R. Reddy Pakala
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August 3, 1990

Moorpark Reclaimed Water Feasibility Study
Final Draft Report

Please find enclosed four copies of the final draft of our report entitled "Moorpark Wastewater Treatment Plant Reclaimed Water Feasibility Study." We have modified the report in accordance with your comments on the draft report.

We plan to issue the final report three weeks after your review of the final draft. Please call if you have any questions.

BOYLE ENGINEERING CORPORATION

Glenn A. McPherson

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Enclosure

VT-V04-200-01/JMK/mwm

Moorpark Wastewater Treatment Plant

Reclaimed Water Feasibility Study

VENTURA COUNTY WATERWORKS DISTRICT NO. 1

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Section 1 - Executive Summary

1.1 Background and Purpose

Ventura County Waterworks District No. 1 (the District) operates the Moorpark Wastewater Treatment Plant west of the City of Moorpark. The plant is currently producing about 2 MGD of secondary treated effluent which is percolated into the ground using ponds. The District has recently had difficulty percolating all of the treated effluent into the ground because of reduced percolation rates resulting from local hydrogeologic conditions. The plant's operating permit does not allow discharge of secondary effluent into the nearby Arroyo Las Posas. Tertiary treatment of the wastewater will be required before direct discharge into the creek will be allowed. It is planned to add 1.5 MGD of tertiary treatment capacity, and to make other improvements. The tertiary facility is expected to be completed by 1992.

The tertiary treated effluent is expected to be suitable for irrigation of farmlands and landscaped areas, with precautions to prevent salinity build-up in the soil. The treatment plant is located in an agricultural area. Tertiary treatment of the wastewater provides an opportunity to sell reclaimed water for irrigation uses.

The purpose of this study is to evaluate the feasibility of supplying reclaimed water for local irrigation uses, and to estimate distribution costs and water rates.

1.2 Effluent Characteristics

The reclaimed water, which will be tertiary treated effluent, is expected to be of acceptable quality for irrigation purposes. The water quality will be superior to the groundwater supplied from most local wells. Based on historical data, the total dissolved solids (TDS), is expected to be approximately 600 to 700 ppm, compared to local groundwater supplies with TDS levels between 400 and 2100 ppm. However, the TDS will be somewhat higher than the average 380 ppm present in potable water supplied by Waterworks District No. 1.

Although the reclaimed water will be suitable for irrigation, the salinity will be relatively high. The impact on crop yields can be minimized with modern irrigation practices.

1.3 Reclaimed Water Availability

The expanded treatment plant will have a nominal capacity of 3.0 MGD, including tertiary filters with a capacity of 1.5 MGD and percolation capacity of up to 3.0 MGD depending upon the percolation rates, which are dependent on weather, actual infiltration rates, operation, and maintenance procedures. However, 1.5 MGD is considered to be the <u>reliable</u> percolation capacity of the expanded facility.

After the tertiary facilities are constructed around 1992, a reliable supply of 1.5 MGD of reclaimed water will be available. As part of the 1.5 MGD tertiary facility addition, space will be allocated for future expansion of the tertiary facilities to 3.0 MGD. This expansion may be needed as early as 1995, when projected wastewater flows are expected to exceed 3.0 MGD. When the future tertiary facilities are expanded, a reclaimed water supply of 3.0 MGD will be available for sale to irrigation customers.

The cost of tertiary treatment will be high, around $182 to $236 per acre-foot, not including capital costs. The marketable price for reclaimed water, considering the low cost of groundwater and potable supplies, will not be high enough to recover all of the treatment cost. It is therefore recommended that the District plan to percolate a portion of the secondary effluent. In the first phase of the proposed reclaimed water system, it is recommended that the District execute contracts to serve reclaimed water up to a total peak demand of 1.5 MGD. During peak reclaimed water demand periods, a full 1.5 MGD of wastewater will be subject to tertiary treatment. When the demand is less than 1.5 MGD, the District need produce only enough reclaimed water to meet the demand. The remaining secondary effluent can be percolated up to the capacity of the percolation ponds. However, any flows that cannot be percolated or sold as reclaimed water must be subjected to tertiary treatment and discharged to Arroyo Las Posas.

1.4 Potential Reclaimed Water Demand

An extensive marketing survey was conducted of potential reclaimed water users near the treatment plant. A preliminary study area, located entirely within Water Works District No. 1, was selected, based on areas most likely to be serviceable. After some investigations, the study area was narrowed down to a "final study area" near the treatment plant. The final study area includes 18 potential users of reclaimed water. Based on the information obtained, the potential irrigation uses include orchards, row crops, nurseries, and a potential future park. A proposed future golf course was not included in the marketing survey, but was considered separately.

Confidential questionnaires were mailed to all of the potential users within the final study area. Information was received on cropping patterns, irrigation practices, presents sources and costs of irrigation water, and general interest in the possibility of purchasing reclaimed water. The future annual peak demands for these potential users were estimated and tabulated.

It was found that potential reclaimed water demand within the final study area could exceed 3.0 MGD, if all potential users could be supplied. However, many of the potential users have their own wells and can pump groundwater very cheaply. Fortunately, there are several parcels near the plant that are now purchasing water from Water Works District No. 1 for $227/acre-foot. These potential customers will have an economic incentive to purchase reclaimed water.

Based on the marketing survey data, a Phase I service area was defined, consisting of 5 potential users near the plant, who now purchase District water, and whose demands add up to a peak of 1.5 MGD. Three backup users are also included within the Phase I service area. The District will need to begin discussion and negotiations with these identified potential users.

In addition to potential users within the final study area, it may also be possible to supply water to Zone Mutual Water Company, or to Arroyo Las Posas Water Company. However, it is recommended to proceed with an initial reclaimed water system entirely within Waterworks District No. 1 at this time. Supply to other agencies can be considered later if local users are not willing to convert to reclaimed water.

A potential future golf course near Grimes Canyon Road has also been considered. This development could be serviced by extending the proposed facilities toward the Northeast. The golf course developer appears to be willing to pay for the cost of the distribution system, and will pay domestic potable rates. For economic reasons, this would be the most attractive option for the District. However, this golf course is not necessary to create a viable reclaimed water system near the treatment plant.

1.5 Phase I Distribution System

A Phase I distribution system has been recommended to serve the potential customers identified in the Phase I service area. The distribution system will initially supply up to 1.5 MGD to users near the treatment plant. The system is capable of expansion in several directions and could be extended to provide service to the proposed golf course near Grimes Canyon Road. The pipelines are sized to eventually supply at least 3.0 MGD to users within or outside the final study area. The Phase I distribution system includes the following major components:

1. A 1.0 MG storage pond at the treatment plant site, consisting of an earth embankment, a plastic lining, and a wet well/overflow.

2. A packaged constant pressure booster pump station, with a maximum capacity of 2500 gpm.

3. A "north branch" 16-inch and 12-inch pipeline.

4. A "south branch" 8-inch pipeline.

The distribution system will provide service to areas below 500 foot elevation, with a minimum pressure of 43 psi, corresponding to a head of 100 feet - a design pressure adequate to operate irrigation systems within most of the service area. Users at high elevations with conventional sprinkler heads may need to boost the pressure.

Potential future expansions of the reclaimed water distribution system have been identified. However, it is suggested that after implementation of the Phase I system, the District should obtain a few years of operational experience before firming plans to expand the system.

1.6 Costs

Capital costs for the Phase I distribution system are expected to be approximately $700,000 to provide a peak capacity of 1.5 MGD.

The cost of distributing reclaimed water is estimated to be $148/acre-foot, when supplying a demand corresponding to a peak flow of 1.5 MGD. It may be possible to decrease the unit costs by selling surplus reclaimed water. If sales of surplus water resulted in selling all of the available 1.5 MGD supply, the distribution cost could drop to $94/acre-foot. However, none of the above unit costs include the capital or operational costs of tertiary treatment.

1.7 Golf Course Alternative

The Phase I distribution system described above is based on the assumption that the proposed golf course near Grimes Canyon Road will take many years to be approved and constructed, and that the District will install a viable reclaimed water system before the golf course is approved. However, if the golf course developer constructs the facilities, some modifications to the Phase I distribution system may be appropriate: on-site storage, with a reduced storage pond at the plant; 24 hour pumping at the plant; and different pipeline diameters.

1.8 Pricing and Water Rates

The most important factor in setting reclaimed water rates is going to be the relatively low cost of local groundwater supplies. Groundwater can be pumped for a total cost of under $100/acre-foot. However, some agricultural users now pay $227/acre-foot for District potable water.

One goal for the reclaimed water system will be to recover the cost of tertiary treatment. Based on the identified Phase I users, it appears that reclaimed water can be priced to recover the costs of distribution and to partially offset the cost of tertiary treatment. It will probably not be possible to recover all of the costs of tertiary treatment.

The recommended pricing strategy is to sell reclaimed water at a percentage of the applicable potable rates. The various rate categories and recommended rates are summarized on Table 8-1. Suggested rates range between $114 and $227 per acre-foot for agricultural use. For golf courses or other users, the domestic potable rate for $333/AF would be used, in order to recoup the tertiary treatment costs, since the increased demand may require tertiary treatment for water that could otherwise be percolated.

1.9 Implementation Plan

A reclaimed water system appears to be feasible near the Moorpark Wastewater Treatment Plant. A Phase I distribution system, capable of delivering a peak of 1.5 MGD, has been selected. A brief implementation plan is presented in Section 9.5 of this report.

The use of reclaimed water for irrigation purposes is expected to increase greatly within southern California. Due to anticipated future water shortages within California, reclaimed water is now being thought of as a resource to be utilized for an overall benefit to society. In many instances, the availability of reclaimed water has created its own market. If the District

implements a reclaimed water system west of Moorpark, it will benefit both the District and its customers.

Section 2 - Introduction

2.1 Project Background

The County of Ventura manages Waterworks District No. 1, which includes most of the City of Moorpark, as well as areas to the north and west of the City. To the west of District No. 1 is the County managed Waterworks District No. 19. Both districts receive State Water Project water from Calleguas Municipal Water District, a member agency of the Metropolitan Water District of Southern California. Both Districts also produce well water, which is blended with the water received from Calleguas.

Included within Waterworks District No. 19 are three irrigation water companies: Zone Mutual Water Company, Berylwood Water Company, and Arroyo Las Posas Water Company. Each of these three water companies produces local well water which is distributed to agricultural users. None of these water companies currently receive water from Waterworks Districts No. 1 or 19.

Ventura County Waterworks District No. 1 operates the Moorpark Wastewater Treatment Plant west of the City of Moorpark. The Treatment Plant is located adjacent to Arroyo Las Posas (a year round stream), and is west of Hitch Boulevard and Moorpark Home Acres. A location map is provided in Figure 2-1. The plant is currently producing approximately 2 MGD of secondary treated effluent which is percolated into the underground using ponds located next to the arroyo.

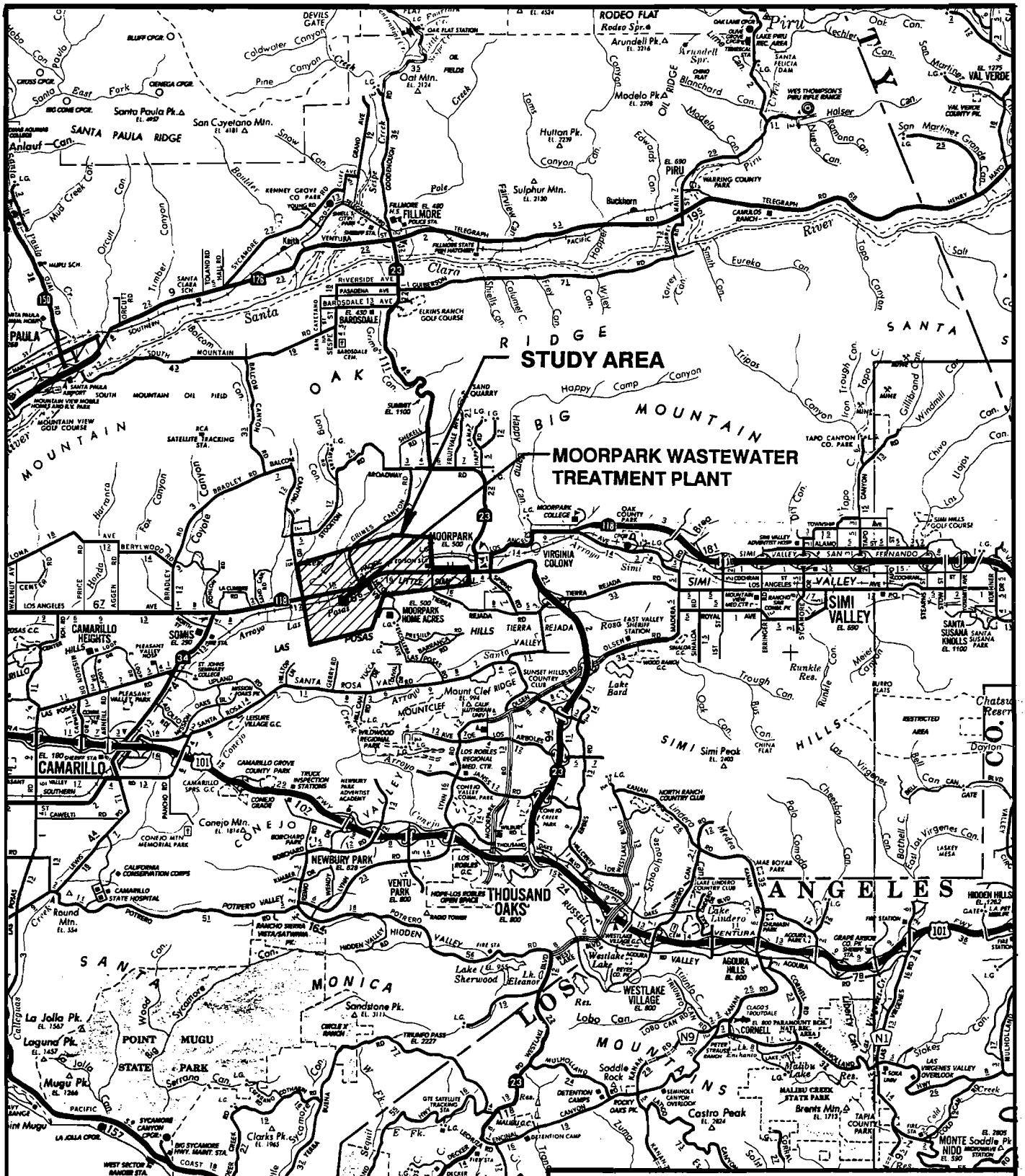
The District has recently had difficulty percolating all of the treated effluent into the ground due to low percolation rates caused by local hydrogeologic conditions and weather. The current operating permit of the plant does not allow discharge of secondary effluent into Arroyo Las Posas. It is planned now to expand the plant to add tertiary treatment facilities and make other improvements. Unlike secondary effluent, the tertiary treated wastewater could then be discharged directly into the arroyo.

An alternate to creek discharge would be to sell the effluent as reclaimed water, recovering some or all of the treatment costs. The treatment plant is surrounded by agricultural lands which could utilize reclaimed water for irrigation. Faced with possible drought conditions and projected future water shortages within California, sales of reclaimed water from the plant would result in beneficial use of the water and could reduce overall costs of running the treatment plant.

2.2 Study Objective

The purpose of this report is to study and evaluate the feasibility of marketing and distributing reclaimed water produced by the Moorpark Wastewater Treatment Plant. The study includes the following tasks:

1. Evaluate effluent water quality for potential irrigation uses.



COUNTY OF VENTURA WATERWORKS DISTRICT NO.1

MOORPARK WASTEWATER TREATMENT PLANT RECLAIMED WATER FEASIBILITY STUDY

LOCATION MAP

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VT-V04-200-01

FIGURE 2-1

2. Evaluate and project future supplies of reclaimed water from the treatment plant.

3. Conduct a marketing survey of potential users of reclaimed water near the plant. Obtain information on their current irrigation practices.

4. Identify those users most likely to utilize reclaimed water, and estimate their future irrigation demands.

5. Define a distribution system that will convey reclaimed water to identified customers. Estimate approximate sizes of facilities including storage, pumping and transmission pipelines.

6. Estimate costs of the distribution system.

7. Evaluate current water prices and recommend a pricing strategy for sale of reclaimed water.

Section 3 - Treatment Plant Effluent Characteristics

3.1 Current Effluent Quality

Water quality data on the past and current secondary treated effluent can provide a good indication of the water quality to be expected after tertiary treatment. Most of the important dissolved chemical constituents will be largely unaffected by tertiary treatment.

Treated wastewater samples are collected monthly (in some months, several samples were collected) by Ventura County Waterworks District No. 1 staff for analysis of pH, total dissolved solids (TDS), boron, chloride, fluoride, sulfate, and biological oxygen demand (BOD). Results of these analyses are submitted by the District to the Regional Water Quality Control Board for compliance with monitoring requirements of the existing waste discharge permit. The summary of this historic wastewater effluent quality data is shown on Table 3-1. These data provide a limited view of wastewater effluent quality trends that have occurred since 1985. The concentration of these water quality constituents fluctuates significantly from month to month and, with the exception of chloride, significant trends with time cannot be established. Chloride concentrations in the wastewater effluent exhibit a strong upward trend with the exception of the time period in early 1989, when chloride concentrations were reduced. This was likely the result of a change in the source of imported water since chloride concentrations from State Water Project water are consistently in excess of 100 ppm during that period.

The application of reclaimed wastewater effluent for crop/landscape irrigation purposes requires more complete analyses of wastewater quality than those provided by the monthly monitoring effort. As a result, weekly reclaimed wastewater samples were collected starting November 2, 1989 to perform more comprehensive laboratory analyses (see Table 3-2). The purpose of the additional sample collection/analytical efforts was to obtain data necessary to address additional irrigation water quality/environmental concerns that typically arise as a result of reclaimed wastewater irrigation projects. These concerns revolve around constituents that may limit/impact the suitability for irrigation or pose environmental concerns. The impact of these constituents on irrigation water quality is discussed in later sections in this report. Concentrations of trace elements, such as arsenic, barium, cadmium, etc., are generally below detectable levels. Nutrients (nitrogen and phosphate) that may contaminate surface and groundwater resources constitute additional environmental concerns. Nitrogen content varies from about 80 to 106 pounds/acre-foot, while phosphate varies from about 22 to 26 pounds/acre-foot of reclaimed wastewater. Phosphorous is generally not a significant environmental concern since it is usually immobilized by fixation on the soil cation exchange complex and is then available for plant uptake. However, nitrogen (in the nitrate form) is mobile and may move through the soil to contaminate surface or shallow groundwater resources. Nitrogen is an important crop nutrient, and much of that applied in the reclaimed wastewater can used by plant uptake. As a result, proper irrigation water management can mitigate any significant environmental concerns due to nitrogen contained in the reclaimed wastewater.

TABLE 3-1

SUMMARY OF HISTORIC TREATED WASTEWATER EFFLUENT QUALITY[1]
MOORPARK WASTEWATER TREATMENT PLANT

Date	TDS (ppm)	Salinity ($EC_w x10^6$)[2]	pH	Boron (ppm)	Chloride (ppm)	Fluoride (ppm)	Sulfate (ppm)	BOD (ppm)
4/11/85	625	976	7.3	0.8	82	0.4	143	33
6/6/85	688	1,075	7.6	0.7	82	0.4	172	12
9/24/85	718	1,122	7.4	0.7	76	--	207	--
12/26/85	660	1,031	7.4	0.7	92	--	180	--
3/24/86	633	989	7.4	0.8	90	--	136	--
7/2/86	728	1,138	7.8	0.9	102	--	195	--
9/8/86	715	1,117	7.5	0.7	100	--	143	95
9/22/86	705	1,102	7.0	0.9	102	--	159	60
10/27/86	635	992	7.7	0.7	108	0.6	168	21
12/8/86	668	1,044	7.6	0.7	92	0.7	165	40
1/5/87	656	1,025	7.6	1.0	102	0.6	194	39
1/21/87	700	1,094	7.4	0.7	100	0.7	188	72
2/2/87	660	1,031	7.8	0.7	104	0.4	194	46
2/18/87	660	1,031	7.3	0.8	100	0.5	201	82
3/2/87	616	963	7.9	0.8	92	0.5	196	41
3/9/87	564	881	7.5	0.7	94	0.6	164	40
4/6/87	704	1,100	7.9	0.8	102	0.5	180	45
4/20/87	636	994	7.5	0.8	100	0.3	145	58
5/4/87	784	1,225	7.8	0.6	101	0.4	143	31
5/18/87	628	981	7.6	0.8	96	0.5	140	15
6/1/87	720	1,125	7.9	0.7	104	0.5	141	14
6/15/87	604	944	7.6	0.7	104	0.4	122	20
7/8/87	636	994	8.0	0.7	102	0.4	140	19
7/20/87	624	975	7.9	0.8	100	0.4	137	22
8/3/87	624	975	8.0	0.7	100	0.6	99	43
8/17/87	600	938	7.9	0.8	98	0.4	108	48
9/9/87	624	975	7.9	0.7	96	0.4	129	27
10/5/87	644	1,006	7.9	0.8	94	0.3	142	13
10/19/87	564	881	7.7	0.8	102	0.4	145	16
11/9/87	568	888	7.6	0.7	98	0.3	170	19
11/23/87	608	950	7.7	0.7	102	0.4	161	62
12/7/87	600	938	7.8	0.8	106	0.3	141	58
12/21/87	588	919	7.8	0.7	100	0.3	130	37
1/4/88	652	1,019	7.8	0.4	110	0.3	147	33
1/20/88	600	938	7.8	0.6	118	0.3	114	42
2/3/88	588	919	7.6	0.6	110	0.3	113	70
2/17/88	680	1,063	7.6	0.8	110	0.4	152	73
2/29/88	608	950	7.4	0.7	104	0.3	117	67

TABLE 3-1 (continued)

Date	TDS (ppm)	Salinity ($EC_w x 10^6$)[2]	pH	Boron (ppm)	Chloride (ppm)	Fluoride (ppm)	Sulfate (ppm)	BOD (ppm)
3/14/88	600	938	7.6	0.7	118	0.3	153	86
3/28/88	640	1,000	7.6	0.7	118	0.3	104	78
4/11/88	608	950	7.6	0.6	128	0.5	130	78
4/27/88	640	1,000	7.6	0.6	112	--	96	--
5/11/88	648	1,013	7.8	0.8	118	0.3	109	19
5/31/88	636	994	7.7	0.7	116	0.3	108	49
6/8/88	628	981	7.4	0.7	130	0.2	121	50
6/20/88	684	1,069	7.8	0.8	128	0.3	135	27
7/6/88	584	913	8.0	0.8	124	0.3	123	54
7/20/88	616	963	8.0	0.6	126	0.3	101	41
8/3/88	608	950	8.0	0.6	126	--	132	--
8/15/88	640	1,000	8.0	0.6	126	0.4	148	20
9/19/88	640	1,000	7.9	0.7	130	0.4	147	40
10/27/88	--	--	7.7	0.7	133	--	177	24
11/22/88	708	1,106	7.7	0.7	136	--	122	53
12/23/88	812	1,269	7.8	0.7	120	0.4	152	39
1/6/89	584	913	7.9	0.8	80	0.5	127	47
1/13/89	652	1,019	7.9	0.8	82	0.6	113	36
1/19/89	508	794	7.4	0.8	76	0.6	99	81
1/26/89	596	931	8.1	0.8	82	0.7	139	36
2/2/89	652	1,019	7.9	0.9	82	0.6	123	45
2/9/89	620	969	8.1	0.9	80	0.7	112	38
2/17/89	572	894	8.4	0.9	80	0.7	114	33
2/23/89	756	1,181	7.7	0.9	80	0.6	112	18
3/3/89	760	1,188	7.9	1.0	80	0.7	118	33
3/9/89	544	850	7.8	1.0	68	0.8	105	63
3/16/89	512	800	7.9	0.8	70	0.8	99	141
3/30/89	652	1,019	7.6	0.7	92	0.7	97	143
4/6/89	568	1,028	8.6	0.8	96	0.5	98	26
4/14/89	596	931	8.4	1.1	106	0.5	115	33
4/20/89	572	894	7.8	0.8	96	0.6	123	68
4/28/89	692	1,081	7.4	0.5	156	1.2	118	41
5/4/89	720	1,125	7.6	0.9	150	0.3	134	36
5/11/89	716	1,119	7.9	0.6	142	0.4	133	30
5/18/89	716	1,119	8.3	0.6	146	0.3	121	36
6/2/89	600	938	7.9	1.0	156	0.5	124	35
6/8/89	712	1,113	7.5	0.6	150	1.0	129	44
6/15/89	808	1,263	7.6	0.6	150	0.4	123	65

[1] Based on results of wastewater effluent water quality analyses provided by Ventura County Waterworks District No. 1.

[2] Estimated based on TDS concentration [TDS (ppm) ÷ 0.64 = salinity (EC_w x 10^6)].

TABLE 3-2

SUMMARY OF EXISTING TREATED WASTEWATER EFFLUENT QUALITY[1]
MOORPARK WASTEWATER TREATMENT PLANT

Constituent	Units	Sample Collection Date					
		11/2/89	11/9/89	11/16/89	11/22/89	12/1/89	12/8/89
pH	--	7.7	7.6	8.1	7.6	7.6	7.7
Total dissolved solids (TDS)	ppm	620	652	636	620	596	616
Electrical conductivity[2]	dS/m	969	1,019	994	969	931	963
Suspended solids	ppm	13	40	36	4	33	21
Calcium	ppm	43	40	38	35	40	35
Magnesium	ppm	19	19	18	18	18	18
Sodium	ppm	140	140	140	133	134	135
Sodium adsorption ratio	--	4.5	4.5	4.7	4.6	4.4	4.7
Adj. sodium adsorption ratio	--	9.7	9.6	9.9	9.7	9.4	9.9
Bicarbonate (as $CaCO_3$)	ppm	352	352	355	349	355	349
Carbonate (as $CaCO_3$)	ppm	<1[3]	<1	<1	<1	<1	<1
Boron	ppm	0.7	0.8	0.6	0.6	0.6	0.7
Chloride	ppm	133	139	136	137	135	137
Fluoride	ppm	0.4	0.2	0.3	0.3	0.3	0.2
Sulfate	ppm	127	130	115	109	107	91
Ammonium nitrogen	ppm	28.2	34.0	32.0	33.0	31.0	31.0
Nitrate nitrogen	ppm	<1	<1	<1	<1	<1	<1
Total nitrogen	ppm	29.5	34.0	33.0	33.0	39.0	37.0
Potassium	ppm	14	15	14	5	14	14
Phosphate	ppm	9.6	8.0	9.3	9.0	8.9	8.8
Arsenic	ppb	<50	<50	<50	<50	<50	<50
Barium	ppb	<100	<100	<100	<100	<100	<100
Cadmium	ppb	<10	<10	<10	<10	<10	<10
Chromium	ppb	<50	<50	<50	<50	<50	<50
Copper	ppb	<100	<100	<100	--	<100	<100

Constituent	Units	Sample Collection Date 11/2/89	11/9/89	11/16/89	11/22/89	12/1/89	12/8/89
Iron	ppb	100	200	100	100	100	100
Lead	ppb	<50	<50	<50	<50	<50	<50
Manganese	ppb	19	30	<50	30	<50	<50
Mercury	ppb	<2	<2	<2	<2	<2	<2
Selenium	ppb	<10	<10	<10	<10	<10	<10
Silver	ppb	<50	<50	<50	<50	<50	<50
Zinc	ppb	<100	<100	<100	60	<100	<100
Turbidity	NTU	14.0	19.1	14.0	15.0	15.0	15.0
Chlorine residual	ppm	0.43	<0.1	<0.1	<0.1	<0.1	<0.1
Oil and grease	ppm	4	3	7	5	3	4
BOD	ppm	<30	27	41	30	42	33
COD	ppm	192	184	630	340	192	196
Cyanide	ppm	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MBAS	ppm	0.22	0.10	0.10	0.21	0.56	0.19
Gross alpha	pC/l	0.3±2	0.3±1	0.7±1	0.0±1	0.9±2	0.4±2
Color	units	36	30	32	34	44	42
Odor	ton	<1	<1	<1	<1	<1	<1

1 Based on analyses of wastewater effluent samples collected by Ventura County Waterworks District No. 1 staff. Laboratory analyses performed by FGL Environmental Analytical Chemists, 853 Corporation Street, Santa Paula, California.

2 Estimated based on TDS concentration [TDS (ppm) ÷ 0.64 = salinity (ECw x 106)].

3 "<" denotes that concentration was below level of detection.

3.2 Projected Tertiary Effluent Quality

The new tertiary treatment facilities at the Moorpark Wastewater Treatment Plant are being designed by Kennedy/Jenks/Chilton to produce effluent which meets the California Department of Health Services Title 22 requirements for "nonrestricted recreational impoundment." Water which meets these requirements may be used for full body-contact sport activities and for spray irrigation of unprocessed food crops. Additionally, if tertiary-treated water is discharged into the Arroyo Las Posas, the effluent must meet certain requirements in order to qualify for a National Pollutant Discharge Elimination System (NPDES) permit.

Title 22 requires that the turbidity of the effluent does not exceed an average operating turbidity of 2 turbidity units and does not exceed 5 turbidity units more than 5 percent of the time during any 24-hour period. Additionally, Title 22 requires that the median number of coliform organisms does not exceed 2.2 per 100 milliliters and the number of coliform organisms does not exceed 23 per 100 milliliters in more than one sample within any 30-day period.

The NPDES requirements for the Simi Valley County Sanitation District Water Quality Control Plant are shown in Table 3-3. Since this facility discharges to the same creek as the Moorpark Wastewater Treatment Plant, the requirements for the Moorpark plant are expected to be very similar to those shown in Table 3-3. However, the exact requirements for constituent levels in the effluent will not be known until the NPDES permit is obtained. Therefore, these level limitations may change slightly.

The tertiary treatment process will only remove particles that are in suspension in the wastewater. The process also deactivates pathenogenic organisms. Since many of the constituents listed in Tables 3-1, 3-2, and 3-3 are dissolved or in ionic form, they will not be affected by the filtration process and their levels will not change from the levels in the current wastewater influent. BOD, suspended solids, and turbidity will all be reduced during filtration. Suspended solids should be reduced to 5-10 ppm. The chloride levels in the water may increase slightly due to the chlorination of the water. A comparison of Table 3-3 with 3-2 shows that the rest of the constituents in the influent are all generally lower than the NPDES discharge limitations (see Table 3-4). If any of these dissolved constituents are higher than what is acceptable for an NPDES permit, additional processes may have to be incorporated into the treatment plant. The chloride level, in particular, occasionally approaches the projected daily maximum of 150 mg/l. Therefore, steps may need to be taken to further reduce the level of chloride in the tertiary effluent.

In summary, the tertiary treatment of the wastewater will render it suitable for irrigation of food crops and landscaping, in accordance with current health regulations. The unused reclaimed water will be able to be discharged to Arroyo Las Posas.

TABLE 3-3

EXPECTED NPDES DISCHARGE LIMITATIONS FOR TREATED WASTEWATER EFFLUENT QUALITY MOORPARK WASTEWATER TREATMENT PLANT

Constituent	Units	30-Day Average	7-Day Average	Daily Maximum
BOD	mg/l	20	30	45
Suspended Solids	mg/l	15	40	45
Oil and Grease	mg/l	10	---	15
Total Dissolved Solids	mg/l	---	---	850
Chloride	mg/l	---	---	150
Sulfate	mg/l	---	---	250
Nitrate-N plus Nitrite-N	mg/l	---	---	10
Fluoride	mg/l	---	---	1.6
Boron	mg/l	---	---	1.0
Residual Chlorine	mg/l	---	---	0.1
Settleable Solids	ml/l	0.1	---	0.3
Arsenic	mg/l	---	---	0.05
Barium	mg/l	---	---	1.0
Cadmium	mg/l	---	---	0.01
Total Chromium	mg/l	---	---	0.05
Copper	mg/l	---	---	1.0
Iron	mg/l	---	---	0.3
Lead	mg/l	---	---	0.05
Mercury	mg/l	---	---	0.002
Selenium	mg/l	---	---	0.01
Silver	mg/l	---	---	0.05
Zinc	mg/l	---	---	5.0
Chlorinated Hydrocarbons:				
Endrin	mg/l	---	---	0.0002
Lindane	mg/l	---	---	0.004
Methoxychlor	mg/l	---	---	0.1
Toxaphene	mg/l	---	---	.005
Chlorophenoxys:				
2,4 - D	mg/l	---	---	0.1
2,4,5 - TP (silvex)	mg/l	---	---	0.01

The acute toxicity of the effluent shall be such that the average survival in the undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90 percent, with no single test less than 70 percent survival.

Source: California Regional Water Quality Control Board, Los Angeles Region, "Fact Sheet -- Waste Discharge Requirements for Simi Valley County Sanitation District Water Quality Control Facility."

TABLE 3-4
COMPARISON OF HISTORIC EFFLUENT QUALITY WITH PROJECTED NPDES REQUIREMENTS
MOORPARK WASTEWATER TREATMENT PLANT

CONSTITUENT	UNITS	HISTORICAL MAXIMUM	HISTORICAL AVERAGE	REQUIRED 30-DAY AVG.	REQUIRED 7-DAY AVG.	REQUIRED DAILY MAX.	MEET REQUIREMENT
BOD	mg/l	143	44.8	20	30	45	No [1]
Suspended Solids	mg/l	40	24.5	15	40	45	Yes
Oil and Grease	mg/l	7	4.3	10	--	15	Yes
Total Dissolved Soilds	mg/l	812	642.7	--	--	850	Yes
Chloride	mg/l	156	108.3	--	--	150	No [2]
Sulfate	mg/l	207	135.8	--	--	250	Yes
Nitrate-N plus Nitrite-N	mg/l	*	*	--	--	10	*
Flouride	mg/l	1.2	.5	--	--	1.6	Yes
Boron	mg/l	1.1	.7	--	--	1	Yes [3]
Residual Chlorine	mg/l	*	*	--	--	.1	*
Settleable Solids	ml/l	*	*	.1	--	.3	*
Arsenic	mg/l	<.05	<.05	--	--	.05	Yes
Barium	mg/l	<.1	<.10	--	--	1	Yes
Cadmium	mg/l	<.01	<.01	--	--	.01	Yes
Total Chromium	mg/l	<.05	<.05	--	--	.05	Yes
Copper	mg/l	<.1	<.10	--	--	1	Yes
Iron	mg/l	.2	.12	--	--	.3	Yes
Lead	mg/l	<.05	<.05	--	--	.05	Yes
Mercury	mg/l	<.002	<.002	--	--	.002	Yes
Selenium	mg/l	<.01	<.01	--	--	.01	Yes
Silver	mg/l	<.05	<.05	--	--	.05	Yes
Zinc	mg/l	<.1	.09	--	--	5	Yes
Chlorinated Hydrocarbons:							
Endrin	mg/l	*	*	--	--	.0002	*
Lindane	mg/l	*	*	--	--	.004	*
Methoxychlor	mg/l	*	*	--	--	.1	*
Toxaphene	mg/l	*	*	--	--	.005	*
Chlorophenoxys:							
2, 4-D	mg/l	*	*	--	--	.1	*
2, 4, 5-TP (silvex)	mg/l	*	*	--	--	.01	*

* Treated wastewater was not tested for these constituents.

1 BOD levels will be decreased by tertiary treatment

2 In April and June of 1989, chloride levels were unusually high. They normally fall below the projected daily maximum of 150 mg/l.

3 On one day (4/14/89), the level of boron exceeded the daily maximum of 1 mg/l.

Section 4 - Effluent Flow and Reclaimed Water Availability

4.1 Current Wastewater Flows

Ventura County Waterworks District No. 1 submits quarterly monitoring reports of wastewater flows into the Moorpark Wastewater Treatment Plant to the California Regional Water Quality Control Board. The data submitted includes daily flow into the plant, total monthly flow, average daily flow for the month, and the low daily flow for the month.

A summary of average daily flow for each month from January 1985 through September 1989 is presented in Table 4-1. Historical daily flows are shown graphically on Figure 4-1. No information was available for January, February and March, 1986, so the flow for these months was estimated from data for December, 1985, and April, 1986. Figure 4-2 shows the monthly average of the historical daily flow.

These historical flows demonstrate trends that can be used to project future reclaimed water supplies.

4.2 Effluent Flow Projections

In order to estimate the quantity of reclaimed water which will be available to irrigation users, the future effluent flow from the Moorpark Wastewater Treatment Plant has been projected. Several prior studies have also projected wastewater flows. Two of these studies project flows into the next century: John Carollo Engineers, "County of Ventura Public Works Agency, Moorpark Wastewater Treatment Plant Expansion Study" (December, 1985); and James M. Montgomery Consulting Engineers, Inc., "Final Environmental Impact Report for Moorpark Wastewater Treatment Plant" (May 1988). The Expansion Study projected an effluent flow of 4 MGD in the year 2005. The Final EIR projected a flow of about 4.7 MGD in the year 2010. Figure 4-3 shows a graph of these flow projections, along with the historical flow data which was presented in Figure 4-2.

The above-mentioned studies projected flow for purposes of designing an expansion of the wastewater treatment plant. These projections tend to be on the upper bounds of the historical data. For purposes of projecting the flow which will be available to agricultural users for irrigation purposes, it is prudent to project along the lower bounds of the historical flows. Figure 4-4 shows the wastewater flow projected to be available until the year 2010, based on a lower bound projection.

4.3 Monthly and Daily Flow Variations

Figures 4-5 through 4-9 show the monthly average of the historic daily flow, into the treatment plant, for the years 1985 through September 1989. An analysis of these figures shows that

TABLE 4-1

Summary of Historical Wastewater Influent Flows

Moorpark Wastewater Treatment Plant

Year	Month	Average Daily Flow (MGD)
1985	January	1.447
	February	1.409
	March	1.375
	April	1.214
	May	1.29
	June	1.32
	July	1.306
	August	1.309
	September	1.372
	October	1.46
	November	1.466
	December	1.444
1986	January	1.444
	February	1.44
	March	1.436
	April	1.436
	May	1.421
	June	1.418
	July	1.356
	August	1.293
	September	1.254
	October	1.419
	November	1.475
	December	1.467
1987	January	1.538
	February	1.561
	March	1.645
	April	1.643
	May	1.742
	June	1.66
	July	1.525
	August	1.597
	September	1.664
	October	1.688
	November	1.744
	December	1.772

Table 4-1 (Continued)

Year	Month	Average Daily Flow (MGD)
1988	January	1.789
	February	1.887
	March	1.79
	April	1.841
	May	1.854
	June	1.921
	July	1.986
	August	1.852
	September	1.913
	October	2.096
	November	2.139
	December	2.04
1989	January	2.042
	February	1.884
	March	1.845
	April	1.821
	May	1.815
	June	1.849
	July	1.85
	August	1.812
	September	1.863

Source: Monitoring Reports for the Ventura County Waterworks District No. 1 Wastewater Treatment Plant (submitted quarterly to the California Regional Water Quality Control Board).

MOORPARK WASTEWATER TREATMENT PLANT
HISTORICAL DAILY FLOW

JANUARY 1, 1985 - SEPTEMBER 30, 1989

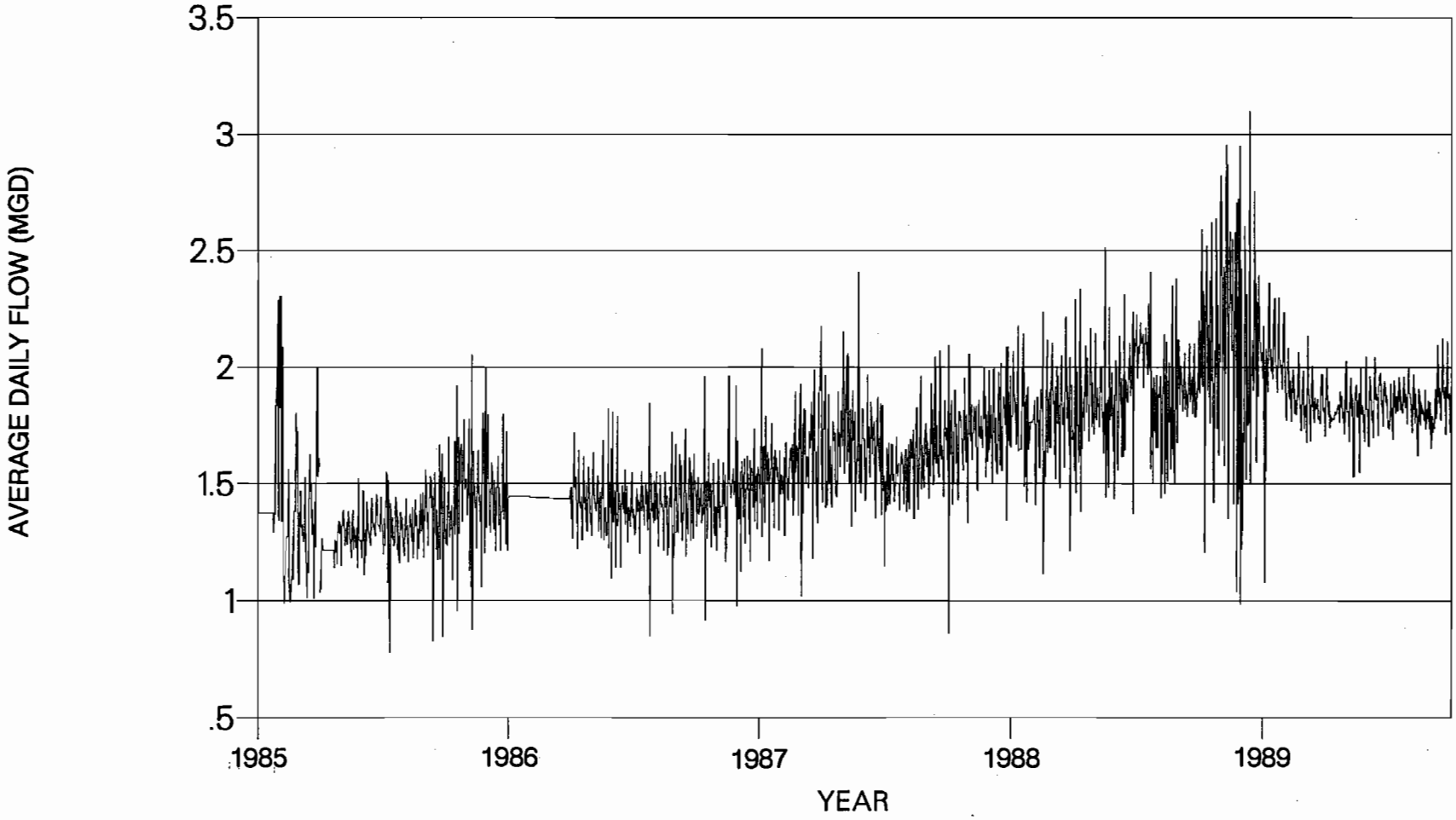


FIGURE 4-1

MOORPARK WASTEWATER TREATMENT PLANT
MONTHLY AVERAGE OF HISTORICAL DAILY FLOW

JANUARY 1, 1985 - SEPTEMBER 30, 1989

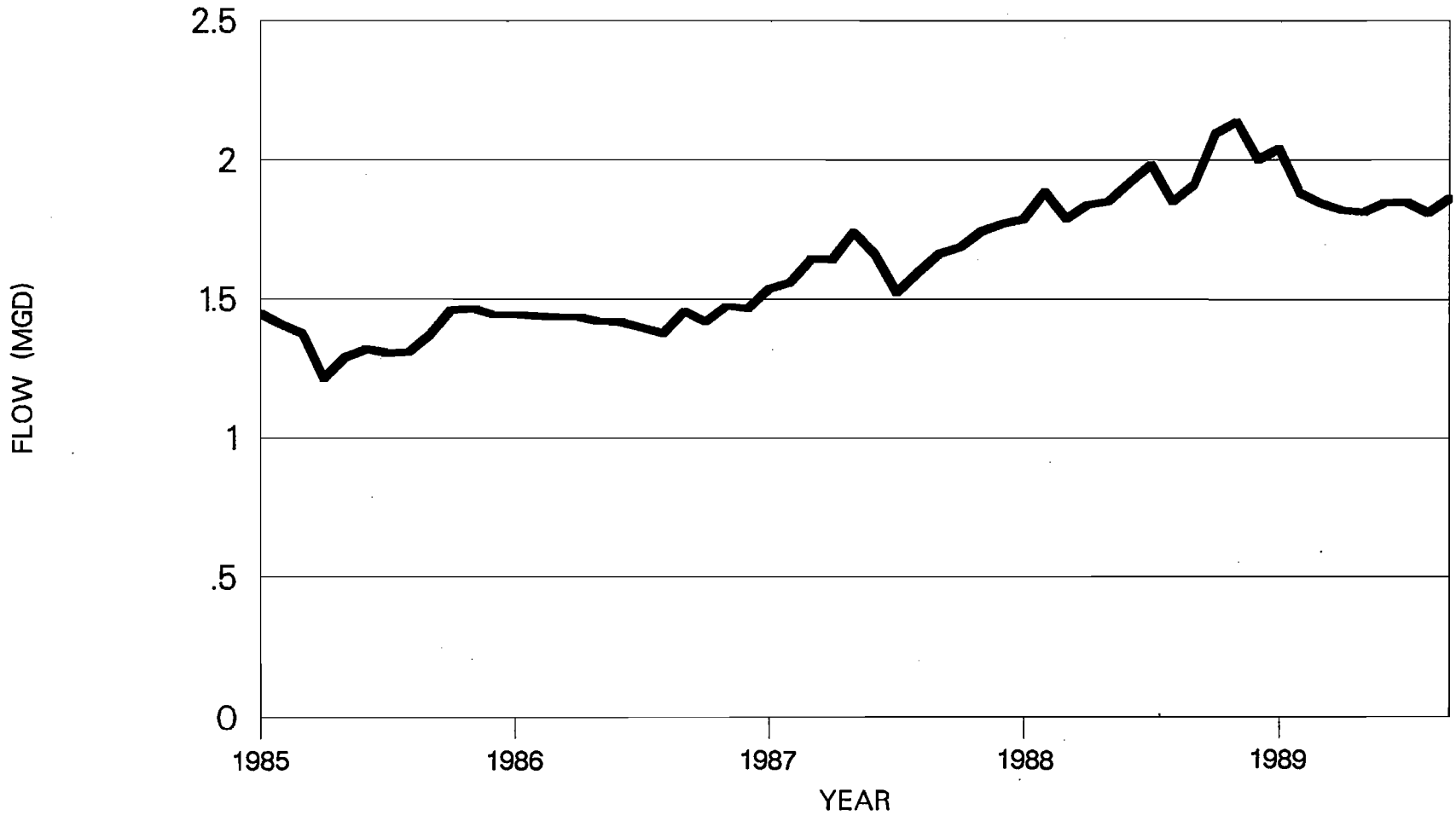


FIGURE 4-2

MOORPARK WASTEWATER TREATMENT PLANT
FLOW PROJECTED IN PAST STUDIES

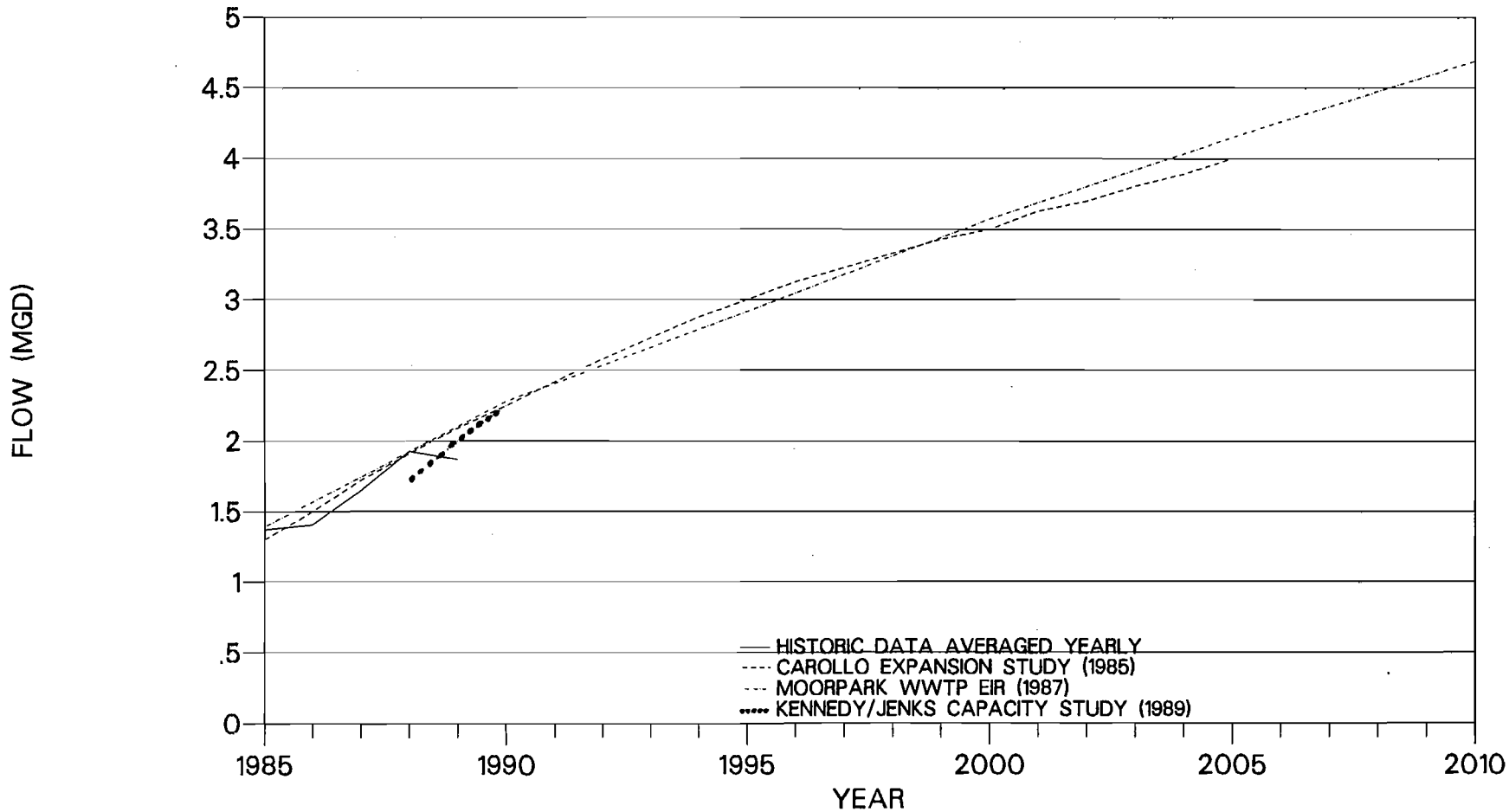


FIGURE 4-3

MOORPARK WASTEWATER TREATMENT PLANT
PROJECTED AVERAGE DAILY FLOW

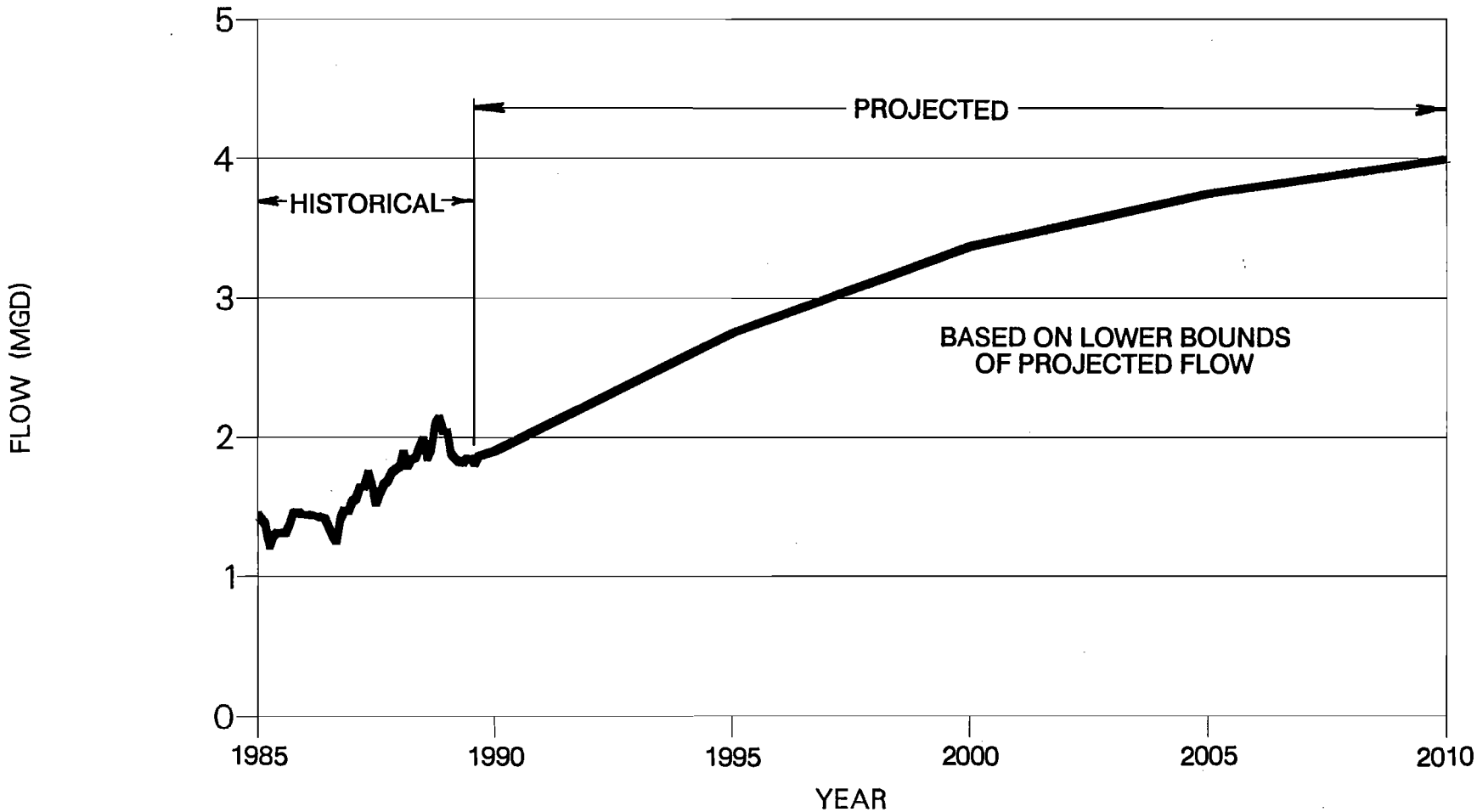


FIGURE 4-4

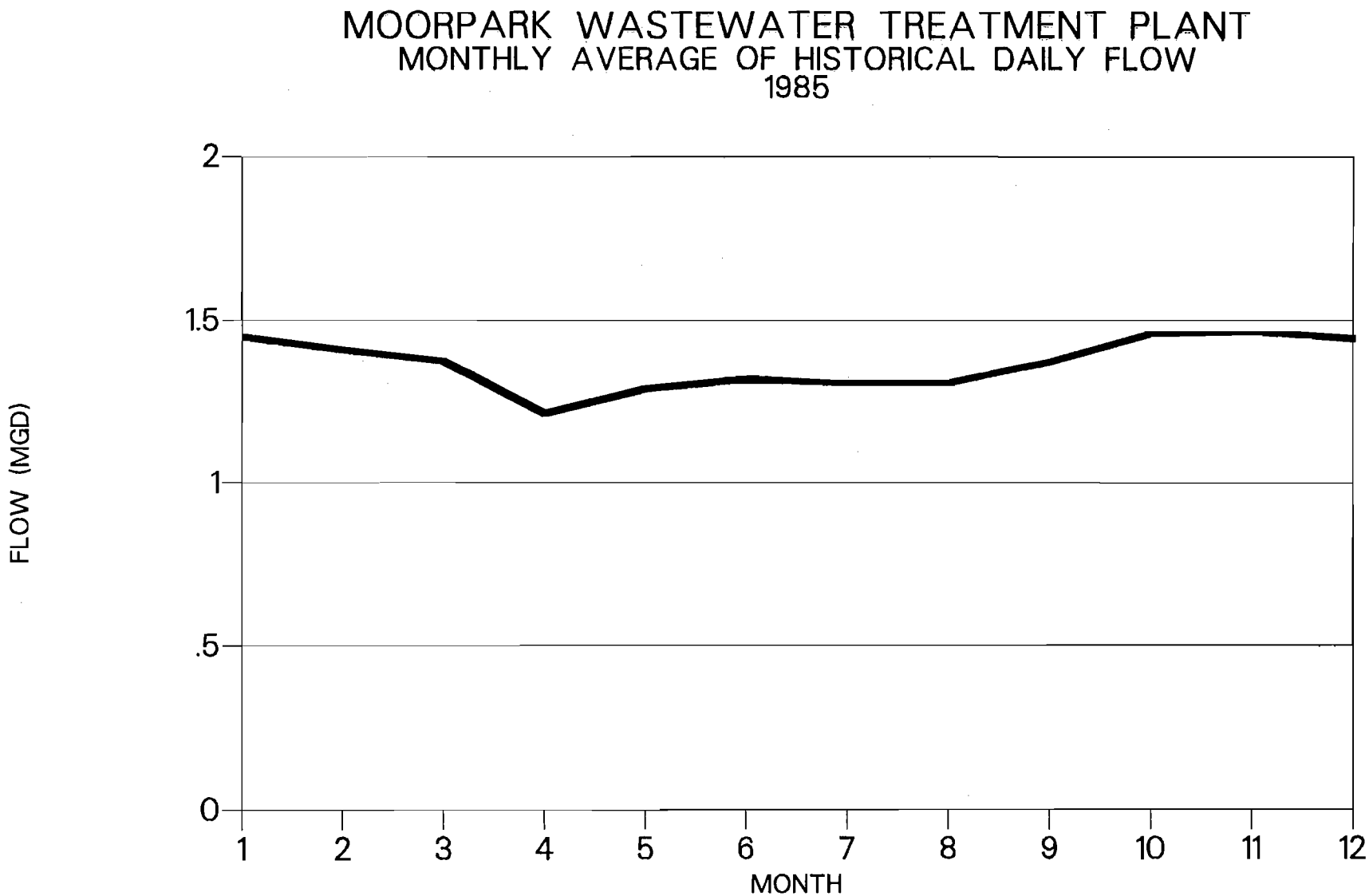

MOORPARK WASTEWATER TREATMENT PLANT
MONTHLY AVERAGE OF HISTORICAL DAILY FLOW
1985
FLOW (MGD)
2
1.5
1
.5
0
1
2
3
4
5
6
7
8
9
10
11
12
MONTH

FIGURE 4-5

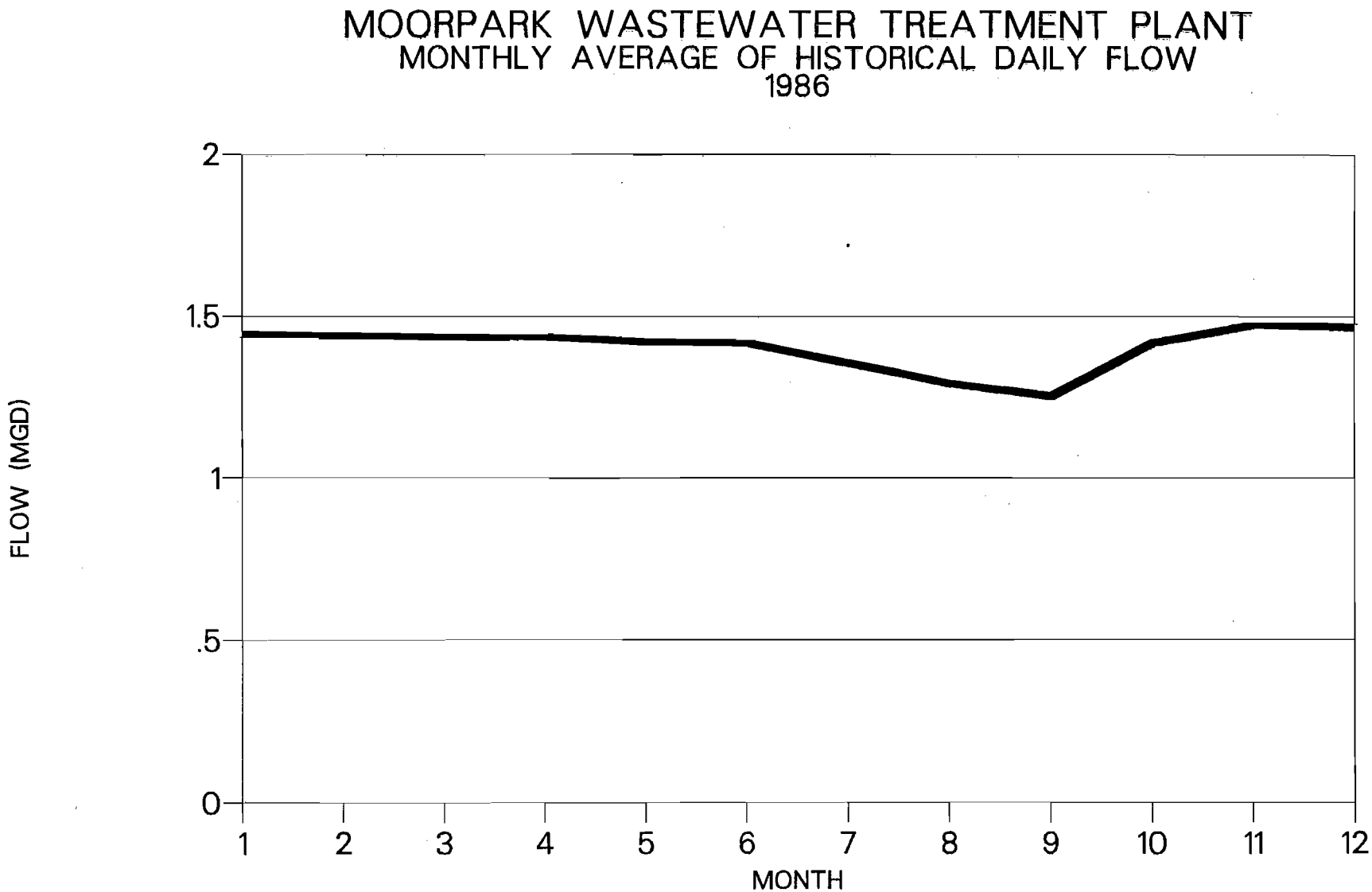

MOORPARK WASTEWATER TREATMENT PLANT
MONTHLY AVERAGE OF HISTORICAL DAILY FLOW
1986
FLOW (MGD)
2
1.5
1
.5
0
1
2
3
4
5
6
7
8
9
10
11
12
MONTH

FIGURE 4-6

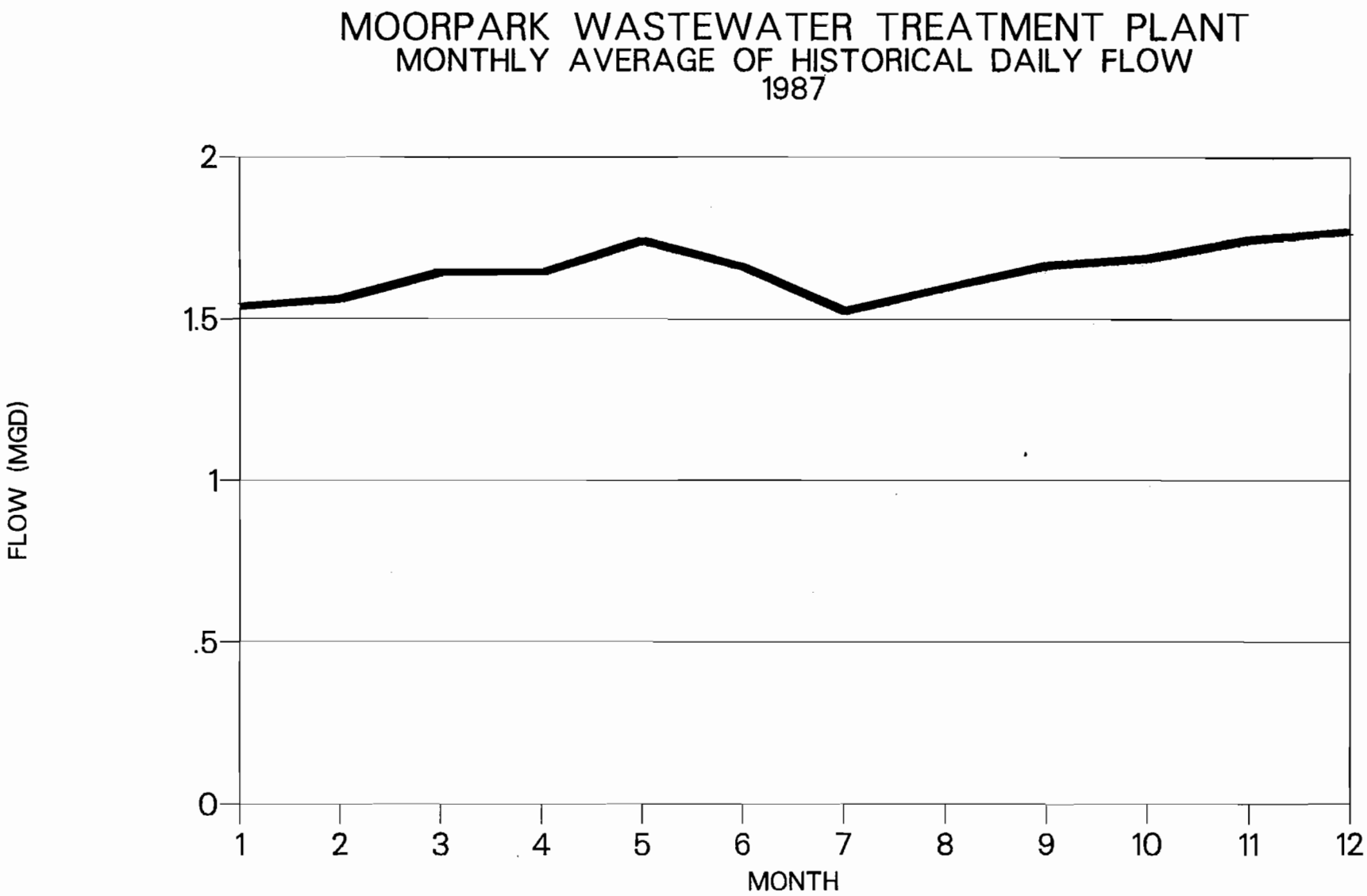

MOORPARK WASTEWATER TREATMENT PLANT
MONTHLY AVERAGE OF HISTORICAL DAILY FLOW
1987
FLOW (MGD)
2
1.5
1
.5
0
1
2
3
4
5
6
7
8
9
10
11
12
MONTH

FIGURE 4-7

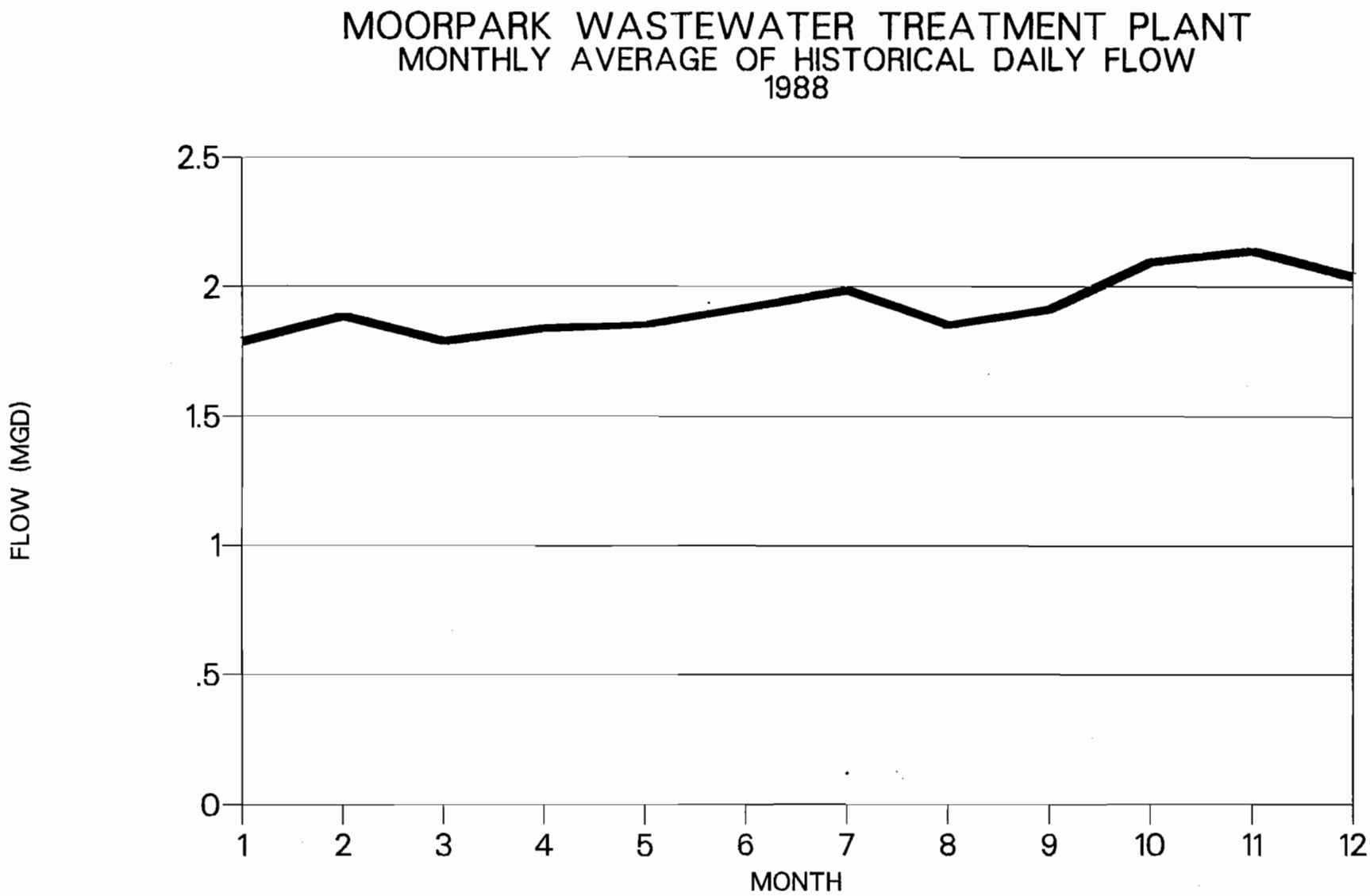

MOORPARK WASTEWATER TREATMENT PLANT
MONTHLY AVERAGE OF HISTORICAL DAILY FLOW
1988
FLOW (MGD)
2.5
2
1.5
1
.5
0
1
2
3
4
5
6
7
8
9
10
11
12
MONTH

FIGURE 4-8

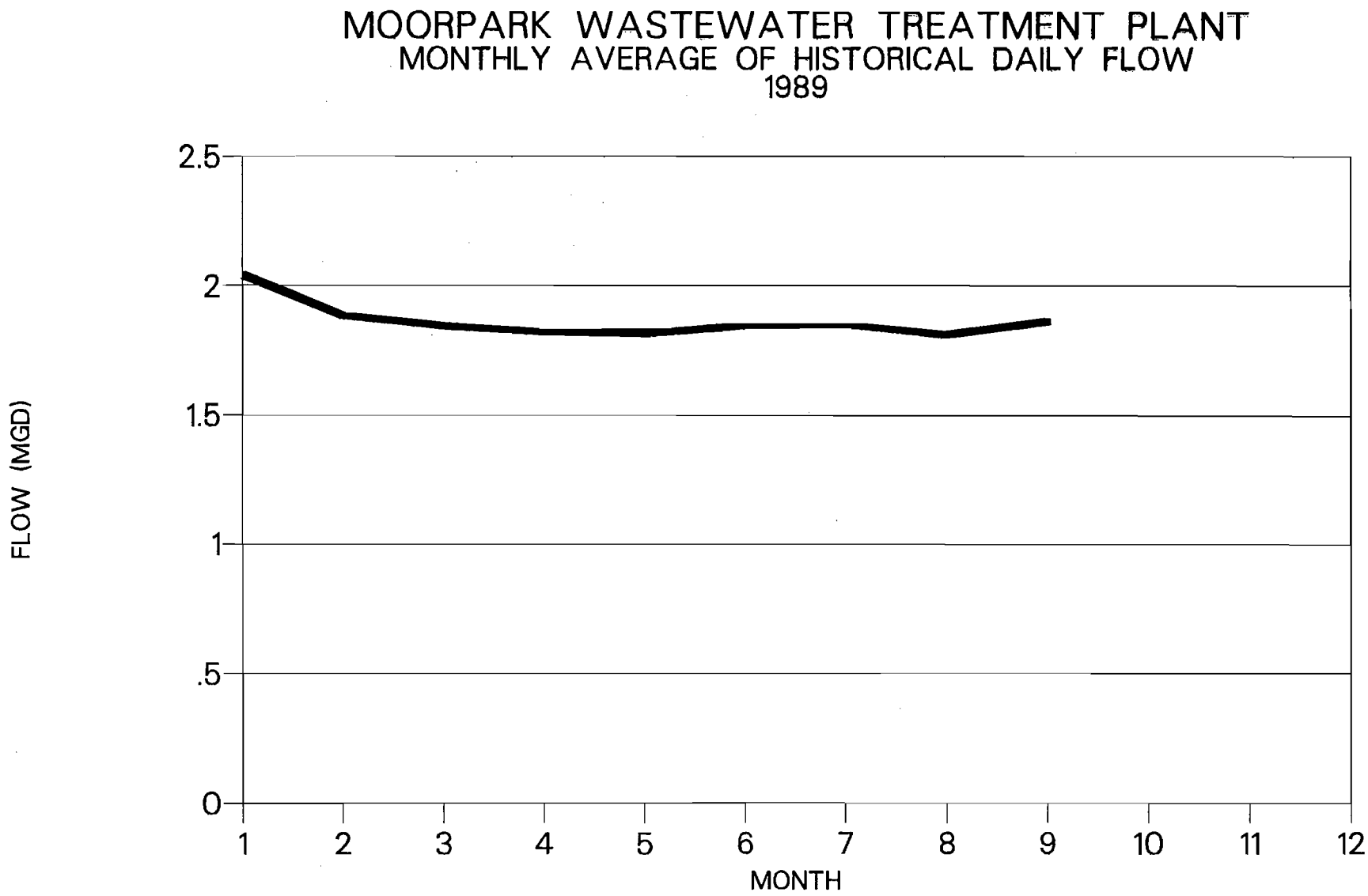

MOORPARK WASTEWATER TREATMENT PLANT
MONTHLY AVERAGE OF HISTORICAL DAILY FLOW
1989
FLOW (MGD)
2.5
2
1.5
1
.5
0
1
2
3
4
5
6
7
8
9
10
11
12
MONTH

FIGURE 4-9

there does not appear to be any monthly or seasonal variations in the flow, except for a slight increase at the end of the year. The flow peaks and low spots do not seem to exhibit any patterns, which indicates a fairly constant average flow into the plant, increasing each year as population and development increases. Figure 4-10 shows the flow for 1985 through 1988 averaged each month. This graph indicates that the flow into the plant is fairly constant throughout the year, with a slight rise in the last three months. This increase may be due to infiltration into the sewer mains during wet weather.

Influent flow to the wastewater treatment plant is measured continuously on circular charts. Each chart shows one week of flow. Flows for February through October, 1989, were analyzed to determine flow variations during the course of the day. The flows demonstrated a very definite pattern during weekdays and weekends. Figure 4-11 shows the average weekday hourly flow; Figure 4-12 shows average weekend hourly flow. The weekday flow has a peak from about 7:00 am to 1:00 pm, and another peak from about 6:00 pm to 10:00 pm. The weekend flow has one peak from about 9:00 am to 10:00 pm.

The hourly variations in flow during the day are not expected to affect the flow of effluent from the tertiary treatment plant. The treatment ponds and the tertiary treatment facilities are expected to regulate the flow so that a fairly constant supply of reclaimed water will be produced throughout the day.

4.4 Reclaimed Water Availability

The projected treated wastewater effluent flow discussed in Section 4.2 represents the total flow treated in the plant. The projected flow includes treated water that will be discharged to percolation ponds plus the water that will be treated in the tertiary treatment facility, which will be either discharged into the reclaimed water distribution system or into Arroyo Las Posas. Kennedy/Jenks/Chilton is currently designing a plant expansion to a nominal capacity of 3.0 MGD, including tertiary filters with a capacity of 1.5 MGD and percolation ponds with a nominal capacity of 1.5 MGD. The percolation ponds will actually have a maximum capacity of up to 3.0 MGD, depending upon weather, actual infiltration rates, and operation/maintenance procedures. However 1.5 MGD is considered to be the reliable percolation capacity of the expanded facility.

Since present flows are above 1.5 MGD, the District will have the option of producing up to 1.5 MGD of reclaimed water after constructing the tertiary plant.

As can be seen in Figure 4-3, the wastewater flows to the plant are expected to reach 3.0 MGD by around 1995. Present plans for the treatment plant expansion are to provide space for a future expansion of the tertiary facilities to 3.0 MGD, for a total nominal plant capacity of 4.5 MGD (3.0 MGD tertiary treatment plus 1.5 MGD nominal percolation capacity). If the tertiary plant is expanded, the District would have the option of producing up to 3.0 MGD of tertiary treated reclaimed water.

During periods of lower reclaimed water demand, the District will have the option of percolating as much water as the ponds can handle, to reduce treatment costs.

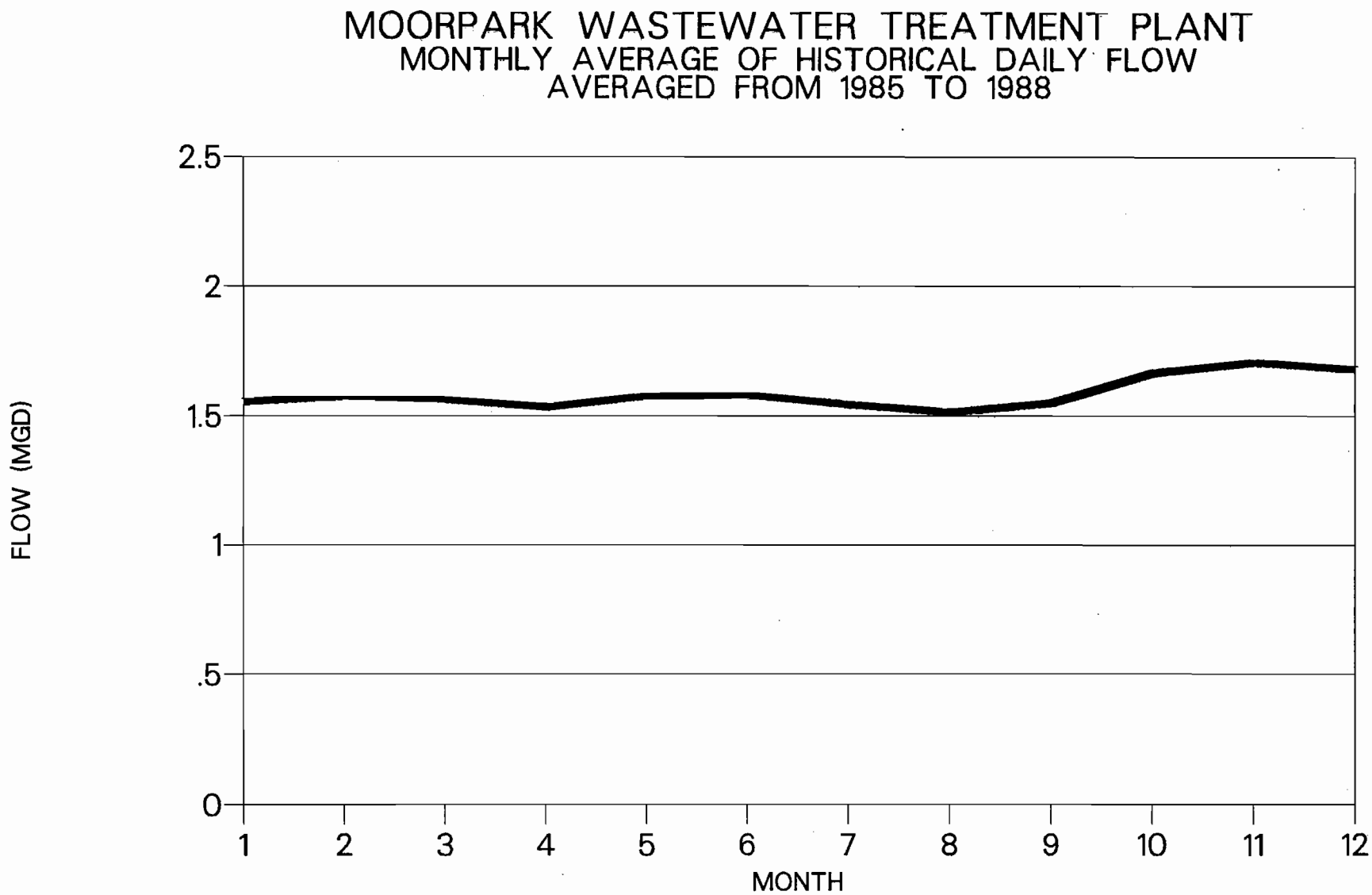

MOORPARK WASTEWATER TREATMENT PLANT
MONTHLY AVERAGE OF HISTORICAL DAILY FLOW
AVERAGED FROM 1985 TO 1988
FLOW (MGD)
2.5
2
1.5
1
.5
0
1
2
3
4
5
6
7
8
9
10
11
12
MONTH

FIGURE 4-10

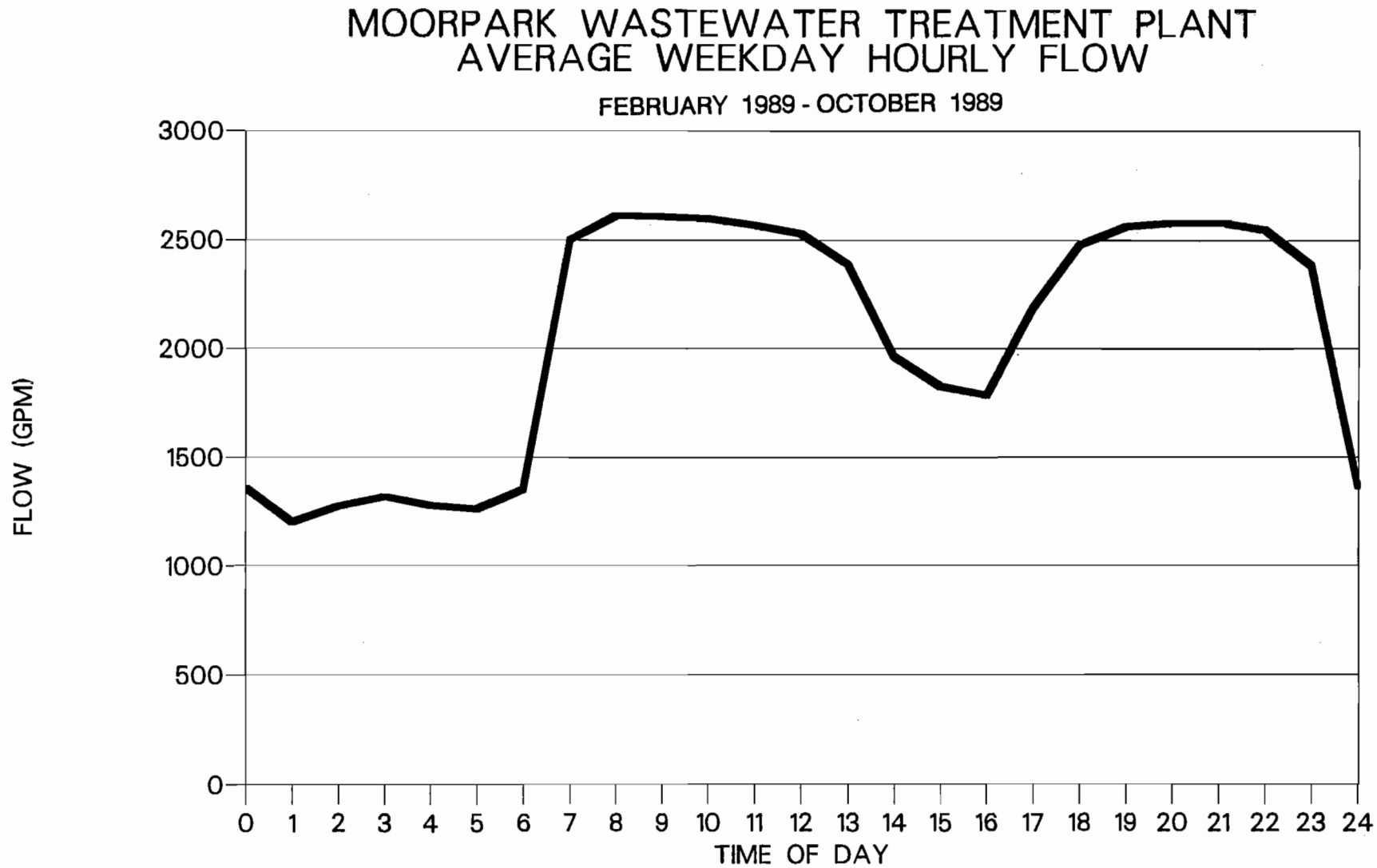

MOORPARK WASTEWATER TREATMENT PLANT
AVERAGE WEEKDAY HOURLY FLOW
FEBRUARY 1989 - OCTOBER 1989
FLOW (GPM)
3000
2500
2000
1500
1000
500
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
TIME OF DAY

FIGURE 4-11

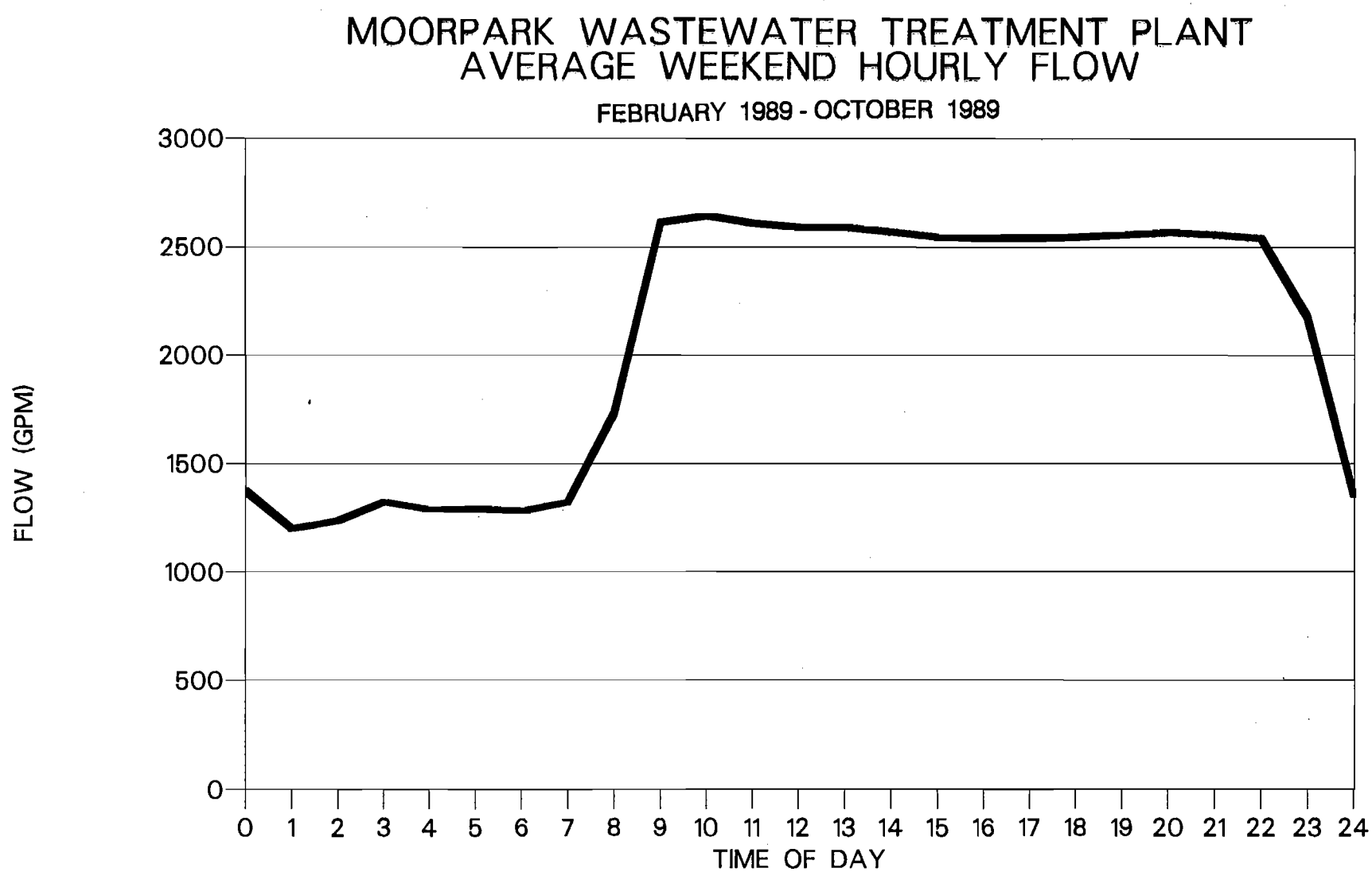

MOORPARK WASTEWATER TREATMENT PLANT
AVERAGE WEEKEND HOURLY FLOW
FEBRUARY 1989 - OCTOBER 1989
FLOW (GPM)
3000
2500
2000
1500
1000
500
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
TIME OF DAY

FIGURE 4-12

In summary, a reclaimed water supply of 1.5 MGD will be available after the tertiary facilities are constructed. At some time in the future, 3.0 MGD of reclaimed water will potentially be available, after the tertiary facilities are expanded.

4.5 Operational Cost of Tertiary Treatment

Preliminary cost information for tertiary treatment was obtained from Kennedy/Jenks/Chilton, who are preparing the design of the Moorpark Wastewater Treatment Plant expansion and the tertiary treatment facility. The cost of chemicals is expected to be $750 to $1000 per day after startup, when the plant is operating at 1.5 MGD. Operating costs for tertiary treatment, obtained from KJC, are summarized below:

TERTIARY TREATMENT OPERATION COSTS

Components	Annual Cost	Cost per AF @ 1.5 MGD (1680 AF/Yr)
Chemicals	$ 274,000 to $365,000	$163 to $217
Labor	$ 17,000	$10
Power	$ 10,000	$ 6
Materials & Equipment	$ 5,000	$ 3
Capital Costs	Not Included	Not Included
TOTAL	$ 306,000 to $ 397,000	$182 to $236

Total operational cost for tertiary treatment will therefore be approximately $182 to $236 per acre-foot. This does not include any capital costs for the tertiary plant.

Section 5 - Evaluation Of Agricultural Irrigation Reuse

5.1 Land Use

Existing and anticipated land use conditions are a significant consideration in identifying and evaluating potential irrigation users/locations. The cost of reclaimed wastewater delivery facilities will be significant considering the location of some parcels that may be irrigated. The expected longevity of agricultural irrigation may determine the viability of supplying reclaimed water to some areas.

Ventura County Waterworks District No. 1 is comprised of the City of Moorpark and adjacent unincorporated areas. The City of Moorpark was incorporated July 1, 1983. It is located in an east/west-oriented valley bounded by the Las Posas Hills to the south and the Simi Hills and the western flank of Big Mountain to the north. Primary regional access is via the Simi Valley Freeway (State Route 118) from the east, the Moorpark Freeway (State Route 23) from the south, and Los Angeles Avenue (State Route 118) from the west. The impact of these and other proposed roadways will be discussed later.

Existing urban development in Moorpark is located in three areas: 1) downtown, 2) Campus Park, and 3) Peach Hill. The estimated population of Moorpark was 15,733 persons in January 1986. The total number of dwelling units in the City on March 31, 1987 was 5,395. In 1985, city staff projected that under the City's current Land Use Element, total buildout of the City would result in 11,074 dwelling units, with a population of 32,225. This was based on the adopted person-per-dwelling-unit projection of 2.91 for the year 2000. As a result, a 105 percent growth, or an additional 16,492 persons, are anticipated to reside in Moorpark by the year 2000. Planned land use, as based on the City of Moorpark General Plan, is shown on Figure 5-1. The significance of these growth projections on future irrigation in the area is considerable.

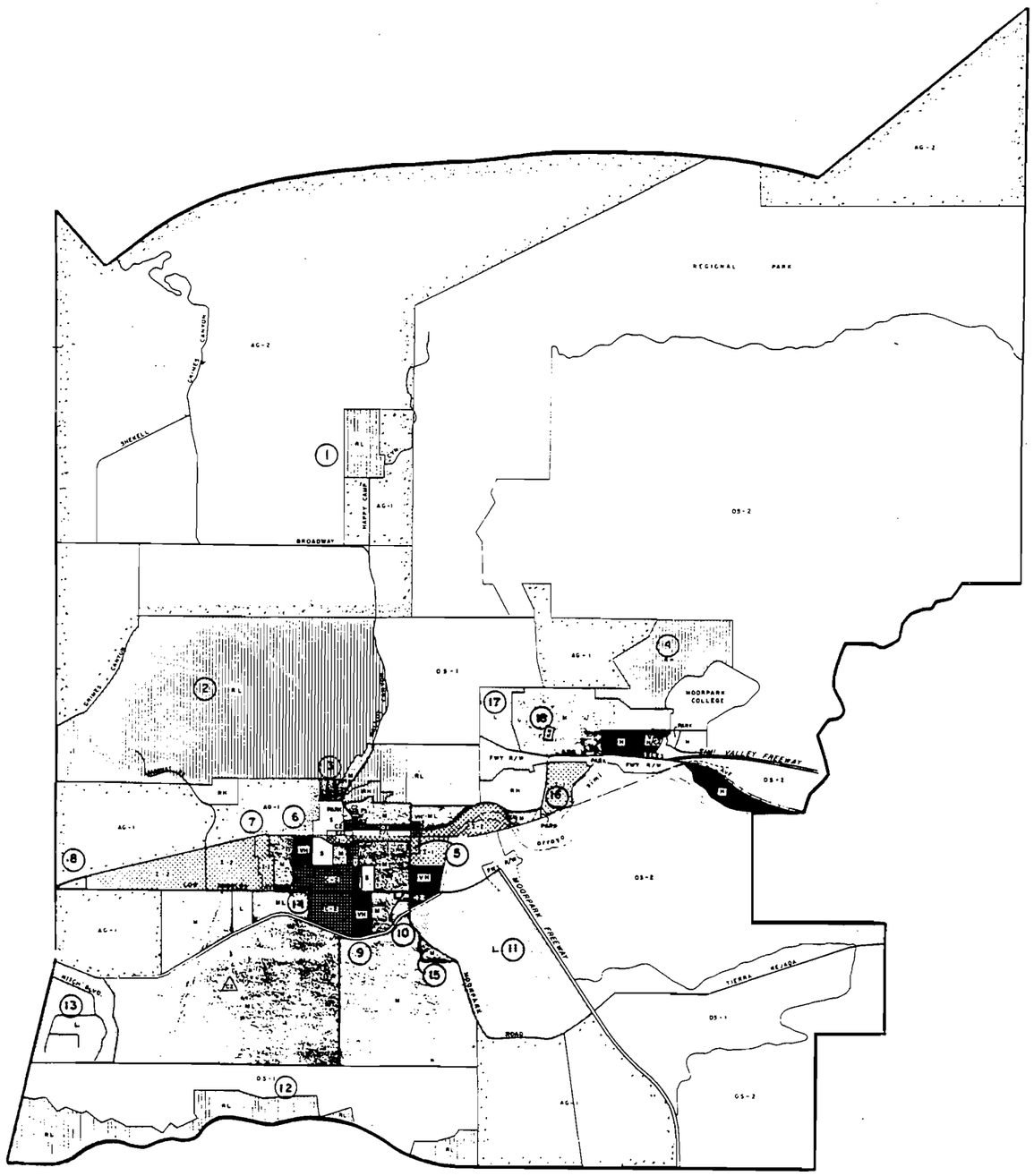
The Ventura County 208 Water Quality Management Plan (amended July 1980) was developed to establish policies/programs to improve water quality and is used to guide land use decisions, particularly as related to land use planning. It is based on population projections in 5-year increments to the year 2000 and is prepared for both growth and nongrowth areas. Growth and nongrowth area boundaries (year 2000), based on the Ventura County 208 Plan, provide a useful indication of where future growth can be expected, as shown on Figure 5-2. Growth areas include lands that are inside incorporated city boundaries and spheres of influence (see Figure 5-3), and may also include lands not yet encompassed by the sphere of influence. Note that the growth area boundary is well to the west of the City of Moorpark's sphere of influence and generally follows the alignments of Hitch Boulevard and Grimes Canyon Road (Figure 5-2). The area of interest, that may ultimately fall within the sphere of influence and/or incorporated area, extends even farther to the west (Figure 5-3).

The expansion of transportation facilities in the area may also impact land use and future irrigation. The planned extension of the Simi Valley Freeway (State Route 118) to bypass the City of Moorpark will impact lands to the north of Los Angeles Avenue. The proposed State

MOORPARK AREA PLAN

VENTURA COUNTY
ENVIRONMENTAL RESOURCE AGENCY

PLANNING DIVISION



MOORPARK WASTEWATER
TREATMENT PLANT

RESIDENTIAL

RL	RURAL LOW	5 ACRE/DU
RH	RURAL HIGH	1 ACRE/DU
L	LOW DENSITY	1.1-2 DU/ACRE (1.6 DU/ACRE/AV.)
ML	MEDIUM LOW DENSITY	2.1-3 DU/ACRE (2.6 DU/ACRE/AV.)
M	MEDIUM DENSITY	3.1-5 DU/ACRE (4 DU/ACRE/AV.)
H	HIGH DENSITY	5.1-10 DU/ACRE (7 DU/ACRE/AV.)
VH	VERY HIGH	10.1-20 DU/ACRE (15 DU/ACRE/AV.)

COMMERCIAL

- C1 — NEIGHBORHOOD COMMERCIAL
- C2 — GENERAL COMMERCIAL
- C2 — GENERAL COMMERCIAL 7.5 ACRES
- C/1 — COMMERCIAL/INDUSTRIAL MIX

INDUSTRIAL

- I-1 — LIGHT INDUSTRIAL
- I-2 — MEDIUM INDUSTRIAL

AGRICULTURE

- AG-1 — 10-40 ACRES/DU
- AG-2 — 40+ ACRES/DU

OPEN SPACE

- OS-1 — 10-40 ACRES/DU
- OS-2 — 40+ ACRES/DU

INSTITUTIONAL (existing only)

- S — SCHOOL
- P — PARK

1979

This Plan (map) is part of the General Plan adopted pursuant to the Planning Law of the State of California, passed by resolutions of the Planning Commission on 12-13-79 and the Board of Supervisors of Ventura County on 12-18-79

Board of Supervisors, Chairman

Planning Commission, Chairman

MAP 1

N

SOURCE: VENTURA COUNTY ENVIRONMENTAL
RESOURCE AGENCY MOORPARK AREA PLAN

COUNTY OF VENTURA
WATERWORKS DISTRICT NO.1

MOORPARK WASTEWATER TREATMENT PLANT
RECLAIMED WATER FEASIBILITY STUDY

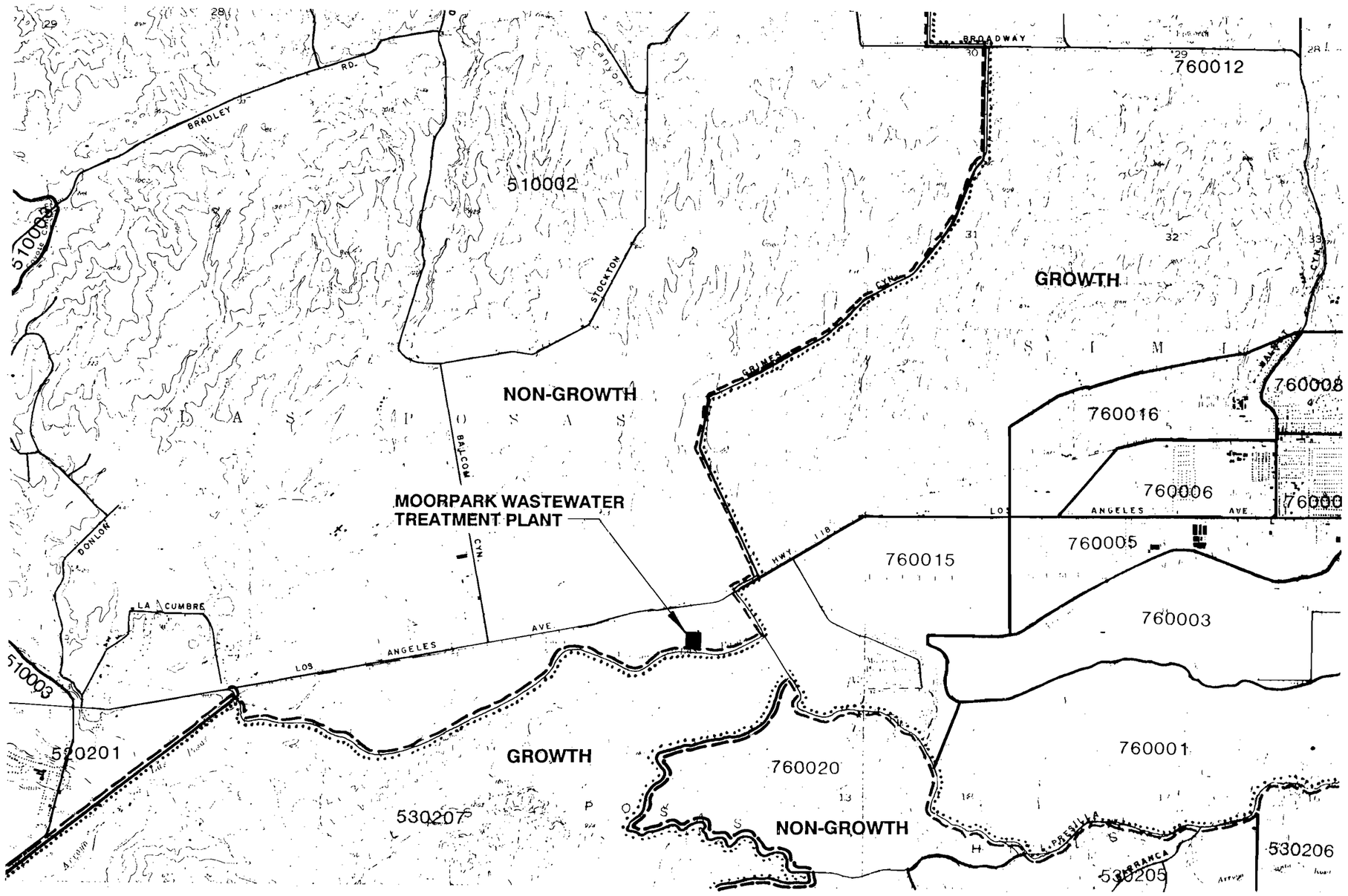
MOORPARK LAND USE PLAN

BOYLE ENGINEERING CORPORATION

VT-V04-200-01

FIGURE 5-1

D-1046



LEGEND

.....	GROWTH AREA BOUNDARY
------	NON-GROWTH AREA BOUNDARY
SIX DIGIT NUMBERS	TRANSPORTATION ANALYSIS ZONES

N

SOURCE: COUNTY OF VENTURA GROWTH AREA/NON GROWTH AREA BOUNDARY QUAD SHEET FOR MOORPARK (SET #12)

COUNTY OF VENTURA WATERWORKS DISTRICT NO.1

MOORPARK WASTEWATER TREATMENT PLANT RECLAIMED WATER FEASIBILITY STUDY

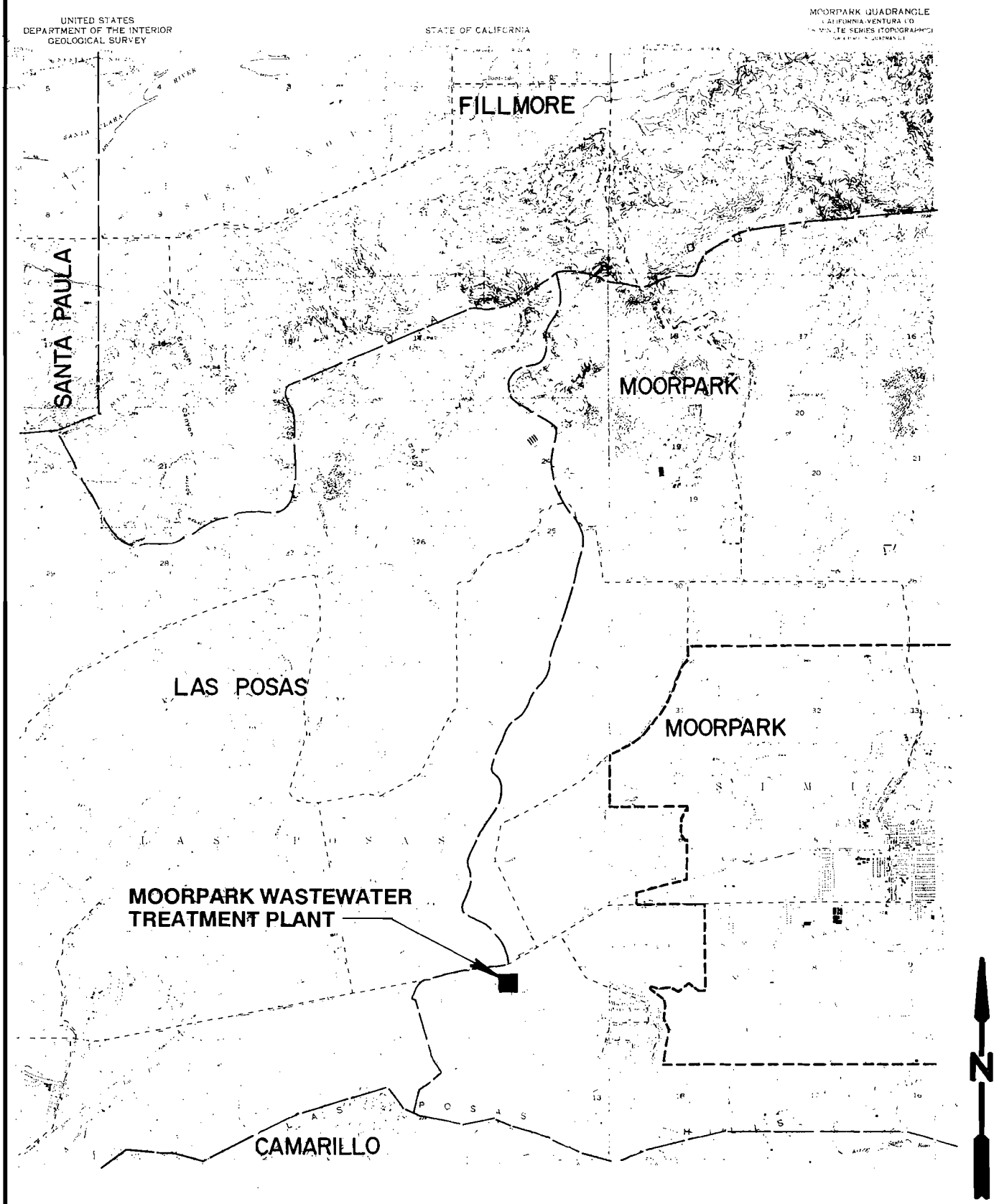
GROWTH AREA/NON GROWTH AREA BOUNDARIES

BOYLE ENGINEERING CORPORATION

VT-V04-200-01 FIGURE 5-2

D-1046

SOURCE: COUNTY OF VENTURA AREA OF INTEREST, SPHERE OF INFLUENCE QUAD SHEET FOR MOORPARK (SET #10)



AREAS OF INTEREST, SPHERES OF INFLUENCE

——— AREA OF INTEREST BDRY.
- - - - - SPHERE OF INFLUENCE BDRY.

FIGURE 5-3

Route 118 alignment generally follows the slope break between valley alluvium and foothill lands. However, construction, assuming the most optimistic scenario, is at least 15 years in the future.

Agricultural land use in the Moorpark area is generally west of the City and includes commercial nurseries, fields/row crops, citrus/avocado orchards, and some grazing lands. Irrigated agriculture is very important to the continuing economic growth of Ventura County. Much of the alluvial land being considered for reclaimed wastewater irrigation is classified as "prime" farmland based on the Soil Conservation Service assessment. These areas are considered a nonrenewable resource of state and national importance. Further, much of the total area being evaluated for reclaimed wastewater irrigation is somewhat protected from development by the Land Conservation Act (Williamson Act) program. This act provides for long-term (10-year) contracts between the growers and Ventura County to their mutual benefit. The grower receives reduced property tax benefits in exchange for guaranteeing exclusive agricultural use during the 10-year contract period. Contract agreements are renewed automatically unless the owner or Ventura County files a Notice of Nonrenewal. Lands covered by Land Conservation Act agreements are shown on Figure 5-4.

The Land Conservation Act discourages, but does not prevent, development to other nonagricultural uses. In theory, lands cannot be developed until the contract between the grower and Ventura County expires (contracts are generally 10 years, renewed annually). However, there is a vehicle that can allow more rapid development. If the developer is willing to repay the difference between the full tax rate that would have been in effect and reduced Land Conservation Act tax rates for the total time the lands were included in the Act, lands can be made available for development immediately, provided County approval is obtained. The buy-out cost is usually quite high but is often justified in rapidly developing areas with high property values.

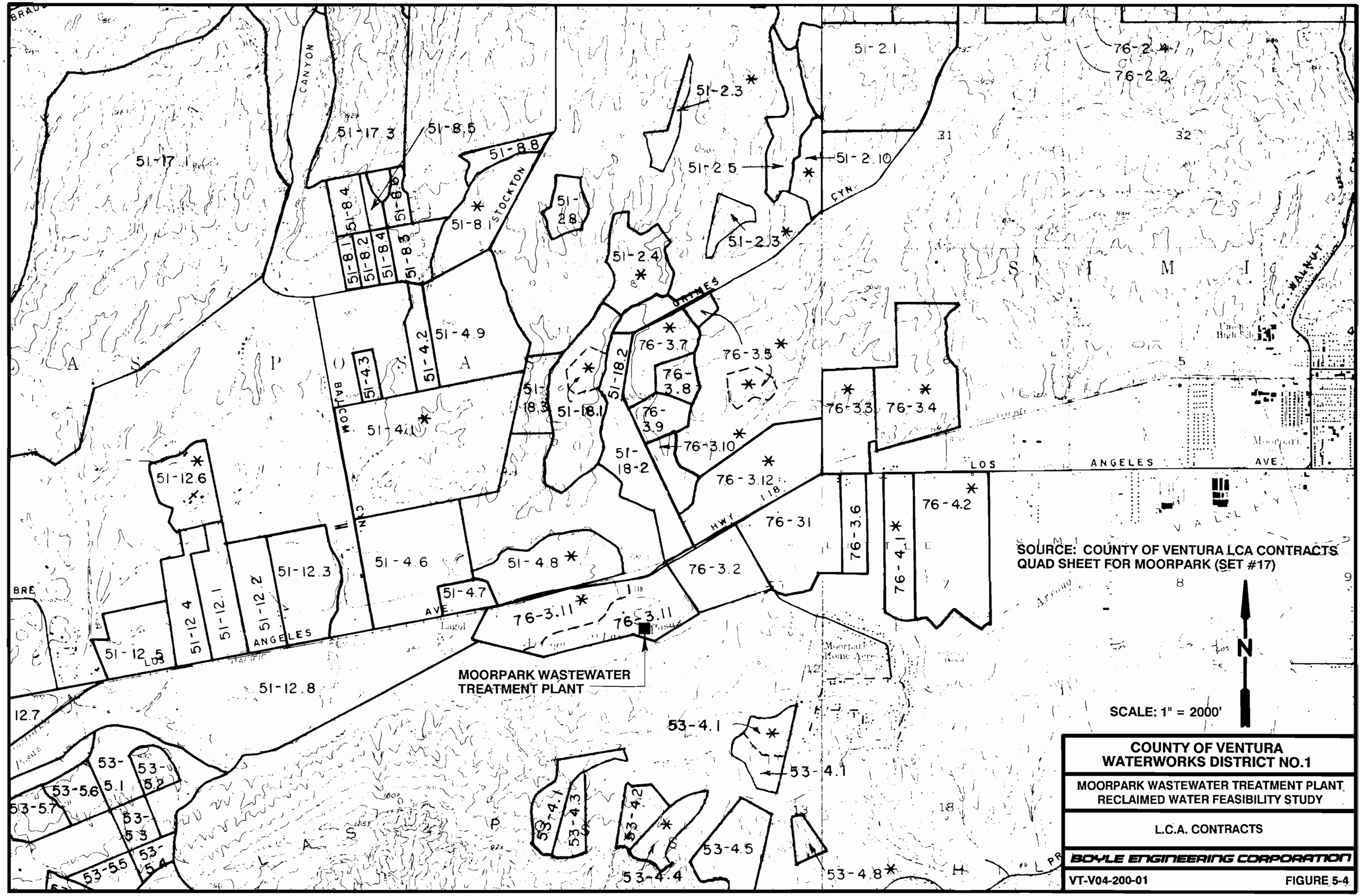
It is difficult to accurately assess the impact of the myriad of conditions, projections, and regulations in regard to the future development of agricultural lands west of the City of Moorpark. However, based on projected growth in the area, it may be unrealistic to plan for long-term irrigation (beyond the year 2000) of lands east of Hitch Boulevard and Grimes Canyon Road. The following general observations summarize land use conditions relative to reclaimed wastewater irrigation:

- Short-term development is being directed to the north and south of the City of Moorpark away from areas of "prime" agricultural land located to the west.

- As lands to the north and south of the City are developed, more pressure will be exerted on lands to the west, which will ultimately be the only direction the City can grow.

- Development may extend to the area of Hitch Boulevard and Grimes Canyon Road by the year 2000.

- Reclaimed water irrigation of lands east of Hitch Boulevard and Grimes Canyon Road should generally be considered a short-term venture (10-year life).


51-17.1
51-17.3
51-8.5
51-8.8
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51-8.2
51-8.3
51-8.4
51-8.6
51-8.7
51-4.9
51-4.2
51-4.3
51-4.1
51-2.1
51-2.3
51-2.5
51-2.10
51-2.8
51-2.4
51-2.3
76-2.1
76-2.2
51-18.2
51-18.3
51-18.1
76-3.7
76-3.8
76-3.9
76-3.5
76-3.10
76-3.12
76-3.3
76-3.4
76-3.6
76-4.2
76-4.1
76-31
76-3.2
51-12.6
51-12.3
51-12.2
51-12.1
51-12.4
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51-4.7
76-3.11
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12.7
53-5.1
53-5.2
53-5.3
53-5.4
53-5.5
53-5.6
53-5.7
53-4.1
53-4.2
53-4.3
53-4.4
53-4.5
53-4.8
MOORPARK WASTEWATER TREATMENT PLANT
SOURCE: COUNTY OF VENTURA LCA CONTRACTS QUAD SHEET FOR MOORPARK (SET #17)
N
SCALE: 1" = 2000'
COUNTY OF VENTURA
WATERWORKS DISTRICT NO.1
MOORPARK WASTEWATER TREATMENT PLANT
RECLAIMED WATER FEASIBILITY STUDY
L.C.A. CONTRACTS
BOYLE ENGINEERING CORPORATION
VT-V04-200-01
FIGURE 5-4

D-1046

- Existing commercial nurseries and a planned regional park generally located within in the City of Moorpark's existing sphere of influence should be evaluated for potential long-term irrigation.

- The development of reclaimed water distribution facilities should primarily address lands west of Hitch Boulevard and Grimes Canyon Road with some consideration for short-term uses (based on cost/benefit analysis) east of these roadways.

- Existing agricultural lands in District 19 may be acceptable long-term areas for tertiary treated wastewater irrigation.

5.2 Agricultural Study Area

The agricultural study area encompasses those lands west of the City of Moorpark to the District No. 1 boundary presently used for agricultural/nursery crop production purposes. The north/south extent of the area was initially determined based on reviews of land use based on recent aerial photography, topography, estimates of acreage requirements, and other factors. Landowners within this initial boundary were identified based on information from the Ventura County Tax Assessor's office and contacted by telephone to obtain general data.

Upon further review of information gathered early in the study period, the extent of the initial area selected was reduced in size because of the following considerations:

- Existing land use zoning.

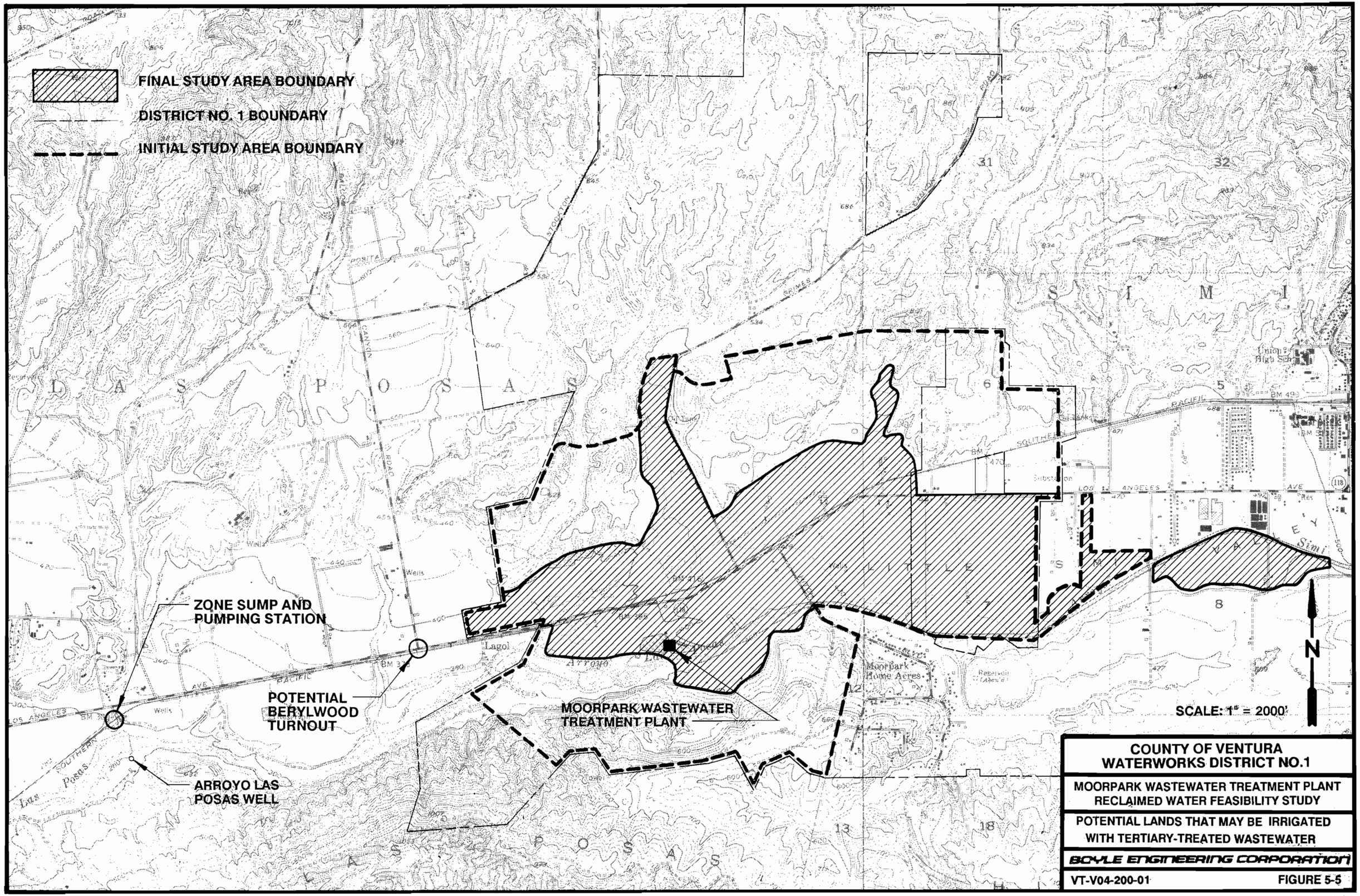
- Small parcel sizes/ownerships would require a large number of individual turnouts, which would increase delivery system costs.

- Serving lands in the rolling foothills above the alluvial floodplain would significantly increase system capital and operation/maintenance costs.

- Minimize the number of creek and road crossings to reduce system costs.

- Development pressure is being directed toward the upland areas away from the lands considered "prime" farmland by the USDA Soil Conservation Service.

The initial study area, along with the area selected for final study, is shown on Figure 5-5. The agricultural area selected generally includes the valley alluvial lands west of the City of Moorpark boundary extending to the District No. 1/District No. 19 boundary. Also included is the proposed City of Moorpark regional park located just east of Tierra Rejada Road and south of Arroyo Las Posas. The feasibility of serving three privately-held water companies within the District No. 19 boundary (Arroyo Las Posas, Berylwood, and Zone Mutual) is also considered.


FINAL STUDY AREA BOUNDARY
DISTRICT NO. 1 BOUNDARY
INITIAL STUDY AREA BOUNDARY
ZONE SUMP AND PUMPING STATION
POTENTIAL BERYLWOOD TURNOUT
ARROYO LAS POSAS WELL
MOORPARK WASTEWATER TREATMENT PLANT
SCALE: 1" = 2000'
N
COUNTY OF VENTURA
WATERWORKS DISTRICT NO.1
MOORPARK WASTEWATER TREATMENT PLANT
RECLAIMED WATER FEASIBILITY STUDY
POTENTIAL LANDS THAT MAY BE IRRIGATED
WITH TERTIARY-TREATED WASTEWATER
BOYLE ENGINEERING CORPORATION
VT-V04-200-01
FIGURE 5-5

5.2.1 Potential Agricultural Users

The summary of potential reclaimed wastewater agricultural users is shown on Table 5-1. The area identified includes about 1,059.87 gross acres per the Ventura County Tax Assessor's parcel maps. The cropping pattern is generally summarized as follows (gross acreage):

- 656.36 acres field/row crops, including 14.00 acres of cut flowers.
- 124.87 acres commercial nursery
- 91.83 acres eucalyptus trees
- 77.20 acres Christmas trees
- 69.00 acres future regional park (City of Moorpark)
- 40.61 acres avocado trees

The summary of general characteristics of the three private water companies within the District No. 19 boundary (Arroyo Las Posas, Berylwood, and Zone Mutual) is shown on Table 5-2. These water companies primarily supply water to agricultural users. Because of the proximity of these water companies to the wastewater treatment plant, it may be feasible to provide a connection to their existing irrigation water supply facilities. Each individual water company has its own discrete delivery system dedicated to agricultural irrigation uses. It may be desirable to provide long-term service to these areas, especially as District No. 1 lands begin to be removed from agricultural use near the end of the decade. Development pressure to nonagricultural uses is minimal in the service area of these three water companies, and they are likely to remain in irrigated agriculture long after District No. 1 lands are urbanized. The total irrigated area encompasses some 7,250 acres planted primarily to field/row crops, citrus, and avocados.

5.2.2 Geology and Soils

The project area lands are underlain by a sequence of very fine to coarse grain marine and nonmarine clastic sedimentary rocks. Locally, these base rocks have been overlaid by alluvial deposits from surrounding uplands. The age of the geologic material ranges from Oligocene for the basement sedimentary rocks to recent for the deposited alluvium. The oldest geologic sediment is the nonmarine Sespe formation. It generally consists of clay to pebbly sandstone and conglomerate interbedded with siltstone and claystone. The sandstone and conglomerate are typically poorly sorted, poorly cemented, and well compacted. The marine Plio-Pleistocene San Pedro formation and the nonmarine equivalent Saugus formation are deposited on the Sespe formation. These two units are similar, consisting of siltstone and claystone with interbeds of noncemented and poorly consolidated clayey sandstone and gravelly sandstone. The basal Fox Canyon member of both formations consists of up to 400 feet of gravelly sandstone with thin siltstone interbeds. Alluvium deposited from late Pleistocene until Recent time overlies the older units over much of the project area. This material fills the

TABLE 5-1

SUMMARY OF POTENTIAL TREATED WASTEWATER EFFLUENT AGRICULTURAL USERS DISTRICT NO. 1 LANDS[1]

Parcel Owner(s)	Assessor Parcel Number	Gross Acreage	Cropping Pattern
Alejo, Enrique Jr.	503-0-050-315	20.19	Avocados
	503-0-050-335	20.42	Avocados
Birkenshaw, Betty Trust	500-0-340-185	66.65	Field/row
	500-0-340-195	6.61	Field/row
Birkenshaw, James R.	163-0-040-090	60.61	Christmas trees
Birkenshaw, Veda H.	504-0-010-010	56.97	[2]
	504-0-010-020	20.31	Field/row
	504-0-010-030	28.57	Field/row
Boething Family Trust	163-0-030-245	29.18	Nursery
	163-0-040-045	10.76	Nursery
	163-0-040-115	19.03	Nursery
Burhoe, Douglas Jr.	163-0-030-635	25.003	Field/row
Chang, John Yon	503-0-050-320	89.58	Field/row
Church of Jesus Christ of LDS	603-0-060-155	118.56	Field/row
City of Moorpark	---	69.00[3]	Park
Finley, Carolyn A.	504-0-020-030	59.46	Field/row
Ives, Edwin M.	503-0-050-205	20.02	Eucalyptus
	503-0-050-215	24.35	Eucalyptus
	503-0-050-225	26.71	Eucalyptus
	503-0-050-245	20.75	Eucalyptus
Katsuda, Ken Chowanski, Walter M.	163-0-030-655	14.00[3]	Flowers
Levy Company	504-0-020-040	139.20	Field/row

TABLE 5-1 (continued)

Parcel Owner(s)	Assessor Parcel Number	Gross Acreage	Cropping Pattern
McGuire, Eva Louise	504-0-020-015	33.41	Field/row
Ota, Kiyoshi Ota, Bill	503-0-050-075	20.53	Nursery
Southern California Edison Company	504-0-010-040	1.83	Nursery
	504-0-010-050	1.47	Nursery
	504-0-010-060	1.83	Nursery
	504-0-010-070	5.04	Nursery
	504-0-020-025	8.32	[4]
	504-0-020-055	21.96	[5]
	504-0-020-255	7.26	Nursery
	504-0-020-265	6.31	Nursery
	504-0-020-275	5.98	Nursery

[1] Based on Ventura County Tax Assessor's data, gross acreage = 1,059.87.

[2] Parcel leased to two separate entities. 16.59 acres (estimated) in Christmas trees and 40.38 acres (estimated) in field/row crops.

[3] Estimated acreage.

[4] Parcel leased to two separate entities. 2.00 acres (estimated) in nursery and 6.32 acres (estimated) in field/row crops.

[5] Parcel leased to two separate entities. 13.65 acres (estimated) in nursery and 8.31 acres (estimated) in field/row crops.

TABLE 5-2

SUMMARY OF POTENTIAL TREATED WASTEWATER EFFLUENT AGRICULTURAL USERS PRIVATE WATER COMPANIES IN DISTRICT NO. 19

Water Company	Service Area (acres)	Water Cost ($/acre-foot)	Cropping Pattern	Estimated Water Use (Total AF)
Arroyo Las Posas[1]	350	210[2]	Avocado/citrus	600-700
Berylwood[3]	1,300	125	Avocado/citrus Field/row	1,200-1,300
Zone Mutual[3]	5,600	125	Avocado/citrus Field/row	6,000-6,300
TOTAL	7,250			7,800-8,300

1 Based on data obtained from Ron Johnson, Arroyo Las Posas Water Company, Chairman - Board of Directors.

2 Estimated existing cost. Water cost will be reduced to about $140/acre-foot after 1992, when debt on capital facilities is retired.

3 Based on data obtained from Sam McIntyre and Bill Radford.

Las Posas Valley along the alignment of Arroyo Las Posas and occurs along tributary channels. Alluvial deposits are generally crudely stratified, noncemented, and poorly consolidated. Grain size ranges from clay/silt to boulder-size material. The thickness of the alluvium is locally variable, and it reaches a maximum depth of about 200 feet through the valley adjacent to Arroyo Las Posas.

The soil characteristics prevailing in the project area are the product of a complex set of environmental and geologic forces. Soil conditions change with time as they are modified by these continuing climatic and geologic events. The characteristics of the soil at any given point in time depend on:

1. Physical and mineralogical composition of the parent material.

2. Prevailing climate under which the soil accumulated and that which has existed since accumulation.

3. Soil relief.

4. Biological forces such as plant and animal life in and on the soil.

5. Length of time that these developmental forces have acted on the soil material.

The use and management of soils can also act to modify native soil conditions. Tillage can mix surface layers, create pans, and modify biological forces. Land leveling can change relief. Irrigation and fertilization can change the salinity, alkalinity and fertility status. Improperly managed grazing or equipment operations can harm soil structure and reduce soil permeability.

The USDA Soil Conservation Service (SCS) surveyed and classified soils in the project area during the period 1961 through 1968. The results of the SCS survey are published in the "Soil Survey of the Ventura Area, California" issued April 1970. Data in the SCS report generally characterizes the surface 60 inches of the soil profile.

Project area soils can be separated into three distinct groups (see Figure 5-6):

1. Soils on alluvial fans, plains, and basins.

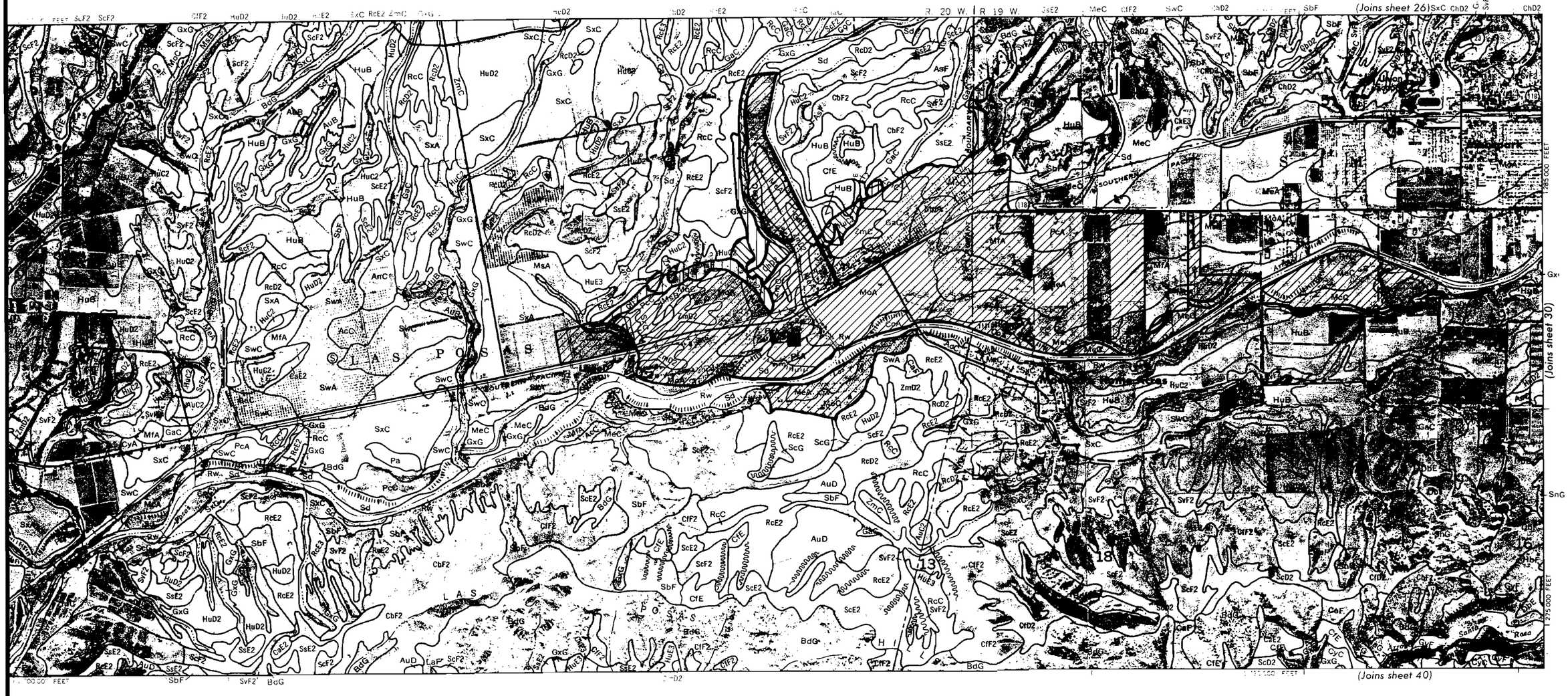
2. Soils on terraces.

3. Soils on uplands.

Soils occurring on alluvial fans, plains, and basins are those that predominate in a project area. Soils that occur on alluvial fans, plains, and basins are those of the 1) Pico-Metz-Anacapa association, 2) Mocho-Sorrento-Garretson association, and 3) River Wash-Sandy Alluvial Land-Coastal Beaches association.

The Pico-Metz-Anacapa association includes soils that are level to moderately sloping, very deep, well-drained to somewhat excessively-drained sandy loams. The soils of this

VENTURA AREA, CALIFORNIA — SHEET NUMBER 27



LEVEL TO MODERATELY SLOPING, EXCESSIVELY-DRAINED TO POORLY-DRAINED, SOILS OF THE ALLUVIAL FANS, PLAINS AND BASINS.

LEVEL TO MODERATELY STEEP, WELL-DRAINED AND MODERATELY WELL-DRAINED SOILS OF THE TERRACES.

MODERATELY SLOPING TO VERY STEEP, WELL-DRAINED AND EXCESSIVELY-DRAINED SOILS OF THE UPLANDS

NOTE: SEE TABLE 5-3 FOR GENERAL SOIL CHARACTERISTICS

REF: USDA/SCS SOIL SURVEY FOR THE VENTURA AREA, CALIFORNIA

COUNTY OF VENTURA WATERWORKS DISTRICT NO.1

MOORPARK WASTEWATER TREATMENT PLANT RECLAIMED WATER FEASIBILITY STUDY

GENERAL LOCATION OF PROJECT AREA SOILS

BOYLE ENGINEERING CORPORATION

VT-V04-200-01 FIGURE 5-6

association are some of the most productive in the project area. They are used for irrigated vegetables, citrus crops, field crops, strawberries, walnuts, and avocados.

Metz series soils consist of somewhat excessively drained calcareous loamy sands and loamy fine sands extending to depths of 60 inches or more. These soils were formed on alluvial plains and fans in stratified alluvial deposits derived predominantly from sedimentary rocks. Slopes are generally 0 to 9 percent. The surface layer is pale brown, calcareous loamy sand underlain by light brownish-gray calcareous stratified sand and sandy loam. Pico series soils are well-drained and somewhat excessively-drained calcareous sandy loams and loams extending to depths of 60 inches or more. These soils formed on alluvial fans and plains derived predominantly from sedimentary rocks. They have predominant slopes of 0 to 9 percent. Pico soils generally have a surface layer of grayish-brown calcareous sandy loam underlain by light brownish-gray calcareous loam and sandy loam.

Soils of the Mocho-Sorrento-Garretson association are level to moderately sloping, very deep, well-drained loams to silty clay loams. The soils of this association are also some of the most productive in the survey area. They are used for irrigated vegetables, citrus crops, field crops, walnuts, and avocados.

Mocho series soils consist of well-drained loams, gravelly loams, and clay loams extending to a depth of 60 inches or more. These soils formed on alluvial plains and fans derived predominantly from sedimentary rocks. Predominant slopes are 0 to 9 percent. Mocho soils have a surface layer of grayish-brown calcareous loam underlain by grayish-brown and light grayish-brown calcareous loam. Sorrento series soils consist of well-drained loams and silty clay loams extending to a depth of 60 inches or more. These soils formed on alluvial fans and plains in alluvium derived from sedimentary rocks. Predominant slopes are generally 0 to 9 percent. Sorrento soils have a surface layer of grayish-brown, neutral to mildly alkaline loam underlain by grayish-brown and light brownish-gray, moderately alkaline loam that is calcareous in the lower part. Garretson series soils consist of well-drained loams and gravelly loams extending to a depth of 60 inches or more. These soils formed on alluvial fans and plains in alluvium derived predominantly from sedimentary rocks. Slopes are generally 0 to 9 percent. Garretson soils have a surface layer of grayish-brown and yellowish-brown, slightly acid loam underlain by yellowish-brown and pale brown, mildly alkaline loam and gravelly fine sandy loam.

Soils of the River Wash-Sandy Alluvial Land-Coastal Beaches association are level to gently sloping, excessively drained to poorly drained, stratified sandy, gravelly, and cobbly material. The soils of this association generally have little value for agriculture. However, some areas of sandy alluvial land are used for citrus crops and other limited agricultural uses.

Sandy Alluvial Land consists of stratified sandy sediments, gravelly and cobbly in places, on floodplains adjacent to perennial and intermittent streams. This land type is subject to infrequent flooding, scouring, or deposition immediately following high-intensity storms of long duration. Drainage is excessive, and permeability is very rapid.

Soils that occur on terraces are those of the Rincon-Huerhuero-Azule association. These soils are level to moderately steep, very deep, well-drained to moderately well-drained, very fine sandy loams to silty clay loams that have a slowly or very slowly permeable sandy clay subsoil. The soils in this association are generally used for citrus and field crops. Areas of lesser slopes may also be planted to vegetables.

Rincon series soils consist of well-drained silty clay loams that have a sandy clay subsoil. These soils developed on old alluvial fans and terraces and material weathered from sedimentary rocks. Slopes predominantly range from 2 to 30 percent. These soils typically extend to depths of 60 inches or more and have a surface layer of dark gray, slightly acid silty clay loam. The subsoil is dark grayish-brown and brown, neutral to moderately alkaline sandy clay and sandy clay loam that becomes calcareous with increasing depth. The substratum is yellowish brown, calcareous stratified sandy clay loam and sandy loam. Huerhuero series soils consist of moderately well-drained, very fine sandy loams that have a sandy clay subsoil. They have an effective rooting depth of 8 to 30 inches. These soils formed on alluvial fans and terraces in alluvium derived from sedimentary rocks. Predominant slopes range from 0 to 30 percent. Huerhuero soils have a surface layer of grayish-brown and dark grayish-brown, slightly acid, very fine sandy loam. This layer is underlain by a thin layer of gray, medium acid, very fine sandy loam. The subsoil is brown and pale brown, neutral and moderately alkaline sandy clay and sandy clay loam. The substratum is brown, moderately alkaline calcareous very fine sandy loam.

Soils of the uplands are those of the San Benito-Nacimiento-Linne association. These soils are strongly sloping to very steep, well-drained clay loams and silty clay loams that are moderately deep to deep over shale or sandstone. The soils of this association are used for citrus crops, field crops, and avocados.

San Benito series soils consist of well-drained clay loams that extend to depths of 40 to 60 inches over softly consolidated sediments. These soils formed in upland areas and have slopes of 9 to 75 percent. They have a surface layer of dark grayish-brown, moderately alkaline clay loam and a substratum of grayish brown and light yellowish-brown calcareous clay loam. They are underlain by softly consolidated sediments.

The suitability of soils for irrigation with tertiary treated wastewater is evaluated based on the physical and chemical soil characteristics and the chemical characteristics of the applied irrigation water. Soils occurring in the project area are considered suited to the application of tertiary treated wastewater for crop irrigation purposes. The summary of general soil characteristics is shown on Table 5-3.

5.3 Marketing Survey

A grower survey questionnaire was prepared to elicit information needed to determine interest in using tertiary treated wastewater for irrigation. Another purpose of the survey effort was to gather data relative to the cropping patterns, irrigation methods, and water costs unique to each individual farming operation. Data gathered from individual operations provides the basis

TABLE 5-3

SUMMARY OF GENERAL SOIL CHARACTERISTICS[1]
EXISTING IRRIGATED LANDS
DISTRICT NO. 1

Soil Series	SCS Map Unit ID	Texture	Slope (%)	Drainage	Depth (inches)	Permeability (inches/hour)	Available Water-Holding Capacity (inches/foot)	Reaction (pH)	Salinity[3] ($EC_e \times 10^3$)
Chesterton	ChD2	Coarse sandy loam	5-15	Mod. well	0-10	2.0-6.3	1.32-1.56	5.6-6.5	<2.0
					10-26	0.06-0.2	1.68-1.92	5.6-6.5	<2.0
					26-36	<0.06	—	5.6-6.5	—
					36-60	0.2-0.63	1.68-1.92	7.4-7.8	<2.0
Corralitos	CoA	Loamy sand	0-2	Excessive	0-57	>20.0	0.72-0.96	6.1-7.3	<2.0
Garetson	GaC	Loam	2-9	Well	0-56	0.62-2.0	1.92-2.16	6.1-7.8	<2.0
					56-61	0.63-2.0	0.84-1.08	7.4-7.8	<2.0
Huerhuero	HuC2	Very fine	5-9	Mod. well	0-25	0.63-2.0	1.80-.04	6.1-7.3	<2.0
		Sandy loam			25-48	<0.06	0.48-0.72	6.6-8.4	<2.0
					48-57	0.63-2.0	1.80-2.04	7.9-8.4	<2.0
Metz	McA	Loamy fine sand	0-2	SE[2]	0-60	6.3-20.0	9.96-1.20	7.4-8.4	<2.0
	McC	Loamy fine sand	2-9	SE	0.60	6.3-20.0	0.96-1.20	7.4-8.4	<2.0
	MeA	Loamy sand	0-2	SE	0-60	6.3-20.0	0.72-0.96	7.4-8.4	<2.0
	MeC	Loamy sand	2-9	SE	0-60	6.3-20.0	0.72-0.96	7.4-8.4	<2.0
	MfA	Loamy sand	0-2	SE	0-40	6.3-20.0	0.72-0.96	7.4-8.4	<2.0
		(loamy substratum)			40-60	2.0-6.3	1.32-1.56	7.4-8.4	<2.0
Mocho	MoA	Loam	0-2	Well	0-60	0.63-2.0	1.92-2.16	7.9-8.4	<2.0
	MoC	Loam	2-9	Well	0-60	0.63-2.0	1.92-2.16	7.9-8.4	<2.0
	MsB	Clay loam	2-5	Well	0-60	0.2-0.63	2.16-2.40	7.9-8.4	<2.0
Pico	PcA	Sandy loam	0-2	Well	0-54	2.0-6.3	1.32-1.56	7.9-8.4	<2.0
					54-60	6.3-20.0	0.60-0.84	7.9-8.4	<2.0
	PcC	Sandy loam	2-9	Well	0-54	2.0-6.3	1.32-1.56	7.9-8.4	<2.0
					54-60	6.3-20.0	0.60-0.84	7.9-8.4	<2.0

TABLE 5-3 (continued)

Soil Series	SCS Map Unit ID	Texture	Slope (%)	Drainage	Depth (inches)	Permeability (inches/hour)	Available Water-Holding Capacity (inches/foot)	Reaction (pH)	Salinity ($EC_e \times 10^3$)
Pico	PsA	Loam (sandy substratum)	0-2	Well	0-18	0.63-2.0	1.92-2.16	7.9-8.4	<2.0
					18-36	2.0-6.3	1.32-1.56	7.9-8.4	<2.0
					36-59	6.3-20.0	0.60-0.84	7.9-8.4	<2.0
Rincon	RcE2	Silty clay loam	15-30	Well	0-16	0.2-0.63	2.28-2.52	6.1-7.3	<2.0
					16-31	0.06-0.2	1.80-2.04	6.6-8.4	<2.0
					31-60	0.2-0.63	1.68-1.92	7.4-8.4	<2.0
San Benito	ScF2	Clay loam	30-50	Well	0-60	0.2-0.63	2.04-2.28	6.6-8.4	<2.0
Sandy Alluvial Land	Sd	Sandy	—	Excessive	0-60	>20.0	0.72-1.44	6.6-8.4	<2.0
Soper	SvF2	Gravelly loam	30-50	Well	0-11	0.63-2.0	1.68-2.16	6.1-6.5	<2.0
					11-57	0.2-0.63	1.20-1.68	6.6-7.8	<2.0
					>57	—	—	—	—
Sorrento	SwA	Loam	0-2	Well	0-60	0.63-2.0	1.92-2.16	6.1-8.4	<2.0
	SxA	Silty clay loam	0-2	Well	0-60	0.2-0.63	2.28-2.52	6.1-7.8	<2.0
	SxC	Silty clay loam	2-9	Well	0-60	0.2-0.63	2.28-2.52	6.1-7.8	<2.0
Zamora	ZmC	Loam	2-9	Well	0-17	0.63-2.0	1.92-2.16	6.1-7.3	<2.0
					17-40	0.2-0.63	2.28-2.52	6.6-7.3	<2.0
					40-52	0.63-2.0	1.32-1.56	7.4-8.4	<2.0
	ZmD2	Loam	9-15	Well	0-17	0.63-2.0	1.92-2.16	6.1-7.3	<2.0
					17-40	0.2-0.63	2.28-2.52	6.6-7.3	<2.0
					40-52	0.63-2.0	1.32-1.56	7.4-8.4	<2.0

[1] Source: Soil Survey, Ventura Area, California, USDA Soil Conservation Service, issued April 1970.
[2] SE = Somewhat excessive.
[3] Expressed as mmhos/cm at 25°C.

for evaluating alternative water delivery system design/flow requirements and potential tertiary treated wastewater value. The potential golf course near Grimes Canyon Road was not included in the marketing survey.

The survey questionnaire consisted of four pages with 19 total questions. The survey instrument (see Appendix A) was developed by Boyle agricultural staff and reviewed internally prior to the actual survey/data collection effort. A letter was developed explaining the purposes of the project for mailing to each individual landowner. The letter was prepared on Ventura County Public Works Agency letterhead.

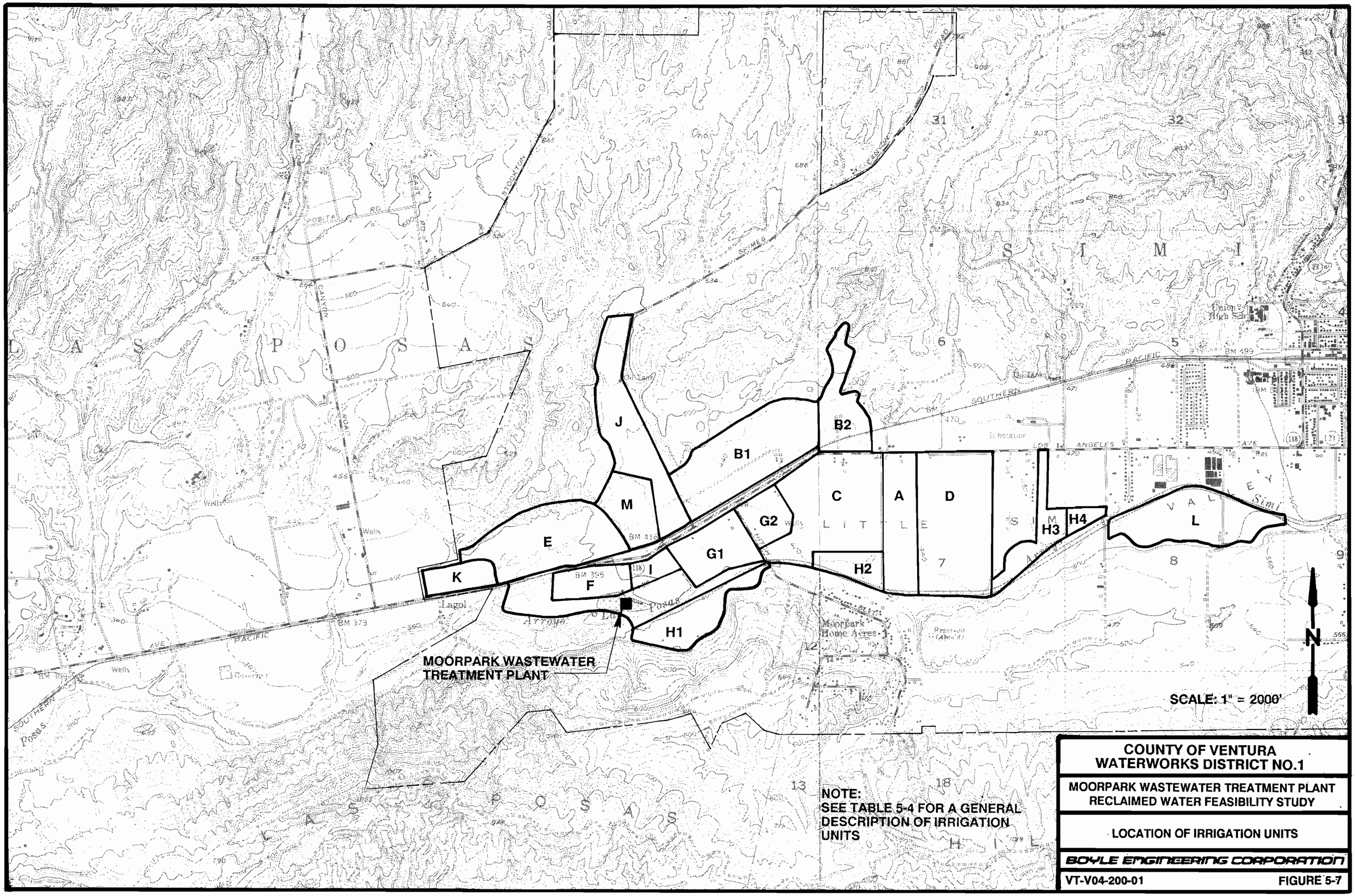
After an appropriate amount of time had elapsed after mailing the letter, an attempt was made to contact each landowner by telephone. The purpose of the initial telephone contact was to obtain general information regarding the existing use/operation of each parcel, discuss and answer questions relative to irrigation with tertiary treated wastewater and to determine the level of interest/cooperation in participating in the proposed project. We were unable to contact all of the landowners. Those who were contacted were advised that if additional information was required, a meeting would be scheduled to obtain more comprehensive responses to our questions.

As a result of our initial discussions with property-owners, we were able to identify which parcels were owner-operated and those which were leased. The possibilities of irrigating the proposed City of Moorpark regional park and providing treated wastewater to the three private water companies (Arroyo Las Posas, Berylwood, and Zone Mutual) were also identified. Appointments were scheduled with the parcel owners/lessees (final study area – see Figure 5-5) and survey questionnaires were used for data collection purposes. In several cases, the data requested was not readily available, and survey questionnaires were left with the owner or lessee for later completion and mailing to Boyle. None of the survey questionnaires were completed in total, but sufficient data was generally provided to facilitate analyses for purposes of this study. The responses were obtained with the understanding that the data was confidential and that the survey information would not be disclosed on individual operations. This report respects the confidentiality of the data and does not disclose information not generally available from other sources.

To protect data confidentiality and facilitate the planning and evaluation efforts of this study, the final study area was divided into individual irrigation units. The location of these irrigation units is shown on Figure 5-7, and the general characteristics of each unit are summarized in Table 5-4. These unit designations and data collected during the survey effort form the basis of the analyses/conclusions presented in this report.

Three main issues/concerns have been expressed by potential users relative to irrigation with tertiary treated wastewater. They are summarized as follows:

- Water cost
- Water quality
- Water availability


J
B1
B2
M
E
K
F
I
G1
G2
C
A
D
H1
H2
H3
H4
L
MOORPARK WASTEWATER TREATMENT PLANT
SCALE: 1" = 2000'
N
NOTE:
SEE TABLE 5-4 FOR A GENERAL DESCRIPTION OF IRRIGATION UNITS
COUNTY OF VENTURA
WATERWORKS DISTRICT NO.1
MOORPARK WASTEWATER TREATMENT PLANT
RECLAIMED WATER FEASIBILITY STUDY
LOCATION OF IRRIGATION UNITS
BOYLE ENGINEERING CORPORATION
VT-V04-200-01
FIGURE 5-7

D-1046

TABLE 5-4

SUMMARY OF GROWERS SURVEY QUESTIONNAIRE RESULTS[1]

Irrigation Unit[2]	Management Status	Cropping Pattern	Acreage Gross	Acreage Net[3]	Method of Irrigation	Irrigated Water Irrigation Water Source District	Irrigated Water Irrigation Water Source Groundwater	Irrigation Water Diversion (acre-feet) Estimated Requirement[4]	System Flow (gpm)
A	Lessee	Field/row	59.46	56.5	Sprinkler		x	169.5	550
B1	Lessee	Field/row	118.56	114.6	Sprinkler		x	343.8	1,510
B2	Lessee	Field/row	73.26	41.0	Sprinkler		x	123.0	---
C	Lessee	Field/row	139.26	110.4	Sprinkler		x	331.2	740
D	Lessee	Field/row	139.20	121.0	Sprinkler		x	363.0	850
E	Lessee	Field/row	89.58	85.1	Sprinkler	x		255.3	---
F	Lessee	Field/row	25.00	25.0	Sprinkler		x	75.0	600
G1	Operator/owner	Xmas trees	60.61	55.0	Gravity		x	145.8	---
G2	Operator/owner	Xmas trees	(Note 7)	15.8	Gravity		x	41.9	---
H1	Operator/owner	Nursery	58.97	56.0	Micro/sprinkler	x		176.4	---
H2	Lessee	Nursery	30.28	28.8	Micro/sprinkler	x		90.7	---
H3	Lessee	Nursery	23.52	22.3	Micro/sprinkler	x		70.3	---
H4	Lessee	Nursery	6.20	5.9	Micro/sprinkler	x		18.6	---
I	Operator/owner	Flowers	14.00	14.0	Sprinkler	x		42.0	---
J	Operator/owner	Eucalyptus	91.83	87.0	Drip	x		230.6	---
K	Operator/owner	Nursery	20.53	19.5	Micro/Sprinkler	x		61.4	---
L	Operator/owner	Turf (park)	69.00	50.0	Sprinkler		x	207.5	---
M	Operator/owner	Avocado	40.61	20.0	Sprinkler	x		53.0	---

TABLE 5-4 (continued)

Irrigation Unit[2]	Irrigation Water Cost ($/acre-foot) District[5]	Irrigation Water Cost ($/acre-foot) Groundwater[6]	Interest in Project Yes	Interest in Project No	Comments/Concerns
A	---	74	x		Concerned with availability, quality, and cost.
B1	---	70	x		Concerned with availability, quality, and cost
B2	---	70	x		Concerned with availability, quality, and cost
C	---	68	x		Concerned with availability, quality, and cost
D	---	95	x		Concerned with availability, quality, and cost
E	227	---	x		Concerned with availability, quality, and cost
F	---	98	x		Concerned with quality and cost. Supportive of concept/project.
G1	---	68	x		Concerned with cost.
G2	---	68	x		Concerned with cost.
H1	227	---	x		Concerned with availability and quality. Supportive of concept/project.
H2	227	---	x		Concerned with availability and quality. Supportive of concept/project.
H3	227	---	x		Concerned with availability and quality. Supportive of concept/project.
H4	227	---	x		Concerned with availability and quality. Supportive of concept/project.
I	227	---	x		Concerned with quality. Claims right to water at no cost per property deed of trust.
J	227	---	x		---
K	227	---	x		Concerned with quality.
L	---	68	x		Concerned with cost. Property currently in litigation over dispute on existing well.
M	227	---	x		---

[1]Data summary and estimates based on information collected from growers survey.
[2]See Figure 5-6.
[3]Obtained from grower or estimated based on assumed 95% gross to net acreage reduction factor.
[4]Based on survey data and estimates of consumptive use and irrigation efficiency.
[5]Does not include monthly meter charge of $14 to $98.
[6]Based on estimates of annual capital, operation, maintenance, and energy costs.
[7]Included with Unit C.

5.3.1 Cropping Patterns

Prevailing cropping pattern acreages for District No. 1 project area lands are summarized in Table 5-5. District No. 1 cropping pattern location is shown on Figure 5-8. The cropping pattern has been divided into four different crop types: 1) field/row crops, 2) tree crops, 3) nursery crops, and 4) turf.

Field/row crops are generally produced on nearly level to gently sloping alluvial lands. These lands are intensively farmed to a variety of vegetable crops. These crops are typically grown for specialty markets, and little information was provided by the growers relative to exact cropping patterns because of the competitive nature of this venture. Field/row crop lands consist of approximately 567.6 net cropped acres.

① Table 5-4 addresses the differences.

② Existing regulations allow use of reclaimed water for food crops.

d for avocados, Christmas trees, and eucalyptus. intersection of Hitch Boulevard and Los Angeles et irrigated acres. Avocados and eucalyptus are along Grimes Canyon Road and consist of 20 and l eucalyptus, respectively.

different locations, three of which are along the he other at the westerly extent of District 1 north of encompass some 132.5 net irrigated acres.

are lands east of Tierra Rejada Road and south of presently being used for irrigated field/row crops. oorpark, and planning is in progress to construct a l area of the proposed park is estimated at some

The summary of existing cropping patterns in privately held mutual water companies in District 19 is summarized in Table 5-6. Specific data on cropping pattern acreages are not available for these three privately held water companies. The data included in Table 5-6 is based on estimates provided by individuals knowledgeable of water company conditions/operations. Based on these estimates, there are approximately 5,770 acres of lands used for citrus/avocado production, 1,410 acres used for field/row crops, and 45 acres used for commercial nursery.

5.3.2 Agricultural Irrigation Practices

The summary of irrigation methods presently used on District No. 1 lands is shown in Table 5-7. Four general types of irrigation methods are practiced:

1. Gravity (70.8 net irrigated acres)

2. Sprinkler (617.6 net irrigated acres)

3. Sprinkler/micro-irrigation (132.5 net irrigated acres)

TABLE 5-5

SUMMARY OF EXISTING CROPPING PATTERN DISTRICT NO. 1 LANDS[1]

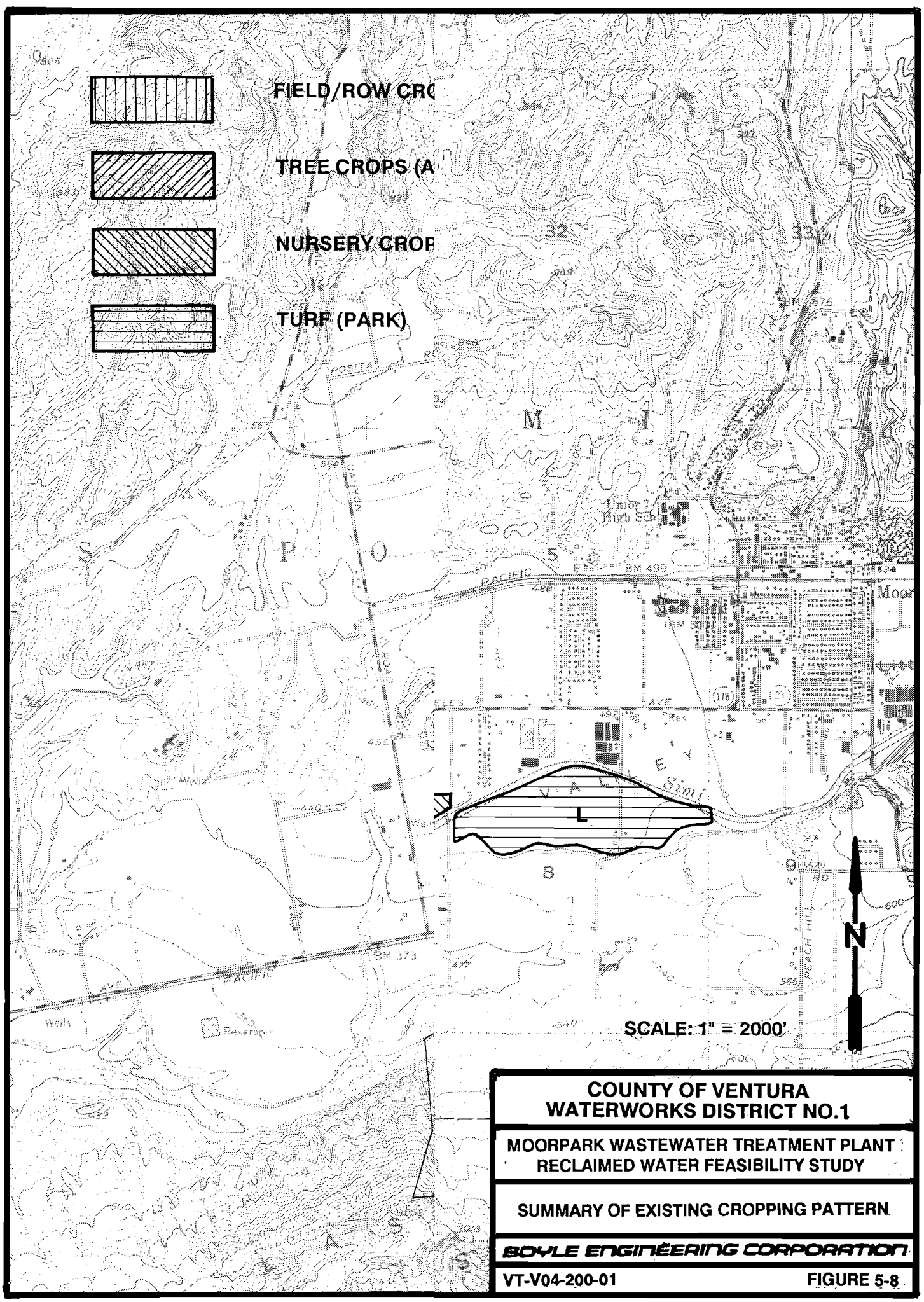
Farming Unit	Cropping Pattern	Gross Acreage	Net Acreage
A	Field/row	59.46	56.5
B1	Field/row	118.56	114.6
B2	Field/row	73.26	41.0
C	Field/row	139.26	110.4
D	Field/row	139.20	121.0
E	Field/row	89.58	85.1
F	Field/row	25.00	25.0
G1	Trees[2]	60.61	55.0
G2	Trees	---[3]	15.8
H1	Nursery	58.97	56.0
H2	Nursery	30.28	28.8
H3	Nursery	23.52	22.3
H4	Nursery	6.20	5.9
I	Field/row	14.00	14.0
J	Trees	91.83	87.0
K	Nursery	20.53	19.5
L	Turf[4]	69.00	50.0
M	Trees	40.61	20.0
	Total	1,059.87	927.9

1 Based on Ventura County Tax Assessor's data and results of grower survey.

2 Parcels G1 and G2 - Christmas trees, Parcel J - eucalyptus, and Parcel M - avocado.

3 Included with Parcel C gross acreage.

4 City of Moorpark regional park.



COUNTY OF VENTURA
WATERWORKS DISTRICT NO.1

MOORPARK WASTEWATER TREATMENT PLANT
RECLAIMED WATER FEASIBILITY STUDY

SUMMARY OF EXISTING CROPPING PATTERN

BOYLE ENGINEERING CORPORATION

VT-V04-200-01 FIGURE 5-8

D-1046

TABLE 5-6

SUMMARY OF EXISTING CROPPING PATTERN DISTRICT NO. 19 PRIVATE WATER COMPANIES[1]

Water Company	Acreage			
	Citrus	Avocado	Field/Row	Nursery
Arroyo Las Posas	175	175	---	---
Berylwood	870	150	210	45
Zone	2,640	1,760	1,200	---
Total	3,685	2,085	1,410	45

[1] Estimated cropping patterns based on conversations with individuals knowledgeable about water company operations.

TABLE 5-7

SUMMARY OF IRRIGATION METHODS[1]
DISTRICT NO. 1 LANDS

Irrigation Method	Farming Unit	Cropping Pattern	Net Irrigated Acreage
Gravity	G1	Christmas Trees	55.0
	G2	Christmas Trees	15.8
Sprinkler	A	Field/row	56.5
	B1	Field/row	114.6
	B2	Field/row	41.0
	C	Field/row	110.4
	D	Field/row	121.0
	E	Field/row	85.1
	F	Field/row	25.0
	I	Field/row	14.0
	L	Turf[2]	50.0
Sprinkler/Micro-irrigation	H1	Nursery	56.0
	H2	Nursery	28.8
	H3	Nursery	22.3
	H4	Nursery	5.9
	K	Nursery	19.5
Micro-irrigation	J	Eucalyptus Trees	87.0
	M	Avocado Trees	20.0

1 See Figure 5-9 for summary of lands irrigated with different systems/approaches.

2 City of Moorpark regional park.

4. Micro-irrigation (107.0 net irrigated acres)

Gravity-irrigated lands are located near the intersection of Los Angeles Avenue and Hitch Boulevard. This irrigation method is used to apply water to the existing Christmas tree plantings at that location.

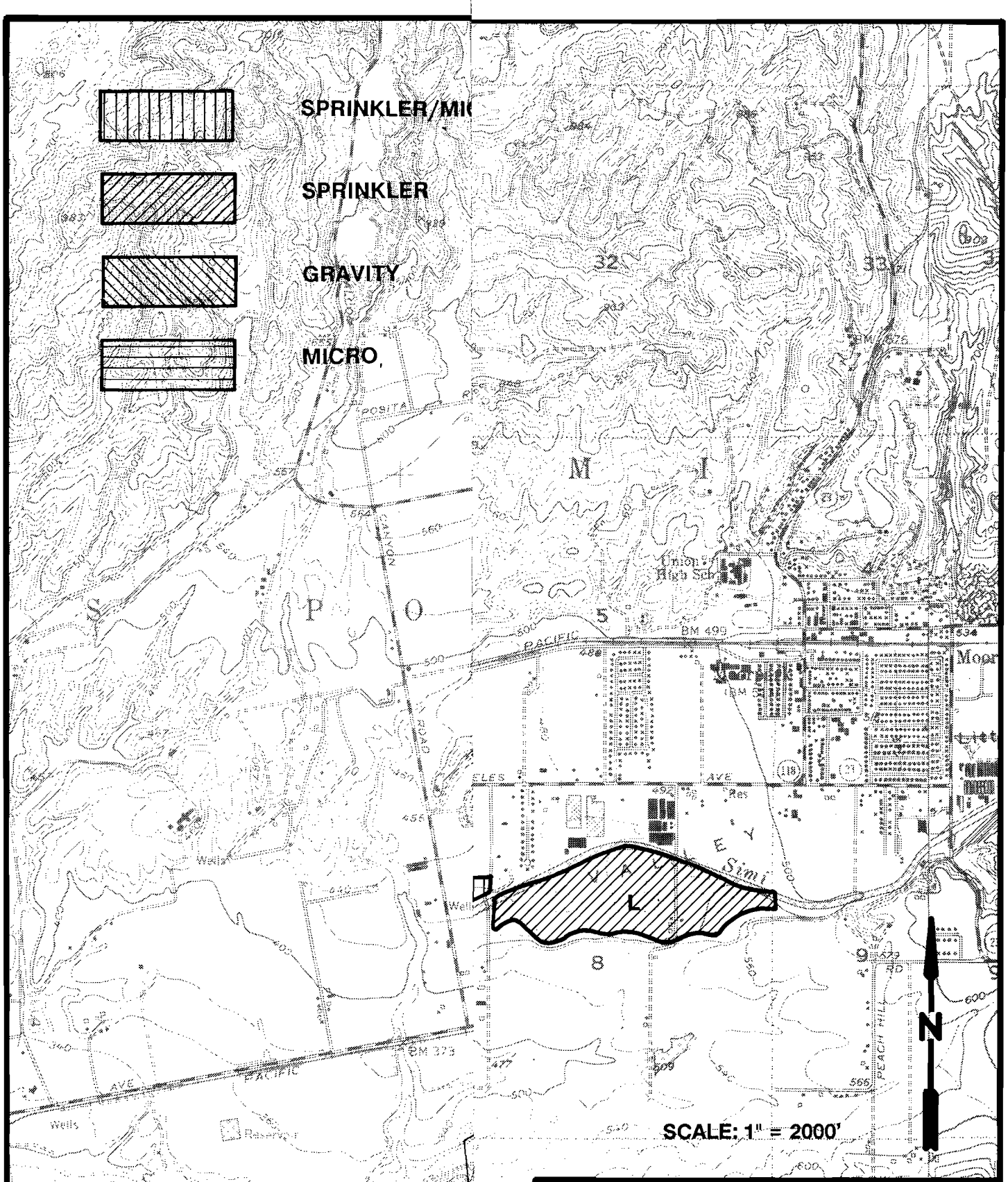
Sprinkler irrigation systems are used to apply water to lands used for field/row crop production. These systems typically consist of aluminum pipe, hand-move systems that are typically pressurized using either District No. 1 pressure or booster pumps from existing wells. Under certain conditions required to address crop cultural requirements, gravity irrigation may occasionally be used on these sprinkler-irrigated areas. When gravity irrigation is performed, it is applied using gated pipe. This is not a normal practice in sprinkler-irrigated areas. Farming Unit L, which is presently owned by the City of Moorpark and planned for development into a regional park, is currently being used for field/row crop production using sprinkler irrigation facilities. When this area is developed into the regional park, it will continue to be sprinkler irrigated.

Nursery lands use a combination of sprinkler and micro-irrigation and, in some cases, may also use limited hand watering. The eucalyptus trees in Farming Unit J and avocado trees in Farming Unit M are micro-irrigated. Micro-irrigation systems are those that use drip emitters, mini-sprinklers, misters, etc. to apply small amounts of water on a more frequent basis when compared to other, more traditional irrigation methods. Figure 5-9 shows the location of the different types of irrigation methods in the District No. 1 study area.

Potential lands that may be irrigated in the privately-held water companies in District No. 19 (Arroyo Las Posas, Berylwood, and Zone) are generally irrigated using the same methodology used in District No. 1. The exception may be that because of a larger percentage of citrus and avocados in the cropping pattern, there may be more micro-irrigated lands. Data that would allow the summation of irrigated acreage versus method of irrigation are not readily available for these areas in District No. 19.

5.3.3 Water Quality of Existing Sources

There are basically two sources of irrigation water for agricultural lands in the project area – District potable water, and groundwater. A summary of irrigation water sources for District No. 1 lands is shown on Figure 5-10. The three private water companies in District No. 19 (Arroyo Las Posas, Berylwood, and Zone Mutual) rely primarily on groundwater for their irrigation water source. Small amounts of District water may be used by the private water companies, depending on irrigation water demand conditions. Arroyo Las Posas uses a larger proportion of District water because of adverse water quality characteristics in water pumped from its well. A summary of irrigation water quality from various source waters is shown in Table 5-8. Tertiary treated wastewater quality is estimated based on the results from a water sample collected November 2, 1989. This water sample was collected from the existing treatment process. However, the concentrations of constituents shown are not expected to change appreciably as a result of tertiary treatment.



COUNTY OF VENTURA
WATERWORKS DISTRICT NO.1

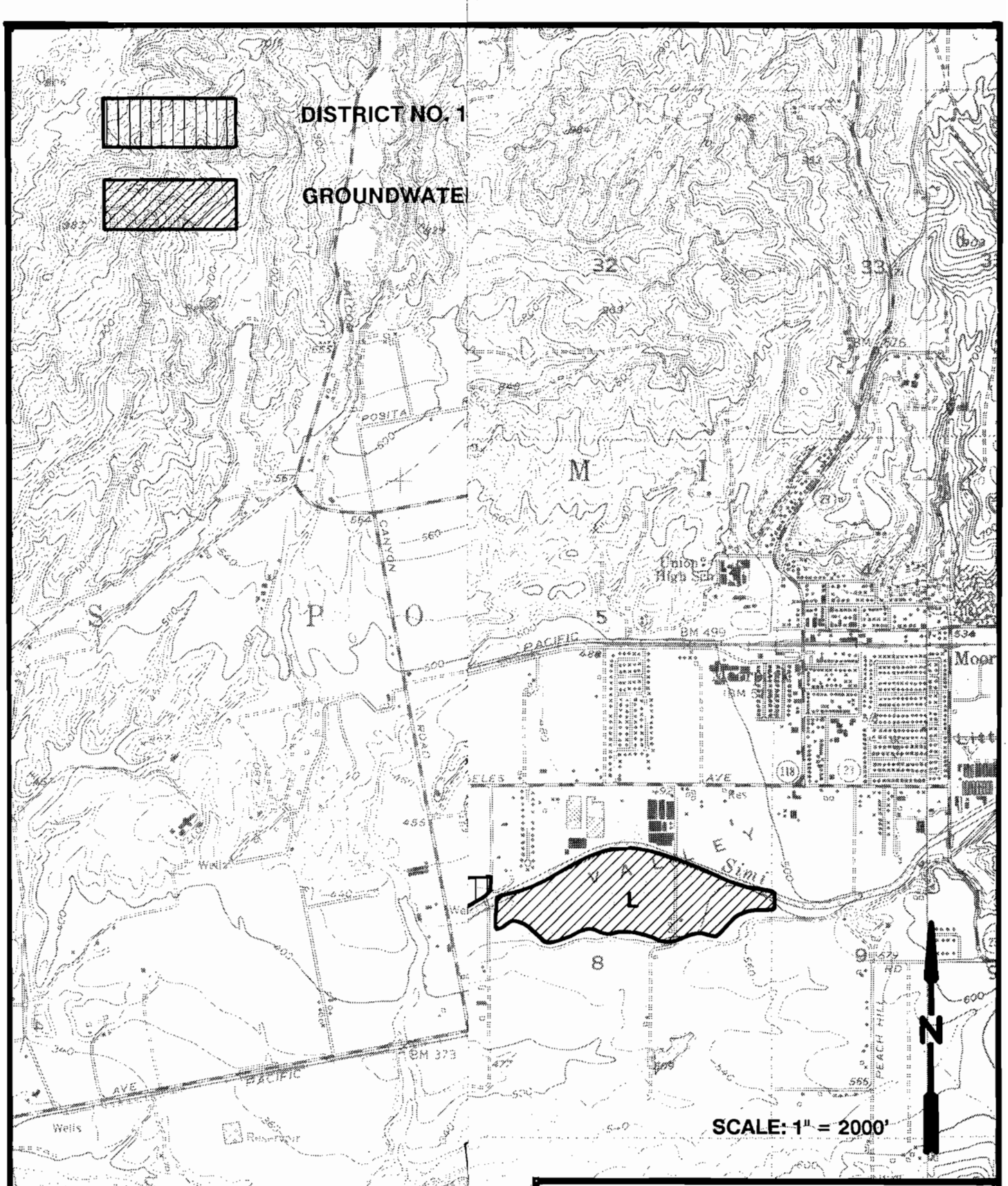
MOORPARK WASTEWATER TREATMENT PLANT
RECLAIMED WATER FEASIBILITY STUDY

SUMMARY OF METHOD OF IRRIGATION

BOYLE ENGINEERING CORPORATION

VT-V04-200-01 **FIGURE 5-9**

D-1046



COUNTY OF VENTURA
WATERWORKS DISTRICT NO.1

MOORPARK WASTEWATER TREATMENT PLANT
RECLAIMED WATER FEASIBILITY STUDY

SUMMARY OF IRRIGATION WATER SOURCE

BOYLE ENGINEERING CORPORATION

VT-V04-200-01 FIGURE 5-10

D-1046

TABLE 5-8

SUMMARY OF IRRIGATION WATER QUALITY FROM VARIOUS SOURCE WATERS

Constituent	Units	District No. 1	District No. 1 Groundwater[1,2]	Arroyo Las Posas Groundwater[3]	Berylwood Groundwater[4]	Zone Groundwater[5]	Tertiary Treated Wastewater[1,6] (Projected)
pH	---	7.9	7.5	7.5	7.9	7.6	7.7
Total Dissolved Solids, TDS	ppm	380	1,972	2,129[7]	489[7]	1,649[7]	620
Salinity, ECw	mhos/cm	594[7]	3,081[7]	2,900	677	2,289	969[7]
Calcium	meq/l	2.2	14.0	10.1	3.7	10.0	2.1
Magnesium	meq/l	1.0	5.3	9.5	1.2	4.4	1.6
Sodium	meq/l	2.5	9.0	12.4	1.7	10.0	6.1
Bicarbonate	meq/l	2.2	4.9	4.3	3.5	4.8	5.8
Sodium Adsorption Ratio, SAR	---	2.0	2.9	4.0	1.1	3.7	4.5
Adjusted SAR	---	3.4	7.5	10.4	2.3	9.5	9.7
Boron	ppm	0.2	1.0	1.4	0.2	0.9	0.7
Chloride	ppm	79	184	310	27	200	133
Sulfate	ppm	66	798	938	107	665	127
Nitrate	ppm	7	198	2	10	<1	<1

[1] Based on results of analyses from water samples collected November 2, 1989.
[2] Birkenshaw well located in Farming Unit C.
[3] Based on results of analyses from groundwater sample collected November 3, 1986.
[4] Based on results of analyses from groundwater sample collected November 4, 1988.
[5] Based on results of analyses from water sample collected from sump November 4, 1988.
[6] Tertiary wastewater quality is not expected to vary appreciably for constituents shown from results of this analysis performed on existing wastewater.
[7] Estimated.

State of California regulations, as set forth in Title 22, regulate the application of treated wastewater effluent for irrigation purposes. The approach being followed by the District is to treat wastewater from the Moorpark treatment plant with tertiary treatment facilities to a level where it is suitable for body contact recreation. This level of treatment allows unlimited use for crop irrigation per Title 22 regulations. Once specific users and applications for tertiary treated wastewater are identified, the District will need to advise the Ventura County Environmental Health Department of all proposed uses in the project area in order to get their approval.

Water quality for irrigation is directly related to the concentration and kind of chemical constituents present. The constituents related to water quality that may affect irrigation water suitability for crops in the project that will be discussed herein include electrical conductivity (EC_w), sodium adsorption ratio (SAR), bicarbonates, chlorides, and boron. General University of California irrigation water quality guidelines are shown on Table 5-9. Pathogens will be reduced to acceptable levels by the tertiary treatment.

Electrical Conductivity

Electrical conductivity (EC_w) is a measure of the total salt content of the irrigation water. It is expressed as millimhos per centimeter ($EC_w \times 10^3$) or micromhos per centimeter ($EC_w \times 10^6$) at 25°C. The relationship of irrigation water salinity (EC_w) to plant yield response is shown on Table 5-10. In general, the irrigation water salinity of District No. 1 blended water, Berylwood groundwater, and tertiary treated wastewater are acceptable for the irrigation of crops produced in the project area without serious consideration for potential yield reductions. The salinity of tertiary treated wastewater is slightly higher than desirable, and more intensive irrigation management may be required in order to control soil salinity levels. This is not anticipated to be a serious problem because of adequate rainfall in the project area which will assist the salt leaching process and help to mitigate the accumulation of soluble salts in the soil profile. The salinity of District No. 1 groundwater, Arroyo Las Posas groundwater, and Zone groundwater is higher than desirable. These waters have limited suitability for irrigation based on their salinity content. Continued use of these waters without careful management may cause the accumulation of soluble salts in the soil profile. Potential yield reductions in salt-sensitive crops are a serious hazard with continued irrigation using waters of these salinity levels.

Sodium Adsorption Ratio

The sodium adsorption ratio (SAR) is the most reliable index of irrigation water sodium hazard to crops and soils. A moderately high SAR will not generally result in a toxic effect to most plants. However, some crops are sensitive to excess sodium. Sodium concentrations in irrigation water sources, as evaluated by SAR, are slightly higher than desirable in the Arroyo Las Posas, Zone, and tertiary treated wastewater sources. These slightly elevated sodium adsorption ratios are not expected to cause adverse conditions to crop production. The sodium content, as evaluated by milliequivalents per liter, is higher than desirable in the District No. 1 groundwater, Arroyo Las Posas groundwater, Zone groundwater, and tertiary treated wastewater sources. Sodium toxicity, as a result of foliar absorption, was not reported by any of the growers

TABLE 5-9

GUIDELINES FOR INTERPRETATION OF WATER QUALITY FOR IRRIGATION

Problem and Related Constituent	Water Quality Guidelines No Problem	Increasing Problems	Severe Problems
Salinity[1]			
ECw of irrigation water (mmhos/cm)	<0.75	0.75 - 3.0	>3.0
Permeability			
ECw of irrigation water (mmhos/cm)	>0.5	<0.5	<0.2
adj.SAR[2]	<6.0	6.0 - 9.0	>9.0
Specific ion toxicity[3] from root absorption			
Sodium (evaluated by adj.SAR)	<3.0	3.0 - 9.0	>9.0[4]
Chloride (meq/l)	<4	4.0 - 10.0	>10
Chloride (mg/l or ppm)	<142	142 - 355	>355
Boron (mg/l or ppm)	<0.5	0.5 - 2.0	2.0 - 10.0
Foliar absorption[5] - sprinklers			
Sodium (meq/l)	<3.0	>3.0	--
Sodium (mg/l or ppm)	<69	>69	--
Chloride (meq/l)	<3.0	>3.0	--
Chloride (mg/l or ppm)	<106	>106	--
Miscellaneous[6]			
NH4-N and NO3-N (mg/l or ppm) for sensitive crops	<5	5-30	>30
HCO3 (only with overhead sprinklers) (meq/l)	1.5	1.5 - 8.5	>8.5
HCO3 (only with overhead sprinklers) (mg/l or ppm)	<90	90 - 520	>520
pH	Normal range = 6.5 - 8.4		--

1 Assumes water for crop plus needed water for leaching requirement will be applied. Crops vary in tolerance to salinity (mmho/cm x 640 - approximate total dissolved solids (TDS), in mg/l or ppm; mmho x 1000 = mhos).

2 adj.SAR (adjusted sodium adsorption ratio) is calculated from a modified equation developed by U.S. Salinity Laboratory to include added effects of precipitation or dissolution of calcium in soils and related to CO3+HCO3 concentrations. Permeability problems, related to low EC or high adj.SAR of water, can be reduced if necessary by adding gypsum. Usual application rate per acre-foot of applied water is from 200 to about 1,000 pounds. 234 pounds of 100 percent gypsum added to 1 acre-foot of water will supply 1 meq/l of calcium and raise the EC2 about 0.1 mmho. In many cases, a soil application may be needed.

TABLE 5-9 (continued)

[3] Most tree crops and woody ornamentals are sensitive to sodium and chloride. Most annual crops are not sensitive.

[4] Shrinking-swelling type soils (montmorillonite type clay minerals); higher values apply for others.

[5] Leaf areas wet by sprinklers may show a leaf burn due to sodium or chloride absorption under low-humidity/high-evaporation conditions. (Evaporation increases ion concentration in water films on leaves between rotations of sprinkler heads.)

[6] Excess N may affect production or quality of certain crops, i.e., sugar beets, citrus, avocados, apricots, and grapes. (1 mh/1 NO3-N = 2,172 N/acre-foot of applied water.) HCO3 with overhead sprinkler irrigation may cause a white carbonate deposit to form on fruit and leaves.

Reference: Ayers, Robert S., Quality of Water for Irrigation, Journal of the Irrigation and Drainage Division, ASCE, June 1977.

Note: Interpretations are based on possible effects of constituents on crops or soils or both. Guidelines are flexible and should be modified when warranted by local experience or special conditions of crop, soil, and method of irrigation.

TABLE 5-10

POTENTIAL YIELD REDUCTION OF SEVERAL CROPS AS RELATED TO THE SALINITY OF THE IRRIGATION WATER[1]

Crop	Percent Reduction in Yield 0% EC_w[2]	10% EC_w	25% EC_w	50% EC_w
Beans	0.7	1.0	1.3	2.3
Bell Pepper	0.9	1.3	2.0	3.3
Cabbage	1.1	1.7	2.7	4.7
Cantaloupe	1.5	2.3	--	--
Carrot	0.7	1.0	1.7	2.7
Lettuce	0.9	1.3	2.0	3.3
Onion	0.9	1.3	2.0	3.3
Sweet Corn	1.1	1.7	2.7	4.0
Tomato	1.8	2.7	4.3	5.3
Almond	1.1	1.7	--	3.3
Apple	1.1	1.7	--	3.3
Apricot	1.1	1.7	--	3.3
Avocado	0.9	1.3	--	2.7
Citrus	1.1	2.5	--	5.0
Grape	1.8	2.7	--	5.3
Peach	1.1	1.7	--	3.3
Walnut	1.1	1.7	--	3.3

1 Adapted from "Water Quality for Irrigation," by L. K. Stromberg, Farm Advisor, Fresno County, November 15, 1975.

2 $EC_w \times 10^3$ is expressed in mmhos/cm at 25°C.

interviewed in the project area. Foliar toxicity due to elevated sodium concentrations is a site/crop-specific phenomenon. It does not appear to be a serious problem in the project area.

A reduction in soil permeability is a major problem that occurs with irrigation water high in sodium. Applying water with an SAR below 6 does not usually result in permeability problems. If the SAR is between 6 and 9, permeability problems can occur on fine-textured soils. An SAR above 9 will likely result in permeability problems on all mineral soils except coarse, sandy soils. Permeability problems are not likely to occur in the project area as a result of sodium concentrations based on low sodium hazards as evaluated by the sodium adsorption ratio.

Bicarbonates

Bicarbonates in irrigation water applied to the soil will precipitate calcium from the cation exchange complex as relatively insoluble calcium carbonate. As exchangeable calcium is lost from the soil, the relative proportion of sodium is increased with a corresponding increase in the sodium hazard (SAR). Bicarbonates in the irrigation water contribute to the overall salinity, but, more importantly, they may result in a previously calcium-dominant soil becoming sodium dominant by precipitating the exchangeable calcium which, in turn, will reduce soil permeability.

A measure of the bicarbonate hazard in irrigation water can be expressed as the adjusted SAR. The adjusted SAR takes into account the concentration of bicarbonates in irrigation water in relation to their effect on potential increases in soil SAR. When the adjusted SAR is less than 6, soil permeability problems generally do not occur. If the adjusted SAR is between 6 and 9, permeability problems can occur on fine-textured soil. An adjusted SAR above 9 will likely result in permeability problems on mineral soils except coarse, sandy soils. Adverse impacts to soil permeability are a concern with all irrigation water sources except District No. 1 blended water and Berylwood groundwater. Periodic soil or water treatment may be required to maintain favorable water infiltration characteristics in project soils.

High concentrations of bicarbonates in irrigation water applied by sprinklers may cause whitewashing and leaf burn. The bicarbonate content in all irrigation water sources is sufficiently high to cause concern. However, whitewashing and leaf burn were not indicated as problems by the growers interviewed, nor were they observed in the project area.

Bicarbonates in irrigation water may also cause potential problems in micro-irrigation systems as a result of lime precipitation, which can cause emitter plugging. These potential problems are accentuated in alkaline irrigation water sources such as those at the site. Lime precipitation in micro-irrigation systems may be a problem in systems installed to irrigate permanent crops (citrus/avocado/nursery) in the project area. The tertiary treated wastewater, however, does not present problems not already present in other irrigation water sources.

Chlorides

Chlorides are necessary for plant growth in relatively small amounts. However, high concentrations of chlorides can inhibit growth and result in toxicity to foliage if applied by sprinkler irrigation. Chlorides in irrigation water are specifically toxic to some plant species. The chloride content of District No. 1 groundwater, Arroyo Las Posas groundwater, and Zone groundwater are higher than critical levels and may result in root/foliage toxicity problems. The chloride content of District No. 1 ~~district~~ water, Berylwood groundwater, and tertiary treated wastewater are generally suitable for the irrigation of chloride-sensitive crops. The chloride concentration of tertiary treated wastewater is slightly higher than desirable and may cause foliage toxicity problems with sprinkler irrigation of chloride-sensitive crops. This is not expected to be a serious problem.

Boron

will be corrected
(deleted)

Boron in irrigation water does n ical conditions, but in high concentrations it can have a to: e tolerance of some crops to boron is shown on Table 5· n of District No. 1 ~~district~~ water, Berylwood groundwater, er should not impact crop suitability/yield in the project ntration of District No. 1 groundwater, Arroyo Las Posas groundwater, and Zone groundwater are higher than desirable and may result in production problems to sensitive crops.

5.3.4 Irrigation Water Suitability

The suitability of water sources is summarized on Figure 5-11. The irrigation water quality with regard to conductivity (C) and sodium hazard (S) is determined by plotting corresponding values on this figure. Potential soil management and crop production problems that can arise as a result of irrigating with water of a certain quality can thus be determined.

District No. 1 potable water and Berylwood groundwater falls into the C2S1 classification. Irrigation water with this quality can be used on most soils and crops. Appreciable leaching of soluble salts may be necessary on salt-sensitive crops such as citrus and avocado. Tertiary treated wastewater falls in the C3S2 classification. Water with this quality should be used only on soils with no restrictive layers so that salt leaching can be accomplished. Water penetration problems may develop on fine-textured soils unless gypsum is present. Plants with low salt tolerance, such as citrus/avocados, are generally considered suitable in the lower ranges of this classification. District No. 1 groundwater falls in the C4S2 classification. This water should be used only on well-drained, coarse-textured soils with no restrictive layers. The sodium content may cause water penetration problems, making salt leaching difficult. The application of organic matter to the soil will help mitigate penetration problems. Plants with good salt tolerance are best suited to irrigation with this water source. Arroyo Las Posas and Zone groundwater falls into the C4S3 classification. This is considered generally poor quality water for irrigation. The very high salinity makes leaching necessary, but the high sodium is likely to cause a water penetration problem,

TABLE 5-11

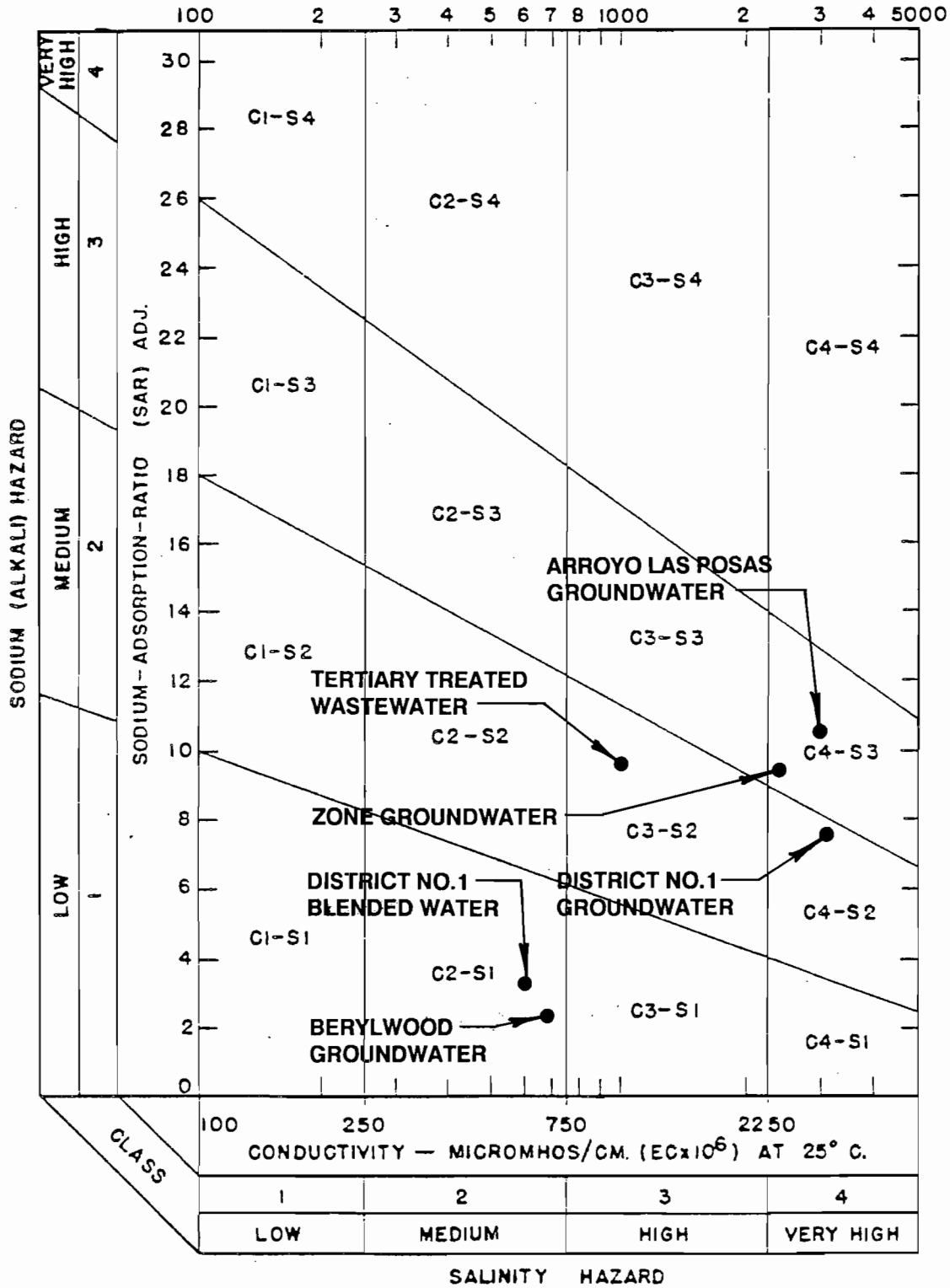
RELATIVE TOLERANCE OF SEVERAL CROPS TO BORON IN IRRIGATION WATER[1,2]

Sensitive 0.5 - 1.0 ppm	Semi Tolerant 1.0 - 2.0 ppm	Tolerant 2.0 - 4.0 ppm
Lemon	Lima Bean	Carrot
Grapefruit	Sweet Potato	Lettuce
Avocado	Bell Pepper	Cabbage
Orange	Tomato	Onion
Apricot	Field Pea	Melon
Peach	Radish	Asparagus
Cherry	Sweet Pea	
Grape	Potato	
Apple		
Pear		
Plum		
Navy Bean		
Walnut		
Peach		
Almond		

1 Adapted from USDA Technical Bulletin No. 448.

2 In each group the plants named first are considered as being more sensitive and those named last more tolerant.

DIAGRAM FOR CLASSIFICATION OF IRRIGATION WATER



NOTE:

This diagram was adapted from Agricultural Handbook 60, U. S. Dept. of Agriculture.

making leaching difficult. Coarse-textured gypsiferous soils with no restrictive layers, salt-tolerant crops, soil amendments, and special salinity management are generally needed to address water quality problems. Organic matter application to the soil surface will help mitigate water penetration problems.

Soils at the project site do not contain high concentrations of soluble salts. However, irrigation water sources, such as the District No. 1 groundwater and Arroyo Las Posas/Zone groundwater, have a high salinity hazard. With irrigation, soluble salts may accumulate in the soil as a result of plant water uptake. This occurs because plants remove stored water, allowing soluble salts to accumulate in the root zone. As the salt concentration within the root zone increases, a resulting decrease in plant yield will occur if plant salt tolerance levels are exceeded.

Leaching is a percolation process whereby excess irrigation water passes through the root zone and thus moves soluble salts downward to prevent their accumulation in harmful concentrations. This process maintains a favorable salt balance in the root zone. It requires leaching an equal or greater amount of salt from the soil in the drainage water than that introduced by irrigation water. The leaching requirement is defined as the fraction of irrigation water that must be leached through the root zone to maintain soil salinity at a specified level. The leachate moves out of the root zone as drainage water.

The leaching fraction required to maintain a suitable salt balance can be calculated analytically if the electrical conductivity of both irrigation and drainage water is known. The University of California has published guidelines based on irrigation water electrical conductivity versus potential yield reduction and leaching fraction which is required to maintain a favorable salt balance in the soil. The leaching requirement is expressed as the percentage of water applied in excess of the irrigation water application requirement that is needed to maintain a favorable salt balance without exceeding crop salt tolerance levels. Saline irrigation water sources, such as District No. 1 groundwater and Arroyo Las Posas/Zone groundwater, have adverse salinity concentrations which will require high leaching fractions to prevent soil salinity accumulation.

Introduction of tertiary treated wastewater to supplement groundwater resources in District No. 1 and Arroyo Las Posas/Zone should be beneficial to plant growth response since irrigation water quality will be significantly improved. District No. 1 blended water and groundwater from Berylwood has better quality when compared to tertiary treated wastewater. However, application of tertiary treated wastewater to supplement these irrigation water sources should not cause serious problems with crop suitability or production.

5.4 Long-term Irrigation Projections

Future development of agricultural lands west of the City of Moorpark may have a significant impact on the amount of tertiary treated wastewater that is applied for irrigation annually. If all of the farming units identified contract with ~~Ventura County~~ The District to receive tertiary treated

wastewater, there will be little flow available for distribution to other potential irrigation areas to the west.

A water balance estimate that assumes existing conditions is summarized on Table 5-12. The District No. 1 crop water requirement is based on net crop acreages and estimated water use. Estimated monthly water use is based on data from the grower surveys and published information relative to crop consumptive use requirements. Tertiary treated wastewater availability is based on assumed flows of 1.5 and 3.0 mgd. Based on this water balance calculation, at 1.5 mgd approximately 1,386.8 acre-feet of supplemental water would need to be applied to make up the irrigation water deficit resulting from the inadequate tertiary wastewater supply. Assuming 3.0 mgd tertiary treated wastewater availability, only 385.5 acre-feet of supplemental water is required. At the 1.5-mgd wastewater flow, it is estimated that 267.1 acre-feet of tertiary treated wastewater would be available for diversion to the three private water companies in District No. 19. Assuming the 3.0-mgd flow, about 948.4 acre-feet would be available. Note that much of this excess water under both scenarios is available during the winter months when demand in District No. 19 is low.

Several factors may act to reduce the demand for tertiary treated wastewater in District No. 1. These factors are:

1. Tertiary treated wastewater cost.

2. Tertiary treated wastewater quality.

3. Tertiary treated wastewater availability.

4. Crop marketability concerns.

Costs that will be charged for tertiary treated wastewater will likely be higher than the $70 to $95 per acre-foot annual groundwater cost in District No. 1. Lands presently used for the production of field/row crops are largely sprinkler irrigated with groundwater (except Farming Unit E). These parcels are all leased from absentee owners. As a result, the actual water costs paid by the lessees is the cost of energy ($20 to $30 per acre-foot) and some minor maintenance/repair costs. It is questionable whether these growers will elect to apply tertiary treated wastewater because of the low cost and availability of groundwater.

Energy costs to pump groundwater in District No. 1 are consistently less than $30 per acre-foot. In addition, groundwater wells that serve Parcels B1, B2, and F are deep and provide better quality irrigation water. It appears that these individuals have little incentive to seriously consider applying tertiary treated wastewater unless the cost is competitive with present groundwater costs, and obtaining better quality irrigation water provides an economic benefit to their operation. The existing Christmas tree operation in Parcels G1 and G2 is also irrigated with groundwater. These farming units are not intensively farmed and have historically been underirrigated. The interest in intensively farming these units, while paying a higher cost for irrigation water, is questionable (these units are served by water pumped by the lessee at no cost to the Christmas tree operation). The proposed City of Moorpark regional park will be irrigated by the existing water wells on the property. The City plans to recondition these wells. This parcel is the farthest from the existing treatment plant and will be the most expensive to

TABLE 5-12

WATER BALANCE ESTIMATE ASSUMING YEAR 1990 CONDITIONS

(acre-feet)

Month	District No. 1 Crop Water Requirement	Tertiary Treated Wastewater Availability		Requirement for District Water/ Groundwater		Potential Diversions to District No. 19	
		3.0 mgd	1.5 mgd	3.0 mgd	1.5 mgd	3.0 mgd	1.5 mgd
January	15.4	285.5	142.6	--	--	270.1	127.2
February	112.7	257.9	128.8	--	--	145.2	16.1
March	210.9	285.5	142.6	--	68.3	74.6	--
April	254.8	276.3	138.0	--	116.8	21.5	--
May	308.2	285.5	142.6	22.7	165.6	--	--
June	361.3	276.3	138.0	85.0	223.3	--	--
July	408.7	285.5	142.6	123.2	266.1	--	--
August	403.1	285.5	142.6	117.6	260.5	--	--
September	313.3	276.3	138.0	37.0	175.3	--	--
October	230.2	285.5	142.6	--	87.6	55.3	--
November	161.3	276.3	138.0	--	23.3	115.0	--
December	18.8	285.8	142.6	--	--	266.7	123.8
Total	2,798.7	3,361.6	1,679.0	385.5	1,386.8	948.4	267.1

Added Section 8.4 Pg 8-3. to address GMA.

SWRCB has been addressed in 8-3

serve. It may be difficult to provide urce of supply. not a serious limitation for tertiary t or the remaining use District No. 1 blended water for ble to provide t wastewater at a lower cost.

The impact of improved water quality on a grower's decision to apply tertiary treated wastewater is difficult to assess. Water quality will not be a serious consideration for lands that presently apply District No. 1 blended water. Growers farming Parcels B1, B2, and F who have good quality groundwater do not have an incentive to apply tertiary treated wastewater. Further, groundwater quality is not a limitation to irrigation of the proposed regional park.

The remaining farming units irrigated with groundwater appear to have a serious water quality problem. However, the growers interviewed did not indicate that water quality limitations were restricting their ability to produce economic yields of the crops grown. Groundwater quality may not be a serious consideration for these growers.

Many of the growers in District No. 1 produce high-quality/value vegetable and specialty crops. These crops are sometimes marketed directly from the field and often consumed fresh. Several of the growers were concerned about the marketability of crops irrigated with reclaimed water. Concerns about adverse impacts on public health/crop marketability may constrain irrigation with tertiary treated wastewater. However, these concerns may not be realistic considering the distances to major markets.

This concern has been discussed in water Reclamation Seminars.

Similar concerns exist for the three private water . 19 (Arroyo Las Posas, Berylwood, and Zone). However, the two e the decision to use tertiary treated wastewater are cost and quali uld be improved by providing tertiary treated wastewater to the Zo ilities. Improved water quality could be a significant benefit to crop rroyo Las Posas is especially in need of better quality water sinc quality presently limits the ability to apply water pumped from their existing well. Growers in these two water companies also have a better ability to pay since their existing water cost is much higher than for groundwater pumped in District No. 1. It is questionable whether Berylwood growers will be interested in using tertiary treated wastewater for irrigation since they presently have excellent quality water, and tertiary treated wastewater will degrade the quality of their existing irrigation water supply.

It is possible that many of the identified growers in District No. 1 who are presently interested in participating in the project may elect not to apply tertiary treated wastewater for irrigation. As a result, the interest of growers in the three private water companies in District No. 19 becomes important. The irrigated area of these water companies is substantially larger than the area identified in District No. 1. As a result, it may be possible to maximize annual water use as a result of increasing demand in the spring and fall by including these areas in the project. Table 5-13 summarizes an assessment of potential water use assuming reduced demand in District No. 1 as a result of limited project participation or urban development to the alignment of Grimes Canyon Road and Hitch Boulevard. The District No. 1 crop water requirement has been modified to reflect the reduced acreage/water use. Based on this assessment, at 3.0-mgd flow District No. 1 lands could be provided a firm supply and would probably not need supplemental water sources. A total of about 1,935 acre-feet per year could be diverted to

TABLE 5-13

WATER BALANCE ESTIMATE ASSUMING REDUCED DISTRICT NO. 1 DEMAND[1]

(acre-feet)

Month	District No. 1 Crop Water Requirement	Tertiary Treated Wastewater Availability		Requirement for District Water/ Groundwater		Potential Diversions to District No. 19	
		3.0 mgd	1.5 mgd	3.0 mgd	1.5 mgd	3.0 mgd	1.5 mgd
January	15.4	285.5	142.6	--	--	270.1	127.2
February	43.6	257.9	128.8	--	--	214.3	85.2
March	111.3	285.5	142.6	--	--	174.2	31.3
April	128.7	276.3	138.0	--	--	147.6	9.3
May	155.9	285.5	142.6	--	13.3	129.6	--
June	181.7	276.3	138.0	--	43.7	94.6	--
July	202.9	285.5	142.6	--	60.3	82.6	--
August	203.0	285.5	142.6	--	60.4	82.5	--
September	158.4	276.3	138.0	--	20.4	117.9	--
October	116.5	285.5	142.6	--	--	169.0	26.1
November	90.4	276.3	138.0	--	--	185.9	47.6
December	18.8	285.5	142.6	--	--	266.7	123.8
Total	1,426.6	3,361.6	1,679.0	--	198.1	1,935.0	450.5

[1] Assumes urban development to Grimes Canyon Road and Hitch Boulevard with continued irrigation of nursery and parklands east of those roadways.

District No. 19. Based on this assessment, the three private water companies in District No. 19 (Arroyo Las Posas, Berylwood, and Zone) could be provided an opportunity to use tertiary treated wastewater for irrigation.

5.4.1 Tertiary Treated Wastewater Flow/Demand

A summary of estimated annual water requirements and turnout design flow rates for each farming unit are summarized on Table 5-14. Total annual water use is based on an estimate of net farmed acreage and unit crop water use (acre-feet per acre). These data were based primarily on results of the grower survey with verification by reviewing published information relative to crop water use in the project area. Based on this assessment, it is estimated that field/row crops annually use approximately 3.0 acre-feet per acre. Tree crops (Christmas trees, avocados, and eucalyptus) would use approximately 2.65 acre-feet per acre, nursery plants about 3.15 acre-feet per acre, and the park about 4.15 acre-feet per acre. These values are similar or higher than those provided by the Groundwater Management Agency (Method No. 3), which estimates 2.4 acre-feet per acre for field crops, 3.2 acre-feet per acre for truck crops, and 1.6 acre-feet per acre for orchards.

Crop consumptive use data, as developed by the California Department of Water Resources for the project area, was modified to address climatic conditions and provide the basis for determining the unit peak water requirement. The unit peak water requirement is defined as the month or period of highest water use for a given crop or cropping pattern. The determination of the unit peak water requirement is necessary to develop delivery system supply schedules, capacity requirements, and the interval between common point deliveries.

Climatic variables, soil physical parameters, and crop development factors all affect the unit peak water requirement. In mild, stable climates, the unit peak water requirement may approach the average daily condition of the peak use month. Climatic variables, such as windy periods, periods of low relative humidity, and high levels of incoming solar radiation can all serve to increase consumptive use during the peak use period.

Even though the peak use period normally extends for time periods of less than one month, it is still a controlling factor in determining system flow capacity requirements. This is necessary since water deficit-induced stress can adversely affect crop yield and quality, and peak water use normally occurs during the crop's most active stage of growth. The unit peak water requirement was determined by using a peaking factor applied to the average daily consumptive use of the peak use month. The peaking factor was determined based on a procedure developed by the USDA Soil Conservation Service.

Design flow estimates are based on the unit peak water requirement and estimates of irrigation efficiency. The length of time that the irrigation system will be operated daily is another factor considered in calculating design flow estimates. District No. 1 lands are typically irrigated 12 hours during the day except for the city park, which would likely be irrigated for 10 hours during the night, when irrigated with reclaimed water. Design flow

TABLE 5-14

SUMMARY OF ESTIMATED ANNUAL WATER REQUIREMENTS AND TURNOUT DESIGN FLOW RATES DISTRICT NO. 1

Farming Unit	Gross Acreage	Net Acreage	Crop	Total[1] Water Use (AF/year)	Design Flow (gpm/acre)	Turnout Design Capacity (gpm)
A	59.46	56.5	Row crops	169.5	10.0	565
B1	118.56	114.6	Row crops	343.8	10.0	1,146
B2	73.26	41.0	Row crops	123.0	10.0	410
C	139.26	110.4	Row crops	331.2	10.0	1,104
D	139.20	121.0	Row crops	363.0	10.0	1,210
E	89.58	85.1	Row crops	255.3	10.0	851
F	25.00	25.0	Row crops	75.0	10.0	250
G1	60.61	55.0	Trees	145.8	6.0	330
G2	--[2]	15.8	Trees	41.9	6.0	95
H1	58.97	56.0	Nursery	176.4	8.0	448
H2	30.28	28.8	Nursery	90.7	8.0	230
H3	23.52	22.3	Nursery	70.3	8.0	178
H4	6.20	5.9	Nursery	18.6	8.0	47
I	14.00	14.0	Row crops	42.0	10.0	140
J	91.83	87.0	Trees	230.6	6.0	522
K	20.53	19.5	Nursery	61.4	8.0	156
L	69.00	50.0	Park	207.5	8.0	400
M	40.61	20.0	Trees	53.0	6.0	120
	1,059.87	927.9		2,799.0		8202

1 Row crop = 3.0 AF/acre.
Tree = 2.65 AF/acre.
Park = 4.15 AF/acre.
Nursery = 3.15 AF/acre.

2 Part of Parcel C.

estimates shown on Table 5-14 are multiplied by the net irrigated acreage to determine the turnout design capacity for each farming unit.

The three private water companies in District No. 19 (Arroyo Las Posas, Berylwood, and Zone) operate their systems on a 24-hour-per-day basis. If tertiary treated wastewater is provided to these water companies, the design flow rate is equivalent to an average daily flow of about 2,100 gpm (assuming 3.0-mgd tertiary treatment capacity). It may be necessary to increase this design flow rate slightly based on estimates of peak tertiary treated wastewater flows and storage capacity.

Section 6 - Reclaimed Water Distribution System

6.1 General Requirements

The reclaimed water distribution system, including storage, pumps and pipelines, must be capable of delivering water to the users efficiently and economically. The following factors were considered in selecting the distribution system layout and components:

1. A low cost distribution system is required in order for reclaimed water to be competitive with other local water supplies.

2. The distribution system should be concentrated, if possible, in those areas presently receiving water from Waterworks District No. 1 in order to reduce potable demands within the District.

3. To minimize initial costs, the distribution system should service identified potential customers closest to the treatment plant.

4. The distribution system should accommodate future expansion to serve new areas as additional reclaimed water supplies become available, or as land use changes.

5. It was assumed that the reclaimed water system would be installed and made viable before approval of the potential golf course on Grimes Canyon Road. The distribution system will be capable of supplying the golf course if and when it is constructed.

6. A minimum number of railroad crossings should be used.

6.2 Recommended Operating Scenario

The planned expansion of the Moorpark WWTP will include the following:

1. Percolation ponds with a reliable capacity of 1.5 MGD and a maximum peak capacity of up to 3.0 MGD.

2. Tertiary Treatment with a capacity of 1.5 MGD.

The total nominal plant capacity will be 3.0 MGD. Space will be allocated for a future expansion of the tertiary facilities from 1.5 to 3.0 MGD.

The peak percolating capacity will be as high as 3.0 MGD depending on weather, actual infiltration rates, operation and maintenance. However, 1.5 MGD is considered to be the reliable percolation capacity.

Due to the high operational cost of tertiary treatment ($182 to $236 per acre-foot, not including capital cost of tertiary facilities), the cost of treating and distributing reclaimed water will be higher than the $227/AF (for District water), or less, that local users are now paying for irrigation water. It is unlikely that farmers will be willing to pay more for reclaimed water than for potable or wellwater. Therefore, it will be most economical to percolate as much secondary effluent as possible. Tertiary treatment should only be provided for the wastewater that can not be reliably percolated. The proposed operating scenario is demonstrated in Figure 6-1. After expansion of the treatment plant, scheduled for 1992, the full nominal percolation pond capacity of 1.5 MGD will be utilized. The District will make agreements to serve reclaimed water up to a total peak demand of 1.5 MGD. During peak reclaimed water demand periods, a full 1.5 MGD of reclaimed water will be tertiary treated. When reclaimed water demands are less than the peak 1.5 MGD, the District need treat only enough reclaimed water to meet the demand. The unfiltered secondary effluent can be percolated, up to a reliable percolation rate of 1.5 MGD. When reclaimed water demands are low, the District may attempt to percolate more than 1.5 MGD of secondary effluent. However, any effluent that cannot be percolated (as secondary effluent), or sold as reclaimed water (after tertiary treatment), must be treated to tertiary requirements before discharge to the creek.

By 1995, wastewater flows are projected to exceed 3.0 MGD and the District will need to decide whether to expand tertiary treatment or to increase the percolation disposal capacity. The District has had difficulty percolating secondary effluent and it may have no choice but to expand the tertiary treatment capacity. This would increase the supply of reclaimed water to a peak flow capacity of 3.0 MGD.

6.3 Recommended Initial Service Area - Phase I

Based on the planned tertiary treatment capacity of 1.5 MGD, and on the projected supplies in Figure 6-1, an initial reclaimed water system, referred to as Phase I, is recommended, with a capacity to supply a peak demand of 1.5 MGD. The system was also sized to be expandable to supply a peak demand of up to 3.0 MGD. Based on Figure 6-1, 3.0 MGD of reclaimed water could be available as early as 1997, if all water is fully treated, or by 2008 if 1.5 MGD is percolated.

The proposed reclaimed water service area for Phase I is shown in Figure 6-2. The potential customers shown are those located nearest the treatment plant and those currently serviced by WWD No. 1. A list of the selected users and their estimated demands is provided in Table 6-1. Five primary customers have been identified, whose peak demands add up to 1.5 MGD. These primary customers now use District potable water. The District can pass an ordinance requiring use of reclaimed water where available. Since future use of groundwater will be restricted by the Groundwater Management Agency (Section 8.4), these customers may have little choice but to use reclaimed water. However, in case one or more of these customers declines to use reclaimed water, three backup customers have been identified. In addition to the eight customers shown, other potential customers are available, as shown on Figure 5-7. However, the cost of distribution facilities is higher to serve customers located farther from the treatment plant.

PROJECTED SUPPLY OF RECLAIMED WATER

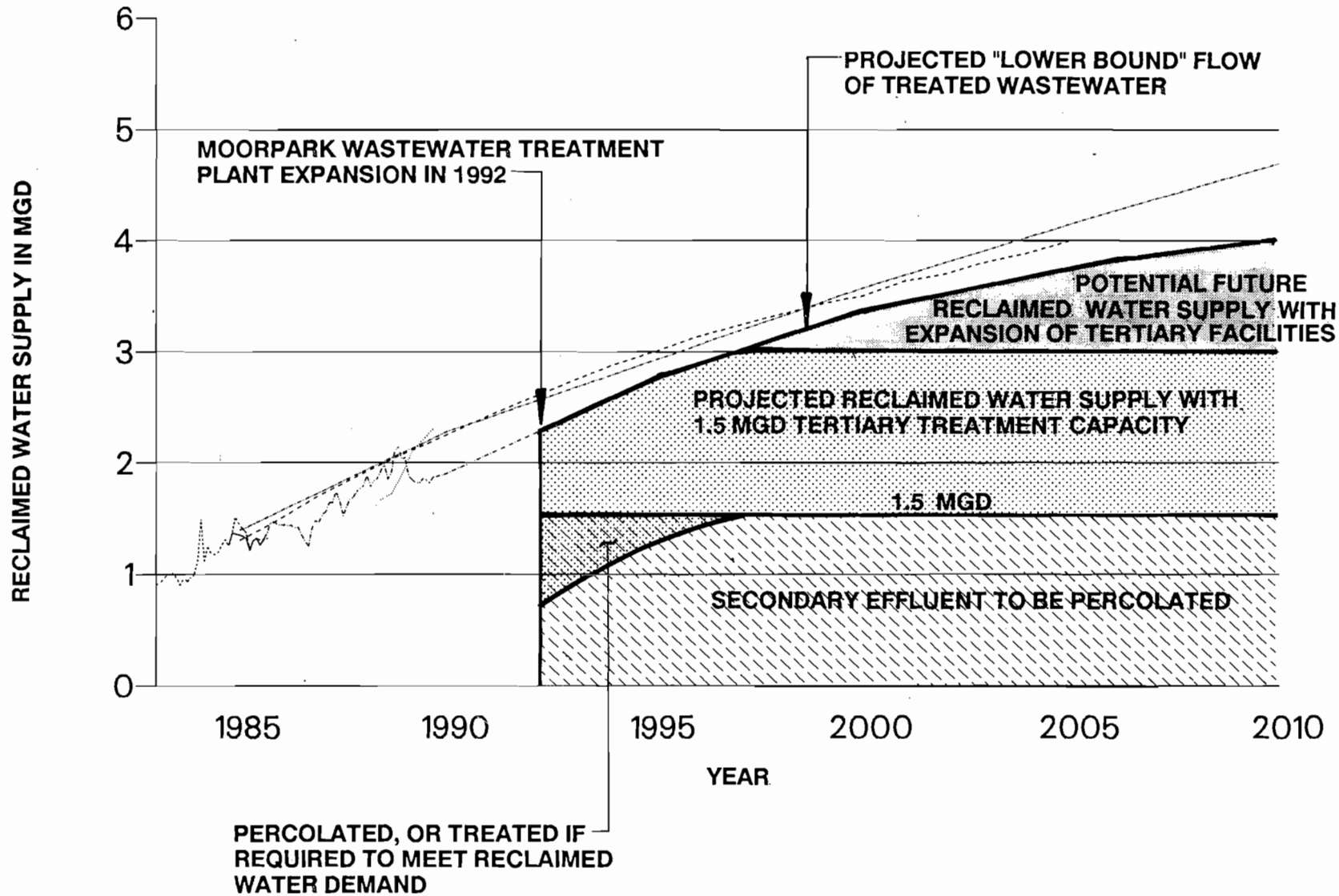


FIGURE 6-1

FIGURE 6-1

5.3.1 Cropping Patterns

Prevailing cropping pattern acreages for District No. 1 project area lands are summarized in Table 5-5. District No. 1 cropping pattern location is shown on Figure 5-8. The cropping pattern has been divided into four different crop types: 1) field/row crops, 2) tree crops, 3) nursery crops, and 4) turf.

Field/row crops are generally produced on nearly level to gently sloping alluvial lands. These lands are intensively farmed to a variety of vegetable crops. These crops are typically grown for specialty markets, and little information was provided by the growers relative to exact cropping patterns because of the competitive nature of this venture. Field/row crop lands consist of approximately 567.6 net cropped acres.

Tree crop lands consist of those used for avocados, Christmas trees, and eucalyptus. Christmas trees are grown near the intersection of Hitch Boulevard and Los Angeles Avenue and consist of about 70.8 net irrigated acres. Avocados and eucalyptus are grown north of Los Angeles Avenue along Grimes Canyon Road and consist of 20 and 87 net irrigated acres for avocado and eucalyptus, respectively.

Nursery crops are produced at four different locations, three of which are along the alignment of Arroyo Las Posas and the other at the westerly extent of District 1 north of Los Angeles Avenue. Nursery crops encompass some 132.5 net irrigated acres.

Also included within the project area are lands east of Tierra Rejada Road and south of Arroyo Las Posas. These lands are presently being used for irrigated field/row crops. The parcel is owned by the City of Moorpark, and planning is in progress to construct a large regional park. The net irrigated area of the proposed park is estimated at some 50 acres.

The summary of existing cropping patterns in privately held mutual water companies in District 19 is summarized in Table 5-6. Specific data on cropping pattern acreages are not available for these three privately held water companies. The data included in Table 5-6 is based on estimates provided by individuals knowledgeable of water company conditions/operations. Based on these estimates, there are approximately 5,770 acres of lands used for citrus/avocado production, 1,410 acres used for field/row crops, and 45 acres used for commercial nursery.

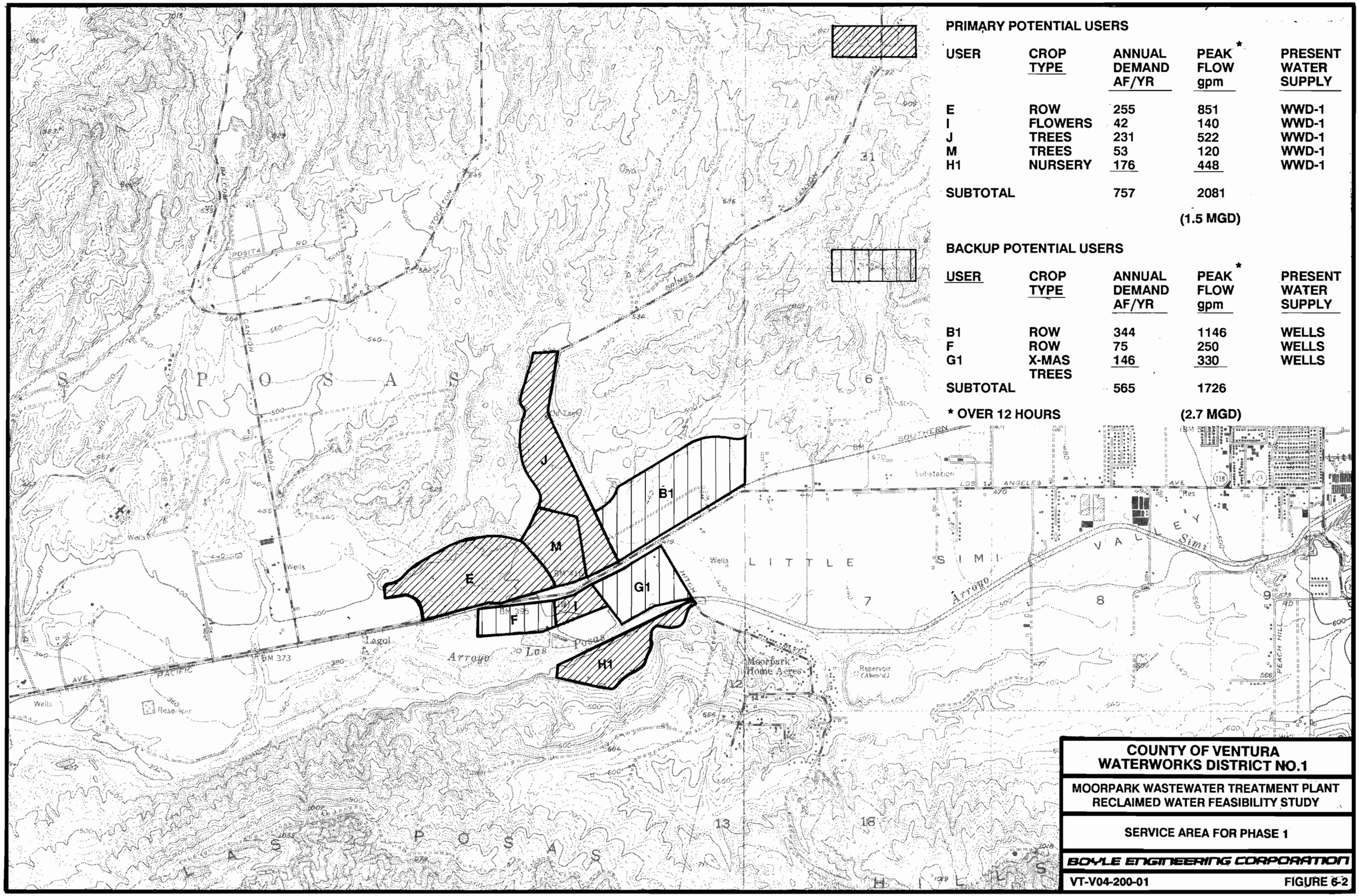
5.3.2 Agricultural Irrigation Practices

The summary of irrigation methods presently used on District No. 1 lands is shown in Table 5-7. Four general types of irrigation methods are practiced:

1. Gravity (70.8 net irrigated acres)

2. Sprinkler (617.6 net irrigated acres)

3. Sprinkler/micro-irrigation (132.5 net irrigated acres)



PRIMARY POTENTIAL USERS

USER	CROP TYPE	ANNUAL DEMAND AF/YR	PEAK* FLOW gpm	PRESENT WATER SUPPLY
E	ROW	255	851	WWD-1
I	FLOWERS	42	140	WWD-1
J	TREES	231	522	WWD-1
M	TREES	53	120	WWD-1
H1	NURSERY	176	448	WWD-1
SUBTOTAL		757	2081	
			(1.5 MGD)	

BACKUP POTENTIAL USERS

USER	CROP TYPE	ANNUAL DEMAND AF/YR	PEAK* FLOW gpm	PRESENT WATER SUPPLY
B1	ROW	344	1146	WELLS
F	ROW	75	250	WELLS
G1	X-MAS TREES	146	330	WELLS
SUBTOTAL		565	1726	
			(2.7 MGD)	

* OVER 12 HOURS

COUNTY OF VENTURA
WATERWORKS DISTRICT NO.1

MOORPARK WASTEWATER TREATMENT PLANT
RECLAIMED WATER FEASIBILITY STUDY

SERVICE AREA FOR PHASE 1

BOYLE ENGINEERING CORPORATION

VT-V04-200-01 FIGURE 6-2

TABLE 6-1

POTENTIAL RECLAIMED WATER CUSTOMERS IN PHASE I SERVICE AREA

Category	User	Crop Type	Annual Demand (AF/YR)	Peak[1] Flow (gpm)	Present Water Supply
Primary Potential Users	E	Row	255	851	WWD No. 1
	H1	Nursery	176	448	WWD No. 1
	I	Flowers	42	140	WWD No. 1
	J	Trees	231	522	WWD No. 1
	M	Trees	53	120	WWD No. 1
	Subtotal		757	2081	(1.5 MGD)
Backup Potential Users	B1	Row	344	1146	Wells
	F	Row	75	250	Wells
	G1	Row	146	330	Wells
	Subtotal		565	1726	
	Total Potential Demand in Phase I Service Area		1322	3807	(2.7 MGD)

[1] Peak flow over 12-hour daytime period, to satisfy evapotranspiration requirements, from Table 5-14.

It is recommended to concentrate the initial marketing efforts on those areas shown in Figure 6-2. Once the reclaimed water system is operational, additional customers can be added as additional water becomes available.

The service area shown in Figure 6-2 is based on supplying all irrigation demands of those customers. Although their peak summer demands total 1.5 MGD, during most of the year the demand is less than 1.5 MGD, and some reclaimed water will be released to the creek, or additional secondary effluent can be percolated. An alternate to creek discharge is to sell surplus water at a discount, to those customers who have alternate supplies during the summer.

The supply versus monthly demand, for the Phase I primary users is shown in Figure 6-3. The highest monthly demand is 107 acre-feet in July. This is less than the monthly supply, at 1.5 MGD, of 142 acre-feet. This difference is necessary because the maximum day demand will peak above the maximum monthly demand, and only 1.5 MGD will be available to supply the peak demands.

The Phase I service area is relatively small and each user will have to adopt irrigation practices that distribute demand over a longer period to decrease the chances of excess peaking demands on the system. On site storage tanks could also be used.

6.4 Distribution System Alternatives

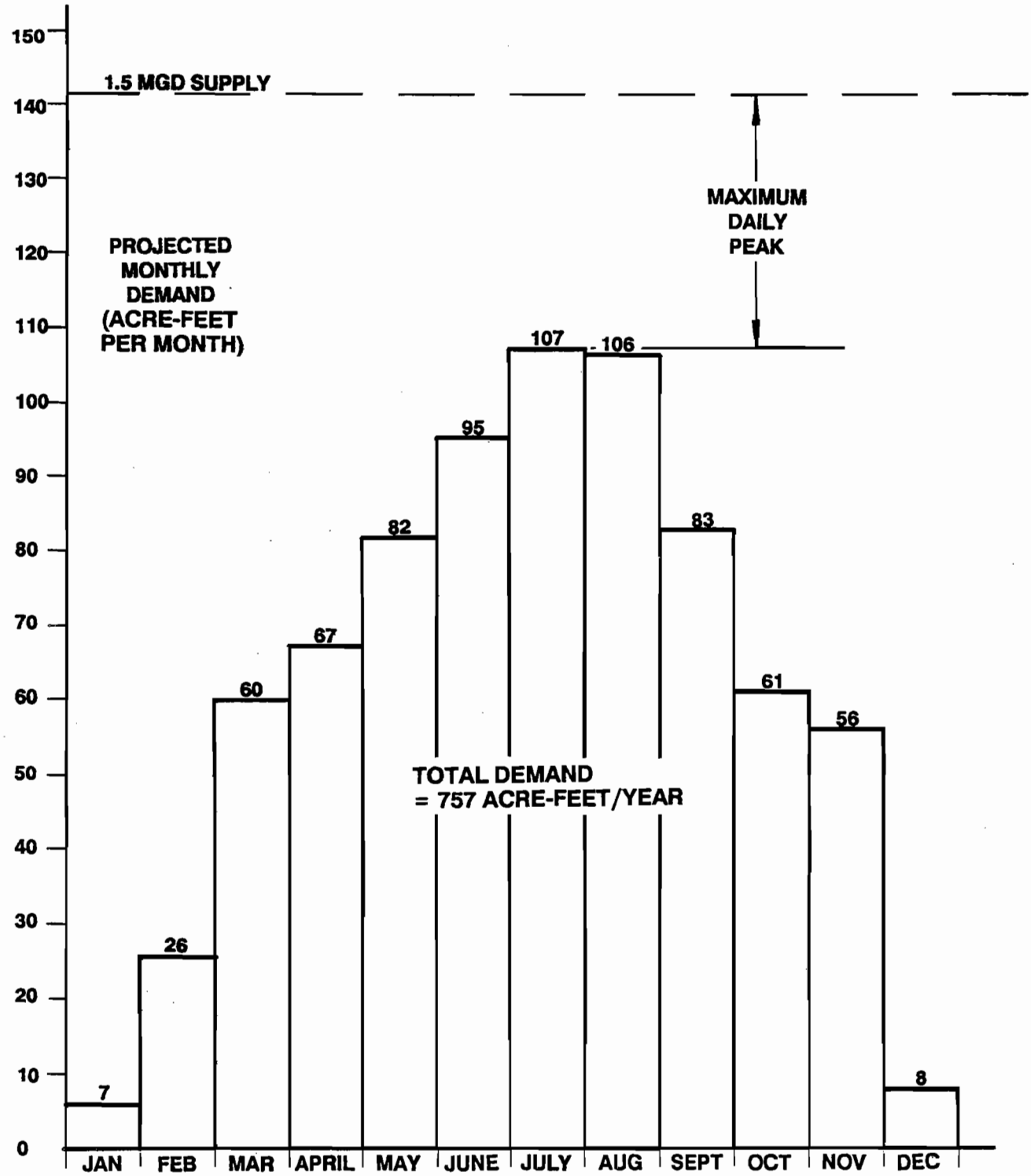
Several distribution system alternatives were investigated in the course of this study. During these investigations it became apparent that an extensive distribution system that could distribute 1.5 MGD or even 3.0 MGD over the full study area would be expensive and could not compete with the cost of existing water supplies. Of many options considered, four viable alternatives were selected for further consideration, as described below:

1. Alternative 1 - Golf Course Distribution System

With Alternative 1, a distribution system would be provided by the developer of a potential golf course along Grimes Canyon Road. The distribution system would be custom designed for the needs of the golf course, but several agricultural customers located along the transmission main could also be served.

2. Alternative 2 - Local Reclaimed Water System

Distribution system Alternative 2 is a small localized distribution system that will supply reclaimed water on demand to the Phase I service area of Figure 6-2. Alternative 2 provides water to customers within Water Works District No. 1, and does not require agreements with other agencies.



COUNTY OF VENTURA
WATERWORKS DISTRICT NO.1

MOORPARK WASTEWATER TREATMENT PLANT
RECLAIMED WATER FEASIBILITY STUDY

PROJECTED MONTHLY DEMAND - PHASE 1
SERVICE AREA (USERS E,H1,I,J AND M)

BOYLE ENGINEERING CORPORATION

VT-V04-200-01 FIGURE 6-3

3. Alternative 3 - Deliver all Reclaimed Water to Zone Mutual

In Alternative 3, all reclaimed water produced, up to 1.5 MGD, will be delivered through a pipeline to Zone Mutual. It appears that gravity flow into an existing sump would suffice.

4. Alternative 4 - Local Reclaimed Water System with Surplus Water to Zone Mutual

In Alternative 4, the local distribution system from Alternative 2 would be provided. The customers in the Phase I service area would be supplied with reclaimed water on demand. Surplus water would be delivered to Zone Mutual through a pipeline to their existing sump.

Alternative 1 is the most attractive option for cost reasons. The potential golf course developer appears to be willing to construct the distribution system at his own expense. Other customers could also be served by the distribution system.

If the golf course is not approved and constructed, another alternative must be selected. Of the other three alternatives, Alternative 2 is recommended for implementation within the District.

Alternative 2 has the ability to be expanded in the future to deliver reclaimed water to Zone Mutual, if that option becomes viable and if sufficient supplies are available. However, their distribution system would be subject to the health regulations associated with reclaimed water.

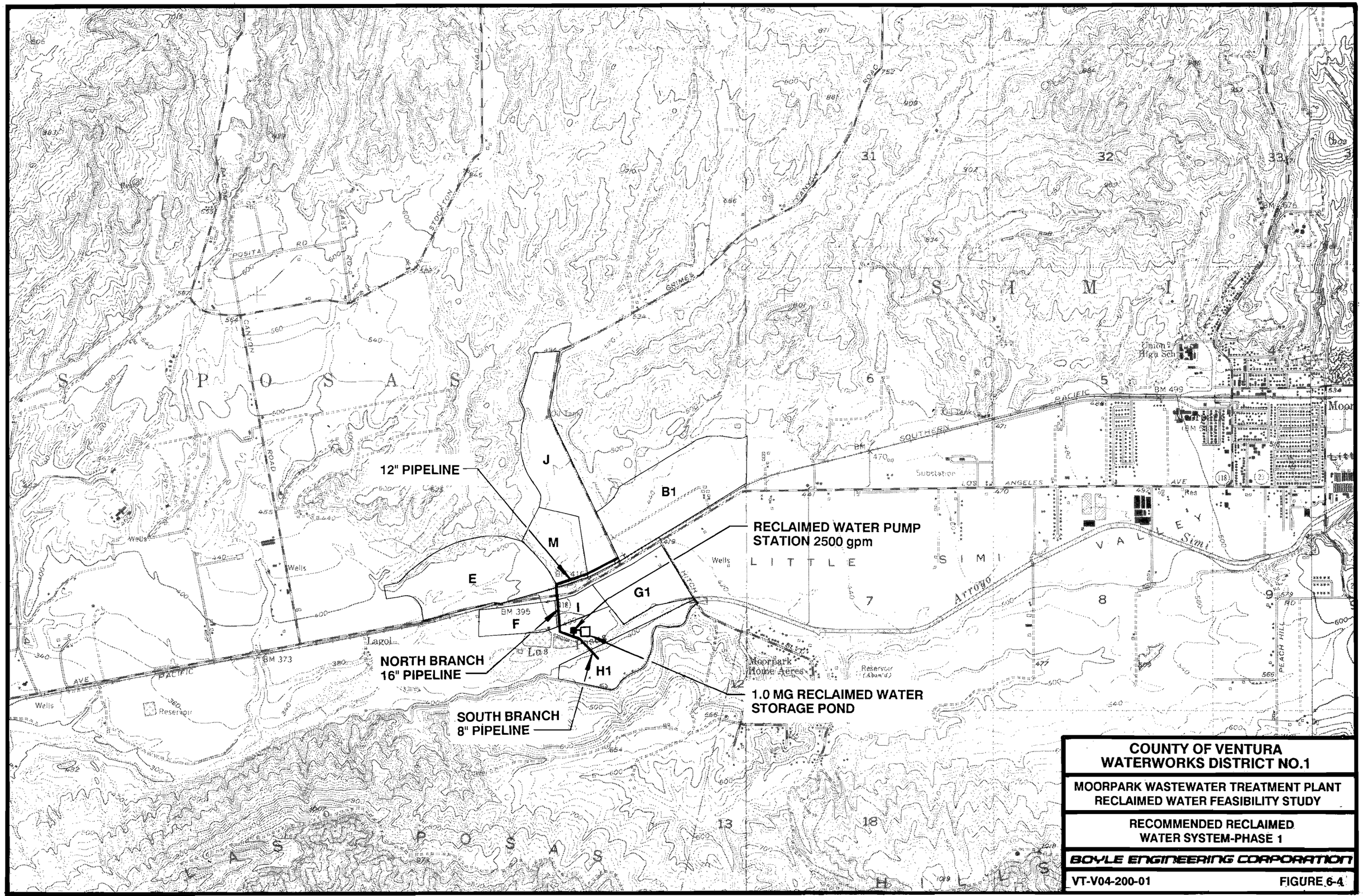
6.5 Recommended Reclaimed Water Distribution System - Phase I

The recommended Phase I reclaimed water distribution system (Alternative 2) is shown in Figure 6-4. This system will supply reclaimed water on demand to the potential Phase I users identified in Table 6-1. The pipelines were sized to allow extension of the distribution system in any direction. Some extensions not shown may be required as part of Phase I if some potential users elect not to participate.

The major facilities in the recommended alternative are described below:

1. Regulatory Storage

It is intended to operate the tertiary plant at a fairly constant rate over any given day. However, reclaimed water use is expected to occur primarily over a 12 hour daytime period. Daily regulation storage within the reclaimed water system will be needed to store reclaimed water produced during the night for distribution to users in the daytime. The following storage volumes will be required, based on a 12 hour distribution of a constant supply.



COUNTY OF VENTURA
WATERWORKS DISTRICT NO.1

MOORPARK WASTEWATER TREATMENT PLANT
RECLAIMED WATER FEASIBILITY STUDY

RECOMMENDED RECLAIMED
WATER SYSTEM-PHASE 1

BOYLE ENGINEERING CORPORATION

VT-V04-200-01 **FIGURE 6-4**

D-1046

	SUPPLY AND DEMAND	
	1.5 MGD	3.0 MGD
Regulatory Storage Volume	750,000 gal	1,500,000 gal
Emergency Reserve	250,000 gal	500,000 gal
Total Storage Volume	1,000,000 gal	2,000,000 gal

The emergency reserve storage represents two hours of peak demand.

It is recommended that Phase I include a storage capacity of 1.0 MG. This will provide adequate storage until at least 1995. An additional 1.0 MG can be added as part of the next phase, if required.

Farmers can irrigate with reclaimed water in the daytime because their properties are not open to the general public. Parks, schools, golf courses and other areas open to the public are required to irrigate at night when using reclaimed water. As the area develops, such public areas may eventually be supplied with reclaimed water. Any nighttime demands will offset daytime irrigation, requiring less regulatory storage. This is another reason that any storage volume over 1.0 MG should be postponed until the next phase, if and when it proves to be needed.

Potential sites for a tank were located on USGS Quad sheets. For a gravity storage system, the most likely sites are located in the hills to the south of the treatment plant. The minimum elevation would need to be around 600 feet; such sites are situated outside the Phase I service area.

Steel tanks are relatively expensive. A full length supply pipeline sized for maximum day flows would need to be provided between the treatment plant and the tank. A preliminary economic analysis showed that use of a steel tank designed to AWWA standards would make reclaimed water uncompetitive with local supplies (including WWD No. 1).

Instead of a steel tank, it is recommended that a storage pond be constructed at the treatment plant site, as part of the planned plant expansion. The pond would consist of an earth embankment, a plastic liner, and a concrete wetwell/overflow structure. This approach will minimize the capital costs of the storage facilities. Due to rapid turnover within the pond, it will probably not need to be covered to prevent algae growth. Each user will require irrigation filters to prevent clogging of sprinklers. Provisions for future addition of a floating cover can be designed into the storage pond in case it proves to be necessary.

The storage pond could be located within the existing percolation beds. Based on information provided by Kennedy/Jenks/Chilton on the tertiary facilities, it appears that gravity flow will be possible from the tertiary well into a pond constructed within the percolation area. The reclaimed water storage pond location will need to be finalized as part of the treatment plant expansion design. The storage pond will also need to be

incorporated into the site drainage at the treatment plant site, so that any overflow can safely flow into the arroyo. This may require the pond to be located near the arroyo.

It is assumed that the tertiary facility will supply water at sufficient head to fill the storage pond.

2. Pumping Facilities

The pumping facilities must be located between the storage pond and the distribution pipelines. The pumps must be capable of supplying the peak demand over a 12 hour day. The required flows are as follows:

	Demand	
	1.5 MGD	3.0 MGD
24 Hour Average Flow	1042 gpm	2083 gpm
12 Hour Peak Flow	2083 gpm	4167 gpm
Design Maximum Pump Flow	2500 gpm	5000 gpm

The design maximum flow is based on an additional 20 percent reserve capacity above the 12 hour flow.

It is recommended to utilize a constant pressure booster pump station. With a design flow of 2500 gpm, a variable speed drive will probably be appropriate. Prepackaged units are available that will minimize the cost. The system includes a microprocessor that monitors the discharge pressure and adjusts the pump speed to maintain a steady pressure. These pumps are commonly used on irrigation systems. It would be preferable for the pumps to have an adjustable discharge set pressure. This will allow operational flexibility as new customers are added or deleted.

It is assumed that the pumping facilities will be located outdoors, over the wet well adjacent to the storage pond. Part of the pump control unit would be located inside a building within the treatment plant.

Final site selection for the pump station should be made during the design of the treatment plant expansion.

3. Distribution Pipelines

The proposed locations of the Phase I distribution pipelines are shown in Figure 6-4. The main branch to the north will serve customers north of the railroad tracks. The south branch will serve the nursery south of the arroyo.

The pipeline sizes for Phase I must be selected very carefully. The pipelines must be oversized initially so that they will be capable of delivering 3.0 MGD without parallel

pipelines when the system is expanded. However, if they are made too large the reclaimed system will be less cost effective initially.

The key to sizing the Phase I pipelines is to estimate the potential future service areas and to plan for eventual expansion into those areas. A potential future distribution system to service the final study area is shown in Figure 6-5. The future pipeline extensions shown could serve the following areas:

1. A potential future golf course and/or other developments north on Grimes Canyon Road.

2. The final study area as defined in Figure 5-5.

3. Zone Mutual or Arroyo Las Posas

4. Avocado orchards in the hills south of the treatment plant.

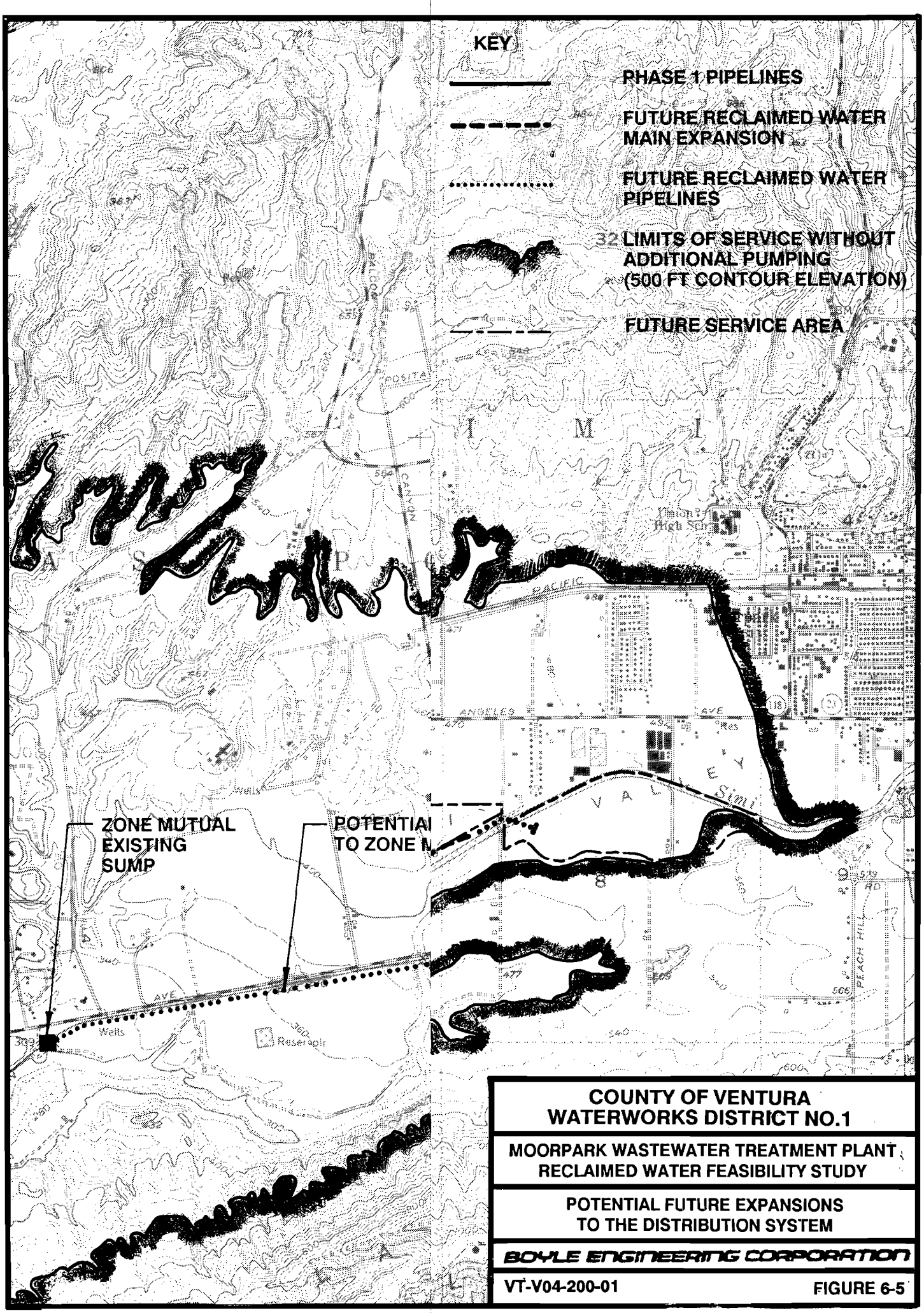
Almost all of the future service area is below an elevation of 500 feet. The 500 foot contour is highlighted on Figure 6-5. The distribution system was sized to serve those areas under 500 feet with a minimum pressure of 43 psi (100-foot head). Any users requiring higher pressures may need to use booster pumps, depending upon their elevation.

The treatment plant is located at an elevation of about 400 feet. Generally, it is preferable to maintain system pressures under 150 psi, in order to use standard class 150 pipe and to eliminate pressure reducers. To meet this requirement the maximum Hydraulic Grade Line (HGL) in the system should not exceed 400 + 347 = 747 feet. Some of the service area west of the plant is below 400 feet. Future extensions to those areas, or to Zone Mutual, may require pressure reducers.

Having identified the future service area and the required HGLs, it is still necessary to make an assumption about the potential distribution of future demands within the service area. If the future 3.0 MGD demand is located far from the treatment plant, a larger pipeline will be required than if the same demand is located adjacent to the plant. The Phase I pipelines sizes were based on the assumed flow distribution shown in Figure 6-6. These flows were based on reducing all of the flows on Table 5-14, which total 8202 gpm, to result in a total flow of 3.0 MGD. The pipe sizes, hydraulic gradients, and pressures are shown in Table 6-2. Obviously, the selected pipeline diameters will be more than adequate to deliver 1.5 MGD to the identified potential users in the Phase I service area.

When the system is expanded to 3.0 MGD or more, several measures can be taken to increase the effective capacity of the pipelines, if necessary, without installing parallel lines:

1. The HGLs at more distant users could be reduced below 600 feet where possible.



COUNTY OF VENTURA
WATERWORKS DISTRICT NO.1

MOORPARK WASTEWATER TREATMENT PLANT
RECLAIMED WATER FEASIBILITY STUDY

POTENTIAL FUTURE EXPANSIONS
TO THE DISTRIBUTION SYSTEM

BOYLE ENGINEERING CORPORATION

VT-V04-200-01 FIGURE 6-5

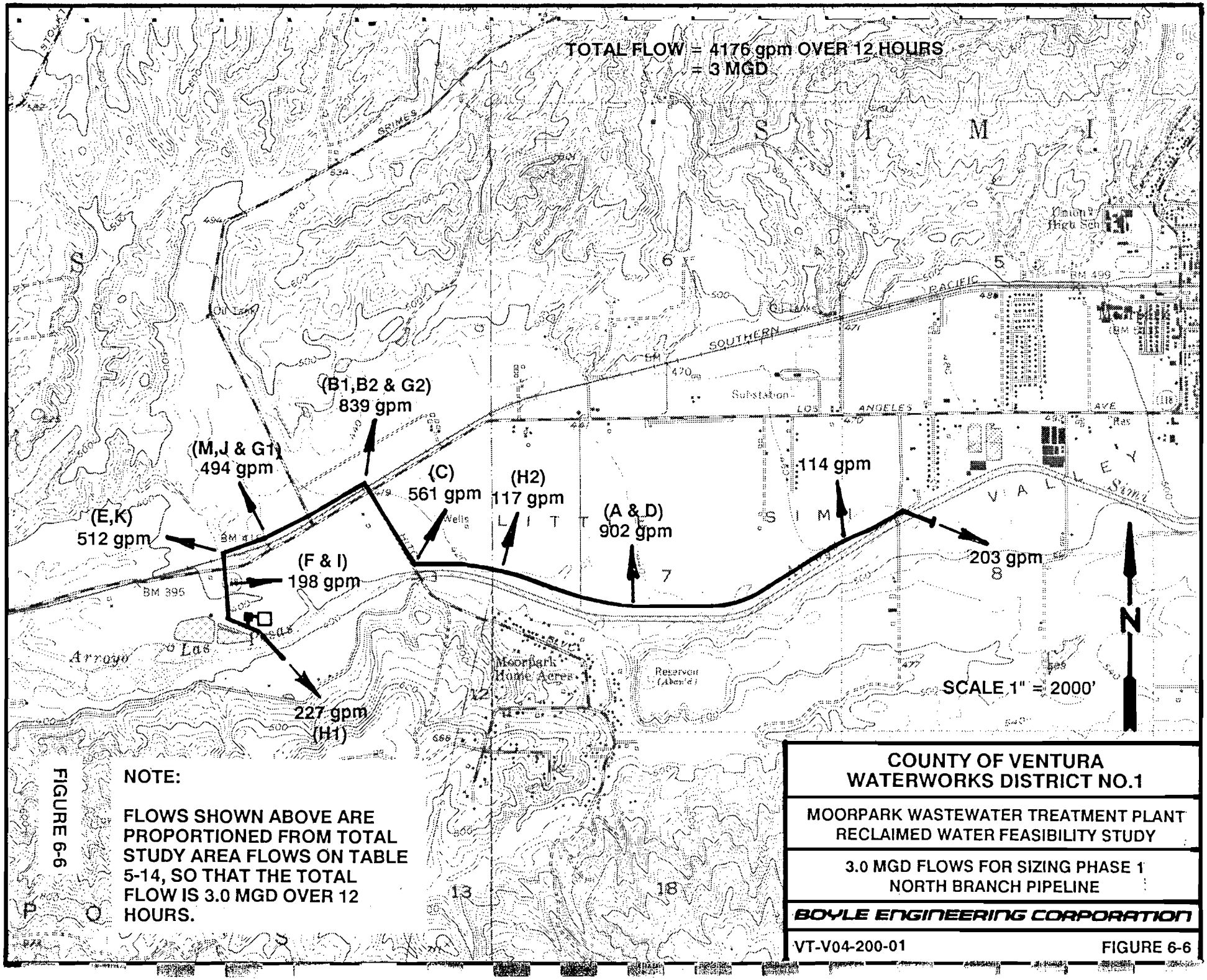

TOTAL FLOW = 4176 gpm OVER 12 HOURS
= 3 MGD
(B1,B2 & G2)
839 gpm
(M,J & G1)
494 gpm
(C)
561 gpm
(H2)
117 gpm
(A & D)
902 gpm
114 gpm
(E,K)
512 gpm
(F & I)
198 gpm
203 gpm
227 gpm
(H1)
SCALE 1" = 2000'
N
S I M I
V A L L E Y
SOUTHERN
PACIFIC
LOS ANGELES AVE
Moorpark Home Acres
Arroyo Las
NOTE:
FLOWS SHOWN ABOVE ARE PROPORTIONED FROM TOTAL STUDY AREA FLOWS ON TABLE 5-14, SO THAT THE TOTAL FLOW IS 3.0 MGD OVER 12 HOURS.
COUNTY OF VENTURA
WATERWORKS DISTRICT NO.1
MOORPARK WASTEWATER TREATMENT PLANT
RECLAIMED WATER FEASIBILITY STUDY
3.0 MGD FLOWS FOR SIZING PHASE 1
NORTH BRANCH PIPELINE
BOYLE ENGINEERING CORPORATION
VT-V04-200-01
FIGURE 6-6

FIGURE 6-6

TABLE 6-2

HYDRAULIC ANALYSIS OF NORTH BRANCH PIPELINES UNDER 3.0 MGD FLOWS

MOORPARK WASTEWATER TREATMENT PLANT
RECLAIMED WATER FEASIBILITY STUDY

REACH	UPHILL HGL (FEET)	UPHILL GROUND ELEVATION (FEET)	DEMAND (GPM)	ALLOCATED FLOW (GPM)	PIPE DIAMETER (INCHES)	WATER VELOCITY (FT/SEC)	LENGTH (FEET)	HEAD LOSS (FEET)	DOWNHILL HGL (FEET)	DOWNHILL GROUND ELEVATION (FEET)	PRESSURE (PSI)
PS-Q1	747.0	390.0	7,754	3,939	16	6.3	1,200	11.0	736.0	400.0	145.6
Q1-Q2	736.0	400.0	7,364	3,741	16	6.0	650	5.4	730.6	402.0	142.4
Q2-Q3	730.6	402.0	6,357	3,230	12	9.2	1,000	25.8	704.8	421.0	123.0
Q3-Q4	704.8	421.0	5,385	2,736	12	7.8	2,300	43.6	661.2	422.0	103.6
Q4-Q5	661.2	422.0	3,734	1,897	12	5.4	1,600	15.4	645.8	407.0	103.5
Q5-Q6	645.8	407.0	2,630	1,336	12	3.8	1,500	7.5	638.2	420.0	94.6
Q6-Q7	638.2	420.0	2,400	1,219	12	3.5	2,300	9.8	628.4	427.0	87.3
Q7-Q8	628.4	427.0	625	318	8	2.0	4,300	10.9	617.6	460.0	68.3
Q8-Q9	617.6	460.0	400	203	6	2.3	1,800	8.1	609.5	450.0	69.1

2. Some users (especially orchards or public areas) could irrigate at night, which will increase the total flow capacity.

3. Storage could be provided in distant parts of the system to receive water at night for daytime distribution.

The proposed Phase I pipelines will be able to supply 1.5 MGD to the immediate service area around the treatment plant with minimum head losses, thus reducing pumping and energy costs during the crucial startup of the reclaimed water system. After the system has been in service for a couple years, the accumulated operational data will enable a better evaluation of the economics of extending service into new areas.

4. Other Facilities

In addition to the major supply facilities, some miscellaneous appurtenances will be required. For example, backflow preventers will be required within some of the private distribution systems to prevent reclaimed water from being inadvertently introduced into those systems. It is also recommended that a pipe be provided, with an air gap, to provide supplemental potable water to the storage pond. This will allow for a backup supply.

6.6 Future Expansion Options for the Reclaimed Water System

The Phase I distribution system is recommended for initial implementation of the Reclaimed Water System. As shown on Figure 6-5, the proposed Phase I reclaimed water system is capable of being expanded in several directions. In addition to the pipeline extensions, other options exist for expanding the system, as discussed in general below:

1. Potential Golf Course to the North

A developer is considering building a new golf course to the north, east of Grimes Canyon Road. The proposed golf course is in the very preliminary planning stages and a tentative map has not even been filed. In general, golf courses make excellent reclaimed water customers. Their demand is more constant than for row crops, where land can sit idle for long periods. Golf course owners usually have funds to pay for facilities. Ventura County now requires all new golf courses to use reclaimed water, if available, instead of potable water.

The potential golf course could be supplied through the proposed Phase I facilities. A pipeline extension to the north along Grimes Canyon Road would be required. A new pump station would be required to boost water to the higher elevations at the golf course. Storage facilities would be required near the golf course. The pipeline could also deliver water to new customers along the route.

In summary, the proposed Phase I facilities could supply this golf course or other future users. Additional supplies could be made available by increasing the amount of water subjected to tertiary treatment, and reducing percolation. It could be some time before the golf course would use any reclaimed water. By constructing Phase I, the District can implement a versatile reclaimed water system without depending upon any one large user.

2. Delivery to Zone Mutual

A future pipeline to the west could deliver water into a Zone Mutual well sump located about 1 1/2 miles west of the treatment plant. Water could be delivered on or off peak. A pressure reducing/pressure sustaining valve may be required to reduce pipeline pressures below 150 psi and to maintain pressures in the distribution system to the east; otherwise, flows to Zone Mutual could drain the rest of the system.

A less expensive alternate to providing a pipeline to the sump location would be to utilize an existing private 12-inch pipeline, south of the railroad tracks, for part of the route. This variation could be finalized in the future if delivery to Zone Mutual becomes beneficial.

3. Delivery to New Areas Under 500-Foot Elevation

Delivery to future areas under 500-foot elevation can be provided, if water is available, by extending distribution lines to the new areas. The economics must be evaluated on a case-by-case basis.

4. Delivery to New Areas Above 500-Foot Elevation

Delivery to new areas above 500-feet elevation will require new pumping and possibly storage facilities, in addition to extending the pipelines. Such users may be required to receive water over a 24-hour period, or only at night, in order to minimize peaking on the backbone system.

5. Delivery to Avocado Orchards to the South

Extensive avocado/orange orchards south of the creek may be able to use reclaimed water in the future. Some new plantings indicate that some owners plan to continue farming for some time. This area was not considered as part of the Phase I service area because of the high cost of facilities to supply the area, and because of the high cost of pumping to a 700-foot elevation. A storage tank and additional pumps would be required. However, under drought conditions the economics could change, especially if reductions to agricultural users are imposed in the future.

These orchards could be supplied by extending the Phase I pipeline to the south and providing pump/storage facilities.

6. Peak with Potable Water

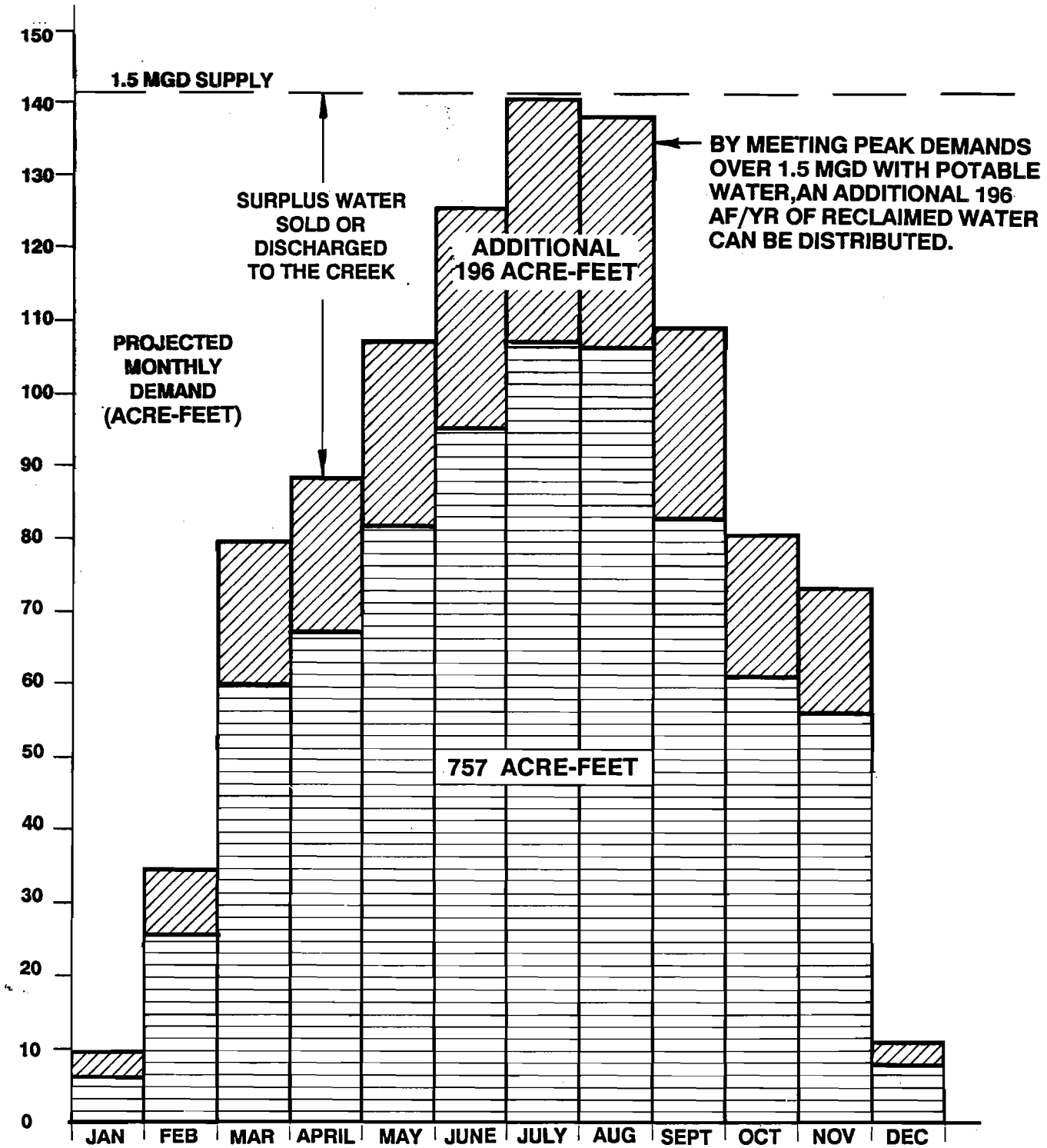
The peak irrigation demands will occur over very short periods. The Phase I system could be modified to introduce potable water into the storage pond (through an approved air gap) in order to supplement reclaimed water during peak periods. This would allow the District to increase total sales of reclaimed water. A small amount of potable water added in the summer can allow an increase in reclaimed water sales by many times that amount. If reclaimed water sales reduce potable demand, then the overall potable demand can be reduced by supplementing during short-term peaks.

If a small amount of potable water is supplemented into the reclaimed system, reclaimed water sales can be increased from 757 acre-feet to about 953 acre-feet per year. This increase is based on allowing the maximum monthly demand to reach 143 acre-feet, equivalent to a steady flow of 1.5 MGD during the month, as shown in Figure 6-7. The amount of potable water that will need to be supplemented in this case is difficult to estimate, and will depend on irrigation practices and weather variations. Typical demand variations within a water system are shown in Figure 6-8, which shows a daily history of typical water demands. Although a number of daily peaks occur above the highest monthly average, the additional demand resulting from those peaks is a small percentage of the overall demand, as determined by the relative areas under the curve.

The proposed Phase I reclaimed water system can be expected to show more daily and seasonal variations than in Figure 6-8, because of the system's small size. By implementing the Phase I system as proposed and monitoring daily demands, the District will be able to determine whether future supplementation with potable water would be beneficial.

7. Early Expansion of Tertiary Treatment Facilities

According to projections, expansion of the tertiary plant above 1.5 MGD of capacity may be required by around 1995. To expand the supply of reclaimed water, the new facilities could be constructed early. The expanded facilities would sit idle for much of the year, when reclaimed water demand is low, but could help meet peaks in the summer. The high cost of treating a small amount of extra water for short periods could be offset by increased annual sales of reclaimed water during the rest of the year. However, early expansion of tertiary facilities is not expected to be economically viable.



MAXIMUM RECLAIMED WATER SALES IF ALL DAILY PEAKS ARE MET BY THE 1.5 MGD SUPPLY OF RECLAIMED WATER.

ADDITIONAL RECLAIMED WATER SALES IF DAILY PEAKS ABOVE 1.5 MGD ARE SUPPLEMENTED WITH POTABLE WATER.

COUNTY OF VENTURA
WATERWORKS DISTRICT NO.1

MOORPARK WASTEWATER TREATMENT PLANT
RECLAIMED WATER FEASIBILITY STUDY

IMPACT OF SUPPLEMENTING WITH
POTABLE WATER DURING PEAK PERIODS

BOYLE ENGINEERING CORPORATION

VT-V04-200-01 FIGURE 6-7

POTENTIAL SUPPLEMENTATION OF POTABLE WATER INTO THE RECLAIMED WATER SYSTEM

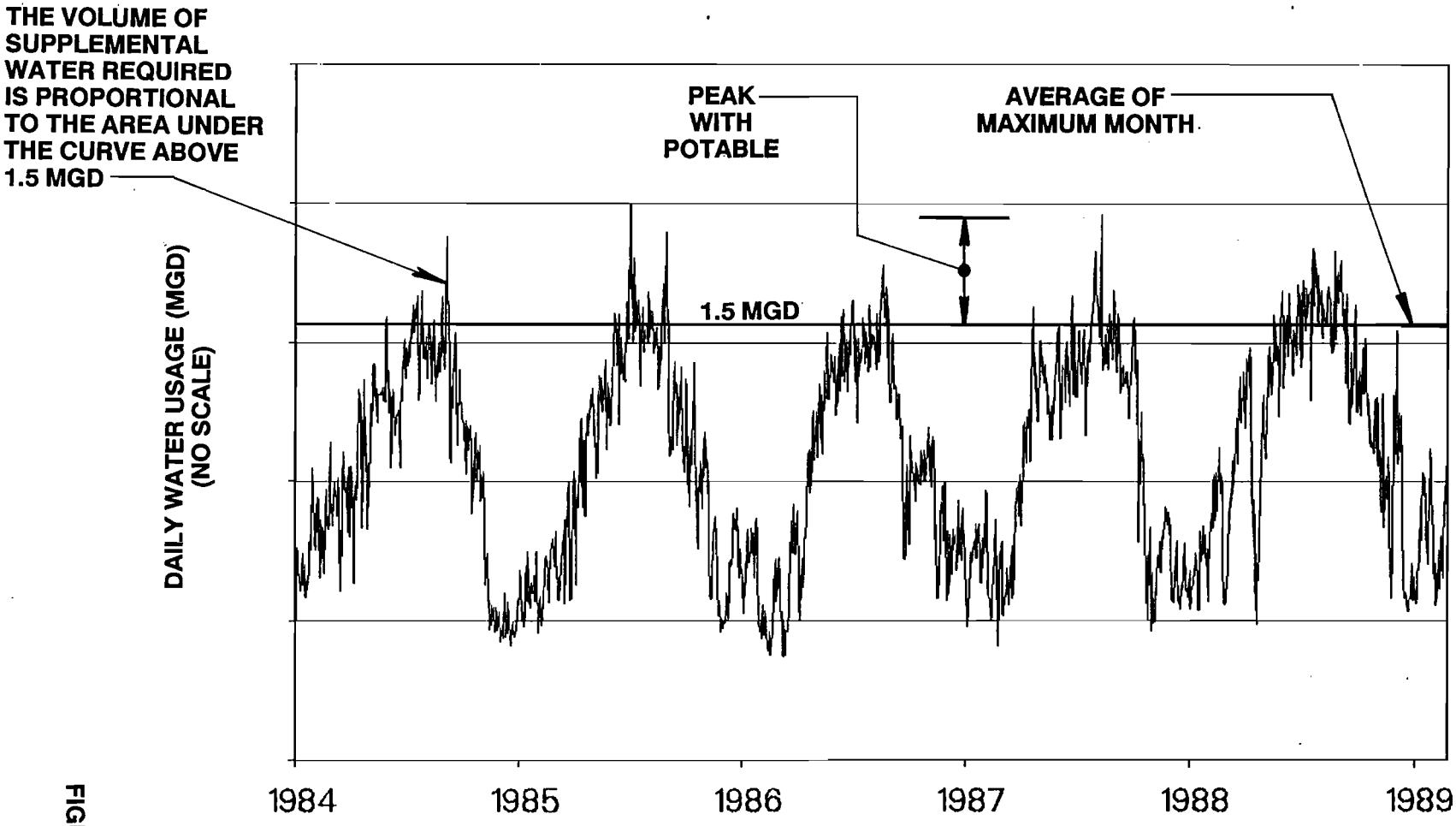


FIGURE 6-8

FIGURE 6-8

8. Seasonal Storage for Reclaimed Water

A seasonal reservoir could nearly double annual sales of reclaimed water. Surplus water produced in the winter could be stored until needed during the peak summer demand months. Seasonal storage will not be required as part of Phase I. Potential storage reservoir sites were not investigated as part of this study.

6.7 Golf Course Distribution System

The Phase I distribution system described in the preceding sections is based on the District installing a reclaimed water system before approval and construction of the golf course near Grimes Canyon Road. However, if the reclaimed water system is paid for and constructed by the developer of the golf course, some modifications to the distribution system might be appropriate:

1. Pump Station

   Due to the distance from the plant to the golf course, it would probably be more economical to pump over a 24 hour period rather than only during a 12 hour demand period. This could reduce the pipeline diameter required.

2. Distribution Pipeline

   The pipeline would be sized for a 24 hour flow. Peak demands would be partially met by flows from storage.

3. On-site Storage

   Due to the distance to the golf course tract, and its higher elevation, on-site storage within or near the golf course would probably be appropriate. Storage at the treatment plant could be reduced.

Design of a distribution system centered around the potential golf course is beyond the scope of this study.

Section 7- Reclaimed Water System Costs

7.1 Estimated Capital Costs

Estimated Capital Costs for the Phase I Facilities are summarized in Table 7-1. Costs are shown in 1990 dollars.

7.2 Estimated Delivery Costs

The estimated delivered cost per acre-foot is summarized in Table 7-2. Capitalization costs are based on 9 percent interest over 20 years, for an A/P of 10.955 percent. Twenty years was used because the area may eventually convert to residential use. Pumping costs are based on electrical energy costs of about 10¢/kwh, and assume head losses resulting from identified Phase I users. Pumping costs will increase in the future when demand exceeds 1.5 MGD and head losses are increased.

The operating and maintenance costs for the reclaimed system will be highly variable. It is assumed that treatment plant staff will operate the reclaimed water system, eliminating the need for a separate staff. It is also assumed that providing a "demand" system will reduce coordination of irrigation practices, etc., by District personnel, although significant coordination will be required during the first summer after startup, and during nearly all hot spells. Under these conditions operating costs for the reclaimed system are estimated to be approximately $20/acre foot.

The total delivery cost of reclaimed water will be approximately $150/AF.

TABLE 7-1

ESTIMATED CAPITAL COSTS OF PHASE I RECLAIMED WATER SYSTEM

Item	Description	Unit Price	Amount
1	North Branch 16" Pipeline, 1600'	$75	$120,000
2	North Branch 12" Pipeline, 1600'	$59	94,000
3	South Branch 8" Pipeline, 800'	$42	34,000
4	Pump Station		120,000
5	Storage Pond & Wet Well		100,000
	TOTAL CONSTRUCTION COST		468,000
	Eng., Admin., Insp., etc. (20%)		94,000
	Contingency (20%)		112,000
	TOTAL PROJECT COST		$674,000
	Annual Cost (9% over 20 years, A/P=0.11)		$ 74,000

TABLE 7-2

ESTIMATED DELIVERED COST PER ACRE-FOOT FOR THE PHASE I RECLAIMED WATER SYSTEM

Description	Phase I Primary Demand Customers	Peak With Potable Water	All Water Sold @ 1.5 MGD
Annual Reclaimed Water Sales	757 AF	953 AF	1680 AF
Cost Per Acre-foot			
Capitalization costs	$98	$78	$44
Pumping costs	$30	$30	$30
Operation costs	$20	$20	$20
Potable water purchase	0	$ 6	0
Total Cost per acre-foot	$148	$134	$ 94

Section 8 - Economics and Pricing Strategies

8.1 General Economic Feasibility of Selling Reclaimed Water

The projected cost of delivering reclaimed water is approximately $150 per acre foot. This compares favorably with the present $227/AF cost of agricultural water from WWD No. 1. The water quality is good – better than most local groundwater. It appears to be economically feasible to supply reclaimed water to identified customers. However, it will not be possible to recover all of the costs of tertiary treatment by selling reclaimed water. The initial Phase I reclaimed water system should be limited to 1.5 MGD, so that the reliable percolation capacity of 1.5 MGD can be utilized. During off-peak reclaimed water demand periods, as much secondary effluent as possible should be percolated.

8.2 Recommended Pricing

It is recommended that the District charge a price for reclaimed water that will offset as much of the tertiary treatment costs as possible. The quality and reliable supply of the reclaimed water will be of benefit to the users. Negotiations with potential customers will be required before setting a fixed price.

Several price levels should be established, based on types of use, as described below. Proposed rates are defined as percentages of the District's potable rates. There are several potable rate categories. Each user would pay a percentage of the potable rate applicable to his type of use. For example, agricultural users would pay a percentage of the District's potable rate for agriculture.

1. Preferred Customer Rate

Preferred customers are those who will receive reclaimed water on demand. Each customer will have to agree, in a written contract, to a maximum flow rate, or maximum daily use. The maximum flow rate will be established to allow each irrigator to meet the maximum evapotranspiration needs of his crops during a severe heat wave, with modern and well planned irrigation practices, as defined in Table 5-14. This will prevent unnecessary peaking on the system.

As a starting point, it is suggested that reclaimed water rates for preferred customers be set at 75% to 100% of the applicable Waterworks District No. 1 potable water rate for each user. For example, agricultural users would pay 75% to 100% of $227/AF, or $170/AF to $227/AF. As potable rates increase, the reclaimed water rates would increase automatically. Any domestic/other user (as defined on the District's rate schedule) of reclaimed water would pay 75% to 100% of the corresponding Waterworks District No. 1 rate for potable water.

2. Surplus Water Rate

In the winter, reclaimed water supplies will exceed the demand and some effluent may need to be discharged into the arroyo. To encourage use of this water, a surplus water rate could be established. This surplus water could be offered to those users who have wells or other readily available sources of water. Their reclaimed water supplies, by contract, would be subject to being cut off with 24 hours notice when seasonal demands approaches the supply limits. District personnel would manually close valves at each user.

Surplus water sales might be limited to those customers not receiving potable water from WWD No. 1. Alternately, to encourage reduction in potable use, the surplus rate might be offered to some WWD No. 1 customers, with appropriate restrictions. Limitations may be required to encourage preferred customers to remain on the demand system.

The pricing strategy for surplus water will need to be established by negotiation and will depend on the relative price of alternate sources. If the surplus water rate is too high, those users with wells will not be willing to participate. On the other hand, if the price for surplus water is set too low, there will be no incentive for customers to participate as demand customers. Rates could be set at between 50 and 100 percent of the applicable potable rates, depending on potential demand.

3. Wholesale Water Rate

Delivering reclaimed water to other agencies for distribution may result in lower capital, pumping, and operating costs, depending on the location of their receiving facilities. A reduced rate for those customers, such as Zone Mutual or Las Posas, may be appropriate. Water sold to other agencies could be limited to surplus water. Rates could be set at between 50 and 100 percent of the applicable potable rates.

4. Golf Courses

Depending upon reclaimed water supply and demand after startup of the Phase I reclaimed water system, it might be appropriate to establish a separate rate category for golf courses, or other types of users. To meet the additional demand caused by a golf course may require tertiary treatment of water that could otherwise be percolated. Therefore a golf course water rate should be higher to recover the operational cost of tertiary treatment, as well as distribution costs. To recover treatment and distribution costs, the full domestic potable rate may be adequate. If early expansion of tertiary facilities is required to meet the golf course demands, an even higher rate may be required, to help recover capitalization costs of the expanded tertiary facilities.

8.3 Pricing Summary

A suggested pricing strategy for the various rate categories is summarized in Table 8-1. The final rates can be set only after discussions with potential users. The distribution system will be able to service only a limited number of customers without a more costly expansion.

To encourage reclaimed water use, the District could pass an ordinance requiring Water Works District No. 1 potable water customers to use reclaimed water for irrigation purposes instead of potable water, where available. Such ordinances have been effective within other water districts. An executive order issued by the Governor of California in 1980 (Executive Order 8/68/80) directs the State Water Resources Control Board to consider plans to urge reclamation of urban wastewater. This provides additional justification for an ordinance requiring use of reclaimed water.

8.4 Impact of Fox Canyon Groundwater Management Agency

The Board of Directors of the Fox Canyon Groundwater Management Agency (GMA) has passed a series of ordinances to restrict future pumping of groundwater within its jurisdiction. Entitlements for existing wells are based on historical demand for each well from 1985 through 1989. Future extractions from existing wells will be reduced about 1 percent per year until safe yield is achieved in 2010. Installation of new wells and extractions from existing wells will be severely limited.

The GMA ordinances may impact some of the identified agricultural users, by limiting and reducing their groundwater supplies. The GMA rules will increase the competitiveness of reclaimed water in comparison with groundwater supplies.

8.5 MWDSC Rebate Program

The Metropolitan Water District of Southern California (MWDSC) has a Local Projects Program (LPP) to assist local agencies in the development of a cost-effective local water supply. The LPP provides financial assistance to new local water supply projects which reduce demands on Metropolitan's imported water supplies and which require Metropolitan's assistance to be financially feasible.

Metropolitan's contribution under the LPP has recently been increased from a minimum of $75 per acre-foot, which was based on avoided energy costs for pumping an equivalent amount of water through the State Water Project, to a minimum of $154 per acre-foot, which is not tied to energy costs or any cost index, but instead will be reviewed and adjusted by the MWDSC Board of Directors periodically.

The LPP contribution is transferred to the project sponsor via a yield purchase agreement under which Metropolitan purchases the yield of a project at a rate equal to the sum of Metropolitan's reclaimed water rate (currently $230 per acre-foot) and the LPP contribution of $154 per acre-foot. Metropolitan then sells the yield back to the project sponsor through their member

TABLE 8-1

PROPOSED RECLAIMED WATER RATE STRUCTURE

Rate	Description	Suggested Rate Range	Approximate Cost per Acre-foot[1]
Primary	Distribution to private/public customers on demand	75-100% of potable rate	$170 - 227
Surplus	Distribution of surplus water when available, subject to cutoff on 24 hours notice.	50-100% of potable rate	$114 - 227
Wholesale	Distribution to other agencies	50-100% of potable rate	$114 - 227
Golf Courses	New private golf courses	Domestic potable rate (Recover distribution and operational cost of tertiary treatment)	$333 [2]

1 Based on present potable water rate of $227/AF to agricultural customers.

2 The present domestic potable rate of $333/AF nearly recovers the costs of distribution and tertiary treatment, assuming a tertiary treatment cost of $182/AF (from Section 4.5). Does not include capital costs of tertiary treatment.

agency at Metropolitan's reclaimed water rate, leaving the project with a net contribution equal to the LPP contribution of $154 per acre-foot. Metropolitan tailors its total financial contribution to a project by varying the length of time the agreement will be in effect . In cases where the project becomes financially self-sufficient in less than 25 years, Metropolitan's participation remains in effect until the "break even" year. In most projects the term is 25 years, but in some projects the term may be as short as seven years.

There are some limitations which may exclude the proposed project from Metropolitan's rebate program. In order to qualify for inclusion in the LPP, the local agency must demonstrate that its proposed project meets the following criteria:

- The project must produce "new water" which replaces a firm demand on Metropolitan.
- The project must require Metropolitan's financial assistance to be viable.
- A facilities plan and market analysis must be completed.
- Public health and regulatory permits must be obtainable.

Additionally, projects which supply water for agricultural irrigation needs are not currently included in the LPP. Therefore, it is doubtful that the proposed project will qualify for MWDSC financial assistance at this time. However, an effort is underway to attempt to include agricultural users in the LPP, so the proposed project may qualify for financial assistance in the future.

In summary, the District's Phase I reclaimed water system will not be able to rely upon receiving any funding or support form MWDSC.

Section 9 - Conclusions and Recommendations

9.1 Effluent Quality and Availability

Tertiary treated wastewater is expected to be of sufficient quality for irrigation purposes. The water quality is better than that available from most local wells.

Due to the high cost of tertiary treatment, the District should plan on percolating at least 1.5 MGD of secondary effluent.

After the tertiary treatment facilities are constructed, a reliable reclaimed water supply of 1.5 MGD will be available. The District should contract to sell an amount of reclaimed water, corresponding to a peak demand of 1.5 MGD, to local users.

The District would provide tertiary treatment for the daily volume of water required by its reclaimed water customers, and for any water that can not be percolated.

In summary, there will be enough high-quality reclaimed water to implement Phase I of a cost-effective distribution system.

9.2 Reclaimed Water Marketability

A marketing survey of potential users near the plant has been completed. The Moorpark Wastewater Treatment Plant is surrounded by agricultural lands, several of which purchase water from Water Works District No. 1. There appears to be enough potential demand near the plant, within Waterworks District No. 1, to utilize a significant portion of the projected supply of reclaimed water. Local farmers are concerned with the low quality of groundwater now being used.

The major obstacle to marketing reclaimed water will be the comparatively lower cost of pumping local groundwater supplies. Many of the identified potential users have private wells, and pump groundwater very cheaply.

A Phase I service area has been selected for the initial marketing efforts. Most of the identified primary users are now using Waterworks District No. 1 water, and should be willing to convert to reclaimed water. If these users can be converted, a local distribution system can be provided for them.

9.3 Reclaimed Water Distribution System

The initial distribution system facilities, referred to as Phase I, have been selected. The system includes the following major components:

1. A storage pond (1.0 MG) at the treatment plant site, consisting of an earth embankment, a plastic lining and a wet well/overflow.

2. A packaged constant pressure booster pump station, with a maximum capacity of 2500 gpm.

3. A "north branch" 16-inch and 12-inch pipeline.

4. A "south branch" 8-inch pipeline.

The system is sized to serve the Phase I service area at a maximum demand of 1.5 MGD. The system is planned to be expandable as future reclaimed water supply and demand are increased.

9.4 Pricing Strategies

It appears that reclaimed water can be priced to recover the costs of distribution and to partially offset the cost of tertiary treatment. Due to the high costs of tertiary treatment, however, it will probably not be possible to recover all of the cost of tertiary treatment.

The recommended pricing strategy is to sell reclaimed water at a percentage of the potable rates. The various rate categories and recommended rates are summarized below:

Rate	Description	Suggested Price Range
Primary	Distribution to private/public customers on demand	75-100% of potable costs
Surplus	Distribution of surplus water when available, subject to cutoff on 24 hours notice.	50-100% of potable costs
Wholesale	Distribution to other agencies	50-100% of potable costs
Golf Courses	New private golf courses	Domestic potable rate

9.5 Implementation of the Reclaimed Water System

Phase I of a viable reclaimed water system can be implemented concurrently with expansion of the treatment plant facilities. The following general steps will be required:

1. Select a location for the storage pond and pumping facilities, within the treatment plant site.

2. Conduct detailed negotiations with potential users within or adjacent to the Phase I service area, or other users such as the potential golf course, culminating in written agreements to deliver/purchase water.

3. Prepare a "Title 22" engineering report as part of the permitting process.

4. Prepare environmental documentation to meet CEQA requirements.

5. Develop a final design (plans and specifications) for the distribution system. This phase should include a 10 percent submittal to define the design criteria and preliminary design.

6. Construct the reclaimed water facilities.

7. Start up and test the reclaimed water system.

After the system has been in operation for a couple of years, planning can proceed for future expansion of the system.

APPENDIX A
POTENTIAL WATER USER SURVEY

CONFIDENTIAL

MOORPARK WASTEWATER TREATMENT PLANT
RECLAIMED WATER IRRIGATION FEASIBILITY STUDY
POTENTIAL WATER USER SURVEY

1. Name: Operation _____
   Individual _____

2. Address: _____
   _____
   _____

3. Property Location: _____
   (plot boundaries on attached map)

4. Acreage: Gross _____
   Net _____

5. Irrigation Method: Flood _____ acres
   Sprinkler _____ acres
   Drip _____ acres

   If sprinkler, type (solid set, hand move, etc.) _____

6. Water Applied: (total last 3 years)
   1988 _____ acre-feet
   1987 _____ acre-feet
   1986 _____ acre-feet

7. Crops Grown (last 3 years):

	Crop	Acreage	Total Applied Water (acre-feet)
1988			
1987			

1986	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____

8. Water Source: District _____ acre-feet
Well _____ acre-feet
Other _____ acre-feet
If other, what is source? _____

9. Water Cost: District _____ $/acre-foot
Well _____ $/acre-foot
Other _____ $/acre-foot

10. Water Cost Elements:

($/acre-foot or total)	Replacement	O&M	Energy
District	_____	_____	_____
Well	_____	_____	_____
Other	_____	_____	_____

11. Well Data:

	Well #_____	Well #_____	Well #_____
Location	_____	_____	_____
Horsepower Rating	_____	_____	_____
Casing Diameter	_____	_____	_____
Well Depth	_____	_____	_____
Pumping Water Level	_____	_____	_____
Flow Rate (gpm)	_____	_____	_____
Energy Source (elec., diesel, etc.)	_____	_____	_____
Energy Cost ($/unit)	_____	_____	_____
Discharge Pressure (psi)	_____	_____	_____
Booster Pump (yes/no)	_____	_____	_____
If Yes, Energy Source	_____	_____	_____
Energy Cost ($/unit)	_____	_____	_____
Operating Pressure (psi)	_____	_____	_____
Horsepower Rating	_____	_____	_____

12. District Water:

Turnout Location	_____	_____	_____
Pressure (psi)	_____	_____	_____
Flow Rate (gpm)	_____	_____	_____
Booster Pump (yes/no)	_____	_____	_____
If Yes, Energy Source	_____	_____	_____
Energy Cost ($/unit)	_____	_____	_____
Operating Pressure (psi)	_____	_____	_____
Horsepower Rating	_____	_____	_____

13. Tailwater Return Facilities (yes/no) _____

If no, how is tailwater handled? Do you have surface runoff that leaves your property?

_____
_____
_____
_____

14. Water Quality Data: (attach copies if available)

District Water (yes/no)
Well Water (yes/no)
Other Sources (yes/no)

If yes:

Source	Salinity	Adjusted SAR	Chloride	Boron	Nitrate

15. Estimate of Reclaimed Water Value: _____ $/acre-foot

16. Interest in using reclaimed water for irrigation (yes/no)

If no, list reasons _____
_____
_____
_____
_____

17. Interest in signing nonbinding letter of intent with Ventura County for using reclaimed water for irrigation on property (yes/no)

If no, list reasons _____

_____

_____

_____

_____

18. How much reclaimed water would you apply if available in unlimited supply at favorable cost?
_____ acre-feet, or _____% of total

19. Concerns/Comments: _____

_____

_____

_____

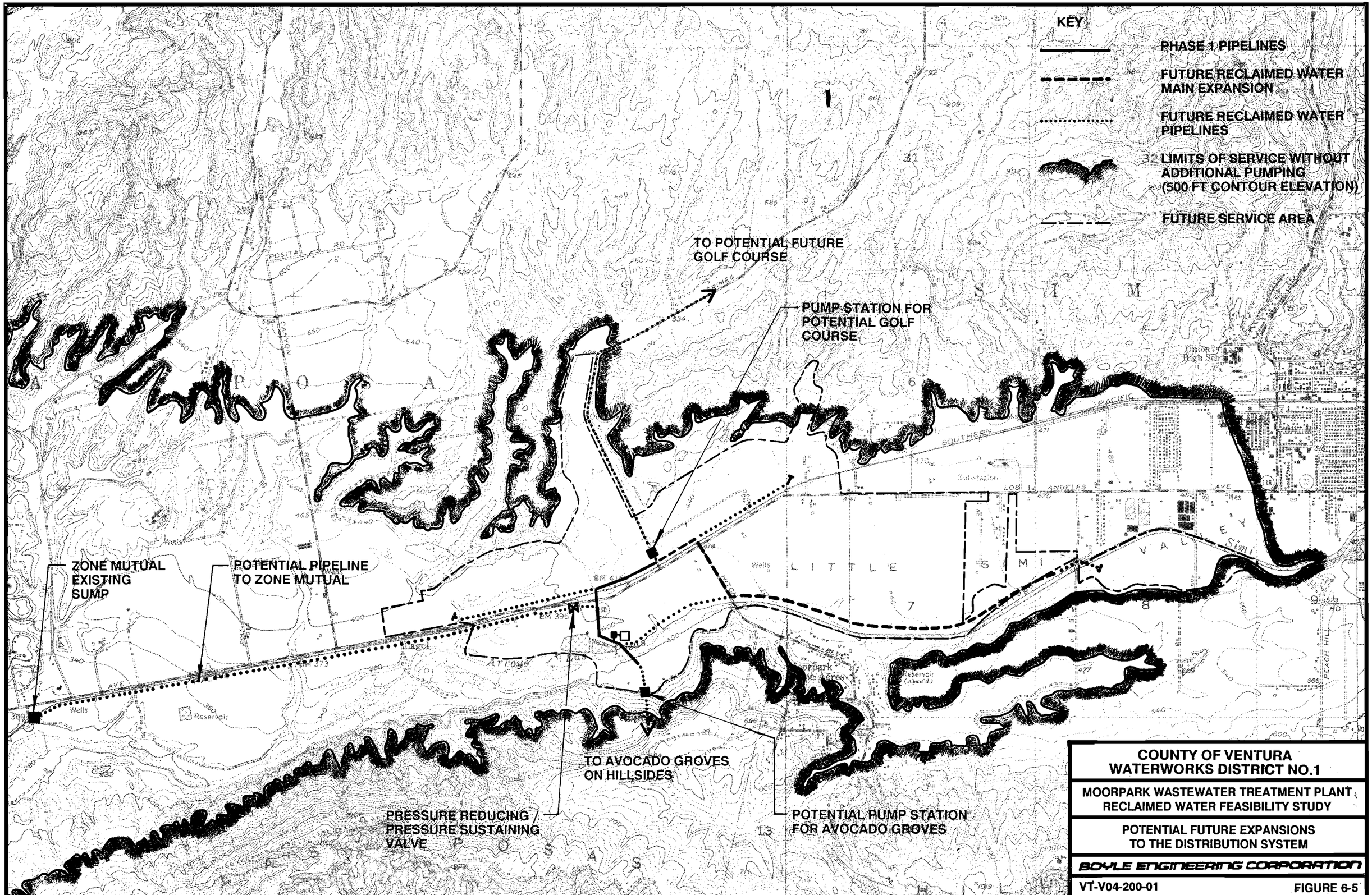
_____

_____

_____

_____

Interviewer: _____
Date: _____



COUNTY OF VENTURA
WATERWORKS DISTRICT NO.1

MOORPARK WASTEWATER TREATMENT PLANT
RECLAIMED WATER FEASIBILITY STUDY

POTENTIAL FUTURE EXPANSIONS TO THE DISTRIBUTION SYSTEM

BOYLE ENGINEERING CORPORATION

VT-V04-200-01 FIGURE 6-5

D-1046

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Final Draft

Recycled Water Market Assessment

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Prepared for

County of Ventura Water and Sanitation Department District No. 1
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Moorpark, CA 93021

K/J Project No. 0789039

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Acronym List

AF	acre-feet
AFY	acre-feet per year
AFY/acre	acre-feet per year per acre
APN	Assessor Parcel Number
DPH	California Department of Public Health
District	Ventura County Waterworks District No. 1
HCF	hundred cubic feet
MG	million gallons
MGD	million gallons per day
Moorpark WWTP	Moorpark Wastewater Treatment Plant
RWQCB	Regional Water Quality Control Board
WWTP	wastewater treatment plant

Section 1: Introduction

Ventura County Waterworks District No. 1 ("District") owns and operates the Moorpark Wastewater Treatment Plant (Moorpark WWTP) with current secondary treatment capacity of 3 million gallons per day (MGD). The Moorpark WWTP has 30 one acre ponds that are used for percolation. The District is currently planning to expand the Moorpark WWTP to 5 MGD. The Moorpark WWTP has tertiary treatment meeting Title 22 requirements for water suitable for recycled water systems. Currently, the District produces and distributes 1.5 MGD of recycled water to the Moorpark Country Club Estates golf course, developed by Toll Brothers. As part of the expansion program, the District desires to increase the recycled water distribution to a total of 4 MGD and total percolation of 1 MGD.

Recycled water facilities presently include two 1.5 million gallon (MG) storage ponds at the Moorpark WWTP, a booster pump station, and a pipeline to the Moorpark Country Club golf course. Recycled water for the Moorpark County Club is delivered to a lake and the golf course is responsible for pumping into their recycled water distribution system. The District has received a grant to construct a reservoir near the lake, and also extend a pipeline from the plant south along Hitch Boulevard across Arroyo Simi to Boething Nursery.

Objectives of this market assessment include the following: (1) document existing recycled water customers; (2) identify potential users of recycled water within the service area of the District; (3) screen the potential customers for suitability; and (4) identify expansion areas for the recycled water system. Given the District's current recycled water service to the Moorpark Country Club golf course, the ideal future potential customers would be located along this existing distribution system or near the Moorpark WWTP.

This market assessment is the first phase of a larger study that will result in a recycled water master plan.

1.1 Previous Studies

Previous reports and studies containing helpful information for this market assessment are described below.

1.1.1 Engineering Report

In January 2003, Kennedy/Jenks Consultants prepared the *Engineering Report for the Production, Distribution, and Use of Recycled Water*. This engineering report is a California Department of Public Health (DPH) and California Regional Water Quality Control Board (RWQCB) requirement for the use of recycled water. This report describes the wastewater treatment process at the Moorpark WWTP, the quality of the recycled water, and the use areas. At the time of the report, the sole use was for turf and general landscape irrigation at the Moorpark Country Club located along Grimes Canyon Road. The report also includes a listing of the Sewer Accounts (based on water usage) for the year 2001.

1.1.2 Supplemental Engineering Report

The April 2006 *Supplemental Engineering Report for the Proposed Reclaimed Water, Distribution System and Storage Reservoir* prepared by the District is an update to the 2003 Engineering Report. This report describes the recent plans to build a 1.5 MG reservoir and 3,000 linear feet of additional piping. Appendix F of the report includes a listing of thirteen parcels currently served with potable water for irrigation purposes, which could be served by recycled water.

1.1.3 Reclaimed Water Feasibility Study

The *Moorpark Wastewater Treatment Plant Reclaimed Water Feasibility Study* (August 1990, Boyle Engineering Corporation) evaluated the feasibility of supplying reclaimed water for irrigation of agricultural and landscaping operations in the District service area. The study indicated that there is a large potential market for reclaimed water near the Moorpark WWTP.

Section 2: Methodology

This market assessment utilized a broad array of sources for the purposes of estimating potential user locations and associated recycled water demands. The Study Area for this market assessment is the service area of Ventura County Waterworks District No. 1. This market assessment was conducted during the period of September through November 2007.

Potential recycled water users were identified through a number of sources including:

- Land use maps and aerial photography
- General Plans and Specific Plans for the City of Moorpark
- Discussions with the City of Moorpark Community Development Department relative to "pre-plumbed" development projects that have dual pipelines to accommodate deliveries of recycled water
- Soliciting information from the City of Moorpark Community Development Department on current/proposed/future developments
- Soliciting information from the City Parks, Recreation and Community Services Department on current/proposed/future parks. The parks department provided billing records for July 2005 through August 2006 for City parks currently using potable water, as well as descriptions of other landscape areas managed by the City Parks Department. Arroyo Vista Park is currently irrigated with well water, however the potential annual recycled water demand may exceed 70 acre-feet per year (AFY). Villa Campesina Park is currently irrigated with local well water, however the annual irrigation demand for this park is minimal.
- Soliciting information from the Moorpark Unified School District with respect to existing and future schools. The school district provided billing records for years 2005 and 2006 and a description of how each account is utilized (irrigation, potable, or both).
- Evaluating 2006 billing data furnished by the District
- Field reconnaissance of the Study Area to determine potential customer types and locations.

In evaluating recycled water users, there are several criteria to be considered:

A. Location. Close proximity to the Moorpark WWTP is preferred, since it reduces the length of required pipelines and pumping costs.

B. Size. Customers with large potential demand can be served more cost effectively than customers with small demand. The District established a threshold of 10 AFY as the minimum potential annual recycled water customer demand for inclusion in the data analysis. Customers with potential recycled water demand of less than 10 AFY could be served if they are adjacent to a recycled water pipeline.

C. Suitability. Consistent with Title 22, Chapter 4 of the California Code of Regulations (Title 22), only uses which can utilize recycled water were considered in the study. In addition, only uses with potential long-term demand were considered. For example, several multi-tenant industrial parks exist within the City of Moorpark. However, these industrial parks tend to have regular turnover in tenants and a tenant that can utilize recycled water (e.g., light manufacturing) could be replaced with a tenant that cannot utilize recycled water (food preparation). Hence it is uncertain that these multi-tenant industrial parks would have long-term recycled water demand.

D. Hours of Demand. Ideally, the recycled water demand should be spread throughout the 24-hour day, reducing the size requirements for pipelines and pumping. In general, landscape irrigation is conducted during night hours. Agriculture irrigation typically has daytime demands. Commercial and industrial uses are typically during the day or at least outside the normal irrigation period; however, for the Moorpark area there is little opportunity in that category. Therefore, it is desired to balance landscape irrigation with daytime demands. Additional recommendations for applicable timing of recycled water usage will be included in the Recycled Water Master Plan.

Section 3: Existing and Potential Users of Recycled Water

This section describes the existing recycled water distribution system, potential use areas, types of users, and demands of potential users.

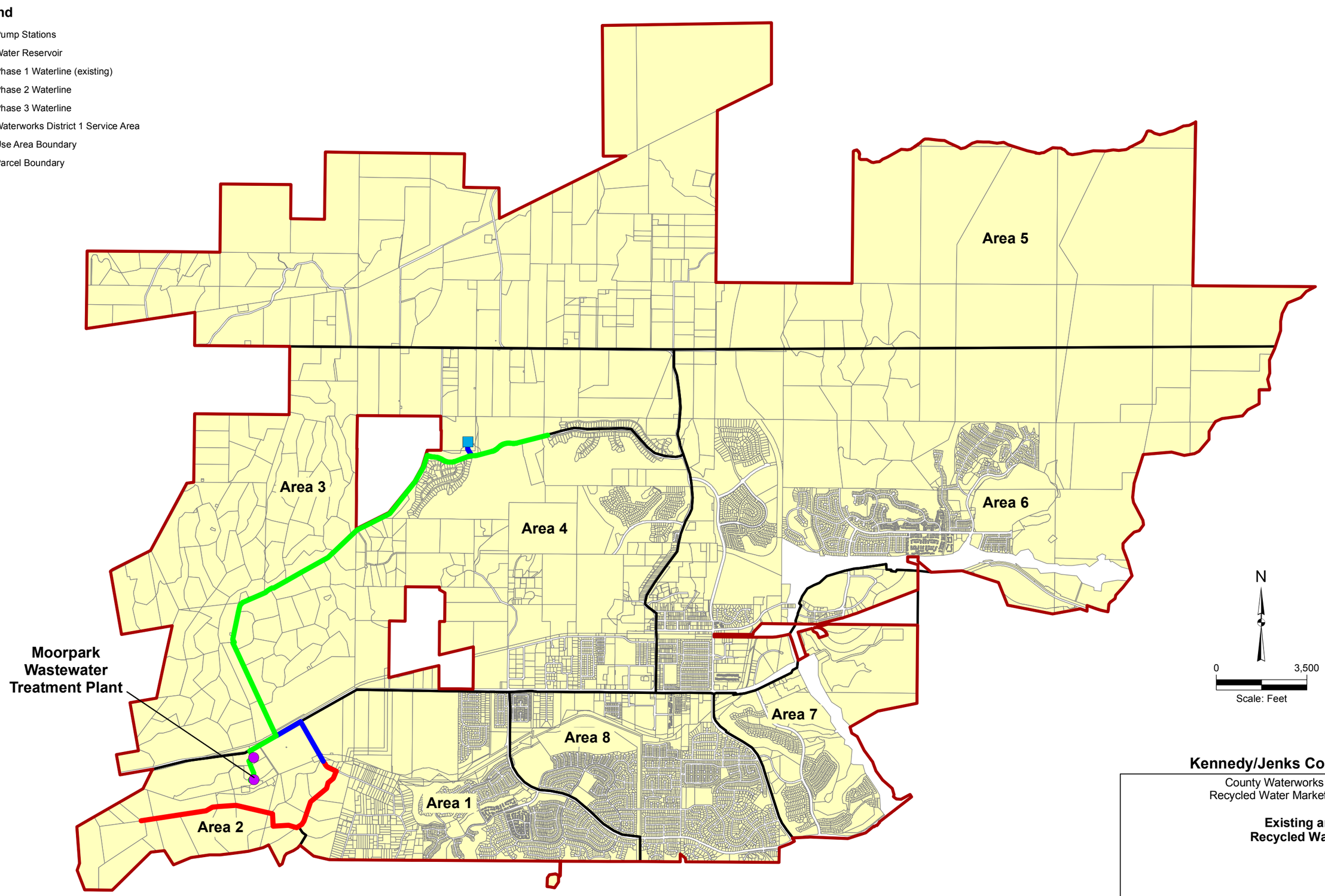
3.1 Existing Users and Distribution System

The Moorpark Country Club golf course (Country Club) is currently the only existing user of recycled water in the District's service area. Figure 3-1 depicts the District Service Area and existing recycled water system and the planned future expansion. Recycled water is stored in the recycled water ponds at the Moorpark WWTP, then pumped to a lake near the Country Club. Design has begun on a 1.5 MG reservoir for recycled water storage to be located near the Country Club. In 2005, the Country Club used an average of approximately 404 acre-feet (approximately 0.36 MGD) (District, 2006).

3.2 Potential Use Areas

An "existing potential user" is a user that currently has a potable water demand that can be converted to recycled water. For the purposes of describing existing potential users, these users have been grouped into eight geographic areas:

- Area 1: East of Hitch Boulevard, south of Los Angeles Avenue, west of Moorpark High School, and north of the District's southern service area boundary
- Area 2: West of Hitch Boulevard, south of Los Angeles Avenue within the southwest corner of the District service area
- Area 3: West of Grimes Canyon Road, north of Los Angeles Avenue, east of Balcom Canyon Road, and south of Broadway
- Area 4: East and south of Grimes Canyon Road, north of Los Angeles Avenue, west of Walnut Canyon Road
- Area 5: North of Broadway within the District service area boundary
- Area 6: East of Walnut Canyon Road, south of Broadway, north of State Route 118
- Area 7: East of Spring Road, south of State Route 118
- Area 8: West of Spring Road, East of Moorpark High School, south of Los Angeles Avenue, north of the District service area.



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County Waterworks District No. 1
Recycled Water Market Assessment

Existing and Planned Recycled Water System

April 2008
KJ 0789039

Figure 3-1

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3.3 Types of Potential Users

There are three types of potential recycled water users. Each of these is defined below.

1. Existing Potential Users. Existing Potential Users currently have potable water demand that can be converted to recycled water demand within the near term.

2. Future Potential Users. Future Potential Users are users that may have a recycled water demand in the future. These users or properties are in the planning stage, where the property is being planned or where an expansion of an existing property would result in a demand for recycled water.

3. Potential "Anchor" Users. Potential "Anchor" Users are those users, either Existing Potential Users or Future Potential Users, with a recycled water demand of 100 AFY or greater. Recycled water distribution systems differ from potable water system in that there are few recycled water users and the distances between users can be large. Identifying "anchor" users can provide justification for extending the recycled water distribution system in a given direction.

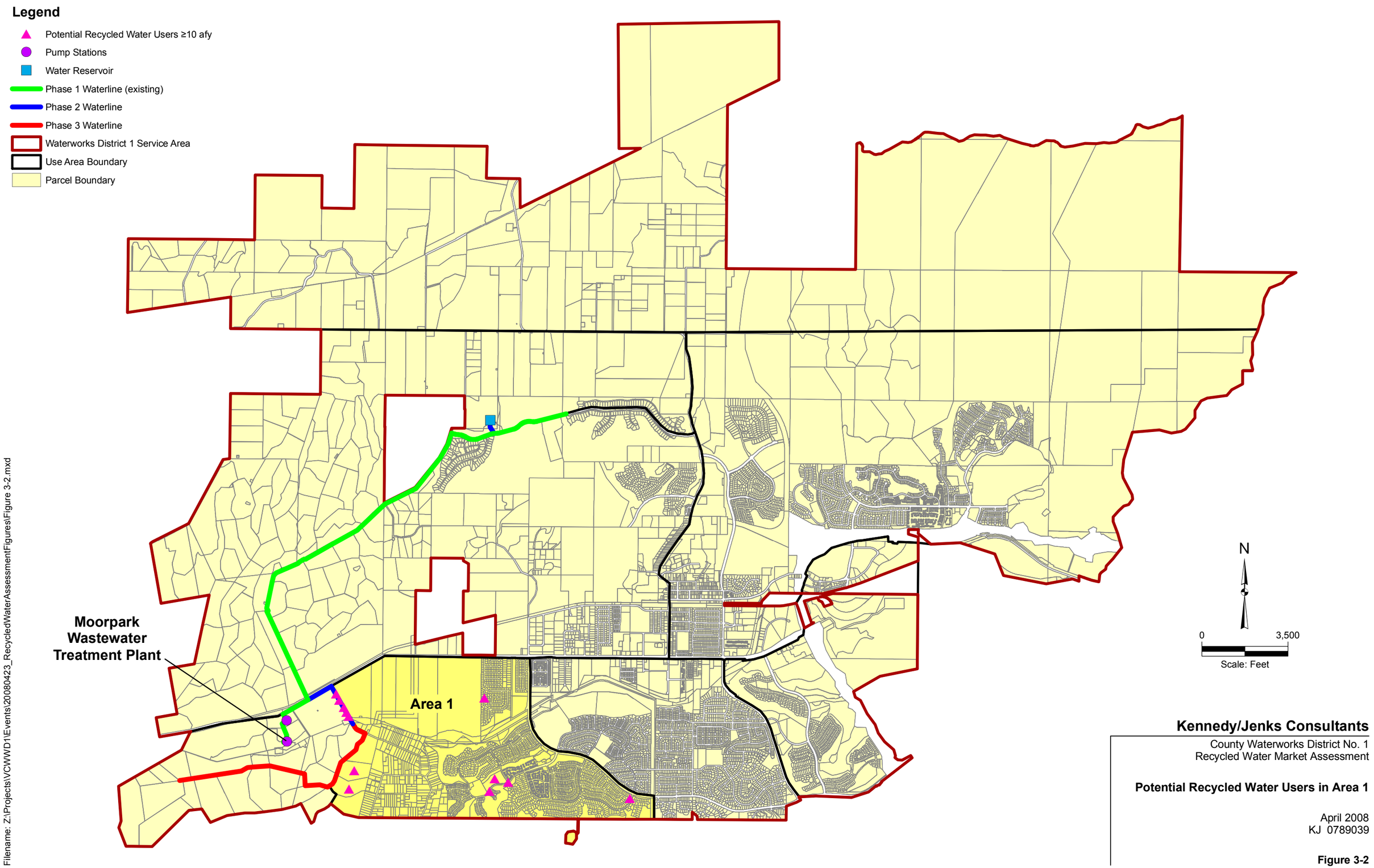
3.4 Assessment of Potential Users

There are approximately 100 existing potential recycled water users within the District with a minimum demand of 10 AFY. Total estimated recycled water demand is 4,038 AFY for existing potential users.

Table 3-1 summarizes the estimated demands for potential agricultural users. Potential agricultural customers are identified by use area in Figures 3-2 to 3-9. Agricultural customers constitute the largest category of existing potential recycled water users, with estimated annual demand of 2,840 AF. It is emphasized that Tables 3-1 to 3-4 do not imply that it is financially feasible to serve all identified potential recycled water users.

TABLE 3-1
POTENTIAL AGRICULTURAL USERS OF RECYCLED WATER BY LOCATION

Area #	Site Name	Address	Estimated Demand Including Loss (AFY) (Rounded)
1	private	10998 Los Angeles Ave	69
1	private	4641 Hitch Blvd	68
1	private	11350 Los Angeles Ave (Treeland Farms)	65
1	private	4320 Hitch Blvd	11
Subtotal Area 1			**213**
2	private	Hitch Blvd	132
2	private	Parcel 14	103
2	private	Parcel 15 Terra Cavo	84
2	private	Hitch Blvd / Los Angeles Ave	72
2	private	4393 Hitch Blvd (Lot 13)	57
2	private	Hitch Blvd Parcel 16	54
2	private	4129 Ventavo	51



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County Waterworks District No. 1
Recycled Water Market Assessment

Potential Recycled Water Users in Area 1

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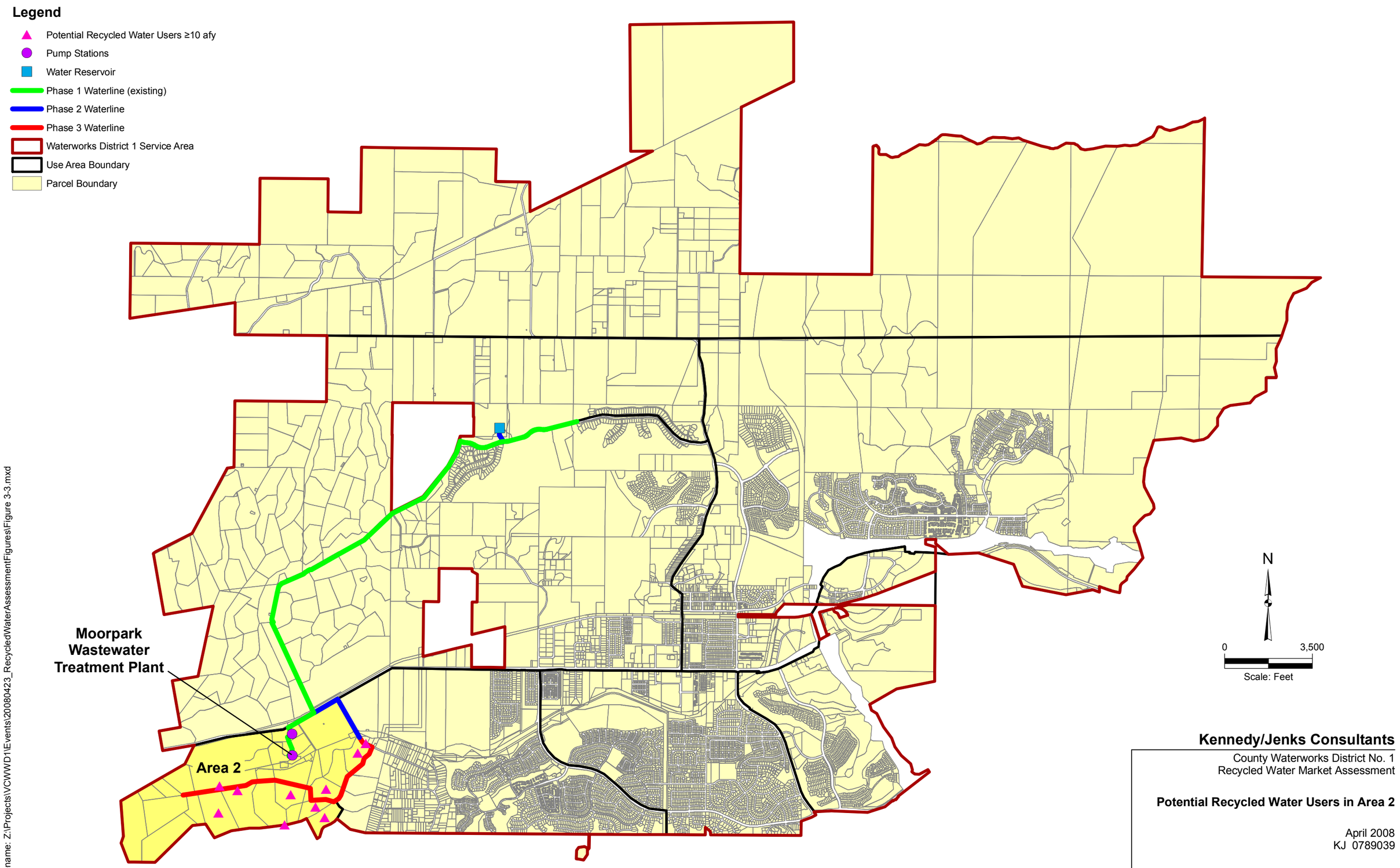
Figure 3-2



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County Waterworks District No. 1
Recycled Water Market Assessment

Potential Recycled Water Users in Area 2

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Figure 3-3

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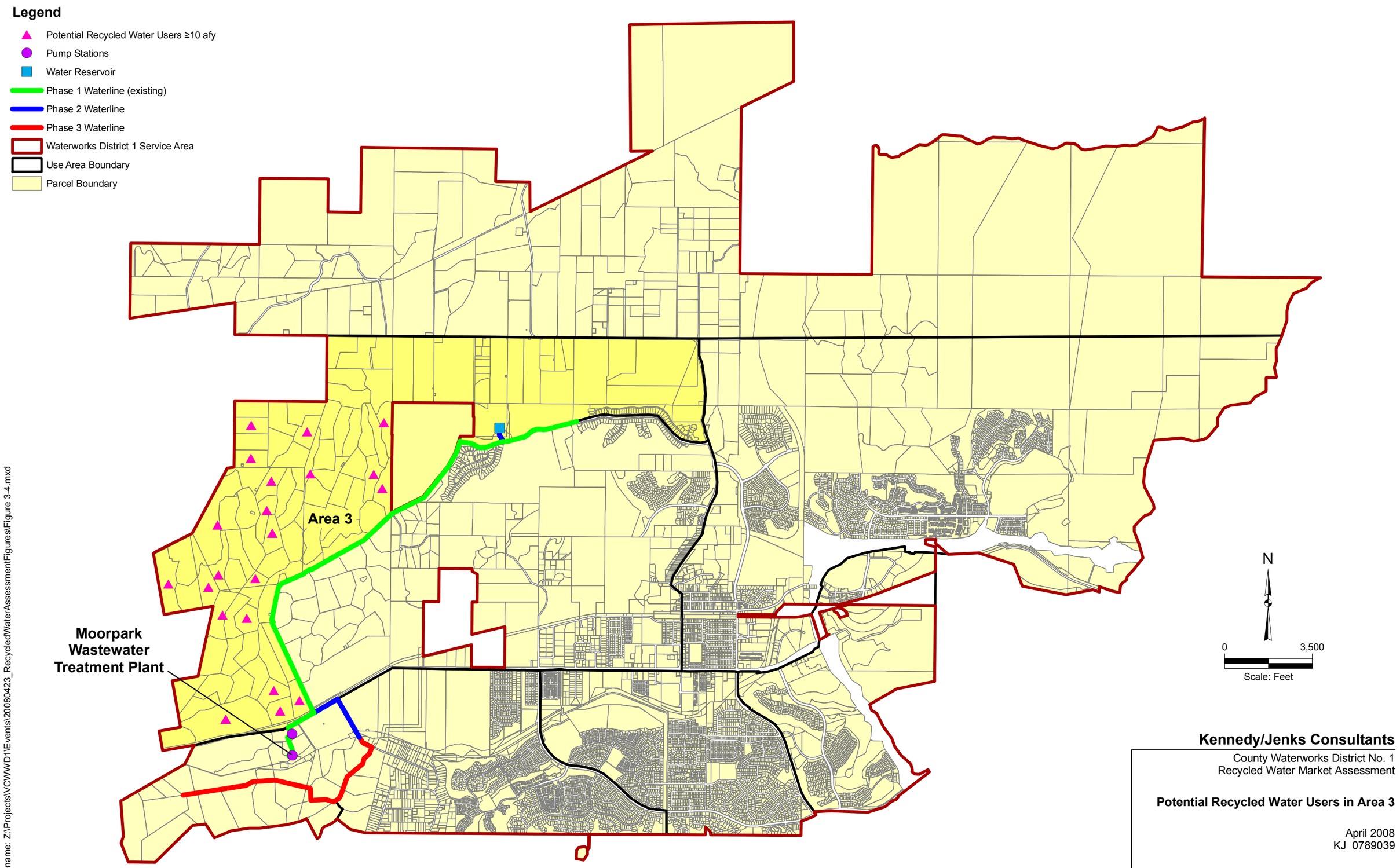

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Potential Recycled Water Users in Area 3

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Figure 3-4

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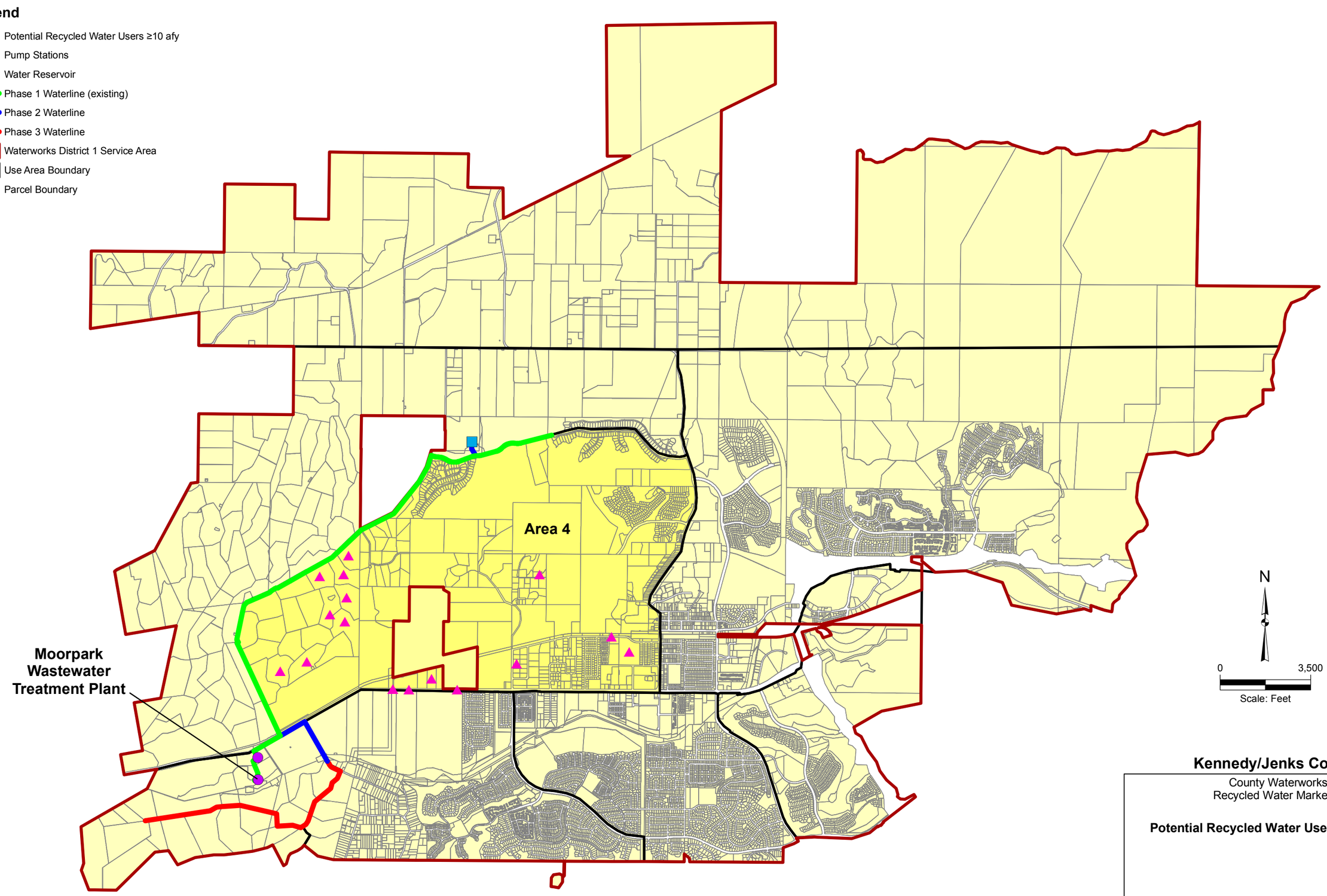

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County Waterworks District No. 1
Recycled Water Market Assessment

Potential Recycled Water Users in Area 4

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Figure 3-5

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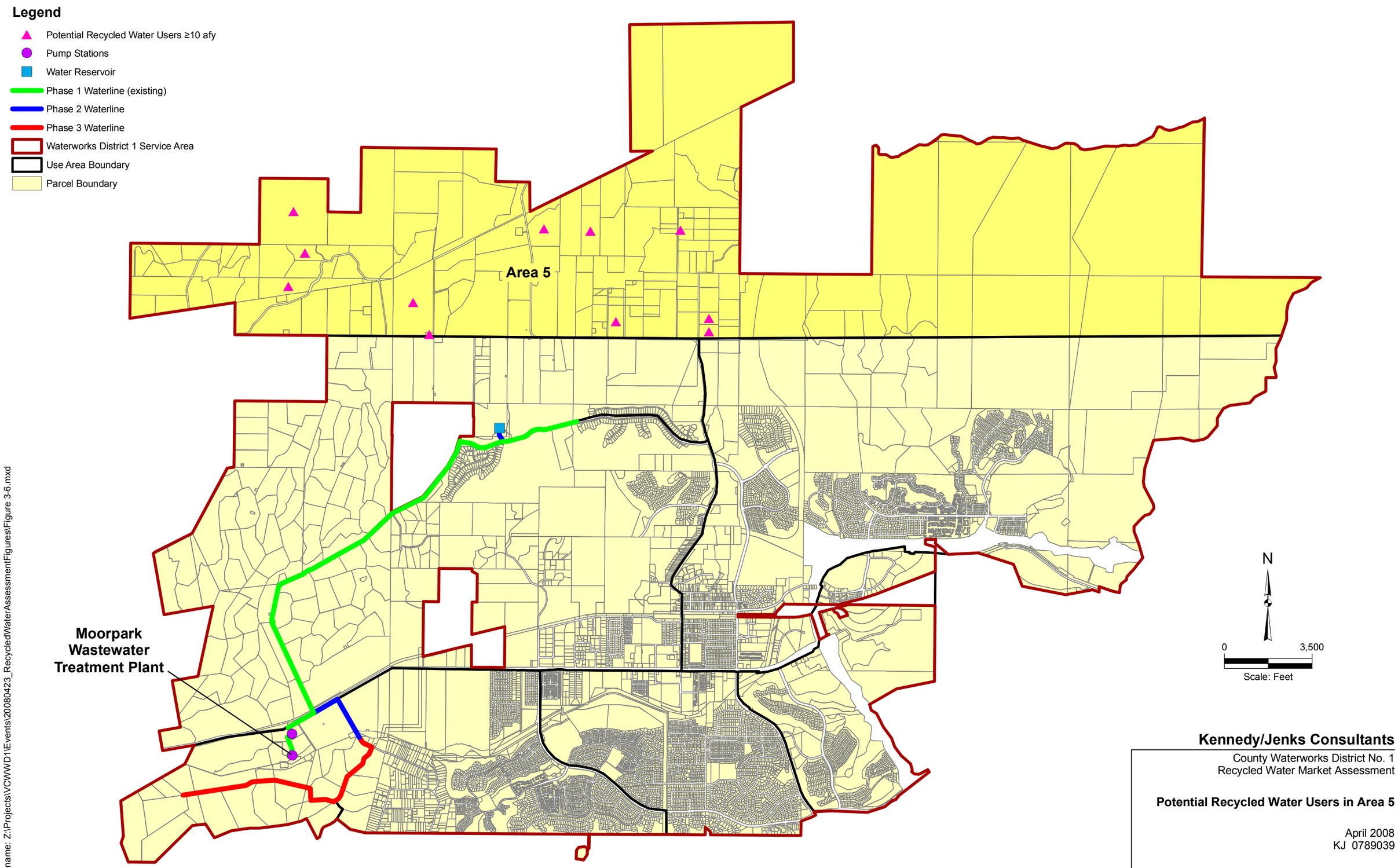

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County Waterworks District No. 1
Recycled Water Market Assessment

Potential Recycled Water Users in Area 5

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Figure 3-6

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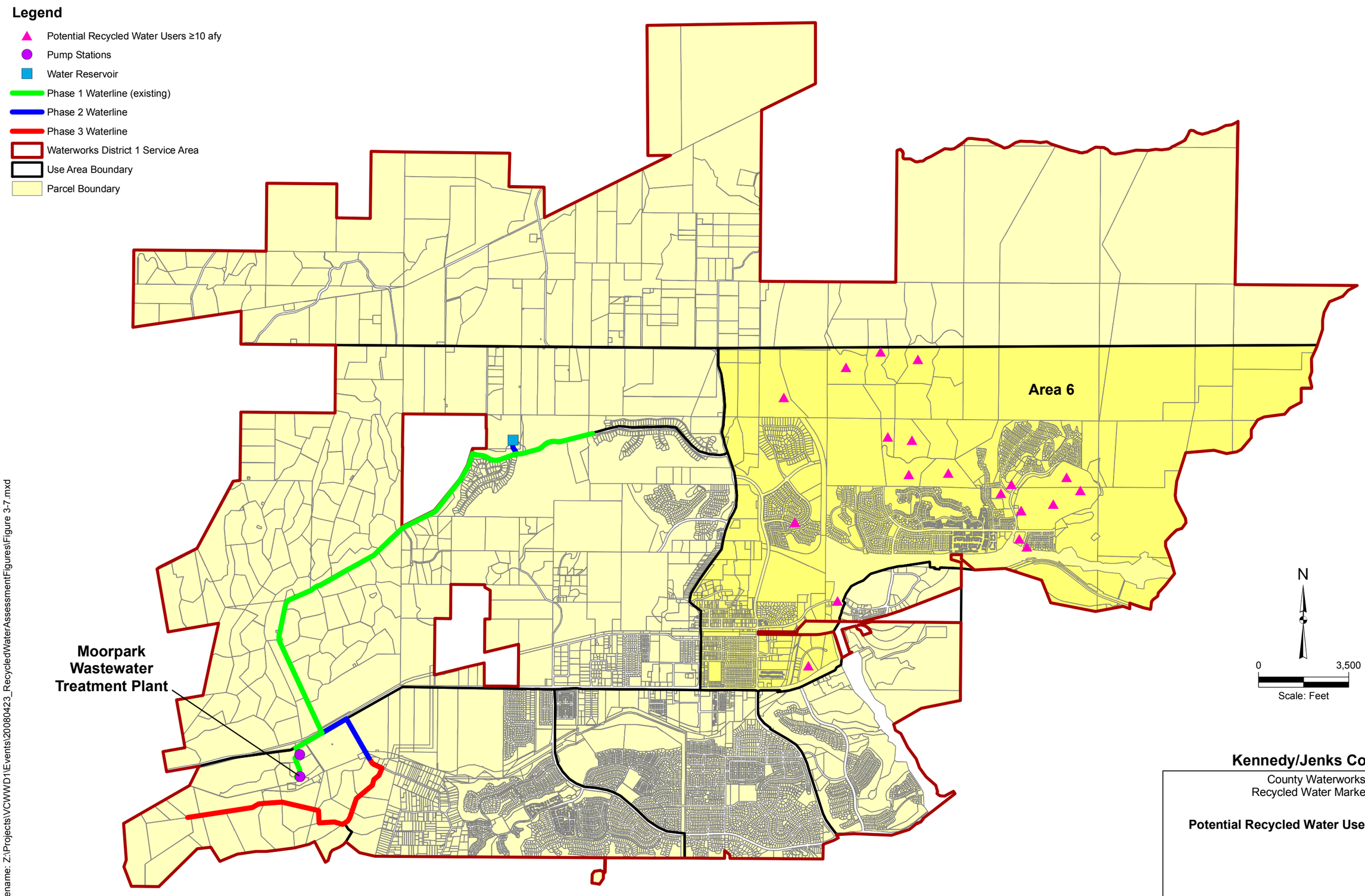

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County Waterworks District No. 1
Recycled Water Market Assessment

Potential Recycled Water Users in Area 6

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Figure 3-7

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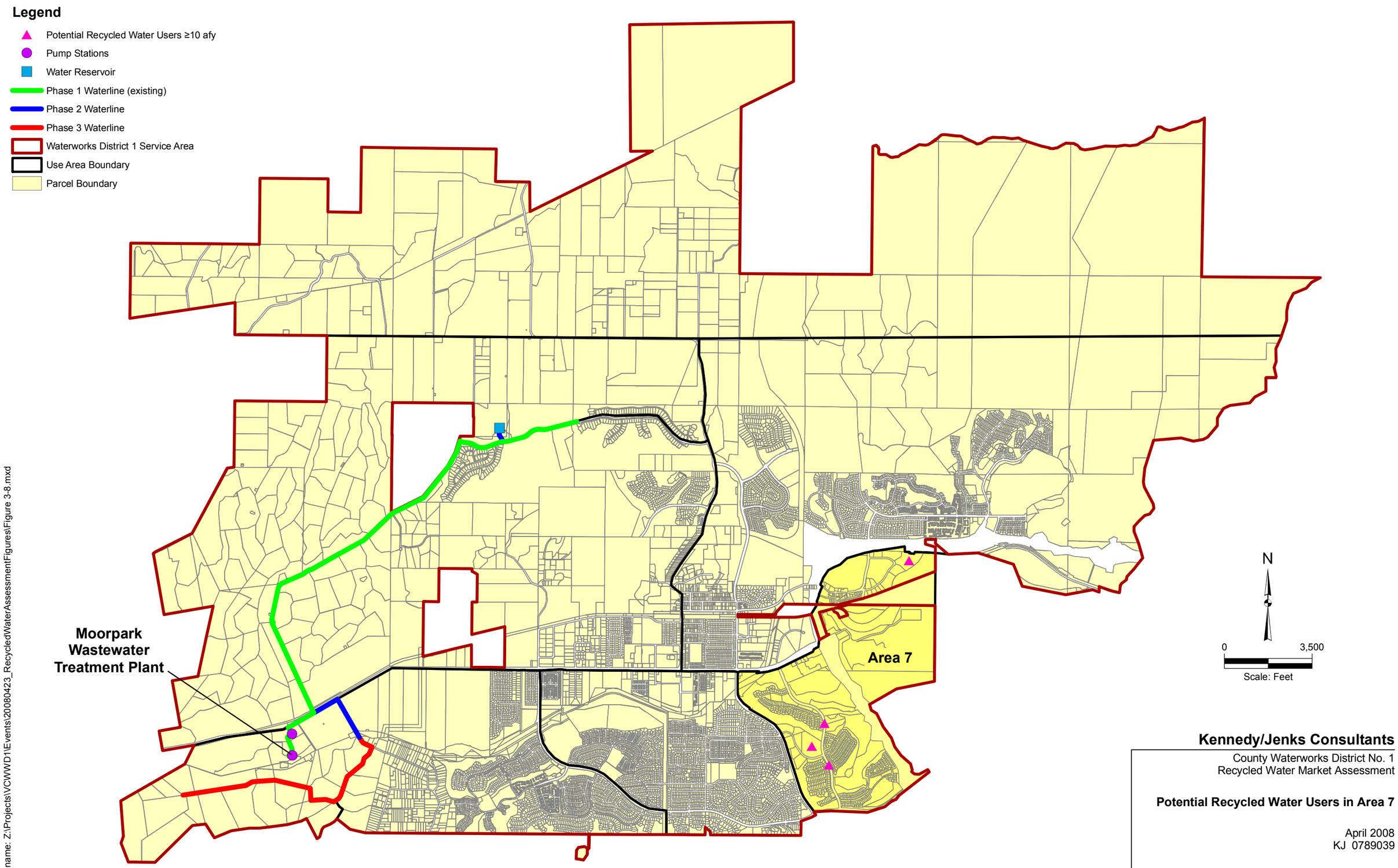

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County Waterworks District No. 1
Recycled Water Market Assessment

Potential Recycled Water Users in Area 7

April 2008
KJ 0789039

Figure 3-8

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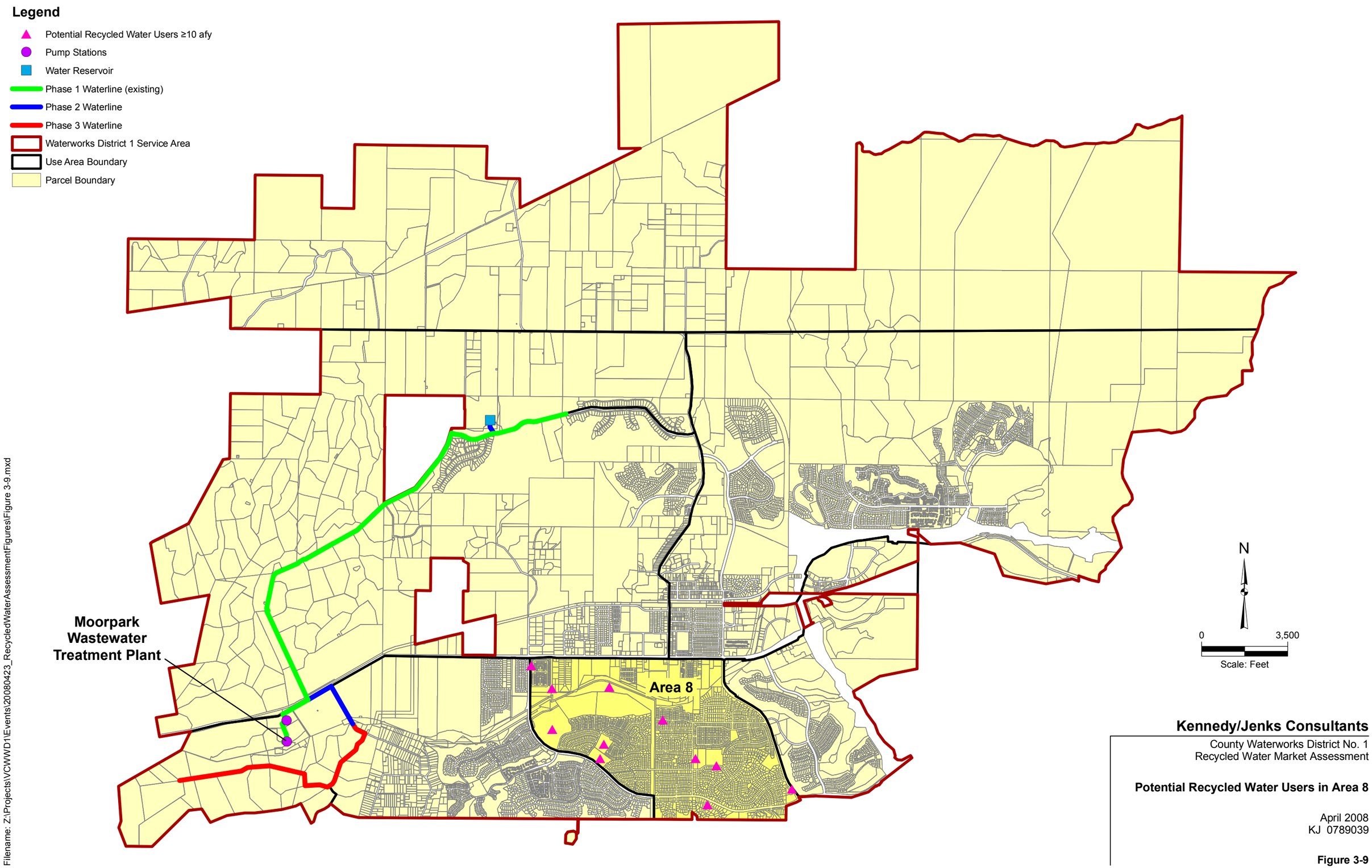

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County Waterworks District No. 1
Recycled Water Market Assessment

Potential Recycled Water Users in Area 8

April 2008
KJ 0789039

Figure 3-9

Area #	Site Name	Address	Estimated Demand Including Loss (AFY) (Rounded)
2	private	Hitch Blvd (Boething Tree Farms)	37
2	private	4139 Ventavo Dr	33
2	private	Ventavo 1 Par 19	25
2	private	Hitch Blvd Parcel 16	25
2	private	Tract 104 P-2 #4	25
2	private	4188 Ventavo Dr	25
2	private	Tract 104 P2 Par 6	21
2	private	4389 Hitch Blvd	16
2	private	Tract 104-Par 1	20
2	private	4260 Ventavo Dr	20
2	private	Tract 104 P2 Par 2	10
Subtotal Area 2			**810**
3	private	Parcel 2	100
3	private	Parcel 1	56
3	private	Parcel 48 Ventavo 4	39
3	private	9601/9701 Los Angeles Ave	30
3	private	Parcel 10 of 124	21
3	private	9601 Los Angeles Ave	20
3	private	9107 Los Angeles Ave	17
3	private	7 Luxenberg Dr	34
3	private	APN 503002016	40
3	private	Stockton Rd (Matilija Nursery)	37
3	private	Luxenberg Dr	23
3	private	7010 W Winchester Dr	23
3	private	Parcel 40	21
3	private	6455 Chagall Dr	24
3	private	6005 Grimes Canyon Rd	22
3	private	9332 Stockton Rd	13
3	private	7360 Rifleman Rd	14
3	private	6137 Grimes Cyn Rd	10
3	private	Parcel 1	11
3	private	Parcel 46	17
3	private	6426 Chagel Dr	11
3	private	6005 Grimes Canyon Rd	13
3	private	6501 Chagall Dr	18
3	private	6485 Chagall Dr	15
3	private	8614 Stockton Rd	15
3	private	Parcel 33	16
Subtotal Area 3			**660**
4	private	APN 503006032	56
4	private	Parcel 13	29
4	private	6480 Grimes Canyon Road	30
4	private	6370 Grimes Canyon Road	28
4	private	Parcel 4	21
4	private	Parcel 3	23
4	private	10735 Los Angeles Avenue	19

Area #	Site Name	Address	Estimated Demand Including Loss (AFY) (Rounded)
4	private	5490 Grimes Canyon Road	17
4	private	Parcel 8	17
4	private	Parcel 2 of PM 3333	17
Subtotal Area 4			**257**
5	private	10195 Stockton Rd	102
5	private	Middle Ranch Rd	105
5	private	Campus Park Rd	75
5	private	10089 Stockton Rd	62
5	private	13650 Broadway Rd	58
5	private	11003 Broadway Rd	39
5	private	Lot 2 of Parcel Map 4257	38
5	private	12085 Clinton St	35
5	private	APN 108017004	28
5	private	8642 Grimes Cyn Rd	23
5	private	8160 Happy Camp Rd	26
5	private	10865 Broadway	14
5	private	12598 Broadway Rd	12
5	private	13375 Broadway Rd	19
5	private	9001 Roseland Ave	11
Subtotal Area 5			**647**
6	private	Lot 3	72
6	private	Lot 6	70
6	private	Lot 5	62
6	private	Lot 4	49
Subtotal Area 6			**253**
TOTAL			**2,840**

Source: District records.

Table 3-2 summarizes the 13 potential park and open space locations that could be irrigated with recycled water. Potential park and landscaping customers users are identified by use area in Figures 3-2 to 3-9. Park irrigation (with the exception of commercial golf courses, generally categorized as institutional or commercial customers) results in approximately 718 AFY of existing potential recycled water demand. Arroyo Vista Park has a potential annual recycled water demand which may exceed 70 AFY. However, this park is not included in Table 3-2 since it is currently irrigated with well water. Villa Campesina Park, also not included in Table 3-2, is currently irrigated with local well water. Annual irrigation demand for this park is minimal.

TABLE 3-2
POTENTIAL CITY PARK AND LANDSCAPING USERS OF RECYCLED WATER BY LOCATION

Area #	Site Name	Address	Estimated Demand Including Loss (AFY) (Rounded)	Notes
1	Country Trail Park	11701 ½ Mountain Trail	38	1
1	Glenwood Park	11800 Harvester St	22	1
Subtotal Zone 1			**60**	
4	Poindexter Park	500 Poindexter Ave.	32	1
Subtotal Area 4			**32**	
5	Rustic Canyon Golf Course	15100 Happy Camp Cyn Rd	400	3
Subtotal Area 5			**400**	
6	Campus Canyon Park	6970 Hearon Dr	42	1
6	College View Park	15400 Campus Park Dr	24	1
6	Campus Park	6400 Harvard St	18	1
Subtotal Area 6			**84**	
7	Oak County Park	901 Quimisa Dr	0	2,4
7	Miller Park	4530 Miller Parkway	45	1
7	Metrolink Station landscaping	310 High St	16	2
Subtotal Area 7			**61**	
8	Mountain Meadows Park	4350 Mountain Meadow Dr	33	1
8	Peach Hill Park	13200 Peach Hill Rd	36	1
8	Tierra Rejada Park	11900 Mountain Trail St	12	1
Subtotal Area 8			**81**	
TOTAL			**718**	

Notes:
1. Water use estimate based on records provided by City of Moorpark Parks, Recreation & Community Services Department.
2. Water use estimate based on acres of irrigated land, visual estimates, and owner interviews.
3. Water use estimate based on records provided by Ventura County Waterworks District No. 1
4. Ventura County Waterworks District No. 8 currently provides water and wastewater services for Oak County Park. It is anticipated that Ventura County Waterworks District No. 8 will provide recycled water to Oak County Park.

Table 3-3 summarizes the potential recycled water demands for industrial/commercial users. Potential existing industrial/commercial users are identified by use area in Figures 3-2 to 3-9. These three potential existing users have an estimated demand of approximately 238 AFY.

TABLE 3-3
POTENTIAL INDUSTRIAL USERS OF RECYCLED WATER BY LOCATION

Area #	Site Name	Address	Estimated Demand (AFY)	Estimated Demand Less 15% Potable Use Plus System Loss (AFY) (Rounded)
5	Cemex Construction Materials	9035 Roseland Ave	202	195
Subtotal Area 5				**195**
6	SmTek Electronics Manufacturing	200 Science Dr	21	20
Subtotal Area 6				**20**
7	Kavlico Electronics Manufacturing	14501 Princeton Dr	24	23
Subtotal Area 7				**23**
TOTAL				**238**

Source: District records.

Table 3-4 lists the existing seven school sites with the potential to use recycled water. Potential existing school users are identified by use area in Figures 3-2 to 3-9. Irrigation at existing school sites would result in an annual recycled water demand of approximately 242 AF.

TABLE 3-4
POTENTIAL SCHOOL USERS OF RECYCLED WATER BY LOCATION

Area #	Site Name	Address	Estimated Demand (AFY)	Estimated Demand Including Loss (AFY) (Rounded)	Notes
1	Moorpark High School	4500 Tierra Rejada	50	50	1
Subtotal Area 1				**50**	
4	Chaparral Middle School	280 Poindexter	14	14	2
4	Walnut Canyon Elementary	280 Casey Street	10	10	1
Subtotal Area 4				**24**	
6	Moorpark Community College	7075 Campus Drive	136	136	3
6	Campus Canyon School	15300 Monroe	12	12	1
Subtotal Area 6				**148**	
7	Mesa Verde Middle School	1400 Peach Hill Drive	10	10	2
Subtotal Area 7				**10**	
8	Mountain Meadows Elementary	4200 Mountain Meadows Drive	10	10	1
Subtotal Area 8				**10**	
TOTAL				***242***	

Notes:
1. Average 2005-2006 irrigation use (in AFY) as reported by Moorpark Unified School District, based on dedicated irrigation meter.
2. Estimated irrigation water use based on estimate of irrigated property.
3. Water use estimate based on records provided by Ventura County Waterworks District No. 1.

3.5 Future Potential Users

A "future potential user" is defined as a potential user who based on their location, land use, and water usage, appear suitable to receive recycled water beyond one year from present. Future users were identified through discussions with the City of Moorpark Community Development Department. Examples of future potential users with large future water demands are described in the following subsections. Future potential recycled water demand is approximately 254 AFY. In addition, the City Parks Department has stated that in the near future (year 2008) the Department will be taking over management of several landscaped slopes and greenbelt areas associated with housing developments. These slopes and greenbelts are currently managed by multiple entities and served by multiple meters. Once these greenbelt areas are transferred to City Park Department management they could be consolidated into single managed and

irrigated area suitable for recycled water. Specific acreages and locations of greenbelt areas to be transferred to City Park Department management are not currently known. Potential recycled water demands for these areas are not estimated at this time.

3.5.1 Hitch Ranch - Specific Plan 1

This proposed development, located in Area 4, includes a 281 acre Specific Plan with up to 600 dwelling units, 3 acres of institutional use, approximately 40 acres of light industrial use, and 32 acres of open space. It is anticipated that approximately 50 percent of parks and open space will be irrigated resulting in approximately 32 AFY of potential recycled water demand. This potential development is within Area 4 located north of the Union Pacific Railroad, west of Walnut Canyon Road (Highway 23), and generally east of Gabbert Road. A recycled water use evaluation prepared for the Hitch Ranch Specific Plan estimated a potential recycled water demand of 210 AFY. The Environmental Impact Report and formal specific plan are in process for this development and it is estimated that any recycled water demand is 1 to 5 years in the future.

3.5.2 Meridian Hills

Currently under development within Area 4, this community will consist of approximately 248 single-family homes. This community is planned west of Walnut Canyon Road, between Casey Road and Championship Drive. This community will have landscaped and irrigated slope areas, estimated at approximately 15 acres (assume 100 percent of landscaped and sloped areas are irrigated). Conditions of approval for Meridian Hills required construction of a separate irrigation plumbing system for their landscaped areas, using recycled water if available. However, because the recycled water was not available when construction started, a secondary irrigation system for recycled water is not included in this development. Assuming an irrigation rate of 2.0 AFY/acre, this community has an estimated potential recycled water demand of approximately 30 AFY.

3.5.3 Moorpark Highlands – Specific Plan 2

The approved Moorpark Highlands Specific Plan will include up to 450 single-family residential lots and one multi-family lot for up to 102 units. This property is located in Area 6 north of Charles Street, along the extension of Spring Road, east of Walnut Canyon Road (SR-23) and west of Happy Camp Canyon Regional Park. The Specific Plan also includes a 7-acre City park and a 22-acre school site in the Moorpark Unified School District. This development is currently under construction. However, discussions with the City Parks Department and the Moorpark Unified School District indicate that the proposed City park and proposed school will not be developed for at least the next 5 years. Because plans for the school site and City park have not been developed, it is necessary to make some assumptions about their non-potable water use. It is estimated that up to 25 percent of both the school site and park site will be irrigated, resulting in approximately 7 acres of irrigated area. Assuming an irrigation rate of 2.0 AFY/acre, this results in an estimated potential recycled water demand of approximately 14 AFY. The Development Agreement for the Moorpark Highlands Specific Plan 2 required construction of a separate irrigation plumbing system for landscaped areas, using recycled water if available. However, because recycled water was not available at the time of final approval, this development will be built without a separate irrigation system.

3.6 Potential "Anchor" Users

Existing Potential Users or Future Potential Users, with a recycled water demand of 100 AFY or greater. Recycled water distribution systems differ from potable water system in that there are few recycled water users and the distances between users can be large. Identifying "anchor" users can provide justification for extending the recycled water distribution system in a given direction. As illustrated in Table 3-5, anchor users constitute nearly 1,500 AFY of demand. However, only four anchor users are located in the vicinity of the existing and proposed recycled water pipelines (those in Areas 2 to 4). Anchor users located in Areas 1 to 4 are displayed in Figures 3-2 to 3-5, respectively. Anchor users in the vicinity of the existing and proposed water pipeline have an estimated recycled water demand of 545 AFY.

Potential "anchor" users include the following:

- Three agricultural parcels in the southwest part of the service area (two parcels in Area 2, one parcel in Area 3). These agricultural users, which are in the vicinity of the Phase II and Phase III recycled water pipeline, have an approximate demand of 330 AFY.

- Two agricultural parcels located in the northeast corner and north central parts of the service area (Area 5). These parcels have an approximate demand of 207 AFY.

- Rustic Canyon Golf Course. This golf course is located on the eastern side of the District (Area 5). This public 18 hole golf course receives domestic water from the District. Estimated demand for the golf course, based on District records is approximately 400 AFY.

- Cemex Construction Materials. This concrete and aggregate company operates in the northern portion of the District (Area 5). It is estimated that the existing non-potable uses by Cemex are approximately 190 AFY.

- Moorpark Community College. This Community College is located within Area 6 and includes a recycled water demand of approximately 136 AFY.

- Hitch Ranch Specific Plan. Future development within Area 4 includes a total of 281 acres. A recycled water use evaluation prepared for the Hitch Ranch Specific Plan estimated a potential recycled water demand of 210 AFY.

TABLE 3-5
POTENTIAL ANCHOR USERS OF RECYCLED WATER

Area #	Address	Customer Type	Timing: Existing	Timing: Near-Term (1-5 years)	Timing: Future (> 5 years)	Potential Recycled Water Demand (AFY)
5	15100 Happy Camp Canyon Road (Rustic Canyon Golf Course)	Irrigation	X			400
4	Hitch Ranch Specific Plan	Irrigation		X		210
5	9035 Roseland Avenue (Cemex Construction Materials)	Commercial	X			195
6	7075 Campus Drive (Moorpark Community College)	Irrigation	X			136
2	Hitch Blvd	Agriculture	X			132
5	Middle Ranch Rd	Agriculture	X			105
2	Parcel 14	Agriculture	X			103
5	10195 Stockton Rd	Agriculture	X			102
3	Parcel 2	Agriculture	X			100
Total Demand Anchor Users						**1,483**

4 Potential Recycled Water Demand

This section defines maximum recycled water demand, demand within Use Areas, potential demand within District No. 8, and operational criteria.

4.1 Maximum Potential Demand

A summary of estimated annual recycled water demands by use area, maximum month, and maximum daily demands are provided in Table 4-1. Appendix A includes details for each potential recycled water user with a minimum demand of 10 AFY within the District's service area. Total annual recycled water demand, if all existing and future potential customers are served, is estimated to be approximately 4,800 AFY within the Study Area. The corresponding total maximum daily demand was estimated to be approximately 7.8 MG within the Study Area, again, if all existing and future potential customers are served with recycled water. As previously stated, the District anticipates production of a maximum of 4.0 million gallons per day of recycled water.

Agricultural customers constitute the largest category of potential recycled water users, with estimated annual demand of 2,840 AF (or approximately 59 percent of all potential demand). Park irrigation (with the exception of commercial golf courses, generally institutional customers) is the second largest potential user, constituting approximately 1,198 AFY (404 AFY of existing recycled water use, 718 AFY of existing potential uses, 76 AF of future potential uses). Park irrigation represents approximately 25 percent of the total potential recycled water demand. Irrigation at school sites is the third largest potential user within the District, with an estimated total annual demand of 253 AF (242 AF existing potential uses, 11 AF future potential uses). Irrigation of school sites represents nearly 5 percent of the total potential recycled water demand. Industrial/commercial users have an estimated demand of approximately 238 AFY (all existing potential users) which represents nearly 5 percent of the total potential recycled water demand. Additional details provided in Section 3 and Appendix A.

Table 4-1 also provides information on potential demands in the vicinity of the existing and proposed Phase II and Phase III recycled water pipelines (Areas 2 to 4). Total annual recycled water demand, if all customers are served, is estimated to be approximately 2,427 AF in Areas 2 to 4. Details for each potential customer are included in Appendix A. The corresponding total maximum daily demand was estimated to be approximately 3.5 MG. If Area 1 is included, total annual recycled water demand increases to 2,750 AF and maximum daily demand increases to 4.0 MG. Areas 5 to 8 include nearly 2,000 AFY of additional potential recycled water demand. Demands for recycled water in Areas 1 to 4 are summarized below.

- Area 1. This area, east of Hitch Boulevard, south of Los Angeles Avenue, west of Moorpark High School, and north of the District's southern boundary. Area 1 is easterly of both the proposed Phase II and Phase III recycled water pipelines, but potentially could be served by the recycled water system in a later expansion. Area 1 has approximately 213 AFY of potential demand from existing agricultural users, approximately 60 AFY from recreational uses, and approximately 50 AFY from school irrigation. Locations of these potential recycled water users are displayed in Figure 3-2.

- Area 2. This area, west of Hitch Boulevard, south of Los Angeles Avenue, within the southwest corner of the District boundary is in the immediate vicinity of the proposed Phase II and Phase III recycled water pipelines. There is potentially 810 AFY of recycled water demand from agriculture in this area. The locations of these existing potential recycled water users are displayed in Figure 3-3.

- Area 3. This area, west of Grimes Canyon Road, north of Los Angeles Avenue, east of Balcom Canyon Road, and south of Broadway, is west and north of the existing Phase I pipeline. There is potentially 660 AFY of recycled water demand from agriculture in this area. The locations of these existing potential recycled water users are displayed in Figure 3-4.

- Area 4. This area, east and south of Grimes Canyon Road, north of Los Angeles Avenue, west of Walnut Canyon Road is south and east of the existing Phase I pipeline. There is potentially 257 AFY recycled water demand from agriculture in this area, another 96 AFY demand from park and recreational facilities, and 24 AFY from existing school sites. The locations of these potential recycled water users are displayed in Figure 3-5.

Appendix A illustrates there is a substantial amount of potential demand for recycled water and that most of it already exists with properties that are already developed or are anticipated to be developed within one year. However, this potential demand is spread throughout the District service area. In order to minimize costs associated with distribution, the District may desire to encourage recycled water use near the existing and proposed recycled water system by serving customers with less than 10 AFY of recycled water demand.

TABLE 4-1
TOTAL POTENTIAL DEMAND AND EXISTING DEMAND FOR RECYCLED WATER

Area	Customer Type	Potential Recycled Water Demand (AFY)	Potential Max Month Demand [1] (MG)	Potential Average Day Demand (MG)	Potential Maximum Daily Demand[2] (MG)
Potential Demand					
Subtotal Area 1	Ag,Irr	323	12.3	0.3	0.5
Subtotal Area 2	Ag	810	31.4	0.5	1.7
Subtotal Area 3	Ag	660	25.2	0.1	0.8
Subtotal Area 4	Ag, Irr	553	21.2	0.2	1.0
Subtotal Area 5	Ag, Irr, Com	1,242	47.6	1.1	2.5
Subtotal Area 6	Ag, Irr, Com	519	20.0	0.4	0.8
Subtotal Area 7	Irr, Com	194	7.4	0.1	0.3
Subtotal Area 8	Irr	91	3.6	0.0	0.2
Total Potential Demand		4,392	168.7	2.7	7.8
Existing Demand					
4 (Moorpark Country Club)	Irr	404	15.5	0.6	0.0
Total Existing Demand		404	15.5	0.6	0.0
Total Potential and Existing Demand		**4,796**	**184.2**	**3.3**	**7.8**

Notes:
1. Maximum Month Demand assumed to be 1.41 times greater than average month demand. This maximum month peaking factor was taken from the Ventura County Waterworks District No. 1 Water System Master Plan Update (June 2007).
2. Maximum Day Demand assumed to be 2.3 times greater than average day demand. This maximum month peaking factor was taken from the Ventura County Waterworks District No. 1 Water System Master Plan Update (June 2007).

4.2 Demand Served by District No. 8

Several of the potential existing users identified could be served by the recycled water system of Ventura County Waterworks District No. 8 (Simi Valley). Although the District No. 8 recycled water system is not constructed (District is currently finalizing the Recycled Water Master Plan), there is potential for that District to serve various customers within District No.1.

Table 4-2 lists the various potential recycled water users within Ventura County Waterworks District No. 1 service area that could potentially be served by District No. 8. These potential users, if served by District No. 8 would reduce potential demand in District No. 1 by 720 AFY and reduce potential maximum daily demand by 1.5 MGD. Thus, the District No. 1 would have a potential total demand of 4,076 AFY and potential maximum daily demand of 6.3 MGD if these various users were served by District No. 8.

TABLE 4-2
RECYCLED WATER DEMAND POTENTIALLY SERVED BY WATERWORKS DISTRICT 8

			Timing			Potential Demand			
Area #	**Address**	**Customer Type**	**Existing**	**Near (1-5 years)**	**Future (> 5 years)**	**Potential Recycled Water Demand (AFY)**	**Max Month Demand[1] (MG)**	**Average Day Demand (MG)**	**Maximum Daily Demand[2] (MG)**
5	15100 Happy Camp Canyon Road (Rustic Canyon Golf Course)	Park Irrigation	X			400	15.3	0.4	0.8
6	6970 Hearon Dr (Campus Canyon Park)	Park Irrigation	X			42	1.6	0.0	0.1
6	15400 Campus Park Drive (College View Park)	Park Irrigation	X			24	0.9	0.0	0.0
6	6400 Harvard Street (Campus Park)	Park Irrigation	X			18	0.7	0.0	0.0
6	7075 Campus Drive (Moorpark Community College)	School Irrigation	X			136	5.2	0.1	0.3
7	901 Quimisa Dr (Oak County Park)	Park Irrigation	X			100	3.8	0.1	0.2
Total Demand in Vicinity of Waterworks District 8						**720**	**27.6**	**0.6**	**1.5**

Notes:
1. Maximum Month Demand assumed to be 1.41 times greater than average month demand. This maximum month peaking factor was taken from the Ventura County Waterworks District No. 1 Water System Master Plan update (June 2007).
2. Maximum Day Demand assumed to be 2.3 times greater than average day demand. This maximum month peaking factor was taken from the Ventura County Waterworks District No. 1 Water System Master Plan update (June 2007).

4.3 Operational Criteria

Because irrigation-related uses dominate potential recycled water demand, it is assumed that demands for recycled water will be very seasonal, with the highest demands occurring during the hot, dry summer months when irrigation requirements are greatest. Based on review of records from the Moorpark Unified School District and City of Moorpark Parks Department, it is assumed that the peak period for irrigation uses are the months of August and September. However, the Draft Water System Master Plan Update (District, 2007) has concluded that the maximum peak period for the District service area overall is September to October. Demands are anticipated to be significantly lower during the fall, winter, and spring months.

Demands for agriculture, the highest potential recycled water user category, are anticipated to occur during the day. In general, irrigation of parks and schools and residential landscaping is conducted between the hours of 10:00 p.m. and 6:00 a.m., as most landscape irrigation customers irrigate at night. This is due partly to water efficiency and horticultural benefits, but is typically employed to meet a requirement of DPH to limit public contact. Hence, it is anticipated that recycled water demands will be greatest during the day due to agricultural users, with a reduced, but continuing demand overnight. Additional recommendations for applicable timing of recycled water usage will be included in the Recycled Water Master Plan.

4 References

Personal Communication

Bobardt, David. Planning Director, Community Development Department, City of Moorpark. October and November 2007.

Kreps, Dennis. Energy Manager, Moorpark Unified School District. October and November 2007.

Lindley, Mary. Parks, Recreation & Community Services Director, City of Moorpark. October and November 2007.

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City of Moorpark. 2007. *Reclaimed Water Usage Evaluation, Hitch Ranch, Moorpark, CA*. Prepared by Water Resource Engineering Associates.

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Appendix A

Potential and Existing Recycled Water Users

APPENDIX A
POTENTIAL AND EXISTING RECYCLED WATER USERS

			Timing			Potential Demand			
Area #	Address	Customer Type	Existing	Near (1-5 years)	Future (> 5 years)	Potential Recycled Water Demand (AFY)	Max Month Demand[1] (MG)	Average Day Demand (MG)	Maximum Daily Demand[2] (MG)
POTENTIAL DEMAND									
1	11350 Los Angeles Ave (Treeland Farms)	Agriculture	X			65	2.5	0.1	0.1
1	10998 Los Angeles Ave	Agriculture	X			69	2.6	0.1	0.1
1	4641 Hitch Blvd	Agriculture	X			68	2.6	0.1	0.1
1	4320 Hitch Blvd	Agriculture	X			11	0.4	0.0	0.0
1	11701 ½ Mountain Trail (Country Trail Park)	Irrigation	X			38	1.5	0.0	0.1
1	11800 Harvester Street (Glenwood Park)	Irrigation	X			22	0.8	0.0	0.0
1	4500 Tierra Rejada (Moorpark High School)	Irrigation	X			50	1.9	0.0	0.1
Subtotal Area 1						***323***	***12.3***	***0.3***	***0.5***
2	Hitch Blvd / Los Angeles Ave	Agriculture	X			72	2.8	0.1	0.1
2	Hitch Blvd Parcel 16	Agriculture	X			25	1.0	0.0	0.1
2	Hitch Blvd	Agriculture	X			132	5.1	0.1	0.3
2	Parcel 14	Agriculture	X			103	3.9	0.1	0.2
2	Parcel 15 Terra Cavo	Agriculture	X			84	3.2	0.1	0.2
2	4393 Hitch Blvd (Lot 13)	Agriculture	X			57	2.2	0.1	0.1
2	Hitch Blvd Parcel 16	Agriculture	X			54	2.1	0.0	0.1
2	4129 Ventavo	Agriculture	X			51	2.0	0.0	0.1
2	Hitch Blvd (Boething Tree Farms)	Agriculture	X			37	1.4	0.0	0.1
2	4139 Ventavo Dr	Agriculture	X			33	1.3	0.0	0.1
2	Ventavo 1 Par 19	Agriculture	X			25	1.0	0.0	0.1
2	Tract 104 P-2 #4	Agriculture	X			25	1.0	0.0	0.1
2	4188 Ventavo Dr	Agriculture	X			25	1.0	0.0	0.1
2	Tract 104 P2 Par 6	Agriculture	X			21	0.8	0.0	0.0
2	4389 Hitch Blvd	Agriculture	X			16	0.6	0.0	0.0
2	Tract 104-Par 1	Agriculture	X			20	0.8	0.0	0.0
2	4260 Ventavo Dr	Agriculture	X			20	0.8	0.0	0.0
2	Tract 104 P2 Par 2	Agriculture	X			10	0.4	0.0	0.0
Subtotal Area 2						***810***	***31.4***	***0.5***	***1.7***
3	Parcel 2	Agriculture	X			100	3.8	0.1	0.2
3	Parcel 1	Agriculture	X			56	2.1	0.0	0.1
3	Parcel 48 Ventavo 4	Agriculture	X			39	1.5	0.0	0.1
3	9601/9701 Los Angeles Ave	Agriculture	X			30	1.1	0.0	0.1
3	Parcel 10 of 124	Agriculture	X			21	0.8	0.0	0.0
3	9601 Los Angeles Ave	Agriculture	X			20	0.8	0.0	0.0
3	9107 Los Angeles Ave	Agriculture	X			17	0.7	0.0	0.0

			Timing			Potential Demand			
Area #	Address	Customer Type	Existing	Near (1-5 years)	Future (> 5 years)	Potential Recycled Water Demand (AFY)	Max Month Demand[1] (MG)	Average Day Demand (MG)	Maximum Daily Demand[2] (MG)
3	7 Luxenberg Dr	Agriculture	X			34	1.3	0.0	0.1
3	0	Agriculture	X			40	1.5	0.0	0.1
3	Stockton Rd (Matilija Nursery)	Agriculture	X			37	1.4	0.0	0.1
3	Luxenberg Dr	Agriculture	X			23	0.9	0.0	0.0
3	7010 W Winchester Dr	Agriculture	X			23	0.9	0.0	0.0
3	Parcel 40	Agriculture	X			21	0.8	0.0	0.0
3	6455 Chagall Dr	Agriculture	X			24	0.9	0.0	0.0
3	6005 Grimes Canyon Rd	Agriculture	X			22	0.8	0.0	0.0
3	9332 Stockton Rd	Agriculture	X			13	0.5	0.0	0.0
3	7360 Rifleman Rd	Agriculture	X			14	0.5	0.0	0.0
3	6137 Grimes Cyn Rd	Agriculture	X			10	0.4	0.0	0.0
3	Parcel 1	Agriculture	X			11	0.4	0.0	0.0
3	Parcel 46	Agriculture	X			17	0.7	0.0	0.0
3	6426 Chagel Dr	Agriculture	X			11	0.4	0.0	0.0
3	6005 Grimes Canyon Rd	Agriculture	X			13	0.5	0.0	0.0
3	6501 Chagall Dr	Agriculture	X			18	0.7	0.0	0.0
3	6485 Chagall Dr	Agriculture	X			15	0.6	0.0	0.0
3	8614 Stockton Rd	Agriculture	X			15	0.6	0.0	0.0
3	Parcel 33	Agriculture	X			16	0.6	0.0	0.0
Subtotal Area 3						***660***	***25.2***	***0.1***	***0.8***
4	APN 503006032	Agriculture	X			56	2.1	0.0	0.1
4	Parcel 13	Agriculture	X			29	1.1	0.0	0.1
4	6480 Grimes Canyon Road	Agriculture	X			30	1.1	0.0	0.1
4	6370 Grimes Canyon Road	Agriculture	X			28	1.1	0.0	0.1
4	Parcel 4	Agriculture	X			21	0.8	0.0	0.0
4	Parcel 3	Agriculture	X			23	0.9	0.0	0.0
4	10735 Los Angeles Avenue	Agriculture	X			19	0.7	0.0	0.0
4	5490 Grimes Canyon Road	Agriculture	X			17	0.7	0.0	0.0
4	Parcel 8	Agriculture	X			17	0.7	0.0	0.0
4	Parcel 2 of PM 3333	Agriculture	X			17	0.7	0.0	0.0
4	500 Poindexter Ave (Poindexter Park)	Irrigation	X			32	1.2	0.0	0.1
4	280 Poindexter (Chaparral Middle School)	Irrigation	X			14	0.5	0.0	0.0
4	280 Casey Street (Walnut Canyon Elementary)	Irrigation	X			10	0.4	0.0	0.0
4	Hitch Ranch Specific Plan	Irrigation		X		210	8.0	0.2	0.4
4	Meridian Hills	Irrigation		X		30	1.2	0.0	0.1
Subtotal Area 4						***553***	***21.2***	***0.2***	***1.0***
5	10195 Stockton Rd	Agriculture	X			102	3.9	0.1	0.2
5	Middle Ranch Rd	Agriculture	X			105	4.0	0.1	0.2
5	Campus Park Rd	Agriculture	X			75	2.9	0.1	0.2
5	10089 Stockton Rd	Agriculture	X			62	2.4	0.1	0.1
5	13650 Broadway Rd	Agriculture	X			58	2.2	0.1	0.1

			Timing			Potential Demand			
Area #	Address	Customer Type	Existing	Near (1-5 years)	Future (> 5 years)	Potential Recycled Water Demand (AFY)	Max Month Demand[1] (MG)	Average Day Demand (MG)	Maximum Daily Demand[2] (MG)
5	11003 Broadway Rd	Agriculture	X			39	1.5	0.0	0.1
5	Lot 2 of Parcel Map 4257	Agriculture	X			38	1.5	0.0	0.1
5	12085 Clinton St	Agriculture	X			35	1.3	0.0	0.1
5	0	Agriculture	X			28	1.1	0.0	0.1
5	8642 Grimes Cyn Rd	Agriculture	X			23	0.9	0.0	0.0
5	8160 Happy Camp Rd	Agriculture	X			26	1.0	0.0	0.1
5	10865 Broadway	Agriculture	X			14	0.5	0.0	0.0
5	12598 Broadway Rd	Agriculture	X			12	0.5	0.0	0.0
5	13375 Broadway Rd	Agriculture	X			19	0.7	0.0	0.0
5	9001 Roseland Ave	Agriculture	X			11	0.4	0.0	0.0
5	15100 Happy Camp Canyon Road (Rustic Canyon Golf Course)	Irrigation	X			400	15.3	0.4	0.8
5	9035 Roseland Avenue (Cemex Construction Materials)	Commercial	X			195	7.5	0.2	0.4
Subtotal Area 5						***1,242***	***47.6***	***1.1***	***2.5***
6	Lot 3	Agriculture	X			72	2.8	0.1	0.1
6	Lot 6	Agriculture	X			70	2.7	0.1	0.1
6	Lot 5	Agriculture	X			62	2.4	0.1	0.1
6	Lot 4	Agriculture	X			49	1.9	0.0	0.1
6	6970 Hearon Dr (Campus Canyon Park)	Irrigation	X			42	1.6	0.0	0.1
6	15400 Campus Park Drive (College View Park)	Irrigation	X			24	0.9	0.0	0.0
6	6400 Harvard Street (Campus Park)	Irrigation	X			18	0.7	0.0	0.0
6	200 Science Drive (SmTek Electronics Manufacturing)	Commercial	X			20	0.8	0.0	0.0
6	7075 Campus Drive (Moorpark Community College)	Irrigation	X			136	5.2	0.1	0.3
6	15300 Monroe (Campus Canyon School)	Irrigation	X			12	0.5	0.0	0.0
6	Moorpark Highlands Specific Plan	Irrigation			X	14	0.5	0.0	0.0
Subtotal Area 6						***519***	***20.0***	***0.4***	***0.8***
7	901 Quimisa Dr (Oak County Park)	Irrigation	X			100	3.8	0.1	0.2
7	4530 Miller Parkway (Miller Park)	Irrigation	X			45	1.7	0.0	0.1
7	310 High Street (Metrolink Station landscaping)	Irrigation	X			16	0.6	0.0	0.0
7	14501 Princeton Drive (Kavlico Electronics	Commercial	X			23	0.9	0.0	0.0

Area #	Address	Customer Type	Timing: Existing	Timing: Near (1-5 years)	Timing: Future (> 5 years)	Potential Recycled Water Demand (AFY)	Potential Demand: Max Month Demand[1] (MG)	Potential Demand: Average Day Demand (MG)	Potential Demand: Maximum Daily Demand[2] (MG)
	Manufacturing)								
7	1400 Peach Hill Drive (Mesa Verde Middle School)	Irrigation	X			10	0.4	0.0	0.0
Subtotal Area 7						***194***	***7.4***	***0.1***	***0.3***
8	4350 Mountain Meadow Dr (Mountain Meadows Park)	Irrigation	X			33	1.3	0.0	0.1
8	13200 Peach Hill Road (Peach Hill Park)	Irrigation	X			36	1.4	0.0	0.1
8	11900 Mountain Trail Street (Tierra Rejada Park)	Irrigation	X			12	0.5	0.0	0.0
8	4200 Mountain Meadows Drive (Mountain Meadows Elementary)	Irrigation	X			10	0.4	0.0	0.0
Subtotal Area 8						***91***	***3.6***	***0.0***	***0.2***
TOTAL POTENTIAL DEMAND						**4,392**	**168.7**	**2.7**	**7.8**
EXISTING DEMAND									
4	Moorpark Country Club	Irrigation	X			404	15.5	0.6	0.0
TOTAL EXISTING DEMAND						**404**	**15.5**	**0.6**	**0.0**
TOTAL POTENTIAL AND EXISTING DEMAND						**4,796**	**184.2**	**3.3**	**7.8**

Notes:

1. Maximum Month Demand assumed to be 1.41 times greater than average month demand. This maximum month peaking factor was taken from the Ventura County Waterworks District No. 1 Water System Master Plan Update (June 2007).
2. Maximum Day Demand assumed to be 2.3 times greater than average day demand. This maximum month peaking factor was taken from the Ventura County Waterworks District No. 1 Water System Master Plan Update (June 2007).

VENTURA COUNTY WATERWORKS DISTRICTS

Representing: Ventura County Waterworks Districts No. 1, 16, 17 & 19

COUNTY OF VENTURA
PUBLIC WORKS AGENCY
JEFF PRATT
Agency Director

Water & Sanitation Department
R. Reddy Pakala
Director

Anne Dana
Administration

Cliff Finley
Operations

Cefe Munoz
Engineering

February 27, 2012

Information Technology Unit
California Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Subject: Ventura County Waterworks District No. 1 (District)
Moorpark Wastewater Treatment Plant
2011 Annual Water Recycling Monitoring Report
Title 22 Recycled Water
File No. 01-122 CI No. 8371

Attached is the 2011 Annual Water Recycling Monitoring Report for the Ventura County Waterworks District No. 1 Moorpark Wastewater Treatment Plant. The laboratory tests were performed by the District's laboratory, Pat-Chem Laboratories, and Fruit Growers Environmental Laboratories, State certified laboratories.

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Executed on this 27th day of February 2012 in Moorpark, California.

R. R. Pakala, Director
Water and Sanitation Department

RRP:AS:ec

6767 Spring Road • P.O. Box 250 • Moorpark, California 93021-0250
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VENTURA COUNTY WATERWORKS DISTRICT NO. 1
MOORPARK WASTEWATER TREATMENT PLANT

2011 ANNUAL
WATER RECYCLING MONITORING REPORT

6767 Spring Road
P.O. Box 250
Moorpark, CA 93020

MOORPARK WASTEWATER TREATMENT PLANT
2011 ANNUAL WATER RECYCLING MONITORING REPORT

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VENTURA COUNTY WATERWORKS DISTRICT NO. 1
MOORPARK WASTEWATER TREATMENT PLANT
(Title 22 Recycled Water)

2011 WATER RECYCLING ANNUAL MONITORING REPORT

EXECUTIVE SUMMARY

The Ventura County Waterworks District No. 1 (District) owns and operates the Tertiary Treatment Facility at the Moorpark Wastewater Treatment Plant (MWTP).

The District normally disposes of secondary treated wastewater through the on-site percolation/evaporation ponds. During this reporting period the tertiary facility was in operation. All reclaimed water produced was in accordance with the WRR permit.

On July 24, 2000 the District submitted an engineering report that outlined the production, distribution, and use of recycled water. On August 21, 2000 the State DOHS approved the engineering report and provided the Regional Board with comments and recommendations. The Regional Board consulted with the State DOHS regarding the proposed recycling project and has incorporated their recommendations and issued the Water Recycling Requirements, Order No. R4-2002-0028 on February 5, 2002. The order also requires that the District update the Title 22 engineering report. The District retained Kennedy/Jenks Consultants to prepare the update, which was submitted to the Regional Board on March 10, 2003.

The recycled water distribution system was completed in September 2003. The recycled water production began on September 11, 2003.

Presently, Moorpark Country Club is the sole user of recycled water produced from the MWTP. In calendar year 2011, Moorpark Country Club purchased 355.2 acre-feet (115.7 million gallons) of recycled water. This recycled water was used for golf course irrigation.

Figure I

MOORPARK WASTEWATER TREATMENT PLANT
2011 ANNUAL FLOW SUMMARY

DAILY RECLAMATION PRODUCTION (MGD)

DATE	JAN	FEB	MAR	APR	MAY	JUN
1	0.00	0.00	0.00	0.00	0.00	1.30
2	0.00	0.10	0.00	0.00	0.00	0.65
3	0.00	0.92	0.00	0.00	0.00	0.00
4	0.00	1.30	0.00	0.00	0.65	0.00
5	0.84	0.92	0.00	0.00	1.30	0.00
6	0.92	0.00	0.00	0.00	1.30	0.76
7	0.27	0.00	0.00	0.00	0.92	0.70
8	0.00	0.00	0.00	0.00	0.00	0.92
9	0.00	0.70	1.30	0.00	0.00	0.65
10	0.00	1.30	1.30	0.00	0.49	0.00
11	0.00	0.86	0.65	0.00	1.30	0.00
12	0.00	0.00	0.00	0.81	0.76	0.00
13	0.00	0.00	0.00	1.13	0.49	0.81
14	0.00	0.00	0.00	0.54	0.43	0.76
15	0.00	0.76	0.00	0.33	0.00	0.38
16	1.30	0.92	0.65	0.00	0.00	0.54
17	0.65	0.00	1.30	0.00	0.00	0.00
18	0.00	0.51	0.73	0.00	0.76	0.00
19	0.65	0.00	0.00	0.00	0.54	0.00
20	1.24	0.00	0.00	0.92	0.00	0.76
21	0.49	0.00	0.00	0.87	0.00	0.92
22	0.00	0.00	0.00	0.54	0.00	0.60
23	0.00	0.87	0.00	0.00	0.00	0.54
24	0.00	0.70	0.00	0.00	0.49	0.49
25	0.00	0.00	0.00	0.00	0.30	0.00
26	0.87	0.00	0.00	0.00	1.12	0.00
27	1.30	0.00	0.00	0.87	0.70	0.00
28	0.70	0.00	0.00	0.92	0.00	1.30
29	0.00		0.00	0.48	0.00	0.92
30	0.00		0.00	0.54	0.00	0.00
31	0.00		0.00		0.62	
MAX	**1.30**	**1.30**	**1.30**	**1.13**	**1.30**	**1.30**
MIN	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
AVG	**0.30**	**0.35**	**0.19**	**0.27**	**0.39**	**0.43**

Figure I

MOORPARK WASTEWATER TREATMENT PLANT
2011 ANNUAL FLOW SUMMARY

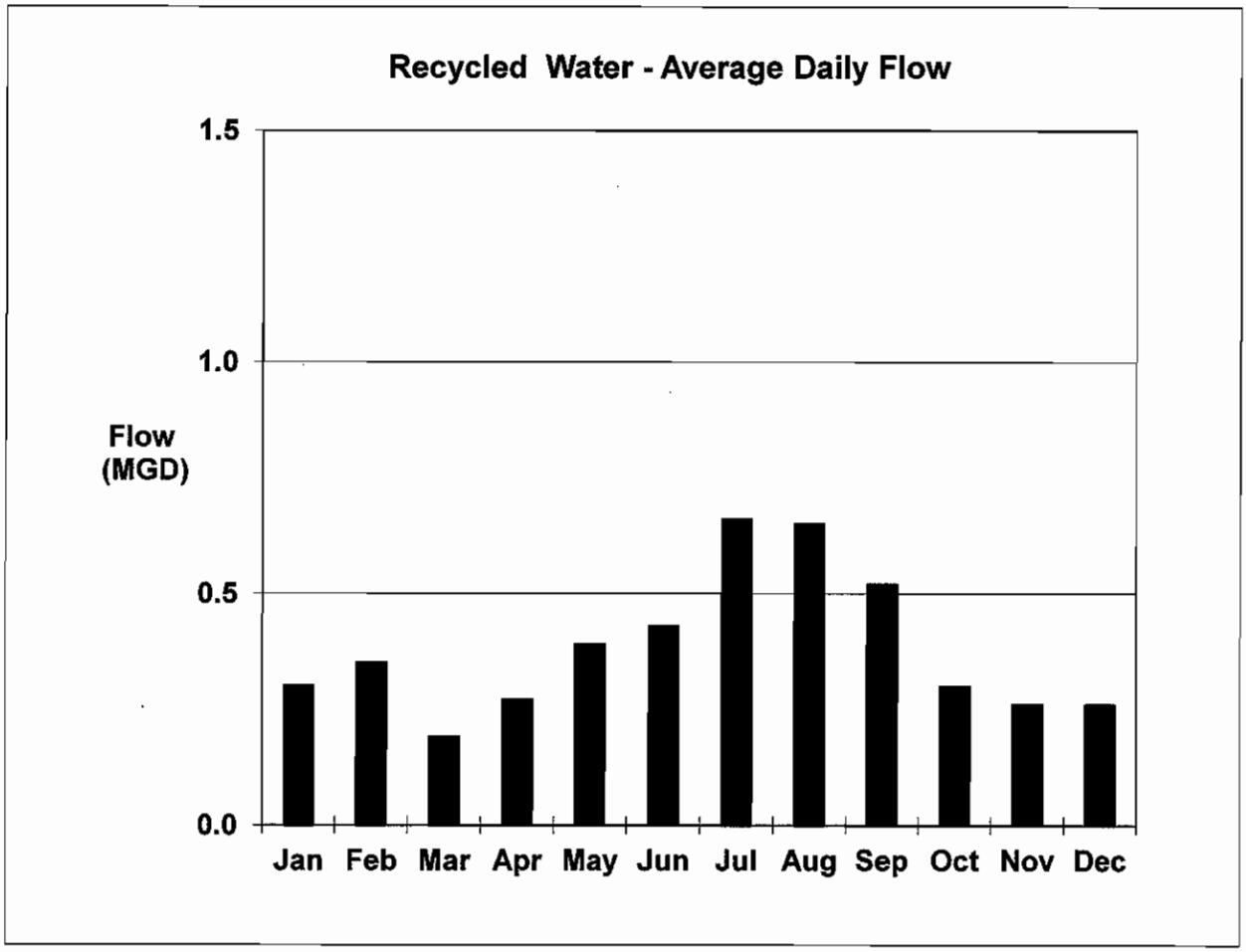
DAILY RECLAMATION PRODUCTION (MGD)

DATE	JUL	AUG	SEP	OCT	NOV	DEC
1	0.92	0.70	0.92	0.80	0.88	0.55
2	0.86	1.30	0.54	0.00	0.93	0.55
3	0.00	1.30	0.00	0.00	0.32	0.00
4	0.00	0.92	0.00	0.80	0.49	0.00
5	0.65	0.54	0.70	0.60	0.00	0.00
6	1.30	0.00	1.30	0.00	0.00	0.93
7	1.30	0.00	1.30	0.00	0.00	0.93
8	0.92	0.76	0.92	0.00	0.00	0.00
9	0.00	1.30	0.49	0.00	0.49	0.00
10	0.00	0.92	0.49	0.00	0.38	0.00
11	0.81	0.54	0.00	0.55	0.00	0.00
12	1.30	0.54	0.38	0.87	0.00	0.00
13	1.30	0.00	1.30	0.45	0.00	0.93
14	0.92	0.00	1.30	0.20	0.00	0.60
15	0.54	0.76	0.76	0.00	0.00	0.00
16	0.00	1.30	0.00	0.00	0.22	0.00
17	0.00	0.92	0.00	0.55	0.55	0.00
18	0.49	0.33	0.00	1.20	0.93	0.00
19	1.30	0.43	0.00	1.20	0.00	0.00
20	1.30	0.00	0.70	0.75	0.00	0.00
21	0.92	0.65	1.20	0.50	0.00	0.00
22	0.54	0.92	0.85	0.00	0.49	0.93
23	0.38	0.92	0.43	0.00	0.00	0.93
24	0.00	0.92	0.00	0.00	0.00	0.00
25	0.65	0.38	0.00	0.00	0.05	0.00
26	1.30	0.89	0.00	0.00	0.00	0.00
27	1.30	0.76	0.65	0.45	0.00	0.00
28	0.92	0.00	0.60	0.00	0.71	0.77
29	0.54	0.00	0.00	0.45	0.66	0.88
30	0.00	0.81	0.85	0.00	0.55	0.00
31	0.00	1.30		0.00		0.00
MAX	**1.30**	**1.30**	**1.30**	**1.20**	**0.93**	**0.93**
MIN	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
AVG	**0.66**	**0.65**	**0.52**	**0.30**	**0.26**	**0.26**

Figure II

MOORPARK WASTEWATER TREATMENT PLANT

2011 ANNUAL RECYCLED WATER REPORT

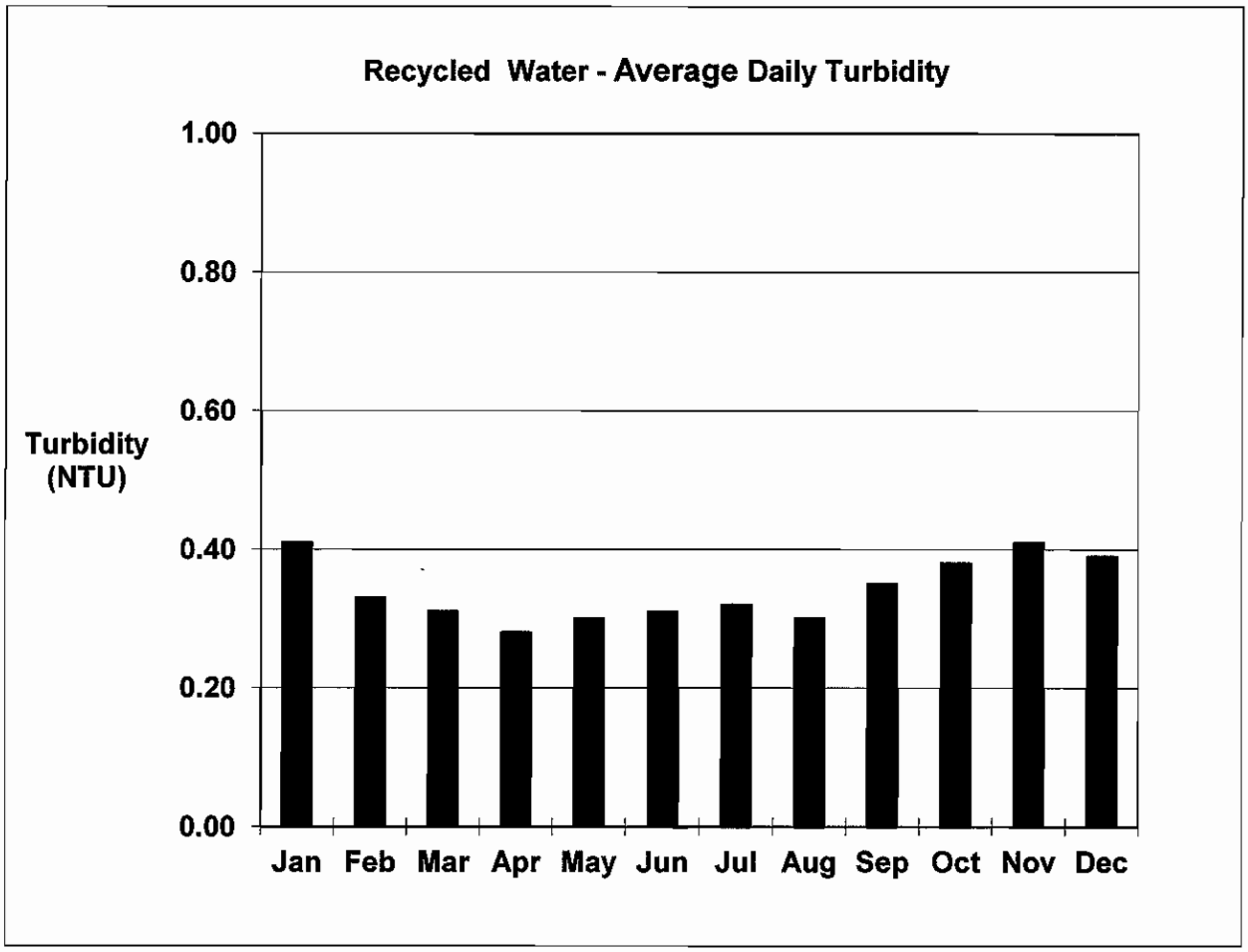


Month	Flow (MGD)	Month	Flow (MGD)
Jan	0.30	Jul	0.66
Feb	0.35	Aug	0.65
Mar	0.19	Sep	0.52
Apr	0.27	Oct	0.30
May	0.39	Nov	0.26
Jun	0.43	Dec	0.26

Figure III

MOORPARK WASTEWATER TREATMENT PLANT

2011 ANNUAL RECYCLED WATER REPORT

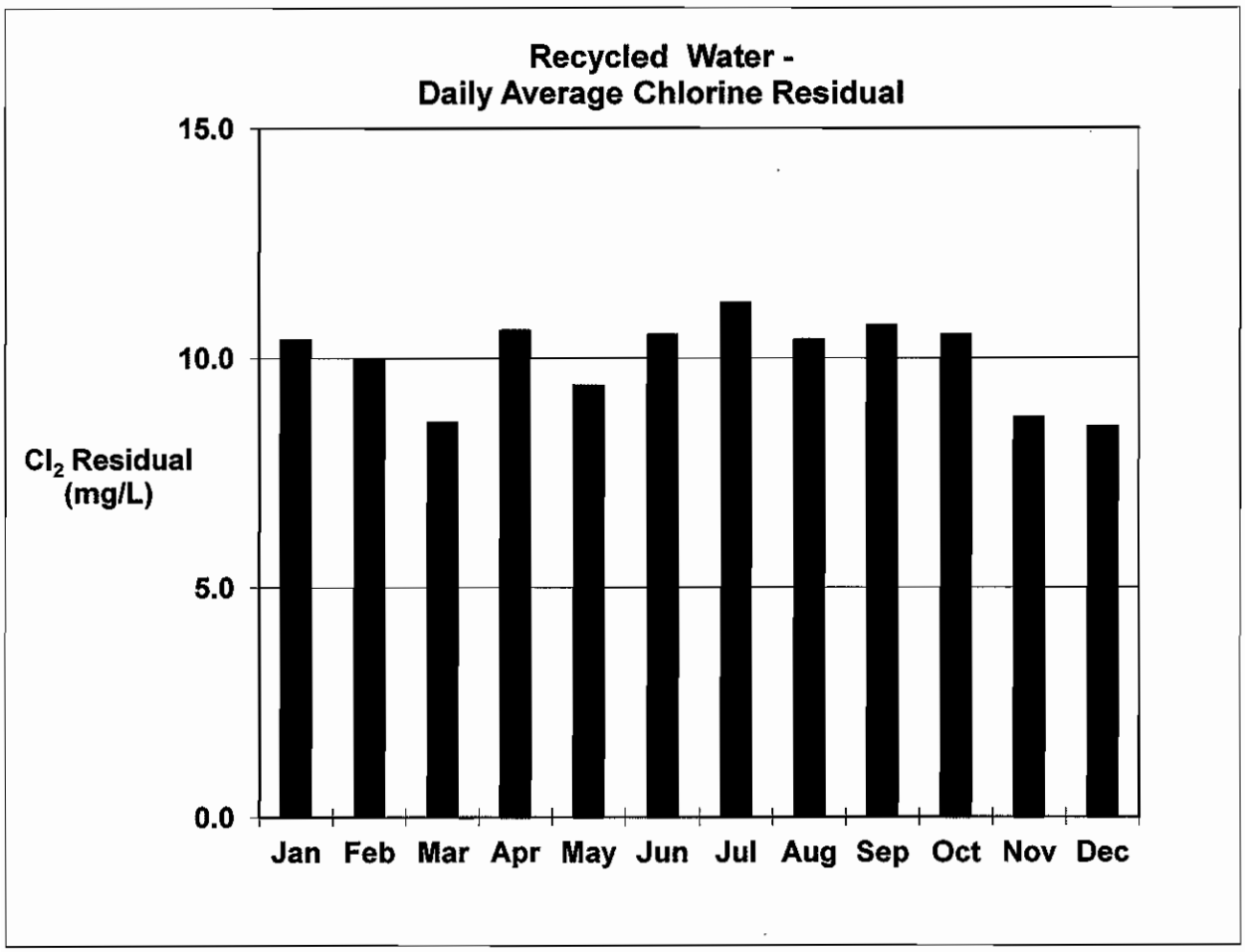


Month	Turbidity (NTU)	Month	Turbidity (NTU)
Jan	0.41	Jul	0.32
Feb	0.33	Aug	0.30
Mar	0.31	Sep	0.35
Apr	0.28	Oct	0.38
May	0.30	Nov	0.41
Jun	0.31	Dec	0.39

Figure IV

MOORPARK WASTEWATER TREATMENT PLANT

2011 ANNUAL RECYCLED WATER REPORT

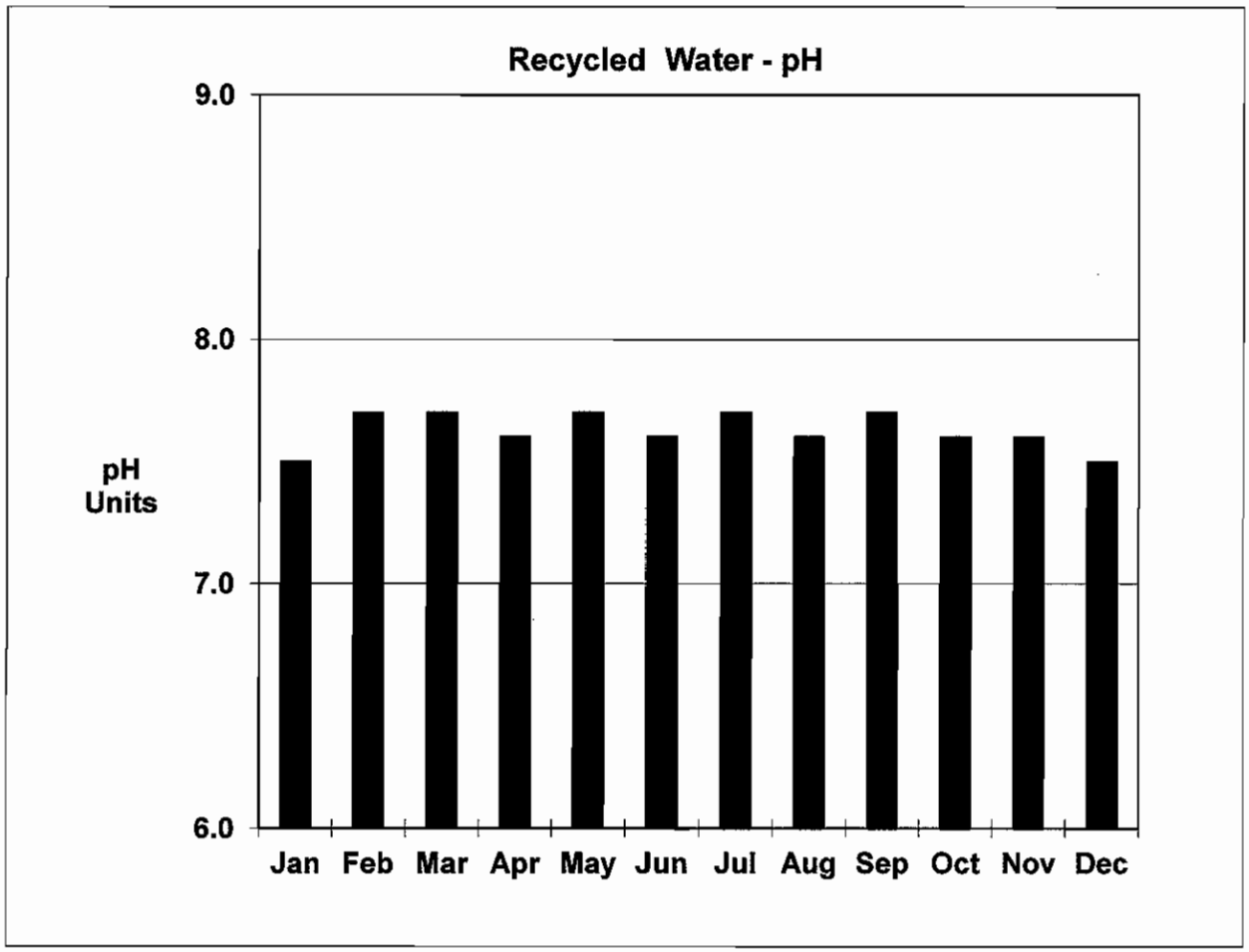


Month	Cl_2 Residual (mg/L)	Month	Cl_2 Residual (mg/L)
Jan	10.4	Jul	11.2
Feb	10.0	Aug	10.4
Mar	8.6	Sep	10.7
Apr	10.6	Oct	10.5
May	9.4	Nov	8.7
Jun	10.5	Dec	8.5

Figure V

MOORPARK WASTEWATER TREATMENT PLANT

2011 ANNUAL RECYCLED WATER REPORT



Month	pH	Month	pH
Jan	7.5	Jul	7.7
Feb	7.7	Aug	7.6
Mar	7.7	Sep	7.7
Apr	7.6	Oct	7.6
May	7.7	Nov	7.6
Jun	7.6	Dec	7.5

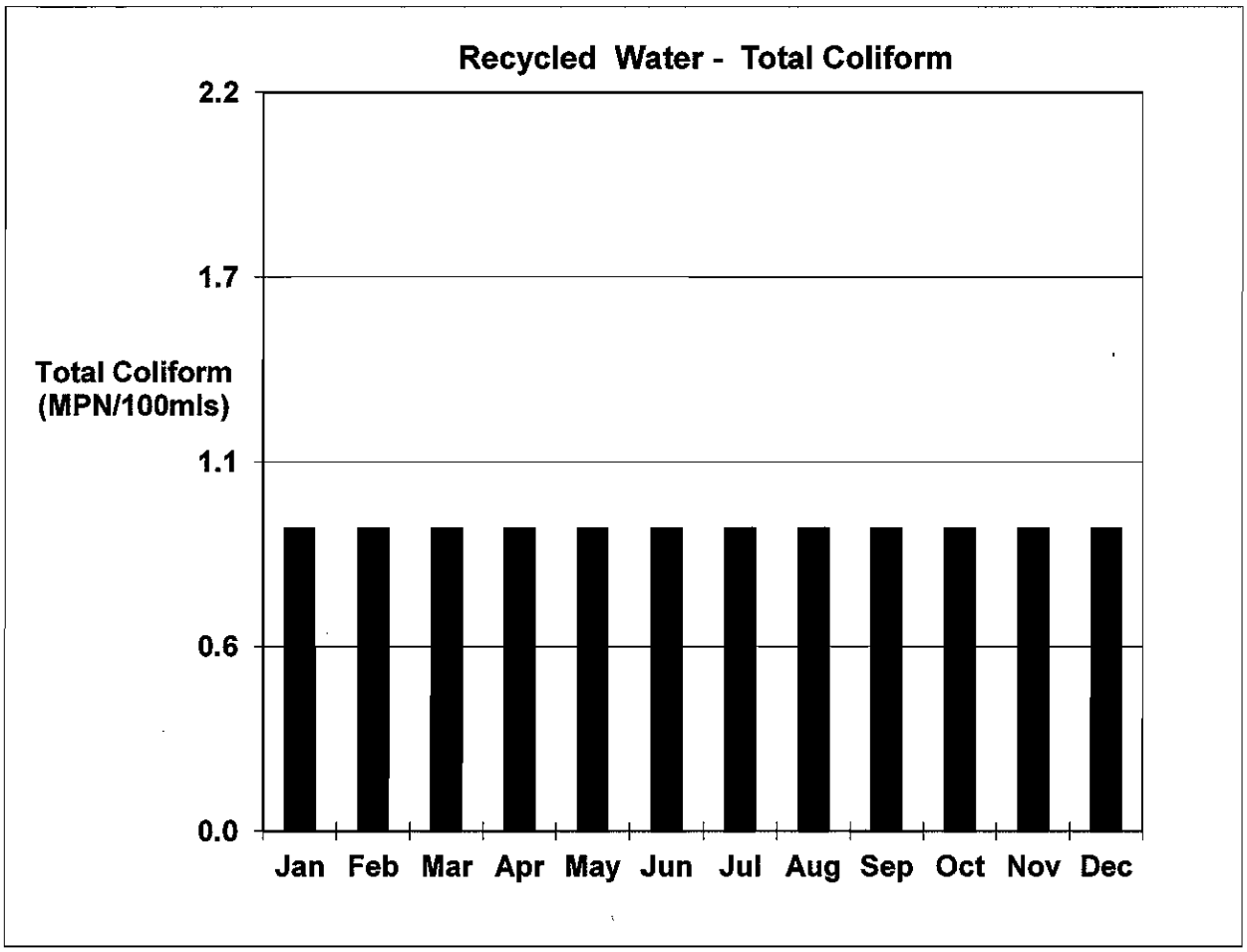
Note:

1. pH limits = 6.5 to 8.5 pH Units.

Figure VI

MOORPARK WASTEWATER TREATMENT PLANT

2011 ANNUAL RECYCLED WATER REPORT

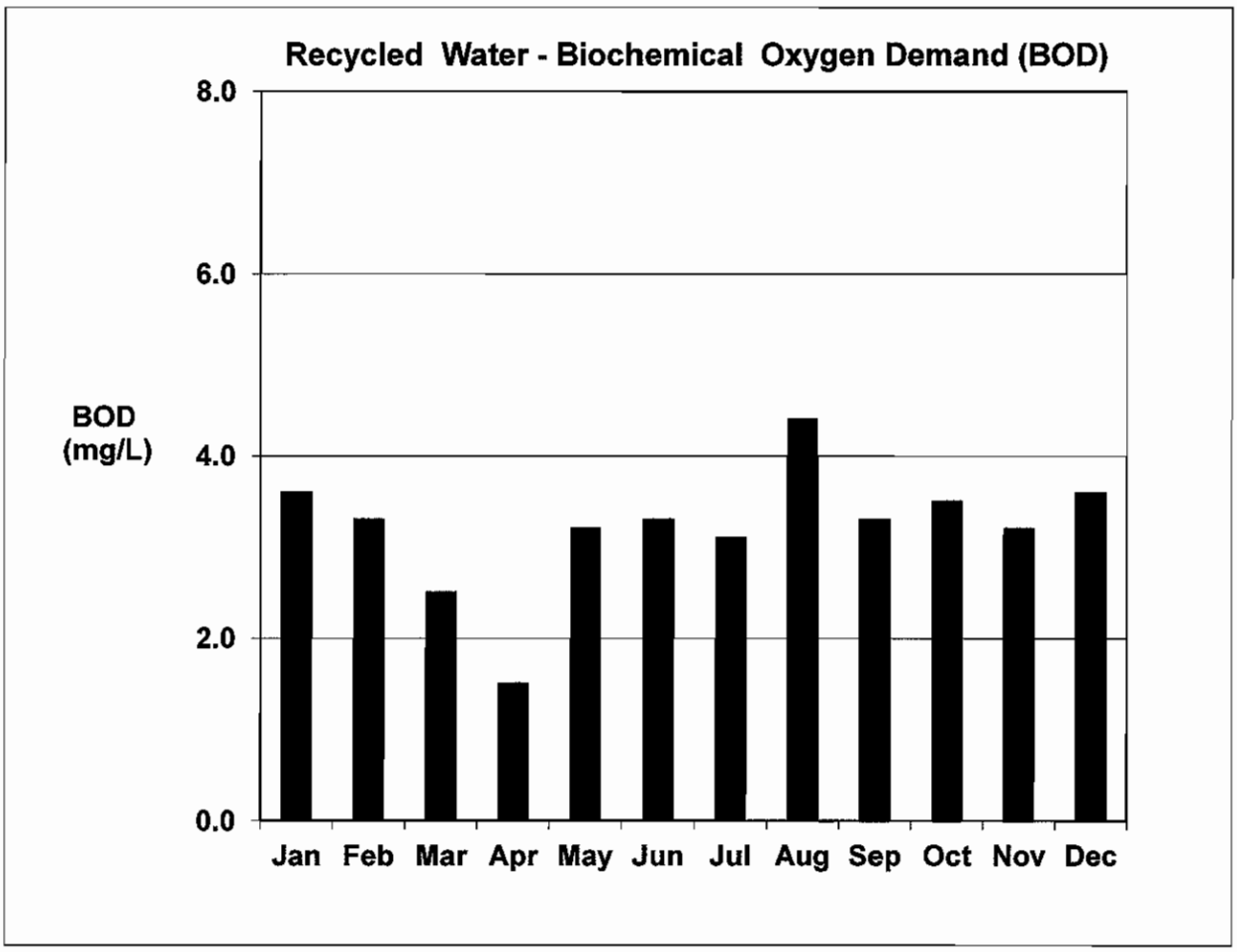


Month	Total Coliform	Month	Total Coliform
Jan	< 1.1	Jul	< 1.1
Feb	< 1.1	Aug	< 1.1
Mar	< 1.1	Sep	< 1.1
Apr	< 1.1	Oct	< 1.1
May	< 1.1	Nov	< 1.1
Jun	< 1.1	Dec	< 1.1

Figure VII

MOORPARK WASTEWATER TREATMENT PLANT

2011 ANNUAL RECYCLED WATER REPORT



Month	BOD (mg/L)	Month	BOD (mg/L)
Jan	3.6	Jul	3.1
Feb	3.3	Aug	4.4
Mar	2.5	Sep	3.3
Apr	< 2.0	Oct	3.5
May	3.2	Nov	3.2
Jun	3.3	Dec	3.6

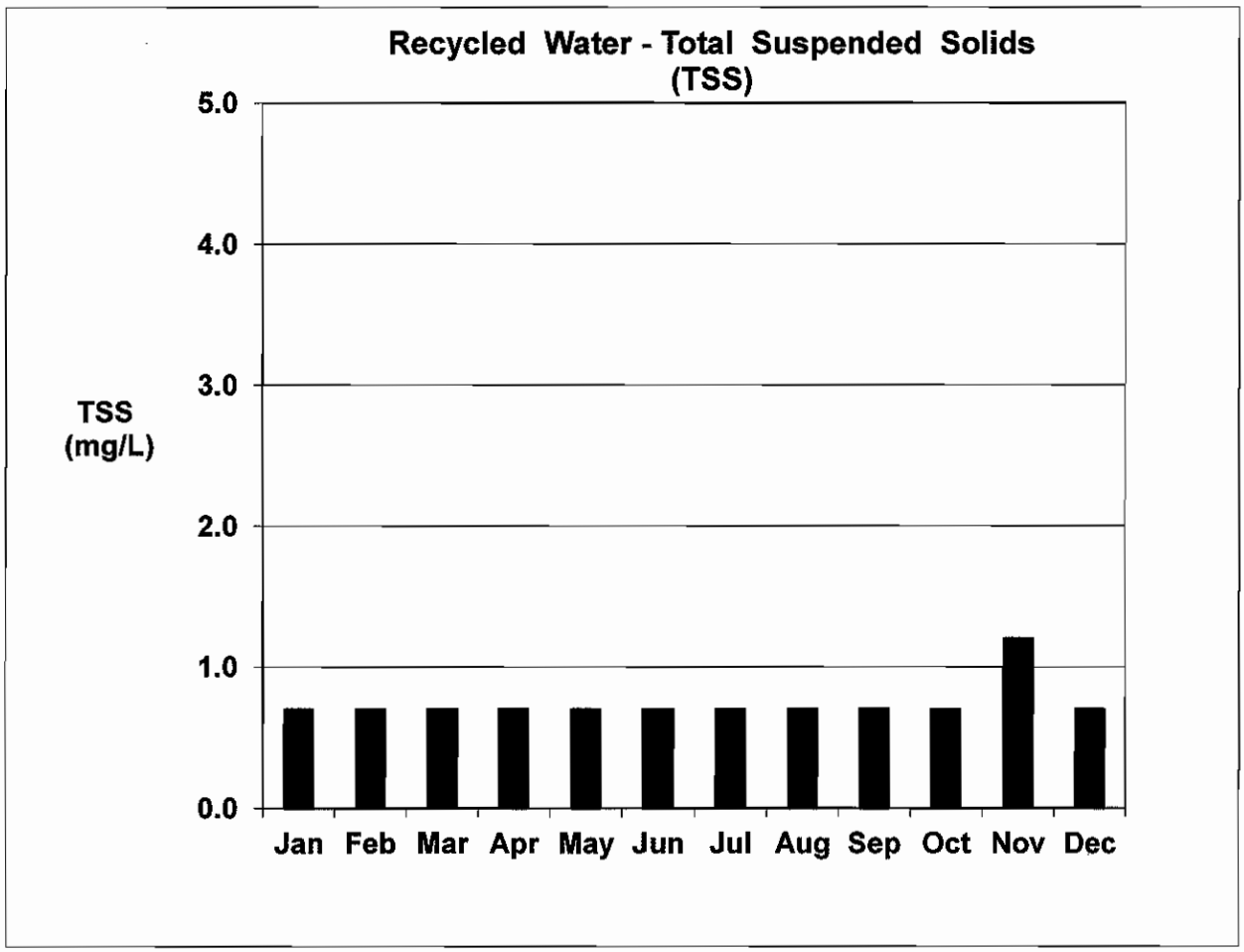
Notes:

1. Effluent BOD limit = 30 mg/l.

Figure VIII

MOORPARK WASTEWATER TREATMENT PLANT

2011 ANNUAL RECYCLED WATER REPORT



Month	TSS (mg/L)	Month	TSS (mg/L)
Jan	< 1.0	Jul	< 1.0
Feb	< 1.0	Aug	< 1.0
Mar	< 1.0	Sep	< 1.0
Apr	< 1.0	Oct	< 1.0
May	< 1.0	Nov	1.2
Jun	< 1.0	Dec	< 1.0

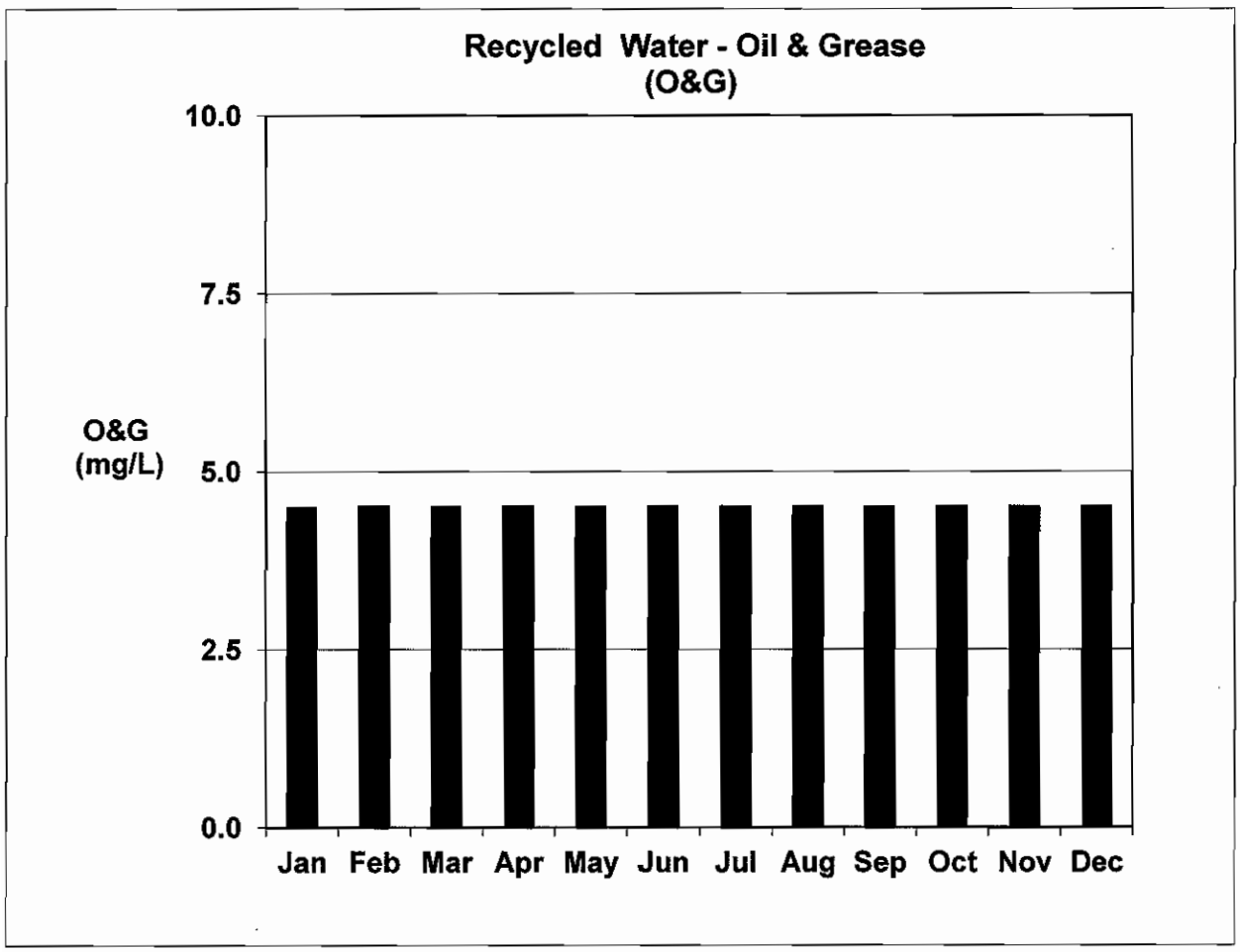
Notes:

1. Effluent TSS limit = 30 mg/l.

Figure IX

MOORPARK WASTEWATER TREATMENT PLANT

2011 ANNUAL RECYCLED WATER REPORT



Month	O&G (mg/L)	Month	O&G (mg/L)
Jan	< 5	Jul	< 5
Feb	< 5	Aug	< 5
Mar	< 5	Sep	< 5
Apr	< 5	Oct	< 5
May	< 5	Nov	<5
Jun	< 5	Dec	<5

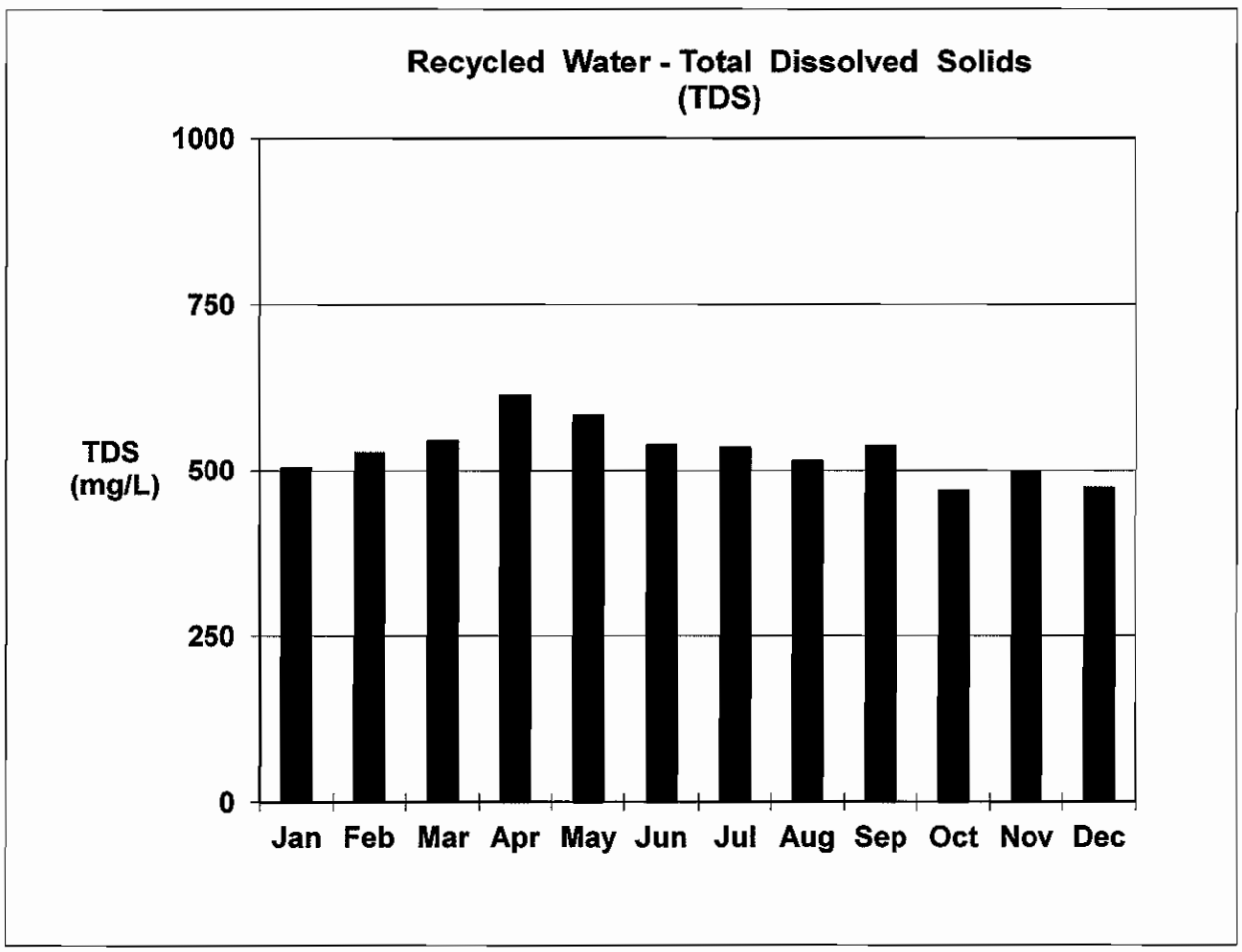
Notes:

1. Effluent Oil & Grease limit = 10 mg/l.

Figure X

MOORPARK WASTEWATER TREATMENT PLANT

2011 ANNUAL RECYCLED WATER REPORT



Month	TDS (mg/L)	Month	TDS (mg/L)
Jan	504	Jul	534
Feb	526	Aug	514
Mar	544	Sep	536
Apr	612	Oct	468
May	582	Nov	498
Jun	538	Dec	472

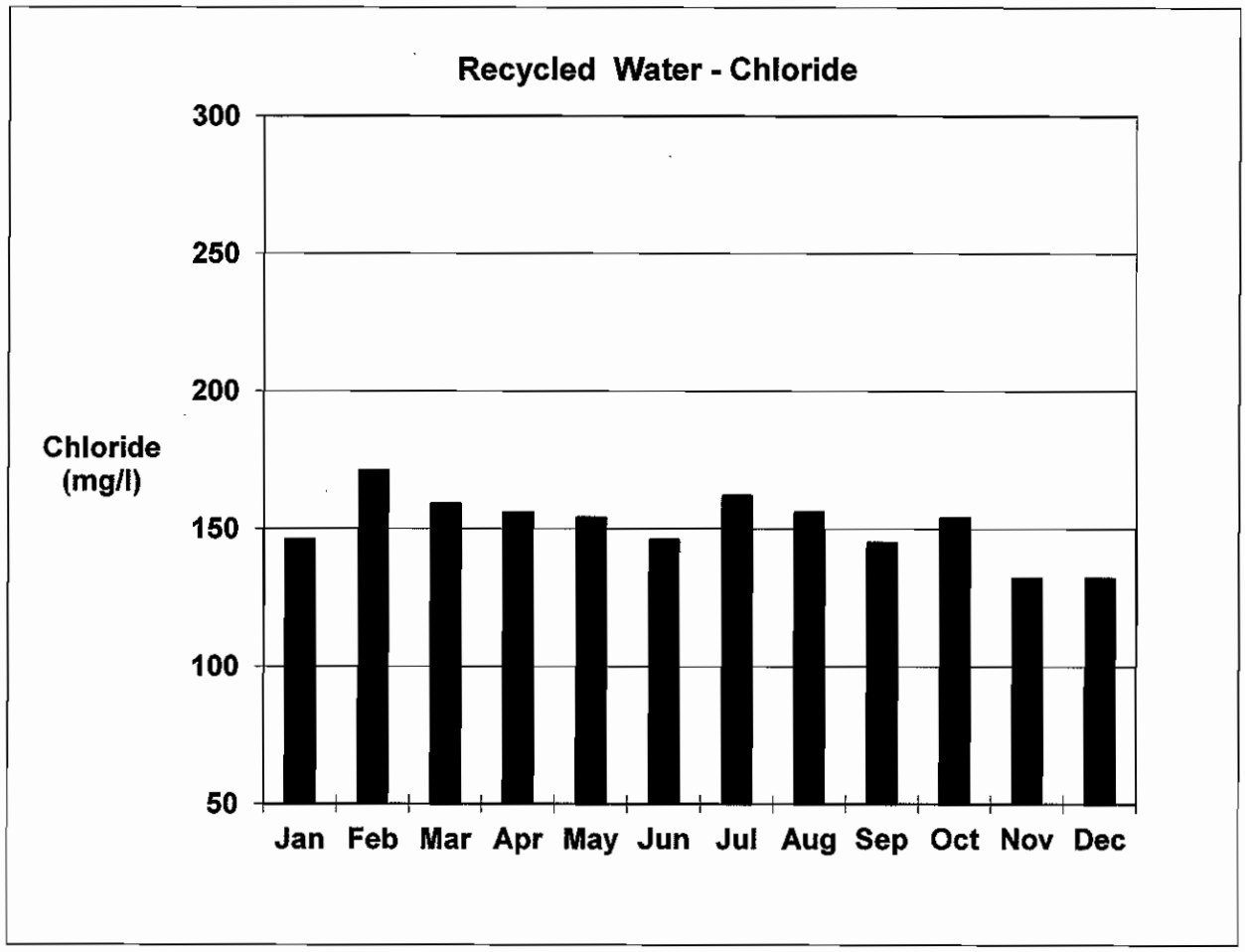
Notes:

1. TDS limit = 1500 mg/l.

Figure XI

MOORPARK WASTEWATER TREATMENT PLANT

2011 ANNUAL RECYCLED WATER REPORT



Month	Chloride (mg/L)	Month	Chloride (mg/L)
Jan	146	Jul	162
Feb	171	Aug	156
Mar	159	Sep	145
Apr	156	Oct	154
May	154	Nov	132
Jun	146	Dec	132

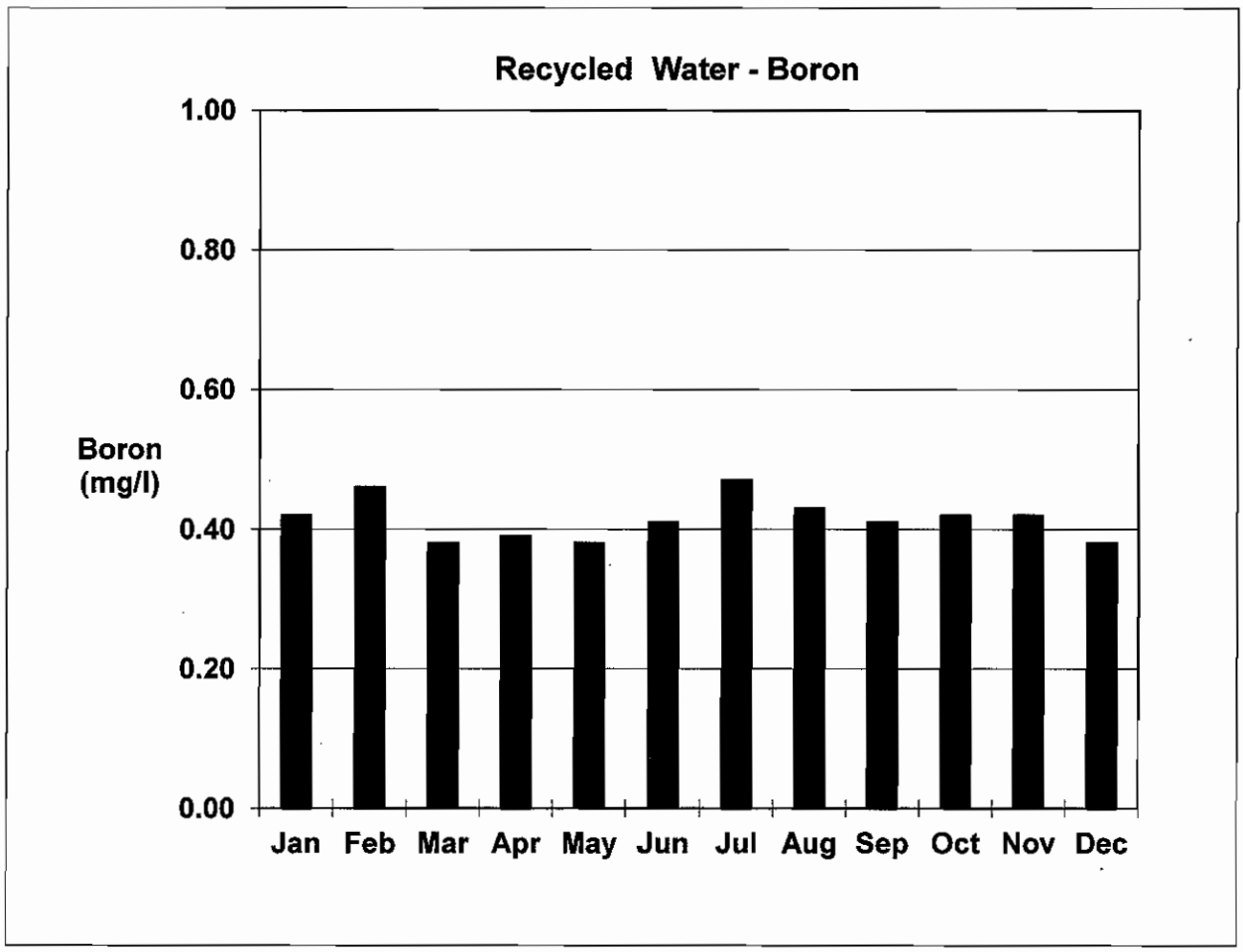
Notes:

1. Chloride limit = 250 mg/l.

Figure XII

MOORPARK WASTEWATER TREATMENT PLANT

2011 ANNUAL RECYCLED WATER REPORT



Month	Boron (mg/L)	Month	Boron (mg/L)
Jan	0.42	Jul	0.47
Feb	0.46	Aug	0.43
Mar	0.38	Sep	0.41
Apr	0.39	Oct	0.42
May	0.38	Nov	0.42
Jun	0.41	Dec	0.38

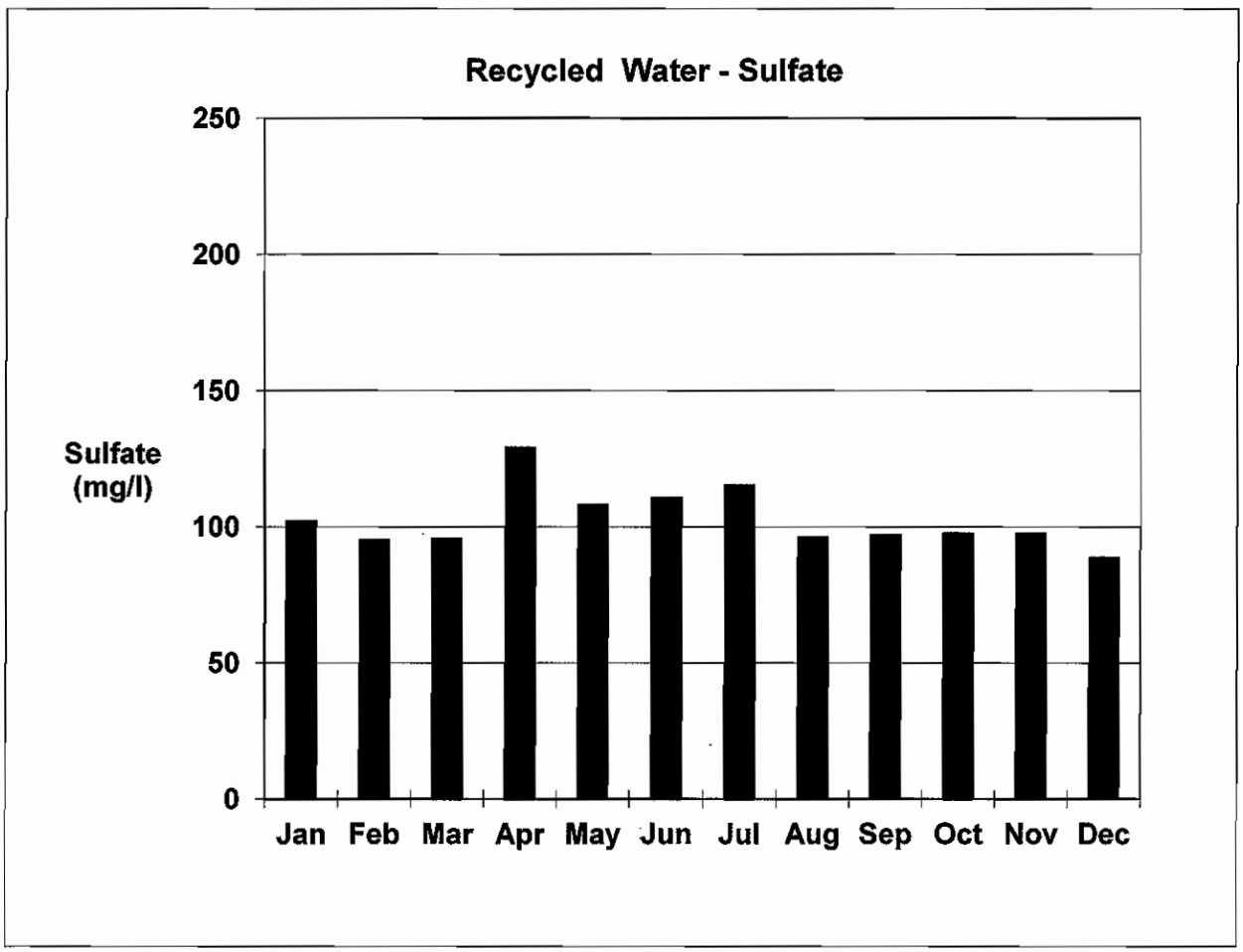
Notes:

1. Boron limit = 1.0 mg/l.

Figure XIII

MOORPARK WASTEWATER TREATMENT PLANT

2011 ANNUAL RECYCLED WATER REPORT



Month	Sulfate (mg/L)	Month	Sulfate (mg/L)
Jan	102	Jul	115
Feb	95.2	Aug	96.1
Mar	95.7	Sep	96.9
Apr	129	Oct	97.5
May	108	Nov	97.5
Jun	111	Dec	88.7

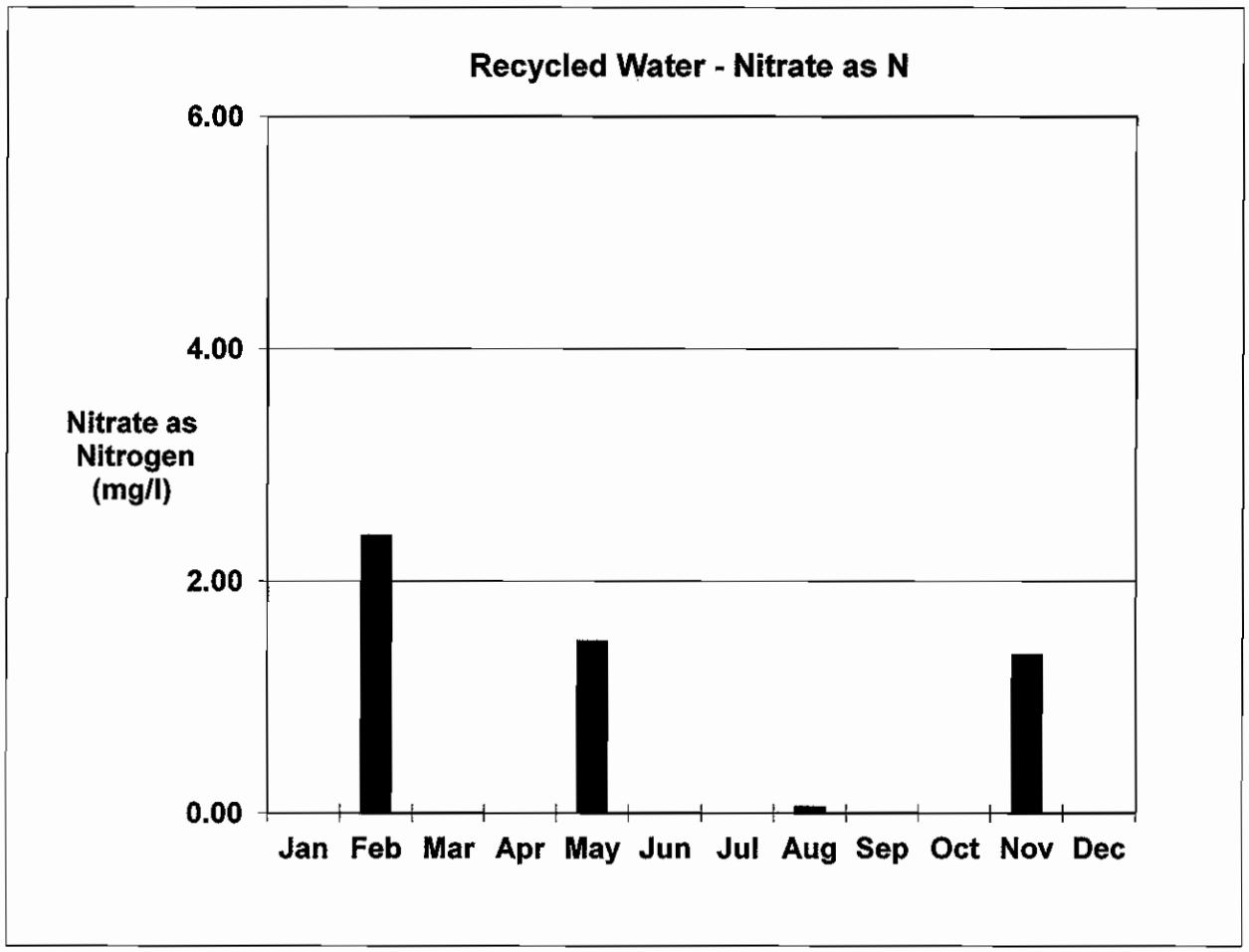
Notes:

1. Sufate limit = 700 mg/l.

Figure XIV

MOORPARK WASTEWATER TREATMENT PLANT

2011 ANNUAL RECYCLED WATER REPORT



Month	Nitrate-N (mg/l)	Month	Nitrate-N (mg/l)
Jan	--	Jul	--
Feb	2.39	Aug	0.05
Mar	--	Sep	--
Apr	--	Oct	--
May	1.48	Nov	1.36
Jun	--	Dec	--

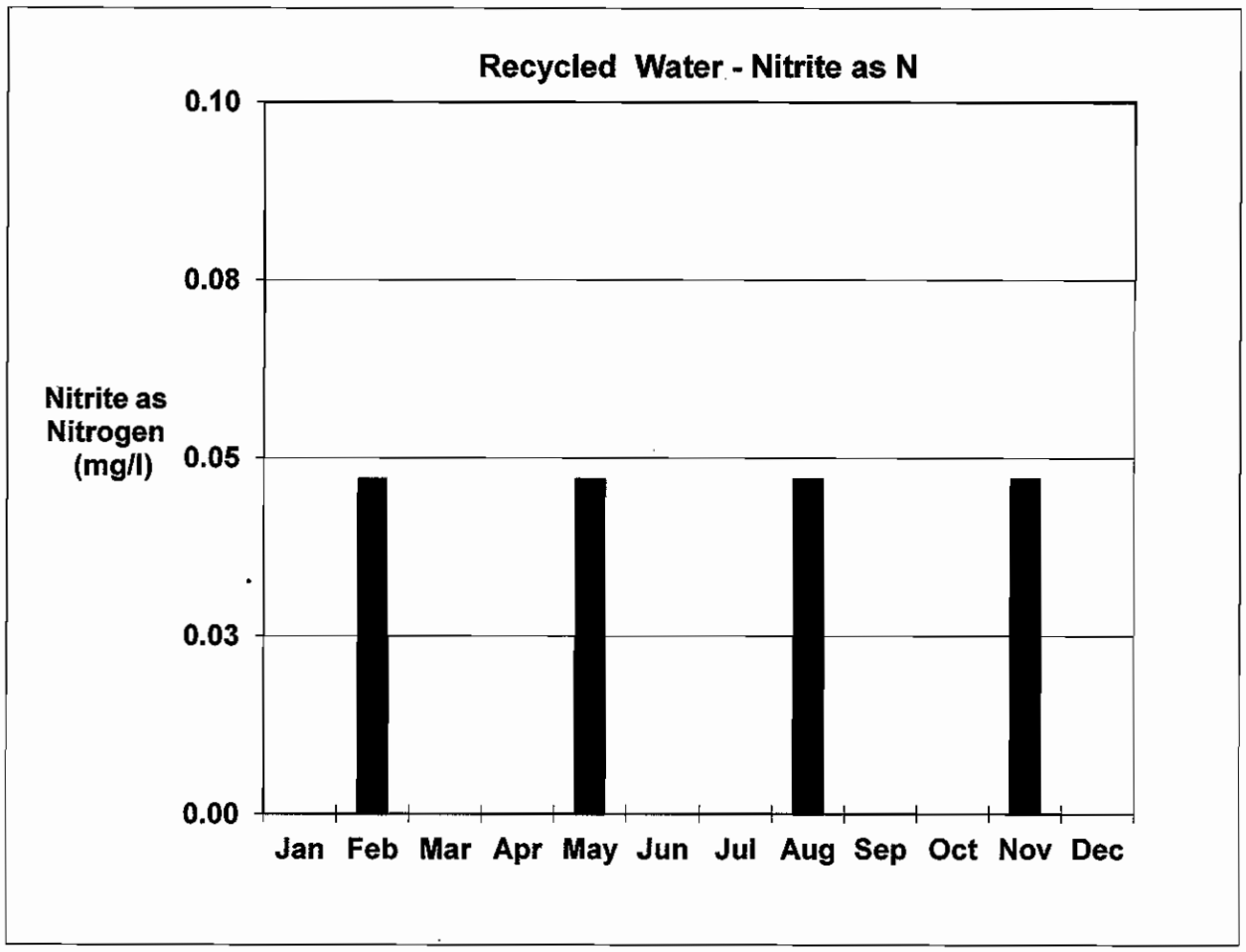
Notes:

1. Nitrate as N + Nitrite as N limit = 10 mg/l.

Figure XV

MOORPARK WASTEWATER TREATMENT PLANT

2011 ANNUAL RECYCLED WATER REPORT



Month	Nitrite-N (mg/l)	Month	Nitrite-N (mg/l)
Jan	--	Jul	--
Feb	< 0.05	Aug	< 0.05
Mar	--	Sep	--
Apr	--	Oct	--
May	< 0.05	Nov	< 0.05
Jun	--	Dec	--

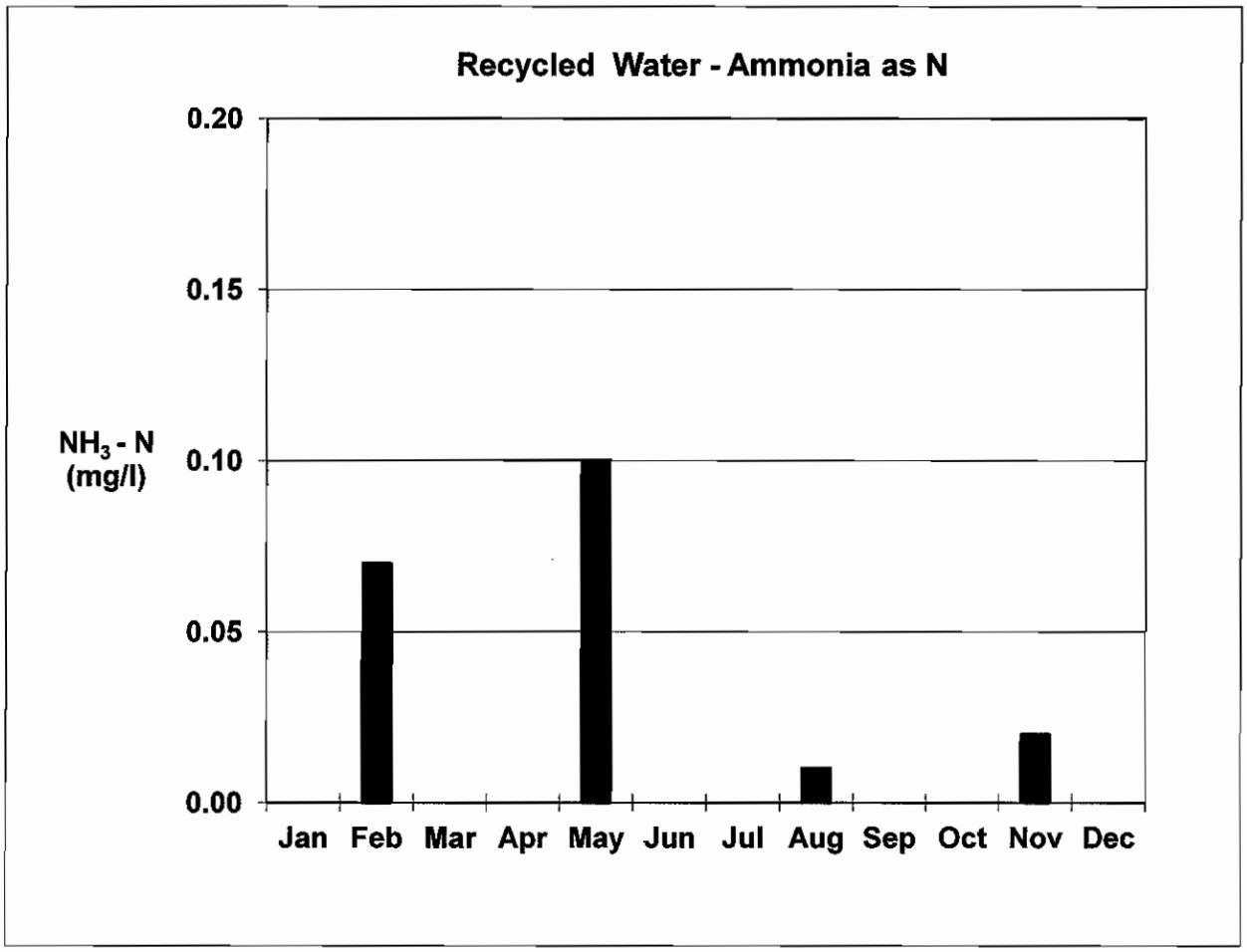
Notes:

1. Nitrate as N + Nitrite as N limit = 10 mg/l.

Figure XVI

MOORPARK WASTEWATER TREATMENT PLANT

2011 ANNUAL RECYCLED WATER REPORT

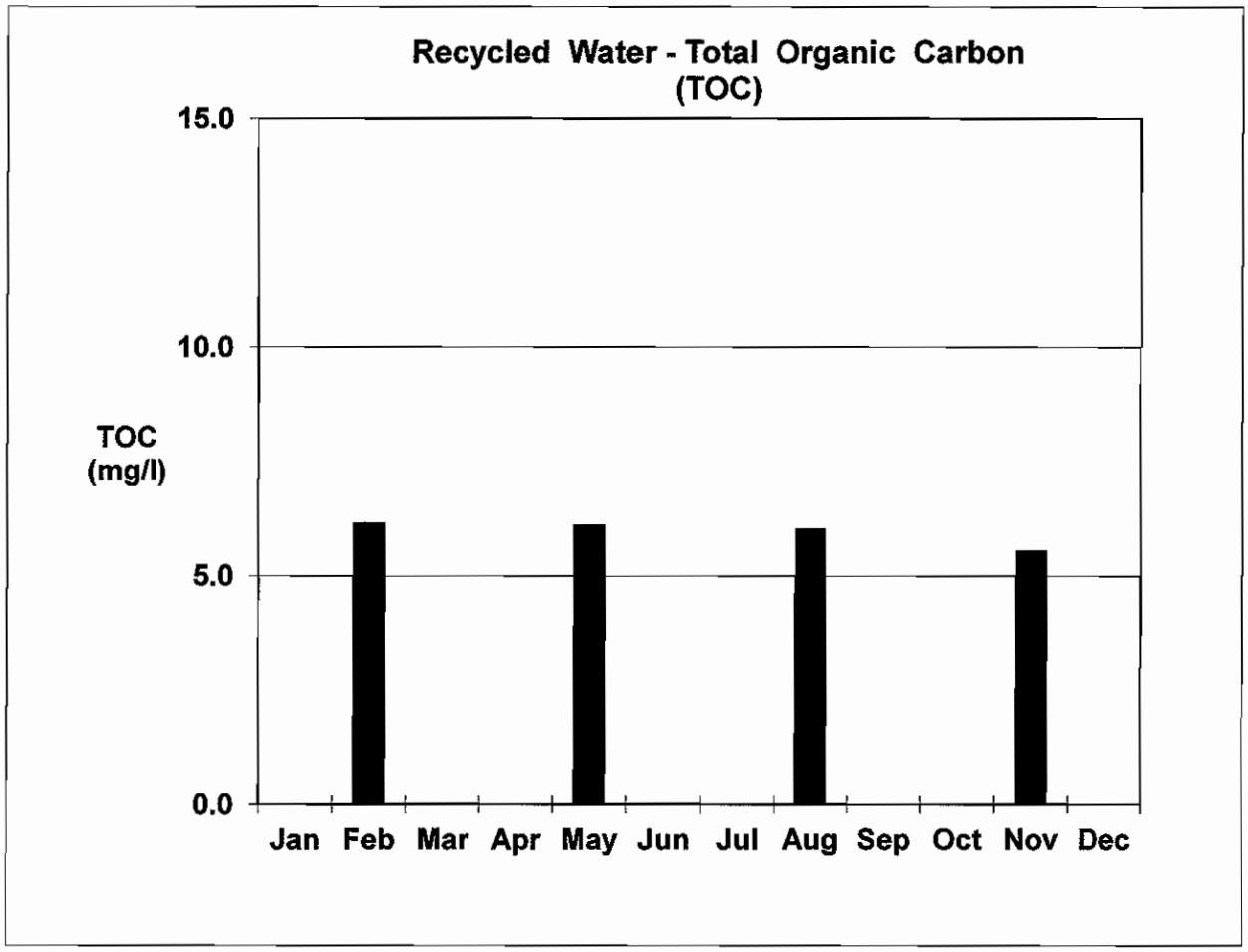


Month	NH_3-N (mg/L)	Month	NH_3-N (mg/L)
Jan	--	Jul	--
Feb	0.07	Aug	< 0.01
Mar	--	Sep	--
Apr	--	Oct	--
May	0.10	Nov	0.02
Jun	--	Dec	--

Figure XVII

MOORPARK WASTEWATER TREATMENT PLANT

2011 ANNUAL RECYCLED WATER REPORT

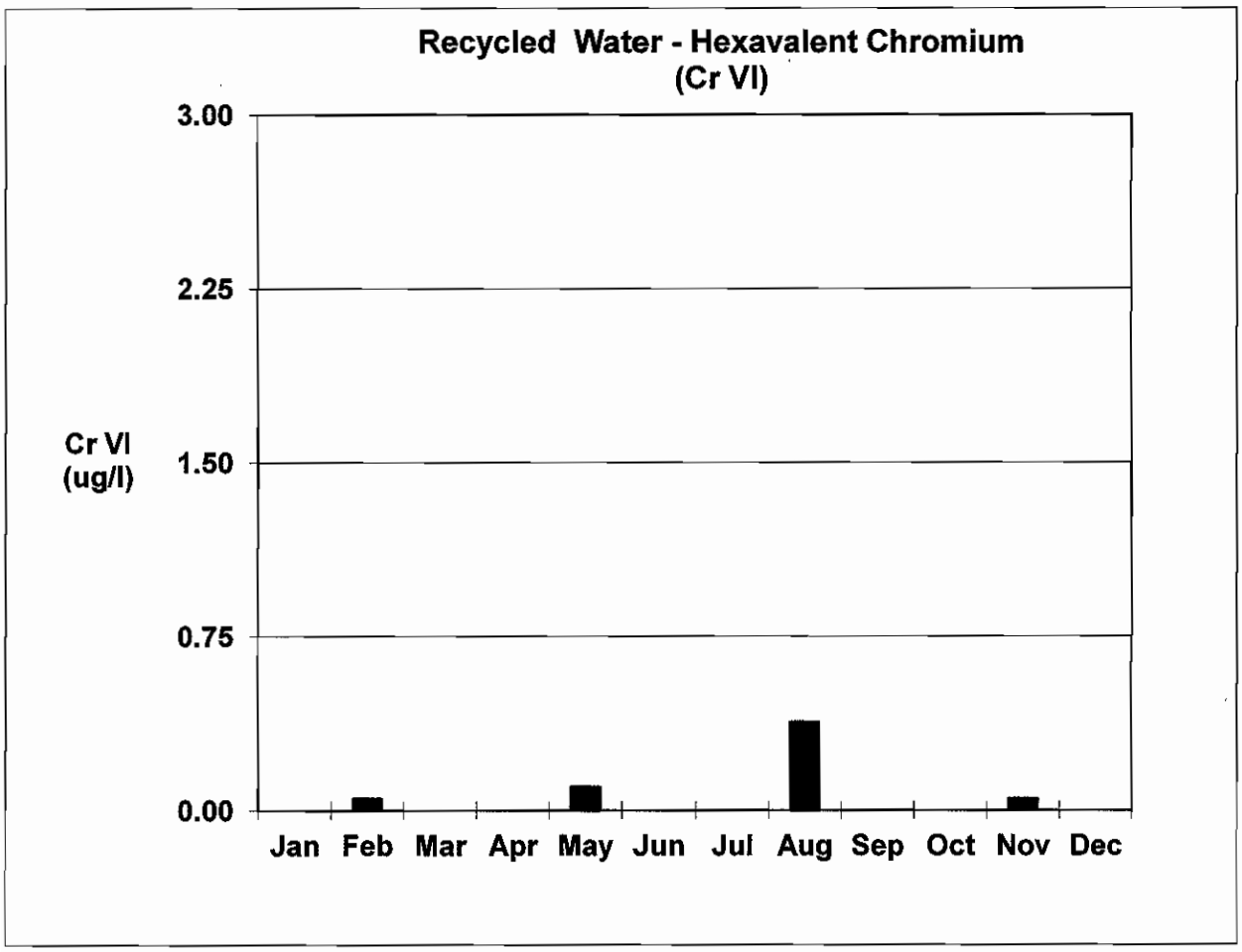


Month	TOC (mg/L)	Month	TOC (mg/L)
Jan	--	Jul	--
Feb	6.14	Aug	6.00
Mar	--	Sep	--
Apr	--	Oct	--
May	6.10	Nov	5.54
Jun	--	Dec	--

Figure XVIII

MOORPARK WASTEWATER TREATMENT PLANT

2011 ANNUAL RECYCLED WATER REPORT



Month	Cr VI (ug/L)	Month	Cr VI (ug/L)
Jan	--	Jul	--
Feb	< 0.05	Aug	0.38
Mar	--	Sep	--
Apr	--	Oct	--
May	0.10	Nov	< 0.05
Jun	--	Dec	--

ATTACHMENT A

ANNUAL LABORATORY TEST RESULTS

VENTURA COUNTY WATERWORKS DISTRICT NO. 1
MOORPARK WASTEWATER TREATMENT PLANT

2011 ANNUAL
WATER RECYCLING MONITORING REPORT

6767 Spring Road
P.O. Box 250
Moorpark, CA 93020

VENTURA COUNTY WATERWORKS DISTRICTS
Water and Sanitation Laboratory

Moorpark Wastewater Treatment Plant
Monitoring / Reporting Program No. 8371
WRR Order No. R4-2002-0028

August 03, 2011

Annual Recycled Effluent Metals & Radioactivity Results

Analyte	Method	Units	Effluent Concentration
Antimony	200.8	ug/L	< 1.0
Arsenic	200.8	ug/L	0.8
Beryllium	200.8	ug/L	< 0.2
Cadmium	200.8	ug/L	< 0.2
Chromium	200.8	ug/L	1.6
Copper	200.8	ug/L	1.9
Lead	200.8	ug/L	0.2
Mercury	245.1	ug/L	< 0.20
Nickel	200.8	ug/L	2.5
Selenium	200.8	ug/L	< 2.0
Silver	200.8	ug/L	< 0.2
Thallium	200.8	ug/L	< 0.2
Zinc	200.8	ug/L	48
Gross Alpha	900.0	pCi/L	0.036 ± 2.22
Gross Beta	900.0	pCi/L	6.25 ± 2.26

< X denotes result below X, detection limit of reporting.

VENTURA COUNTY WATERWORKS DISTRICTS
Water and Sanitation Laboratory

Moorpark Wastewater Treatment Plant
Monitoring / Reporting Program No. 8371
WRR Order No. R4-2002-0028

August 03, 2011

Annual Recycled Effluent Miscellaneous Results

Analyte	Method	Units	Effluent Concentration
Total Cyanide	SM 4500-CN-E	mg/L	< 0.05

VENTURA COUNTY WATERWORKS DISTRICTS
Water and Sanitation Laboratory

Moorpark Wastewater Treatment Plant
Monitoring / Reporting Program No. 8371
WRR Order No. R4-2002-0028

August 03, 2011

Annual Recycled Effluent 608 (Pesticides) Results

Analyte	Units	Effluent Concentration
Aldrin	ug/L	< 0.005
Chlordane	ug/L	< 0.1
Dieldrin	ug/L	< 0.01
4,4'-DDT	ug/L	< 0.01
4,4'-DDE	ug/L	< 0.01
4,4'-DDD	ug/L	< 0.01
Alpha Endosulfan	ug/L	< 0.01
Beta Endosulfan	ug/L	< 0.01
Endosulfan Sulfate	ug/L	< 0.01
Endrin	ug/L	< 0.01
Endrin Aldehyde	ug/L	< 0.01
Heptachlor	ug/L	< 0.01
Heptachlor Epoxide	ug/L	< 0.01
Alpha BHC	ug/L	< 0.01
Beta BHC	ug/L	< 0.005
Gamma BHC	ug/L	< 0.01
Delta BHC	ug/L	< 0.005
Toxaphene	ug/L	< 0.5
PCB 1016	ug/L	< 0.5
PCB 1221	ug/L	< 0.5
PCB 1232	ug/L	< 0.5
PCB 1242	ug/L	< 0.5
PCB 1248	ug/L	< 0.5
PCB 1254	ug/L	< 0.5
PCB 1260	ug/L	< 0.5

< X denotes result below X, detection limit of reporting.

VENTURA COUNTY WATERWORKS DISTRICTS
Water and Sanitation Laboratory

Moorpark Wastewater Treatment Plant
Monitoring / Reporting Program No. 8371
WRR Order No. R4-2002-0028

August 03, 2011

Annual Recycled Effluent 624 (VOA) Results

Analyte	Units	Effluent Concentration
Acrolein	ug/L	< 10.0
Acrylonitrile	ug/L	< 10.0
Benzene	ug/L	< 0.5
Carbon Tetrachloride	ug/L	35.9
Chlorobenzene	ug/L	< 0.5
1,2-Dichloroethane	ug/L	< 0.5
1,1,1-Trichloroethane	ug/L	< 0.5
1,1-Dichloroethane	ug/L	< 0.5
1,1,2-Trichloroethane	ug/L	< 0.5
1,1,2,2-Tetrachloroethane	ug/L	< 0.5
Chloroethane	ug/L	0.8
Chloroform	ug/L	103
1,1-Dichloroethylene	ug/L	1.1
1,2-TransDichloroethylene	ug/L	< 0.5
1,2-Dichloropropane	ug/L	< 0.5
1,2-Dichloropropylene	ug/L	< 0.5
Ethylbenzene	ug/L	< 0.5
Methylene Chloride	ug/L	< 0.5
Methyl Chloride	ug/L	45.2
Methyl Bromide	ug/L	< 0.5
Bromoform	ug/L	5.5
Dichlorobromomethane	ug/L	43.6
Chlorodibromomethane	ug/L	15.4
Tetrachloroethylene	ug/L	0.9
Toluene	ug/L	< 0.5
Trichloroethylene	ug/L	1.0
Vinyl Chloride	ug/L	< 0.5
2-Chloroethyl Vinyl Ether	ug/L	< 0.5
Xylene	ug/L	< 0.5

< X denotes result below X, detection limit of reporting.

VENTURA COUNTY WATERWORKS DISTRICTS
Water and Sanitation Laboratory

Moorpark Wastewater Treatment Plant
Monitoring / Reporting Program No. 8371
WRR Order No. R4-2002-0028

August 03, 2011

Annual Recycled Effluent 625 (Base / Neutral) Results

Analyte[1]	Units	Effluent Concentration
Acenaphthene	ug/L	< 2.0
Benzidine	ug/L	< 10.0
1,2,4-Trichlorobenzene	ug/L	< 2.0
Hexachlorobenzene	ug/L	< 2.0
Hexachloroethane	ug/L	< 2.0
Bis (2-Chloroethyl) Ether	ug/L	< 2.0
2-Chloronaphthalene	ug/L	< 2.0
1,2-Dichlorobenzene	ug/L	< 5.0
1,3-Dichlorobenzene	ug/L	< 5.0
1,4-Dichlorobenzene	ug/L	< 5.0
3,3'-Dichlorobenzidine	ug/L	< 2.0
2,4-Dinitrotoluene	ug/L	< 5.0
2,6-Dinitrotoluene	ug/L	< 5.0
1,2-Diphenylhydrazine	ug/L	< 1.0
Fluoranthene	ug/L	< 2.0
4-Chlorophenyl Phenyl Ether	ug/L	< 2.0
4-Bromophenyl Phenyl Ether	ug/L	< 2.0
Bis (2-Chloroisopropyl) Ether	ug/L	< 2.0
Bis (2-Chloroethoxy) Methane	ug/L	< 2.0
Hexachlorobutadiene	ug/L	< 2.0
Hexachlorocyclopentadiene	ug/L	< 2.0
Isophorone	ug/L	< 2.0
Naphthalene	ug/L	< 2.0
Nitrobenzene	ug/L	< 2.0
N-Nitrosodimethylamine	ug/L	< 5.0
N-Nitrosodi-N-Propylamine	ug/L	< 2.0
N-Nitrosodiphenylamine	ug/L	< 2.0

< X denotes result below X, detection limit of reporting.

VENTURA COUNTY WATERWORKS DISTRICTS
Water and Sanitation Laboratory

Moorpark Wastewater Treatment Plant
Monitoring / Reporting Program No. 8371
WRR Order No. R4-2002-0028

August 03, 2011

Annual Recycled Effluent 625 (Base / Neutral) Results

Analyte[1]	Units	Effluent Concentration
Bis (2-Ethylhexyl) Phthalate	ug/L	< 2.0
Butyl Benzyl Phthalate	ug/L	< 2.0
Di-N-Butyl Phthalate	ug/L	< 2.0
Di-N-Octyl Phthalate	ug/L	< 2.0
Diethyl Phthalate	ug/L	< 2.0
Dimethyl Phthalate	ug/L	< 2.0
Benzo (A) Anthracene	ug/L	< 2.0
Benzo (A) Pyrene	ug/L	< 2.0
Benzo (B) Fluoranthene	ug/L	< 2.0
Benzo (K) Fluoranthene	ug/L	< 2.0
Chrysene	ug/L	< 2.0
Acenaphthylene	ug/L	< 2.0
Anthracene	ug/L	< 2.0
1,12-Benzoperylene	ug/L	< 2.0
Fluorene	ug/L	< 2.0
Phenanthrene	ug/L	< 2.0
1,2,5,6-Dibenzanthracene	ug/L	< 2.0
Indeno (1,2,3-CD) Pyrene	ug/L	< 2.0
Pyrene	ug/L	< 2.0
TCDD (625 SIM)	ug/L	< 2.0

< X denotes result below X, detection limit of reporting.

VENTURA COUNTY WATERWORKS DISTRICTS
Water and Sanitation Laboratory

Moorpark Wastewater Treatment Plant
Monitoring / Reporting Program No. 8371
WRR Order No. R4-2002-0028

August 03, 2011

Annual Recycled Effluent 625 (Acid) Results

Analyte[1]	Units	Effluent Concentration
2,4,6-Trichlorophenol	ug/L	< 5.0
p-Chloro-M-Cresol	ug/L	< 5.0
2-Chlorophenol	ug/L	< 5.0
2,4-Dichlorophenol	ug/L	< 2.0
2,4-Dimethylphenol	ug/L	< 2.0
2-Nitrophenol	ug/L	< 2.0
4-Nitrophenol	ug/L	< 10.0
2,4-Dinitrophenol	ug/L	< 10.0
4,6-Dinitro-O-Cresol	ug/L	< 10.0
Pentachlorophenol	ug/L	< 10.0
Phenol	ug/L	< 5.0

< X denotes result below X, detection limit of reporting.

ATTACHMENT B

ANALYTICAL METHODS
QUALITY ASSURANCE PROCEDURES

VENTURA COUNTY WATERWORKS DISTRICT NO. 1
MOORPARK WASTEWATER TREATMENT PLANT

2011 ANNUAL
WATER RECYCLING MONITORING REPORT

6767 Spring Road
P.O. Box 250
Moorpark, CA 93020

VENTURA COUNTY WATERWORKS DISTRICTS
Water and Sanitation Department Laboratory

QUALITY ASSURANCE DOCUMENT

Revised & Updated - August 2010

Reviewed by Al Sexton – Manager Laboratory Services – August 23, 2010

Ventura County Waterworks Districts
6767 Spring Road
P.O. Box 250
Moorpark, CA 93021

I. INTRODUCTION

The Water and Sanitation Department of the County of Ventura Public Works Agency is responsible for the administration, operation and maintenance of the various waterworks districts.

Ventura County Waterworks Districts (District) Water and Sanitation Laboratory is a registered environmental laboratory, pursuant to the provisions of the California Environmental Laboratory Improvement Act of 1988.

The fields of testing for which this laboratory has been accredited under this Act are indicated on the Environmental Laboratory Accreditation list.

The District operates this laboratory for the purpose of performing water, wastewater and industrial waste monitoring / analysis to meet compliance monitoring program specified by Federal and State agencies. Process control and industrial waste monitoring is also performed.

PURPOSE OF DOCUMENT

The Quality Assurance Document describes the continuing program to ensure the reliability, precision and accuracy of data produced by the laboratory. It emphasizes prevention, early detection and correction of factors resulting in questionable validity of generated data. It discusses the basic factors of water and wastewater measurements that determine the value of analytical results, and provides recommendations for the control of these factors to ensure that analytical results are the best possible. Quality Assurance Program, per these recommendations increases confidence in the reliability of the reported results, and will be strictly adhered to by laboratory personnel.

QUALITY ASSURANCE OBJECTIVES

The Quality Assurance (QA) Program is designed to control and monitor the quality of data generated at the District's Water and Sanitation Laboratory. Implementation of the program ensures compliance with Federal regulatory requirements specified under the National Pollutant Discharge Elimination System (NPDES), Regional Water Quality Control Board, Waste Discharge Requirements, California Department of Public Health requirements and Environmental Laboratory Accreditation Program (CDPH ELAPB).

II. LABORATORY ORGANIZATION

A. QUALIFICATION AND BACKGROUND OF PERSONNEL

1. Laboratory Director - Reddy Pakala

   Education: Rutgers State University
   MS Environmental Engineering

   Experience: County of Ventura, Public Works Agency
   Water and Sanitation Department, Director
   May, 1988 to Present

2. Laboratory Manager – Albert L. Sexton Jr.

   Certification: CWEA Laboratory Analyst Grade III

   Education: University of Phoenix, MBA / MPA

   University of California at Santa Barbara
   BA Geography / Environmental Studies

   Moorpark College, AA Environmental Studies

   Experience: Las Virgenes Municipal Water District

   Laboratory Technician II – January 1989 to June 1999

   County of Ventura, Public Works Agency

   Laboratory Manager – June 1999 to Present

3. Laboratory Technician(s) – Javier Ambriz and Nick Steffen

   Certification: CWEA Laboratory Analyst Grade I

   Education: Biochemistry, Environmental Sciences with Chemistry backgrounds.

   Experience: Water/Wastewater laboratory and/or related field work.

B. RESPONSIBILITY OF PERSONNEL

1. Laboratory Director:

The Laboratory Director is responsible for overall coordination of on-going operation of the state certified chemical and bacteriological laboratory at the sanitation plant, for the purpose of meeting the quality control standards and requirements mandated by Federal, State and local regulatory agencies.

2. Laboratory Manager:

The Laboratory Manager is responsible for planning, development, regulatory and permit compliance for the Districts under the jurisdiction of the County of Ventura. Set-up laboratory procedures assure quality control and assist in the planning and coordination of the entire laboratory. Responsible for supervising laboratory staff, operations and sample analysis.

3. Laboratory Technician(s):

The Laboratory Technician(s), under general supervision, are responsible for performing laboratory work, including analysis of water, wastewater and related work as assigned.

The Technician receives, collects and analyzes a variety of samples for standard routine, chemical, bacteriological and physical analyses. Maintains lab records, sample logs, and data books. Assist in the preparation of monthly, quarterly and annual reports as required by the permits. Assists and prepares all standard solutions, reagents, and media. Assists and operates, maintains, and repairs a variety of laboratory equipment.

III. SAMPLING PROCEDURES

A. METHODS

The generation of quality data begins with the collection of the sample. Thus the integrity of the sample collection process is of paramount importance.

Samples are collected, handled and preserved in accordance with Standard Methods for The Examination Of Water And Wastewater, 19th edition, and Methods for Chemical Analysis of Water and Wastes, EPA – 600/4 – 79- 020, revised March 1983. Samples must be collected in such a way that no foreign

material is introduced into the sample and no material of interest escapes from the sample prior to analysis. To ensure sample integrity, the following must be observed:

- Samples must be collected in appropriate containers. Generally, glass containers are used for collecting organic parameters. Polyethylene plastic containers are to be used for collecting samples to be tested for inorganic and metal parameters.

- Sample containers and sampling devices must be properly prepared to ensure the sample is not contaminated with the material of interest during the collection process.

- Appropriate volumes of sample must be collected to ensure that the required detection limits can be met and quality control samples may be analyzed.

- Samples must be properly preserved to minimize the loss of materials of interest due to absorption, chemical or biological degradation, or volatilization.

- Chain of custody documentation must be completed and samples must be properly shipped to the laboratory in an appropriate time frame to ensure that analysis-holding times can be met.

- Samples are taken daily, weekly, monthly, quarterly, semi-annually, and annually in accordance with approved sampling and monitoring program plan(s).

B. SAMPLE CUSTODY

After sampling, each sample proceeds through an orderly process upon receipt to ensure integrity of both the sample and the documentation required throughout analysis. Each sample is checked for correct identification. Identification is made by marking the container or placing a label on the container with the field sample ID number corresponding to the laboratory field sampling worksheet and/or Chain of Custody (COC). Sample source name, location of sampling, date & time sample was collected, sample collector, analysis required or completed and preservation technique used are to be recorded on each sample and on the COC.

The sample will be relinquished to the lab person who will sign and date the field sampling worksheet and/or COC and assume custody of the sample for analysis in the laboratory.

The lab personnel will ensure samples are properly stored and maintained prior to analysis. EPA has established holding time requirements for analysis. The EPA requirements are followed and samples received outside holding limits are rejected and not analyzed by the laboratory.

IV. CALIBRATION PROCEDURES AND FREQUENCY

A. REAGENT, STANDARD AND MEDIA PREPARATION

Reagents in the laboratory will be analytical reagent grade or better. Lesser quality reagents than specified for the method will not be used. Any chemical, upon delivery, will be checked to see that it meets analytical reagent grade specifications. The reagent container will be marked with the date of receipt, date opened and initialed.

Distilled or deionized water will be used in the preparation of reagents and standards. They must only be prepared with the highest degree of care and technique. Reagents that have a short life should be prepared only in small amounts. They should be re-standardized depending on their stability. They should be checked for signs of deterioration, such as discoloration, formation of precipitates, turbidity, or change in concentration. Solutions prepared in the lab should be accurately labeled as to composition, concentration, date of preparation, and preparer's name. Commercially prepared reagents and standard solutions may be utilized once they are checked for accuracy.

Primary standards should be obtained from the National Bureau of Standards whenever possible. Other reagents, standards and media are prepared in accordance with Standard Methods.

As reagents, stock standards and media are prepared; they are recorded into an appropriate logbook. Each entry contains the preparation date, lot number and supplier, preparer's initials, the amount of analyte used, how the reagent was made, and any pertinent information.

B. INSTRUMENT CALIBRATION AND TUNING

Calibration of instrumentation is required to ensure the analytical system is operating with proper sensitivity. Instrumentation is standardized, calibrated and maintained in accordance with EPA guideline procedures for quality control and the instrument manufacturer's manuals. A typical calibration is performed using an appropriate series of standard solutions encompassing the entire linear range of interest. A minimum of three standards and a blank are used to establish a calibration. Standard operating procedures (SOP's) are utilized for specific calibration instructions. Calculated values for standards must be within

10% of expected values. Calibration curves are reestablished annually at a minimum or when reagent lots change.

Initial calibration curve verification (ICV) is performed before sample analysis. An external reference sample or an independent standard may provide ICV. Analysis cannot proceed if the ICV is unacceptable.

Continuing calibration verification (CCV) is performed when large amounts of samples are analyzed or if specified in the SOP for that procedure. If the CCV is unacceptable, samples analyzed after the last successful CCV or ICV will be reanalyzed. The analytical run will be completed with a CCV. Calibration curves are evaluated for linearity by correlation factor ($r > 0.995$), % relative standard deviation or equivalent.

In the event of an instrument breakdown or malfunction in which the analyst can not find the source of the problem, or where it can not be fixed in-house, the instrument is sent to the manufacturer or a reputable service company for repair.

1. Personnel Training

   The only persons authorized to operate the instruments are those that are specifically trained.

2. Maintenance Records

   Records of calibration, maintenance and servicing are kept in instrument specific log / notebooks.

3. Thermometer Calibration

   The laboratory equipment used in the ovens and incubators are checked periodically against a certified thermometer. Calibration corrections are marked on each thermometer where necessary and recorded in a specific logbook.

4. Frequency of Calibration

   Calibration frequency of instrumentation is documented in the analytical notebook dedicated for each analysis.

V. ANALYTICAL PROCEDURES

The analytical methods performed by District's Water and Sanitation Laboratory are performed in compliance with current EPA guidelines or as specified by various Federal, State, and local regulatory agencies. The standard references most often

used include: Standard Methods for the Examination of Water and Wastewater, 19th edition, and Methods for Chemical Analysis of Water and Wastes, EPA – 600/4 – 79-020, revised March 1983.

Methods used in the laboratory are specified in the ELAPB certification for Field of Testing (FOT) # 101, 107 and 108 and /or in the bench level SOP's. The SOP's assist laboratory staff in the use of the analytical methods and specify actual procedures, techniques and equipment used in the laboratory. Non-certified procedures / methodologies are occasionally used for non-regulatory operational testing.

VI. DATA REDUCTION, VALIDATION AND REPORTING

Data reduction, validation and reporting are the final features of a QA program. Laboratory staff is responsible for generating valid data.

A. DATA REDUCTION

Laboratory staff have the primary responsibility for reducing raw data. This process consists of converting raw data values into final reportable values. This is achieved by comparing individual sample results to a calibration curve, except for methods that yield direct concentrations. The data is then accounted for dilutions made during the procedure and reporting limits are observed. The reduced data is transferred onto data report worksheets for report generation. Calculation methods to account for sample weights or volumes are specified in the analyte SOP. Once the raw data is collected and evaluated by the laboratory staff, the laboratory manager reviews and evaluates the laboratory data prior to signing and releasing them for report generation.

B. DATA VALIDATION and REPORTING

Laboratory staff performs an initial data review after completion of each analytical analysis. Recovery and precision results are calculated, and are compared to established control limits. If laboratory staff determine that any part of the analysis to be out of control, the laboratory manager is notified and a corrective action process begins. The data is then compared against current control limits. Control limits for Relative Percent Difference (RPD) are set at 20% and recovery limits are set at 80% - 120% until enough data is collected and internal control limits are established.
Independent means of verifying results may be used to validate data. These include Cation/Anion balance, EC & TDS ratios, and EC/TDS relationships.

Analyte specific notebooks containing raw data are maintained and data entries must be recorded in permanent black ink. If errors are made in recording raw data, laboratory staff follow instructions outlined in data reporting procedures. Logbooks are

used and maintained for recording microbiological media lots, reagent preparations, and ion specific electrode calibrations.

Once the laboratory manager has validated the data, a final report is generated and submitted for reporting and filing. The final report is attached to the raw data worksheet and is reviewed for errors and completeness.

VII. INTERNAL QUALITY CONTROL CHECKS

The Quality Assurance/Quality Control (QA/QC) program monitors data quality with internal QC checks, which are used to determine if laboratory operations are in control during data generation and what effects does the sample matrix have on the data being generated. This is accomplished by performing matrix spikes, matrix duplicates, matrix duplicate spikes, and through the use of EPA approved external quality control check samples and control limits.

A. INSTRUMENT QC CHECKS

Analytical instruments are calibrated prior to use as specified in the laboratory SOP's. Whenever calibration can not be achieved or measurement of a calibration standard is not within specified limits, the instrument will be considered malfunctioning and will be reported to the Laboratory Manager. Any malfunctioning instrument will not be used until appropriate maintenance or repairs are performed and documented.

B. DUPLICATE SAMPLES

Results from duplicate sample analyses are a measure of precision. One sample in ten is split for duplicate analysis in order to verify that acceptable precision is achieved. If more than one sample matrix is involved, the above criteria apply to each sample matrix. If acceptable precision is not verified, further analyses are halted until a cause has been identified and corrective action taken. If samples are expected to be clean, duplicate water spikes are performed in order to evaluate precision.

With the exception of gravimetric and titrimetric analysis, matrix spikes and matrix duplicate are also performed on one in ten samples for each separate matrix being analyzed. Matrix spikes and matrix duplicate spikes verify accuracy of the method through the determination of recovery calculations.

C. CERTIFIED REFERENCE STANDARDS

The laboratory analyzes EPA certified external reference standards along with the samples in order to certify the accuracy of results and ICV. The expected results for standards of this type are known. These standards enable problems to be detected and corrected at a very early stage of the analysis. Results not within the acceptance range are investigated and corrective actions taken to ensure those results are within the acceptable range prior to the analysis of further samples.

D. LOG BOOKS

Logbooks documenting the preparation of standard and surrogate solutions are maintained. Information regarding the source of the standard, lot number, weight or volume of standard used, date prepared and name of preparer are included. Reagents used to prepare standard and surrogate solutions are checked for purity prior to use. Logbooks documenting the use of each analytical instrument are maintained; a description of every sample (including standards, duplicates, spikes and blanks) is recorded in the logbook as the samples are analyzed. Likewise, log books documenting periodic maintenance and repairs to each instrument are maintained.

VIII. PERFORMANCE AND SYSTEM AUDITS

The District's Water and Sanitation Laboratory participates in a variety of Federal and State certification programs, (i.e., EPA's DMR study and California's ELAPB program,) that subjects the laboratory to stringent system and performance audits on a regular basis.

Performance audits are quantitative in nature and are designed to evaluate specific analytical measurement systems. They may be open or blind and may originate with the laboratory, or with a regulatory agency. Samples of a known composition are obtained from the EPA, the National Institute of Science and Technology (NIST, formerly the National Bureau of Standards,) or from a commercial source such as ERA. These audit samples are analyzed along with our regular sample workload. Results are compared with acceptance limits and communicated to the analysts following the completion of the work. Correct results are acknowledged publicly within the laboratory to promote a general appreciation for quality while incorrect results are addressed by a formal notice with a request for corrective action. System audits are qualitative reviews of the laboratory quality control measurement system designed to verify that these systems are being used appropriately. A partial systems audit might be as simple as a short question and answer session. These might reveal

procedural misunderstandings, which could be corrected on the spot and/or by rewriting the SOP with improved clarity.

IX. PREVENTIVE MAINTENANCE

To minimize down time and interruption of analytical and/or microbiological work, preventive maintenance is routinely performed. Designated laboratory personnel are trained in routine maintenance procedures on laboratory equipment. When repairs are necessary, either trained staff performs them or trained service engineers employed by the manufacturer or qualified service company personnel. A service contract has been utilized only for balances. The laboratory has a maintenance schedule and manufacturer's product manual that are utilized as a reference.

Detailed SOP's are on file that describes preventive maintenance procedures. The laboratory also maintains a detailed logbook documenting the preventive maintenance and repairs performed on each analytical instrument or piece of equipment.

X. PROCEDURES USED TO ASSESS PRECISION, ACCURACY AND COMPLETENESS

The effectiveness of a QA program is measured by the quality of data generated by the laboratory. Data quality is judged in terms of its precision, accuracy, representativeness, completeness and comparability. These terms are described as follows:

A. PRECISION

Precision is a measure of how well a particular analytical result can be reproduced. This is usually determined by running duplicate analyses on the same sample. Precision can be expressed by the standard deviation.

B. ACCURACY

Accuracy is a measure of how close the determined value is to the real value. Relative errors express the difference between the measured and the actual amounts. This calculated amount is the percent recovery and is determined by running spiked samples.

C. REPRESENTATIVENESS

Representativeness is the degree to which data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Analytical and/or

microbiological data should represent the sample analyzed regardless of the heterogeneity of the original sample matrix.

D. COMPLETENESS

Completeness is a measure of the amount of valid data obtained from a measurement system compared with the amount that was expected to be obtained under normal conditions. To be considered complete, the data set must contain QC check analyses verifying precision and accuracy for the analytical protocol. In addition, data is reviewed in terms of stated goals in order to determine if the database is sufficient.

E. COMPARABILITY

Comparability expresses the confidence with which one data set can be compared to another data set measuring the same property. Comparability is ensured through the use of established and approved analytical/microbiological methods, consistency in the basis of analysis (wet weight, volume, etc.,) and consistency in reporting units (ppm, ppb, etc.)

F. CORRECTIVE ACTION

When errors, deficiencies, or out-of-control situations exist, the QA program provides systematic procedures, called "corrective actions," to resolve problems and restore proper functioning to the analytical and/or biological system.

Laboratory personnel are alerted that corrective actions may be necessary, if:

- QC data are outside the warning or acceptable limits for precision and accuracy;
- Deficiencies are detected during QA internal or external audits or from the results of performance check samples.

Corrective action procedures are often handled at the bench level. Laboratory staff should make an initial investigation, which may include checking calculations, checking instrument for calibration drift and/or re-reading samples to ensure proper documentation. Corrective actions may be needed to resolve the problem and restore proper functioning to the analytical system. If the problem persists or can not be identified, the matter is referred to the Laboratory Manager for further investigation.

XI. SAFETY PRACTICES

Laboratory safety practices have been established for each type of analytical procedure. Laboratory staff has been trained on safe work practices and the hazards involved in performing work in an analytical laboratory. Method specific safety issues are addressed in the method specific SOP and are reviewed before an unfamiliar analysis is performed by laboratory staff.

Minimum personal protective equipment has been established for each procedure. Chemicals are stored and segregated by hazard class in the laboratory. Safety equipment is inspected and tested routinely.

ATTACHMENT C

OPERATOR CERTIFICATION

VENTURA COUNTY WATERWORKS DISTRICT NO. 1
MOORPARK WASTEWATER TREATMENT PLANT

2011 ANNUAL
WATER RECYCLING MONITORING REPORT

6767 Spring Road
P.O. Box 250
Moorpark, CA 93020

VENTURA COUNTY WATERWORKS DISTRICT NO. 1
MOORPARK WASTEWATER TREATMENT PLANT
2011 ANNUAL WATER RECYCLING MONITORING REPORT

OPERATOR CERTIFICATION

(As of December 31, 2011)

David Borunda	Wastewater Treatment Plant Operator 4
Augustine Godinez	Wastewater Treatment Plant Operator 2 Collection System Maintenance Technologist 4 Water Distribution Operator D4 Water Treatment Operator T2
Sean Hays	Wastewater Treatment Plant Operator 1
James Kawaguchi	Wastewater Treatment Plant Operator 1 Water Distribution Operator D2 Water Treatment Operator T1
Jack Kramer	Wastewater Treatment Plant Operator 5 Water Distribution Operator D3 Water Treatment Operator T2
Reed Kregel	Wastewater Treatment Plant Operator 1 Water Distribution Operator D1
Ryan Lokkesmoe	OIT Wastewater Treatment Plant Operator 1
Issac Lopez	OIT Wastewater Treatment Plant Operator 1
Steve Murray	Wastewater Treatment Plant Operator 4

ATTACHMENT D

OPERATION & MAINTENANCE MANAGEMENT PLAN

VENTURA COUNTY WATERWORKS DISTRICT NO. 1
MOORPARK WASTEWATER TREATMENT PLANT

2011 ANNUAL
WATER RECYCLING MONITORING REPORT

6767 Spring Road
P.O. Box 250
Moorpark, CA 93020

VENTURA COUNTY WATERWORKS DISTRICT NO. 1
MOORPARK WASTEWATER TREATMENT PLANT
2011 ANNUAL WATER RECYCLING MONITORING REPORT

OPERATION & MAINTENANCE MANAGEMENT PLAN

The Operation and Maintenance Manual was prepared by Hasaan Consultants, Ventura, CA, in April 2003. There is no review scheduled at the present time. The manual is complete and valid for the current facilities.

ATTACHMENT E

TREATMENT PROCESS CHEMICALS & QUANTITIES

VENTURA COUNTY WATERWORKS DISTRICT NO. 1
MOORPARK WASTEWATER TREATMENT PLANT

2011 ANNUAL
WATER RECYCLING MONITORING REPORT

6767 Spring Road
P.O. Box 250
Moorpark, CA 93020

VENTURA COUNTY WATERWORKS DISTRICT NO. 1
MOORPARK WASTEWATER TREATMENT PLANT
2011 ANNUAL WATER RECYCLING MONITORING REPORT

CHEMICALS USED IN TREATMENT PROCESS

TRADE NAME	CHEMICAL NAME	TOTAL QUANTITY PURCHASED IN 2011
Liquid Bleach	Sodium Hypochlorite 12.5%	69,748 Gallons
Clarifloc C-2005, C-6286	Aluminum Sulfate	152,280 Pounds

FINAL

ENVIRONMENTAL IMPACT REPORT
MOORPARK WASTEWATER TREATMENT PLANT RECLAIMED WATER DISTRIBUTION SYSTEM

April 1997

State Clearinghouse No. 96021009

Ventura County Waterworks
District No. 1

Woodward-Clyde

Woodward-Clyde Consultants
130 Robin Hill Road, Ste. 100
Santa Barbara, California
(805) 964-6010 Fax (805) 964-0259

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APPENDIX A INITIAL STUDY AND NOP COMMENTS

APPENDIX B COMMENTS ON THE DRAFT EIR AND RESPONSES

1.1 PROJECT BACKGROUND

The Moorpark Wastewater Treatment Plant (MWWTP) is owned by Ventura County Waterworks District No. 1 (District) and is operated by the County of Ventura Public Works Agency. The treatment plant is located between Highway 118 (Los Angeles Avenue) and Calleguas Creek (locally referred to as Arroyo Las Posas) approximately four miles west of the City of Moorpark (Figure 1). The District's service area includes the City of Moorpark and adjacent unincorporated areas under the jurisdiction of the County of Ventura. In addition to providing wastewater treatment and disposal services, the District also provides potable water to municipal, industrial and agricultural customers within its service area.

The MWWTP was originally constructed in 1965 and was designed as an interim treatment facility with a capacity of 1.0 million gallons per day (MGD). In 1982, the plant was expanded to a permanent 1.5 MGD facility and in 1991 the plant was upgraded to provide a secondary treatment capacity of 3.0 MGD. The most recent modifications (completed in 1993) involved the addition of treatment facilities to allow for the tertiary treatment of up to 1.5 MGD of effluent. Currently effluent from the MWWTP is treated to secondary levels and is discharged to on-site percolation/evaporation ponds for disposal. The tertiary treatment facility was constructed to allow 1.5 MGD of the effluent to be treated to a tertiary level and discharged directly into Arroyo Las Posas. However, except for a brief period in 1995, no discharge to the creek has occurred. Treatment of the effluent to tertiary levels also provided the District with the option to reclaim the water for beneficial reuse.

The proposed project is a distribution system designed to distribute tertiary-treated reclaimed water from the MWWTP for use at agricultural and/or landscape irrigation reuse sites in the District's service area. The distribution system would provide up to 1.5 MGD of tertiary-treated reclaimed water. The project would involve the construction of reclaimed water storage ponds, pump stations, and a series of pipelines to deliver the water (Figure 2). A lift station and other minor pipeline connections would be constructed to link the distribution system to the existing tertiary treatment facilities.

A Reclaimed Wastewater Feasibility Study (Boyle Engineering, 1990) was conducted to evaluate the feasibility of supplying reclaimed water for irrigation of agricultural and landscaping operations in the project area. The study showed that there is a large potential market for reclaimed water near the MWWTP.

1.2 CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) COMPLIANCE

1.2.1 Overview of Prior CEQA Compliance

The District, as lead agency, previously prepared and certified a Final EIR (State Clearinghouse [SCH] No. 87051314) for the MWWTP expansion (from 1.5 MGD to 3.0 MGD treatment capacity) on May 17, 1988. Subsequently, based on further study, the project was revised by substituting process improvements for construction of some of the treatment works and an

addendum to the previously prepared EIR was prepared to address the potential impacts of the proposed project, as revised. The addendum and final EIR were considered, and the revised project was approved on November 7, 1989. A supplemental EIR (EIR No. 0901-9783) was prepared to address the potential impacts of construction of tertiary treatment facilities to allow discharge of up to 1.5 MGD into Arroyo Las Posas. The Ventura County Board of Supervisors certified the Supplemental EIR and approved the revised project on June 4, 1991. Both the Final and Supplemental EIRs considered the possible long-term use of treated effluent from the MWWTP for agricultural and landscape irrigation.

1.2.2 Purpose and Scope of the EIR

As discussed previously, several CEQA documents have been prepared to address upgrades and modifications to the MWWTP. The current project is a logical progression in the District's long-term intent to reclaim the wastewater treatment plant effluent for beneficial reuse as identified in these prior documents. Although these prior CEQA documents identified the intent to beneficially reuse the treatment plant effluent, no information was available at the time the documents were prepared regarding the proposed distribution system components or environmental effects.

Section 15162(a)(1) of the State *CEQA Guidelines* specifies that a subsequent EIR be prepared when substantial changes are proposed to a project which will require major revisions of the previous EIR due to the involvement of new significant effects. The proposed project includes new project components and involves construction of project components in new areas not a part of the existing MWWTP site. In addition, the Initial Study (Appendix A) prepared for the project indicated that the project could result in significant adverse impacts to the environment. These new project components and new impacts were not evaluated in the previous CEQA documents. Hence, to satisfy CEQA requirements, a subsequent EIR is being prepared for the reclaimed water distribution system project. Copies of the earlier final EIR (State Clearinghouse [SCH] No. 87051314), addendum, and supplemental EIR (EIR No. 0901-9783) for the MWWTP are available for public review at the District's office.

In accordance with Section 15121(a) of the *CEQA Guidelines* the purpose of an EIR is to serve as an informational document that:

> *"...will inform public agency decision-makers and the public generally of the significant environmental effects of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project..."*

The EIR addresses both site-specific and cumulative effects of the proposed project in accordance with the provisions set forth in the *CEQA Guidelines*. The focus of this EIR is to address potentially significant environmental issues identified in the Initial Study and to recommend feasible mitigation measures, where possible, that reduce or eliminate significant environmental impacts. The level of detail in the EIR is consistent with Section 15151 of the *CEQA Guidelines*:

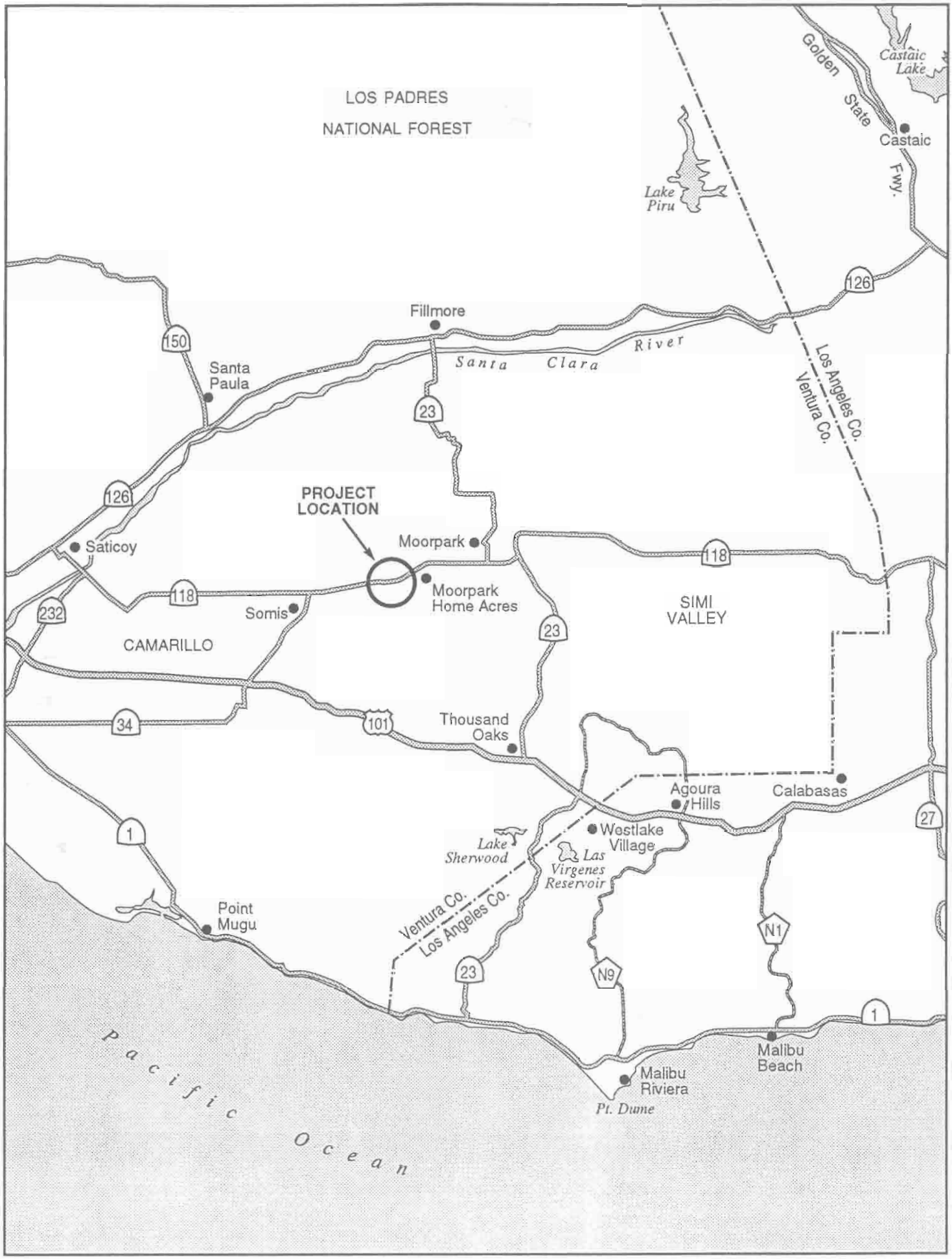


Figure 1. Regional Location

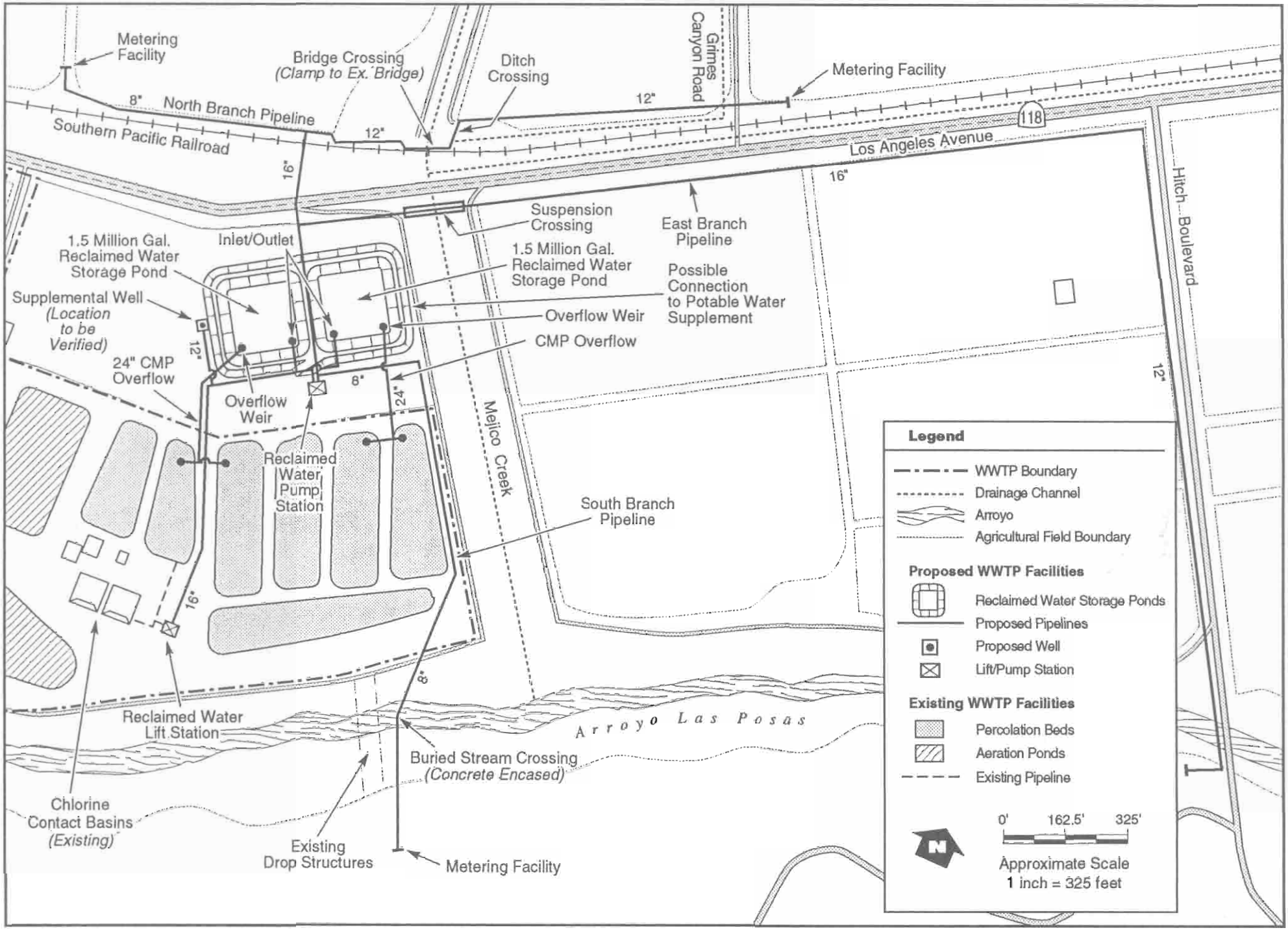


Figure 2. Overview of Proposed Facilities

> *"An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effect of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among experts. The courts have not looked for perfection, but for adequacy, completeness, and a good faith effort at full disclosure."*

The alternatives section of the EIR, prepared in accordance with Section 15126(d) of the *CEQA Guidelines*, focuses on a reasonable range of alternatives capable of eliminating or reducing significant adverse effects associated with the proposed project. In addition, the EIR identifies the "environmentally superior alternative".

The EIR focuses on the following key issues which were identified in the Initial Study and from comments received on the Notice of Preparation (refer to Appendix A):

- General Plan Consistency
- Agricultural Resources
- Groundwater Quantity
- Paleontologic Resources
- Archaeological Resources

In addition, pursuant to Section 21002.1(e) of the *CEQA Statutes*, a brief discussion is provided regarding potential environmental effects determined not to be significant.

1.2.3 Development of the Final EIR

The public Draft EIR was circulated for a 45-day review period. At the end of the review period, a hearing was conducted by Ventura County Environmental Report Review Committee (ERRC) on March 5, 1997. At that hearing, the District summarized comments received on the Draft EIR and presented draft responses to comments to the ERRC for their consideration and approval.

Appendix B of Final EIR contains all comments received on the Draft EIR and responses by the District to the comments. Portions of the EIR have been revised in response to the comments. These sections have been marked with a vertical line in the right hand margin.

1.3 CEQA LEAD, RESPONSIBLE AND TRUSTEE AGENCIES

Ventura County Water Works District No. 1 is lead agency for this subsequent EIR since it has primary responsibility for approving and implementing the project. Ventura County, represented by its Resource Management Agency (Planning Division), would be a responsible agency if modification of the Conditional Use Permit under which the MWWTP operates is required. A determination of the consistency with the General Plan pursuant to Government Code Section 65402 would be required for acquisition of the site for construction and operation of the reclaimed water storage ponds.

The District will need to apply for and receive water reclamation requirements (WRRs) from the Regional Water Quality Control Board (Los Angeles Region) to allow for distribution and use of the reclaimed water. The California Department of Fish and Game (CDFG) is a trustee agency with respect to biological resources potentially affected by the project. If construction of pipelines across natural drainages results in modification of the streambed or banks acquisition of a 1601 Streambed Alteration Agreement from CDFG would also be required. The State Department of Conservation must be notified if a public agency intends to acquire lands enrolled in the Land Conservation Act (Williamson Act). The District has provided this notification.

Table 1-1 provides an overview of potential responsible, trustee, or other permitting agencies, their potential approval or permitting role, and the applicability of their approval or permits to the proposed project.

TABLE 1-1

POTENTIALLY REQUIRED PERMITS, APPROVALS OR AUTHORIZATIONS

Responsible, Trustee, or Permitting Agency	Permit, Approval, or Review	Potential Applicability
FEDERAL		
U.S. Army Corps of Engineers	404 Individual or Nationwide Permit	Discharge of dredge or fill material into "waters of the U.S."
STATE		
Caltrans	Encroachment Permit	Construction/trenching within the right-of-way of Highway 118
Regional Water Quality Control Board	Water Reclamation Requirements	Distribution and use of reclaimed water from the MWWTP
	401 Water Quality Certification	404 Individual or Nationwide Permit
	NPDES Permit	Discharge of groundwater into the arroyo during well development
	Construction Stormwater Permit	Construction activities which disturb 5 or more acres
California Department of Fish and Game	1601 Streambed Alteration Agreement	Pipeline installation within Arroyo Las Posas and across Grimes Canyon Wash
CalOSHA	Trenching and Excavation Permit	Trenching greater than five feet deep
California Department of Conservation	Notice of Acquisition	Acquisition of lands enrolled in the Land Conservation (Williamson) Act
LOCAL PERMITS		
Ventura County Resource Management Agency (Planning Division)	Modification of Conditional Use Permit	Construction and operation of the Reclaimed Water Distribution System
	Government Code Section 65402 General Plan Consistency Determination	Acquisition of APN 163-030-705 for the reclaimed water storage ponds
Ventura County Public Works Agency Transportation Department	Encroachment Permit	Pipeline installation in Hitch Boulevard right-of-way
Ventura County Public Works Agency Water Resources Division	Well Installation Permit	Construction and operation of the supplemental groundwater well
Ventura County Flood Control District	Encroachment Permit	Installation of pipelines in Arroyo Las Posas and across Grimes Canyon Wash

2.1 SUMMARY OF IMPACTS

A summary of the impacts of the project is presented in Table 2-1 for the environmental issues evaluated in the EIR. Direct, indirect, and cumulative impacts of the construction and operation of the project were identified and classified using the following system:

- **Class I Impacts**. Significant environmental impacts that cannot be avoided or mitigated to a less than significant level. For these impacts, the District must issue a "Statement of Overriding Considerations" pursuant to Section 15092(b) of the *CEQA Guidelines* if the project is approved.

- **Class II Impacts**. Significant environmental impacts that can be mitigated to a less than significant level. The District must make "findings" under Section 15091(a) of the *CEQA Guidelines* if the project is approved.

- **Class III Impacts**. Other environmental impacts that are potentially adverse but not significant. Mitigation measures may be recommended but are not required for adverse but less than significant impacts.

- **Class IV Impacts**. Beneficial Impacts.

2.1.1 Unavoidable Significant Impacts (Class I Impacts)

Based on the analysis conducted in the EIR, direct and indirect impacts to agricultural resources (loss of prime farmlands) would be significant and unavoidable.

2.1.2 Significant But Mitigable Impacts (Class II Impacts)

One potentially significant archaeological site (CAV-VEN- 228A) is located along a knoll just north of the proposed location of the north branch pipeline associated with Distribution Alternative 1. The site will not be directly affected by installation of the pipeline; however, if improperly located, construction staging and/or access could disturb cultural resources associated with this site. Avoidance and/or Phase II evaluation is proposed to mitigate potential impacts to this site.

The Draft EIR concluded that impacts to groundwater resources would be adverse, but not significant (Class III). The District received a comment on the Draft EIR indicating that groundwater impacts should be considered significant. The District re-examined their impact analysis and again concluded that the impacts should be considered less than significant. However, the District recognizes that there is a disagreement among experts on this issue, and for purposes of the Final EIR, the District has classified groundwater impacts of the project as potentially significant, but mitigable (Class II).

2.1.3 Adverse But Less Than Significant Impacts (Class III Impacts)

The proposed project would also result in a variety of less than significant adverse impacts. Some of these impacts were identified as a result of the analyses conducted in this EIR and some were identified during the initial study assessment. Class III impacts evaluated in this EIR are presented in Table 2-1. Other impacts determined not to be significant are discussed in the Initial Study (included as Appendix A of this EIR) and are summarized in Section 4.6.

2.1.4 Beneficial Impacts (Class IV)

Implementation of the project will allow for distribution of wastewater from the MWWTP in keeping with County, regional, and state policies supporting beneficial reuse/reclamation of wastewater treatment plant effluent.

2.1.5 Cumulative Impacts

Development associated with the City of Moorpark Specific Plan Area No. 8, construction of Las Posas Basin Aquifer Storage and Recovery Project, and historic development associated with the MWWTP combined with construction of the reclaimed water storage ponds would result in cumulatively significant impacts to agricultural resources, specifically prime farmlands. Land Conservation Act (LCA) contracted lands would also be cumulatively affected by the construction of these projects, resulting in the cumulative cancellation of LCA contracts. However, several of the LCA contracted lands within Specific Plan Area 8 are currently in the process of non-renewal and would no longer be enrolled in the Williamson Act by the time development is scheduled to occur.

In the future, the Simi Valley Wastewater Treatment Plant intends to reclaim a portion of the effluent from it's facility for beneficial reuse, however no specific distribution plans or time schedule for implementation of a reclamation project have been developed. The effluent is derived from imported supplies and is currently discharged to Arroyo Simi/Arroyo Las Posas. This effluent provides recharge to the Las Posas Basin (LPB) via seepage through the Arroyo Simi/Arroyo Las Posas channel. Hence, cumulatively there could be a reduction in the amount of effluent derived from imported sources which is percolated into the LPB. However, since no plans are currently available regarding Simi Valley's reclamation plans, a determination of the cumulative effects can not be made.

The project is not expected to result in impacts to paleontologic resources; hence, no cumulative impacts are expected. Several of the projects noted have the potential to cumulatively affect archaeological resources in the Moorpark area. Specifically, CA-VEN-228a could be impacted by both the proposed project and the Las Posas Basin Aquifer Storage and Recovery Project. However, with inclusion of mitigation, cumulative impacts to cultural resources would likely be reduced to a cumulatively adverse but less than significant level.

2.2 CONSISTENCY WITH THE VENTURA COUNTY GENERAL PLAN

The Ventura County General Plan land use designation for the proposed reclaimed water distribution ponds is "Agriculture (40 acre minimum)". The proposed distribution pipelines would primarily traverse lands designated as "Agriculture (40 acre minimum)"; lands designated as "Open Space (10 acre minimum)" would be traversed where the south branch pipeline crosses Arroyo Las Posas. The "Agricultural" designation is applied to irrigated lands which are suitable for the cultivation of crops and the raising of livestock. Construction and operation of the reclaimed water storage ponds would preclude agricultural uses on an approximate 14 acre parcel designated for agriculture in the General Plan. Hence, the project would not be consistent with this land use designation. Because the pipelines would be located below the ground surface and most agricultural activities could be reestablished above the pipelines, installation of the distribution pipelines would be consistent with the agricultural land use designation.

2.3 CONSISTENCY WITH THE VENTURA COUNTY ZONING ORDINANCE

The reclaimed water storage ponds would be located on lands zoned as "Agricultural Exclusive" (A-E) in the zoning ordinance. The reclaimed water distribution pipelines would also traverse lands zoned as A-E. The purpose of the A-E zone is to "preserve and protect commercial agricultural lands as a limited irreplaceable resource, to preserve and maintain agriculture as a major industry in Ventura County and to protect these areas from the encroachment of non-related uses which, by their nature, would have detrimental effects upon the agriculture industry" (Ventura County, 1995). Reclaimed water distribution systems are not specifically called out as a type of use in the County Zoning Ordinance. Community wastewater treatment plants and pipelines are listed as a conditionally permitted use within the A-E zone district. Since it appears the reclaimed water distribution system would be an allowable use with a conditional use permit, the project would be consistent with the zoning ordinance.

2.4 CONSISTENCY WITH GENERAL PLAN GOALS AND POLICIES

The proposed project is expected to be consistent with County General Plan policies pertaining to agriculture, air quality, mineral resources, biological resources, scenic resources, energy resources, hazards, public facilities and services, paleontology, archaeology, and groundwater.

2.5 PROJECT ALTERNATIVES

A range of alternatives were examined in the EIR including:

- No Project Alternative
- Alternate location for the reclaimed water storage ponds at the existing MWWTP
- Alternate location for the reclaimed water storage ponds adjacent to the MWWTP

- Distribution Alternative 1 which would provide water to agricultural customers and nurseries
- Distribution Alternative 2 which would provide water to a proposed golf course in the City of Moorpark

Of the alternative site locations identified, only locating the reclaimed water storage ponds at the existing MWWTP site would eliminate the significant agricultural resource impacts of the project. However, this would require conversion of one or more percolation ponds to reclaimed water storage ponds which could affect the District's ability to treat and dispose of effluent at the throughput capacity of the plant.

Neither Distribution Alternative would result in significant unavoidable impacts to other project area resources analyzed in this EIR. However, Distribution Alternative 1 would potentially be used in lieu of existing potable water supplies.

The No Project Alternative would eliminate the project's significant effect on agricultural resources and the associated inconsistencies with General Plan goals and policies. This alternative would not meet the project objectives and pursuant to CEQA requirements the environmentally superior alternative from the remaining alternatives would be the proposed project using Distribution Alternative 1.

2.6 MITIGATION MONITORING PLAN

A mitigation monitoring plan will be prepared by the District after certification of the EIR, but prior to approval of the project, in compliance with *CEQA Statutes* (Public Resource Code Section 21081.6). Issues to be addressed in the mitigation monitoring plan include: mitigation measures identified in this EIR required to reduce potentially significant project impacts to a less than significant level; timing of mitigation; monitoring methods; actions, and timing; and identification of the agency responsible for monitoring

TABLE 2-1

SUMMARY OF IMPACTS AND MITIGATION

DESCRIPTION OF IMPACT BY ISSUE AREA	RECOMMENDED MITIGATION MEASURES	RESIDUAL IMPACT LEVEL
CLASS I IMPACTS: SIGNIFICANT AND UNMITIGABLE		
Agricultural Resources		
Direct displacement of 3.2 acres of prime farmland and indirect loss of an additional 11 acres of prime farmland.	Allow agricultural uses to continue on the portions of the parcel not being used for project facilities.	Significant
CLASS II IMPACTS: SIGNIFICANT, BUT MITIGABLE		
Groundwater		
Reduction in the amount of MWWTP effluent percolated into the LPB.	Continue the average annual amount of water discharged to the percolation ponds or stream	Less than significant
Potential increase in TDS levels in the LPB due to reduction in effluent percolated.	Continue the average annual amount of water discharged to the percolation ponds or stream	Less than significant
Cultural Resources		
Potential Impacts to CA-VEN-228a due to construction staging or access associated with construction of the North Branch Pipeline.	Confine construction related staging and access to the base of the knoll below CA-VEN-228a; or conduct Phase II analysis to determine exact location and significance if access into the area is required.	Less than significant.
CLASS III IMPACTS: ADVERSE, BUT NOT SIGNIFICANT		
Agricultural Resources		
Temporary disruption to approximately 3.62 acres of prime farmland if Distribution Alternative 1 is constructed or 1.45 acres of prime farmland if Distribution Alternative 2 is constructed.	None required.	Less than significant.
Disruption of agricultural activities on land adjacent to but not directly involved in construction.	None required.	Less than significant
Loss of productivity due to dust accumulation on leaves.	None required.	Less than significant
Development of non-agricultural uses in an area currently designated as an agricultural preserve.	None required.	Less than significant.
Paleontological Resources		

TABLE 2-1
(Concluded)

DESCRIPTION OF IMPACT BY ISSUE AREA	RECOMMENDED MITIGATION MEASURES	RESIDUAL IMPACT LEVEL
Remote potential for disturbance to paleontologic resources during trenching.	None required.	Less than significant.
Archaeological Resources		
Potential impacts to as yet undiscovered buried archaeological resources along the margins of Mejico Creek and the terraces bordering Arroyo Las Posas.	None required.	Less than significant.
Potential impacts to Native American Values.	None required.	Less than significant.
CLASS IV IMPACTS: BENEFICIAL IMPACTS		
Water Supply		
Reduction or replacement of potable water demand with reclaimed wastewater consistent with county, regional, and state policies.	Not applicable.	Not applicable.

3.1 INTRODUCTION AND PROJECT BACKGROUND

The Ventura County Waterworks District No. 1 (District) operates the Moorpark Wastewater Treatment Plant (MWWTP) and also provides potable water to municipal, industrial and agricultural customers. The MWWTP is located in Ventura County, approximately 0.25 miles south of State Highway 118, four miles west of the City of Moorpark, just north of Arroyo Las Posas (see Figure 1). The existing treatment facility occupies all or portions of the following Assessor Parcel Numbers (APNs): 163-030-485, -635, 645, -745, and -765. Total area of the existing facility is approximately 123 acres. The District intends to construct a Reclaimed Water Distribution System (project) to distribute tertiary treated reclaimed water to agricultural and/or landscape irrigation water users in the District's service area. The project consists of reclaimed water storage, pumping, and distribution facilities.

Presently, about 2.0 million gallons per day (MGD) of secondary treated effluent is disposed of through evaporation and/or percolation into the local groundwater basin through 29 percolation ponds located near the banks of Arroyo Las Posas. The plant has a secondary treatment capacity of 3.0 MGD and has installed a tertiary treatment facility with a capacity of 1.5 MGD. The percolation ponds were designed to percolate up to 3.0 MGD, however based on current percolation rates, the ponds are considered to have a reliable percolation capacity of 1.5 MGD (Boyle Engineering, 1990). It was determined that the poor performance of the percolation ponds had the potential to limit the throughput of the MWWTP to less than the full capacity of 3.0 MGD. Hence, the tertiary treatment facility was constructed to allow alternative options for disposal of the effluent (Ventura County Waterworks District No. 1, 1991). The addition of the tertiary treatment facility was subject to previous CEQA environmental review approved by the Board of Supervisors. The supplemental EIR prepared for the tertiary treatment facility briefly identified reclamation of the tertiary effluent as a potential disposal option, but only disposal to Arroyo Las Posas was evaluated in detail.

A Reclaimed Wastewater Feasibility Study (Boyle Engineering, 1990) was conducted to evaluate the feasibility of supplying reclaimed water for irrigation of agricultural and landscaping operations in the vicinity of the MWWTP. The study showed that there is a large potential market for reclaimed water near the MWWTP.

3.2 PURPOSE AND NEED FOR THE PROJECT

The primary purpose of the project is to provide the facilities and pipelines necessary to distribute tertiary treated reclaimed water from the MWWTP to agricultural and landscape irrigation water users in the District's service area.

The District receives 75 percent of its water supply from Calleguas Municipal Water District (Calleguas) which is a member agency of Metropolitan Water District of Southern California (Metropolitan). Several customers within the District's boundaries receive 100 percent of their water supplies from imported sources. In 1991, Metropolitan imposed mandatory water cutbacks on its member agencies, including Calleguas. The District established a voluntary ten percent reduction which is expected to be implemented on a continuing basis. Because of these recent

cutbacks and the potential for shortages in deliveries from Calleguas, the District is proposing to provide reclaimed water from the MWWTP for use in irrigating local agricultural lands and landscaping, and thereby conserve potable water and improve the reliability of its overall water supplies.

The MWWTP is located within the jurisdiction of the Fox Canyon Groundwater Management Agency (GMA). The Fox Canyon aquifer system (including the Oxnard Plain aquifers) is in a state of overdraft, resulting in seawater intrusion near the coast. GMA Ordinance No. 5 requires incremental reduction in the amount of groundwater that can be pumped by local water users within the GMA boundaries. Each groundwater pumper has been assigned an allocation based on a percentage of historical pumping from 1985 to 1989. The allocations will be reduced gradually until a 25 percent reduction is achieved in 2010. The intent of GMA Ordinance No. 5 is to reduce demands on the Fox Canyon aquifers to levels of safe yield. This is important to reduce seawater intrusion that has penetrated a 22-square mile area near the coast.

Reclamation and distribution of the tertiary-treated water is an alternate to the disposal of secondary treated effluent in the on-site percolation ponds.

3.3 OVERVIEW OF PROJECT COMPONENTS

3.3.1 General Description

The proposed project would consist of a distribution system to deliver tertiary treated reclaimed water to agricultural and irrigation customers in the vicinity of the MWWTP. The distribution system would be sized for 3.0 MGD, the maximum capacity of the secondary treatment facilities at the MWWTP. However, this project would only allow for the distribution of a maximum of 1.5 MGD of reclaimed water, equal to the maximum capacity of the existing tertiary filters. Construction of additional tertiary treatment filters would be required to provide reclaimed water in excess of 1.5 MGD; the addition of these filters would require additional review under the California Environmental Quality Act (CEQA).

The reclaimed water distribution system would include the following components:

- Two 1.5 million gallon storage ponds (Figure 2)
- A lift station at the MWWTP to pump tertiary effluent from the chlorine contact basin (part of the tertiary treatment facilities) to the storage ponds (Figure 2)
- A pump station at the MWWTP to deliver reclaimed water from the storage ponds into the distribution system at adequate pressures (Figure 2)
- A supplemental groundwater well and/or a connection to a potable supply (Figure 2)
- A pipeline distribution system to deliver water from the MWWTP to agricultural and nursery customers in the service area (Figure 3) or to a proposed golf course along Grimes Canyon Road (Moorpark Country Club Estates - Bollinger Development, Tract 4928) via a

pipeline connection to be constructed by the Moorpark Country Club Estates developer (Figure 4).

A detailed description of the components follows.

3.3.2 Treatment Plant Modifications

The MWWTP modification would include the addition of a 16-inch pipeline that would supply tertiary treated effluent from the tertiary treatment portion of the MWWTP to the reclaimed water distribution system (Figure 2). This 16-inch pipe provides the only mechanical interface between the MWWTP and the proposed reclaimed distribution system.

Other than a piping connection, the only other interface between the reclaimed system and the MWWTP would be a telemetry and control system, which would most likely be integrated with MWWTP's existing system. This integration would allow coordination of the amount of tertiary wastewater produced to meet reclaimed water demands.

3.3.3 Storage Ponds

Two 1.5 million gallon storage ponds would be constructed as part of the reclaimed water distribution system (Figure 2). The ponds would be located on APN 163-030-705 in an area which has historically been used for agriculture. This 14.59 acre parcel would be purchased by the District as a part of the right-of-way for the facilities. The storage ponds would receive tertiary treated water at a steady rate from the MWWTP. The storage ponds would provide daily regulation storage so that peak demands can be met even if several irrigators use water within a short period. Two ponds are provided for redundancy, so that operation can continue if one pond is being cleaned or repaired.

The storage ponds would be open reservoirs. The ponds would be formed by excavating to a depth of approximately three feet below ground surface, using the excavated material to construct earthen berms to a height of approximately six feet above ground surface. The approximate water surface area of each pond would be one acre. The overall dimensions of the storage ponds would be about 275 feet by 500 feet, including berms. The pond depths would be about 6 feet, with about 1 foot of freeboard to the crest of the berm. The ponds would be intended to provide peak demand storage and storage for flow from the tertiary treatment plant during minimum demands; therefore the storage ponds would be operated at less than full capacity to keep a buffer zone available for fluctuating system demands. The actual operating level of the ponds could be higher, and would be determined after several months of operation. The berms would be constructed with an approximate slope of about 2:1 horizontal to vertical, on inner and outer slopes. The width of the berm crests would be about 12 feet, to allow access for maintenance vehicles.

The ponds would be lined with plastic to prevent leakage of reclaimed water into the ground. The linings would be anchored at the top perimeter of the berms. Since the average retention time of water in the ponds should be less than three days, high amounts of algae growth are not expected.

The storage ponds would be screened from view from Los Angeles Avenue by a row of drought tolerant trees. The ponds would be set back from the roadway about 100 feet (Figure 2). The landscaping around the reclaimed water system would be integrated with the landscaping design for the entire MWWTP.

3.3.4 Reclaimed Water/Effluent Lift Station

The proposed reclaimed water storage ponds would be too high to allow water discharged from the chlorine contact basin to flow by gravity into the ponds. A reclaimed water/effluent lift station would be needed to pump the tertiary effluent from the chlorine contact basin into the storage ponds (Figure 2). The lift station would be located within the existing MWWTP boundary. The lift station would contain electrically driven low-head pumps. A sump would be provided as part of the lift station. Water levels in the sump would determine when the lift pumps turn on or off. Operation of the lift station would be integrated with operation of the tertiary treatment facilities. It is expected that the lift station would not be enclosed in a building; however, the pumps and motors would be designed for exposure to the weather.

3.3.5 Reclaimed Water Pump Station

The reclaimed water pump station would pump water from the storage ponds into the distribution pipeline system (Figure 2). Since there is no reclaimed water reservoir in the distribution system, one or more pumps must remain in operation at all times to maintain pressure. The pumps would be electrically driven, with a variable frequency drive to maintain a set discharge pressure. The pumps would be designed with a total capacity of about 2500 gallons per minute (gpm) required to distribute the peak demand corresponding to a supply of 1.5 MGD. It is expected that the pump station would be a package unit. It would be connected into the existing telemetry and control system for the MWWTP. It is expected that the pump station would not be enclosed in a building, but that the pumps and motors would be designed for exposure to the weather.

3.3.6 Pipeline and Appurtenances

The proposed project consists of two possible distribution alternatives (Figures 3 and 4). Distribution Alternative 1 (Figure 3) would provide reclaimed water to agricultural customers south, north, and east of the MWWTP. Distribution Alternative 2 (Figure 4) would provide service to a proposed golf course in the City of Moorpark, along Grimes Canyon Road. Although the maximum extent of the pipeline system is discussed in this project description, sections of pipelines would be constructed only as required to serve customers that enter into Water Service Agreements with the District.

The proposed pipeline system is shown in Figures 3 and 4. Distribution Alternative 1 would consist of a "North Branch", a "South Branch", and an "East Branch" pipeline. The approximate pipeline diameters are also shown on Figure 2. The North Branch would serve customers north of State Highway 118, on the north side of the railroad. The South Branch would serve customers south of the arroyo, primarily the nursery just south of the MWWTP. The East Branch would serve customers between State Highway 118 and Arroyo Las Posas, and may also serve the nursery south of the arroyo.

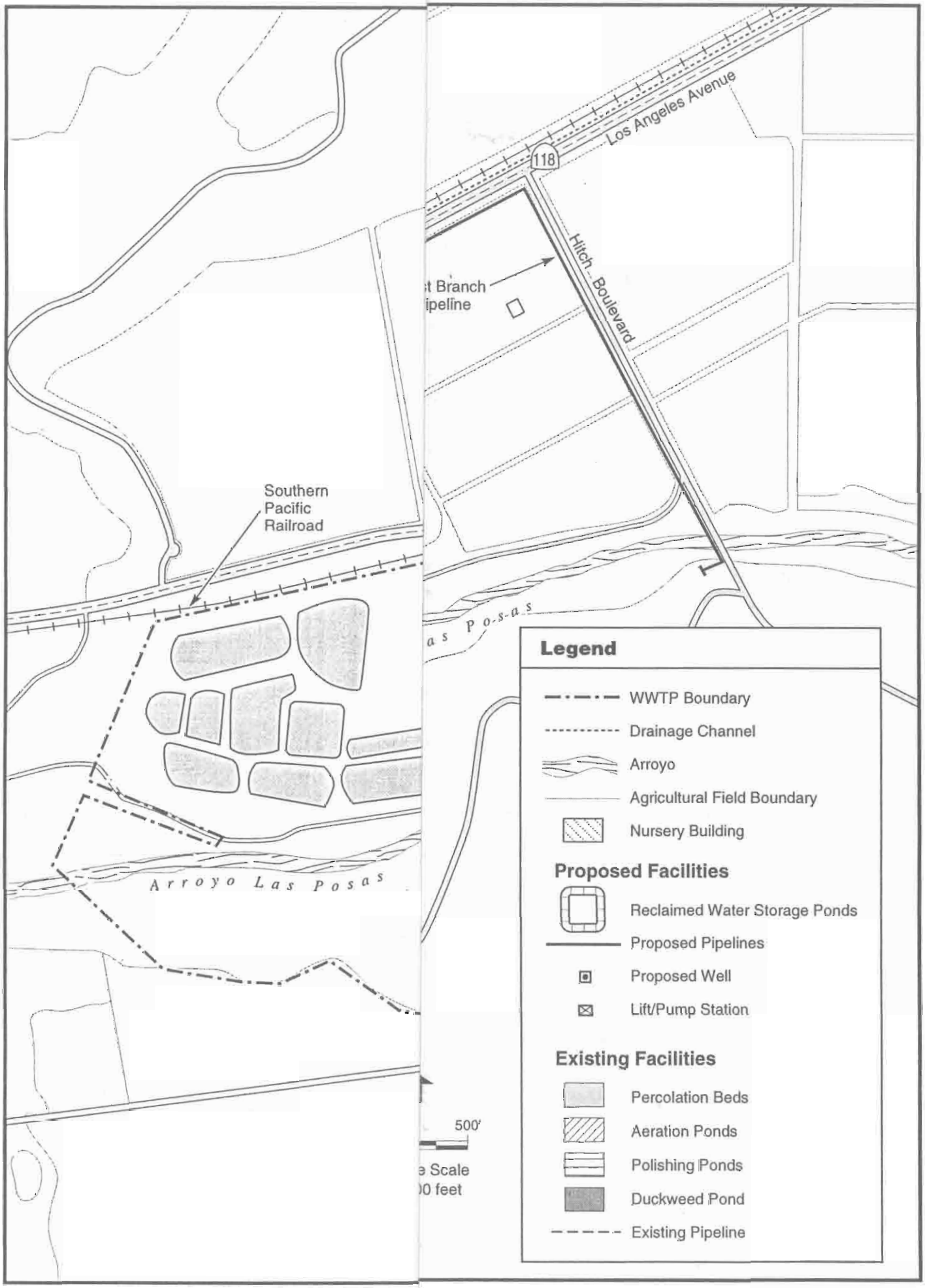


Figure 3. Distribution Alternative 1

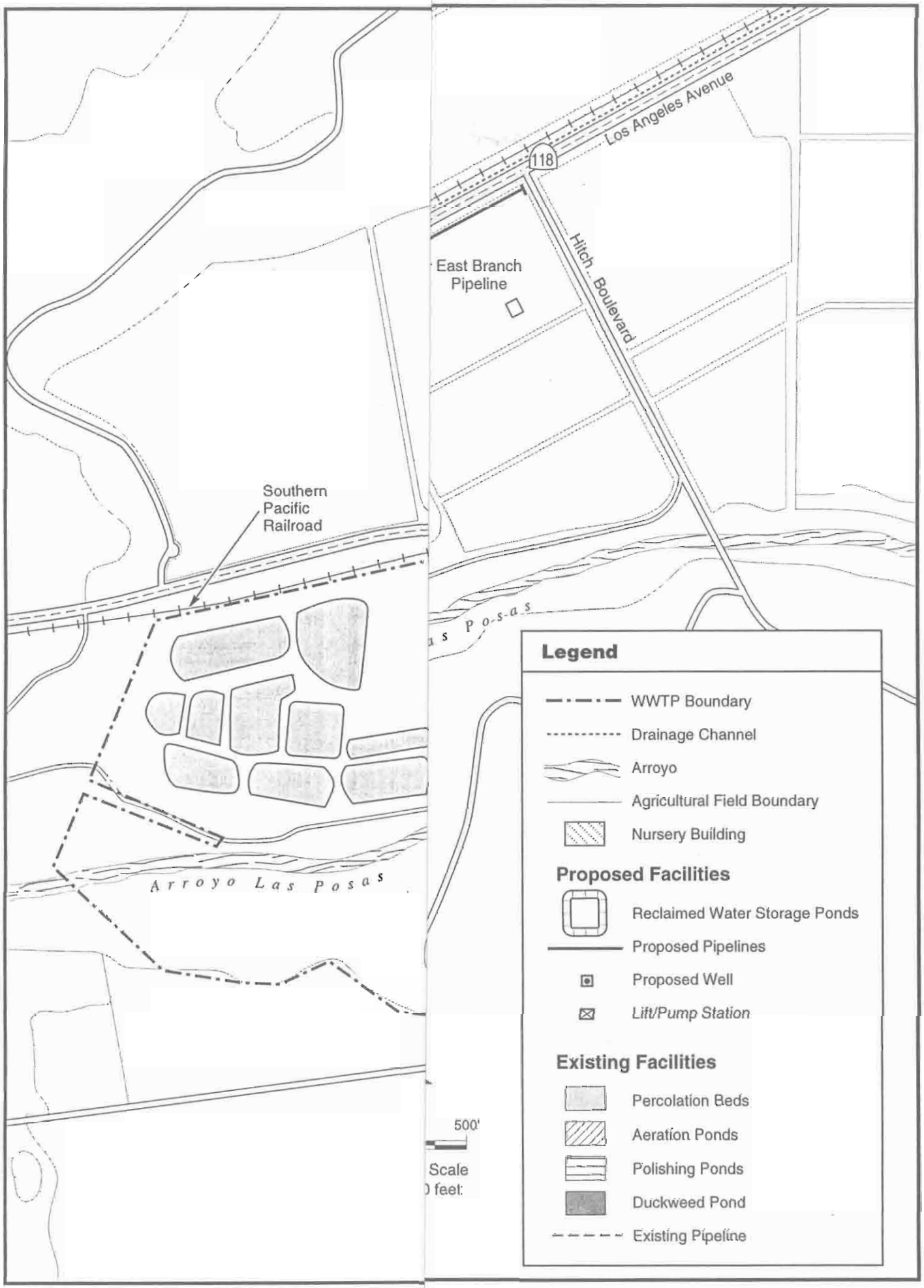


Figure 4. Distribution Alternative 2

If Distribution Alternative 2 is selected, only the "East Branch" pipeline would be constructed. Under this alternative the East Branch pipeline would terminate at Hitch Boulevard, and would not continue south across the Hitch Boulevard bridge (Figure 4). The proposed Moorpark Country Club Estates developer would tie into the reclaimed water distribution system at this location. The proposed golf course and the connection to the reclaimed water distribution system were evaluated as a part of the CEQA review of the Moorpark Country Club Estates Project (City of Moorpark, 1995).

Pipelines would be constructed primarily along the perimeters of open fields, in agricultural access roads, and in road and railroad rights-of-way. The pipelines would traverse the railroad, a stream, several bridges, and an agricultural drainage ditch crossing (Figure 2). Pipeline easements would be obtained on private lands. Existing easements for potable lines may be used where enough room is available for a second line. Encroachment permits would be obtained from Caltrans (for Highway 118) and from Ventura County Public Works Agency Transportation Department for any pipelines in or across public roadways. Agreement from the California Department of Fish and Game (CDFG) and a permit from the US Army Corps of Engineers (ACOE) may also be necessary for installation of the South Branch pipeline across Arroyo Las Posas and possibly other area drainages.

Pipeline materials would consist of either PVC, ductile iron pipe or steel pipe, to be selected during the final design process. Standard appurtenances such as valves, blow-offs, air-vac valves, and meter vaults would be provided. Except for bridge and other crossings described herein, the pipeline would be buried three to eight feet underground. The trench depths would be greatest where the pipelines would be jacked beneath Highway 118 and the Southern Pacific railroad tracks.

The pipeline system would be designed to deliver water to the boundary of each customer with the exception of service to the proposed golf course. Service connections would be provided to each customer at mutually agreeable locations. Each customer would be responsible for distributing the water within his own property. Customers can construct and use their own storage facilities if agreed to in the recycled water permit. Service to the proposed golf course would be via a tie-in to the pipeline system by the developer of Moorpark Country Club Estates Project.

3.3.6.1 Treatment Site Pipelines

As discussed in Section 3.3.2, a 16-inch supply pipeline would be routed between the lift station and the reclaimed water storage ponds. The pipeline would begin at the reclaimed water lift station located about 100 feet east of the chlorine contact basins. The pipeline would be routed north between two percolation ponds. It would then traverse a vacant field to the storage ponds. The vacant field has historically been farmed, however, the site has not been cultivated since approximately 1994 (Karra, 1995). The pipeline would connect to the inlet/outlet pipes from the storage ponds and to the suction side of the reclaimed water pump station. The pipeline may also be connected to a pipeline from a proposed supplemental groundwater well.

3.3.6.2 North Branch Pipeline

This pipeline would be constructed if Distribution Alternative 1 is selected (Figure 3). From the reclaimed water pump station, a 16-inch distribution pipeline would be routed to the north. It would pass between the two storage ponds then across an open area to Highway 118 (Los Angeles Avenue). The pipeline would be jacked under Highway 118 just north of the MWWTP. It would then be routed north to the Southern Pacific Railroad, and would be jacked under the railway. North of the tracks, the pipeline would branch east and west.

To the west, the North Branch pipeline would be reduced to about 8-inch diameter and would be routed in an agricultural access road between the railroad right-of-way and an avocado orchard. The pipeline would be routed down a hill to an open field, where the pipeline would terminate and a meter would be located to supply water to the customer at this terminus.

From the jacked casing under the railroad, the North Branch pipeline would also be routed to the east, in an agricultural access road just north of the railway (Figure 2). The pipeline size would be reduced to about 12 inches. As the pipeline approaches Mejico Creek (also known as Grimes Canyon Creek/Wash) the route would re-enter the railroad right-of-way. At the railroad bridge over Mejico Creek, the pipeline would emerge from the ground and would be clamped to the bridge. This portion of the pipeline would most likely be constructed of restrained and/or flexible joint ductile iron pipe. Specially designed clamps would secure the pipe to the bridge. After crossing the creek, the pipe would again be buried underground, alongside other existing pipes.

About 50 feet east of the bridge, the pipe would be routed north across an agricultural ditch. The ditch crossing would be generally less than 50 feet wide and would consist of a welded steel pipe span, without any steel structural support. The pipe would pass above the bottom of the ditch at a sufficient elevation to allow water to pass underneath. Concrete anchors would be constructed at each end of the ditch crossing, approximately 10 to 20 feet beyond the banks. North of the ditch crossing, the pipeline would again be routed east in an agricultural road, to Grimes Canyon Road. The pipeline would cross Grimes Canyon Road with normal trench construction. Just east of Grimes Canyon Road, the pipeline would end near a meter vault.

3.3.6.3 East Branch Pipeline

This pipeline would be constructed if either distribution alternative is selected. The 16-inch East Branch pipeline begins north of the storage ponds and is routed to the east, south of Highway 118 (Figure 2). The pipeline would be routed in open fields and agricultural roads just south of the highway right-of-way. Across Mejico Creek, the pipeline may be clamped to an existing crossing of a sewer force main, if the truss is shown to have enough load capacity. The pipeline would be constructed of welded steel pipe and suspended over the force main to satisfy health requirements (leakage from the force main should not be able to inadvertently contaminate the reclaimed water system). Alternately, the pipe may cross the creek on a new suspension crossing adjacent and parallel to the force main crossing. If a new suspension is constructed, it would consist of a steel truss with supporting cables, or a simple truss structure, similar to the existing force main suspension structure. It would be anchored on concrete foundations at both banks of the creek. The structure would be a single span over the creek with no piers or pilings in or on the creek bottom.

The pipe would be welded steel or ductile iron pipe contained within the steel truss. To the east of the creek, the East Branch pipeline would be routed in open fields and agricultural roads just south of the highway right-of-way. At Hitch Road, the pipeline would turn toward the south, and would be routed just west of Hitch Road, in agricultural roads. At Arroyo Las Posas, the pipeline would be clamped to the Hitch Road Bridge. The pipeline would end a few hundred feet south of the arroyo, at a meter for a nursery located there.

If Distribution Alternative 2 is constructed, the pipeline would terminate just west of Hitch Boulevard (Figure 4).

3.3.6.4 South Branch Pipeline

This pipeline would be constructed if Distribution Alternative 1 is selected and would serve the nursery located on the south of the arroyo south side of the existing MWWTP facilities (Figure 3). The 8-inch pipeline would begin at the reclaimed water pump station and would be routed east, just south of the storage ponds. The pipeline would be routed south in a road west of the west bank of Mejico Creek, within the MWWTP site. This road currently contains power poles and a potable waterline. At the southerly boundary of the MWWTP site, the pipeline would be located across a rock revetment into the Arroyo Las Posas stream bed. The pipeline would be buried in the stream bed just upstream of an existing drop structure. The drop structure is a small sheet-pile dam built to prevent erosion in the stream. In the streambed, the pipeline would be buried about five feet deep and would likely be ductile iron pipe with restrained joints. A potable water pipeline also crosses the creek in this general area and a separation of 10 feet would be maintained between the reclaimed and potable lines. The pipeline would be buried in the stream bed possibly within a concrete encasement. South of the arroyo, the pipeline would cross under a concrete and rock revetment, and enter the nursery property. In the nursery, the pipeline would end at a meter vault. Existing flood control access roads would be used to gain access to the arroyo for construction activities.

3.3.7 Groundwater Well and Related Facilities

A well to provide supplemental water in the event of a shutdown of the tertiary treatment facility would also be constructed. The well would be located within the APN 163-030-705, possibly west of the reclaimed water storage ponds (Figure 2). The well would be outfitted with a vertical turbine pump and motor, with the motor located aboveground, and the pump installed in the casing about 100 to 300 feet below ground. The motor would be electrically driven. The wellhead would be located in open air. The wellhead would include a motor control panel. The well would be connected into the lift station pipeline by a 12-inch buried pipeline. The pipeline would include an above-ground backflow preventer to protect the aquifer from accidental injection of reclaimed water.

The alluvial aquifer in the vicinity of the MWWTP, which is part of the Las Posas Basin/South Las Posas Groundwater Basin, may be saturated due to the percolation of secondary effluent. A well would indirectly use the County's own wastewater as a supplement. Well yields in the area range from 120 gpm to about 1500 GPM.

The casing size for the proposed well would be in the range of 10 to 16 inches and the well depth may be on the order of about 500 to 1000 feet to tap the lower confined aquifers in the area. The final location of the well would be determined based on coordination with the State Department of Health Services to ensure that the well would be located a sufficient distance away from the percolation ponds to allow the groundwater to meet all Title 22 water quality requirements for tertiary effluent. Extractions by the District would be maintained within its existing GMA allocation.

Alternatively, imported water from the District could be used to supplement the reclaimed water by discharging it into the reclaimed storage ponds. Health regulations require a suitable air gap to protect the integrity of the potable water system. Potable water service already exists in the vicinity of the MWWTP. A potable main is located a short distance east of the storage pond site. Components would include a buried pipeline to the storage ponds and related components such as valves.

3.3.8 Customer-Owned Facilities

In addition to the District owned and operated reclaimed water facilities, the reclaimed water customers would construct various facilities in order to use the reclaimed water. Such facilities are expected to include the following: (1) new or modified irrigation systems to distribute reclaimed water; (2) backflow preventers to prevent contamination of potable water systems; and (3) signs to identify the use of reclaimed water at the reuse sites.

3.4 CONSTRUCTION ACTIVITIES, WORKFORCE AND SCHEDULE

3.4.1 GENERAL DESCRIPTION

Construction of the initial reclaimed water distribution facilities is planned in 1997/1998, upon completion of environmental documentation, acquisition of permits, acquisition of land, and preparation of construction plans and specifications. Staging areas within the present MWWTP site would be used to store materials and equipment for both projects. Agricultural areas near the MWWTP would not be affected other than those areas where the storage and distribution facilities would be built. Water would be periodically sprayed on exposed earth to control dust.

Construction of the various components is described below.

3.4.2 Pump Stations

The reclaimed lift station would be located within the MWWTP site boundaries and the reclaimed water pump station would be located in the vicinity of the reclaimed water storage ponds. Construction would include minor grading and installation of concrete foundation and walls, underground pipelines, and mechanical and electrical components. Electrical power is already available at the site and should be adequate to supply all reclaimed water facilities. Electrical power would be conveyed to the pump stations via underground conduits from existing Southern California Edison transformers. Such conduits would be located within the MWWTP site.

3.4.3 Storage Ponds

The storage ponds would require grading of about 10,000 cubic yards of earth. The ponds would be constructed using primarily on-site native materials. The excavated material from the pond bottom would be used to create the berms. Some imported sand and gravel may be used under the bottom lining of the ponds. A possibility exists that clean fill may be needed somewhere else on the MWWTP site, in which case the ponds would be designed for a net removal of material.

It is expected that grading the ponds could be completed within about 60 days, depending on weather. The typical construction equipment for this type of project would include wheel loaders, backhoe loaders, hopper trucks, wheel tractor scrapers, motor graders, bulldozers, vibratory drum compactors, and sheepsfoot rollers, depending on the type of equipment the contractor has available. A project of this size may have up to 6 to 8 pieces of equipment in use at one time.

The amount of material that would be imported or exported from the site is expected to be minor; however, if material is hauled on public roads, a traffic control plan would be filed with Caltrans and/or other agencies having jurisdiction to ensure public safety.

3.4.4 Pipeline Construction

Pipelines would be buried using standard trenching, placement and backfill procedures. The pipelines would be buried between 3 to 8 feet deep, with an average of around 4 feet. Trenches are typically constructed about one foot wider than the pipe diameter. Shoring would be used to protect workers. Alternately, where space is available, sloped trench sides may be used. Construction of the pipeline would involve a strip of land about 20 to 30 feet in width.

Native materials would be used for filling trenches. However imported sand may be used for bedding the pipelines before backfilling. A net surplus of about 1,000 cubic yards of excavated earth would result from pipeline installation. The excess materials would be disposed of at the MWWTP site or may be used to help build the storage pond berms. Hauling dirt would conform to all applicable regulations, as described for storage pond materials.

Pipelines can be installed at a rate ranging between 100 and 300 feet per day. Typical construction equipment used to install pipelines includes trenchers, pipelayers, backhoe loaders, bulldozers, excavators, wheel loaders, depending on the type of equipment available. The East Branch pipeline would be routed south of the Caltrans right-of-way for Highway 118. Any activities that impact traffic would be subject to a traffic control plan to be approved by Caltrans and other regulatory agencies, as appropriate.

3.4.4.1 Stream Crossing

The stream crossing of Arroyo Las Posas would be constructed during the dry season (May to November) using cut and cover pipelaying techniques. The total distance between stream banks is about 350 feet. The width of the flowing stream is about 20 to 30 feet in the summer. Starting from one bank, the pipeline would be laid in a trench to a point close to the stream. The pipe would be buried 4 to 6 feet below the streambed. A trench with sloped sides would probably be used.

Dewatering wells would be used near the trench to maintain the trench as dry as possible. The trench would be backfilled and Arroyo Las Posas would be diverted temporarily over the pipe segment already installed, allowing access to the original streambed. The pipeline would then be laid across the streambed to the opposite bank, using trench and backfill. The trenched materials would be used for backfill. No imported bedding would be used. Near the stream, the pipe material would be ductile iron pipe with restrained joints. A concrete encasement around the pipeline may be required in the streambed. Such an encasement would be about 2 feet wide and 2 feet deep, buried below the streambed. The pipeline would cross under a rock revetment at both banks of the stream. A 10-foot wide section of the revetment would be removed to lay the pipe. The revetment would be restored to its original condition.

To reduce the amount of sediment generated during construction, a small embankment could be built up to the edge of the stream. Wooden flash boards backed with riverbed sand and gravel could be used to divert the flow.

It is expected that the stream crossing could be completed while diverting the stream for just one or two days. Including preparation and cleanup, the entire operation would take about one week, assuming the crossing is constructed during the dry season. The construction activities would be limited to the disturbed area within 100 feet upstream from the existing drop structure.

3.4.4.2 Jacked Casings

A jacked casing is required where the North Branch Pipeline crosses Highway 118 and the railroad. To jack a casing under a highway or railroad, a "jacking pit" is constructed at one side, and a "receiving pit" at the other side of the road. A hollow pipe with a cutting tool is hydraulically jacked between the pits, with soil removed as the tool advances. After a horizontal hole is cut under the road, a pipe is jacked into the hole and grouted into place. The operation can be performed without obstructing traffic on the road. Screening would be provided during the operation to reduce distraction to drivers.

3.4.4.3 Bridge Crossings

Bridge crossings are required where the North Branch Pipeline crosses Mejico Creek and where the East Branch Pipeline crosses Arroyo Las Posas, as shown on Figure 3. Bridge crossings would be constructed using equipment operating primarily from the bridge decks. Special hydraulic lift arms can be used to lift and position pipes and equipment under the bridge. Scaffolding also can be suspended from the bridge.

Equipment on the Hitch Boulevard Bridge would obstruct traffic during construction. A traffic control plan would be developed by the contractor and approved by all appropriate agencies before construction starts. At least one lane of traffic would remain open on any roadway bridges. For the Mejico Creek railroad bridge, construction activities would need to be coordinated with train schedules. Approval of Southern Pacific would be required prior to the start of any construction within the railroad right-of-way.

3.4.4.4 Suspension Crossing

A suspension crossing may be located where the East Branch Pipeline crosses Mejico Creek (Figure 3). The steel truss/pipe assembly would be assembled in open land beyond the stream bank. After assembly, the truss would be lifted and placed onto its concrete end foundations.

3.4.4.5 Ditch Crossing

A ditch crossing is required where the North Branch Pipeline crosses the agricultural ditch north of the railroad at a point just east of the railroad bridge. The pipeline ditch crossings would be constructed by digging a trench about 4 feet deep until it daylights into the ditch. The trenches would be built at both banks of the ditch. A single span of pipe would be lifted and placed into the trench, using a crane resting on one bank. Concrete blocks would be poured around the pipe at about 10 to 20 feet from the banks, away from the ditch. The trenches would then be backfilled with native material and compacted.

Within 20 feet of the ditch banks, vegetation above the banks would need to be cleared for a total width of about 20 feet. More than 20 feet away from the banks, the construction width would be the same as for pipeline construction. Within the ditch and its banks, vegetation would need to be trimmed to provide 5 feet of clearance around the pipe.

3.4.5 Well Construction

A well may be constructed within the MWWTP site. A preliminary location is indicated on Figure 2. Further hydrogeologic study may be required to select the best location within the MWWTP site. The well would be outfitted with a vertical turbine pump and motor, with the motor located aboveground, and the pump installed within the casing about 100 to 300 feet below ground. The motor would be electrically driven, with a rating of 40 to 200 horsepower. The wellhead would be located aboveground.

The well would be constructed over a six week period, including two to three weeks of drilling using a portable, truck-mounted rig which employs direct rotary drilling methods (if logistically and geologically possible), utilizing biodegradable or bentonite-based drilling fluid. The necessary drilling fluids would be stored on site in a Baker Tank during well construction and subsequently disposed of utilizing vacuum trucks. The well construction is anticipated to yield approximately 20,000 gallons of drilling fluids, all of which would be collected and disposed of off-site.

Upon completion of the well, drill cuttings (i.e., the soil and rock removed from the borehole) would be cleaned up and removed from the site with a backhoe and a dump truck. The well would consist of a 6-inch-diameter pilot borehole to a maximum of 1,000 feet below ground surface. If needed, a 24-inch-diameter conductor casing would be installed at the surface through unconsolidated near-surface materials to allow drilling in the underlying bedrock. If a substantial amount of water is found upon completion of the drilling, the hole would be reamed to a larger diameter, and a 12 to 16-inch diameter steel casing would be installed, along with a locked metal well cover.

Water produced during the 5 to 10 day period required for well development (probably no more than a few acre-feet in volume) would be discharged directly into a percolation pond or into Arroyo Las Posas, after any drilling fluids have been removed. Discharge of well water into the arroyo could require a NPDES permit. A 7-foot square concrete apron would be poured around the well head at the ground surface. The completed well would be locked, with access available only to District or consultant staff.

3.4.6 Construction Workforce Requirements

The following crews are expected to be required for construction of the proposed facilities:

TABLE 3-1
CONSTRUCTION WORKFORCE REQUIREMENTS

Component	Number of Workers	Duration of Construction
Pump Stations	4	3 months
Storage ponds	4	2 months
Pipelines	6	3 months
Electrical/Telemetry	2	1 month
Well	3	2 months

3.4.7 Construction Schedule

Construction of the reclaimed water distribution system would occur over an approximate 9-month period.

3.5 OPERATIONAL INFORMATION

3.5.1 Reclaimed Water Customers

The Reclaimed Water Feasibility Study (Boyle, 1990) identified a service area with customers in the immediate vicinity of the MWWTP that could use about 1.5 MGD of reclaimed water. Many of the identified agricultural customers (whose crops include field/row, tree, nursery, and turf) presently receive water from the District. In order to receive reclaimed water from the District, each potential customer would first be required to apply for and obtain a recycled water permit. The District intends to sign up enough customers to use all of the available reclaimed water during peak irrigation demand periods.

Other types of crops and land uses in the project area which could utilize reclaimed irrigation water include the avocado groves in the hills south of the arroyo, golf courses, cemeteries or other large-scale landscape irrigation customers.

3.5.2 Seasonal and Daily Use of Reclaimed Water

The District anticipates that a total of about 800 to 1000 acre-feet per year (AFY) of reclaimed water would be delivered to customers via the proposed project if Distribution Alternative 1 is constructed and 1340 AFY is Distribution Alternative 2 is constructed. Most of these deliveries would occur during peak irrigation demand periods in summer. However, the available reclaimed water supply of 1.5 MGD (1,680 AFY)is expected to be fairly constant throughout the year. As such, little or no reclaimed water may be used for many weeks or months during the winter. During such periods the effluent would be treated to secondary levels and discharged into the existing percolation ponds. If insufficient percolation capacity is available, tertiary treated water would be discharged to Arroyo Las Posas pursuant to the requirements of the District's National Pollutant Discharge Elimination System (NPDES) Permit. Row crops and nurseries typically irrigate in the daytime so that the irrigation can be monitored by workers. Golf courses and parks irrigate at night since the facilities are in use in the daytime.

3.5.3 Reclaimed Water Quality

The District will need to obtain water reclamation requirements (WRRs) from the Regional Water Quality Control Board before the tertiary treated reclaimed water can be distributed for irrigation. The 1990 Reclaimed Water Feasibility Study (Boyle, 1990) evaluated the quality of reclaimed water from the MWWTP in comparison to other local water supplies. In general, reclaimed water is of higher quality (i.e., lower salt content and total dissolved solids) than the local groundwater used by many farmers. However the quality is not as high as imported water delivered by the District.

According to the Reclaimed Water Feasibility Study, the reclaimed water quality is suitable for irrigation of crops. However, levels of chlorides in the reclaimed water could be relatively high, and irrigation practices may have to be adapted to minimize adverse impacts on crop yields.

Periodic water quality samples would be taken by the District to monitor water quality impacts and to guide irrigation practices of its customers.

3.5.4 Facilities Operation and Maintenance

The operation of the reclaimed water system would be automated to minimize manpower requirements. The major maintenance requirement is expected to be regular inspection and cleaning of the facilities. Sediment would build up in the storage ponds. The storage ponds may need to be drained and cleaned about once a year. Storage pond sediments can be deposited in the sludge drying beds for drying, and disposed of with the sludge. Under reasonable worst case conditions, about 500 cubic yards of sediment may accumulated in the ponds each year (based on 2-inches of deposition per year in the storage ponds). Floating windborne debris may also need to be cleaned out of the ponds about once per week. Windblown debris is expected to be less than one trash can full per week, and can be hauled to a landfill.

The storage ponds would have an average retention time of less than 3 days. During winter periods, when demands are low, one pond may be drained and temporarily removed from service. With careful control of water levels and an average retention time of three days, algae growth is not

expected to become a problem in the storage ponds. Occasional applications of algae control chemicals such as copper sulfate may be required to reduce algae growth in unusual conditions.

3.5.5 Energy Requirements

It is expected that the reclaimed water distribution system would use about 400,000 kilowatt-hours of electrical energy per year, primarily at the two pump stations and the well.

3.5.6 Workforce Requirements

It is expected that existing staff at the MWWTP would operate the reclaimed water distribution system. The major work would be monitoring the daily operation of the system, which would be run automatically.

One person at the MWWTP site would be designated as an Irrigation Coordinator, who would help coordinate irrigation schedules so that too many growers do not irrigate on the same day. The Irrigation Coordinator would also monitor irrigation practices at the customers' fields to ensure no runoff is occurring, and to monitor compliance with other reclaimed water regulations. This person may also be designated as a Conservation Coordinator, who would ensure that best management practices for water conservation are implemented by the customers so that water is not wasted.

At the staff level, one engineer or technician would be required to monitor water use and operation of the reclaimed system on a part time basis.

3.6 ENVIRONMENTAL PROTECTION INCORPORATED INTO PROJECT DESIGN

The following design features/measures were incorporated into the original project design to mitigate potential project impacts:

Visual Resources/Aesthetics

- The storage ponds would be screened from view from Los Angeles Avenue by a row of drought tolerant trees. The ponds would be set back from the roadway about 100 feet. The landscaping around the reclaimed water system would be integrated with the landscaping design for the entire MWWTP.

Biological Resources

- Pipelines would be installed in previously disturbed areas including the perimeters of open fields, in agricultural access roads, and in road and railroad rights-of-way.
- The stream crossing of Arroyo Las Posas would be constructed during the dry season (May to November) using cut and cover pipelaying techniques and other erosion control measures (e.g., diversion of flow around the active work area).

- Construction activities in Arroyo Las Posas would be limited to the disturbed area within 100 feet upstream from the existing drop structure.

- With the exception of the south branch pipeline across Arroyo Las Posas, project pipelines would be designed to span other project area drainages.

Transportation/Circulation

- The North Branch pipeline would be jacked under Highway 118 and beneath the Southern Pacific railroad tracks to avoid disturbance to vehicular and rail traffic.

- The East Branch pipeline would be clamped to the Hitch Road Bridge, and at least one lane of traffic will be maintained through the work area.

Groundwater Quantity

- Groundwater extractions by the District would be maintained in accordance with the District's existing GMA allocation.

Air Quality

- Water would be periodically sprayed on exposed earth to control dust generation during construction.

Solid Waste Disposal

- The ponds would be designed to require no major import or export of earth materials.

Hydraulic Hazards

- If needed, a concrete encasement will be installed around the South Branch pipeline across Arroyo Las Posas to protect the pipeline from scour.

3.6.1 Additional Environmental Protection Incorporated into the Project Design

The following improvements to the project have been adopted by the District since issuance of the NOP to further minimize adverse but less than significant impacts that are anticipated to result from construction and operation of the project. These improvements are not required to mitigate for potentially significant impacts, and hence, they are not included as mitigation measures.

Agricultural Resources:

- To the extent practicable, construction will be scheduled while fields are fallow or when crops can be harvested in advance of construction.

- Market value will be paid for crops taken out of production.

- Agricultural landowners will be notified of construction and construction activities should be undertaken so as to avoid blocking access to agricultural parcels.

Groundwater Quantity/Quality

- The District will continue to coordinate with the Water Resources Division to maximize recharge during low reclaimed water demand periods.

Paleontologic Resources

- In the unlikely occurrence that paleontologic resources are encountered during construction, a qualified paleontologist will be retained to evaluate the significance of the find.

Archeological Resources

- A Native American monitor will be present when construction occurs within 100 feet of areas where there is the potential for undiscovered buried archeological resources to be present (i.e., Mejico Creek and Arroyo Las Posas).

- A Native American monitor will be present if construction related disturbances associated with the north branch pipeline east of Mejico Creek occur within 100 feet of CA-VEN-228a.

- If any cultural resources are uncovered during construction, standard procedures will include work stoppage in the resource area until it is evaluated and appropriate mitigation is implemented.

In the following subsections, the existing environmental conditions and environmental effects of the proposed project are described. Each section also includes a discussion of potential cumulative effects of the project and a discussion of the project's consistency or inconsistency with the applicable goals and policies of the Ventura County General Plan. The project impacts were classified in the manner shown below. An impact was determined to be significant using the definition of "significance" in the *CEQA Guidelines* (Sections 15056, 15064(b), and 15358; and Appendices D and G), the *CEQA Statutes* (Public Resources Code 21088), and the significance thresholds set forth in Ventura County's Initial Study Assessment Guidelines (1992).

- **Class I Impacts**. Significant environmental impacts that cannot be avoided or mitigated to a less than significant level. For these impacts, the County must issue a "Statement of Overriding Considerations" pursuant to Section 15092(b) of the *CEQA Guidelines* if the project is approved.

- **Class II Impacts**. Significant environmental impacts the can be mitigated to a less than significant level. The County must make "findings" under Section 15091(a) of the *CEQA Guidelines* if the project is approved.

- **Class III Impacts**. Other environmental impacts that are potentially adverse but not significant.

- **Class IV Impacts**. Beneficial Impacts.

Mitigation measures to avoid or reduce impacts are also identified in the following sections.

4.1 ENVIRONMENTAL SETTING AND LAND USE COMPATIBILITY

4.1.1 Regional Setting

The project area is located in eastern Ventura County, approximately four miles west of the City of Moorpark (Figure 1). The reclaimed water storage ponds and distribution pipelines would be located in a narrow valley (little Simi Valley) between the Las Posas Hills on the south and Oak Ridge Mountains to the north. The project area is rural and is characterized by rolling hills which are cultivated and consist of orchards (e.g., avocado and citrus), field crops, and nurseries.

4.1.2 Existing Site Characteristics

The project would distribute tertiary-treated wastewater (reclaimed water) from the existing MWWTP. The existing treatment plant occupies an area of about 123 acres and is located between Highway 118 (Los Angeles Avenue) and Arroyo Las Posas, approximately 0.4 miles west of the intersection of Highway 118 and Hitch Boulevard (Figure 2). The proposed project would encompass a total of approximately 3.2 acres associated with the reclaimed water storage ponds and 5,850 linear feet of pipeline if Distribution Alternative 1 is constructed or 2,200 linear feet of pipeline if Distribution Alternative 2 is constructed.

The reclaimed water storage ponds would be located in an agricultural field (currently not under cultivation) between Highway 118 and the existing MWWTP (Figure 2). As described in Section 3.3.6, the north and east branch pipelines would primarily be located in agricultural access roads, or along field boundaries both to the north and south of Highway 118. The east branch pipeline would also extend to the south at Hitch Boulevard following an existing agricultural access road along the west side of the boulevard. At the crossing of Arroyo Las Posas, the pipeline would be clamped to the Hitch Boulevard bridge and would end a few hundred feet south of the arroyo, providing service to an existing nursery. If Distribution Alternative 2 is selected the pipeline would not continue south, but would terminate just west of the intersection of Highway 118 and Hitch Boulevard. The south branch pipeline would extend from the reclaimed water storage ponds, follow an existing access road along the east boundary of the existing MWWTP and cross Arroyo Las Posas in a disturbed area just upstream of the existing flood control drop structure. The pipeline would then continue to the south in an existing flood control access road and terminate at an existing nursery.

4.1.3 Surrounding Land Uses

The project components are located in an area primarily developed with agricultural uses. Land uses immediately adjacent to the proposed reclaimed water treatment ponds consist of percolation ponds associated with the existing MWWTP to the south, Mejico Creek to the east, Highway 118 to the north, and agricultural land to the west. Land uses adjacent to the pipelines are primarily agricultural (orchards and field crops), transportation-related (Highway 118, Hitch Boulevard, and the Southern Pacific Railroad Tracks), disturbed open space, or public facilities (MWWTP). Residential development is limited in the project area and primarily consists of individual dwellings associated with area ranches. The east branch pipeline (Distribution Alternative 1) would terminate in the vicinity of Moorpark Acres.

4.1.4 General Plan Land Use Designation

The Ventura County General Plan land use designation for the proposed reclaimed water distribution ponds is "Agriculture (40 acre minimum)". The proposed distribution pipelines would primarily traverse lands designated as "Agriculture (40 acre minimum)"; lands designated as "Open Space (10 acre minimum)" would be traversed where the south branch pipeline crosses Arroyo Las Posas. The "Agricultural" designation is applied to irrigated lands which are suitable for the cultivation of crops and the raising of livestock. The project would directly preclude agricultural uses on 3.2 acres of lands designated for agricultural use and would likely indirectly inhibit the agricultural use of an additional 11 acres of land. These lands would instead be used for public services/utilities-related uses.

The project site is also located within the City of Moorpark's Planning Area and is within the area designated as Specific Plan Area 4.

4.1.5 Zoning Designation

The project site is located in the inland (non-coastal) portion of Ventura County and is subject to the non-coastal zoning ordinance (Division 8 of the Ventura County Code).

The reclaimed water storage ponds would be located on lands zoned as "Agricultural Exclusive" (A-E) in the zoning ordinance. The reclaimed water distribution pipelines would also traverse lands zoned as A-E. The purpose of the A-E zone is to "preserve and protect commercial agricultural lands as a limited irreplaceable resource, to preserve and maintain agriculture as a major industry in Ventura County and to protect these areas from the encroachment of non-related uses which, by their nature, would have detrimental effects upon the agriculture industry" (Ventura County, 1995). Reclaimed water distribution systems are not specifically called out as a type of use in the County Zoning Ordinance. Community wastewater treatment plants and pipelines are listed as a conditionally permitted use within the A-E zone district. In addition, project components may be exempt from local permits (e.g., zoning and building) pursuant to California Government Code Section 53091. This code section states that "zoning ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, or transmission of water... ."

4.1.6 Land Conservation Act (LCA) Contract Status

The existing wastewater treatment plant occupies a portion of APN 163-030-635, which is a 71.01 acre parcel and is within LCA contract 76.3.11 established in 1977. A "notice of non-renewal" was filed for this LCA contract in 1989. The reclaimed water storage ponds would be located on APN 163-030-705, a 14.58 acre parcel which is currently within LCA contract 76.3.11A. All of the distribution pipelines (north branch, east branch, and south branch) would also traverse LCA contract 76.3.11A where they originate at the reclaimed water storage ponds. The north branch pipeline would also partially traverse LCA contract 51.18.2.

4.1.7 Project Considered in the Cumulative Impact Analysis

Cumulative impacts are defined in the State *CEQA Guidelines* (Section 153559(a)) as, "... the change in the environment which results form the incremental impacts of the project when added to other closely related past, present, and reasonably foreseeable probable future projects." Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time. Section 15130 of the State *CEQA Guidelines* provides additional guidance on the analysis of cumulative impacts by specifying that: (1) cumulative impacts be discussed in the EIR when they are significant; and (2) the discussion of the cumulative impacts reflect the severity of the impact and their likelihood of occurrence. The Guidelines further state that the discussion of cumulative impacts need not be as detailed as discussion of the project's impacts; the discussion should be guided by the standards of practicality and reasonableness.

All of the proposed project components would be located in an unincorporated area of Ventura County. The project site and surrounding areas are designated and zoned as either agriculture or open space. Cumulative projects listed below and considered in the cumulative analyses for each issue area include projects which because of timing, location, or resources affected were identified as potentially contributing to cumulative effects when analyzed with respect to the Reclaimed Water Distribution System Project. Additional background information on historic and current activities which may contribute to cumulative effects is presented in the cumulative impacts discussion for each resource issue area beginning in Section 4.2.

4.1.7.1 County of Ventura Projects

Discussions were held with Ventura County Resource Management Agency, Planning Division (Planning Division) staff to identify potential cumulative projects in the vicinity of the reclaimed water distribution system project. No residential development projects are currently proposed or pending in unincorporated areas of Ventura County in the project vicinity. Several mining projects are currently under review but have not received formal approval including the Transit Mixed Concrete Company Aggregate Mine (Conditional Use Permit [CUP] 4633) and Grimes Rock, Inc. (CUP 4875). These two projects are not likely to result in cumulative impacts when considered with the proposed reclaimed water distribution system because of their location with respect to the proposed project and because the projects are not expected to affect similar resources.

4.1.7.2 City of Moorpark Projects

The City of Moorpark's Land Use Plan designates six Specific Plan areas within and outside of the City limits. The proposed project components are located in Specific Plan Area 4. Based on discussions with City Planning staff, with respect to the resources affected by the proposed project, development associated with Specific Plan Area 8 (Hidden Creek Ranch) appears to have the most potential to result in cumulative impacts. An application is currently pending for Specific Plan Area 8 and the final EIR is in preparation.

Specific Plan Area 8

The Specific Plan consists of 4,323 acres located directly north of the City of Moorpark and east and south of Happy Camp Canyon Regional Park. The plan proposes 3,221 residential dwelling units on 1359.4 gross acres, an 18-hole public golf course with clubhouse, equestrian center, retail centers, three elementary schools, and parks and trails. The plan proposes to leave 2,514 acres in open space. Other uses that may be developed in the Specific Plan Area include water reservoirs, storm water detention basins, a helispot, onsite wastewater treatment plant, etc.

4.1.7.3 Other Projects

Las Posas Basin Aquifer Storage and Recovery Project

The Calleguas Municipal Water District is proposing to construct water injection/extraction facilities in the Las Posas Groundwater Basin (LPB) near the City of Moorpark. The project consists of the following components: installation of 25 injection/extraction wells in a 9-square-mile well field area generally between Balcom Canyon Road to the west, Walnut Canyon Road to the east, Broadway Road to the north and Los Angeles Avenue to the south; installation of a pump/hydroelectric generating station on a 4.6-acre site located east of Spring Road and south of Arroyo Simi within the City of Moorpark; and installation of approximately 26 miles of pipeline.

4.1.8 Consistency with Plans and Policies

As required by Section 15125(b) of the CEQA Guidelines, the following section includes a discussion of the project's consistency with applicable adopted local and regional land use and environmental goals and policies. Appendix G of the *CEQA Guidelines* states "a project will normally have a significant effect on the environment if it will conflict with adopted environmental plans and goals of the community where it is located".

4.1.8.1 Ventura County General Plan Goals, Policies, and Programs

Based on the analysis conducted in the Initial Study (Appendix A), the proposed project is expected to be consistent with County General Plan policies and goals pertaining to air quality, mineral resources, biological resources, scenic resources, energy resources, hazards, and public facilities and services. Consistency with General Plan resource policies pertaining to agriculture, paleontology, archaeology, and groundwater is presented on a resource by resource basis in Sections 4.2, 4.3, 4.4, and 4.5 of this EIR. In addition, the following goals and policies are also potentially applicable to the proposed project:

Land Use

Goal 3.1.1-4: "Ensure that land uses are appropriate and compatible with each other, and guide development in a pattern that will minimize land use conflicts between adjacent land uses."

Discussion of Consistency: Operation of the reclaimed water distribution system would be compatible with adjacent agricultural land uses. Hence, the project would be consistent with this goal.

Policy 3.1.2-2: Consistency of Zoning: Zoning shall be consistent with the General Plan Land Use Maps (Figure 3.1 [of the General Plan Goals, Policies, and Programs]) and the Zoning Consistency Matrix (Figure 3.2 [of the General Plan Goals, Policies, and Programs]).

Policy 3.1.2-3: Consistency of Land Use: Any land use shall be deemed consistent with the General Plan if it is permitted under a zoning designation which is consistent with Policy No. 2 above [consistency of zoning], and if the land use does not conflict with any other policy of the County General Plan.

Discussion of Consistency: Construction and operation of the reclaimed water distribution system would be an allowable use in the A-E zone district with a major conditional use permit; therefore, the project would be consistent with the zoning ordinance. The project would be potentially inconsistent with goals and policies pertaining to the preservation and protection of agricultural lands.

Public Facilities and Services -- Water Supply Facilities

Program 4.3.3-3: The County Public Works Agency (Water Resources and Development Department) and the three major water wholesale agencies (Casitas, Calleguas, and United) will continue to pursue the use of reclaimed water as a long-term source for agricultural irrigation.

Discussion of Consistency: If Distribution Alternative 1 is selected, the project would be consistent with the intent of this program.

4.1.8.2 Ventura County Air Quality Management Plan

Since the reclaimed water distribution system will not be a source of long-term air emissions (short-term nuisance dust generation could occur during construction) and the project will not have an affect on the County's population forecasts, the project will be consistent with the County's Air Quality Management Plan.

4.1.8.3 Ventura County Water Management Plan

The following policy and program from the Ventura County Water Management Plan (1994) are potentially applicable to the project:

Reclamation Policy 1: "Where feasible, require the use of reclaimed water for beneficial uses such as wetlands, agriculture, golf course, park and other landscape irrigation or industrial uses."

Discussion of Consistency: The project would provide for the beneficial reuse of tertiary-treated wastewater effluent at local agricultural areas or at a proposed golf course site. Hence, the project would be consistent with this policy.

Water Demand Management Program 1: "Implement recommendations in Board adopted Drought Action Plan as listed below (RMA Planning Division, cities, Water District):

f. Require specified new and existing uses (such as golf courses, cemeteries, etc.) to use only reclaimed or other non-potable water."

Discussion of Consistency: Distribution Alternative 2 would provide reclaimed water to a proposed golf course in the City of Moorpark. Hence, this alternative would be consistent with the intent of this program.

4.1.8.4 Southern California Association of Governments Regional Comprehensive Plan

The Regional Comprehensive Plan does not specifically contain goals or policies pertaining to reclaimed water, but does support the development and use of reclaimed water to offset/replace demands for potable water where such high quality water is not required.

4.1.8.5 Regional Water Quality Control Board Basin Plan

As discussed previously, the District must obtain Water Reclamation Requirements from the RWQCB. With respect to the use of reclaimed water, the Water Quality Control Plan for the Los Angeles Region includes a discussion of the State Water Resources Control Board's Resolution No. 77-1, "Policy with Respect to Water Reclamation in California". This policy outlines the State Water Resource Control Board's support for and encouragement of water reclamation while also recognizing the need to protect public health. Pursuant to this resolution, the State and Regional Boards encourage reclamation projects for which "reclaimed water will replace or supplement the use of fresh water or better quality water".

The project would provide reclaimed water which will either partially replace use of existing groundwater or potable water supplies (Distribution Alternative 1) or would provide irrigation water to a proposed golf course (Distribution Alternative 2) in lieu of potable water. Hence, the project would be consistent with this policy.

4.1.8.6 California Water Code

California Water Code, Section 13510 states that the people of the State have a primary interest in the development of facilities to reclaim water containing waste to supplement existing surface and underground water supplies and to assist meeting the future water requirements of the State. Since the project would allow for the distribution of tertiary treated reclaimed water, the project would be consistent with this section of the California Water Code.

4.2 AGRICULTURAL RESOURCES

4.2.1 Introduction

Agricultural lands at the reclaimed water storage ponds and along the pipeline alignments are described below and are based on the following sources of data: (1) field reconnaissance of the of the project area; (2) review of current aerial photographs; (3) review of the Important Farm Lands Inventory Maps; (4) review of the Soil Conservation Survey soil classification maps; and (5) review of the County of Ventura's Land Conservation Act (LCA) Contract maps and associated files.

4.2.1.1 Regional Setting

Ventura County is one of the principal agricultural counties in the state and agriculture accounts for the largest single element of the Ventura County economy. The county contains fertile soils and extensive floodplain areas and has a favorable climate and long growing season. Agriculture began in Ventura County with livestock grazing associated with the founding of Mission San Buenaventura in 1782 (California Department of Conservation, 1991). Grazing lands transitioned to grain and field crops, with barley and lima beans becoming the first major food exports in the mid to late 1800s coinciding with establishment of the railroad and the construction of Port Hueneme. Following World War I, innovations in shipping and refrigeration and an expanding regional population led to the replacement of field crops with truck farms.

As urbanization has extended into historic farming areas (e.g., the Oxnard Plain and Simi Valley) rising land values have induced farmers to transition to high value crops (California Department of Conservation, 1991). Walnuts and apricots were Ventura County's first tree crops, however citrus (oranges and lemons) became the dominant tree crop. Other crops produced in the county include specialty crops such as strawberries and nursery stock and Ventura County has become one of the nation's leading producers of avocados.

Agricultural land use in the Moorpark area is generally west of the City of Moorpark and includes commercial nurseries, field/row crops, citrus and avocado orchards, and some grazing lands (Boyle Engineering, 1990). Much of the agricultural land is classified as "prime" farmland based on the California Department of Conservation's classification.

4.2.1.2 Farmland Mapping and Monitoring Program

The Important Farmlands Mapping and Monitoring Program (FMMP) is currently administered by the California State Department of Conservation and was established to: (1) map and classify lands that have agricultural value; and (2) monitor the conversion of these lands. The FMMP was established in 1982 to continue the Important Farmland mapping efforts begun in 1975 by the US Department of Agriculture, Soil Conservation Service (SCS). The FMMP divides farmland into classes based upon soil type and the productive capability of the land. Revised mappings of important farmlands and agricultural/land use conversion reports are produced every two years. This system is used by Ventura County to inventory agricultural lands for the County General Plan. The FMMP system contains five agricultural classifications: "prime farmland", "farmland

of statewide importance", "unique farmland", "farmland of local importance", and "grazing land." The minimum mapping unit is 10 acres. A key factor in classifying lands using the FMMP criteria is the "capability class" (Class) of the soil as designated in the County's Soil Survey (SCS, 1970). Soil classes designated in the County's Soil Survey range from Class I (very fertile and productive soils with few limitations) through Class VIII (lands unsuitable for agriculture). The SCS provides a list to the Department of Conservation on those soils which meet the criteria for prime farmland and farmlands of Statewide Importance.

Ventura County's FMMP definitions for the most important categories of farmlands in the project region are provided below:

Prime Farmlands have the soil quality, growing season and moisture supply needed to produce sustained high yields of crops economically when treated and managed according to modern farming methods. California's prime farmlands are irrigated soils over 40 inches deep with a water holding capacity of four inches or more. The soils area generally well drained, free from frequent flooding, and free from freezing soil temperature. The soils have very slow sub-soil permeability.

Farmlands of Statewide Importance are lands other than Prime that have a good combination of physical and chemical characteristics. The criteria is basically like that of Prime Farmlands but there is no minimum soil depth limitation and no permeability restriction. They have a broader water holding capacity and moderate erosion hazard.

Unique Farmlands are other lands that produce high-value food and fiber crops as listed in the annual report of the Department of Food and Agriculture. Example of such crops are citrus, olives, avocados, fruit and vegetables.

Farmlands of Local Importance include lands of importance to the local agricultural economy, as determined by the County. These farmlands are comprised of dryland farming (e.g., bean and grain crops) and non-irrigated Prime Farmlands or Farmlands of Statewide Importance.

In order to be included in the Department of Conservation's mapping, "prime farmlands" and "farmlands of statewide importance" must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date, and "unique farmlands" must have been used for the production of specific high economic value crops at some time during the two update cycles prior to the mapping date.

4.2.1.3 Land Conservation (Williamson) Act

The primary tool to preserve farmlands in California is the Land Conservation Act (LCA) of 1965, also commonly known as the Williamson Act. The Williamson Act is California's only statewide agricultural land protection program. The Williamson Act was developed to balance the pressure of urban growth by providing an incentive for farmers and ranchers to remain in agriculture. The Act is a voluntary land conservation program which is administered by counties and cities, with technical assistance provided from the California Department of Conservation. Ventura County entered the program in 1969 and in 1986 there were 165,996 acres under LCA

contract (Ventura County, 1994b). The County of Ventura has developed guidelines for implementing the Land Conservation Act which are administered by the County Resource Management Agency, Planning Division.

Under the provisions of the Act, landowners may voluntarily enter into a long-term agreements with cities and counties to form agricultural preserves and maintain their property in agricultural uses in exchange for a reduced property tax assessment based on the actual use of the land for agricultural purposes, as opposed to its unrestricted market value. In turn, the landowners commit to restricting the use of their land to agricultural or open space uses for a contract period of typically 10 years. The County administering the LCA contract receives subvention payments from the state that partially compensate for property tax revenues foregone because of the lower tax rates applied to Williamson Act lands. At the end of each 10 year contract period, the LCA contract is automatically renewed unless a "notice of non-renewal" is filed or the contract is canceled. In theory, lands cannot be developed until the contract between the grower and the County expires; however, if the land owner/developer is willing to repay the difference between the full tax rate that would have been in effect and reduced LCA tax rates for the total time the lands were included in the Act, lands can be made available for development immediately, provided County approval is obtained.

Two other methods for agricultural preserve (LCA contract) termination are "Cancellation" (Article 5 of the Williamson Act beginning with Government Code Section 51280) and "Eminent Domain or Other Acquisition" (Article 6 of the Williamson Act beginning with Government Code Section 51290). Article 6 of the Act addresses State or Local Public Improvements within an agricultural preserve by a "public agency". It is the policy of the state (Government Code Section 51290, et seq.) that public agencies locate public improvements on non-contracted land, rather than land covered by a Williamson Act contract. In addition, prime agricultural land should not be acquired if there is other land, within or outside, the preserve on which the improvement can be located. Specifically finding must be made that: (1) the public acquisition of agricultural preserve lands over other lands is justified; and (2) the acquisition is not based on cost alone. A "public agency" is defined as the state, or any department or agency thereof, and any county, city, school district, or other local public district, agency, or entity (Government Code Section 51291[a]).

Pursuant to Government Code Section 51291(b) if a public agency (e.g., the District) is considering acquisition of land enrolled in the Williamson Act for a public improvement, the public agency must notify the Director of Conservation and the local governing body responsible for administering the Williamson Act of the intent to acquire/locate a public improvement within the preserve. Subsequently, notification is required when the land is actually acquired (i.e., through purchase or eminent domain) and if there any significant changes to the nature of the public improvement. Finally, if the acquired land is not used for the public improvement, notification must be provided to the Department of Conservation and the County, and the land must be re-enrolled in the a contract before it is returned to private ownership.

4.2.1.4 Agricultural Land Use Designation and Zoning

The Land Use Chapter of the Ventura County General Plan establishes an "Agricultural" designation for land identified in the FMMP mapping (with some exceptions). This designation establishes a forty acre minimum parcel size and subjects all parcels to the "Agricultural Exclusive" (A-E) zoning district. As discussed in Section 4.1.5, the proposed site for the reclaimed water storage ponds and the majority of the proposed reclaimed water distribution pipelines are on lands designated and zoned for agriculture.

4.2.2 Existing Agricultural Setting

Agricultural land uses and existing agricultural preserves (LCA contracts) in the vicinity of the project components are shown on Figure 5 and are described below.

4.2.2.1 Reclaimed Water Storage Ponds

Land Use

The proposed reclaimed water storage ponds would be located on a parcel of land (APN 163-030-705) between the existing percolation/treatment ponds associated with the Moorpark wastewater treatment plant and Highway 118. As discussed previously, this parcel is designated and zoned for agriculture. The site is mapped as "prime" on the county's 1994 Important Farmland Inventory map (the 1996 maps are currently in preparation). The parcel comprises 14.49 acres and is currently not under cultivation. The site has not been in agricultural production since about 1994 (Karra, 1995).

Historically, a variety of specialty field crops were grown at the site including squashes and other specialty vegetables (Karra, 1995). According to the most recent agricultural crop reports (Ventura County Agricultural Commissioner, 1994) approximately 3,741 harvested acres of miscellaneous vegetable were in production on a County-wide basis in 1994 for a total value of $43,258,00.00. No data is available regarding the average yield or unit value per acre for this crop type.

Soils

The proposed reclaimed water storage ponds would be located in an area containing soils identified as Pico sandy loam. This soil type is described a having moderately rapid permeability, slow runoff, and no erosion hazard. The natural fertility is described a medium and the soil capability class is II (prime).

LCA Contract Status

LCA contract 76-3.11 formerly included APNs 163-030-645, -635, -765, and -745 and was entered into in 1977. Currently, only APN 163-030-635 and 163-030-705 are within LCA contracts (76-3.11 and 76-3.11A, respectively). A notice of non-renewal was filed for LCA contract 76-3.11 in 1989 and subsequently the contract was reconfigured into LCA contracts 76-

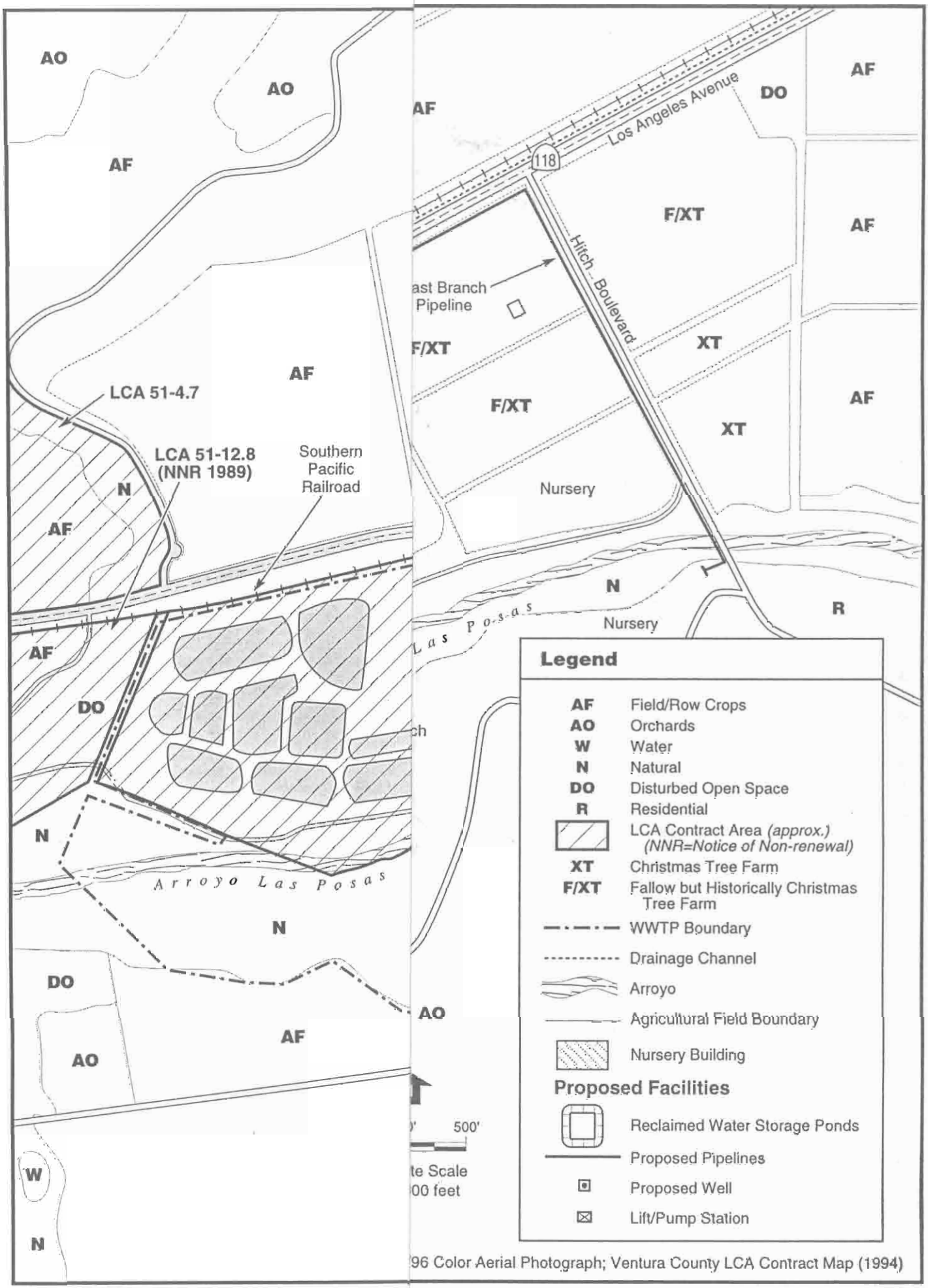


Figure 5. Existing Agricultural Land Uses and LCA Contracts

3.11 and 76-3.11A. LCA contract 76.3.11A encompasses APN 163-030-705 and includes the proposed location of the reclaimed water storage ponds. LCA contract 76-3.11A is not in non-renewal.

As required pursuant to Government Code Section 51291(b), the District submitted a letter to the Director of the California Department of Conservation (DOC) regarding the proposed acquisition of APN 163-030-705 (currently with LCA contract 76-3.11A) for purposes of public improvement. A response letter has been received from the Department of Conservation regarding the proposed acquisition. The Department of Conservation has indicated that the District's acquisition of LCA contracted land "appears to meet the requirements of the Williamson Act" (DOC, 1995).

4.2.2.2 Distribution Pipelines

Land Use

The pipelines would traverse lands designated as, and zoned primarily for, agriculture. The pipelines would be located in existing agricultural access roads or along field boundaries. Agricultural land uses adjacent to or traversed by the pipelines include field/row crops, tree farms/orchards (avocados and Christmas tree) and nurseries. The pipelines traverse lands identified as "prime", "farmlands of statewide importance", and "unique" on the County's Important Farmlands Inventory Map.

Soils

The pipelines primarily traverse soils of the Mocho series and Pico series. The soils within these two series are described as having moderate permeability, slow to medium runoff, and little to no erosion hazard. The inherent fertility is medium and the capability classes are I and II (prime).

LCA Contract Status

At their origin at the reclaimed water storage ponds, all the pipelines would be located on lands under LCA contract 76-3.11A. In addition, the north branch pipeline (Distribution Alternative 1) would traverse LCA contract 51-18.2 in the vicinity of Grimes Canyon Road. No other currently active LCA contracted lands would be affected by installation of the distribution pipelines.

4.2.3 Project Impacts

The potential impacts to agriculture associated with the reclaimed water distribution system include:

- Displacement of agriculturally prime soils and conversion of agricultural land to non-agricultural uses and loss of agricultural productivity due to construction of the reclaimed water storage ponds and pipelines.
- Removal of agricultural lands from inclusion in the Williamson Act

- Disruptions of agricultural activities due to construction of the pipelines within and adjacent to existing agricultural fields

4.2.3.1 Significance Criteria

Appendix G of the State CEQA Guidelines states that a project that would convert prime agricultural land to non-agricultural use or impair the agricultural productivity of prime agricultural land would normally have a significant effect on the environment. In addition, the Guidelines state that a project would normally have a significant effect on the environment if it would conflict with the adopted environmental plans and goals of the community where it is located.

The County of Ventura's Initial Study Assessment Guidelines (1992) includes the following agricultural impact threshold:

For lands that have a General Plan land use designation of "agriculture" and an important farmland inventory classification of "prime" or "statewide", any project that would result in the direct and/or indirect loss of agricultural soils meeting or exceeding five acres is considered to have a significant impact. A project is considered to have a contribution to a significant cumulative impact if the land use designation is "agriculture", the important farmland inventory classification is "prime" or "statewide" and the project would directly or indirectly result in the loss of one or more acres of agricultural soils.

4.2.3.2 Impacts to Important Farmlands

Table 4.2-1 summarizes impacts to important farmlands (as mapped by the Department of Conservation) as a result of construction and operation of the reclaimed water distribution system.

TABLE 4.2-1
IMPACTS TO IMPORTANT FARMLANDS

	Important Farmland Mapping Classification					
	Prime		Statewide		Unique	
Project Component	Linear Feet Traversed	Acres in ROW	Linear Feet Traversed	Acres in ROW	Linear Feet Traversed	Acres in ROW
Reclaimed Water Storage Ponds	---	3.20	---	0.00	---	0.00
Distribution Alternative 1						
North Branch Pipeline	1470.00	1.01	0.00	0.00	400.00	0.28
East Branch Pipeline	3750.00	2.58	0.00	0.00	0.00	0.00
South Branch Pipeline	30.00	0.02	200.00	0.14	0.00	0.00
Total	**5250.00**	**3.62**	**200.00**	**0.14**	**400.00**	**0.28**
Distribution Alternative 2						
East Branch Pipeline	2200.00	1.52	0.00	0.00	0.00	0.00
Total	**2200.00**	**1.52**	**0.00**	**0.00**	**0.00**	**0.00**

A discussion of these impacts follows.

Reclaimed Water Storage Ponds and Associated Aboveground Facilities

The project would involve the construction of two 1.5 million gallon reclaimed water storage ponds, a supplemental groundwater well, and a reclaimed water pump station on a 14.59 acre parcel (APN 163-030-705). The facilities would be located on the eastern half of the parcel. The overall dimensions of the ponds would be about 275 feet by 500 feet (3.2 acres) including berms; the dimension of the reclaimed water pump station would be approximately 20 by 30 feet (0.014 acres); and the supplemental well would occupy an area of approximately 15 feet by 15 feet (0.005 acres). A minor amount of additional land would be temporarily disturbed due to installation of on-site pipelines (e.g., connecting pipelines between the reclaimed water storage ponds and the tertiary treatment facilities, and the proposed well or potable water supply and the reclaimed water storage ponds). Hence, construction of the ponds and associated above ground facilities would result in the direct displacement of approximately 3.22 acres of land designated as "agricultural" in the County General Plan, that has an FMMP classification of prime, and contains soils which have a "capability class" of II (prime).

No other aboveground direct disturbances to agricultural soils are proposed, but use of the remaining 11 acres of prime soils for agricultural activities or cultivation would likely not occur. The direct displacement of 3.22 acres would not represent a significant impact to agricultural soils; however, considering the significance threshold set forth in Appendix G of the CEQA guidelines and the County's threshold for the loss of prime agricultural soils, the direct loss of the 3.22 acres of the prime soils combined with the indirect loss of agricultural productivity on the remaining 11 acres resulting from construction of the ponds would represent a significant (Class I) agricultural impact. However, construction of the reclaimed water storage ponds and associated facilities would not directly result in the displacement of agricultural crops since the 14.59 acre parcel is not currently under cultivation and has not been cultivated since approximately 1994 (Karra, 1995).

Reclaimed Water Distribution Pipelines

Impacts to agricultural lands and activities resulting from installation of the reclaimed water distribution lines could occur due to: (1) temporary disturbance of crops within or adjacent to the construction right-of-way; (2) disruption to agricultural activities (harvesting, agricultural traffic, etc.) due to construction on and adjacent to agricultural lands; and (3) potential damage to crops due to construction-related fugitive dust.

As discussed previously, the pipelines would be installed within existing agricultural field boundaries or within existing roadway or railroad rights-of-way. In addition, pipeline trenches will be backfilled with native soil material excavated from the trenches. As summarized in Table 4-1, pipeline installation associated with Distribution Alternative 1 would traverse approximately 5250 linear feet of agricultural land identified as "prime", 200 feet of land designated as "farmlands of statewide importance", and 400 feet of land designated as "unique" on the County's Important Farmlands Inventory Map (Department of Conservation, 1994).

Construction of Distribution Alternative 1 may temporarily remove a maximum of about 3.62 acres of farmland designated as "prime", 0.14 acres of land designated as "farmlands of statewide importance", and 0.28 acres of land designated as "unique" from agricultural production (assuming a construction disturbance corridor width of 30 feet). Construction of Distribution Alternative 2 may temporarily remove a maximum of about 2,200 feet of prime agricultural farmlands, potentially resulting in the removal of 1.52 acres of farmlands designated as "prime". This disruption of agricultural lands due to pipeline installation would represent an adverse but less than significant impact (Class III) since: (1) the disruption would be temporary; (2) the trenches will be backfilled with the native material excavated from the trench; and (3) the agricultural uses can be reestablished within the construction right-of-way.

Pipeline installation along agricultural field boundaries and in agricultural access roads could interfere with harvesting activities and could cause a disruption in the timing and access for agricultural vehicles and equipment. This disruption would be an adverse but less than significant impact (Class III) due to the limited duration and extent of construction activities. Measures to minimize conflicts with agricultural activities are included in Section 4.2.6.

Agricultural lands adjacent to the construction right-of-way could be affected by dust deposited on the leaves of the crop during pipeline construction and as a result of construction equipment operating on dirt access roads. This impact is expected to be adverse but less than significant (Class III) since the extent and duration of pipeline construction would be limited, and use of dust control measures are included in the project description.

4.2.3.3 Removal of Agricultural Land from the Land Conservation (Williamson) Act

Reclaimed Water Storage Ponds and Appurtenant Facilities

The reclaimed water storage ponds are proposed to be located on lands within LCA contract 76-3.11A. This contract encompasses APN 163-030-705. It is the intent of the District to purchase this parcel as a part of the right-of-way for the facilities. When a public agency acquires land (either by eminent domain or through purchase) under an agricultural preserve contract, the contract automatically becomes null and void as to the land actually acquired (Government Code Section 51295). Hence, acquisition of APN 163-030-705 by the District for construction and operation of the reclaimed water storage ponds would result in the cancellation of LCA contract 76-3.11A and removal of the parcel from inclusion in the Williamson Act.

The District submitted a notification letter to the Director of the State Department of Conservation regarding their proposed public acquisition of Williamson Act land for the reclaimed water distribution system and for lands currently leased by the District for percolation ponds (refer to Section 4.2.4.2 regarding cumulative impacts to Williamson Act lands). In response to the District's letter, a letter was forwarded from the Department of Conservation (1995) stating that

> "*... after reviewing the material submitted, it is apparent that there is no adjacent, non-contracted land that would be feasible for the proposed expansion.*

Thus, the acquisition of land covered by a Williamson Act contract appears to meet the requirements of the Williamson Act."

Since the Department of Conservation has determined that the project is consistent with the requirements of the Williamson Act, the removal of 14.59 acres from agricultural preserve status (cancellation of LCA contract 76-3.11A) would represent an adverse but less than significant (Class III) agricultural impact.

4.2.4 Cumulative Impacts

4.2.4.1 Farmland Conversion in Ventura County

To provide a perspective on the loss of important farmlands, Table 4.2-2 provides an overview of important farmland conversion in Ventura County for the period from 1984 to 1992. As evidenced from Table 4.2-2, on a county-wide basis there has been a net loss of about 3,115 acres of "prime" farmland over the eight year reporting period. On average, acreages of important farmlands (which includes prime, statewide, unique, and local) have cumulatively declined at an average rate of 776 acres per year over the eight year reporting period. The majority of the conversion has been from agricultural to non-agricultural (urban/ built-up land) uses.

TABLE 4.2-2
HISTORIC FARMLAND CONVERSIONS IN VENTURA COUNTY

Farmland Classification	Total Acres Inventoried in 1992	Acreage Changes 1984 to 1992				
		84-86	86-88	88-90	90-92	Total
Prime	53,300	-1305	-847	-672	-291	-3115
Statewide Importance	38,102	-576	-521	-501	-197	-1795
Unique	22,454	-307	-134	183	-54	-312
Local	11,442	-133	-151	-448	-250	-982
Total	**125,298**	**-2321**	**-1653**	**-1438**	**-792**	**-6204**
Average Important Farmland Conversion Rate (1984 to 1992): -775.5 acres/year						

Source: Department of Conservation, 1984-92.

4.2.4.2 Historic and Current Development at the MWWTP

LCA Contract 76-3.11 originally included over 107 acres of land. Modification to the MWWTP as described in the Final Environmental Impact Report for the Treatment Plant Expansion (Ventura County, 1988) required the acquisition of approximately 18.89 acres of land in LCA contract 76-3.11. In addition, the EIR identified that 28.69 acres of lands under LCA contract

76-3.11 (APN 163-030-635) would be temporarily leased for WWTP facilities; no action was taken to acquire these lands and the 28.69 acres remained in LCA contract 76-3.11.

In 1989 a notice of non-renewal was filed on a portion LCA Contract 76-3.11. Subsequently LCA contract 76-3.11 was reconfigured and LCA Contract 76-3.11A was formed and included the portion of LCA contract 76-3.11 not included in the notice of non-renewal. Currently LCA contract 76-3.11 includes 71.01 acres of land (APN 163-030-635); this contract is due to expire in 1998. LCA contract 76-3.11A, which is not in non-renewal, currently encompasses 14.49 acres (APN 163-030-705) and is proposed for acquisition by the District for the reclaimed water distribution system project. The District is now also proposing to acquire the 29 acres formally leased from APN 163-030-635, and has filed notice (along with their notice regarding their proposed acquisition of lands under LCA Contract 76-3.11A) to the Department of Conservation of their intent to acquire the land.

In summary, historic and current development associated with the MWWTP will result in the direct cumulative removal of approximately 62 acres of lands included in the Williamson Act. These lands were/are also classified as "prime farmland". Development activities at the treatment plant site may have also contributed indirectly to the non-renewal of an additional 45+ acres of land that were enrolled in the Williamson Act.

4.2.4.3 City of Moorpark

Buildout within the existing limits of the City of Moorpark (as outlined in the General Plan) is not expected to have a significant effect of agricultural resources because: (1) no lands within the existing city limits are enrolled in the Williamson Act; (2) only a small amount of "prime farmlands" or "farmlands of state-wide significance" occur within the city limits; and (3) existing agricultural land use within the city is limited. The City is proposing to annex 4,323 acres of land (Specific Plan #8) in the northeastern corner of its planning area, north of the Moorpark Community College. According to the Draft EIR prepared for the Specific Plan, development associated with the Specific Plan could result in the removal of 118 acres of "prime farmland". Agricultural lands would not be directly removed from Williamson Act contracts because most of the contracts within the Specific Plan Area will expire before development is proposed.

4.2.4.4 Las Posas Basin Aquifer Storage and Recovery Project

According to the EIR prepared for the Las Posas Basin Aquifer Storage and Recovery Project (CMWD, 1994), development associated with the Aquifer Storage and Recovery (ASR) well field could, using a worst case analysis, permanently displace approximately 43.8 of "prime farmlands." In addition, impacts to prime farmlands could occur due to installation of several of the pipeline alignment alternatives. Several parcels enrolled in the Williamson Act would also be within the projects area of potential effect; however, it is not anticipated the project would require cancellation of LCA contracts.

4.3.4.5 Summary of Cumulative Impacts to Agricultural Resources

Each of the projects listed above, including the proposed project, will contribute to the loss of prime farmlands and to some extent will affect lands currently enrolled in the Williamson Act. These projects alone could displace about 176 acres of "prime farmland" in the Moorpark area. Historic development at the MWWTP has also resulted in an incremental conversion of "prime farmland" to non-agricultural uses. Hence, cumulative loss of "prime farmland" is considered to be a significant adverse impact (Class I).

4.2.5 General Plan Consistency

The following General Plan policies pertain to agricultural lands within the County:

Farmland Resources Policy 1.6.2.1: "Discretionary development located on land designated as Agricultural and identified as Prime Farmland or Farmland of Statewide Importance on the State's Important Farmland Inventory, shall be planned and designed to remove as little land as possible from potential agricultural production and to minimize impacts on topsoil."

> ***Discussion of Consistency:*** Due to the existing constrained nature of the MWWTP, little room is available for expansion of plant facilities within the existing plant boundaries. In addition expansion opportunities onto adjacent lands are also limited due to the presence of drainages along the southern, western and eastern boundaries of the site, and the presence of Highway 118 to the north. Hence, the only developable lands adjacent to the treatment plant consists of lands zoned and designated for agriculture and mapped as prime farmlands. Because the reclaimed water storage ponds have been sited in proximity to the existing treatment plant and will link into the existing treatment plant facilities, the need to locate additional ancillary facilities (e.g., new parking, office space, process control facilities, etc.) on the adjacent prime farmlands has been avoided. However, placement of the reclaimed water storage ponds and the reclaimed pump station on "prime farmland" cannot be avoided. The project would be consistent with this policy because impacts to agricultural lands have been minimized to the extent feasible.

Farmlands Resources Policy 1.6.2.3: " Land Conservation Act (LCA) contracts shall be encouraged on irrigated farmlands."

> ***Discussion of Consistency***: Acquisition of APN 163-030-705 by the District will result in the cancellation of LCA contract 76-3.11A. However, as noted above, impacts to farmlands have been minimized to the extent feasible. Hence, the project would be consistent with this policy.

Farmlands Resources Policy 1.6.2.6: "Discretionary development adjacent to Agricultural-designated lands shall not conflict with agricultural use of those lands."

Discussion of Consistency: Operation of the existing wastewater treatment plant facility has not conflicted with agricultural activities on adjacent lands. Operation of the reclaimed water storage ponds is expected to be compatible with adjacent agricultural land uses. Construction of the reclaimed water distribution pipelines adjacent to and across adjacent agricultural properties may temporarily interrupt agricultural activities on these parcels. However, the disruption would be temporary and no long-term conflict is expected. Hence, the project would be consistent with this policy.

4.2.6 Mitigation Measures and Residual Impacts

No measures are available to mitigate the project-specific impact or cumulative loss of prime farmlands as a result of the construction and operation of the reclaimed water storage ponds to a level of insignificance. However, measure AG-1 has been included to minimize the indirect effect of the reclaimed water storage ponds on the productivity of prime farmlands. In addition, no measures have been identified to mitigate the cumulative removal of land from inclusion in the Williamson Act. It should also be noted that the District has adopted several agricultural protection measures as part of the project to minimize adverse but less than significant impacts to agricultural resources.

AG-1. The District should consider sub-leasing the western half of APN 163-030-705 for agricultural production/use.

4.3 GROUNDWATER QUANTITY

4.3.1 Existing Setting

Information on the groundwater setting in the project area is summarized from available literature including other EIRs prepared in the project area (CMWD, 1994; County of Ventura, 1992); the County of Ventura's Water Management Plan (1994d) and recent investigations prepared by CH2M Hill (1993) for the Metropolitan Water District (MWD).

4.3.1.1 Regional and Local Groundwater Setting

The existing MWWTP and the proposed reclaimed water distribution system facilities are located over the Las Posas Basin (LPB) (Figure 6). The LPB is an east-west trending structural depression containing water-bearing sediments of Pliocene to Recent Age (CMWD, 1994) covering an area of about 40 square miles (CH2M Hill, 1993). The basin has historically been considered to be comprised of two separate basins, the North and South Las Posas Basin, by the presence of the Moorpark Anticline, a large east-west trending anticlinal structure located north of Los Angeles Avenue (CMWD, 1994) and due to groundwater quality differences and structural differences. The majority of the project components and reuse sites would be located within the area comprised of the South Las Posas Basin; however, the reuse site associated with Distribution Alternative 2 would be located within the area defined as the North Las Posas Groundwater Basin. Recent investigations performed by CH2M Hill (1993) discuss these two basins together as the Las Posas Basin.

The surface of the LPB generally slopes to the south and southwest, with elevations ranging from about 1,200 feet above the National Geodetic Vertical Datum (NGVD) in the northeast to about 120 feet NGVD in the southwest where the LPB joins with the Oxnard Plain (CH2M Hill). The LPB is bounded by mountains and hills on three sides (South Mountain and Oakridge to the north; Camarillo Hills and Las Posas Hills to the south; and Big Mountain to the east) and by Arroyo Las Posas to the south.

The LPB is primarily underlain by Tertiary and Quaternary sediments and the basin floor consists largely of alluvial deposits. The geologic structure of the LPB is dominated by a northeast/southwest-trending syncline. The Tertiary sedimentary units are deformed to the extent that they outcrop along the northern and southern boundaries of the basin. A number of synclines are superimposed on the predominant synclinal structure.

Several significant faults traverse the basin including a north/south trending fault which, according to CH2M Hill (1993), cuts across the central portion of the basin. This fault had not been identified by previous investigators and was identified by CH2M Hill (1993) based on the opposite trends in the ground water levels in the vicinity of the fault. On the west side of the fault, groundwater levels are declining rapidly by as much as 130 feet, whereas on the eastern side of the fault groundwater levels are rising sharply by as much as 180 feet (CH2M Hill, 1993). The fault appears to separate the basin into two distinct hydrogeologic units. The existing MWWTP percolation ponds are located in an area of rising groundwater on the east side of the fault.

The primary aquifer system (commonly referred to as the Lower Aquifer System [LAS]) in the LPB consists of the Fox Canyon Aquifer and the Grimes Canyon Aquifer. The Fox Canyon Aquifer is part of the Lower Pleistocene San Pedro Formation, and consists of marine and non-marine sands and gravel. The Grimes Canyon Aquifer is part of the Plio-Pleistocene Santa Barbara Formation, and consists of marine sand with gravel. The Fox Canyon Aquifer is typically separated from the underlying Grimes Canyon Aquifer by 50 to 100 feet of fine-grained sediments, which are of low permeability. The LAS is overlain by interbedded fine-grained and coarse-grained sedimentary deposits, which are referred to as the interbedded unit (CH2M Hill, 1993).

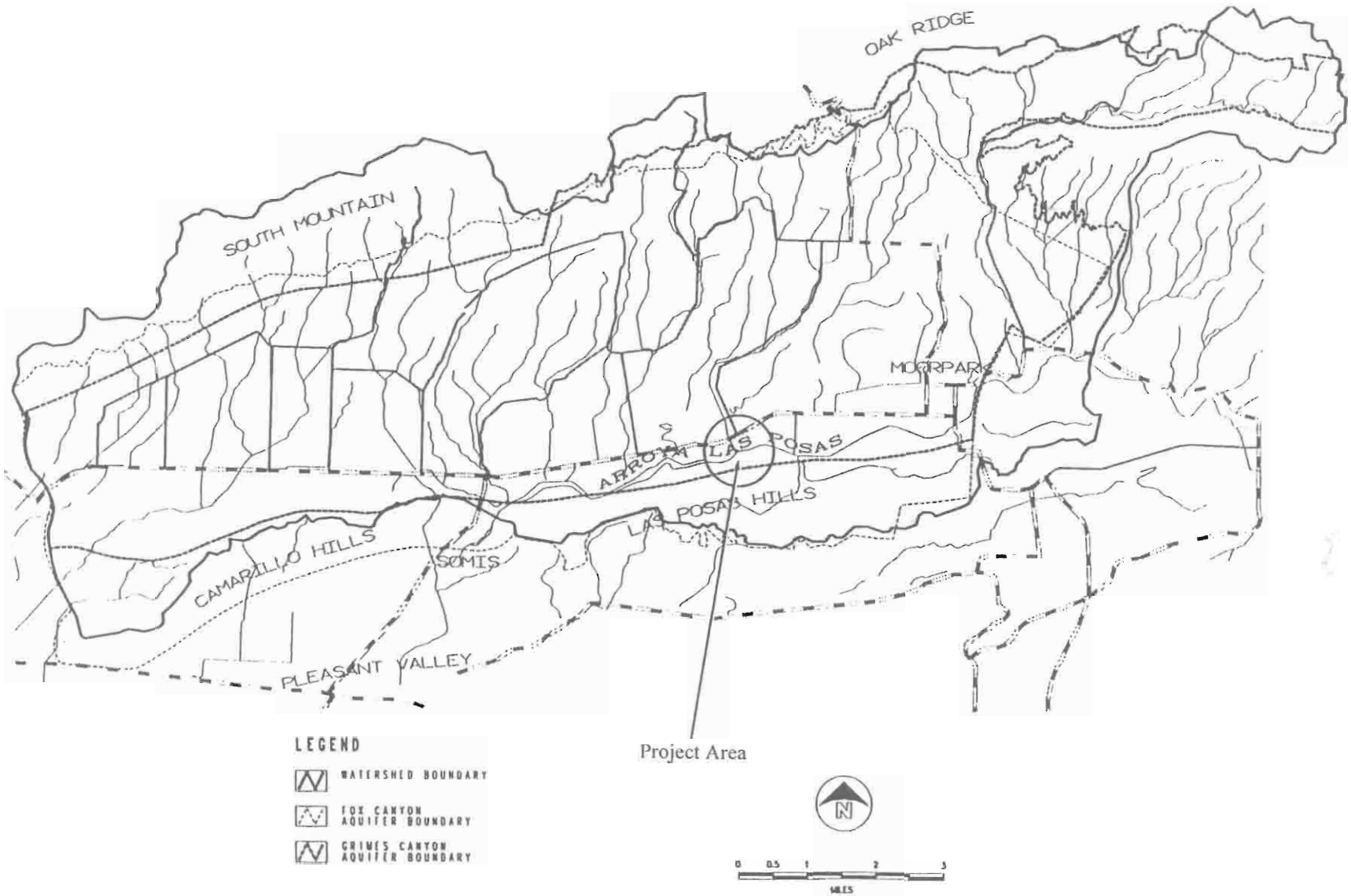
Water quality in the LPB lower aquifer system is of very good quality; total dissolved solids (TDS) concentrations typically range from 250 to 750 milligrams per liter (mg/l). However, localized TDS concentrations have been as high as 1,500 to 1,800 mg/l (CMWD, 1994). Water quality is described as being fairly uniform across the basin, although TDS concentrations have recently increased in the LPB in the vicinity of Somis and Balcom Canyon Road in the Arroyo Las Posas. The trend of water quality degradation is most apparent in areas experiencing rising water levels, and can be attributed to recharge from Arroyo Simi and Arroyo Las Posas (CMWD, 1994). Continuing degradation of groundwater may be caused by the City of Simi dewatering program, which pumps large amounts of groundwater with a high TDS concentration from the Simi Valley Groundwater Basin and discharges this water into Arroyo Simi (Ventura County, 1994d).

4.3.1.2 Groundwater Basin Recharge and Discharge

The total groundwater recharge to the North Las Posas Groundwater Basin and the South Las Posas Groundwater Basin have been previously estimated to be 26,000 AFY and 7,900 AFY, respectively (County of Ventura, 1992). Total outflow from the North Las Posas Groundwater Basin and the South Las Posas Groundwater Basin has been estimated to be 37,400 AFY and 7,000 AFY, respectively (County of Ventura, 1992). Thus, the North Las Posas Groundwater Basin is considered to be in a state of overdraft and the South Las Posas Basin in a state of surplus based on the County of Ventura (1992).

CH2M Hill (1993) estimated that over a 14-year period (1977 to 1990), average annual recharge to the LPB (which includes the area previously described as the North and South Las Posas Basin) was approximately 16,825 AFY, and average annual discharge was 26,850 AFY. Groundwater recharge and discharge to the portion of the basin east of the north-south trending fault was estimated to be 10,875 AFY and 14,360 AFY, respectively; recharge and discharge on the west side of the fault was estimated to be 5,950 AFY and 12,490 AFY, respectively. The existing MWWTP and the proposed reclaimed water distribution system components are located in the eastern portion of the LPB.

Recharge to the Lower Aquifer System of the LPB occurs primarily through infiltration of rainfall in outcrop areas (primarily located along the northern and southern margins of the basin); recharge from Arroyo Las Posas; subsurface inflow from adjacent groundwater basins; and vertical leakage of groundwater from adjacent aquitards (CH2M Hill, 1993). Leakage of water from the interbedded unit, and recharge from Arroyo Las Posas accounts for about 70 percent of



Source: CH2M Hill, 1993

Figure 6. Las Posas Basin Watershed and Aquifer Boundaries

the recharge to the Lower Aquifer for the entire LPB and accounts for 93 percent of the recharge to the eastern portion of the LPB System (CH2M Hill, 1993). Discharge from the basin is primarily from groundwater pumpage.

4.3.1.3 Groundwater Management

The Fox Canyon Groundwater Management Agency (GMA) was created through State legislation in 1982 to manage groundwater resources in the area overlying the Fox Canyon Aquifer zone. The GMA has the authority to require well registrations, reporting of groundwater production, and place limits on groundwater extractions. GMA Ordinance No. 5, Groundwater Extraction and Control Ordinance, was adopted in 1990 and is intended to eliminate overdraft of local groundwater basins by the year 2010. This ordinance has been periodically updated. The most recent version is Ordinance No. 5.5 which was adopted in May 1995. A key element of the ordinance is the gradual reduction in groundwater extractions. Pursuant to this ordinance average groundwater extractions will be reduced a total of 25 percent between the years 1992 and 2009.

4.3.1.4 MWWTP Effluent Disposal

Presently, the MWWTP discharges about 2.0 million gallons per day (MGD) of secondary treated effluent to 29 percolation ponds which have a total area of 31 acres. Approximately 14 acres of the ponds are essentially evaporation ponds with little or no measurable percolation (Karra, 1990). Although the percolation capacity of the ponds was designed to provide for disposal of the full 3.0 MGD MWWTP capacity, reduced percolation rates (ranging between 0.66 feet per day in the summer and 0.3 feet per day in the winter) and the need for rotational pond use (periodic removal/drying of ponds) has reduced the reliable percolation capacity of the ponds to 1.5 MGD (1680 AFY). In addition, the ponds are situated in an area of rising groundwater, and prior analyses indicated that these rising water levels might eventually inhibit percolation (County of Ventura, 1988).

Tertiary-treated effluent from the MWWTP was discharged into Arroyo Las Posas for a brief period in 1995 (approximately nine months). However, due to high ammonia levels in the effluent, the discharge was terminated. The current NPDES permit only allows discharge into the arroyo when 100 percent of the discharge cannot be percolated/evaporated.

4.3.2 Project Impacts

The MWWTP proposes to provide 1.5 MGD of tertiary treated water for nearby agricultural or irrigation water users within Ventura County Waterworks District No. 1 service area. During summer months, peak demands would be supplemented either by groundwater extracted from a proposed on-site well or would be supplemented from the District's potable water supplies. Potential impacts to groundwater quantity resulting from implementation of the project include: (1) potential increased extractions associated with the supplemental groundwater well; and (2) a reduction in the amount of water recharged to the LPB.

4.3.2.1 Significance Criteria

The Ventura County Initial Study Guidelines (1992) provide the following significance criteria for impacts to groundwater quantity:

- Any use that will increase the net utilization of groundwater in a basin that is overdrafted or adversely impacts an overdrafted basin.
- In groundwater basins that are not overdrafted or that do not impact an overdrafted basin, net water use that will individually or cumulatively cause the basin to become overdrafted.

These criteria pertain to net utilization and do not address changes in percolation/groundwater recharge.

With respect to groundwater resources, Appendix G of the State CEQA Guidelines states that a project will normally have a significant effect on the environment if it will *"interfere substantially with groundwater recharge."*

4.3.2.2 Groundwater Impacts Associated with Use of the Supplemental Well

The proposed project includes the construction of a well to provide supplemental water in the event of a shutdown of the tertiary treatment facility. The alluvial aquifer in the vicinity of the MWWTP may be saturated due to the percolation of secondary effluent. The casing size for the proposed well would be in the range of 10 to 16 inches and the well depth may be on the order of about 500 to 1000 feet to tap the lower confined aquifers in the area. The volume of groundwater to be extracted from this supplemental well is not currently known, but is expected to be relatively low since the well would be used only on an emergency basis. Extractions from this supplemental well would be maintained within the District's existing GMA allocation. Hence, use of the well is not expected to adversely affect area groundwater resources.

As an alternative to the use of this well, it is possible that water imported by the District could be used to supplement the reclaimed water by discharging it into the reclaimed storage ponds. Potable water service already exists in the vicinity of the MWWTP. A potable main is located a short distance east of the storage pond site.

4.3.2.3 Changes in Percolation/Recharge

Two distribution alternatives are being considered, Distribution Alternative 1 in which up to 1.5 MGD of reclaimed water would be delivered to local agricultural customers for crop irrigation (these customers either currently pump local groundwater or receive water from the District); and Distribution Alternative 2 in which the reclaimed water would be delivered to the proposed Moorpark Country Club Estates development (approved in April 1996) for golf course irrigation. This site is not currently irrigated. The distribution alternatives would provide reclaimed water to reuse sites within the eastern portion of LPB as described by CH2M Hill (1993) or within the South Las Posas Basin as described by previous investigators.

The MWWTP currently treats and disposes of approximately 2.0 MGD of effluent through a combination of percolation and evaporation. If the project is implemented, up to 1.5 MGD (1680 AFY) would be diverted away from the percolation/evaporation ponds and would be distributed for beneficial reuse. About 0.5 MGD (560 AFY) would continue to be treated to secondary levels and percolated on site. However, as noted earlier, a portion of the effluent is evaporated from the ponds.

Implementation of the proposed project would reduce the volume of effluent available for recharge to the LPB via the percolation ponds. The maximum annual amount of reclaimed water that would be diverted and unavailable for percolation would be 1,680 AFY (based on 1.5 MGD rate) when the plant is operating at capacity. The actual annual average amount of water diverted from percolation is likely to be less as discussed in the following paragraph.

The annual amount of reclaimed water delivered to customers will be less than 1680 AFY even when the plant is operating at full capacity because the demand for reclaimed water is significantly reduced or becomes non-existent during winter months. During the winter months, the District would divert the excess effluent to the percolation ponds and/or to Arroyo Las Posas if 100 percent of the effluent cannot be disposed of through percolation (per the District's NPDES permit). Hence, most of the water that would be diverted to reclaimed water customers in the summer would be available for recharge purposes in the winter, identical to current operations.

Reduced recharge resulting from distribution rather than percolation of the reclaimed effluent in the LPB is not expected to cause a significant impact to groundwater storage in this basin for the following reasons:

1. Currently, incoming wastewater flows to the MWWTP are about 2.0 MGD. However, wastewater flows are expected to approach the plant's current capacity of 3.0 MGD by the year 2000 (pers. comm. Karra, 1995). Hence, wastewater discharges to the percolation/ evaporation ponds are expected to reach about 1.5 MGD by the year 2000 (assuming 1.5 MGD is delivered via the proposed reclaimed water distribution system). The District plans to increase the plant's capacity to 5.0 MGD by the year 2010 to meet future demands. For example, buildout of the City of Moorpark Land Use Plan is expected to exceed the 5.0 MGD capacity. Although the District would likely continue to pursue beneficial reuse of the treatment plant effluent, it is unlikely that reclamation could provide for 100 percent effluent disposal, particularly during the winter months.

2. As discussed previously, the District also provides water service to the City of Moorpark and adjacent unincorporated areas. The majority of this water (approximately 75 percent) is imported. The District imports water from Calleguas Municipal Water District (CMWD), a member agency of Metropolitan Water District (MWD). The imported water is delivered from the State Water Project. Hence, the bulk of the water treated at the MWWTP is imported water, not a part of the natural groundwater budget of the LPB. As such, it represents artificial recharge in excess of natural recharge from precipitation, runoff, and return flows from local groundwater pumping.

The project would not interfere with existing natural (in basin) sources of recharge, nor would it significantly physically modify an important recharge area. A small area (approximately 3.2 acres) would be lined/covered with impermeable materials (e.g., the reclaimed water storage ponds would be lined with plastic) but the loss of recharge associated with the new impermeable areas is not expected to be significant. In addition, areas adjacent to the reclaimed water storage ponds are not proposed to be developed and recharge would still occur in these areas.

It should also be noted that the percolation ponds overlie a portion of the South Las Posas Basin, a separate unit of the LPB identified by CH2M Hill in 1993. This basin is considered to be saturated and exhibits high water levels (CMWD, 1989). Hence, the percolation from the MWWTP may not, in effect, provide recharge to this portion of the LPB. To the extent that this recharge is inhibited due to high water levels, the diversion of effluent for reclaimed water use would have less effect on recharge to the LPB as a whole.

In summary, the proposed reclaimed water distribution system would result in the decreased percolation of up to 1.5 MGD of wastewater effluent which is comprised primarily of imported (out of basin) sources. The diverted water would be used for crop or landscape irrigation in place of higher quality water supplies, in support of the County's overall water management objectives. The reduction in the amount effluent (derived primarily from imported sources) percolated to the LPB resulting from implementation of the project would be an adverse but less than significant impact (Class III) because of the following reasons:

1. The amount of effluent diverted for reclaimed water use is likely to be less than 1.5 MGD due to seasonal reductions in demand for reclaimed water.

2. The percolation ponds would continue to be used to percolate the balance of effluent which is not distributed or, if permitted, would be discharged to Arroyo Las Posas where recharge would also occur.

3. The amount of effluent to be percolated and/or discharged to Arroyo Las Posas would exceed current levels (even with diversions for reclamation) in the near future.

The delivery of 1.5 MGD of reclaimed water would result in the reduction of high-quality effluent directly percolated into a basin with elevated concentrations of TDS. Previous studies suggest that the discharge of water with a high TDS concentration by the City of Simi dewatering program since the early 1970's, combined with underflow in the Lower Aquifer System from the Simi Valley Groundwater Basin to the South Las Posas Groundwater Basin, have already caused the groundwater in the South Las Posas Groundwater Basin to take on the chemical characteristics of the Simi Valley Groundwater Basin (Ventura County, 1994d).

Concentrations of TDS in the Simi Valley Groundwater Basin generally range from 1,000 to 2,000 milligrams per liter, which is similar to current TDS concentrations in groundwater in the South Las Posas Groundwater Basin, indicating that TDS concentrations in these basins may have reached chemical equilibrium. Therefore, while the loss of a portion of the recharge from the MWWTP could cause a slight increase in TDS concentrations, it is unlikely to have a significant effect on water quality in the South Las Posas Groundwater Basin as long as the City

of Simi continues to discharge water with a high TDS concentration. Hence, potential impacts to groundwater quality resulting from reduced percolation of MWWTP effluent is also anticipated to be adverse but less than significant (Class III).

Neither distribution alternative is expected to have a significant impact on groundwater resources. However, Distribution Alternative 1 would provide water to some agricultural customers who currently receive potable water from the District, or extract or receive water from the overdrafted LPB. Use of reclaimed water under this alternative could replace or partially offset groundwater extraction. If Distribution Alternative 2 is selected no reduction in existing groundwater extractions or in lieu replacement of potable water supplies would occur because the proposed reuse site (a proposed golf course) is not currently, nor has it been historically, irrigated.

4.3.2.4 Disagreement by Experts Over Conclusions Regarding Impacts to Groundwater

The District received a letter of comment on the Draft EIR from the Ventura County Public Works Agency, Water Resources Division (see Appendix B) which indicated that impacts to groundwater due to decreased recharge to the Las Posas Basin, and associated water quality effects, should be considered. According to the CEQA Guidelines, any disagreement among experts should be disclosed in the Final EIR and the main points of disagreement should be summarized. The primary arguments presented in the letter of comment by the Water Resources Division are as follows:

- A reduction in recharge to the Las Posas Basin (an overdrafted basin) would also reduce recharge to the Oxnard Plain and Pleasant Valley basins, which are also overdrafted. Any reduction in recharge to an overdrafted basin should be considered significant.

- Any reduction in recharge to the Las Posas Basin is likely to increase TDS in the groundwater and should be considered a significant impact.

The District and their EIR consultant, Woodward-Clyde, re-examined their analysis of groundwater impacts due to the proposed project and re-affirmed their original conclusion that impacts from reduced recharge to the Las Posas Basin, and any adjacent basins, are potentially adverse, but are not of a sufficient magnitude to be considered significant. The District arrived at this conclusion again after conducting a more in-depth analysis of potential impacts to groundwater resources. This analysis included the following major elements: (1) differentiation between the South and North Las Posas basins and their overdraft status; (2) identifying which of these two basins would be directly affected; (3) critically examining the hydrologic gradient between the South and North Las Posas basins, and with other adjacent basins; and (4) re-applying the significance criteria for groundwater impacts from the CEQA Guidelines (e.g., "... *substantial interference with groundwater recharge..*").

A detailed analysis of groundwater impacts in response to the Water Resources Division is provided in Appendix B. A summary of this response was presented at the March 5, 1997 Environmental Report Review Committee (ERRC) hearing. The Water Resources Division representative indicated disagreement with the District's analysis and conclusions. There are no

available data or additional technical expertise to resolve the differences expressed by the District and the Water Resources Division regarding groundwater conditions at the project site and the effect of reduced recharge. It was agreed at the ERRC hearing that time consuming and expensive studies would be required to further assess this issue, and that such a study may not reach unequivocal results.

The District stands by its conclusions in the Draft EIR regarding groundwater impacts, but acknowledges the different technical opinion held by the Water Resources Division. At the ERRC hearing, the Water Resources Division proposed a mitigation measure (Mitigation Measure GW-1), which, in their opinion, would reduce any groundwater impacts to less than significant levels. For purposes of the Final EIR, the District will identify groundwater impacts of the project as potentially significant, but mitigable (Class II).

4.3.3 Cumulative Impacts

Development within the City of Moorpark and development within Specific Plan Area 8 would involve the conversion of lands currently in open space or agricultural uses to urban/developed uses. Development associated with buildout of the City of Moorpark and the Specific Plan Area would require new potable and non-potable (reclaimed) water supplies. The potable supplies are proposed to be obtained from the District and other area water purveyors; these supplies are not proposed to be obtained through additional groundwater extractions. As development occurs within the City and the Specific Plan area there will be a net increase in the amount of impervious surfaces. However, environmental documents prepared for the Moorpark General Plan and the Specific Plan Area 8 do not identify loss of groundwater recharge as an issue, hence no impacts to groundwater recharge are expected to occur in association with these projects.

The Las Posas Basin Aquifer Storage and Recovery Project would have no net effect on the amount of water in storage in the LPB since injection and extraction would be balanced. Impervious surfaces associated with the ASR well sites would involve about 5.7 acres; reduced infiltration associated with these new impermeable surfaces is not expected to significantly effect groundwater levels in the LPB. The proposed reclaimed water storage ponds and appurtenant facilities would result in reduced infiltration over an approximate 3.2 acre area. Changes in recharge due to these changes in infiltration would be cumulatively adverse but less than significant.

In the future, the Simi Valley Wastewater Treatment Plant intends to reclaim a portion of the effluent from it's facility for beneficial reuse, however no specific distribution plans or time schedule for implementation of a reclamation project have been developed (pers. comm. Behjan, 1996). The effluent is derived from imported supplies and is currently discharged to Arroyo Simi/Arroyo Las Posas. This effluent provides recharge to the LPB via seepage through the Arroyo Simi/Arroyo Las Posas channel. Hence, cumulatively there would be a reduction in the amount of effluent derived from imported sources which is percolated into the LPB. However, given the absence of specific reclamation plans, an evaluation of the cumulative effects cannot be made.

4.3.4 General Plan Consistency

The Ventura County General Plan provides the following water resources goals and policies which are potentially applicable to the proposed project:

Goal 1.3.1-2: "Effectively manage the water resources of the County by adequately planning for the development, conservation and protection of water resources for present and future generations".

> ***Discussion of Consistency***: The project would provide the conveyance system to allow reclaimed water to be used in the District's service area in lieu of potable supplies. Hence, the project would be consistent with this goal.

Goal 1.3.1-3: "Maintain and, where feasible, restore the chemical, physical and biological integrity of surface and groundwater flows"

> ***Discussion of Consistency***: The project is not expected to significantly affect natural recharge to the LPB/South Las Posas Basin. A reduction in the amount of effluent percolated may cause TDS levels to slightly increase in the LPB/South Las Posas Basin, but discharges for the City of Simi Valley's groundwater dewatering program appears to have the most significant effect on groundwater quality. The project would be potentially consistent with this Goal.

Goal 1.3.1-4: "Ensure that the demand for water does not exceed available water resources."

> ***Discussion of Consistency***: In addition to providing wastewater treatment services, the District provides potable water to the City of Moorpark and adjacent unincorporated areas. Implementation of the proposed project would allow the District to augment its existing water supplies allowing the use of reclaimed water in lieu of potable water. Thus, the project would be consistent with this goal.

Goal 1.3.1-6: "Protect and, where feasible, enhance watersheds and aquifer recharge areas."

> ***Discussion of Consistency***: Although a thick cap overlies most of the Lower Aquifer System an exception occurs along Arroyo Las Posas southwest of Moorpark, where the clay cap is not present and unconfined conditions exist. The existing MWWTP percolation ponds are located in this area and provide recharge to the Lower Aquifer System. The project would result in the reduced infiltration in this area by creating about 3.2 acres of additional impervious area. Considering areas adjacent to the reclaimed water storage ponds would remain undeveloped the net reduction in infiltration is not expected to be significant. Hence, the project would be potentially consistent with this goal.

Goal 1.3.1-6: "Promote reclamation and reuse of wastewater for recreation, irrigation, and to recharge aquifers."

Discussion of Consistency: The project would provide the conveyance facilities to allow the beneficial reuse of tertiary treated reclaimed municipal effluent. The reclaimed water would be used for crop and nursery irrigation (Distribution Alternative 1) or for use at a golf course (Distribution Alternative 2). The portion of the water not distributed would be available for groundwater recharge. Hence, the project would be consistent with this goal.

Policy 1.3.2-4: "Discretionary development shall not significantly impact the quantity or quality of water resources within watersheds, groundwater recharge areas or groundwater basins."

Discussion of Consistency: The proposed reclaimed water distribution system would result in the decreased percolation of up to 1.5 MGD of wastewater effluent which is comprised primarily of imported (out of basin) sources. he diverted water would be used for crop or landscape irrigation in place of higher quality water supplies in support of the County's overall water management objectives. The percolation ponds would continue to be used to percolate the balance of effluent which is not distributed or, if permitted, it would be discharged to Arroyo Las Posas where recharge would also occur. Hence the project is potentially consistent with this policy.

Policy 1.3.2-11: "All new golf courses shall be conditioned to prohibit landscape irrigation with water from groundwater basins or inland surface waters...Where feasible, the reclaimed water shall be utilized for new golf courses."

Discussion of Consistency: Distribution Alternative 2 would provide reclaimed water to a proposed golf course development in the City of Moorpark. Although the golf course is not located on lands under the jurisdiction of the County, the project would be consistent with the intent of this policy.

4.3.5 Mitigation Measures And Residual Impacts

The following measure would reduce any adverse impacts of project on groundwater resources, and avoid any significant impacts :

GW-1 The MWTP shall not decrease the average annual volume of water discharged to percolation ponds and the stream as a result of the project.

4.4 PALEONTOLOGICAL RESOURCES

A Paleontologic Resource Evaluation was prepared for the Moorpark Wastewater Treatment Plant Reclaimed Water Distribution System by Erathem-Vanir Geological Consultants (1996). The evaluation included a literature and records review, and field reconnaissance of the project area. The study is hereby incorporated by reference and is summarized below.

4.4.1 Introduction

Paleontogical resources refer to the fossilized remains of pre-historic plant and animal life. Paleontologic Resources represent non-renewable fossil resources. Fossils are of great scientific interest as records of ancient life because of the scientific information they contain and their rarity. They provide information about the relationships of living organisms, their ancestry, and their former distribution. Progressive morphologic changes seen in fossil lineages provide critical information on the evolutionary process—the ways new species arise and organisms adapt or fail to adapt to changing environmental circumstances. Fossils also serve as important guides to the ages of the rocks and sediments in which they are contained and prove useful in determining the temporal relationships of rock deposits from one area to another and the timing of geologic events. Time scales established by fossils provide a chronological framework for geologic studies of all kinds.

4.4.2 Applicable Laws, Regulations, and Policies

Federal Regulations

Scientifically significant fossils are recognized as important nonrenewable natural resources and as such are protected by a variety of federal regulations. Principal among these are the following:

- Executive Order I2088, October 17, 1978 (43:201, 47707)
- Federal Land Management and Policy Act of 1976 (FLPMA, P.L. 94-579, 43 U.S.C. 1701-1782)
- Executive Order 11593, Protection and Enhancement of the Cultural Environment, May 13, 1971 (36 C.F.R. 8931, 16 U.S.C. 470)
- National Natural Landmarks Program; National Environmental Protection Act of 1969 (P.L. 91-190; 83 Stat. 852; 42 U.S.C. 4321-4327)
- Montana Power Company decision (Decisions of the Department of the Interior 721.D, A-30310; 518-522, December 3, 1965)
- Memoranda of Opinions, U.S. Department of the Interior, Office of the Solicitor to the Bureau of Land Management (BLM), applicability of the Antiquities Act to Fossils, 1956-1974.

California Regulations

State of California laws pertaining to fossil resources include:

- California Environmental Quality Act of 1970 (CEQA) (13 PRC: 2100 *et seq.*)
- Guidelines for the Implementation of the California Environmental Quality Act as am. May 10, 1980 (14 Cal. Adm. Code: 15000 *et seq.*, n.b. Chapter 3, Division 6, Title 14, Appendix G)
- Penal Code Section 622.5 (Stats. 1939, c. 90, p. 1605, S.1)
- Public Resources Code, Section 5097.5 (Stats. 1965, c. 1136, p. 1791)
- Executive Order B-64-80, March 6, 1980.

According to the California Public Resources Code 5097.5, fossils can only be removed from public lands with the express permission of the agency whose jurisdiction the land is under. Violations of this code have been considered misdemeanors and punishable as such.

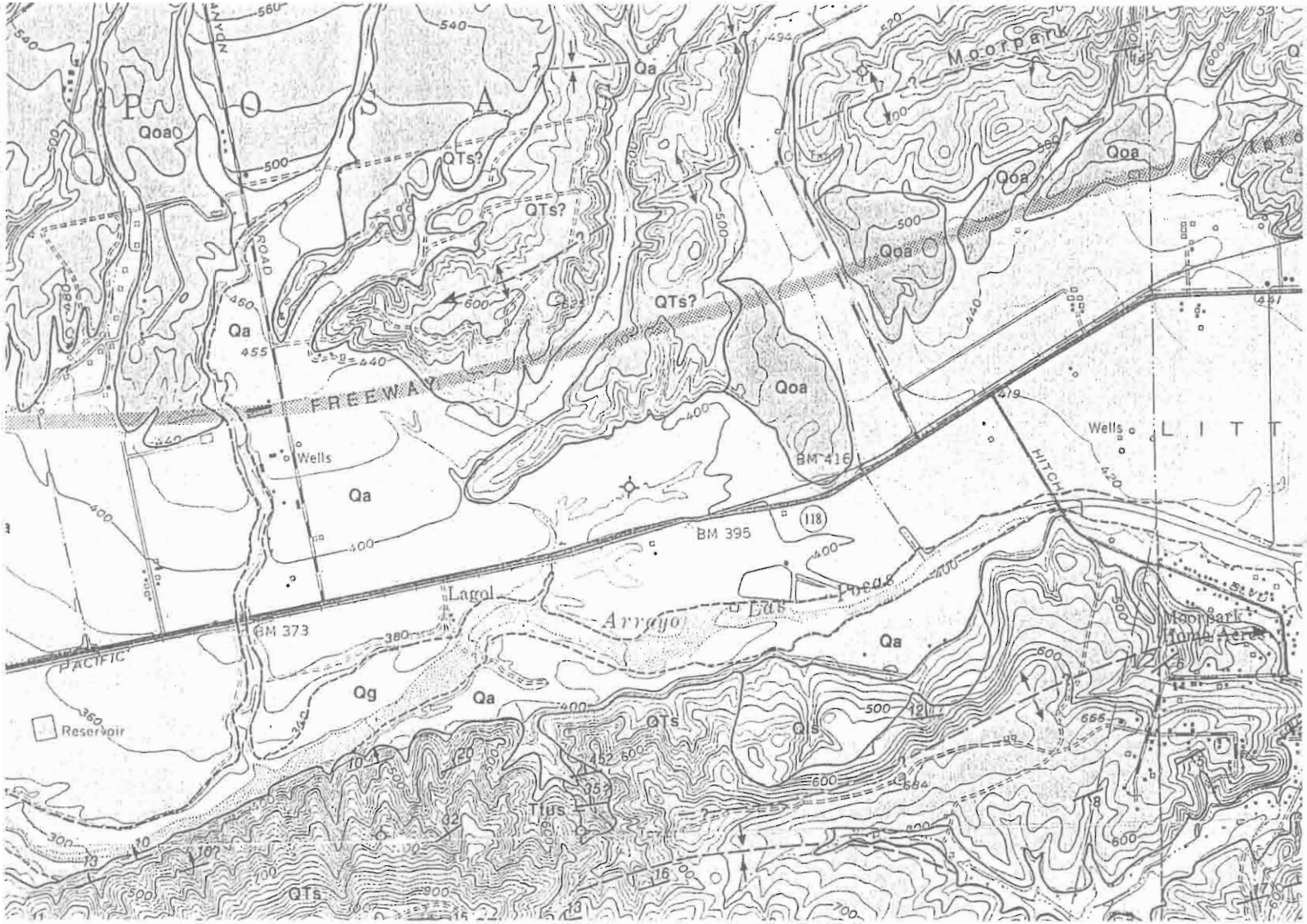
4.4.3 Investigative Methods and Data Sources

A literature search of the Georef database was conducted to identify pertinent geologic and paleontologic references concerning the project area. In addition, paleontologic locality records and maps were reviewed at the Natural History Museum of Los Angeles County for information on known fossil localities within the immediate vicinity of the project area. The search revealed no known localities within the Moorpark USGS 7.5 minute quadrangle. The project area was surveyed on March 1, 1996. The survey involved an intensive search of accessible rock exposures cropping out in and around the existing treatment plant, along Grimes Canyon, and fresh excavations cut by on-going flood control projects near Hitch Boulevard. Field survey resulted in the discovery of no significant fossil remains in the project area.

4.4.4 Geologic/Paleontologic Overview

In Ventura County, paleontological remains include examples from throughout most of geological history, including the Paleozoic (600-335 million years ago), Mesozoic (225-70 million years ago) and Cenezoic (70 million years ago to present) eras (Ventura County, 1994).

Geologic mapping by Dibblee (1992) documents the presence of three different sedimentary deposits in the project area (Figure 7). These include from youngest to oldest, (1) unnamed alluvial deposits of Recent age (Qa); (2) unnamed older surficial sediments of Holocene and possibly Pleistocene age (Qoa); and (3) Saugus Formation of Pleistocene and possibly latest Pliocene age (Qts). Of the three deposits present, only the unnamed older surficial sediments (Qoa) and Saugus Formation (Qts) have the potential to produce scientifically significant fossils.



Source: Dibblee, 1992

Figure 7. Geology of the Project Area

Unnamed Older Surficial Sediments (Qoa). These deposits include older dissected surficial debris that lie along the railroad tracks on the northern margin of the project area (Figure 7). They consist of dissected older alluvial gravel and silt or clay composed largely of detritus from nearby formations.

Vertebrate fossils of late Pleistocene age have been discovered in similar unnamed older surficial sediment at widespread localities in the Ventura Basin. Institutional records show that these localities have been discovered from within a few feet to several hundred feet below the surface (Reynolds, 1987). The remains of the buffalo (Bison) marks the beginning of the late Pleistocene (Rancholabrean), in terrace deposits in the Castaic Valley. Lander (1989), Miller (1971), Reynolds (1987), and Jefferson (1991) reported on a diversity of late Pleistocene (Rancholabrean) land mammals from older alluvium and terrace deposits in the Los Angeles Basin. The large number of recorded fossil localities in older alluvium of late Pleistocene age documents the ability of these deposits to yield scientifically significant fossils.

Saugus Formation (Qts). The Saugus Formation is present in the project area along the north and south sides of Arroyo Las Posas and along Hitch Boulevard, south of where it crosses the river (Figure 7). According to Dibblee (1992), the Saugus in the area consists of light gray to light brown gravel composed of white to light gray granitic rocks, a lesser amount of gneiss, metavolcanic rocks, quartzite, and a lesser yet amount of anothosite, gabbro, and basaltic to andesitic volcanic rocks. The gravel is contained within a dark reddish sandstone to coarse sandy matrix.

The formation elsewhere in Ventura and Los Angeles County includes fossiliferous non-marine to marine deposits that accumulated during the Pliocene and the early Pleistocene or roughly between 1.9 million to 4.8 million years ago. Part of the formation may be as young as late Pleistocene or about 50,000 to 250,000 years old. The formation is known to contain the fossils of a diverse group of extinct animals including horses, large cats, dogs, elephants, peccaries, turtles, deer, and notably sharks. It is also well known for its diverse assemblage of fossil invertebrates (Diveley, 1995).

The continental parts of the Saugus Formation produce vertebrate fossils from a number of fossil localities in the general vicinity of the project area. These include:

1) CIT 220, probably from San Francisquito Canyon
2) (2) LACM 1293, from Potrero Canyon
3) LACM 3374 in Dry Canyon
4) LACM 4134 in Castaic Canyon
5) LACM 6803 and 6804 near the Saugus School
6) LACM 6871 in Rye Canyon
7) localities F-8 to F-11 in Halsey Canyon
8) localities v-91 and 92 of Winterer and Durham (1962)
9) and (9) a crushed horse skull (*Pliohippus*) discovered by Lander (1992) in the Halsey Canyon area.

Together, these localities have yielded fossils mammals including the remains of extinct species of dog, cat, elephant, horse, peccary, camel and deer of late Pliocene to early Pleistocene age (Lander, 1988; Reynolds, 1987; Winterer and Durham, 1962). The upper most part of the Saugus, also of continental origin is not known to be very fossiliferous, but may have produced remains of buffalo (*Bison*) near Castaic Creek, the horse genus (*Equus*; MBA, 1991), and mastodont (Winterfeld, 1995). The occurrence of these genera suggests that deposition of the formation continued into the late Pleistocene. The large number of recorded fossil localities in the Saugus Formation documents the ability the formation to yield scientifically significant fossils.

4.4.5 Project Impacts

Ground disturbance associated with construction of the project components may impact fossil resources. Direct damage or destruction of fossils, with subsequent loss of scientific information can result from construction-related ground disturbance and is of primary concern. In addition, indirect damage or destruction of paleontologic resources can occur due to erosion that is accelerated by construction disturbance. However, not all impacts of construction are adverse to paleontology. Excavation can reveal fossils of significant scientific interest that would have otherwise remained buried and unavailable for scientific study. The mere revelation of fossils of scientific importance is in itself not a beneficial impact. To have beneficial impact, such fossils must be properly collected and catalogued into the collection of a museum repository so that they are available for scientific study.

4.4.5.1 Significance Criteria

Although all fossils contain some scientific information, few paleontologists consider all fossils to have scientific significance. The scientific significance of fossils can only be evaluated by a qualified paleontologist. There is no precise definition of what constitutes a significant fossil or fossil resource, even among paleontologists. For that reason, the following significance guidelines were established by members of the paleontologic community and recognized by the Society of Vertebrate Paleontology (SVP, 1995) to assist in this determination. These guidelines consider fossils to be of scientific value and thus of scientific significance if they:

(1) provide important information about the evolutionary trends among organisms, or relate living plants and animals to extinct organisms

(2) provide important information regarding development of biological communities or interaction between botanical and zoological biotas

(3) demonstrate unusual or spectacular circumstances in the history of life

(4) are in short supply and in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and are not found in other geographic locations

(5) provide information on the dating of important geological events.

According to above guidelines, significant adverse impacts occur when scientifically significant remains of plants and animals or their traces are damaged or destroyed as a result of project implementation.

4.4.5.2 Reclaimed Water Storage Ponds

The reclaimed water storage ponds would be located in an areas of unnamed alluvial deposits of Recent age. These deposits have a low paleontologic sensitivity and are not expected to contain scientifically significant fossils. Hence, no impacts are expected to occur as a result of the construction and operation of the reclaimed water storage ponds.

4.4.5.3 Distribution Pipelines

Distribution Alternative 1

The south branch pipeline would be traverse areas of unnamed alluvial deposits of Recent age. A small portion of the north branch pipeline (north of the railroad track and west of Mejico Creek) traverses any area of unnamed older surficial sediments of Holocene and possibly Pleistocene age, and the east branch pipeline (along Hitch Boulevard on the south side of the arroyo) traverses an area mapped as containing deposits associated with the Saugus Formation. Although these two formation have the potential to contain scientifically significant fossils, the potential significance in the vicinity the proposed pipelines is considered to be low. The paleontologic potential is considered to be low for the following reasons: 1) the Recent age of the sediments on the surface underlying most of the project site; 2) the absence of any fossils in the older alluvium mapped along the railroad tracks; and 3) the fact that it is unlikely that the Saugus Formation will be encountered by the shallow excavations planned for the project facilities. Because the paleontologic significance is low, potential impacts to paleontological resources are not expected.

Distribution Alternative 2

Project components associated with Distribution Alternative 2 would only be located in areas of unnamed alluvial deposits of Recent age. Hence, no impacts to paleontologic resources are expected.

4.4.6 Cumulative Impacts

Since the project is not expected to have a project-specific impact on paleontologic resources, the project would not contribute to the potential for cumulative effects.

4.4.7 General Plan Consistency

Paleontological and Cultural Resources Goal 1.8.1.1: "Identify, inventory, preserve and protect the paleontological and cultural resources of Ventura County (including archaeological, historical, and Native American resources) for their scientific, educational and cultural value."

Discussion of Consistency: A paleontologic resource evaluation was conducted as a part of this EIR. The results of the evaluation indicate that the project would not affect paleontologic resources; hence, the project would be consistent with the intent of this goal.

Other paleontologic policies contained in the General Plan pertain to avoidance and mitigation of impacts to significant paleontologic resources. Since the paleontologic resource evaluation has concluded that construction and operation project will not affect paleontologic resources, these policies would not be applicable to the project.

4.4.8 Mitigation Measures and Residual Impacts

Based on the results of the Paleontologic Evaluation, no additional paleontologic work is required for construction of the project components. However, it the extremely unlikely event that fossils are discovered during construction, a qualified paleontologist would be contacted in order to evaluate the significance of the find as specified in Section 3.6.1.

4.5 CULTURAL RESOURCES

MacFarlane Archaeological Consultants (1996) conducted a Phase 1 Archaeological Survey for the MWWTP Reclaimed Water Distribution System. The objective of the cultural resources investigation were to identify and inventory areas of possible cultural resources sensitivity within the project area. The investigation included: a comprehensive literature and records search; a systematic intensive walkover survey; consultation with local Native American groups and individuals; an assessment of impacts of the project on any potentially significant cultural resources encountered; and identification of appropriate measures to mitigate adverse impacts to cultural resources.

This report is hereby incorporated by reference, and the results of the study are summarized in the following sections.

4.5.1 Existing Setting

4.5.1.1 Introduction

For purposes of the cultural resource evaluation, the project vicinity is defined as the area within ½ mile of the proposed project elements. The project area encompasses those areas which include or are immediately adjacent to the project components. The area of project effect (APE) includes the construction corridor, potential staging areas, spoils storage areas, and associated pipeline connections between the existing MWWTP and the proposed project components.

A cultural resources record search for the proposed project area was conducted at the Archaeological Information Center, Institute of Archaeology, University of California, Los Angeles (UCLA) in March of 1996. Information from the cultural resources record search also includes the location of all previously surveyed areas. The location of these sites along with the location of the project components were plotted on the U.S. Geological Survey (USGS) 7.5 minute topographic series map (Moorpark quadrangle). Extant prehistoric and historic archaeological sites are discussed below.

Nineteen (19) surveys and/or excavations have been conducted within a ½-mile radius of the project area (Callison, 1979a, b, 1980; Clewlow, 1975; Dames & Moore, 1986; Gerber, 1992; Gray and Cagle, 1992; Harper, 1987; Lopez, 1976, 1977, 1979, 1980a, b, 1989, 1991a, b; Parker, 1987a, b; Stokes, 1976). Six of these investigations were conducted for development associated with the Moorpark Wastewater Treatment Plant and include portions of the present study area (Parker, 1987a, b; Harper, 1987; Lopez, 1976; Gray and Cagle, 1992; and Gerber, 1992. No cultural resources were identified in association with these surveys except Parker (1987a, b) which identified and evaluated the significance of CA-VEN-864 located on a cultivated alluvial terrace north of Arroyo Las Posas just west of the confluence of Mejico Creek and Arroyo Las Posas. The site, recorded by Parker (1987a), is described as a very sparse scatter of shell and chipped stone artifacts. Non-artifactual components included 2 chips of fused shale and 2 pieces of marine shell (species not identified). Based on subsequent excavations (Parker, 1987b), the site was evaluated as insignificant.

The literature research also identified one other site (CA-VEN-228a, b) and one isolated artifact located adjacent to the APE. CA-VEN-228 is located on a knoll just northwest of the intersection of Grimes Canyon Road and Los Angeles Avenue (Highway 118). The site, recorded by King and Decker in 1970 as CA-VEN-228 is described as a scatter of artifacts (1 mano, 1 core tool, 1 fused shale flake). An active avocado orchard is currently located on the knoll. Although subsequently mapped as having two separate components (a and b), this is not reflected in the original site record. The site is located on the hillside about 120 feet north of the proposed north branch pipeline. The significance of VEN-228a, b has not been previously evaluated. The isolated artifact, a bi-facially retouched Monterey Chert Flake, was located within the Las Posas sediment control channel about 5 meters from the south bank (Dames & Moore, 1991; Gray and Cagle, 1992). This artifact is redeposited and is not considered to be a significant cultural resource.

4.5.1.2 Cultural-Historical Setting

The project area lies in the eastern portion of the territory of the Ventureno Chumash, a Hokan-speaking group of hunters and gatherers whose ancestors settled in the area as early as 8000-9000 years ago and gradually evolved toward a degree of marine exploitation which may be unique in the Americas (Landberg, 1965; Heizer, 1978; Grant, in Heizer, 1978;). Chumash territory is extensive ranging along the California coast from Malibu in Los Angeles County, northward to include Tejon Pass and Castaic Lake and past the Cuyama River Valley (Kroeber, 1925), and westward to the coast range mountains and includes the Santa Barbara Channel Islands.

Researchers who have focused on the development of a cultural historical sequence for the study area agree that there has been a development of technology and social organization from simple to complex. This sequence has been divided into three developmental periods termed Early, Middle and Late Periods. The oldest sites in the foothills of Ventura County date to about the fourth of fifth millennium before the Christian era (6,000-7,000 B.P. [Before Present]), but the majority of sites are the remains of historically known Ventureno Chumash who occupied sites in the region until the 19th Century (Heizer, 1978; Grant, in Heizer, 1978). During the Spanish Colonial Period (1769-1822) the majority of Chumash were taken into the Missions as Neophytes. It is postulated that others fled inland away from the Mission controlled coastal areas. As a result of exposure to European diseases for which the Chumash had no natural immunity and other factors, the majority of the indigenous population was decimated. When the Missions were desecularized and large areas were granted as Ranchos, many Chumash were taken into the Ventura County Ranchos as workers as has been documented at Rancho Sespe.

Unlike the coastal Chumash, extensive accounts of conditions among the interior peoples are substantially lacking. Extrapolating from other Interior Chumash regions it is known that sites were located with respect to several variables: (1) sites generally occur on raised terraces and other landforms in close proximity to water resources (intermittent drainages, springs, permanent water sources); (2) such sites were also located so as to minimize the cost of utilizing plant and animal communities for subsistence; and (3) sites were generally located on landforms exhibiting

slopes of less than 22 percent with the exception of rock shelters and ceremonial localities (Wilcoxon and Brandoff, 1974; Horne, 1981).

The sole source of information available about interior life comes from missionized Indian informants well after the Chumash population was on its final course toward extinction. From mission vocabularies, H.W. Henshaw was able to obtain Chumash names for plants, animals and many items of their material culture. Of particular importance to the Ojai region was a list of 48 Chumash village names supposedly located in the interior of Ventura County (Applegate, 1974; Wilcoxon and Brandoff, 1974). In 1914 Candalaria Valenzuela, a Ventureno Chumash from the Sespe region confirmed a number of the Chumash village names obtained by Henshaw (Blackburn, 1963, pp. 135-160). Of these, only a small number have been located archaeologically.

Van Valkenburg (1935) suggests that the large number of Chumash place names recorded for the Ventura County region supports extensive utilization during prehistoric times (Applegate, 1975). Applegate (1974, 1975) lists the following place names for the project area originally transcribed by John P. Harrington (1912-1922). Harrington's ethnographic sources included Henshaw's list of Indian villages (Heizer, 1955, in Applegate, 1975) as well as Chumash informants. In addition, Lopez (1978) lists a site in the Grimes Canyon area north of the APE.

- *kaluah*, ---, '---,' fused shale quarry in Grimes Canyon *sapeleq'*, place in Ventureno territory
- *s'omis*, Ventureno, 'scrub-oak spring,' village near Ojai, now seen in Somis, east of Saticoy
- *kimichaq*, village in Happy Camp Canyon, northeast of Moorpark

The parcel is located within the historic boundaries of the Rancho Las Posas. The project area first enters the historic record during the Mexican Colonial Period (1822-1846) in 1824 (May 15) when 26, 623.26 acre Rancho Las Posas was granted to Jose Carrillo and later confirmed to Jose de la Guerra y Noriega (Thompson and West, 1961 edition, p.388). The overland stage route from San Buenaventura traverses the Rancho. In 1876 the ranchos Las Posas and Simi were sold (Thompson and West, 1961 edition). Thompson and West note that throughout the immense area of groves of lemon, orange, avocado, fig and almond trees planted in Rancho Las Posas, artesian wells provided water.

The first sustained occupation of the general area was during the late 1870s (Lopez, 1978a). The areas principal economic activity today centers on citrus and avocado orchards, although there are also operating quarries in Balcom, Long and Grimes Canyons.

4.5.1.3 Archaeological Survey Results

Reclaimed Water Storage Ponds and Associated Facilities

Literature research revealed that the reclaimed water storage ponds and associated connecting pipelines between the ponds and the existing tertiary treatment facilities would be located in an

area previously surveyed by Parker (1987a). No cultural resources were identified in association with this survey. The eastern and southernmost portion of this area was re-surveyed as a part of this investigation and no resources were observed. The actual pond locations were not resurveyed as a part of this investigation due to the lack of ground visibility and access at the location.

Distribution Alternative 1

North Branch Pipeline. During the Phase 1 field study, no archaeological sites or artifacts were observed along the proposed north branch pipeline route. Although no surface evidence of cultural resources were observed, the portions of the pipeline route near the banks of Mejico Creek are located in an area subject to historic flooding and are considered potentially sensitive for the occurrence of buried archaeological resources. In these areas, resources which may have been present on the surface could now be buried by material deposited during the flood events.

The mapped boundary of CA-VEN-228a is located on a hillside approximately 120 feet north of the proposed pipeline. The area currently consists of an avocado orchard. The area was re-examined during the Phase 1 survey. One potential ground cobble was observed on the surface of the hillside about 120 feet north of the proposed pipeline route; however numerous natural cobbles were also found to be present on the surface of the hillside. No other artifacts were observed at this location.

South Branch Pipeline. Portions of the south branch pipeline north of Arroyo Las Posas are within areas previously surveyed by Parker (1987a) and the areas south of the arroyo have been surveyed by Lopez (1991). The entire south branch pipeline was resurveyed as a part of the Phase 1 investigation with the exception of the portion of the pipeline near the reclaimed water distribution ponds, which was not accessible. No archaeological sites or artifacts were observed during the prior surveys or current survey. However, the portion of the pipeline alignment adjacent to Mejico Creek and immediately adjacent to the top of bank of Arroyo Las Posas has been subject to historic flooding, and is therefore considered sensitive for the occurrence of buried archaeological resources.

East Branch. No evidence of an archaeological site or artifacts was observed during the Phase 1 survey of the proposed east branch pipeline. The pipeline traverses Mejico Creek in an area that has been subject to previous flooding and this area is considered sensitive for the presence of buried archaeological resources. However, the wash has been subject to disturbance as a result of prior flood control modification and maintenance activities and is considered to be highly disturbed.

At Hitch Boulevard the pipeline would traverse Arroyo Las Posas. The area adjacent to Arroyo Las Posas has been previously surveyed (Clewlow, 1975; Lopez, 1991) and no archaeological sites or artifacts were observed during this survey. The portion of the route in the vicinity Arroyo Las Posas has been subjected to periods of flooding and is considered sensitive for the presence of buried resources. However, much of this area has been subjected to flood control modification and maintenance activities and is considered highly disturbed.

Distribution Alternative 2

East Branch. Archaeological conditions along the east branch pipeline would be the same as described for Distribution Alternative 1, except the pipeline would terminate just west of Hitch Boulevard and would not continue south across the arroyo.

4.5.2 Project Impacts

If present within the project area, direct impacts to cultural resources could occur due to construction activities such as clearing and grading, excavation (trenching and boring), and equipment access or storage, and tailings storage. Indirect impacts may also occur, primarily as a result of increased public access to archaeological resources.

4.5.2.1 Significance Criteria

The significance of archaeological resources, historic resources and Native American values is evaluated based on the criteria for inclusion in the National Register of Historic Places (36 CFR 60.4). These criteria form the basis for similar criteria outlined in Appendix K of the CEQA Guidelines, California Native American Heritage Commission guidelines and the Ventura and Los Angeles County Plan Archaeological guidelines (CA Site Survey, 1980).

Appendix K of the CEQA Guidelines identifies an important archaeological resource as one that: (1) is associated with an event or person of recognized significance in California or American history; (2) is of recognized scientific importance in prehistory; (3) can provide information that is of demonstrable public interest and useful in addressing scientifically consequential and reasonable archaeological research questions; (4) has a special or particular quality such as the oldest, best example, largest, or last surviving example of its kind; (5) is at least 100 years old and possesses substantial stratigraphic integrity; or (6) involves important research questions that historical research has shown can be answered only with archaeological methods.

CEQA states that if a "project may cause damage to an important archaeological resource, the project may have a significant impact on the environment." Significant impacts are those that have a negative effect on characteristics that make a resource eligible for the NRHP (36 CFR Part 800). As discussed previously, categories of impacts used in this EIR include: adverse and significant; significant but mitigable to a less than significant level; adverse, but less than significant; and beneficial. Impacts may be evaluate as significant and adverse that in any way diminish the integrity, research potential or other characteristics that make a cultural resource significant or important under the applicable legislation. Adverse, but not significant, impacts include those impacts that may alter the characteristics of a resource but do not diminish the resource's overall significance. Impacts on non-significant resources and temporary impacts may also be evaluated as adverse but not significant.

4.5.2.2 Impact Assessment Method

For purposes of this analysis it is assumed that all identified cultural resources that may be affected by the project are significant until further investigation indicates otherwise. This will ensure that cultural resources identified herein will receive full consideration in the environmental planning and review process. Impacts on resources which were previously evaluated as insignificant, or for which adverse impacts have been fully mitigated through data recovery, or have been subsequently removed or destroyed, however, are considered insignificant.

Direct impacts are defined as those associated with ground disturbance such as excavation, grading, removal of vegetation, equipment access and storage which may directly affect the resources. Indirect impacts include increased accessibility of cultural resource sites to artifact collectors or vandals, introduction of visual elements that may compromise the integrity of an important setting or historic or traditional values, and population growth and resultant increase in recreation and other activities in areas which are sensitive for the occurrence of cultural resources.

4.5.2.3 Archaeological Site Evaluation and Impacts

Potential Effects on Recorded Sites

No archaeological resources are located within the APE. Two prehistoric archaeological sites (CA-VEN-228a, b and CA-VEN-846) and one isolated artifact (no trinomial designation) are located adjacent to the APE.

CA-VEN-228a is located on a knoll about 120 feet north of the proposed north branch pipeline. This site was documented as a low density scatter of artifacts in 1975 and has never been evaluated in terms of CEQA or NRHP significance criteria. Since the pipeline would be installed in a previously disturbed area at the base of the knoll, it is not anticipated that pipeline installation with have an adverse direct or indirect impact on this resource. A potential significant adverse impact (Class II) to cultural resources would occur if construction staging or access occurs on or in proximity to the site. To ensure that construction staging or access does not adversely affect CA-VEN-228a, all construction activities including access and marshalling facilities should be confined to the base of the knoll.

CA-VEN-846 is located in an area presently covered by existing MWWTP facilities. Based on the evaluation conducted by Parker (1987b), the site is not considered to contain significant cultural resources and no further investigations were recommended. The proposed project will have no adverse direct or indirect impacts on this site.

The isolated artifact located within the Las Posas Arroyo channel is redeposited material and is not considered to be a significant cultural resource. The proposed project will have no direct or indirect effect on this resource.

Potential Impacts to Unrecorded Sites

A review of historic maps was conducted as a part of the Phase 1 evaluation to identify areas sensitive for the potential occurrence of as yet unidentified prehistoric archaeological resources. Sensitive areas include the margins of the Mejico Creek and terraces bordering Arroyo Las Posas. These two drainages posses the qualities amenable to historic development of cultural resource sites and have been subjected to historic flooding which may have subsequently buried evidence of these sites. The potential for the pipeline routes to affect buried resources at these locations is discussed below.

North Branch Pipeline

The areas bordering the Mejico Creek are considered sensitive for the presence of buried archaeological resources. However, the channel has been previously disturbed by natural channel erosion, as well as flood control modifications, channel maintenance, and agricultural activities. The north branch pipeline be clamped to an existing bridge across the Mejico Creek. Hence, it is considered unlikely that pipeline construction would effect any as yet unidentified buried archaeological resources potentially present in this area.

East Branch Pipeline

The areas bordering the Mejico Creek are considered sensitive for the presence of buried archaeological resources. However, the channel has been previously disturbed by natural channel erosion, as well as flood control modifications, channel maintenance, and agricultural activities. The proposed east branch pipeline would crosses the wash via a suspension crossing which would parallel an existing truss. Hence, it is considered unlikely that pipeline construction would effect any as yet unidentified buried archaeological resources potentially present in this area.

If Distribution Alternative 1 is constructed, the pipeline would also traverse Arroyo Las Posas at Hitch Boulevard in an area considered sensitive for the presence of buried archaeological resources. The area of the proposed pipeline crossing has been previously disturbed by grading associated with Hitch Road and grading associated with agricultural access roads and cultivation within the fields. The area bordering Arroyo Las Posas is also highly disturbed by natural channel erosion, as well as flood control modifications, and channel maintenance activities. Hence, because resources were not observed during the Phase 1 survey, installation of the pipeline would be within previously disturbed areas, and the pipeline would be attached to the existing Hitch Boulevard Bridge where it crosses Arroyo Las Posas, it is considered unlikely that pipeline construction would effect any as yet unidentified buried archaeological resources potentially present in this area.

South Branch Pipeline

The areas bordering the Mejico Creek and terraces bordering Arroyo Las Posas are considered sensitive for the presence of buried archaeological resources. However, the channel has been previously disturbed by natural channel erosion, as well as flood control modifications, channel

maintenance, and agricultural activities. Existing disturbances adjacent to the wash include unpaved access roadways, existing pipelines and other facilities. Existing disturbance adjacent to Arroyo Las Posas includes the presence of a grouted rock revetment, sheet pile drop structure and ungrouted rip rap. The proposed south branch pipeline would parallel the Mejico Creek and cross the Arroyo Las Posas in areas subject to the prior disturbances note above. Hence, it is considered unlikely that pipeline construction would effect any as yet unidentified buried archaeological resources potentially present in this area.

4.5.2.4 Impacts to Native American Values

Consultation with Ventureno Chumash descendants regarding their perception of specific ethnic impacts took place during February 1996. Pursuant to Ventura County guidelines a letter of notification of the Phase 1 survey effort was sent along with a map of the proposed alignments to these respondents. This letter solicited Native American concerns and recommendations regarding the proposed project and requested information to assist in identifying areas of importance to Native Americans along the proposed route. Letters were then followed up by a telephone call as no written responses were received. Only two Chumash descendants responded to telephone inquiries. One respondent met with the principal investigator to discuss the survey area and the extent of previous disturbance anticipated. Both respondents indicated the area was considered sensitive for biological resources and that the raised terraces adjacent to the Mejico Creek and Arroyo Las Posas was sensitive for Native American sites and artifacts.

Based on these consultations, all archaeological sites in the project area are considered to be significant to Native Americans. Collection sites, potentially buried resources regardless of previous disturbances, and the location at which any collected artifacts would be curated were also of significance. In addition, one respondent expressed an interest in accompanying archaeologists during Phase 1 archaeological survey. This individual, however, was not available at the time of the survey.

A significant impact on Native American values consists of any adverse effect to a prehistoric or historic archaeological site or resource of ethnic significance. The potential for significant impacts to Native American values is high from the perspective of Native Americans.

Site avoidance, monitoring, and adherence to State of California burial remains legislation will reduce potential impacts to mitigable levels (Class II and Class III).

4.5.3 Cumulative Impacts

The project is not expected to result in significant adverse impacts to recorded cultural resources, with the exception of potential impacts to CA-VEN-228a if construction staging or access extends onto the knoll north of the north branch pipeline. Wells sites associated with the Las Posas Basin Aquifer Storage and Recovery Project were also identified as having the potential to affect this site (Calleguas Municipal Water District, 1994). With incorporation of mitigation measures (avoidance) included this EIR and mitigation measures included in the Las Posas Basin

Aquifer Storage and Recovery Project EIR, cumulative impacts to CA-VEN-228a would be minimized.

Both projects have the potential to impact previously undiscovered sites adjacent to Arroyo Las Posas and Mejico Creek. The proposed project's contribution to this potential cumulative impact is expected to be low since no evidence of resources were observed during the Phase 1 field surveys and in the vicinity of these drainages, the proposed project pipelines would be located in previously disturbed areas.

4.5.4 General Plan Consistency

Paleontological and Cultural Resources Goal 1.8.1.1: "Identify, inventory, preserve and protect the paleontological and cultural resources of Ventura County (including archaeological, historical, and Native American resources) for their scientific, educational and cultural value."

> ***Discussion of Consistency:*** A paleontologic resource evaluation was conducted as a part of this EIR. The results of the evaluation indicate that the project would not affect paleontologic resources; hence, the project would be consistent with the intent of this goal.

Other cultural resource policies contained in the General Plan pertain to avoidance and mitigation of impacts to significant cultural resources. Since the Phase 1 cultural resource evaluation has concluded that construction and operation project will generally not affect cultural resources and avoidance of Site CA-VEN-228a is possible, the project would be consistent with these policies.

4.5.5 Mitigation Measures and Residual Impacts

<u>Archaeological Sites and Artifacts</u>

Based on the results of the Phase 1 survey, no adverse direct impacts on recorded archaeological sites are anticipated as a result of construction of the reclaimed water storage ponds and installation of the distribution pipelines. The following measure would be required to avoid potential impacts to CA-VEN-228a:

ARC-1 To ensure that construction staging or access associated with construction of the north branch pipeline does not adversely affect CA-VEN-228a, all construction activities including access and marshalling facilities should be confined to the base of the knoll.

In the event that final project design require use of the agricultural access road which crosses CA-VEN-228a, then an additional archaeological investigation in the form of a Phase 2 subsurface testing and site evaluation program would be required to determine the nature, extent and significance of this resource.

It should also be noted that the District has adopted several cultural resource protection measures as part of the project as described in Section 3.6.1.

4.6 EFFECTS FOUND NOT TO BE SIGNIFICANT

In 1994, Section 21002.1(e) of the Public Resources Code (*CEQA Statutes*) was revised to reflect that the purpose of the EIR is to focus on the potentially significant effects of the proposed project. Specifically, Section 21002.1(e) states that:

> *"To provided a more meaningful public disclosure, reduce the time and cost required to prepare an environmental impact report, and focus on potentially significant effects on the environment of a proposed project, lead agencies shall, in accordance with Section 21100 [of the Public Resource Code], focus the discussion in the environmental impact report on those potential effects on the environment of a proposed project which the lead agency has determined are or may be significant. Lead agencies may limit discussion of other effects to a brief explanation as to why those effects are not potentially significant".*

Pursuant to the guidance set forth in Section 21002.1(e), this EIR focuses on those issues for which the project's effect was either determined to be potentially significant, or the effect was undetermined and additional analyses were required to establish the magnitude of the effect. A detailed initial study (Appendix A) of the potential environmental impacts of the reclaimed water distribution system was prepared to help focus the scope of the EIR. The following section provides an brief overview of effects/issues determined not to be significant and therefore not discussed in detail in this EIR; refer to Appendix A for additional information supporting the determinations.

Air Quality

The operation of the reclaimed water distribution system will not result in long-term emission of criteria pollutants. Short-term emissions of criteria pollutants would result from construction equipment operations and nuisance dust generation could occur due to trenching and vehicles operating on unpaved roads. Short-term construction emissions are not considered to be significant since the emission would be temporary. Dust control measures are included in the project design (see Section 3.6).

Water Quality

Erosion control measures are included in the project description (see Section 3.6) to minimize potential adverse impacts to water quality resulting from the construction of the south branch pipeline across Arroyo Las Posas. Application of reclaimed water at the re-use sites will be subject to water reclamation requirements (WRRs) issued by the Regional Water Quality Control Board. The WRRs include prohibitions on discharge, reclamation specifications for the quality and volume of reclaimed water, and monitoring and reporting requirements. Implementation of erosion control included in project design and existing regulatory control on the distribution and use of reclaimed water would ensure that impacts of the project on water quality would be insignificant.

Mineral Resources

The project components are not located in areas identified by the County as mineral resource areas.

Biological Resources

Two general categories of vegetation occur within the project area, upland and riparian. Upland vegetation occurs just above the Arroyo Las Posas channel banks. In the project area upland vegetation consists primarily of introduced agricultural crops, ruderal vegetation, and non-native grassland. Riparian vegetation is found primarily along Arroyo Las Posas. The reclaimed water storage ponds and most of the pipeline alignments are within areas of non-native or ruderal vegetation. These areas provide little to no habitat value. The south branch pipeline would extend across Arroyo Las Posas south of the existing MWWTP and west Mejico Creek. The pipeline would be located just upstream of an existing flood control drop structure. Because of existing flood control maintenance activities in this area, vegetation is essentially absent from the drop structure to a distance of approximately 100 feet upstream; the pipeline would be located in this disturbed area. Since the ponds and pipelines would be installed in areas where vegetation is absent or is comprised of non-native species, biological impacts would not be significant.

Visual Resources

The project components will either be below grade (and thus not subject to view) or will be screened from view by landscaping included in the project design.

Energy Resources

The project would not substantially increase the use of energy resources and, pursuant to the County's Initial Study Guidelines (1992), individual projects are not considered to cause significant energy impacts.

Seismic, Geologic, and Hydraulic Hazards

There are no known seismic, geologic, or hydraulic hazards present within the project area that are not mitigable through standard engineering design.

Noise and Vibration

Noise from construction equipment would be temporary and construction would primarily occur in areas where transportation noise (Highway 118 and Southern Pacific Railroad) are the dominate noise sources. Due to the absence of noise sensitive receptors in the vicinity of the proposed reclaimed water lift and pump stations, no operational noise impacts are expected.

Transportation and Circulation

Operation of the reclaimed water distribution system would only require the addition of one employee to the MWWTP staff; new vehicle trips associated with this employee would have a negligible effect on local roadways and intersections. Vehicle trips associated with the 9-month construction period are also expected to be insignificant. Measures (e.g., jacking the pipeline beneath Highway 118 and implementation of a traffic control plan along Hitch Boulevard) have been incorporated into the project design to minimize disruptions in circulation due to pipeline construction.

Public Facilities and Services

Utility service is already available to the MWTTP. The project would not result in a need for additional police, fire, health care, or educational services or facilities. Construction of the project components has been designed to balance grading and eliminate the need for disposal of excavated materials in area solid waste disposal facilities. Implementation of the project would not change the rate of sediment/sludge generation at the MWWTP.

Recreation

No recreational facilities were identified in the project area that would be disrupted by construction of project components.

CEQA Guidelines Section 15126(d) requires that an EIR analyze alternatives to the proposed project, focusing on alternatives capable of eliminating any significant adverse impacts or reducing them to a less than significant level. A "reasonable" range of alternatives must be addressed that can feasibly attain the basic objectives of the project. This analysis must include a discussion of the "No Project" alternative, and an identification of an "environmentally superior" alternative. In this section, several alternative to the proposed project are identified, followed by a brief evaluation of their feasibility based on logistics, costs, and environmental permitting constraints. In addition, the relative impacts of these alternatives are compared to the proposed project.

The primary objective of the project is to distribute tertiary-treated reclaimed water from the MWWTP for beneficial reuse in the District's service area. The primary impact of the project is it's significant adverse effect on agricultural resources (and associated inconsistencies with General Plan agricultural policies). The project would adverse but less than significant impact on groundwater resources by reducing the amount of effluent (derived primarily from imported water supplies) directly recharged into the local groundwater basin. No impacts to paleontologic or archaeological resources are expected.

5.1 NO PROJECT ALTERNATIVE

Under this alternative, reclaimed water would not be distributed for beneficial reuse. Effluent from the wastewater treatment plant would either be treated to secondary levels and discharged to the on-site percolation ponds or would be treated to tertiary levels and discharged to Arroyo Las Posas . Due to the costs associated with tertiary treatment, if adequate percolation capacity is available, the District's would treat the wastewater to secondary levels and dispose of it via the percolation ponds. In addition, due to the high ammonia concentration of the effluent, the District's current National Pollutant Discharge Elimination System (NPDES) permit only allows for discharge into Arroyo Las Posas when 100 percent percolation is not available.

The No Project Alternative would avoid impacts to agricultural lands and General Plan policy inconsistencies regarding preservation of agricultural lands. The project would maintain the current status regarding recharge to the LPB/South Las Posas groundwater basin. The No Project Alternative would not support policies and programs contained in the Ventura County Water Management Plan and the Regional Water Quality Control Board's Basin Plan regarding beneficial reuse of reclaimed wastewaters. The No Project Alternative would be inconsistent with State Law (Water Resources Code Section 13150) which requires that reclaimed water be used when feasible. In addition, if the ammonia content of the wastewater can not be reduced and discharge to the arroyo is not permitted, the No Project Alternative could affect the District's ability to provide wastewater treatment at its existing throughput capacity.

5.2 ALTERNATIVE LOCATION FOR THE RECLAIMED WATER STORAGE PONDS

Because of the need to have the reclaimed water storage ponds proximal to the tertiary treatment facilities, siting the ponds at an off site location (not immediately adjacent to the MWWTP) is not considered to be a desirable from an engineering and economic perspective. Construction of ponds in such a location would require additional pipelines and may require additional lift/ pumping stations. In addition, other lands in the project area are: primarily designated as, and zoned for, agriculture; are mapped primarily as "prime farmlands" or "farmland of statewide significance"; and are currently under cultivation. Thus, selection of an off site location would not provide a reduction in the agricultural impact associated with construction and operation of the reclaimed water storage ponds and may introduce new impacts (e.g., archaeological impacts) not currently associated with the project as proposed.

5.2.1 Alternative Site Adjacent to the MWWTP

As discussed in Section 4.2, the District recently acquired a portion of APN 163-030-635 which was leased for installation of percolation ponds. It may be possible to locate the reclaimed water storage ponds on the acquired acreage. This proposed site is within LCA contract 76-3.11; a notice of non-renewal was filed for this parcel in 1989. With the exception of the existing percolation ponds, the site is currently under cultivation. The parcel also contains prime soils and prime farmland as mapped by the Department of Conservation (1994). Locating the reclaimed water storage ponds on this parcel would avoid cancellation of LCA contract 76-3.11A, but would not avoid impacts to prime soils or prime farmlands. In addition, since the parcel is currently cultivated, the ponds would result in a direct removal of agricultural crops. Because of the added distance between the site and the tertiary treatment facility, additional pipelines and pump/lift facilities could be required. Impacts to paleontologic, archaeological, and groundwater resources would be similar to those described for the project as proposed.

5.2.2 MWWTP Location

Little room is available within the boundaries of the existing MWWTP for construction of new ponds. Thus, the only option for siting the ponds within the existing treatment plant area would be to convert several of the existing percolation ponds into reclaimed water storage ponds. Conversion of existing percolation/evaporation ponds into reclaimed water storage ponds would eliminate the project-specific and cumulatively significant adverse effect of the project on agricultural resources and the cumulatively significant removal of lands from inclusion in the Williamson Act.

However, conversion of existing percolation ponds to reclaimed water storage ponds could interfere with the ability of the MWWTP to provide treatment at the full secondary treatment capacity of 3.0 MGD, or could subsequently require the development of additional percolation ponds which in turn could affect off site agricultural resources. The reliable percolation capacity of the existing percolation ponds is approximately 1.5 MGD and inflow into the facility is currently approximately 2.0 MGD. Flows into the MWWTP are projected to approach 3.0 MGD

by the year 2000 and, at that time 1.5 MGD would be treated to tertiary levels and reclaimed and the remaining 1.5 MGD would be treated to secondary levels and disposed of in the percolation ponds. Conversion of the existing percolation ponds to reclaimed water storage ponds would limit the District's ability to adequately dispose of the secondary-treated effluent and hence interfere with the District's ability to provide wastewater treatment services within its service area.

5.3 RECLAIMED WATER DISTRIBUTION ALTERNATIVES

The project description currently includes two reclaimed water distribution alternatives; Distribution Alternative 1 which would serve agricultural operations/nurseries in the vicinity of the MWWTP, and Distribution Alternative 2 which would serve a proposed golf course in the City of Moorpark. Neither alternative is expected to have an adverse effect on paleontologic or archaeological resources. Because Distribution Alternative 2 would involve a shorter length of pipeline, its overall effect on agricultural lands would be less than Distribution Alternative 1; however, neither pipeline alignment is expected to result in significant effect on agricultural resources. Agricultural impacts associated with the reclaimed water storage ponds would still occur if either distribution alternative is selected.

Distribution Alternative 1 would provide irrigation water to local agricultural customers. As indicated in the Reclaimed Water Feasibility Study (Boyle, 1990) many of the proposed reclaimed water customers utilize groundwater from the South and North Las Posas groundwater basins or currently receive potable water from the District for crop irrigation. Hence, if Distribution Alternative 1 is constructed the reclaimed water could be used in lieu of existing potable water use. This would represent a beneficial impact. Distribution Alternative 2 would provide reclaimed water to an area that is not currently being irrigated, hence this alternative would not replace current potable water use.

5.4 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

According to CEQA requirements, an environmentally superior alternative must be identified in the EIR. Because the MWWTP is located in an area designated for, zoned for, and currently occupied with agricultural land uses, impacts to agricultural resources are unavoidable if any project alternative except the No Action Alternative is selected. Hence, the environmentally superior alternative is the No Project Alternative. However, the No Project Alternative would not meet the basic objectives of the project. In addition, the *CEQA Guidelines* specify that when the No Action Alternative is the environmentally preferred alternative, another alternative must be selected among the list of feasible alternatives.

Based on the analysis contained in this EIR, besides the No Action Alternative, the environmentally superior alternative is the proposed project with the reclaimed water distributed pursuant to Distribution Alternative 1. Neither distribution alternative is expected to result in significant impacts to the resources evaluated in this EIR. Distribution Alternative 1 is considered environmentally preferable due to the potential for an offset of existing potable water use. However, it should be noted that Distribution Alternative 2 would be consistent with County

and City of Moorpark policies regarding reclaimed water use. These policies generally specify that, where available, reclaimed water be used for specific new and existing uses such as golf courses and cemeteries. In addition, the District's proposed rules and regulations require that reclaimed water be used to serve golf courses, landscape irrigation, and other specified uses in lieu of providing potable water.

6.1 ISSUES AND OVERVIEW

Direct or indirect effects on the environment can result from projects which stimulate, accommodate, or remove obstacles to population or economic growth. Section 15126(g) of the *CEQA Guidelines* requires that the "grow inducing" aspects of a project be considered in the EIR. Of particular concern are those aspects of population or economic growth which may directly or ultimately cause a physical change in the environment or which could cause a burden on existing community services. The *CEQA Guidelines* specify that a lead agency should not presume that growth is either detrimental or beneficial.

In general, a project can either: (1) have no effect on growth; (2) induce growth; or (3) accommodate growth. Growth inducement generally means that the project is directly responsible for the growth (e.g., extension of new infrastructure into an undeveloped area). Growth accommodation means that the project provides some component (e.g., water, sewer service, road, energy, etc.) that is needed for growth, but does not cause growth on its own (the project removes an impediment to growth.

The growth inducing and/or accommodating aspects of this project could include:

- Provision of new water supply source
- Design of the project pipelines which allows for the potential to provide up to 3.0 MGD of reclaimed water (assuming additional CEQA review and appropriate approvals are obtained to allow upgrading of the tertiary treatment facilities)
- Increased construction and operational employment and income in the project area

6.2 EVALUATION OF GROWTH INDUCING IMPACTS

The primary purpose of the reclaimed water distribution project is to provide the facilities and pipelines necessary to distribute tertiary treated reclaimed water from the MWWTP to agricultural and landscape irrigation water users in the District's service area. The use of reclaimed water could "free up" potable water currently used for irrigation and this water could be available to serve new development. However, the overall water available to the project area, and the District as its main water purveyor, has been reduced as a result of cutbacks in the delivery of imported water and mandatory reductions in groundwater pumpage.

The MWWTP is located within the jurisdiction of the Fox Canyon GMA. The Fox Canyon aquifer system is in a state of overdraft, resulting in seawater intrusion near the coast. GMA Ordinance No. 5 requires incremental reduction in the amount of groundwater that can be pumped by local water users (including the District) in the GMA boundaries. Considering the status of local water supplies, it is unlikely that potable water freed up would be used to support new residential or commercial development. The District is proposing to provide reclaimed

water from the MWWTP for use in irrigation of local agricultural lands and landscape irrigation needs, and thereby conserve water and improve the reliability of it overall water supplies.

The reclaimed water could support new development such as golf courses, cemeteries, or other large scale irrigation projects which would otherwise would not have access to potable water. For example, Distribution Alternative 2 would provide reclaimed water to a proposed golf course located in the City of Moorpark (Bollinger Development) located in the City of Moorpark. The golf course project and associated residential development have been approved, and the growth inducing implications of that project were assessed as a part of the project's CEQA review and considered by the City Council when the project was approved. The provision of reclaimed water to the golf course would potentially accommodate its development, but would not induce it.

Providing reclaimed water to local agricultural users could be a potential deterrent to agricultural land conversion, as it could partially compensate for mandatory reductions in groundwater extractions allowing continued productivity of agricultural lands in the District's service area. Such use of reclaimed water for agricultural purposes would be consistent with the County's Water Management Plan.

Due to the brief construction period (approximately nine months) and the limited workforce requirements, construction of the project is expected to be accomplished using workers from the Oxnard-Ventura area and would likely not require long-term relocation of workers to the Moorpark area. Operation of the facility would require one additional full-time employee. The project would provide some short-term economic benefits to the project area communities, but project construction activities would not be growth inducing or accommodating.

Based on the analyses conducted in this EIR, project-related direct and indirect disturbances to land designated as "prime farmlands" by the State Department of Conservation and the County of Ventura would be significant and unavoidable.

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APPENDIX A

INITIAL STUDY AND NOP COMMENTS

PUBLIC WORKS AGENCY
county of ventura

Director
Arthur E. Goulet

Representing Ex-officio:
Ventura County Flood Control District
Ventura County Waterworks Districts
No. 1,16,17, and 19
Lake Sherwood Community Services District
Fox Canyon Groundwater Management Agency

Deputy Directors
William B. Britt
Transportation
John C. Crowley
Water Resources/Development
Robert E. Quinn, Jr.
Engineering Services
Paul W. Ruffin
Central Services
Alex Sheydayi
Flood Control

NOTICE OF PREPARATION

To: Distribution List

Date: January 29, 1996

Subject: Notice of Preparation of a Draft Environmental Impact Report
Moorpark Reclaimed Water Distribution System
Ventura County Waterworks District No. 1

The Ventura County Waterworks District No. 1, (District) acting as Lead Agency, has determined that the above referenced project may have a significant effect on the environment and that a subsequent Environmental Impact Report (EIR) should be prepared. The project description, location map and the probable environmental effects are contained in the attached Initial Study.

The purpose of this notice is to call attention to the project and to request that you or your organization assist the District in identifying the impacts or issues which should be addressed in the EIR.

Please specify, in writing, the scope and content of the environmental information which is germane to your area of responsibility.

Pursuant to Government Code Section 21080.4(a), this information must be submitted to the District by certified mail no later than 30 days after receipt of this notice. Please address all responses to Mr. Satya Karra, 7150 Walnut Canyon Rd., Moorpark, CA 93021.

If you have any questions or would like to meet with the Public Works Agency Staff representing the District to discuss the project please contact the undersigned at (805) 584-4884.

Very truly yours,

Satya Karra, Senior Engineer
Water and Sanitation Services Division
Water Resources and Development Department

SK:ct
Encl.

7150 Walnut Canyon Road, P.O. Box 250, Moorpark, CA 93020
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Regional Water Quality Control Board	
State Clearing House (10 Copies)	
United States Fish and Wildlife Service	Diane Noda

VENTURA COUNTY WATERWORKS DISTRICT NO. 1

RECLAIMED WATER DISTRIBUTION SYSTEM

INITIAL STUDY

Prepared for

VENTURA COUNTY
PUBLIC WORKS AGENCY
WATERWORKS DISTRICT NO. 1
7150 Walnut Canyon Road
Moorpark, California

January, 1996

Woodward-Clyde

VENTURA COUNTY WATERWORKS DISTRICT NO. 1

RECLAIMED WATER DISTRIBUTION SYSTEM

INITIAL STUDY

Prepared for

VENTURA COUNTY
PUBLIC WORKS AGENCY
WATERWORKS DISTRICT NO. 1
7150 Walnut Canyon Road
Moorpark, California

January, 1996

Woodward-Clyde

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1.1 INTRODUCTION AND PROJECT BACKGROUND

The Ventura County Waterworks District No. 1 (District) operates the Moorpark Wastewater Treatment Plant (MWWTP) and also provides potable water to municipal, industrial and agricultural customers. The MWWTP is located in Ventura County, approximately 0.25 miles south of State Highway 118, four miles west of the City of Moorpark, just north of Arroyo Las Posas (see Figure 1). The existing treatment facility occupies all or portions of the following Assessor Parcel Numbers (APNs): 136-030-255, -455, -475, -485, -595, -635, 645, -665, -675, -685, -695, and -715. Total area of the existing facility is approximately 123 acres. The District intends to construct a Reclaimed Water Distribution System (project) to distribute tertiary treated water to agricultural and landscape irrigation water users in the District's service area. The project would consist of reclaimed water storage, pumping, and distribution facilities.

Presently, about 2.0 million gallons per day (MGD) of secondary treated effluent is percolated into the local groundwater basin through 26 percolation ponds located near the banks of Arroyo Las Posas. The District has expanded the secondary treatment capacity of the plant to 3.0 MGD of wastewater and has installed a tertiary treatment facility with a capacity of 1.5 MGD. The MWWTP expansion and the addition of tertiary treatment facility were subject to previous CEQA environmental review approved by the Board of Supervisors.

The tertiary treated effluent meets the water quality requirements of Title 22 of the California Code of Regulations and is of suitable quality to allow discharge of effluent into Arroyo Las Posas. The tertiary treated effluent will also be of suitable quality for agricultural and/or landscape irrigation. A Reclaimed Wastewater Feasibility Study (Boyle Engineering, 1990) was conducted to evaluate the feasibility of supplying reclaimed water for irrigation of agricultural and landscaping operations in the project area. The study showed that there is a large potential market for reclaimed water near the MWWTP.

1.2 PURPOSE AND NEED FOR THE PROJECT

The primary purpose of the project is to provide the facilities and pipelines necessary to distribute tertiary treated reclaimed water from the MWWTP to agricultural and landscape irrigation water users in the District's service area.

The District receives 75 percent of its water supply from Calleguas Municipal Water District (Calleguas) which is a member agency of Metropolitan Water District of Southern California (Metropolitan). Several customers within the District's boundaries receive 95 percent of their water supplies from imported sources. In 1991, Metropolitan imposed mandatory water cutbacks on its member agencies, including Calleguas. The District established a voluntary ten percent reduction which is expected to be implemented on a continuing basis. Because of these recent cutbacks and the potential for shortages in deliveries from Calleguas, the District is proposing to provide reclaimed water from the MWWTP for use in irrigating local agricultural lands and landscaping, and thereby conserve water and improve the reliability of its overall water supplies.

The MWWTP is located within the jurisdiction of the Fox Canyon Groundwater Management Agency (GMA). The Fox Canyon aquifer system (including the Oxnard Plain aquifers) in state of overdraft, resulting in seawater intrusion near the coast. GMA Ordinance No. 5 requires incremental reduction in the amount of groundwater that can be pumped by local water users in the GMA boundaries. Each groundwater pumper has been assigned an allocation based on a percentage of historical pumping from 1985 to 1989. The allocations will be reduced gradually until a 25 percent reduction is achieved in 2010. The intent of GMA Ordinance No. 5 is to reduce demands on the Fox Canyon aquifers to levels of safe yield. This is important to reduce seawater intrusion that has penetrated a 22-square mile area near the coast. The use of reclaimed water near the MWWTP may help reduce overdraft of the aquifer by reducing the quantity of local groundwater extracted for irrigation in the District's service area.

1.3 OVERVIEW OF PROJECT COMPONENTS

1.3.1 General Description

The proposed project would consist of a distribution system to deliver tertiary treated reclaimed water to agricultural and irrigation customers in the vicinity of the MWWTP. The distribution system would be sized for 3.0 MGD, the maximum capacity of the secondary treatment facilities at the MWWTP. However, this project would only allow for the distribution of a maximum of 1.5 MGD of reclaimed water, equal to the maximum capacity of the existing tertiary filters. Construction of additional tertiary treatment filters may be required to provide reclaimed water in excess of 1.5 MGD; the addition of these filters would require additional review under the California Environmental Quality Act (CEQA).

The project facilities are shown on Figure 2 and on Plate 1. The reclaimed water distribution system would include the following components:

- Two 1.5 million gallon storage ponds
- A lift station at the MWWTP to pump tertiary effluent from the chlorine contact basin (part of the tertiary treatment facilities) to the storage ponds
- A pump station at the MWWTP to deliver reclaimed water from the storage ponds into the distribution system at adequate pressures
- A supplemental groundwater well and/or a connection to a potable supply
- A pipeline distribution system to deliver water from the MWWTP to customers in the service area or to a proposed golf course along Grimes Canyon Road (Moorpark Country Club Estates - Bollinger Development, Tract 4928)

A detailed description of the components follows.

1.3.2 Treatment Plant Modifications

The MWWTP modification would include the addition of a 16-inch pipeline that would supply tertiary treated effluent from the tertiary treatment portion of the MWWTP to the reclaimed water distribution system. This 16-inch pipe provides the only mechanical interface between the MWWTP and the proposed reclaimed distribution system.

Other than a piping connection, the only other interface between the reclaimed system and the MWWTP would be a telemetry and control system, which would most likely be integrated with MWWTP's existing system. This integration would allow coordination of the amount of tertiary wastewater produced to meet reclaimed water demands.

1.3.3 Storage Ponds

Two 1.5 million gallon storage ponds would be constructed as part of the reclaimed water distribution system (Plate 1 and Figure 2). The ponds would be located on APN 163-030-070 in an area which has historically been used for agriculture. This 14.59 acre parcel would be purchased by the District as a part of the right-of-way for the facilities. The storage ponds would receive tertiary treated water at a steady rate from the MWWTP. The storage ponds would provide daily regulation storage so that peak demands can be met even if several irrigators use water within a short period. Two ponds are provided for redundancy, so that operation can continue if one pond is being cleaned or repaired.

The storage ponds would be open reservoirs. The ponds would be formed by excavating to a depth of approximately three feet below ground surface, using the excavated material to construct earthen berms to a height of approximately six feet above ground surface. The approximate water surface area of each pond would be one acre. The overall dimensions of the storage ponds would be about 275 feet by 500 feet, including berms. The pond depths would be about 6 feet, with about 3 to 4 feet of freeboard to the crest of the berm. The ponds would be intended to provide peak demand storage and storage for flow from the tertiary treatment plant during minimum demands; therefore the storage ponds would be operated at less than full capacity to keep a buffer zone available for fluctuating system demands. The actual operating level of the ponds could be higher, and would be determined after several months of operation. The berms would be constructed with an approximate slope of about 2:1 horizontal to vertical, on inner and outer slopes. The width of the berm crests would be about 12 feet, to allow access for maintenance vehicles.

The ponds would be lined with plastic to prevent leakage of reclaimed water into the ground. The linings would be anchored at the top perimeter of the berms. Since the average retention time of water in the ponds should be less than three days, high amounts of algae growth are not expected.

The storage ponds would be screened from view from Los Angeles Avenue by a row of drought tolerant shrubs. The ponds would be set back from the roadway about 100 feet (Figure 2). The landscaping around the reclaimed water system would be integrated with the landscaping design for the entire MWWTP.

1.3.4 Effluent Lift Station

The proposed reclaimed water storage ponds would be too high to allow water discharged from the chlorine contact basin to flow by gravity into the ponds. An effluent lift station would be needed to pump the tertiary effluent from the chlorine contact basin into the storage ponds. The lift station would contain electrically driven low-head pumps. A sump would be provided as part of the lift station. Water levels in the sump would determine when the lift pumps turn on or off. Operation of the lift station would be integrated with operation of the tertiary treatment facilities. It is expected that the lift station would not be enclosed in a building; however, the pumps and motors would be designed for exposure to the weather.

1.3.5 Reclaimed Water Pump Station

The reclaimed water pump station would pump water from the storage pond into the distribution pipeline system. Since there is no reclaimed water reservoir in the distribution system, one or more pumps must remain in operation at all times to maintain pressure. The pumps would be electrically driven, with a variable frequency drive to maintain a set discharge pressure. The pumps would be designed with a total capacity of about 2500 GPM, required to distribute the peak demand corresponding to a supply of 1.5 MGD. It is expected that the pump station would be a package unit. It would be located within the MWWTP facility as shown in Plate 1. It would be connected into the existing telemetry and control system for the MWWTP. It is expected that the pump station would not be enclosed in a building, but that the pumps and motors would be designed for exposure to the weather.

1.3.6 Pipeline and Appurtenances

The proposed project consists of two possible distribution alternatives. Distribution Alternative 1 would provide reclaimed water to agricultural customers south, north, and east of the MWWTP. Distribution Alternative 2 would provide service to a proposed golf course in the City of Moorpark, along Grimes Canyon Road. Although the maximum extent of the pipeline system is discussed in this project description, sections of pipelines would be constructed only as required to serve customers that enter into Water Service Agreements with the District.

The proposed pipeline system is shown in Figure 2 and Plate 1. Distribution Alternative 1 would consist of a "North Branch," a "South Branch," and an "East Branch" pipeline. The approximate pipeline diameters are also shown on Figure 2 and Plate 1. The North Branch would serve customers north of State Highway 118, on the north side of the railroad. The South Branch would serve customers south of the arroyo, primarily the nursery just south of the MWWTP. The East Branch would serve customers between State Highway 118 and Arroyo Las Posas, and may also serve the nursery south of the arroyo.

If Distribution Alternative 2 is selected, only the "East Branch" pipeline would be constructed. Under this alternative the East Branch pipeline would terminate at Hitch Boulevard, and would not continue across the Hitch Boulevard bridge.

Pipelines would be constructed primarily along the perimeters of open fields, in agricultural access roads, and in road and railroad rights-of-way. The pipelines would traverse the railroad, a stream, several bridges, and an agricultural drainage ditch crossing, as noted on Figure 2 and Plate 1. Pipeline easements would be obtained on private lands. Existing easements for potable lines may be used where enough room is available for a second line. Encroachment permits would be obtained from Caltrans (for Highway 118) and from Ventura County Public Works Agency Transportation Department for any pipelines in or across public roadways. Agreement from the California Department of Fish and Game (CDFG) and permit from the U.S. Army Corps of Engineers (ACOE) may also be necessary for installation of the South Branch pipeline across Arroyo Las Posas and possibly other area drainages.

Pipeline materials would consist of either PVC, ductile iron pipe or steel pipe, to be selected during the final design process. Standard appurtenances such as valves, blow-offs, air-vac valves, and meter vaults would be provided. Except for bridge and other crossings described herein, the pipeline would be buried three to eight feet underground. The trench depths would be greatest where the pipelines would be jacked beneath Highway 118 and the Southern Pacific railroad tracks.

The pipeline system would be designed to deliver water to the boundary of each customer. Service connections would be provided to each customer at mutually agreeable locations. Each customer would be responsible for distributing the water within his own property. Customers can construct and use their own storage facilities if agreed to in the Water Service Agreements.

1.3.6.1 Treatment Site Pipelines

As discussed in Section 1.3.2, a 16-inch supply pipeline would be routed between the lift station and the reclaimed water storage ponds. The pipeline would begin at the reclaimed water lift station located about 100 feet east of the chlorine contact basins. The pipeline would be routed north between two percolation ponds. It would then traverse an open field to the storage ponds. The open field has historically been farmed, however, agricultural activities were discontinued approximately one year ago. The field would be acquired as a part of these facilities. The pipeline would connect to the inlet/outlet pipes from the storage ponds and to the suction side of the reclaimed water pump station. The pipeline may also be connected to a pipeline from a proposed supplemental groundwater well.

1.3.6.2 North Branch Pipeline

This pipeline would be constructed if Distribution Alternative 1 is selected. From the reclaimed water pump station, a 16-inch distribution pipeline would be routed to the north. It would pass between the two storage ponds then across an open area to Highway 118 (Los Angeles Avenue). The pipeline would be jacked under Highway 118 just north of the MWWTP. It would then be routed north to the Southern Pacific Railroad, and would be jacked under the railway. North of the tracks, the pipeline would branch east and west.

To the west, the North Branch pipeline would be reduced to about 8-inch diameter and would be routed in an agricultural access road between the railroad right-of-way and an avocado orchard. The pipeline would be routed down a hill to an open field, where the pipeline would terminate and a meter would be located to supply water to the customer at this terminus.

From the jacked casing under the railroad, the North Branch pipeline would also be routed to the east, in an agricultural access road just north of the railway (Figure 2). The pipeline size would be reduced to about 12 inches. As the pipeline approaches Grimes Canyon Creek, the route would re-enter the railroad right-of-way. At the railroad bridge over Grimes Canyon Creek, the pipeline would emerge from the ground and would be clamped to the bridge. This portion of the pipeline would most likely be constructed of restrained and/or flexible joint ductile iron pipe. Specially designed clamps would secure the pipe to the bridge. After crossing the creek attached to the bridge, the pipe would again be buried underground, alongside other pipes which are also clamped to the bridge.

About 50 feet east of the bridge, the pipe would be routed north across an agricultural ditch as shown on Plate 1. The ditch crossing would be generally less than 50 feet wide and would consist of a welded steel pipe span, without any steel structural support. The pipe would pass above the bottom of the ditch at a sufficient elevation to allow water to pass underneath. Concrete anchors would be constructed at each end of the ditch crossing, approximately 10 to 20 feet beyond the banks. North of the ditch crossing, the pipeline would again be routed east in an agricultural road, to Grimes Canyon Road. The pipeline would cross Grimes Canyon Road with normal trench construction. Just east of Grimes Canyon Road, the pipeline would end near a meter vault.

1.3.6.3 East Branch Pipeline

This pipeline would be constructed if either distribution alternative is selected. The 16-inch East Branch pipeline begins north of the storage ponds and is routed to the east, south of Highway 118 (Figure 2). The pipeline would be routed in open fields and agricultural roads just south of the highway right-of-way. Across Grimes Canyon Creek, the pipeline may be clamped to an existing crossing of a sewer force main, if the truss is shown to have enough load capacity. The pipeline would be constructed of welded steel pipe and suspended over the force main to satisfy health requirements (leakage from the force main should not be able to inadvertently contaminate the reclaimed water system). Alternately, the pipe may cross the creek on a new suspension crossing adjacent and parallel to the force main crossing. If a new suspension is constructed, it would consist of a steel truss with supporting cables, or a simple truss structure, similar to the existing force main suspension structure. It would be anchored on concrete foundations at both banks of the creek. The structure would be a single span over the creek with no piers or pilings in or on the creek bottom. The pipe would be welded steel or ductile iron pipe contained within the steel truss. To the east of the creek, the East Branch pipeline would be routed in open fields and agricultural roads just south of the highway right-of-way. At Hitch Road, the pipeline would turn toward the south, and would be routed just west of Hitch Road, in agricultural roads. At Arroyo Las Posas, the pipeline would be clamped to the Hitch Road Bridge. The pipeline would end a few hundred feet south of the arroyo, at a meter for a nursery located there.

If Distribution Alternative 2 is constructed, the pipeline would terminate just west of Hitch Boulevard.

1.3.6.4 South Branch Pipeline

This pipeline would be constructed if Distribution Alternative 1 is selected and would serve the nursery south of the arroyo (Figure 2). The 8-inch pipeline would begin at the reclaimed water pump station and would be routed east, just south of the storage ponds. The pipeline would be routed south in a road west of the west bank of Grimes Canyon Creek, within the MWWTP site. This road currently contains power poles and a potable waterline. At the southerly boundary of the MWWTP site, the pipeline would be located across a rock revetment into the Arroyo Las Posas stream bed. The pipeline would be buried in the stream bed just upstream of an existing drop structure. The drop structure is a small sheet-pile dam built to prevent erosion in the stream. In the streambed, the pipeline would be buried about five feet deep and would likely be ductile iron pipe with restrained joints. A potable water pipeline also crosses the creek in this general area and a separation of 10 feet would be maintained between the reclaimed and potable lines. The pipeline would be buried in the stream bed possibly within a concrete encasement. South of the arroyo, the pipeline would cross under a concrete and rock revetment, and enter the nursery property. In the nursery, the pipeline would end at a meter vault. Existing flood control access roads would be used to gain access to the arroyo for construction activities.

1.3.7 Groundwater Well and Related Facilities

A well to provide supplemental water in the event of a shutdown of the tertiary treatment facility would also be constructed. The well would be located within the MWWTP site, possibly west of the storage ponds. The well would be outfitted with a vertical turbine pump and motor, with the motor located aboveground, and the pump installed in the casing about 100 to 300 feet below ground. The motor would be electrically driven. The wellhead would be located in open air. The wellhead would include a motor control panel. The well would be connected into the lift station pipeline by a 12-inch

buried pipeline. The pipeline would include an above-ground backflow preventer to protect the aquifer from accidental injection of reclaimed water.

The alluvial aquifer in the vicinity of the MWWTP, which is part of the South Las Posas Groundwater Basin, may be saturated due to the percolation of secondary effluent. A well would indirectly use the County's own wastewater as a supplement. A number of local wells exist near the MWWTP site, as shown on Figure 3. Data on some of those wells is provided in Table 1. Well yields in the area range from 120 GPM to about 1500 GPM.

The casing size for the proposed well would be in the range of 10 to 16 inches and the well depth may be on the order of about 500 to 1000 feet to tap the lower confined aquifers in the area. The well would be located a sufficient distance away from the percolation ponds that the groundwater would meet all Title 22 water quality requirements for tertiary effluent. Extractions by the District would be maintained within the requirements of the GMA.

Alternatively, imported water from the District could be used to supplement the reclaimed water by discharging it into the reclaimed storage ponds. Health regulations require a suitable air gap to protect the integrity of the potable water system. Potable water service already exists in the vicinity of the MWWTP. A potable main is located a short distance east of the storage pond site. Components would include a buried pipeline to the storage ponds and related components such as valves.

1.3.8 Customer-Owned Facilities

In addition to the District owned and operated reclaimed water facilities, the reclaimed water customers would construct various facilities in order to use the reclaimed water. Such facilities are expected to include the following: (1) pipelines to convey reclaimed water from the point of delivery to other areas of the customers property; (2) new or modified irrigation systems to distribute reclaimed water; (3) connections to other water supplies (connections to potable systems must include an approved air-gap); (4) backflow preventers to prevent contamination of potable water systems; and (5) signs to identify the use of reclaimed water at the reuse sites.

1.4 CONSTRUCTION ACTIVITIES, WORKFORCE AND SCHEDULE

1.4.1 GENERAL DESCRIPTION

Construction of the initial reclaimed water distribution facilities is planned in 1995/1996, upon completion of environmental documentation, acquisition of land, and preparation of construction plans and specification. Staging areas within the present MWWTP site would be used to store materials and equipment for both projects. Agricultural areas near the MWWTP would not be affected other than those areas where the storage and distribution facilities would be built. Water would be periodically sprayed on exposed earth to control dust.

Construction of the various components is described below.

1.4.2 Pump Stations

The reclaimed lift station would be located within the MWWTP site boundaries and the reclaimed water pump station would be located in the vicinity of the reclaimed water storage ponds. Construction would include minor grading and installation of concrete foundation and walls, underground pipelines, and mechanical and electrical components. Electrical power is already

available at the site and should be adequate to supply all reclaimed water facilities. Electrical power would be conveyed to the pump stations via underground conduits from existing Southern California Edison transformers. Such conduits would be located within the MWWTP site.

1.4.3 Storage Ponds

The storage ponds would require grading of about 10,000 cubic yards of earth. The ponds would be constructed using primarily on-site native materials. The excavated material from the pond bottom would be used to create the berms. Some imported sand and gravel may be used under the bottom lining of the ponds. A possibility exists that clean fill may be needed somewhere else on the MWWTP site, in which case the ponds would be designed for a net removal of material.

It is expected that grading the ponds could be completed within about 60 days, depending on weather. The typical construction equipment for this type of project would include wheel loaders, backhoe loaders, hopper trucks, wheel tractor scrapers, motor graders, bulldozers, vibratory drum compactors, and sheepsfoot rollers, depending on the type of equipment the contractor has available. A project of this size may have up to 6 to 8 pieces of equipment in use at one time.

The amount of material that would be imported or exported from the site is expected to be minor; however, if material is hauled on public roads, a traffic control plan would be filed with Caltrans and/or other agencies having jurisdiction to ensure public safety.

1.4.4 Pipeline Construction

Pipelines would be buried using standard trenching, placement and backfill procedures. The pipelines would be buried between 3 to 8 feet deep, with an average of around 4 feet. Trenches are typically constructed about one foot wider than the pipe diameter. Shoring would be used to protect workers. Alternately, where space is available, sloped trench sides may be used. Construction of the pipeline would involve a strip of land about 20 to 30 feet in width.

Native materials would be used for filling trenches. However imported sand may be used for bedding the pipelines before backfilling. A net surplus of about 1,000 cubic yards of excavated earth would result from pipeline installation. The excess materials would be disposed of at the MWWTP site or may be used to help build the storage pond berms. Hauling dirt would conform to all applicable regulations, as described for storage pond materials.

Pipelines can be installed at a rate ranging between 100 and 300 feet per day. Typical construction equipment used to install pipelines includes trenchers, pipelayers, backhoe loaders, bulldozers, excavators, wheel loaders, depending on the type of equipment available. The East Branch pipeline would be routed south of the Caltrans right-of-way for Highway 118. Any activities that impact traffic would be subject to a traffic control plan to be approved by Caltrans and other regulatory agencies, as appropriate.

1.4.4.1 Stream Crossing

The stream crossing of Arroyo Las Posas would be constructed during the dry season (May to November) using cut and cover pipelaying techniques. The total distance between stream banks is about 350 feet. The width of the flowing stream is about 20 to 30 feet in the summer. Starting from one bank, the pipeline would be laid in a trench to a point close to the stream. The pipe would be buried 4 to 6 feet below the streambed. A trench with sloped sides would probably be used.

Dewatering wells would be used near the trench to maintain the trench as dry as possible. The trench would be backfilled and Arroyo Las Posas would be diverted temporarily over the pipe segment already installed, allowing access to the original streambed. The pipeline would then be laid across the streambed to the opposite bank, using trench and backfill. The trenched materials would be used for backfill. No imported bedding would be used. Near the stream, the pipe material would be ductile iron pipe with restrained joints. A concrete encasement around the pipeline may be required in the streambed. Such an encasement would be about 2 feet wide and 2 feet deep, buried below the streambed. The pipeline would cross under a rock revetment at both banks of the stream. A 10-foot wide section of the revetment would be removed to lay the pipe. The revetment would be restored to its original condition.

To reduce the amount of sediment generated during construction, a small embankment could be built up to the edge of the stream. Wooden flash boards backed with riverbed sand and gravel could be used to divert the flow.

It is expected that the stream crossing could be completed while diverting the stream for just one or two days. Including preparation and cleanup, the entire operation would take about one week, assuming the crossing is constructed during the dry season. The construction activities would be limited to the disturbed area within 100 feet upstream from the existing drop structure.

1.4.4.2 Jacked Casings

A jacked casing is required where the North Branch Pipeline crosses Highway 118 and the railroad, where shown on Plate 1. To jack a casing under a highway or railroad, a "jacking pit" is constructed at one side, and a "receiving pit" at the other side of the road. A hollow pipe with a cutting tool is hydraulically jacked between the pits, with soil removed as the tool advances. After a horizontal hole is cut under the road, a pipe is jacked into the hole and grouted into place. The operation can be performed without obstructing traffic on the road. Screening would be provided during the operation to reduce distraction to drivers.

1.4.4.3 Bridge Crossings

Bridge crossings are required where the North Branch Pipeline crosses Grimes Canyon Creek and where the East Branch Pipeline crosses Arroyo Las Posas, as shown on Figure 2. Bridge crossings would be constructed using equipment operating primarily from the bridge decks. Special hydraulic lift arms can be used to lift and position pipes and equipment under the bridge. Scaffolding also can be suspended from the bridge.

Equipment on the Hitch Boulevard Bridge would obstruct traffic during construction. A traffic control plan would be developed by the contractor and approved by all appropriate agencies before construction starts. At least one lane of traffic would remain open on any roadway bridges. For the Grimes Canyon Creek railroad bridge, construction activities would need to be coordinated with train schedules. Approval of Southern Pacific would be required prior to the start of any construction within the railroad right-of-way.

1.4.4.4 Suspension Crossing

A suspension crossing may be located where the East Branch Pipeline crosses Grimes Canyon Creek, where shown on Plate 1. The steel truss/pipe assembly would be assembled in open land beyond the stream bank. After assembly, the truss would be lifted and placed onto its concrete end foundations.

1.4.4.5 Ditch Crossing

A ditch crossing is required where the North Branch Pipeline crosses the agricultural ditch north of the railroad at a point just east of the railroad bridge, where shown on Plate 1. The pipeline ditch crossings would be constructed by digging a trench about 4 feet deep until it daylights into the ditch. The trenches would be built at both banks of the ditch. A single span of pipe would be lifted and placed into the trench, using a crane resting on one bank. Concrete blocks would be poured around the pipe at about 10 to 20 feet from the banks, away from the ditch. The trenches would then be backfilled with native material and compacted.

Within 20 feet of the ditch banks, vegetation above the banks would need to be cleared for a total width of about 20 feet. More than 20 feet away from the banks, the construction width would be the same as for pipeline construction. Within the ditch and its banks, vegetation would need to be trimmed to provide 5 feet of clearance around the pipe.

1.4.5 Well Construction

A well may be constructed within the MWWTP site. A preliminary location is indicated on Plate 1. Further hydrogeologic study may be required to select the best location within the MWWTP site. The well would be outfitted with a vertical turbine pump and motor, with the motor located aboveground, and the pump installed within the casing about 100 to 300 feet below ground. The motor would be electrically driven, with a rating of 40 to 200 horsepower. The wellhead would be located aboveground.

The well would be constructed over a six week period, including two to three weeks of drilling using a portable, truck-mounted rig which employs direct rotary drilling methods (if logistically and geologically possible), utilizing biodegradable or bentonite-based drilling fluid. The necessary drilling fluids would be stored on site in a Baker Tank during well construction and subsequently disposed of utilizing vacuum trucks. The well construction is anticipated to yield approximately 20,000 gallons of drilling fluids, all of which would be collected and disposed of off-site.

Upon well completion, drill cuttings (i.e., the soil and rock removed from the borehole) would be cleaned up and removed from the site with a backhoe and a dump truck. The well would consist of a 6-inch-diameter pilot borehole to a maximum of 1,000 feet below ground surface. If needed, a 24-inch-diameter conductor casing would be installed at the surface through unconsolidated near-surface materials to allow drilling in the underlying bedrock. If a substantial amount of water is found upon completion of the drilling, the hole would be reamed to a larger diameter, and a 12 to 16-inch diameter steel casing would be installed, along with a locked metal well cover.

Water produced during the 5 to 10 day period required for well development (probably no more than a few acre-feet in volume) would be discharged directly into a percolation pond or into Arroyo Las Posas, after any drilling fluids have been removed. Discharge of well water into the arroyo could require a NPDES permit. A 7-foot square concrete apron would be poured around the well head at the ground surface. The completed well would be locked, with access available only to District or consultant staff.

1.4.6 Manpower Requirements

The following crews are expected to be required for construction of the proposed facilities:

Component	Number of Workers	Duration of Construction
Pump Stations	4	3 months
Storage ponds	4	2 months
Pipelines	6	3 months
Electrical/Telemetry	2	1 month
Well	3	2 months

1.4.7 Probable Construction Schedule

Construction of the reclaimed water distribution system would occur over an approximate 9-month period.

1.5 OPERATIONAL INFORMATION

1.5.1 Reclaimed Water Customers

The reclaimed water would be utilized for the proposed golf course along Grimes Canyon Road (Moorpark County Club Estates, Bollinger Development, Tract 4928) and/or customers identified in the Reclaimed Water Feasibility Study (Boyle, 1990). Many of the identified agricultural customers (whose crops include field/row, tree, nursery, and turf) presently receive water from the District. The District intends to sign up enough customers to use all of the available reclaimed water during peak irrigation demand periods.

Other types of crops and land uses in the project area which could utilize reclaimed irrigation water include the avocado groves in the hills south of the arroyo, golf courses, cemeteries or other large-scale landscape irrigation customers.

1.5.2 Seasonal and Daily Use of Reclaimed Water

The District anticipates that a total of about 800 acre-feet per year of reclaimed water would be delivered to customers via the proposed project. Most of these deliveries would occur during peak irrigation demand periods in summer. However, the available reclaimed water supply of 1.5 MGD is expected to be fairly constant throughout the year. As such, little or no reclaimed water may be used for many weeks or months during the winter. During such periods the effluent would be treated to secondary levels and discharged into the existing percolation ponds. If insufficient percolation capacity is available, tertiary treated water would be discharged to Arroyo Las Posas. 24-hour period. Row crops and nurseries typically irrigate in the daytime so that the irrigation can be monitored by workers. Golf courses and parks irrigate at night since the facilities are in use in the daytime.

1.5.3 Reclaimed Water Quality

The 1990 Reclaimed Water Feasibility Study (Boyle, 1990) evaluated the quality of reclaimed water from the MWWTP in comparison to other local water supplies. Expected water quality for the tertiary reclaimed water is compared to other local supplies in Table 2. In general, reclaimed water is of higher quality (i.e., lower salt content and total dissolved solids) than the local groundwater used by many farmers. However the quality is not as high as imported water delivered by the District.

According to the Reclaimed Water Feasibility Study, the reclaimed water quality is suitable for irrigation of crops. However, levels of chlorides in the reclaimed water could be relatively high, and periodic over-irrigation with reclaimed or potable water may be needed to flush salts below the root zones. The surplus of reclaimed water in the off-peak periods would assist such practices.

Periodic water quality samples would be taken by the District to monitor water quality impacts and to guide irrigation practices of its customers.

1.5.4 Facilities Operation and Maintenance

The operation of the reclaimed water system would be automated to minimize manpower requirements. The major maintenance requirement is expected to be regular inspection and cleaning of the facilities. Sediment would build up in the storage ponds. The storage ponds may need to be drained and cleaned about once a year. Storage pond sediments can be deposited in the sludge drying beds for drying, and disposed of with the sludge. Under reasonable worst case conditions, about 500 cubic yards of sediment may accumulated in the ponds each year (based on 2-inches of deposition per year in the storage ponds). Floating windborne debris may also need to be cleaned out of the ponds about once per week. Windblown debris is expected to be less than one trash can full per week, and can be hauled to a landfill.

The storage ponds would have an average retention time of less than 3 days. During winter periods, when demands are low, one pond may be drained and temporarily removed from service. With careful control of water levels and an average retention time of three days, algae growth is not expected to become a problem in the storage ponds. Occasional applications of algae control chemicals such as copper sulfate may be required to reduce algae growth in unusual conditions.

1.5.5 Energy Requirements

It is expected that the reclaimed water distribution system would use about 400,000 kilowatt-hours of electrical energy per year, primarily at the two pump stations and the well.

1.5.6 Manpower Requirements

It is expected that staff at the MWWTP would operate the reclaimed water distribution system. The major work would be monitoring the daily operation of the system, which would be run automatically.

One person at the MWWTP site would be designated as an Irrigation Coordinator, who would help coordinate irrigation schedules so that too many growers do not irrigate on the same day. The Irrigation Coordinator would also monitor irrigation practices at the customer's fields to ensure no runoff is occurring, and to monitor compliance with other reclaimed water regulations. This person

may also be designated as a Conservation Coordinator, who would ensure that best management practices for water conservation are implemented by the customers so that water is not wasted.

At the staff level, one engineer or technician would be required to monitor water use and operation of the reclaimed system on a part time basis.

1.6 MITIGATION MEASURES INCORPORATED INTO PROJECT DESIGN

The following design features/measures have been incorporated into project design to mitigate potential project impacts:

Visual Resources/Aesthetics

- The storage ponds would be screened from view from Los Angeles Avenue by a row of drought tolerant shrubs. The ponds would be set back from the roadway about 100 feet. The landscaping around the reclaimed water system would be integrated with the landscaping design for the entire MWWTP.

Biological Resources

- Pipelines would be installed in previously disturbed areas including the perimeters of open fields, in agricultural access roads, and in road and railroad rights-of-way.

- The stream crossing of Arroyo Las Posas would be constructed during the dry season (May to November) using cut and cover pipelaying techniques.

- Construction activities in Arroyo Las Posas would be limited to the disturbed area within 100 feet upstream from the existing drop structure.

- With the exception of the south branch pipeline across Arroyo Las Posas, project pipelines would be designed to span other project area drainages.

Transportation/Circulation

- The North Branch pipeline would be jacked under Highway 118 and beneath the Southern Pacific railroad tracks.

- The East Branch pipeline would be clamped to the Hitch Road Bridge.

Groundwater Quantity

- Groundwater extractions by the District would be maintained in accordance with GMA requirements.

Air Quality

- Water would be periodically sprayed on exposed earth to control dust.

Solid Waste Disposal

- The ponds would be designed to require no major import or export of earth materials.

Hydraulic Hazards

- If needed, a concrete encasement will be installed around the South Branch pipeline across Arroyo Las Posas to protect the pipeline from scour.

TABLE 1
GROUNDWATER WELL INFORMATION

State Well Number	Date Drilled	Status	Casing Diameter (inches)	Extractions 1985 - 1989 (af/year)	Flow (gpm)	Depth (feet)	Boron (mg/l)	Chloride (mg/l)	Sodium (mg/l)	Sulfate (mgl)	TDS
2N/20W - 1M1	1930	Active	16	160	500	650	--	146	70	261	1080
2N/20W - 1Q1	1930	Active	16	239	--	310	0.18	27	54	157	596
2N/20W - 1Q2	1982	Active	14	139	1200	700	--	162	--	--	1440
2N/20W - 2D1	1955	--	14½ & 12½	--	--	1352	10	--	1.48	2.36	--
2N/20W - 2D2	--	Active	--	291	500	--	--	--	--	--	--
2N/20W - 2N1	1929	--	16	--	--	567	0.07	22	--	42	--
2N/20W - 2N2	1950	--	--	--	--	1029	--	--	--	--	--
2N/20W - 2N3	1964	Active	14 & 12	397	1000	1248	0.13	22	41	93	420
2N/20W - 7F1	1959	--	14 & 12	475	--	1600	0.2	84	75	254	880
2N/20W - 11D1	1980	Active	16 & 14	72	1500	945	--	155	--	--	1690
2N//20W - 11R1	--	--	--	--	--	--	--	--	--	--	--

TABLE 1
GROUNDWATER WELL INFORMATION
(Concludes)

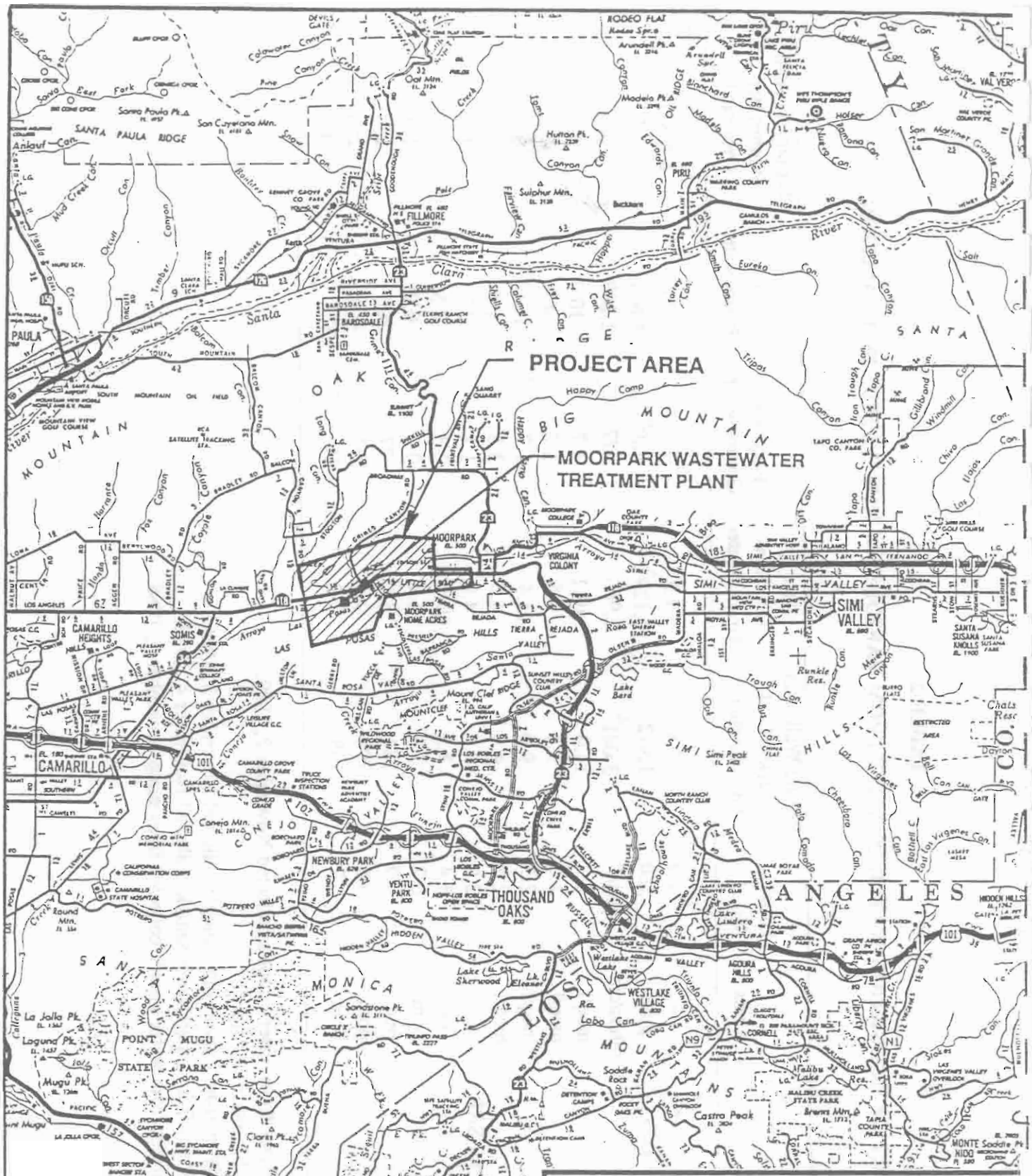
State Well Number	Date Drilled	Status	Casing Diameter (inches)	Extractions 1985 - 1989 (af/year)	Flow (gpm)	Depth (feet)	Boron (mg/l)	Chloride (mg/l)	Sodium (mg/l)	Sulfate (mgl)	TDS
2N/20W - 11R2	1985	Active	14	--	120	500	--	--	--	--	--
2N/20W - 12F1	1929	Abandoned	--	--	--	--	--	301	--	1433	--
2N/20W - 12F2	--		8	--	--	120	--	--	--	--	--
2N/20W - 12F4	1934	--	14	--	--	--	--	--	--	--	--
2N/20W - 12G1	1931	Abandoned	--	--	1-.5 cfs	--	0.85	135	--	953	--
2N/20W - 12G2	1927	--	12	--	--	--	--	--	--	--	---
2N/20W - 12G3	--	--	--	--	--	--	--	--	--	--	--
2N/20W - 12H1	1927	Active	14	72	--	--	--	--	--	--	--
2N/20W - 12H2	1927	Active	14	83	--	150	--	124	--	829	--
2N/20W - 12J2	1944	Active	16	13	--	410	--	--	--	--	--

TABLE 2

SUMMARY OF IRRIGATION WATER QUALITY FROM VARIOUS SOURCE WATERS INFORMATION

Constituent	Units	District No. 1	Private Well w/in District No. 1 Groundwater	Arroyo Las Posas Groundwater	Berylwood Groundwater	Zone Groundwater	Tertiary Treated Wastewater [1] (Projected)
pH	---	7.9	7.5	7.5	7.9	7.6	6.5-8.5
Total Dissolved Solids, TDS	ppm	380	1,972	2,129[6]	489[6]	1,649[6]	850
Salinity, ECw	mhos/cm	594[6]	3,081[6]	2,900	677	2,289	969[6]
Calcium	meq/l	2.2	14.0	10.1	3.7	10.0	2.1
Magnesium	meq/l	1.0	5.3	9.5	1.2	4.4	1.6
Sodium	meq/l	2.5	9.0	12.4	1.7	10.0	6.1
Bicarbonate	meq/l	2.2	4.9	4.3	3.5	4.8	5.8
Sodium Adsorption Ratio, SAR	---	2.0	2.9	4.0	1.1	3.7	4.5
Adjusted SAR	---	3.4	7.5	10.4	2.3	9.5	9.7
Boron	ppm	0.2	1.0	1.4	0.2	0.9	1.0
Chloride	ppm	79	184	310	27	200	150
Sulfate	ppm	66	798	938	107	665	250
Nitrate	ppm	7	198	2	10	<1	10

[1] Based on results of analyses from water samples collected November 2, 1989.
[2] Birkenshaw well located in Farming Unit C.
[3] Based on results of analyses from groundwater sample collected November 3, 1986.
[4] Based on results of analyses from groundwater sample collected November 4, 1988.
[5] Based on results of analyses from water sample collected from sump November 4, 1988.
[6] Estimated.



COUNTY OF VENTURA

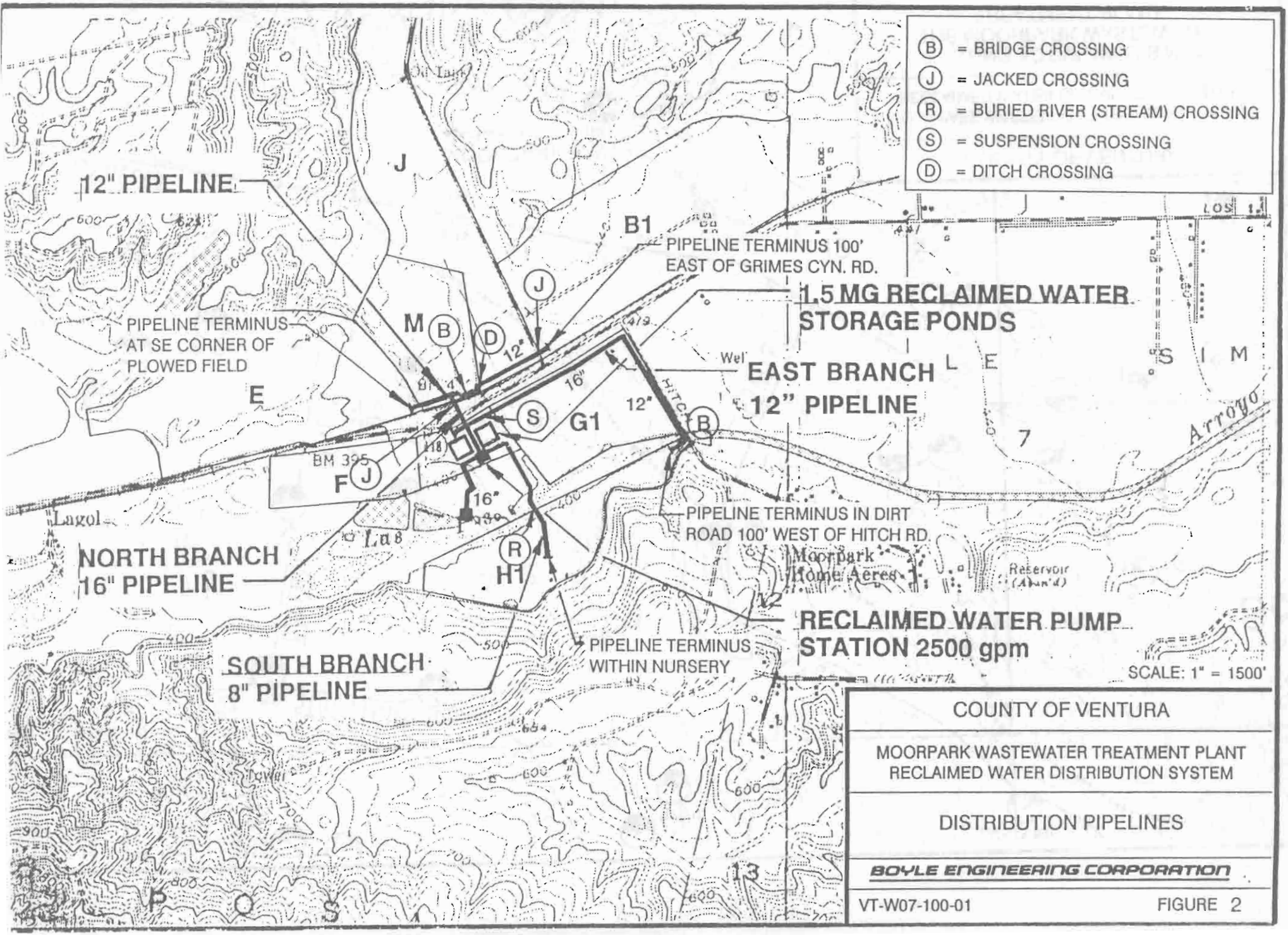
MOORPARK WASTEWATER TREATMENT PLANT
RECLAIMED WATER DISTRIBUTION SYSTEM

LOCATION MAP

BOYLE ENGINEERING CORPORATION

VT-W07-100-01

FIGURE 1



COUNTY OF VENTURA

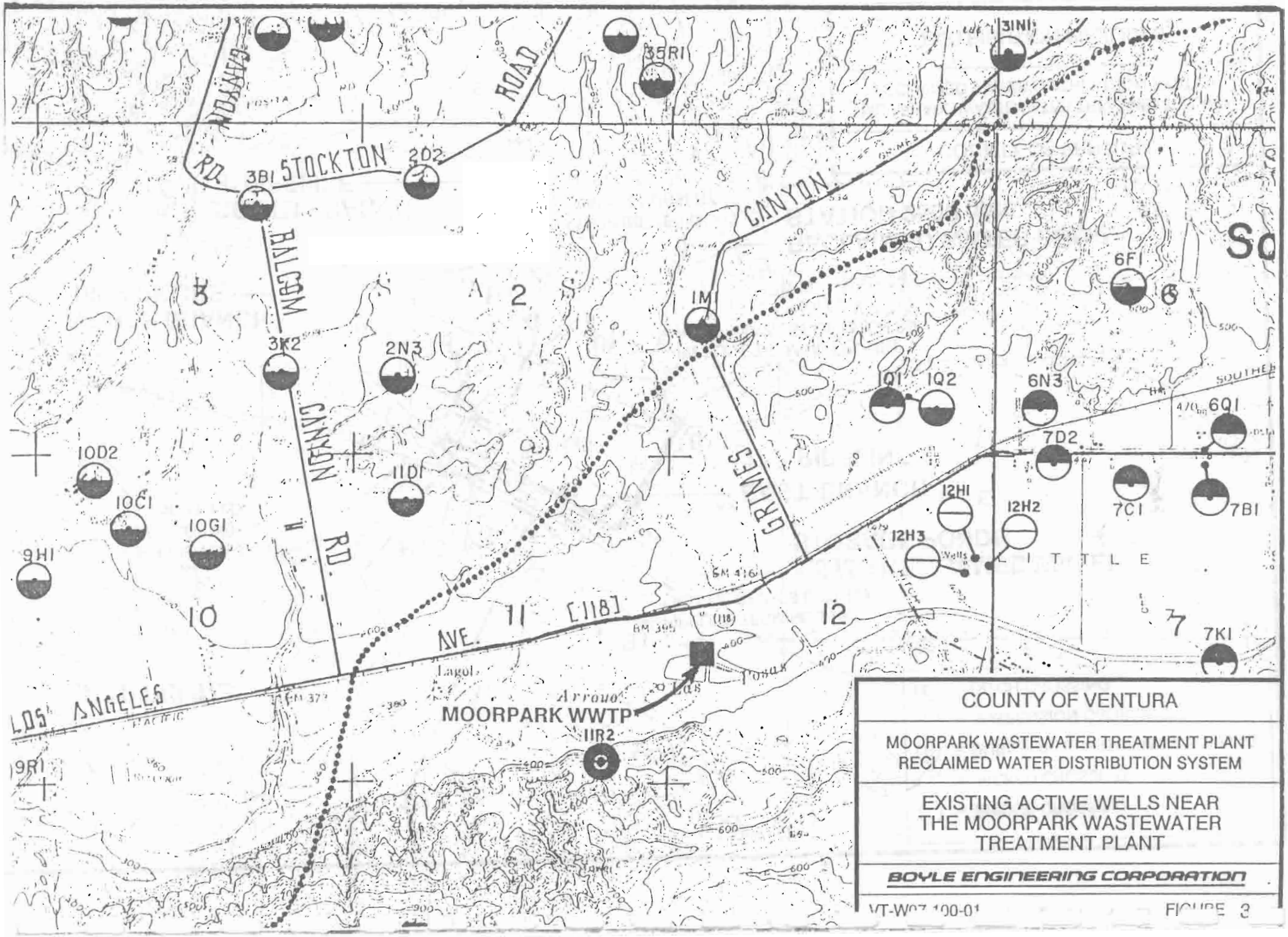
MOORPARK WASTEWATER TREATMENT PLANT
RECLAIMED WATER DISTRIBUTION SYSTEM

DISTRIBUTION PIPELINES

BOYLE ENGINEERING CORPORATION

VT-W07-100-01

FIGURE 2



COUNTY OF VENTURA

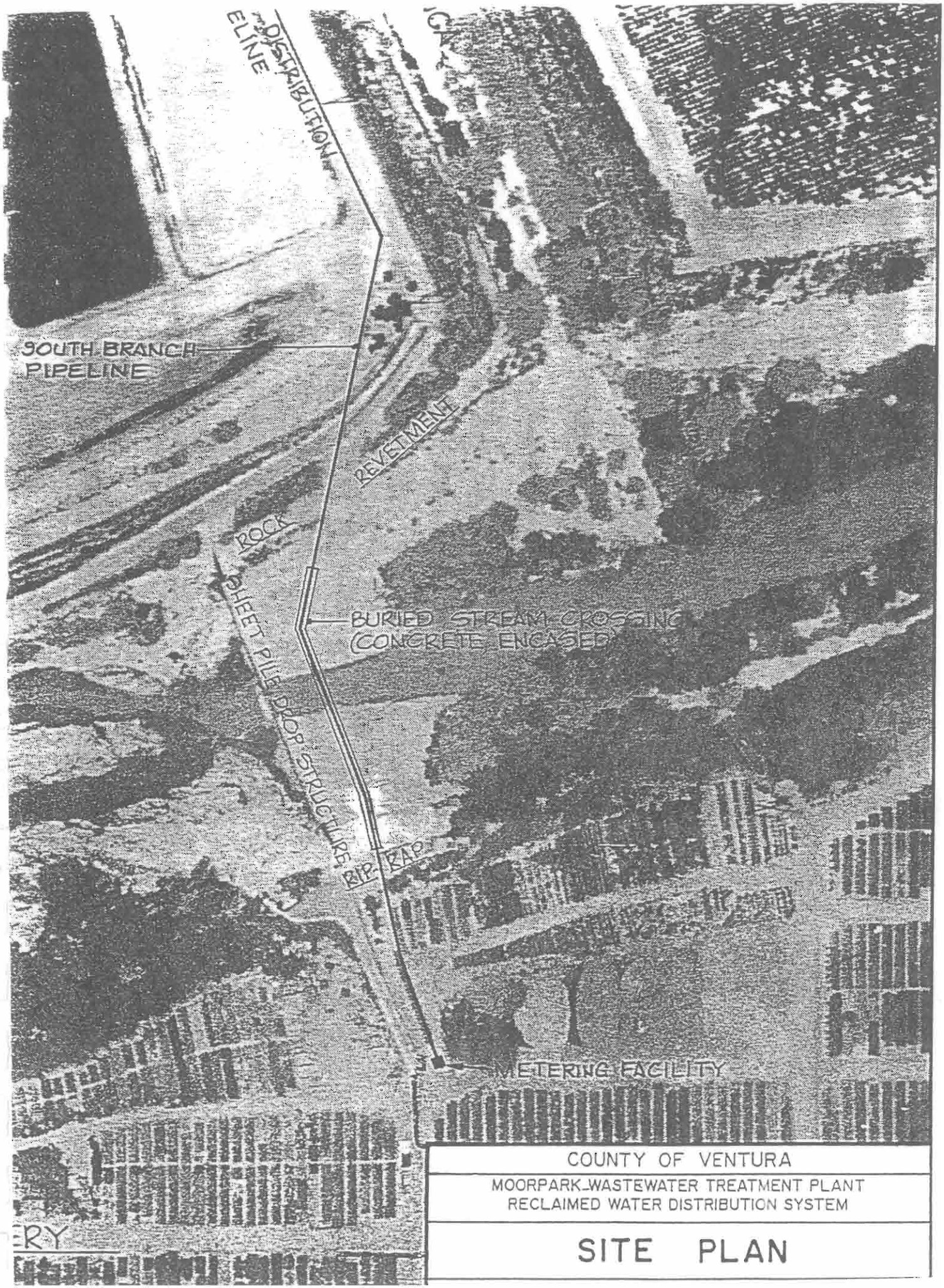
MOORPARK WASTEWATER TREATMENT PLANT
RECLAIMED WATER DISTRIBUTION SYSTEM

EXISTING ACTIVE WELLS NEAR
THE MOORPARK WASTEWATER
TREATMENT PLANT

BOYLE ENGINEERING CORPORATION

VT-W07 100-01

FIGURE 3



COUNTY OF VENTURA

MOORPARK WASTEWATER TREATMENT PLANT
RECLAIMED WATER DISTRIBUTION SYSTEM

SITE PLAN

INITIAL STUDY

PROJECT INFORMATION

1. Name of Applicant: Ventura County Waterworks District No. 1.
3. Project Location: South of Highway 118, 4 miles west of Moorpark. See Section 1.0. Project components would be located betwe the existing MWWTP and Hitch Boulevard.
4. Project Description: See Section 1.0

ENVIRONMENTAL IMPACT CHECKLIST (Discussion of checklist responses is provided in Section 3.0)

ISSUE (Responsible Department)	PROJECT IMPACT DEGREE OF EFFECT*				CUMULATIVE IMPACT DEGREE OF EFFECT*			
	N	LS	S	U	N	LS	S	U
GENERAL:								
1. General Plan Environmental Goals and Policies (Plng).			X				X	
LAND USE:								
2. Land Use (Plng).								
a. community character		X				X		
b. housing		X				X		
c. growth inducement		X				X		
RESOURCES:								
3. Air Quality (APCD)								
a. regional		X				X		
b. local		X				X		
4. Water Resources (PWA)								
a. groundwater quantity				X				X
b. groundwater quality		X				X		
c. surface water quantity		X				X		
d. surface water quality		X				X		
5. Mineral Resource (Plng.)								
a. aggregate		X				X		
b. petroleum		X				X		

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- Disturbed portions of the rock revetment which line the channel banks will be restored to pre-construction conditions.

In addition, the District would comply with requirements set forth in other permits (e.g., Construction Stormwater NPDES permit, 1601 Streambed Alteration Agreement, Section 404 permit), as required, to control erosion and sedimentation resulting from pipeline construction. With implementation of the measures already included in project design, and compliance with other regulatory permit requirements, impacts to water quality would be less than significant.

Application of reclaimed water at the reuse sites will be subject to Water Reclamation Requirements (WRRs) established by the Regional Water Quality Control Board (RWQCB). The WRRs include prohibitions on discharge, reclamation specifications for the quality and volume of reclaimed water, and monitoring and reporting requirements for the reclaimed water and the reclamation reuse areas. Compliance with the WRRs would generally ensure that no adverse impacts to surface water quality would result.

If Distribution Alternative 1 is selected an 8-inch diameter pipeline (south branch pipeline) would be installed across Arroyo Las Posas. To minimize the potential for a pipeline rupture, the following measures have been incorporated into project design:

- The pipeline would be buried beneath the creek scour depth (approximately 4 to 6 feet beneath the stream bed).
- The pipeline will be constructed of ductile iron pipe with restrained joints.
- If determined to be necessary as a result of final design, the pipeline will be encased in a concrete casing.

With incorporation of these measures potential impacts to water quality would be reduced to a less than significant level.

3.5 MINERAL RESOURCES

a. Aggregate Resources. Arroyo Las Posas is not identified on the County Resource Protection Map (1992) or the County Resource Management Agency's Unified Mapping System (UMS) maps as a "mineral resources area". However, the Arroyo Las Posas channel could be a source of aggregate materials. The project may require some construction grade sand for backfilling of pipeline trenches. The amount required would be minimal and according to the Ventura County Initial Study Assessment Guidelines (1992), adequate aggregate resources are available to met local demand; thus the project's impact on the availability of such resources would be less than significant.

Installation of the pipeline across Arroyo Las Posas would temporarily hamper access to aggregate resources which may exist; however, the arroyo is not currently identified as a mineral resource area and the disruption would be short-term (less than one week and localized). This disruption would be insignificant.

b. Petroleum. There are no past or existing oil wells in the vicinity of the reclaimed water storage ponds or along project pipelines based on review of County Uniformed Mapping System resource maps. Therefore, the project would not interfere with access to these resources. Construction of the project would require the consumption of petroleum resources (gasoline and diesel), however this demand would be insignificant (Ventura County, 1992).

3.6 BIOLOGICAL RESOURCES

Information regarding the existing biological setting in Arroyo Las Posas is summarized from the Final Environmental Impact Report for the Arroyo Las Posas Sediment Control Project (Ventura County Flood Control District, 1992); a brief field visit by Woodward-Clyde staff (November, 1994); and other documents prepared for projects located at the MWWTP site.

Two general categories of vegetation occur within the project area: upland and riparian. Upland vegetation occurs just above the Arroyo Las Posas channel banks. Project components located in this area include the existing MWWTP, the proposed reclaimed water storage ponds, and the north and east branch pipelines. The majority of the uplands within the project area have been graded and converted to agricultural land. Natural vegetation occurs only on steep slopes adjacent to the creek. With the exception of vegetation in the immediate vicinity of Grimes Canyon Creek and other small drainage ditch crossings, vegetation along the east and north branch pipelines is either absent or consists of introduced agricultural crops, or ruderal vegetation (tumble weed, Russian thistle, prickly lettuce, black mustard, etc.) and non-native grasslands.

The ruderal vegetation and non-native grasslands provide habitat and foraging opportunities for a wide variety of common wildlife. The most common reptiles and mammals potentially residing in these areas include side-blotched lizard, gopher snake, common kingsnake, Audubon's cottontail, California ground squirrel, Pacific kangaroo rat, and Botta's pocket gopher. Birds which potentially nest in the ruderal/grassland habitat include western meadowlark, lark sparrow, and burrowing owl. Predators such as coyote, red-tailed hawk, barn owl, and American kestrel forage in the ruderal/grassland habitat.

Riparian vegetation types in Arroyo Las Posas in the vicinity of the proposed south branch pipeline include riparian vegetation and open floodplain/aquatic. These vegetation types could be affected if Distribution Alternative 1 is selected, which would require construction of a south branch pipeline across Arroyo Las Posas. Riparian vegetation types in the project area include aquatic/freshwater marsh, scoured floodplain, mixed wetland scrub, riparian woodland, and riparian forest. These vegetation types are described below.

Aquatic/Freshwater Marsh. Aquatic/freshwater marsh vegetation occurs within the creekbed where there are permanently saturated soils. This vegetation type represents the earliest stage of riparian habitat succession. Within this vegetation type, there are three sub-types depending on the amount of water including aquatic, non-persistent emergent, and persistent emergent. Aquatic vegetation types include watercress, yellow waterweed, pondweed, duckweed, and marsh pennywort. Non-persistent emergent plant species include water smartweed, watercress, yellow waterweed, rabbit's foot grass, and willow herb. Persistent emergent plant species include nut-grass, cattail, Olney's bulrush, bulrush, willow smartweed, barnyard grass, Mexican sprangletop, and white sweetclover.

Fish species which are known or potentially occur within the aquatic habitats in the project vicinity include goldfish, brown bullhead, California killifish, and mosquitofish. Birds species observed or believed to occur within the freshwater marsh areas include red-winged blackbird, marsh wren, song sparrow, northern harrier, American and least bittern, great blue heron, great and snowy egret, ruddy duck, mallard, and American coot. Amphibian and mammal species which potentially occur include the Pacific tree frog, muskrat, and ornate shrew.

Scoured Floodplain. The scoured floodplain vegetation type consists of well-drained sand substrates that are periodically scoured by winter flood waters, drying up relatively quickly after being flooded. Hydrophytic plant species such as barnyard grass, nut grass, and horseweed develop while the soils are saturated, but die back shortly after the soils dry up. Vegetative cover on the scoured floodplain is very sparse, generally less than 10 percent.

Mulefat Scrub. This vegetation type develops within drier portions of the floodplain. Drier areas develop open stands of mulefat often mixed with ruderal/non-native grassland species. Moist areas contain moderately dense to dense stands of mulefat and sandbar willow.

Mixed Wetland Scrub. This vegetation type consists of fast growing hydrophytic species, dominated by tall forms of persistent emergent herbaceous species such as willow smartweed, Mexican sprangletop, and nut grass, as well as sandbar willow, giant reed, and mulefat saplings. Mixed wetland scrub grows adjacent to the main drainages, remaining saturated during the winter and spring season, but drying up almost completely during the summer.

Riparian Woodland. Riparian woodland occurs in higher terraces of the creek, usually in small isolated pockets. Riparian woodlands consist of a moderate to dense cover of broadleaved shrubs and willow trees. In the project area, riparian woodlands are dominated exclusively by arroyo willow, and associated giant reed, sandbar willow, and mulefat.

Riparian Forest. Riparian forest vegetation type occurs at the same sites as riparian woodland. Forested areas contain a closed and often overlapping canopy, often with a considerable amount of vertical stratification. The tallest vertical strata consists of scattered red willows, as well as non-native trees such as locust and eucalyptus. Arroyo willow forms the next vertical layer. Cottonwood, sycamore, walnut, and pepper trees also occur in this strata. Shade tolerant shrubs and tree saplings such as sandbar willow and mulefat form the shrub layer. The herbaceous layer contains hydrophytic species such as western goldenrod, mugwort, stinging nettle, and prickly lettuce.

Reptiles and amphibians that are associated with the riparian habitats include western skink, ensatina, Pacific tree frog, western toad, and Pacific slender salamander. Mammal species utilizing riparian habitats include raccoon, striped skunk, and dusky-footed woodrat. Other mammals potentially utilizing the riparian area as a movement corridor include mule deer, coyote, mountain lion, bobcat, and black bear. Common riparian nesting birds include common yellowthroat, Anna's hummingbird, black pheobe, goldfinches, and song sparrow.

The south branch pipeline would extend southward from the reclaimed water storage ponds following an existing access road within the MWWTP area, just west of Grimes Canyon Creek. The pipeline would then turn southwest following a flood control access road. The pipeline would cross down the channel bank in rip-rap reinforced area and cross across the channel just upstream of an existing flood control drop structure. Because of existing flood control maintenance activities in this area, vegetation

is essentially absent in an area which extends from the flood control drop structure to approximately 100 feet upstream. The proposed south branch pipeline would be located in this disturbed area.

a. **Endangered, Threatened, or Rare Species.** Eight taxa of sensitive plants are identified as having the potential to be present in Arroyo Las Posas in the vicinity of the project (Ventura County Flood Control District, 1992). Taxa that occur in marshy habitats include Gambel's water cress (*Rorippa gambelli*) (Federal Category 2 candidate), Ventura marsh milk vetch (*Astragalus pycnostachyus* var. *lanosissimus*) (Federal Category 1 candidate), and spiny rush (*Juncus acutus* ssp. *loepoldii*) (CNPS List 4). Taxa that may occur in the upland habitats within the project area include club-haired mariposa lily (*Calochortus clavatus*) (Federal Category 2 candidate), Catalina mariposa lily (*Calochortus catalinae*) (CNPS List 4), and Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*) (Federal Category 2 candidate). None of these species were identified in the area affected by the Arroyo Las Posas Sediment Control Project, which includes areas which would be affected by construction of the reclaimed water distribution system south branch pipeline.

Potentially sensitive fish and wildlife species which may occur in the project area include coast horned lizard (State Species of Special Concern); white-faced ibis (Federal Category 2 Candidate; State Species of Special Concern); Cooper's hawk (State Species of Special Concern); sharp-shined hawk (State Species of Special Concern); northern harrier (State Species of Special Concern); golden eagle (California fully protected; State Species of Special Concern); burrowing owl (State Species of Special Concern); willow flycatcher (California Endangered); loggerhead shrike (Federal Category 2 Candidate; State Species of Special Concern); least bell's vireo (Federal Endangered, California Endangered); yellow warbler (State Species of Special Concern); yellow-breasted chat (State Species of Special Concern); and tricolored blackbird (Federal Category 2 Candidate; State Species of Special Concern).

Construction of the reclaimed water storage ponds and the north and east branch pipelines is not anticipated to have a significant effect on endangered, threatened, or rare species due to the lack of suitable habitat (as a result of historic and current agricultural activities). In addition, pipelines would primarily be installed in existing agricultural access roads, along agricultural field boundaries, or in railroad or roadway rights-of-way. These two pipelines would cross other drainages (Grimes Canyon Creek, an agricultural drainage ditch north of the Southern Pacific railroad right-of-way, and Arroyo Las Posas at Hitch Boulevard) which contain riparian habitat. These areas may provide habitat to sensitive species, however disruption to these drainages would be minimized by spanning these drainages rather than trenching and impacts would be less than significant.

Construction of the south branch pipeline is also not expected to effect sensitive plant or wildlife as the pipeline would be installed in an area of the Arroyo Las Posas channel in which the vegetation has be previously disturbed by flood control activities. Hence, the project would have a less than significant impact on endangered, threatened, or rare species. Indirect impacts (potential disruptions due to noise, sedimentation, increased human activity) to these sensitive species in upstream and downstream portions of the creek would be minimized by: (1) implementation of erosion and sediment control measures; (2) limiting the duration of construction activities in the creek (anticipated to be less than one week); and (3) limiting construction activities to the disturbed area within 100 feet upstream from the existing drop structure; and (4) compliance with requirements set forth other required permits (i.e., 1601 Streambed Alteration Agreement and Section 404 permit, if required).

b. Wetland Habitat. See discussion above (Biological Resources). Arroyo Las Posas and Grimes Canyon Creek would be considered "waters of the United States" and the riparian vegetation may be wetlands under the jurisdiction of the Corps of Engineers under Section 404 of the Clean Water Act. Installation of the south branch pipeline would occur in a disturbed area of the Arroyo Las Posas Channel. Pipeline installation could temporarily disturb up to approximately 0.8 acres of disturbed floodplain and active creek channel. Because the area involved in pipeline installation is already disturbed and vegetation is negligible in the proposed construction area, the project's effect on wetland habitats would be less than significant. Construction activities in this area would also be subject to conditions set forth in the 1601 Streambed Alteration Agreement and Section 404 permit.

c. Coastal Habitat. The project is not located in the coastal zone; due to the distance between the project area and coastal resources, no impacts are anticipated.

d. Migration Corridor. Operation of the project pipelines and the reclaimed water treatment ponds would not result in any long-term disruptions to wildlife movement. The proposed pond area does not represent a significant wildlife corridor. Project pipelines would be located below ground and would therefore not obstruct movement. Construction activities in Arroyo Las Posas (associated with Distribution Alternative 1 could temporarily affect movement along this corridor, however the disruption would be short-term (one week or less) and confined to daylight hours. Sufficient area would also be available outside the active construction area to allow for movement. Hence, the impact to migration along Arroyo Las Posas would be adverse but less than significant.

e. Locally Important Species/Communities. No additional impacts to biological resources, beyond those described under items b., c., and d. (above) are anticipated. The reclaimed water storage ponds and associated pipelines would be located in agricultural access roads, along field boundaries, and/or within existing roadway and railroad rights-of-way.

3.7 AGRICULTURAL RESOURCES

a. Soils. Soils in the vicinity of the proposed reclaimed water storage ponds are designated as "prime" on the Important Farmlands Inventory Map. Soils along the pipeline alignments are listed as "prime", "of statewide importance", and "unique" on the Important Farmlands Inventory Map. Impacts to agricultural soils along the pipeline corridors would be short-term and temporary, occurring only during pipeline installation. This temporary disturbance to agricultural soils would be considered an adverse but less than significant impact. The reclaimed water storage ponds would require approximately 3.2 acres of land. The proposed site for the reclaimed water storage ponds consists of "prime" soils and is within an area under two existing Land Conservation Act (LCA) contracts (LCA Contract No. 76-3.11 and 76-3.11A). LCA Contract No. 76-3.11 is in non-renewal filed in 1989. The area encompassing the proposed storage ponds is not in non-renewal (Nicole Doner, pers. comm.). This area has historically been used for field crop production; however cultivation of the site has been suspended. Crops have not been grown at the site for about the past year (Karra, pers. comm.).

The General Plan land use designation for the proposed reclaimed water storage ponds is "Agriculture". According to the Ventura County Initial Study Assessment Guidelines (1992), a significant impact to agricultural soils would occur if the project would result in the direct or indirect displacement of five acres of "prime/statewide" designated soils in areas having an agricultural land use designation. Construction and operation of the reclaimed water storage ponds would directly

displace 3.2 acres. The remaining 11 acres of prime soils would not be directly displaced, but the use of this remaining acreage for agricultural activities would likely not occur. Thus, the project's effect on prime agricultural soils would be significant.

The County considers cumulative impacts to agricultural soils to be significant if a project removes one acre or more of "prime/statewide" soils in areas where the land use designation is agriculture (Ventura County, 1992). Based on this threshold criteria, construction and operation of the storage ponds could also have a cumulatively significant impact on agricultural soils.

b. Water. If Distribution Alternative 1 is constructed, reclaimed water would be provided to local agricultural customers. The water would be of equivalent quality to existing irrigation sources (local groundwater). Use of the reclaimed water provided by the distribution system may reduce agricultural use of groundwater from the overdrafted North Las Posas groundwater basin. This would represent a beneficial impact to agricultural water supply. Implementation of Distribution Alternative 2 would have neither a beneficial nor adverse effect. Under this alternative water would be provided for irrigation of a proposed golf course in the City of Moorpark.

c. Air Quality/Micro-Climate. The project is not expected to cause any significant change in local micro-climate by eliminating wind breaks or interfering with solar access for adjacent agricultural lands. However, construction of the project would result in the generation of fugitive dust from grading, vehicle travel and operation on dirt agricultural access roads, and dust from construction vehicles along local public roads. Dust can adversely affect biological control systems used for citrus trees. However, no citrus orchards are located in the vicinity of the proposed storage ponds or distribution pipeline (Karra, pers. comm.); hence no impact would result. Standard dust control measures will be incorporated into project design to minimize dust impacts on other area crops.

d. Pests and Disease. The existing tertiary treatment facility is designed to produce effluent which meets the California Department of Health Services Title 22 requirements for "nonrestricted recreational impoundment" (Boyle Engineering, 1990). Water which meets these requirements may be used for full body-contact sport activities and for spray irrigation of unprocessed food crops. The level of tertiary treatment provided at the MWWTP is suitable for irrigation of food crops and landscaping, in accordance with current health regulations. Monitoring of the effluent quality would be required pursuant to the WRRs issued by the RWQCB. Therefore, the project would not introduce new pest or diseases which would affect agricultural productivity.

e. Land Use Incompatibility. Operation of the reclaimed water distribution system would be compatible with agricultural land uses in the project area. The reclaimed water distribution system is an allowable use in the agricultural zone district. Short-term disruptions to local agricultural traffic may occur during installation of pipelines in access roads and along field boundaries, however this disruption would be localized and of limited duration. Therefore, effects to agricultural resources due to the proposed project (a public facility land use) would be insignificant.

3.8 VISUAL RESOURCES

a. Scenic Highways. Highway 118 is designated as an "eligible County scenic highway" (Ventura County Resources Appendix, 1994). The existing MWWTP is located approximately 550 feet south of Highway 118 and components of the MWWTP are visible from the highway. The reclaimed water distribution pipelines would be located below ground and therefore not visible from Highway 118.

Above ground features associated with the distribution system include the reclaimed water lift station, reclaimed water pump station, the storage ponds, and the well head. The ponds would be created by excavating approximately three feet below the ground surface and constructing a berm to a height of approximately six feet above the ground.

Each pump and well head would be approximately three to five feet above the ground surface and would occupy an area no greater than 625 square feet (0.14 acres). The storage ponds would be located to the north of the existing MWWTP; at their closest point the ponds would be 100 feet from Highway 118. Thus, these project components would be visible from Highway 118. However, existing structures at the MWWTP are 24 to 28 feet and are the dominant features in the Highway 118 viewshed. The addition of the storage ponds, well head, and pump stations would essentially blend in with the existing facilities, and is not expected to significantly degrade existing views from Highway 118. The storage ponds will be screened from view from Los Angeles Avenue by a row of drought tolerant shrubs. The ponds will be set back from the roadway about 100 feet (Figure 2). The landscaping around the reclaimed water system will be integrated with the landscaping design for the entire MWWTP. Visual impacts would be adverse but less than significant.

During the construction of the storage ponds and the distribution pipelines, construction equipment, construction materials, and soil stockpiles could be visible from Highway 118. Since construction activities would be short-term and localized, the visual impacts would be negligible.

b. Scenic Area/Feature. The project area is not identified on the County's Resource Protection Map as a scenic resource area; therefore, no impacts would occur.

3.9 PALEONTOLOGICAL RESOURCES

The project area is underlain by a sequence of very fine to coarse grain marine and nonmarine clastic sedimentary rocks. Locally, these base rocks have been overlaid by alluvial deposits from surrounding uplands. The age of the geologic material ranges from Oligocene for the basement sedimentary rocks to recent for the deposited alluvium. The oldest geologic sediment is the nonmarine Sespe formation. The marine plio-Pleistocene San Pedro Formation and the nonmarine equivalent Saugus formation are deposited on the Sespe formation. Alluvium deposited from late Pleistocene until Recent time overlies the older units over much of the project area. This material fills the Las Posas Valley along the alignment of Arroyo Las Posas and occurs along tributary channel. The thickness of the alluvium is locally variable, reaching a maximum depth of about 200 feet (Boyle Engineering, 1990). Analysis conducted for the Arroyo Las Posas Sediment Control Project (Ventrua County Flood Control District, 1992) indicated a low probability for significant fossil reaources in the creek channel. Therefore, no paleontological impacts are anticipated along the segment of the south branch pipeline across Arroyo Las Posas. For the remaining portions of the project area, the paleontological significance of the project is undetermined (Ventura County Resource Management Agency [RMA], UMS Paleontological Map Series). Therefore, a paleontological resource assessment will be conducted as part of the EIR, to determine the extent of paleontological resources in the project area and the potential effects of the project on these resources.

3.10 CULTURAL RESOURCES

a. Archaeological. Archaeological records review and surveys of portions of the project area have been conducted for EIR's prepared for the Arroyo Las Posas Sediment Control Project and the

existing MWWTP. These previous studies identified several archaeological sites (VEN-631, VEN-864, and VEN-228) within approximately one mile of the project area. Based on the results of these surveys no resources were observed or are expected to be present within the boundaries of the existing MWWTP, and along the portion of the south branch pipeline across Arroyo Las Posas. The remaining portions of the project site have not been subject to comprehensive archaeological resource surveys. Therefore, the possibility exists that archaeological resources may be present in areas north of the existing treatment plant boundaries including: (1) the proposed location for the reclaimed water storage ponds; (2) the east branch pipeline; and (3) the north branch pipeline. These areas have likely been subject to significant surficial disturbances (associated with roadway and agricultural grading), but trenching could extend into previously undisturbed areas. Therefore, a Phase 1 survey will be conducted by a County-qualified archaeologist as part of the EIR to determine the extent of cultural resources in the project area and the potential effects of the project on these resources.

b. Historical. The proposed location for the storage ponds is an open agricultural field. The pipelines would be placed along existing field boundaries, within existing agricultural access roads, and/or within existing road and railroad rights-of-way. No structures are proposed for removal; thus no impacts to historical resources are anticipated.

c. Ethnic, Social, and Religious. Based on a field reconnaissance of the project area by Woodward-Clyde Consultants personnel, no contemporary religious/ethnic social facilities arer known to occur within or adjacent to the project site or along the pipeline alignments. The project's effect on archaeological resources is not currently known, therefore the project's effect on Native American ethnic, social, and religious values is unknown.

3.11 ENERGY RESOURCES

Construction of the project would require petroleum products such as diesel and gasoline. Operation of the reclaimed water distribution would require electricity, primarily for the operation of lift and pump stations. Pursuant to the County's Initial Study Guidelines, individual projects are not considered by the County to cause significant energy impacts.

3.12 COASTAL BEACHES AND SAND DUNES

The project site is not located in the coastal zone. No alterations to Arroyo Las Posas are proposed which would affect its potential contribution of sediments to coastal areas as a part of the Calleguas Creek drainage system.

3.13 SEISMIC HAZARDS

a. Fault Rupture. No faults are known to occur beneath the proposed location for the reclaimed water storage ponds or along the pipeline corridors based on information contained in the Final Environmental Impact Report for the Moorpark Wastewater Treatment Plant Expansion (Ventura County, 1988).

b. Groundshaking. The project is located within a seismically active region. The closest active fault to the project area is the San Cayetano situated approximately 10.5 miles to the north. The closest potentially active fault is the Simi Santa Rosa Fault located approximately 1.2 miles to the south (Ventura County, 1988). The potential for strong groundshaking hazards exists throughout Ventura

County in the event of a strong earthquake (Magnitude [M] 6.0-7.5) originating in the southern half of Ventura County, or a major event (M8.0+) along the San Andreas fault located north of the County (Ventura County, 1994b).

Potential damage to project facilities would be considered an adverse, but not significant impact because state-mandated engineering design features related to seismic hazards would be incorporated into project design.

c. **Tsunami.** The project is not located in a designated "tsunami hazard zone" (Ventura County, 1994b); therefore no impacts to project facilities would occur.

d. **Seiche.** The existing MWWTP percolation ponds and the proposed reclaimed water ponds would be located in the dam failure inundation area for Bard Reservoir (Ventura County, 1988). However, the probability of dam failure is considered to be low (Ventura County, 1988). Thus, impacts to project facilities associated with a seiche at Lake Bard are considered to be less than significant.

e. **Liquefaction.** The project area is not located within an area identified as being subject to liquefaction based on review of the County RMA's UMS map for the Moorpark quadrangle. Alluvial soils at the existing MWWTP vary from firm to moderately firm and dense, and the potential for liquefaction is considered low (Ventura County, 1988). Similar geologic conditions are anticipated at the reclaimed water storage ponds and along the distribution pipelines. No impacts to project facilities are anticipated.

3.14 GEOLOGIC HAZARDS

a. **Subsidence.** The project area is not within a County designated subsidence zone; hence, no impacts to project facilities would occur.

b. **Expansive Soils.** Project components would be located within areas designated by the County as having a low to moderate potential for expansive soils. As needed, appropriate engineering measures will be incorporated into project design to minimize potential damage to project facilities as a result of expansive soils.

c. **Landslides/Mudslides.** The proposed pipeline corridors and the proposed storage ponds are not located within County designated landslide/mudslide hazard zones; hence, no impacts to project facilities would occur and grading activities would not exacerbate slope instability.

3.15 HYDRAULIC HAZARDS

a. **Erosion/Siltation.** Project components are not located in areas designated by the County as "critical erosion areas". Soils in the project area consist of the Pico-Metz-Anacapa association and the Mocho-Sorrento-Garretson association (USDA Soil Conservation Service, 1970). Soils in the project area have little to no erosion hazard (USDA Soil Conservation Service, 1970). Therefore, construction of the pipelines north of Arroyo Las Posas would not result in significant erosion or siltation. As described previously, Distribution Alternative 1 would involve installation of a pipeline (south branch) across Arroyo Las Posas. Installation of the pipeline in the creek bed could cause erosion and downstream sedimentation. As described under item 4.d., measures have been included in project design to reduce erosion and siltation. In addition, the project would be subject to a number of

other regulatory requirements, (1601 Stream Bed Alteration Agreement, and Section 404 permit) which will likely include measures to reduce erosion and sedimentation. With inclusion of these measures, erosion and siltation impacts associated with pipeline construction in Arroyo Las Posas would be reduced to a less than significant level.

b. Flooding. According to the EIR prepared for the Arroyo Las Posas Sediment Control Project (Ventura County Flood Control District, 1992), the 100-year flood event would be contained within the existing creek banks in the vicinity of the proposed project. Therefore, project facilities would be unaffected by 100-year flood events on Arroyo Las Posas. The 100-year flood event is contained within the existing Grimes Canyon Creek channel south of Highway 118; north of Highway 118, the 100-year flood plain extends beyond the channel banks. North branch pipelines associated with Distribution Alternative 2 would be located below ground and would be unaffected by flooding except where the proposed pipeline crosses Grimes Canyon creek. At this location the pipeline is proposed to be clamped to an existing railroad bridge across the creek. The pipeline would be clamped to the side of the bridge. The pipeline would be located above the bottom of the bridge so as not to introduce new obstructions to creek flow (Karra, pers. comm.). Similarly, crossing of Grimes Canyon creek south of Highway 118 would be designed such that no obstruction to flood flows would occur. Impact to project components due to flooding, and the project's impact on flooding would be negligible.

3.16 AVIATION HAZARDS

The project area is not within two miles of a public airport, thus no impacts would occur.

3.17 FIRE HAZARDS

Project components would be located in areas designated by the County as having a low fire hazard, thus no impacts would result.

3.18 HAZARDOUS MATERIALS/WASTE

a. Aboveground Hazardous Materials. The reclaimed water distribution system would not involve the storage or hazardous materials. Issues associated with the storage of hazardous materials associated with the existing MWWTP and tertiary treatment facility have been addressed in previous CEQA documents.

b. Belowground Hazardous Materials. The reclaimed water distribution system would not involve the storage or hazardous materials. No tanks are expected to be present in areas where project construction would occur.

c. Hazardous Wastes. Operation of the reclaimed water distribution system would not generate any hazardous substances.

3.19 NOISE AND VIBRATION

The primary existing sources of noise in the project area are agricultural related equipment, vehicle traffic on Highway 118, railway traffic associated with the Southern Pacific Railroad, and aircraft overflights . Ambient noise levels in the project are typical of a moderately noisy rural setting, with noise levels in the 49 to 59 dBA range (Ventura County Flood Control District, 1992).

Excavation of the reclaimed water storage ponds and pipeline installation would involve the use of heavy-duty construction equipment. Noise levels at 50 to 100 feet from the construction areas would range from 91 to 69 dBA (75 to 69 dBA with controls). Noise levels associated with operation of the lift station and pump would be approximately 76 dBA at 50 feet from the facilities, lowering to 51 dBA at a distance of 800 feet. Land uses adjacent to the reclaimed water storage ponds and along the pipeline corridors are primarily agricultural or transportation-related. These land uses are not considered to be noise sensitive. Noise generated by project construction would be short-term, localized, and would only occur during daylight hours. Due to the rural location of the project components and the absence of sensitive noise receptors, noise generated by the construction and operation of the project would not be significant.

3.20 GLARE

Additional lighting may be installed at the pump and lift stations. This lighting would generally not significantly increase glare over current levels associated with lighting at the existing treatment plant. In addition, perimeter landscaping to be installed at the site would minimize the amount of light visible at off-site locations.

3.21 TRANSPORTATION/CIRCULATION

a. Public Roads and Highways.

Level of Service. No long-term impacts to levels of service (LOS) at area roadways and intersections would occur; operation of the distribution system would primarily be conducted by existing MWWTP staff. One additional part-time employee may be hired to monitor water use and operation of the distribution system. The addition of vehicles trips to area roadways from this part-time employee would be negligible.

At a maximum, approximately six construction personnel would be required for construction of the storage ponds, pipelines, pump and lift stations, and the groundwater well. The existing MWWTP would be used as a local staging area, so daily vehicle trips associated with equipment and material deliveries would be minimal. The addition of these trips during the 9-month construction period would not significantly affect intersection or roadway levels of service.

If Distribution Alternative 1 is selected interruptions to circulation along Highway 118 would be avoided by jacking the pipeline under the highway. Distribution Alternative 1 would also require clamping the east branch pipeline to the Hitch Boulevard bridge. The bridge crossing would be constructed using equipment operating primarily from the bridge deck and/or from scaffolding suspended from the bridge. Traffic on Hitch Boulevard would be obstructed during construction. Impacts to circulation would be minimized by the following measures which have been incorporated into project design:

- A traffic control plan will be developed by the contractor and approved by all appropriate agencies before construction begins
- At least one lane of traffic will remain open on the bridge

Safety/Design. As described above jacking of the pipeline beneath Highway 118 and implementation of a traffic control plan at the Hitch Boulevard bridge would minimize potential circulation hazards during construction.

Tactical Access. Implementation of the traffic control plan will ensure that tactical access would be maintained; impacts would be adverse but less than significant.

b. Private Roads and Driveways. No new private roadways would be constructed.

Safety/Design and Tactical Access. No private roadways would be constructed. Disruption of private agricultural access roads may occur during construction of project pipelines.

However, easements to these areas would be acquired and appropriate alternative access will be developed where needed. Impact to private roads would be insignificant.

c. Pedestrian/Bicycle. Construction and operation of the reclaimed water distribution system would not impact pedestrian or bicycle facilities; no facilities are located along the pipeline alignments or in vicinity or the storage ponds.

d. Parking. Adequate area is available at the MWWTP to provide storage and parking for equipment and construction vehicles; therefore no impacts would result.

e. Bus Transit. Construction and operation of the reclaimed water distribution will not interrupt bus transit service.

f. Railroads. If Distribution Alternative 1 is constructed, the north branch pipeline would be jacked beneath the Southern Pacific railroad tracks to minimize disruptions to rail traffic. Construction of the north branch pipeline would also require suspension of the pipeline to an existing railroad bridge across Grimes Canyon Creek. The District will coordinate with Southern Pacific for all construction activities involving the railroad right-of-way, thereby reducing impact to rail traffic to a less than significant level.

g. Airports. Construction and operation of the reclaimed water distribution system will not affect local airport facilities.

h. Harbors. The project area is not located in the coastal area of the county; therefore, construction and operation will not affect harbor facilities.

I. Pipelines. A Shell Oil Company pipeline is located along to Highway 118 (County RMA UMS map). The proposed distribution pipelines would be designed to avoid impacts to this pipeline.

3.22 WATER SUPPLY

a. Water Quality. See discussion under item 4.

b. Water Quantity. See discussion under item 4. The project would deliver tertiary reclaimed water to local agricultural and irrigation customers which could offset the demand for potable water.

c. **Fire Flow.** The project would not impact the amount of water available to meet fire flow needs.

3.23 WASTE TREATMENT/DISPOSAL

a. **Individual Sewage Disposal System.** The proposed project would not involve sewage disposal.

b. **Sewage Collection/Treatment Facilities.** The project involves the construction and operation of distribution system to distribute reclaimed tertiary treated sanitary wastewater.

c. **Solid Waste Facilities.** Sediment will accumulate in the reclaimed water storage ponds. Storage ponds may need to be drained and clean approximately once per year. Floating windborne debris may also need to be removed from the ponds on a weekly basis. Based on a reasonable worst case estimate approximately 500 cubic yards of sediment could accumulate in the storage ponds. Windborne debris is expected to be less than one trash can full per week and can be disposed of using conventional methods. Reclaimed water storage ponds can be deposited in the sludge drying beds for drying and disposed of with the sludge. Since the project would not increase the capacity the MWWTP, sediment/sludge generation rates would not change, just the location of where the materials accumulate. Therefore, no new impacts would result.

Construction of the reclaimed water storage ponds has been designed such that no import or export of fill would be required. Excavated material would be used to create the pond berms. Pipeline construction would result in a net surplus of about 1,000 cubic yards of excavated earth. The excess material would be disposed at the MWWTP site or would be used in construction of the ponds. Thus construction of the pipeline would not result in significant impact to solid waste disposal facilities.

3.24 UTILITIES

a. **Electric.** The reclaimed water distribution system would use about 400,000 kilowatt-hours of electrical energy per year, primarily for operation of the lift and pump stations. Adequate electrical resources are available in Ventura County. Electrical power is available at the MWWTP and should be adequate for operation of the reclaimed water distribution system. Power would be provided via underground conduits from existing Southern California Edison transformers. Impacts to electrical resources would be less than significant.

b. **Gas.** The project would not require natural gas service.

c. **Communication.** The project would not require new communication facilities.

3.25 FLOOD CONTROL/DRAINAGE

a. **Flood Control District (FCD) Facility.** See discussion under item 15.b.

b. **Other Facilities.** See discussion under item 15.b.

3.26 LAW ENFORCEMENT/EMERGENCY SERVICES (SHERIFF)

a. **Personnel/Equipment.** The project would not affect law enforcement services.

b. **Facilities.** The project would not affect law enforcement services.

3.27 FIRE PROTECTION

a. **Distance/Response Time.** Short-term disruptions to circulation along Hitch Boulevard could occur (see discussion under item 21.a.); no long-term disruptions would occur.

b. **Personnel/Equipment/Facilities.** The project would have no effect on fire protection resources.

3.28 EDUCATION

a. **Schools.** The project would not affect school facilities.

b. **Library.** The project would not affect library facilities.

3.29 RECREATION

a. **Local Parks/Facilities.** The project would not affect recreational facilities. The project would not create a demand for such facilities or disrupt existing facilities.

b. **Regional Parks/Facilities.** The project would not affect regional recreational facilities. The project would not create a demand for such facilities or disrupt existing facilities.

c. **Regional Trails/Corridors.** The project would not affect regional recreational facilities. The project would not create a demand for such facilities or disrupt existing facilities.

Boyle Engineering. 1990. Moorpark Wastewater Treatment Plant Reclaimed Water Feasibility Study. Prepared for Ventura County Waterworks District No. 1.

City of Moorpark. 1994. Notice of Preparation for the Moorpark Country Club Estates EIR.

Doner, Nicole. 1994. Planner, County of Ventura Resource Management Agency. Personal communications with J. Leipner (Woodward-Clyde Consultants).

Karra, Satya. 1995. Senior Engineer, County of Ventura Waterworks District No. 1. Personal communications with J. Leipner (Woodward-Clyde Consultants).

_____. 1994. Senior Engineer, County of Ventura Waterworks District No. 1. Personal communications with J. Leipner (Woodward-Clyde Consultants).

Ventura County. 1994a. Ventura County General Plan: Goals, Policies, and Programs.

_____. 1994b. Ventura County General Plan, Hazards Appendix.

_____. 1994c. Ventura County General Plan: Resources Appendix.

_____. 1993a. Draft Ventura County Water Management Plan.

_____. 1993b. Ventura County General Plan: Public Facilities and Services Appendix.

_____. 1992. Initial Study Assessment Guidelines.

Ventura County Air Pollution Control District. 1989. Guidelines for the Preparation of Air Quality Impact Analyses.

Ventura County, Flood Control District. 1992. Final Environmental Impact Report for the Arroyo Las Posas Sediment Control Project.

Ventura County Resource Management Agency. No Date. Unified Mapping Series maps for the Moorpark quadrangle.

Ventura County Waterworks District No. 1. 1991. EIR No. 0901-9783 for the Expansion of the Moorpark Wastewater Treatment Plant.

_____. 1988. Final Environmental Impact Report for Moorpark Wastewater Treatment Plant Expansion.

U.S. Department of Agriculture, Soil Conservation Service. 1970. Soil Survey Ventura Area, California.

COUNTY OF VENTURA
PUBLIC WORKS AGENCY

WATER RESOURCES AND DEVELOPMENT DEPARTMENT
DEVELOPMENT & INSPECTION SERVICES DIVISION
800 South Victoria Avenue, Ventura, California 93009
(805) 654-2030

MEMORANDUM

Date: February 28, 1996

To: Satya Karra

From: Jim Myers

Subject: Initial Study
Moorpark Reclaimed Water Distribution System
Ventura County Waterworks District No. 1

I have reviewed sufficient subject report. I concur with the findings with regard to Erosion/Siltation, Flooding and Impacts to Non-Flood Control District Drainage Facilities.

If you have any questions relating to the subject matter, please contact me, at (805) 654-2324.

State of California

GOVERNOR'S OFFICE OF PLANNING AND RESEARCH

1400 TENTH STREET
SACRAMENTO 95814

PETE WILSON
GOVERNOR

LEE GRISSOM
DIRECTOR

RECEIVED

FEB 06 1996

PWA/WATER & SANITATION

DATE: February 2, 1996

TO: Reviewing Agencies

RE: MOORPARK RECLAIMED WATER DISTRIBUTION SYSTEM
SCH# 96021009

Attached for your comment is the Notice of Preparation for the MOORPARK RECLAIMED WATER DISTRIBUTION SYSTEM draft Environmental Impact Report (EIR).

Responsible agencies must transmit their concerns and comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of this notice. We encourage commenting agencies to respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

MR. SATYA KARRA
VENTURA COUNTY WATERWORKS DIST. 1
7150 WALNUT CANYON RD
MOORPARK, CA 93021

with a copy to the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the review process, call at (916) 445-0613.

Sincerely,

Antero A. Rivasplata

ANTERO A. RIVASPLATA
Chief, State Clearinghouse

Attachments

cc: Lead Agency

NOP Distribution List

SCH# 96021009

S = sent by lead agency
X = sent by SCH

Resources Agency

- [X] Nadell Gayou, *Resources Agency*, 1020 Ninth Street, Third Floor, Sacramento, CA 95814, 916/327-1722
- [ ] Judy Carpenter, *Dept. of Boating & Waterways*, 1629 S Street, Sacramento, CA 95814, 916/445-6281
- [ ] Gary L. Holloway, *California Coastal Commission*, 45 Fremont Street, Suite 1970, San Francisco, CA 94105-2219, 415/904-5200
- [ ] Reed Holderman, *State Coastal Conservancy*, 1330 Broadway, Suite 1100, Oakland, CA 94612, 510/286-1015
- [X] Tom Gibbs, *Dept. of Conservation*, 801 K Street, MS-24-02, Sacramento, CA 95814, 916/445-8733
- [ ] Douglas Wickizer, *Dept. of Forestry*, 1416 Ninth Street, Room 1516-2, Sacramento, CA 95814, 916/653-9451
- [ ] Hans Kreutzberg, *Office of Historic Preservation*, P.O. Box 942896, Sacramento, CA 94296-0001, 916/653-9107
- [ ] Ken Pierce, *Dept. of Parks and Recreation*, P.O. Box 942896, Sacramento, CA 94296-0001, 916/653-0538
- [ ] Wendy Halverson, *Reclamation Board*, 1020 Ninth Street, Room 240, Sacramento, CA 95814, 916/327-1531
- [ ] Steve McAdam, *S.F. Bay Conservation & Dev't Comm.*, 30 Van Ness Avenue, Room 2011, San Francisco, CA 94102, 415/557-3686
- [X] Nadell Gayou, *Department of Water Resources*, 1020 Ninth Street, Third Floor, Sacramento, CA 95814, 916/327-1722

Health & Welfare

- [ ] Kim Dinh, *Dept. of Health*, 601 N. 7th Street, PO Box 942732, Sacramento, CA 94234-7320, 916/327-6111

Fish and Game - *Regional Offices*

- [ ] Richard L. Elliott, Regional Manager, Department of Fish and Game, 601 Locust, Redding, CA 96001, 916/225-2300 (8-442)
- [ ] Ryan Broddrick, Regional Manager, Department of Fish & Game, 1701 Nimbus Road, Suite A, Rancho Cordova, CA 95670, 916/355-0922 (8-438)
- [ ] B. Hunter, Regional Manager, Department of Fish and Game, P.O. Box 47, Yountville, CA 94599, 707/944-5518
- [ ] G. Nokes, Regional Manager, Department of Fish and Game, 1234 East Shaw Avenue, Fresno, CA 93710, 209/222-3761 (8-421)
- [X] Fred A. Worthley, Jr., Reg. Manager, Department of Fish and Game, 330 Golden Shore, Suite 50, Long Beach, CA 90802, 310/590-5132

Independent Commissions/Agencies

- [ ] Lorri Gervais, *California Energy Commission*, 1516 Ninth Street, MS-15, Sacramento, CA 95814, 916/654-3944
- [X] Native American Heritage Comm., 915 Capitol Mall, Room 364, Sacramento, CA 95814, 916/653-4082
- [X] Douglas Long, *Public Utilities Commission*, 505 Van Ness Avenue, San Francisco, CA 94102, 415/703-2011
- [X] Betty Eubanks, *State Lands Commission*, 1807 - 13th Street, Sacramento, CA 95814, 916/5741880
- [ ] Gerald R. Zimmerman, *Colorado River Board*, 770 Fairmont Avenue, Suite 100, Glendale, CA 91203-1035
- [ ] Rick Angelocci, *Tahoe Regional Planning*, P.O. Box 1038, Zephyr Cove, NV 89448, 702/588-4547
- [ ] Thomas Ottoman, *Office of Emergency Services*, P.O. Box 29998, San Francisco, CA 94129, 415/666-9300
- [ ] Debby Eddy, *Delta Protection Commission*, P.O. Box 530, Walnut Grove, CA 95690, 916/776-2290 FAX 776-2293

Department of Transportation *District Contacts*

- [ ] Dave Carstensen, *Caltrans, District 1*, 1656 Union Street, Eureka, CA 95501, 707/445-6407
- [ ] Michelle Gallagher, *Caltrans, District 2*, P.O. Box 494040, Redding, CA 96049-4040, 916/225-3259 (8-442)
- [ ] Jody Lonergan, *Caltrans, District 3*, 703 B Street, Marysville, CA 95901, 916/741-4277 (8-457)
- [ ] Gary F. Adams, *Caltrans, District 4*, P.O. Box 23660, Oakland, CA 94623-0660, 510/286-6174
- [ ] Lawrence Newland, *Caltrans, District 5*, P.O. Box 8114, San Luis Obispo, CA 93403-8114, 805/549-3683 (8-629)
- [ ] Marc Birnbaum, *Caltrans, District 6*, P.O. Box 12616, Fresno, CA 93778-2616, 209/448-4020
- [X] Wilford Melton, *Caltrans, District 7*, 120 South Spring Street, Los Angeles, CA 90012, 213/897-1338 or 897-1344
- [ ] Harvey Sawyer, *Caltrans, District 8*, P.O. Box 231, San Bernardino, CA 92402, 909/383-4808 (8-670)
- [ ] Lisa Flores, *Caltrans, District 9*, 500 South Main Street, Bishop, CA 93514, 619/872-5203
- [ ] Mitchell Baker II, *Caltrans, District 10*, P.O. Box 2048, Stockton, CA 95201, 209/948-3803
- [ ] Mike Owen, *Caltrans, District 11*, P.O. Box 85406, 2829 Juan Street, San Diego, CA 92186-5406, 619/688-6750 (8-631)
- [ ] Aileen Kennedy, *Caltrans, District 12*, 2501 Pullman St., Santa Ana, CA 92705, 714/724-2239 (8-655)

Business, Transportation, & Housing

- [ ] Sandy Hesnard, *Caltrans - Division of Aeronautics*, P.O. Box 942874, Sacramento, CA 94274-0001, 916/324-1833
- [ ] Tom Micone, *California Highway Patrol*, Office of Special Projects, Planning and Analysis Division, P.O. Box 924898, Sacramento, CA 94298-0001, 916/657-7222
- [X] Ron Helgeson, *Caltrans - Planning*, P.O. Box 942874, Sacramento, CA 94274-0001, 916/445-5570

State and Consumer Services

- [ ] Robert Sleppy, *Dept. of General Services*, 400 R Street, Suite 5100, Sacramento, CA 95814, 916/324-0214
- [ ] Office of Local Assistance, 501 J Street, Suite 400, Sacramento, CA 95814, 916/445-3160

California Environmental Protection Agency

- [X] Barbara Fry, *Air Resources Board*, 2020 L Street, Sacramento, CA 95815, 916/322-8267
- [ ] Mark deBie, *Calif. Waste Management Board*, 8800 Cal Center Drive, Sacramento, CA 95826, 916/255-2367
- [ ] Wayne Hubbard, *State Water Resources Control Board, Division of Clean Water Programs*, P.O. Box 944212, Sacramento, CA 94244-2120, 916/227-4308
- [ ] Phil Zentner, *State Water Resources Control board, Division of Water Quality*, P.O. Box 944213, Sacramento, CA 94244-2130, 916/657-0912
- [ ] Mike Falkenstein, *State Water Resources Control Board, Division of Water Rights*, 901 P Street, 3rd Floor, Sacramento, CA 95814, 916/657-1377 (8-437)
- [ ] Dept. of Toxic Substances Control, *CEQA Tracking Center*, 400 P Street, Fourth Floor, P.O. Box 806, Sacramento, CA 95812-0806, 916/324-3119

Regional Water Quality Control Board

- [ ] NORTH COAST REGION (1), 5550 Skyline Blvd., Suite A, Santa Rosa, CA 95403, 707/576-2220 (8-590)
- [ ] SAN FRANCISCO BAY REGION (2), 2101 Webster, Suite 500, Oakland, CA 94612, 510/286-1255
- [ ] CENTRAL COAST REGION (3), 81 Higuera Street, Suite 200, San Luis Obispo, CA 93401-5427, 805/549-3147 (8-629)
- [X] LOS ANGELES REGION (4), 101 Centre Plaza Drive, Monterey Park, CA 91754-2156, 213/266-7556
- [ ] CENTRAL VALLEY REGION (5), 3443 Routier Road, Suite A, Sacramento, CA 95827-3098, 916/255-3000
  - ○ Fresno Branch Office, 3614 East Ashlan Avenue, Fresno, CA 93726, 209/445-5116 (8-421)
  - ○ Redding Branch Office, 415 Knollcrest Drive, Redding, CA 96002, 916/224-4845 (ATS 441)
- [ ] LAHONTAN REGION (6), 2092 Lake Tahoe Boulevard, South Lake Tahoe, CA 96150, 916/542-5400
  - ○ Victorville Branch Office, 15428 Civic Drive, Suite 100, Victorville, CA 92392-2359, 619/241-6583
- [ ] COLORADO RIVER BASIN REGION (7), 73720 Fred Waring Drive, #100, Palm Desert, CA 92260-2564, 619/346-7491
- [ ] SANTA ANA REGION (8), 2010 Iowa Avenue, Suite 100, Riverside, CA 92507, 714/782-4130 (8-632)
- [ ] SAN DIEGO REGION (9), 9771 Claremont Mesa Blvd., Suite B, San Diego, CA 92124-1331, 619/265-5114 (8-636)

- [ ] OTHER _____
- [ ] OTHER _____

MEMO
from the Solid Waste Management Department

To:	Satya Karra, Senior Engineer
From:	Christy Madden, Sr. Waste Management Analyst CM.
Date:	Tuesday, February 13, 1996
Subject:	NOP - Moorpark Reclaimed Water Distribution System - Ventura County Waterworks District No. 1

We have reviewed the above referenced NOP and find that the Initial Study adequately addresses the solid waste issues of concern to our Department.

If you have any questions, please contact me at extension 2477.

county of ventura

RECEIVED
FEB 07 1996
PWA/WATER & SANITATION

Peter S. Pedroff
Director

GENERAL SERVICES AGENCY
Recreation Services
County Government Center
Administration Building, L #1030
800 South Victoria Avenue
Ventura, CA 93009
(805) 654-3963
Fax (805) 654-3684

DATE: February 6, 1996

TO: Satya Karra
Water Resources and Development Department
Public Works Agency

FROM: Sandra Sanders
Staff to Cultural Heritage Board

SUBJECT: Draft EIR - Moorpark Reclaimed Water Distribution System

It appears that the project, as described, will have no effect on Ventura County historical resources. The cumulative impact is the same as the project impact: none.

No designated or potential National Register of Historic Places sites, designated California Historical Landmarks or Points of Interest, designated Ventura County Historical Landmarks or designated Ventura County Points of Interest are located in the project area.

The project, as described, appears to be consistent with General Plan Goals 1.8.1 & 2, and will not affect our cultural resources.

Please call me at 654-3964 if you have questions about this letter.

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STATE OF CALIFORNIA—BUSINESS AND TRANSPORTATION AGENCY

PETE WILSON, Governor

DEPARTMENT OF TRANSPORTATION
DISTRICT 7, 120 SO. SPRING ST.
LOS ANGELES, CA 90012-3606
TDD (213) 897-6610

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February 29, 1996

IGR/CEQA/NOP/CP/#2003
Moorpark Reclaimed Water
Distribution System
City of Moorpark
Vic.: VEN-118-13.18-R017.49
SCH # 96021009

Mr. Satya Karra
Ventura County Waterworks District 1
7150 Walnut Canyon Rd.
Moorpark, CA 93021

Dear Mr. Karra:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the Moorpark Reclaimed Water Distribution System project referenced above. The primary purpose of the project is to provide the facilities and pipelines necessary to distribute tertiary treated reclaimed water from the Moorpark Wastewater Treatment Plant to agricultural and landscape irrigation water users in the District's service area.

Based on the information received we have the following comment:

In all instances where the proposed work falls within or affects the State right-of-way such as construction, grading, changes to hydraulic run-off, etc. a Caltrans encroachment permit will be needed. Please send six (6) sets of plans to help us make this determination.

If you have any questions regarding this response, please feel free to contact me at (213) 897-4429.

Sincerely,

Stephen J. Buswell

STEPHEN J. BUSWELL
IGR/CEQA Coordinator
Transportation Planning Office

cc: Chris Belsky
State Clearinghouse

VENTURA LOCAL AGENCY FORMATION COMMISSION

Hall of Administration
800 South Victoria Avenue, L#1850
Ventura, CA 93009
(805) 654-2576 FAX (805) 654-5106

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MAR 0 6 1996
PWA/WATER & SANITATI

February 29, 1996

Satya Karra, Senior Engineer
Water and Sanitation Services Division
Public Works Agency
7150 Walnut Canyon Road
Moorpark, CA 93021

Dear Satya:

Re: Comments on Notice of Determination of "Moorpark Reclaimed Water Distribution System" Project

In response to your request, dated January 29, 1996, for comments on the above referenced subject, I would like to inform you that at this time LAFCO does not have any comments on this project.

Sincerely,

Vijay Garimella
Interim Executive Officer

MEMBERS:

OUNTY:
ohn K. Flynn
y Mikels
ank Schillo, *Alternate*

CITY:
Robert N. McKinney
Bernardo M. Perez
James L. Monahan, *Alternate*

PUBLIC:
Janis McCormick
Ron Bottorff, *Alternate*

SPECIAL DISTRICT:
James Acosta
Larry Whelan
John Rush, *Alternate*

INTERIM EXECUTIVE OFFICER:
Vijay Garimella

SECRETARY TO THE COMMISSION:
Vacant

PUBLIC WORKS AGENCY
TRANSPORTATION DEPARTMENT
Traffic and Planning & Administration

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PWA/WATER & SANITATION

MEMORANDUM
February 1, 1996

TO: VCPWA Water Resources and Development Department
Water and Sanitation Services Division
Attention: Satya Karra, Senior Engineer

FROM: Robert B. Brownie, Principal Engineer RBB

SUBJECT: Notice of Preparation of a Draft Environmental Impact Report
Moorpark Reclaimed Water Distribution System
VCPWA Waterworks District Number 1
HITCH BOULEVARD AND LOS ANGELES AVENUE (STATE ROUTE 118)
Within the unincorporated Area of **MOORPARK**

The Transportation Department has reviewed the Notice of Preparation of a Draft Environmental Impact Report for the Moorpark Reclaimed Water Distribution System. Approval of this project would allow the modification of the Moorpark Waste Water Treatment Plant and would consist of reclaimed water storage, pumping and distribution facilities. The Moorpark Waste Water Treatment Plant is located in the unincorporated area of the County approximately 0.25 miles south of State Highway 118, four miles west of the City of Moorpark, just north of Arroyo Las Posas. We offer the following comments:

1) We concur with the Notice of Preparation and the Initial Study for those areas under the purview of the Transportation Department.

2) The traffic generated by this project will not have a significant impact on County roads in the unincorporated area. Therefore, the Transportation Department does not require road improvements or a Traffic Impact Mitigation Fee with this project.

3) This project will require an encroachment permit from the Transportation Department for work done within the **HITCH BOULEVARD** right-of-way. The applicant shall contact Ron Sheppard at (805) 654-2055 for requirements of this permit.

4) **LOS ANGELES AVENUE (STATE ROUTE 118)** is under the jurisdiction of the California State Department of Transportation (CALTRANS). Therefore, CALTRANS should also review this project.

5) Our review of this development is limited to the impacts this development may have on the County's Regional Road Network.

Please call me at extension 2080 with questions.

c: Richard Herrera, Duane Flaten, Rich Guske, Kim Hocking

RBB/RH/DRF:sa
MWWTP.mem

KBB

PUBLIC WORKS AGENCY
county of ventura

Director
Arthur E. Goulet

Deputy Directors
William B. Britt
Transportation
John C. Crowley
Water Resources/Development
Robert E. Quinn, Jr.
Engineering Services
Paul W. Ruffin
Central Services
Alex Sheydayi
Flood Control

Representing Ex-officio:
Ventura County Flood Control District
Ventura County Waterworks Districts
No. 1,16,17, and 19
Lake Sherwood Community Services District
Fox Canyon Groundwater Management Agency

NOTICE OF PREPARATION

To: Distribution List

Date: January 29, 1996

Subject: Notice of Preparation of a Draft Environmental Impact Report
Moorpark Reclaimed Water Distribution System
Ventura County Waterworks District No. 1

The Ventura County Waterworks District No. 1, (District) acting as Lead Agency, has determined that the above referenced project may have a significant effect on the environment and that a subsequent Environmental Impact Report (EIR) should be prepared. The project description, location map and the probable environmental effects are contained in the attached Initial Study.

The purpose of this notice is to call attention to the project and to request that you or your organization assist the District in identifying the impacts or issues which should be addressed in the EIR.

Please specify, in writing, the scope and content of the environmental information which is germane to your area of responsibility.

Pursuant to Government Code Section 21080.4(a), this information must be submitted to the District by certified mail no later than 30 days after receipt of this notice. Please address all responses to Mr. Satya Karra, 7150 Walnut Canyon Rd., Moorpark, CA 93021.

If you have any questions or would like to meet with the Public Works Agency Staff representing the District to discuss the project please contact the undersigned at (805) 584-4884.

Very truly yours,

Satya Karra, Senior Engineer
Water and Sanitation Services Division
Water Resources and Development Department

SK:ct
Encl.

RECEIVED
JAN 30 1996
PWA - Transportation

7150 Walnut Canyon Road, P.O. Box 250, Moorpark, CA 93020
(805) 584-4829 FAX (805) 529-7542

KH

STATE OF CALIFORNIA—ENVIRONMENTAL PROTECTION AGENCY

PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2156
(213) 266-7500
FAX: (213) 266-7600

March 20, 1996

File No. 700.500

Mr. Satya Karra
Ventura Waterworks District No.1
7150 Walnut Canyon Road
Moorpark, California 93021

Re: **Notice of Preparation, Moorpark Reclaimed Water Distribution System; SCH #96021009**

The California Regional Water Quality Control Board for the Los Angeles Region (Regional Board) is charged with protection of water quality for all waterbodies in the Los Angeles and Ventura coastal watersheds. The Regional Board protects water quality by implementing regulations, policies, and programs authorized by the State's Porter-Cologne Water Quality Control Act, and by administering certain regulations established by the Federal Clean Water Act. As a responsible agency under the California Environmental Quality Act (CEQA), the Regional Board also reviews environmental documents and comments upon water quality issues.

Regional Board staff have reviewed the referenced document for this project. The primary purpose of the project is to provide the facilities and pipelines necessary to distribute tertiary treated reclaimed water from the Moorpark Waste Water Treatment Plant to agricultural and landscape irrigation water users in the District's service area.

The document states (p. 1-11) that "the reclaimed water would be utilized for the proposed golf course along Grimes Canyon Road (Moorpark Country Club Estates, Bollinger Development, Tract 4928) and or customers identified in the Reclaimed Water Feasibility Study (Boyle, 1990)." You should know that in a letter to Ms. Debbie Traffenstedt of the City of Moorpark (dated October 23, 1995, copy included), we addressed the point that "the tertiary treatment system at the Plant does not yet provide an effluent of adequate quality that meets all Title 22 water regulations for landscape irrigation". Again we reiterate that the District will have to apply for and receive Water Reclamation Requirements from this Regional Board prior to providing reclaimed water for landscape irrigation .

We appreciate the opportunity to review and provide commentary on this project. If you have any questions regarding our comments, please contact Mr. Kirby McClellan at (213)266-7564.

Sincerely,

Wendy Phillips, Chief
Planning Unit

cc: R. Reddy Pakala, P.E., County of Ventura
7150 Walnut Canyon Road, Moorpark, California 93021

RECEIVED
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WATER & SANITA

COUNTY OF VENTURA
PUBLIC WORKS AGENCY
WATER RESOURCES AND DEVELOPMENT DEPARTMENT

MEMORANDUM
February 21, 1996

To: Rich Guske
Development & Inspection Services Division

From: Lowell Preston, Ph. D., Manager
Water Resources Division

SUBJECT **MOORPARK RECLAIMED WATER DISTRIBUTION SYSTEM WATER RESOURCES-RELATED IMPACTS TO BE ADDRESSED IN DRAFT EIR**

We have reviewed the Initial Study subject document prepared by Woodward-Clyde Consultants and offer the following groundwater-related issues to be addressed in the Environmental Impact Report:

1.1 INTRODUCTION AND PROJECT BACKGROUND - "Presently, about 2.0 million gallons per day (MGD) of secondary treated effluent is percolated into the local groundwater basin..." Water levels in the South Las Posas Groundwater Basin, above which the Moorpark Wastewater Treatment Plant (MWWTP) is sited, have risen about 100 feet during the last decade, coinciding with the delivery of a million acre-feet of high quality imported water to the cities of Simi Valley and Moorpark. Treatment of sewage effluent and release into the Arroyo Simi by Simi Valley, and treatment of sewage effluent and percolation via spreading basins by Moorpark have caused this water-table to rise even during the 1985-1991 drought period. The EIR should assess the available storage remaining in the basin.

The percolation of high-quality effluent into the groundwater basin from the Moorpark and Simi Valley wastewater treatment plants has resulted in an improvement of water quality delivered by area wells. Some of these wells support agricultural production in the North Las Posas Basin area served by the Zone Mutual Water Company and by private wells. A portion of the basin recharge migrates into the Pleasant Valley Basin, which is overdrafted. The EIR must thoroughly assess the groundwater quantity impacts of proposed delivery of the tertiary-treated effluent to an area that has no irrigation history compared to the present (no project) groundwater basin recharge benefit.

1.3.7. GROUNDWATER WELLS AND RELATED FACILITIES - The State Department of Health Services has strict setback rules for distances between reclaimed water injection wells and extraction wells. Due to the long period of use of the treated effluent percolation ponds, the Health Department should be contacted to determine if the project supplemental extraction well is properly sited with respect to distance from effluent recharge facilities.

1.6. MITIGATION MEASURES INCORPORATED INTO PROJECT DESIGN - "Groundwater extractions by the District would be maintained in accordance with GMA requirements." The Fox Canyon GMA does not expect to approve increased allocation for the extraction well.

TABLE 1 - GROUNDWATER WELL INFORMATION - Errata: The values for sodium and sulfate for State Well Number 2N/20W-2D1 are incorrect. Also, water quality results for each well should be identified by date of sampling.

RLP:JT:LH/lh

APPENDIX B

COMMENTS ON THE DRAFT EIR AND RESPONSES

JAN 3 1 1997

State of California

GOVERNOR'S OFFICE OF PLANNING AND RESEARCH
1400 TENTH STREET
SACRAMENTO 95814

PETE WILSON
GOVERNOR

LEE GRISSOM
DIRECTOR

January 23, 1997

MR. SATYA KARRA
VENTURA COUNTY WATERWORKS DIST. 1
7150 WALNUT CANYON RD
PO BOX 250
MOORPARK, CA 93020

Subject: MOORPARK RECLAIMED WATER DISTRIBUTION SYSTEM SCH #: 96021009

Dear MR. SATYA KARRA:

The State Clearinghouse has submitted the above named draft Environmental Impact Report (EIR) to selected state agencies for review. The review period is now closed and the comments from the responding agency(ies) is(are) enclosed. On the enclosed Notice of Completion form you will note that the Clearinghouse has checked the agencies that have commented. Please review the Notice of Completion to ensure that your comment package is complete. If the comment package is not in order, please notify the State Clearinghouse immediately. Remember to refer to the project's eight-digit State Clearinghouse number so that we may respond promptly.

Please note that Section 21104 of the California Public Resources Code required that:

> "a responsible agency or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency."

Commenting agencies are also required by this section to support their comments with specific documentation.

These comments are forwarded for your use in preparing your final EIR. Should you need more information or clarification, we recommend that you contact the commenting agency(ies).

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

ANTERO A. RIVASPLATA
Chief, State Clearinghouse

Enclosures
cc: Resources Agency

STATE OF CALIFORNIA—BUSINESS AND TRANSPORTATION AGENCY

PETE WILSON, Governor

DEPARTMENT OF TRANSPORTATION
DISTRICT 7, 120 SO. SPRING ST.
LOS ANGELES, CA 90012-3606

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JAN 27 1997
JAN 27 1997
WATER & SANITATION

IGR/CEQA/DEIR/CP/#961209
Moorpark Reclaimed Water
Distribution System
City of Moorpark
Vic.: VEN-118-13.18-R017.49
SCH # 96021009

Mr. Satya Karra
Ventura County Waterworks District No. 1
7150 Walnut Canyon Rd.
Moorpark, CA 93020

Dear Mr. Karra:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the Moorpark Reclaimed Water Distribution System project referenced above. The primary purpose of the project is to provide the facilities and pipelines necessary to distribute tertiary treated reclaimed water from the Moorpark Wastewater Treatment Plant to agricultural and landscape irrigation water users in the District's service area.

Based on the information received we have the following comments:

1) We recommend that the traffic control plans for this project be submitted to the Caltrans Office of Traffic Investigations for review.

2) Our review indicates a Caltrans Encroachment permit is required for this project. In all instances where the proposed work falls within or affects the State right-of-way, such as construction, grading, changes to hydraulic run-off, etc. a Caltrans encroachment permit will be needed. We recommend that the District submit a permit application along with six (6) sets of engineering plans and calculations for the proposed project, to the Caltrans Permits Office for review. 1

If you have any questions regarding this response, please call contact me at (213) 897-4429.

Sincerely,

STEPHEN J. BUSWELL
IGR/CEQA Coordinator
Transportation Planning Office

cc: Chris Belsky
State Clearinghouse

JAN 0 3 1997

MOORPARK

799 Moorpark Avenue Moorpark, California 93021 (805) 529-6864

December 30, 1996

Satya Karra
Water and Sanitation Districts
Public Works Agency
7150 Walnut Canyon Road
Moorpark, CA 93020

SUBJECT: DRAFT ENVIRONMENTAL IMPACT REPORT (EIR) FOR MOORPARK WASTEWATER TREATMENT PLANT RECLAIMED WATER DISTRIBUTION SYSTEM (STATE CLEARINGHOUSE NO. 96021009)

Dear Mr. Karra:

The City of Moorpark Department of Community Development has reviewed the above referenced Draft EIR, and have found that it adequately addresses potential impacts, mitigation measures, and alternatives. Please provide us with a copy of the comments received on the Draft EIR and responses, and a copy of the certified Final EIR for our records. 2

Thank you for the opportunity to comment on the Draft EIR.

Sincerely,

Nelson Miller
Director of Community Development

NM/DST
cc: Honorable City Council
Steve Kueny, City Manager

PATRICK HUNTER Mayor | BERNARDO M. PEREZ Mayor Pro Tem | CHRISTOPHER EVANS Councilmember | DEBBIE RODGERS TEASLEY Councilmember | JOHN E. WOZNIAK Councilmember

PUBLIC WORKS AGENCY
TRANSPORTATION DEPARTMENT
Traffic and Transportation Planning

MEMORANDUM

DATE: December 18, 1996

TO: VCPWA Water Resources and Development Department
Water and Sanitation Services Division
Attention: Satya Karra, Senior Engineer

FROM: Robert B. Brownie, Principal Engineer RBB

SUBJECT: Review of Draft Environmental Impact Report
Moorpark Reclaimed Water Distribution System
VCPWA Waterworks District Number 1
HITCH BOULEVARD AND LOS ANGELES AVENUE (STATE ROUTE 118)
Within the unincorporated area of **MOORPARK**

The Transportation Department has reviewed the subject Draft Environmental Impact Report for the Moorpark Reclaimed Water Distribution System. We previously reviewed the Notice of Preparation for this project and provided comments in our February 1, 1996 memorandum. 3

We concur with the Draft Environmental Impact Report for those areas under our purview. With the implementation of the mitigation measures outlined in the Draft Environmental Impact Report, this project will be consistent with the County's General Plan Transportation policies.

Call me at (805) 654-2080 with questions.

c: Richard Herrera
Duane Flaten
Carole Trigg

RBB\RH\DRF:sa
MWWTP.mem

`COUNTY OF VENTURA
PUBLIC WORKS AGENCY
WATER RESOURCES AND DEVELOPMENT DEPARTMENT

MEMORANDUM

January 21, 1997

To: Reddy Pakala

From: Lowell Preston, Manager

Subject: **Moorpark Wastewater Treatment Plant (MWWTP)**
Reclaimed Water Distribution Project No. 32825
Review Comments on Draft Environmental Impact Report (DEIR)

The DEIR MWWTP is complete from the Water Resources perspective. The project is **Less than Significant (LS)** in respect to Initial Studies Checklist Items **4c., 4d.,** and **22b.,** and Significant for items **4a.** and **4b.**

The following **Project Description,** discussion and conclusions are from the DEIR and are provided as a reference for conclusions reached by Water Resources Division:

The proposed project is a distribution system designed to distribute tertiary-treated reclaimed water from the MWWTP for use at agricultural and/or landscape irrigation reuse sites in the District's service area. The distribution system would provide up to 1.5 million gallons per day (MGD) of tertiary-treated reclaimed water. The project would involve the construction of reclaimed water storage ponds, pump stations, and a series of pipelines to deliver the water, as well as connections to the existing tertiary treatment facilities. The project is located within the Fox Canyon Groundwater Management Agency (GMA) and the East Las Posas Basin.

From a water resources standpoint, the project description includes several key points. The current MWWTP percolates 1.5 MGD of secondary treated water into the local groundwater basin (Las Posas Basin [LPB]) (Sec. 3.1). The project includes a well for which extractions by the District would be maintained within its existing GMA allocation. The well would provide supplemental water in the event of a shutdown of the tertiary treatment plant. The project description suggests that the LPB may be saturated due to secondary effluent percolation and that the well would indirectly use the County's own wastewater as a supplement (Sec. 3.3.7). While the available supply of reclaimed water is expected to be fairly constant throughout the year, the use of that water by customers is expected to be seasonal and less than the available supply. The available supply of reclaimed water is 1.5 MGD (1,680 AFY) and the expected use is between 800-1000 AFY for agricultural customers or 1340 AFY if used for a golf course. Therefore, it is anticipated that during winter months, little or no reclaimed water will be delivered to customers 4

and would then be discharged (at secondary treatment levels) to the existing percolation ponds for groundwater recharge or, if percolation capacity is exceeded, discharged to Arroyo Las Posas at tertiary treated levels (Sec. 3.5.2). It is expected that the water quality of the reclaimed water will be higher than local groundwater (with the possible exception of chlorides) used by many farmers but the overall water quality would not be as high as imported water (Sec. 3.5.3). 5

While generally the water quality in the LPB is very good, there is a recent trend in some areas of the LPB toward increased TDS. This may be caused by the City of Simi Valley's dewatering activities and the high TDS groundwater being discharged into the Arroyo Simi (Sec. 4.3.1.1). Based on two separate references, there is generally agreement that the LPB as a whole, is in a state of overdraft in the range of 10-12,000 AFY (Sec. 4.3.1.2). It is believed that 93% of the recharge in the eastern portion of the LPB, where MWWTP is located, comes from Arroyo Las Posas recharge and water leakage from the interbedded unit (Sec. 4.3.1.2). The project has two possible distribution plans for the reclaimed water, both of which would be within the eastern portion of the LPB or portions of both the South and North LPB (Sec. 4.3.2.3).

The DEIR comes to the following three conclusions regarding groundwater quantity (and quality)--

A. While project implementation will reduce current groundwater recharge, it will not have a significant impact because (Sec. 4.3.2.3):

- By the year 2000, it is expected that the wastewater that flows into the plant will increase to the point that routine diversion to the diversion ponds will be at pre-project levels

- Because the majority of water coming into the plant is from imported sources, the bulk of water percolated into the ground is not a part of the natural groundwater budget of the LPB.

- The use of reclaimed water will in part recharge the LPB, although the amount of such recharge cannot be determined at this time. 6

B. With high water levels in the LPB, and if it is saturated, the MWWTP may be inhibited and the diversion of reclaimed water may have less effect on recharge to the LPB as a whole.

C. Loss of groundwater recharge from the MWWTP could cause a slight increase in TDS. This is unlikely to have a significant effect on water quality in the South LPB as long as the City of Simi Valley continues to discharge water with a high TDS concentration.

The following is the discussion of conclusions reached by the Water Resources Division, regarding the impact of this project.

Item 4a. Groundwater Quantity. This project is significant for groundwater quantity as it diverts water from groundwater recharge of the LPB to another use. This diversion in turn impacts the Oxnard Plain basin as there is hydrological connectivity between the LPB and the Oxnard Plain as shown in previous studies such as the EIR for the Las Posas Basin Aquifer Storage and Recovery Project of February 1995. Water well logs in the LPB and the Pleasant Valley Basin (PVB) also 7 8 9

show parallel responses to changes in water levels over the past years. Geologic profiles across the LPB and PVB also show aquifer formation continuity that supports the hydrologic continuity from the LPB to the PVB. These conclusions come from Ventura County Technical Information Report of January 1975, and State Water Resources studies. The LPB and Oxnard Plain basins are overdrafted and the loss of groundwater recharge to the LPB therefore creates a loss to the Oxnard Plain and this constitutes a significant impact. While the DEIR considers the contribution of the wastewater treatment plant effluent as not a part of the "natural groundwater budget of the LPB" the loss of 800-1340 AFY represents an estimated 5-8% of the LPB's annual recharge from all sources assuming an annual recharge of 16, 825 AFY. 10 11 12

This impact may be mitigated to a **LS** level. The significant assessment is based on the potential loss of 1.5 MGD groundwater recharge to the LPB. Any recharge above this 1.5 MGD is a surplus to the basin which would be available for other uses. Recharge below this 1.5 MGD constitutes loss of recharge which has been increasing to its current level since the MWWTP began operation in 1965, and has been since 1965, a part of the LPB recharge balance. The DEIR suggests that by the year 2000, the MWWTP will be discharging enough effluent to provide reclaimed water to its proposed customers and provide 1.5 MGD of groundwater recharge via its percolation ponds. Alternatively, there would be no impact if the 1.5 MGD recharge can continue uninterrupted. Reclaimed water could be made available to the project's proposed customers as the plant output increases beyond 1.5 MGD. Given the potential implementation timing of this project, it could be that by the time the proposed project is completed this condition of plant output may already have been reached.. 13

Item **4b.** Groundwater Quality. This project is significant for groundwater quality as it increases the TDS levels in the LPB through lack of recharge of the basin from plant discharge. Overall TDS concentrations in the LPB range from 250 to 750 milligrams per liter (mg/l). The TDS of the 1.5 MGD recharge is in the range of 600 to 700 mg/l. Localized concentrations within the LPB have been as high as 1500 to 1800 mg/l, and based on water quality maps of the LPB since 1974 there has been a gradual reduction in the area of good water quality (less than 500 mg/l TDS) while the area of poor water quality (more than 1500 mg/l TDS) has gradually expanded. As noted in the project DEIR, a contributor to these trends is the discharge of poor TDS quality groundwater as a result of dewatering operations by the City of Simi Valley. This discharge into the Arroyo Simi provides recharge to the LPB. To the extent that the quality of the 1.5 MGD recharge to the LPB is of higher quality than that of the dewatering operation, the loss of that 1.5 MGD recharge increases the TDS concentrations going into the LPB. While it is recognized that there may be several contributions to the increased TDS levels of sources recharging the basin, the further degradation of the basin by reducing the MWWTP effluent and the probable resultant increase in TDS is adverse (as noted in the DEIR) and Significant. 14

This impact may also be mitigated in the same manner and at the same time as that noted in Item 4b. above.

Item 4c. Surface Water Quantity. This project is LS for surface water quantity as it will not alter streams, rivers, or other surface water bodies.

Item **4d.** Surface Water Quality. This project is **LS** for surface water quality as it does not use any hazardous materials that could be spilled or introduced into the surface water causing contamination.

Item **22b.** Water Supply. This project is **LS** for water supply as it does not use any additional water.

As a condition of the Project, the applicant shall:

1. Destroy any wells discovered or known to exist on the project parcel that are not used as a project water supply. Well destruction work must be performed under a permit issued by the Water Resources Division.

15

A completed Initial Study Checklist is attached.

Should you have any questions, please contact me at 805/648-9204.

cc: John Crowley

AP:LP/mj

mwwtp.doc

RESPONSES TO COMMENTS ON THE DRAFT EIR

STATE OF CALIFORNIA, OFFICE OF PLANNING AND RESEARCH

No specific comments were included in the letter. This agency coordinated the distribution of the Draft EIR to state agencies for their review and comment.

STATE OF CALIFORNIA, CALTRANS

Comment No. 1.

Comment noted. The District will observe the recommendations by Caltrans prior to, and during, construction of the reclaimed water pipelines.

CITY OF MOORPARK

Comment No. 2

Comment noted. No response required.

VENTURA COUNTY, PUBLIC WORKS AGENCY, TRANSPORTATION DEPT.

Comment No. 3

Comment noted. No response required.

VENTURA COUNTY, PUBLIC WORKS AGENCY, WATER RESOURCES

Note: This memorandum primarily addresses concerns about the potential reduction in recharge to the Las Posas Basin as a result of the project. In order to respond to the specific concerns raised in the memorandum, additional technical data on groundwater impacts is provided at the end of this document. This information supplements the analysis presented in the Draft EIR.

Comment 4:

The wastewater treatment plant current treats and disposes about 2.0 million gallons per day (MGD) through evaporation and/or percolation, not 1.5 MGD, as stated in the comment.

Comment 5:

The Ventura County Waterworks District No. 1 is unaware of any available data that demonstrate that chloride levels are higher in tertiary treated reclaimed water than in groundwater from the Las Posas Basin.

Comment 6:

This conclusion quoted from the Draft EIR is incorrect because the use of Best Management Practices during the application of reclaimed water would preclude deep percolation and the recharge of underlying aquifer. The text in the EIR has been modified to correct this error.

Comment 7:

The technical analysis that follows indicates that the groundwater analysis for the EIR should distinguish, whenever possible, between the North and South Las Posas basins. This comment is not accurate as stated, in light of this distinction between basins.

Comment 8:

The technical analysis that follows indicates that the hydrologic continuity between the Las Posas Basin and the Oxnard Plan Basin is limited to the North Las Posas Basin, and no such continuity has been demonstrated between the Oxnard Plain Basin and the South Las Posas Basin. In addition, the data presented below indicate that groundwater is more likely to be flowing from the Oxnard Plain Basin to the North Las Posas Basin, not *visa-versa*, as indicated in the comment. Hence, the delivery and use of reclaimed water under the proposed project are not expected to affect the Oxnard Plain Basin.

Comment 9:

The observation of similar patterns of groundwater levels in wells in adjacent basins does not, in and of itself, indicate hydraulic continuity between basins because groundwater levels may be fluctuating due to similar patterns in rainfall and well pumping in the different basins, both of which would experience the same climatic conditions, and which may have similar agricultural pumping needs.

Comment 10:

The Ventura County Waterworks District No. 1 is unaware of the geological data demonstrating the continuity between the South Las Posas Basin and the Pleasant Valley Basin.

Comment 11:

See response to Comment No. 8 above which indicates that there is no direct hydraulic connectivity between the South Las Posas Basin and the Oxnard Plain Basin, and that any flow between the North Las Posas Basin and the Oxnard Plain is likely to be reverse flows into the North Las Posas Basin.

The technical analysis that follows also indicates that recharge of the overdrafted North Las Posas Basin and Pleasant Valley Basin from the effluent discharged from the Moorpark Wastewater Treatment Plant is likely to be very small (as well as unaccounted for in the budgets constructed

for these basins by the Fox Canyon Groundwater Management Agency). Hence, no significant impact to these overdrafted basins are anticipated due to the diversion of reclaimed water for reuse.

Comment 12:

The technical analysis presented below indicate that the effluent from the Moorpark Wastewater Treatment Plant is discharged (via percolation ponds) to the South Las Posas Basin, which is saturated. Hence, much of this discharge is likely to bypass the South Las Posas Basin as it is conveyed along Arroyo Las Posas. The extent to which these discharges percolate into the North Las Posas Basin and represent a component of its annual recharge budget is unknown and highly speculative. Based on available information, much of the effluent from the plant is not expected to recharge the Las Posas Basin, as a whole.

The estimate of recharge presented in the comment is likely to be low. In a definitive study of the North and South Las Posas basins, CH2MHILL (1993) did not include the discharge from the Moorpark Wastewater Treatment Plant in the groundwater budgets. Hence, the estimate of recharge to these basins of 16,825 acre-feet per year from the CH2MHILL (1993) study is likely to be an underestimate of the actual recharge, taking into account the effluent from the Moorpark Wastewater Treatment Plant.

Comment 13:

The proposed mitigation measure will be considered by the Ventura County Waterworks District No. 1, although the District believes that the project would not result in a significant impact to groundwater quantity. The lead agency has determined, based on available information, that the potential reduction in recharge to the South Las Posas Basin, and to a lesser extent, the North Las Posas Basin, would be adverse, but not significant for the following reasons:

a) Current recharge to the South Las Posas Basin from the plant's discharges is inhibited by the saturated condition of the basin, and therefore, a reduction in discharge to the percolation ponds would not result in a concomitant reduction in recharge to the South Las Posas Basin. Furthermore, the extent of recharge to the North Las Posas Basin is unknown and highly speculative, but is likely to be low based on local hydrogeologic conditions.

b) The amount of effluent to be diverted is expected to be less than the 800 to 1,340 acre-feet projected in the EIR due to seasonal reductions in the demand for reclaimed water.

c) Under current plans, the amount of effluent to be percolated and/or discharged to Arroyo Las Posas would *exceed* current levels (even with diversions for reclamation) in the near future. Hence, any impact on current recharge would be temporary, and future recharge conditions would be an improvement over existing conditions.

Comment 14:

The lead agency believes that the effect on water quality due to reduced recharge to the South Las Posas Basin would be minor, as described in the Draft EIR. The comment provides no new

information or analysis to cause the lead agency to reach a different conclusion. The additional technical analysis presented below provides further support that the reduction in recharge due to the project would be minor, temporary, and less than significant. By extrapolation, impacts to water quality would be minor, temporary, and less than significant.

Comment 15:

The District will adopt this measure as stated.

BACKGROUND INFORMATION AND ADDITIONAL GROUNDWATER ANALYSES

The Draft EIR notes the distinction between the North Las Posas Basin and the South Las Posas Basin because the differences in the overdraft status and sources of recharge for these two basins are critical in evaluating the impacts of the reclaimed water distribution system. Hence, a brief description of these differences is presented below in more detail than that presented in the Draft EIR.

The occurrence of the North Las Posas and South Las Posas Basins has been noted since the studies of Mukae and Turner (1975) and Ventura County (1975). These basins have been considered to be separate by these and other investigators based on water quality data and evidence of geologic separation, as noted below.

The Moorpark Wastewater Treatment Plant and the proposed reclaimed water use areas overlie the South Las Posas Basin. This basin extends from the middle of Happy Camp Canyon, westerly to southwesterly to Arroyo Las Posas, to a point directly south of Balcom Canyon Road. The South Las Posas Basin is an east-west trending basin formed by the downfolding of the Moorpark Syncline near Arroyo Simi, the Moorpark Anticline in the Moorpark Hills, and the Las Posas Anticline in the Las Posas Hills (Mukae and Turner, 1975). The basin is separated from the North Las Posas Basin by the Moorpark Anticline, a geologic structure that creates differences in groundwater levels.

Water-bearing units in the South Las Posas Basin include the Upper Zone consisting of Recent and Pleistocene alluvium, and the Lower Aquifer System consisting of the Fox Canyon Aquifer in the San Pedro Formation. The Grimes Canyon Aquifer is not present. Recent and Pleistocene alluvium is present in Arroyo Simi, Arroyo Las Posas, and their tributaries within the basin.

The San Pedro Formation consists of low permeability clays and silt materials, with localized sand and gravel lenses. The Fox Canyon Aquifer is confined in the South Las Posas Basin and hydraulic connectivity with the Upper Zone is limited to a four-mile long reach of Arroyo Simi and upper Arroyo Las Posas.

Recharge to the South Las Posas Basin occurs by underflow from Arroyo Simi and direct percolation. A significant amount of recharge to the basin occurs due to discharges to Arroyo Simi from the Simi Valley wastewater treatment plant. There are no published estimates of recharge or discharge from the South Las Posas Basin.

Water levels in the South Las Posas have risen steadily (up to 180 feet) from 1975 to 1990 (CH2MHILL, 1993) For example, records from all wells located along Arroyo Las Posas indicate sharp increases in water levels in the South Las Posas Basin (CH2M HILL, 1993). Calleguas MWD (1994) also showed that there is rising groundwater between Balcom Canyon Road and Somis due to underflow in Arroyo Simi (from Simi Valley's wastewater effluent and dewatering well discharges) and direct percolation into the Fox Canyon Aquifer outcrops in the Las Posas Hills. As a result, there are saturated conditions in the South Las Posas Basin. Metropolitan Water District (1989) considers the South Las Posas Basin to be saturated, and Ventura County

Resources Management Agency and Public Works Agency (1994) also state that the basin has a surplus recharge of about 1,000 acre-feet.

A certain amount of groundwater from the South Las Posas Basin may flow into the North Las Posas Basin because water levels in the North Las Posas Basin adjacent to the South Las Posas Basin are as much as 200 feet lower due to pumping depressions. However, the amount of flow has not been estimated.

The alluvium in Arroyo Las Posas from the wastewater treatment plant to near Somis is fully saturated from winter runoff and effluent from the Simi Valley wastewater treatment plant and groundwater dewatering wells (Ventura County, 1993). However, surface flows derived from effluent disappear near Somis. J.M. Montgomery (1988) state that a pumping trough near Somis and local geologic conditions inhibit subsurface flows from entering the adjacent, downstream Pleasant Valley Basin. Significant hydraulic continuity would only occur between the North Las Posas Basin and the Pleasant Valley Basin if the North Las Posas Basin were to fill, according to J.M. Montgomery (1988).

The Pleasant Valley Basin is comprised of the Lower Aquifer System, confined by the sediments of the San Pedro Formation. The Upper Aquifer System is absent from this basin (Metropolitan Water District, 1989). Groundwater is replenished from underflow through the Oxnard Plain Pressure Basin from the Oxnard Plain Forebay Basin and offshore storage (Metropolitan Water District, 1989). The amount, if any, of recharge from the overlying alluvium in Calleguas Creek is unknown. Winter surface flows in Arroyo Las Posas are conveyed to Calleguas Creek.

Several conditions of the Las Posas Basin, as a whole, should be noted based on the above investigations:

a) There is a significant northeast-to-southwest fault that divides the basin, with significantly higher water levels east of the fault. The wastewater treatment plant and Somis occur east of this fault.

b) The estimated average annual recharge to the Las Posas Basin (as a whole), east of the fault, is 10,875 acre-feet per year, of which about 38 percent is from Arroyo Las Posas (CH2MHILL, 1993). However, it should be noted that this recharge estimate does not include recharge from the Moorpark Wastewater Treatment Plant (Foreman, pers. comm., 1997).

c) North Las Posas Basin may discharge to the Oxnard Plan Basin at its western end; however, it is more likely that inflows occur from the Oxnard Plain Basin to the North Las Posas Basin due to a large pumping depression in the western North Las Posas Basin (Mukae, 1990; Calleguas MWD, 1994).

The water quality in the North and South Las Posas Basin differ greatly. In general, the water quality of the North Las Posas Basin is good, with typical TDS levels of 250 to 750 mg/l (Metropolitan Water District, 1989). In contrast, water quality in the South Las Posas Basin is poor, with TDS levels of 1,800 to 2,000 mg/l (Metropolitan Water District, 1989; Calleguas

MWD, 1994). The commonly accepted explanation for this difference is the effect of high TDS effluent from the Simi Valley Wastewater Treatment Plant. The striking difference in water quality in wells located in the South Las Posas and North Las Posas basins, even between wells in close proximity, is further evidence of the geologic separation between the two basins.

The above information provides further support for the conclusion in the Draft EIR that delivery and use of the reclaimed water would not "*interfere substantially with groundwater recharge*," a suggested criteria for determining a significant impact under CEQA (see Appendix G of the CEQA Guidelines). Diverting an estimated 800 to 1,340 acre-feet of reclaimed water for use in the area, rather than percolating the water, is not expected to adversely affect recharge in the South Las Posas Basin because the basin is saturated, and therefore, recharge from existing effluent discharges is already very limited due high groundwater levels.

References:

Calleguas Municipal Water District (MWD), 1994. Program Environmental Impact Report for the Las Posas Basin Aquifer Storage and Recovery Project.

CH2MHILL, 1993. Technical Memorandum. Hydrogeology and Three-Dimensional Groundwater Flow Model of the Las Posas Basin, Ventura County, California.

Foreman, Terry, 1997. Personal communications with John Gray of Woodward-Clyde Consultants. CH2MHILL, Thousand Oaks.

Metropolitan Water District, 1988. North Las Posas Basin Hydrogeologic Investigations. In cooperation with Calleguas Municipal Water District.

J.M. Montgomery, 1988. Environmental Impact Report for the Moorpark Wastewater Treatment Plant Expansion. For Ventura County Waterworks District No. 1.

Mukae, M. M., 1990. Study referenced in Calleguas MWD (1994).

Mukae, M. M. and J.M. Turner, 1975. Ventura County Water Resource Management Study. Ventura County Department of Public Works, Flood Control District.

Ventura County, 1975. Compilation of Technical Information Records for the Ventura County Cooperative Investigation. Volume 1. Flood Control and Drainage. Public Works Department.

Ventura County Resources Management and Public Works Agency, 1994. Ventura County Water Management Plan. Volume II.

California Regional Water Quality Control Board, "Water Recycling Requirements" correspondence (2/5/2002) and Order No. R4-2002-0028 (1/24/02)

California Regional Water Quality Control Board

Los Angeles Region

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February 5, 2002

RECEIVED
FEB 06 2002
PWA/WATER & SANITATION

Mr. R. R. Pakala
Water & Sanitation Services Division
Water Resources and Engineering Department
Ventura County Waterworks District No. 1
P.O. Box 250
Moorpark, CA 93020

Dear Mr. Pakala:

WATER RECYCLING REQUIREMENTS – Ventura County Waterworks District No. 1, Moorpark Wastewater Treatment Plant (File No. 01-122, CI-8371)

Our letter dated December 24, 2001, transmitted tentative Water Recycling Requirements for use of recycled water in surface irrigation, construction application, impoundment, and in-plant cleaning.

Pursuant to Division 7 of the California Water Code, this Regional Board, at a public hearing held on January 24, 2002, reviewed the tentative requirements, considered all factors in the case, and adopted Order No. R4-2002-0028 (copy* enclosed) relative to your production and use of recycled water. Please note that, based on the direction of the Board, the following changes have been made on the tentative requirements before adoption:

- Specifications for Use of Recycled Water 1.a.i. on Page 7 – Discharger is required to obtain approval from the State Department of Health Services (State DOHS) and the Regional Board prior to delivery of recycled water for food crops irrigation.
- Provisions 6 on Page 12 – Discharger is required to obtain approval from the State DOHS and the Regional Board of the amended engineering report prior to the initial delivery of recycled water.

You are required to implement the *Monitoring and Reporting Program (M&RP)* on the effective date of this Order. Your first monitoring report under this Order must be received at the Regional Board by May 15, 2002, covering the monitoring period from January 24 to March 31, 2002. If there is no reuse of recycled water during the reporting period, the report shall so state. Please submit all monitoring reports to the Regional Board, Attn: Information Technology Unit. When submitting monitoring, technical reports, or any correspondence to the Regional Board, please include a reference to our *Compliance File No. CI 8371* to assure that the reports are directed to the appropriate staff and file. We would appreciate it if you would not combine other reports with monitoring reports but would submit each type of report as a separate document.

* The Standard Provisions is now sent to the addressee only: however, anyone may obtain a copy by contacting the Board staff listed herein.

If you have any questions, please feel free to contact me at (213) 576-6651 or Jau Ren Chen at (213) 576-6656.

Sincerely,

WDJesena, P.E.

Winnie D. Jesena, Chief ← Retired
Municipal Permitting Unit

Enclosures

cc: U.S. Army Corps of Engineers
Mr. Jim Kassel, Division of Water Quality, State Water Resources Control Board
Mr. Michael Lauffer, Office of Chief Counsel, State Water Resources Control Board
Ms. Virginia Gardner, Channel Coast District, California State Parks
Ms. Vera Melnyk Vecchio, Drinking Water Field Operations Branch, State Department of Health Services
Mr. Jeff Stone, Recycled Water Unit, Division of Drinking Water, State Department of Health Services
Mr. Mike Ali, Drinking Water Field Operations Branch, Santa Barbara District, State Department of Health Services
Ventura County Environmental Health Division
Ventura County Department of Public Works, Flood Control and Drainage
Ventura Regional Sanitation District
Mr. Chip Weaver, Ventura County Waterworks District No.1
Mr. Earle Hartling, County Sanitation Districts of Los Angeles County

State of California
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

ORDER NO. R4-2002-0028
(File No. 01-122)

WATER RECYCLING REQUIREMENTS FOR VENTURA COUNTY WATERWORKS DISTRICT NO. 1 (Moorpark Wastewater Treatment Plant) (Title 22 Recycled Water)

The California Regional Water Quality Control Board, Los Angeles Region, (Regional Board), finds:

1. Ventura County Waterworks District No. 1 (hereinafter District or Producer) owns and operates the Moorpark Wastewater Treatment Plant (Moorpark) located at 9550 Los Angeles Avenue, Moorpark, California. Under normal conditions, Moorpark discharges secondary treated effluent to on-site percolation/evaporation ponds under Waste Discharge Requirements contained in Order No. 00-048, adopted by this Regional Board on April 13, 2000. During wet weather, when the flow exceeds the percolation capacity, the Moorpark plant further provides tertiary treatment (filtration and disinfection/dechlorination) to a portion of the secondary treated wastewater for discharge into Arroyo Las Posas. This discharge is regulated under separate waste discharge requirements contained in Order No. 00-049 adopted by this Regional Board on April 13, 2000. Order No. 00-049 also serves as the National Pollutant Discharge Elimination System permit (NPDES No. CA0063274).

PURPOSE OF ORDER

2. In addition to the waste discharge requirements in Finding 1, the District has filed a report of waste discharge for the production, distribution, and use of recycled water and applied for water recycling requirements pursuant to the California Water Code Section 13522.5. The District is constructing and will be operating a recycled water distribution system, consisting of recycled water storage, pumping facilities, and distribution pipelines, to provide tertiary treated and disinfected recycled water directly to end-users. The recycled water will be used for surface irrigation, construction application, in-plant cleaning, and impoundment.

3. This Order is a master water recycling permit issued to the District pursuant to California Water Code Section 13523.1. The District is responsible for the production and distribution of recycled water in accordance with the requirements prescribed in this Order. The District is also responsible for processing individual end-users' applications, inspecting point-of-use facilities, and ensuring end-users' compliance with the water recycling requirements contained in this Order.

4. The actual delivery of recycled water to end-users is subject to approval of the State Department of Health Services (hereinafter State DOHS), and/or its delegated local health agency.

DESCRIPTION OF FACILITY AND TREATMENT PROCESS

5. The Moorpark plant has been undergoing a two-phase upgrade and expansion. The plant was originally designed to provide secondary treatment to 3.0 million gallons per day (mgd) of wastewater, and tertiary treatment to 1.5 mgd of secondary treated effluent. The Phase I plant upgrade was completed and has been in operation since July 2001. It included conversion of the aeration/polishing ponds secondary treatment system to an activated sludge process, and the construction of a solids dewatering facility, solar sludge drying beds, and a dewatered cake storage pad.

6. The upgraded primary and secondary treatment systems consist of an in-channel screening (Aqua Guard® screens), grit removal, Biolac® extended aeration system, and secondary clarification. Secondary treated effluent is discharged to 30 onsite percolation/evaporation ponds. Waste sludge is either dewatered using a belt press or dried in sludge drying beds before being hauled away for land application to an approved facility.

7. Tertiary treatment system consists of chemical flocculation, gravity settling, up-flow Dynasand® filtration, and disinfection using sodium hypochlorite solution. During wet weather, the disinfected tertiary treated effluent is dechlorinated prior to discharging into Arroyo Las Posas, which is tributary to Mugu Lagoon. Implementation of the water recycling program would reduce the likelihood or amount of tertiary treated wastewater discharged into Arroyo Las Posas during wet weather.

   Figures 1, 2, 3, and 4 show the location of the plant, schematic diagram of the wastewater flow, tertiary treatment flow diagram, and layout of the treatment plant and percolation ponds, respectively.

8. The District is proceeding with the Phase II plant upgrades that include increasing the secondary treatment capacity to 5 mgd by expanding the Biolac® extended aeration system, providing nitrogen removal, and expanding the tertiary treatment facilities.

9. The Moorpark plant is within the South Las Posas area, and the proposed recycled water use areas are within the Las Posas Valley Groundwater Basin, which is a part of the Ventura Central Ground Water Basin.

APPLICABLE PLANS, POLICIES AND REGULATIONS

10. On June 13, 1994, this Regional Board adopted a revised *Water Quality Control Plan, Los Angeles Region: Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan)*. The Basin Plan contains beneficial uses and water quality objectives for groundwater within the Las Posas Valley groundwater basin. The designated existing beneficial uses are municipal and domestic supply, industrial service supply, industrial process supply, and agricultural supply.

11. Section 13523 of the California Water Code provides that a regional board, after consulting with and receiving recommendations from the State DOHS or its delegated local health agency, and after any necessary hearing, shall, if it determines such action

to be necessary to protect the health, safety, or welfare of the public, prescribe water recycling requirements for water that is used or proposed to be used as recycled water. Section 13523 further provides that such requirements shall include, or be in conformance with, the statewide uniform recycling criteria established by the State DOHS pursuant to the California Water Code Section 13521.

12. The use of recycled water for irrigation in parks, golf courses, freeway landscapes, school yards, cemeteries, and other landscape or agricultural areas could affect the health, safety, and welfare of the public; therefore requirements are necessary.

13. The State DOHS adopted revised Water Recycling Criteria that became effective on December 2, 2000. Applicable criteria to this recycling project are prescribed in this Order.

14. The District had prepared an engineering report on its proposed production, distribution, and use of recycled water for irrigation in September 1999 as required by Section 60323 of Title 22, California Code of Regulations. On July 24, 2000, the District submitted an addendum to the engineering report. On August 21, 2000, the State DOHS approved the engineering report and provided the Regional Board with comments and recommendations on the District's recycling project. However, the District has upgraded their treatment plant in 2001 and expanded the use of recycled water to include construction application, impoundments, and in-plant cleaning purposes. This Order, therefore, requires the District to update their engineering report.

15. Pursuant to the California Water Code Section 13523, the Regional Board has consulted with the State DOHS regarding the proposed recycling project and has incorporated their recommendations in this Order.

16. Pursuant to Section 402(p) of Clean Water Act and Title 40 of the Code of Federal Regulations (CFR) Parts 122, 123 and 124, the State Water Resources Control Board (State Board) adopted general NPDES permits to regulate storm water discharges associated with industrial activity (State Board Order No. 97-03-DWQ adopted on April 17, 1997) and construction activity (State Board Order No. 99-08-DWQ adopted in August 19, 1999. Storm water discharge from Moorpark plant is subject to requirements under these general permits. The District has submitted notices of intent to be covered under the two general permits and has developed and implemented Storm Water Pollution Prevention Plans to comply with the general NPDES permits.

17. The requirements contained in this Order are in conformance with the goals and objectives of the Basin Plan and implement the requirements of the California Water Code and Water Recycling Criteria.

18. In compliance with the California Environmental Quality Act (Public Resources Code Section 21000 et seq.), the District prepared and certified on April 7, 1997, an Environmental Impact Report (EIR) for the Moorpark Wastewater Treatment Plant Reclaimed Water Distribution System. The EIR identified no significant adverse impact to water quality as a result of the use of recycled water.

19. Pursuant to the California Water Code Section 13320, any aggrieved party may seek review of this Order by filing a petition with the State Board. A petition must be sent to: State Water Resources Control Board, P.O. Box 100, Sacramento, CA 95812, within 30 days of adoption.

The Regional Board has notified the District and interested agencies and persons of its intent to issue Master Water Recycling Requirements for the production, distribution and use of recycled water, and has provided them with an opportunity to submit their written views and recommendations.

The Regional Board, in a public meeting, heard and considered all comments pertaining to these water recycling requirements.

IT IS HEREBY ORDERED that Ventura County Waterworks District No. 1 shall comply with the following:

A. RECYCLED WATER LIMITATIONS

1. Recycled water used for irrigation shall be limited to disinfected tertiary recycled water only, as proposed. A disinfected tertiary recycled water is wastewater that has been filtered and subsequently disinfected that meets the following criteria:

   a. The filtered wastewater has been disinfected by either:

      i. A chlorine disinfection process that provides a concentration-time (CT) value of not less than 450 milligram-minutes per liter at all times with a modal contact time of at least 90 minutes, based on peak dry weather design flow. The CT is the product of total chlorine residual and modal contact time measured at the same period. The modal contact time is the amount of time that elapsed between the time that a tracer, such as salt or dye, is injected into the influent at the entrance of the chlorination chamber and the time that the highest concentration of the tracer is observed in the effluent from the chamber. The peak dry weather design flow is the arithmetic mean of the maximum peak flow rates sustained over some period of time (for example three hours) during the maximum 24-hour dry weather period. Dry weather period is defined as periods of little or no rainfall.

      For purposes of calculating and demonstrating compliance with the CT requirement, within 30 days after the initial delivery of recycled water, the Producer shall complete tracer studies under four different flow rates (the maximum, the minimum, and two points in between) to determine the respective modal contact time at the chlorine contact basin. The studies shall follow the protocol outlined in *Tracer Studies in Water Treatment Facilities: A Protocol and Case Studies* published by the American Water Works Association Research Foundation. A curve of flow rate vs. modal contact time, based on the study results, shall be used for estimating the modal contact time at a given flow rate, which is

essential for the CT calculation. A final report on the tracer studies shall be submitted to the State DOHS and the Regional Board within 30 days after the completion of the studies.

In the interim period before the completion of tracer studies, the theoretical retention time based on the volume of the chlorine contact basin and the design flow rate shall be used as the modal contact time in the calculation of CT.

ii. A disinfection process that, when combined with the filtration process, has been demonstrated to inactivate and/or remove 99.999 percent of the plaque-forming units of F-specific bacteriophage MS2, or polio virus in the wastewater. A virus that is at least as resistant to disinfection as polio virus may be used for purposes of the demonstration.

F-specific bacteriophage MS-2 means a strain of a specific type of virus that infects coliform bacteria that is traceable to the American Type Culture Collection (ATCC 15597B1) and is grown on lawns of E. coli (ATCC 15597).

b. The median concentration of total coliform bacteria measured in the disinfected wastewater does not exceed a most probable number (MPN) of 2.2 per 100 milliliters based on the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform bacteria does not exceed an MPN of 23 per 100 milliliters in more than one sample in any 30 day period. No sample shall exceed an MPN of 240 total coliform bacteria per 100 milliliters.

c. A filtered wastewater shall be an oxidized wastewater that has been coagulated and passed through natural undisturbed soil or a bed of filter media under the following conditions:

i. At a rate that does not exceed 5 gallons per minute per square foot of surface area in mono, dual or mixed media gravity, upflow or pressure filtration systems, or does not exceed 2 gallons per minute per square foot of surface area in a traveling bridge automatic backwash filter; and,

ii. The turbidity of the filtered wastewater does not exceed any of the following:

- An average of 2 NTU within a 24-hour period;
- 5 NTU more than 5 percent of the time within a 24-hour period; and
- 10 NTU at any time.

"NTU" (Nephelometric Turbidity Unit) is a turbidity measurement determined by the ratio of the intensity of light scattered by the sample to the intensity of incident light as measured by Method 2130 B. in *Standard Methods for the Examination of Water and Wastewater*, 20th

Edition; Eaton, A. D., Clesceri, L. S., and Greenberg, A. E., Eds; American Public Health Association, Washington, D.C., 1998; p2-8.

d. A coagulated wastewater shall be an oxidized wastewater in which colloidal and finely divided suspended matter have been destabilized and agglomerated upstream from a filter by the addition of suitable floc-forming chemicals.

e. An oxidized wastewater shall be wastewater in which the organic matter has been stabilized, is nonputrescible, and contains dissolved oxygen.

2. The recycled water shall not contain constituents with concentrations in excess of the following limits:

Constituent	Units	30-Day Average	7-Day Average	Maximum Limitations
$BOD_5 20°C$	mg/L	30	45	
Oil and grease	mg/L	10		15
Suspended solids	mg/L	30	45	
Total dissolved solids	mg/L			1500
Chloride	mg/L			250
Sulfate	mg/L			700
Boron	mg/L			1.0
Nitrate + nitrite (sum as nitrogen)	mg/L			10

3. The pH of the recycled water shall at all times be within the range of 6.5 to 8.5 pH units.

4. Recycled water shall not contain trace, toxic and other constituents in concentrations exceeding the current applicable maximum contaminant or action levels for drinking water established by the State DOHS or at levels that adversely affect the beneficial uses of receiving groundwater.

5. Recycled water, which could affect the receiving ground water, shall not contain any substance in concentration toxic to human, animal, or plant life.

6. The radioactivity of the recycled water shall not exceed the limits specified in Sections 64441 and 64443, Article 5, Chapter 15, Title 22 of the California Code of Regulations, or subsequent revisions.

7. Recycled water shall not contain taste or odor-producing substances in concentrations that cause nuisance or adversely affect the beneficial uses of the receiving groundwater.

8. Recycled water shall not cause a measurable increase in organic chemical contaminants in the groundwater.

B. SPECIFICATIONS FOR USE OF RECYCLED WATER

The Producer shall oversee the end-users such that the following requirements are complied with.

1. The disinfected tertiary recycled water may be used for the following:

   a. Surface irrigation in the following areas:

      i. Food crops*, including all edible root crops, where the recycled water comes into contact with the edible portion of the crop;
      ii. Parks and playgrounds;
      iii. School yards; and,
      iv. Unrestricted access golf courses.

      * For food crops and any other irrigation use not specified in this section, the Producer shall obtain approval from the State DOHS and the Executive Officer of the Regional Board prior to delivery.

   b. Construction water for backfill consolidation, soil compaction, mixing concrete, and dust control at construction sites;

   c. Impoundment; and

   d. In-plant cleaning water.

2. Recycled water shall not be used other than those specified in section B.1 unless a revision to engineering report has been submitted to and approved by the State DOHS for such other uses and/or requirements for these uses have been prescribed by this Regional Board, in accordance with Section 13523 of the California Water Code.

C. USE AREA REQUIREMENTS

Use area is an area of recycled water use with defined boundaries, which may contain one or more facilities where recycled water is used.

The Producer shall be responsible to ensure that all users of recycled water comply with the following:

1. No irrigation areas with disinfected tertiary recycled water shall be located within 50 feet of any domestic water supply well unless all of the following conditions have been met:

   a. A geological investigation demonstrates that an aquitard exists at the well between the uppermost aquifer being drawn from and the ground surface;

b. The well contains an annular seal that extends from the surface into the aquitard;

c. The well is housed to prevent any recycled water spray from coming into contact with the wellhead facilities;

d. The ground surface immediately around the wellhead is contoured to allow surface water to drain away from the well; and,

e. The owner of the well approves of the elimination of the buffer zone requirement.

2. There shall be no storage or impoundment of disinfected tertiary recycled water within 100 feet of any domestic water supply well.

3. No irrigation shall take place within 50 feet of any reservoir or stream used as a source of domestic water.

4. Use of recycled water shall comply with the following:

a. Recycled water shall be applied at such a rate and volume as not to exceed vegetative demand and soil moisture conditions. Special precautions must be taken to: prevent clogging of spray nozzles, prevent over-watering, and minimize the production of run-off. Pipelines shall be maintained so as to prevent leakage;

b. Any irrigation runoff shall be confined to the recycled water use area and shall not be allowed to escape as surface flow, unless the runoff does not pose a public health threat and is authorized under a National Pollutant Discharge Elimination System (NPDES) permit issued by this Regional Board. For the purpose of this requirement, however, minor amounts of irrigation return water from peripheral areas shall not be considered a violation of this Order;

c. Spray, mist, or runoff shall not enter dwellings, designated outdoor eating areas, or food handling facilities, and shall not contact any drinking water fountain; and,

d. Recycled water shall not be used for irrigation during periods of rainfall and/or run-off.

5. All recycled water use areas that are accessible to the public shall be posted with signs that are visible to the public, in a size no less than 4 inches high by 8 inches wide, that include the following wording: "RECYCLED WATER – DO NOT DRINK". Each sign shall display an international symbol similar to that shown in Figure 5. An alternative signage and wording may be used provided they are approved by the State DOHS.

6. No physical connection shall be made or allowed to exist between any recycled water piping and any piping conveying potable water, except as allowed under Section 7604 of Title 17, California Code of Regulations.

7. The portions of the recycled water piping system that are in areas subject to access by the general public shall not include any hose bibbs (a faucet or similar device to which a common garden hose can be readily attached). Only quick couplers that differ from those used on the potable water system shall be used on the portions of the recycled water piping system in areas subject to public access.

8. Recycled water use shall not result in earth movement in geologically unstable areas.

D. REQUIREMENTS FOR DUAL-PLUMBED SYSTEM

1. The public water supply shall not be used as a backup or supplemental source of water for a dual-plumbed recycled water system unless the connection between the two systems is protected by an air gap separation which complies with the requirements of Section 7602 (a) and 7603 (a) of Title 17, California Code of Regulations, and that such connection has been approved by the State DOHS and/or its delegated local agency.

2. The Producer shall not deliver recycled water to a facility using a dual-plumbed system unless the report required pursuant to Section 13522.5 of the California Water Code, and which meets the requirements set forth in sections C.3 and/or C.4 of this Order, has been submitted, and approved by, the State DOHS and/or its delegated local agency. The Regional Board shall be furnished with a copy of the State DOHS approval together with the aforementioned report within 30 days following the approval.

3. The report pursuant to Section 13522.5 of the California Water Code shall contain the following information for dual-plumbed systems, in addition to the information required by Section 60323 of Title 22, California Code of Regulations (Engineering Report):

   a. A detailed description of the intended use site identifying the following:

      i. The number, location, and type of facilities within the use area proposing to use dual-plumbed systems;
      ii. The average number of persons estimated to be served by each facility on a daily basis;
      iii. The specific boundaries of the proposed use site including a map showing the location of each facility to be served;
      iv. The person or persons responsible for operation of the dual-plumbed system at each facility; and
      v. The specific use to be made of the recycled water at each facility.

   b. Plans and specifications describing the following:

      i. Proposed piping system to be used;

ii. Pipe locations of both the recycled and potable systems;
iii. Type and location of the outlets and plumbing fixtures that will be accessible to the public; and
iv. The methods and devices to be used to prevent backflow of recycled water into the public water system.

c. The methods to be used by the Producer to assure that the installation and operation of the dual-plumbed system will not result in cross connections between the recycled water piping system and the potable water piping system. These shall include a description of pressure, dye or other test methods to be used to test the system every four years.

4. Prior to the initial operation of the dual-plumbed recycled water system and annually thereafter, the dual-plumbed system within each facility and use site shall be inspected for possible cross connections with the potable water system. The recycled water system shall also be tested for possible cross connections at least once every four years. The testing shall be conducted in accordance with the method described in section D.3.c of this Order. The inspections and the testing shall be performed by a cross connection control specialist certified by the California-Nevada section of the American Water Works Association or an organization with equivalent certification requirements. A written report documenting the result of the inspection and testing for the prior year shall be submitted to the State DOHS within 30 days following completion of the inspection or testing.

5. The Producer shall notify the State DOHS of any incidence of backflow from the dual-plumbed recycled water system into the potable water system within 24 hours of discovery of the incident.

6. Any backflow prevention device installed to protect the public water system serving the dual-plumbed recycled water system shall be inspected and maintained in accordance with Section 7605 of Title 17, California Code of Regulations.

E. GENERAL REQUIREMENTS

1. Recycled water shall not be used for direct human consumption or for the processing of food or drink intended for human consumption.

2. Bypass, discharge, or delivery to the use area of inadequately treated wastewater, at any time, is prohibited.

3. The recycling facility shall be adequately protected from inundation and damage by storm flows and run-off.

4. Adequate freeboard and/or protection shall be maintained in the recycled water storage tanks and process tanks to ensure that direct rainfall will not cause overtopping.

5. The wastewater treatment and use of recycled water shall not result in problems caused by breeding of mosquitoes, gnats, midges, or other pests.

6. The use of recycled water shall not impart tastes, odors, color, foaming, or other objectionable characteristics to the receiving groundwater.

7. Odors of sewage origin shall not be perceivable any time outside the boundary of the treatment facility.

8. The Producer shall, at all times, properly operate and maintain all treatment facilities and control systems (and related appurtenances) which are installed or used by the Producer to achieve compliance with the conditions of this Order. Proper operation and maintenance includes: effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls (including appropriate quality assurance procedures).

9. A copy of these requirements shall be maintained at the water reclamation facility so as to be available at all times to operating personnel.

10. The Producer shall furnish each user of recycled water a copy of these requirements and ensure that the requirements are maintained at the user's facility so as to be available at all times to operating personnel.

F. PROVISIONS

1. Prior to the initial delivery of recycled water, the Producer shall submit to and obtain approval from the State DOHS or its delegated local health agency of the master plan for the recycled water distribution system from the Moorpark plant to use areas. The American Water Works Association Guidelines for the Distribution of Non-Potable Water shall be followed including installation of purple pipe, adequate signs, etc. The master plan shall show the final and as-built drawings and maps of the locations of the potable water, sewer, and recycled water pipelines. The drawings shall indicate adequate separation between the recycled and potable domestic water lines that shall be marked clearly or labeled using separate colors for identification. In addition, the master plan shall include, but not limited to, the following information:

   a. A description of each use area including, but not limited to, a description of what will be irrigated (e.g., landscape, specific food crop, etc.); method of irrigation (e.g., spray, flood, or drip); the location of domestic water supply facilities adjacent to the use areas; site containment measures; the party responsible for the distribution and use of the recycled water at the site; identification of other governmental entities which may have regulatory jurisdiction over the reuse site(s).

   b. A map showing specific areas of use, areas of public access, surrounding land uses, the location and construction details of wells in or near the use areas,

location and type of signage, the degree of potential access by employee or the public, and any exclusionary measures (e.g. fencing).

The Producer shall submit to the Regional Board a copy of the approved master plan and the State DOHS approval within 30 days of approval.

2. For any extension or expansion of the recycled water system or use areas not covered by the master plan, the Producer shall submit a report detailing the extension or expansion plan for approval by the State DOHS or its delegated local health agency. The plan shall include, but not limited to, the information specified in sections F.1.a. and b. above. Following construction, as-built drawings shall be submitted to the State DOHS or its delegated local health agency for approval prior to delivery of recycled water.

   The Producer shall submit to the Regional Board a copy of the approved expansion plan and the State DOHS approval within 30 days of approval.

3. If the recycled water system lateral pipelines are located along the property lines of homeowners, the Producer shall provide a buffer zone or other necessary measures between the recycled water lines and the homeowner's property lines to prevent any illegal connection to the recycled water lines. The Producer shall implement a public outreach program to homeowners to provide information on the use of recycled water.

4. Prior to the initial delivery of recycled water, the Producer shall submit to the State DOHS for approval of the plans and specifications for that facility;

5. The Producer shall inspect the recycled water use areas on a yearly basis. A report of findings of the inspection shall be submitted to the State DOHS, County Health Department, and the Regional Board within 30 days after the inspection.

6. Prior to the initial delivery of recycled water, the Producer shall submit to and obtain approval from the Regional Board and the State DOHS an amended engineering report, describing the current treatment plant and the proposed Phase II treatment plant expansion, their impacts on the recycled water operation, and the operation and maintenance management plan, including a preventive (fail-safe) procedure and contingency plan for controlling accidental discharge and/or delivery to users of inadequately treated wastewater.

7. The Producer shall submit to the Regional Board, under penalty of perjury, technical self-monitoring reports according to the specifications contained in the Monitoring and Reporting Program as directed by the Executive Officer.

8. The Producer shall notify this Regional Board and the State DOHS by telephone within 24 hours of any violations of recycled water use conditions or any adverse conditions as a result of the use of recycled water from this facility; written confirmation shall follow within 5 working days from date of notification.

9. The Producer shall notify this Regional Board and the State DOHS, immediately by telephone, of any confirmed coliform counts that could cause a violation of the requirements. This information shall be confirmed in the next monitoring report. For any actual coliform limit violation that occurred, the report shall also include the cause(s) of the high coliform counts, the corrective measures undertaken (including dates thereof), and the preventive measures undertaken to prevent a recurrence.

10. In accordance with Section 13522.5 of the California Water Code, and Title 22, Division 4, Chapter 3, Article 7, Section 60323 of the California Code of Regulations, the Producer shall file an engineering report, prepared by a properly qualified engineer registered in California, of any material change or proposed change in character, location or volume of the recycled water or its uses to the Regional Board and to the State DOHS.

11. This Order does not exempt the Producer from compliance with any other laws, regulations, or ordinances which may be applicable; they do not legalize the recycling and use facilities; and they leave unaffected any further constraint on the use of recycled water at certain site(s) that may be contained in other statutes or required by other agencies.

12. This Order does not alleviate the responsibility of the Producer to obtain other necessary local, state, and federal permits to construct facilities necessary for compliance with this Order; nor does this Order prevent imposition of additional standards, requirements, or conditions by any other regulatory agency. Expansion of the recycling facility shall be contingent upon issuance of all necessary requirements and permits, including a conditional use permit.

13. After notice and opportunity for a hearing, this Order may be modified, revoked and reissued, or terminated for cause, that include, but is not limited to: failure to comply with any condition in this Order; endangerment of human health or environment resulting from the permitted activities in this Order; obtaining this Order by misrepresentation or failure to disclose all relevant facts; acquisition of new information which could have justified the application of different conditions if known at the time of Order adoption.

    The filing of a request by the Producer for modification, revocation and reissuance, or termination of the Order; or a notification of planned changes or anticipated noncompliance does not stay any condition of this Order.

14. The Producer shall furnish, within a reasonable time, any information the Regional Board or the State DOHS may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order. The Producer shall also furnish the Regional Board, upon request, with copies of records required to be kept under this Order for at least three years.

15. In an enforcement action, it shall not be a defense for the Producer that it would have been necessary to halt or to reduce the permitted activity in order to maintain compliance with this Order. Upon reduction, loss, or failure of the treatment facility,

the Producer shall, to the extent necessary to maintain compliance with this Order, control production or all discharges, or both, until the facility is restored or an alternative method of treatment is provided. This provision applies, for example, when the primary source of power of the treatment facility fails, is reduced, or is lost.

16. This Order includes the attached "Standard Provisions Applicable to Waste Discharge Requirements". If there is any conflict between provisions stated hereinbefore and said "Standard Provisions", those provisions stated hereinbefore prevail.

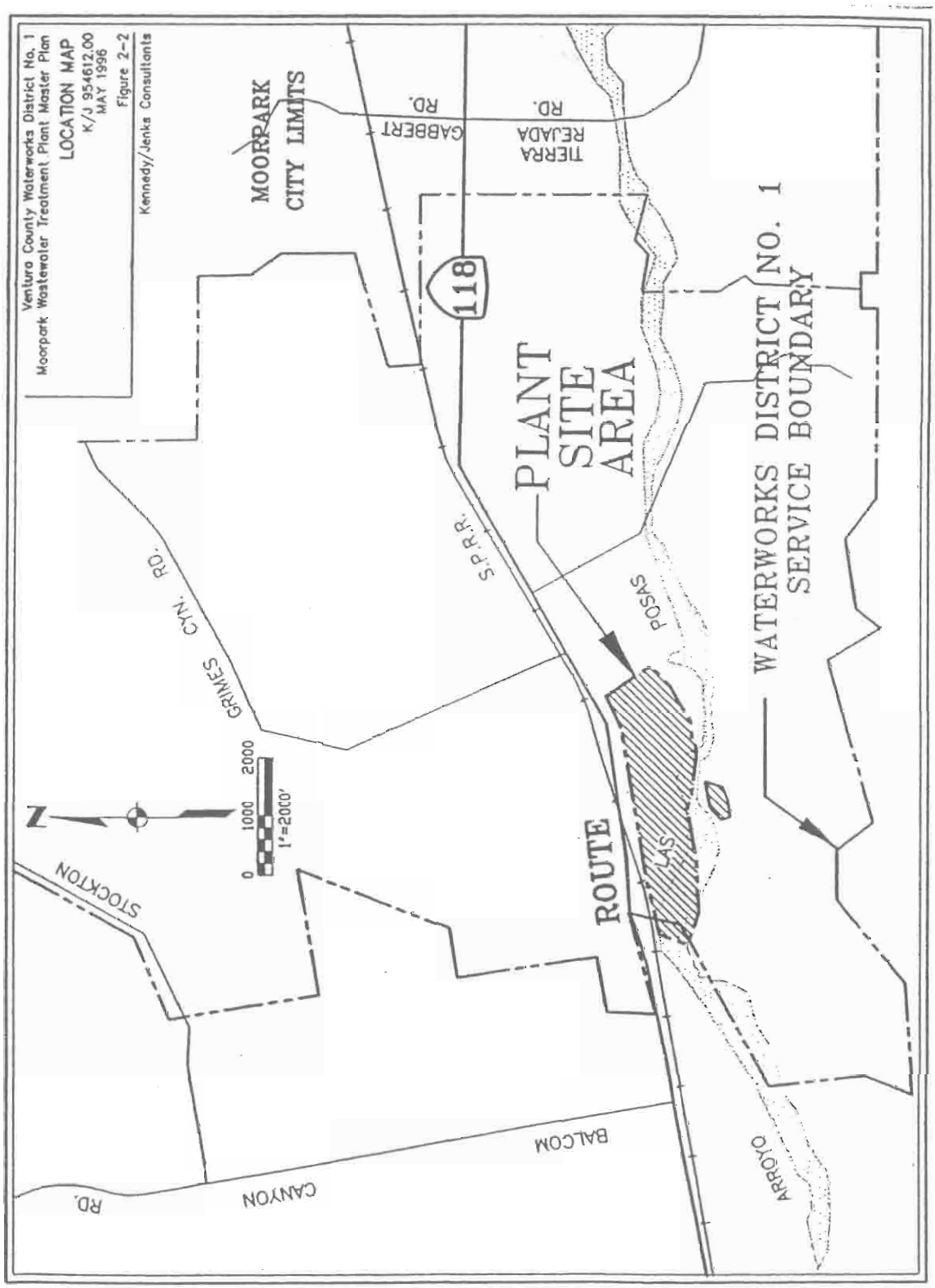
17. This Order includes the attached Monitoring and Reporting Program. If there is any conflict between provisions stated in the Monitoring and Reporting Program and the Standard Provisions, those provisions stated in the Monitoring and Reporting Program prevail.

I, Dennis A. Dickerson, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Los Angeles Region on January 24, 2002.

Dennis A. Dickerson
Executive Officer

/JRC

FIGURE 1


Ventura County Waterworks District No. 1
Moorpark Wastewater Treatment Plant Master Plan
LOCATION MAP
K/J 954612.00
MAY 1996
Figure 2-2
Kennedy/Jenks Consultants
MOORPARK
CITY LIMITS
GABBERT
RD.
TIERRA
REJADA
RD.
118
PLANT
SITE
AREA
WATERWORKS DISTRICT NO. 1
SERVICE BOUNDARY
S.P.R.R.
POSAS
GRIMES
CYN.
RD.
N
0
1000
2000
1"=2000'
STOCKTON
ROUTE
LAS
BALCOM
CANYON
RD.
ARROYO

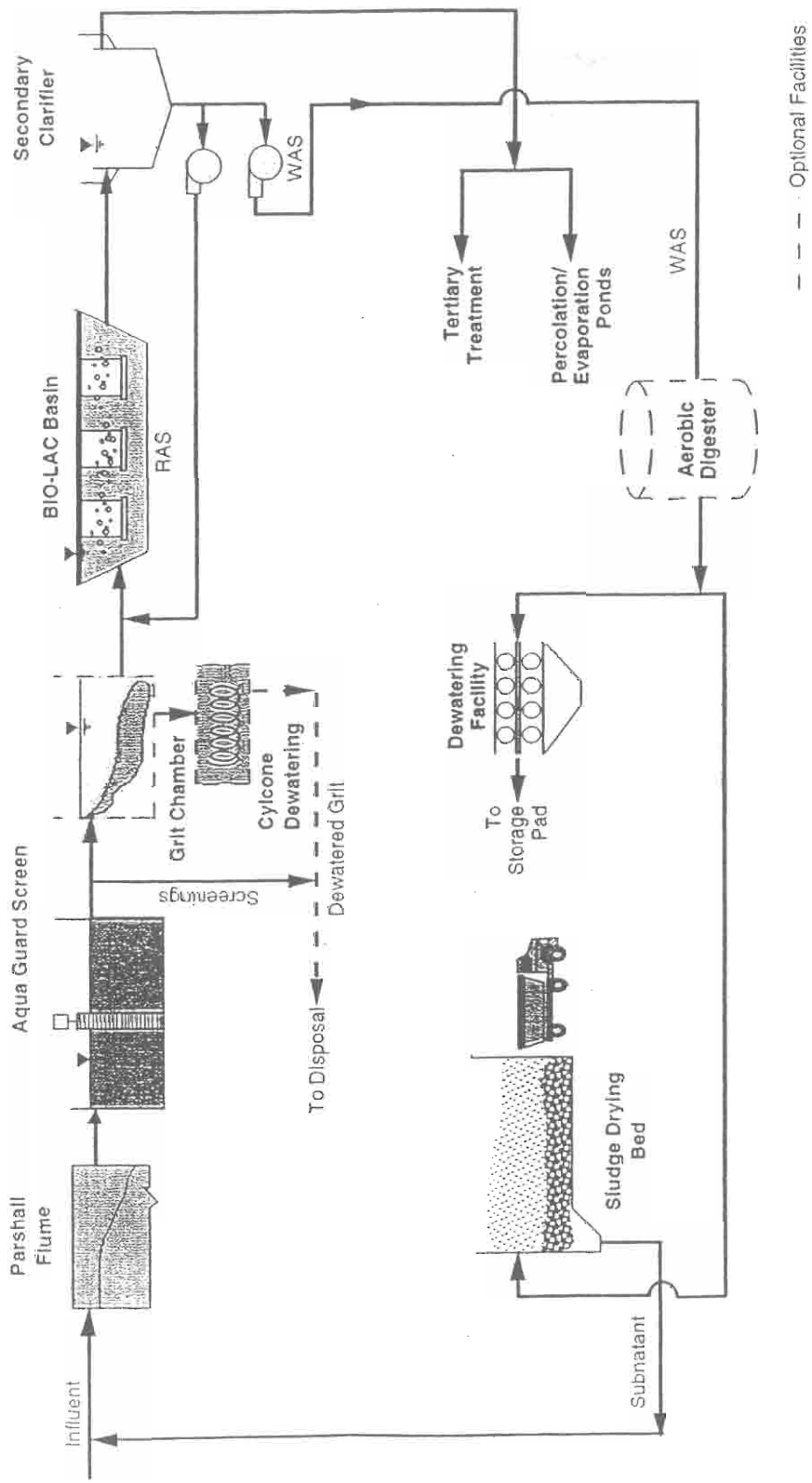


Figure 2
Moorpark Wastewater Treatment Plant
Simplified Process Flow Diagram

MONTGOMERY WATSON

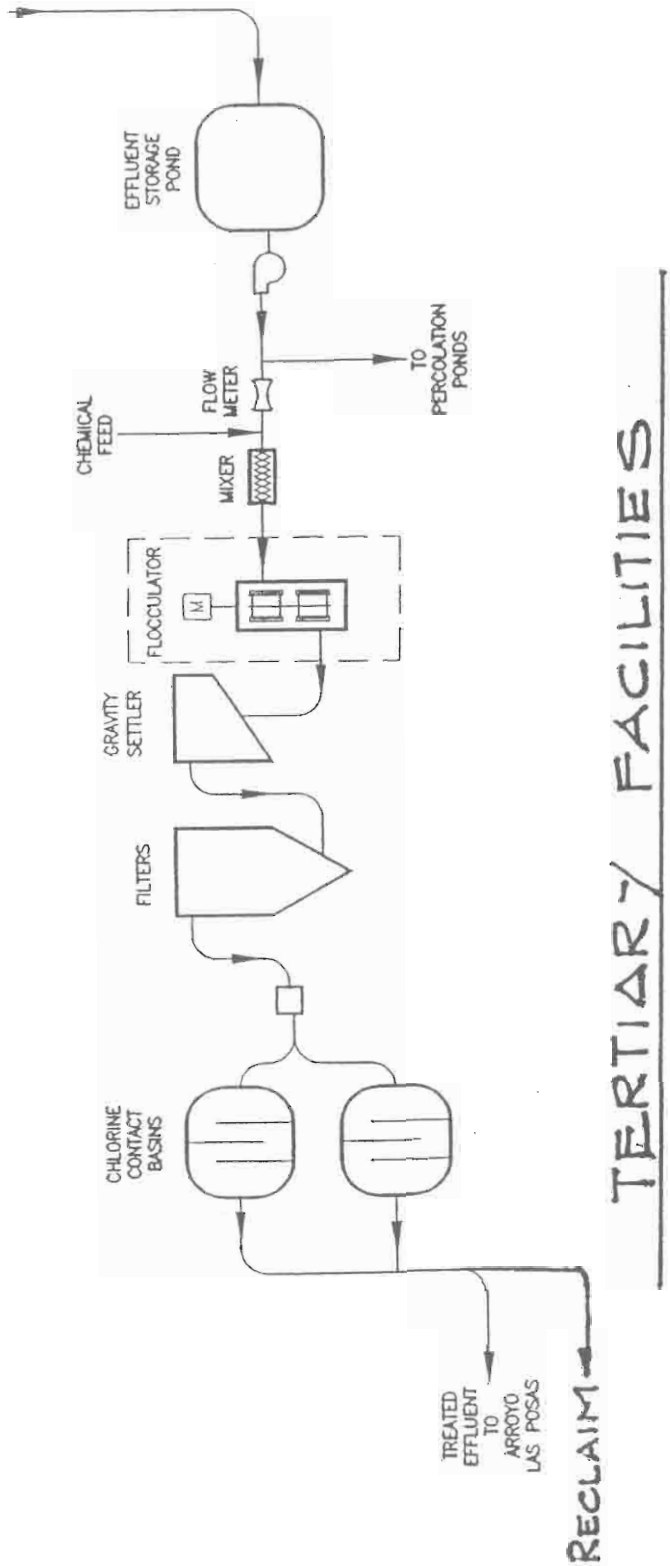

EFFLUENT STORAGE POND
TO PERCOLATION PONDS
FLOW METER
CHEMICAL FEED
MIXER
FLOCCULATOR
M
GRAVITY SETTLER
FILTERS
CHLORINE CONTACT BASINS
TREATED EFFLUENT TO ARROYO LAS POSAS
RECLAIM
TERTIARY FACILITIES

Figure 3

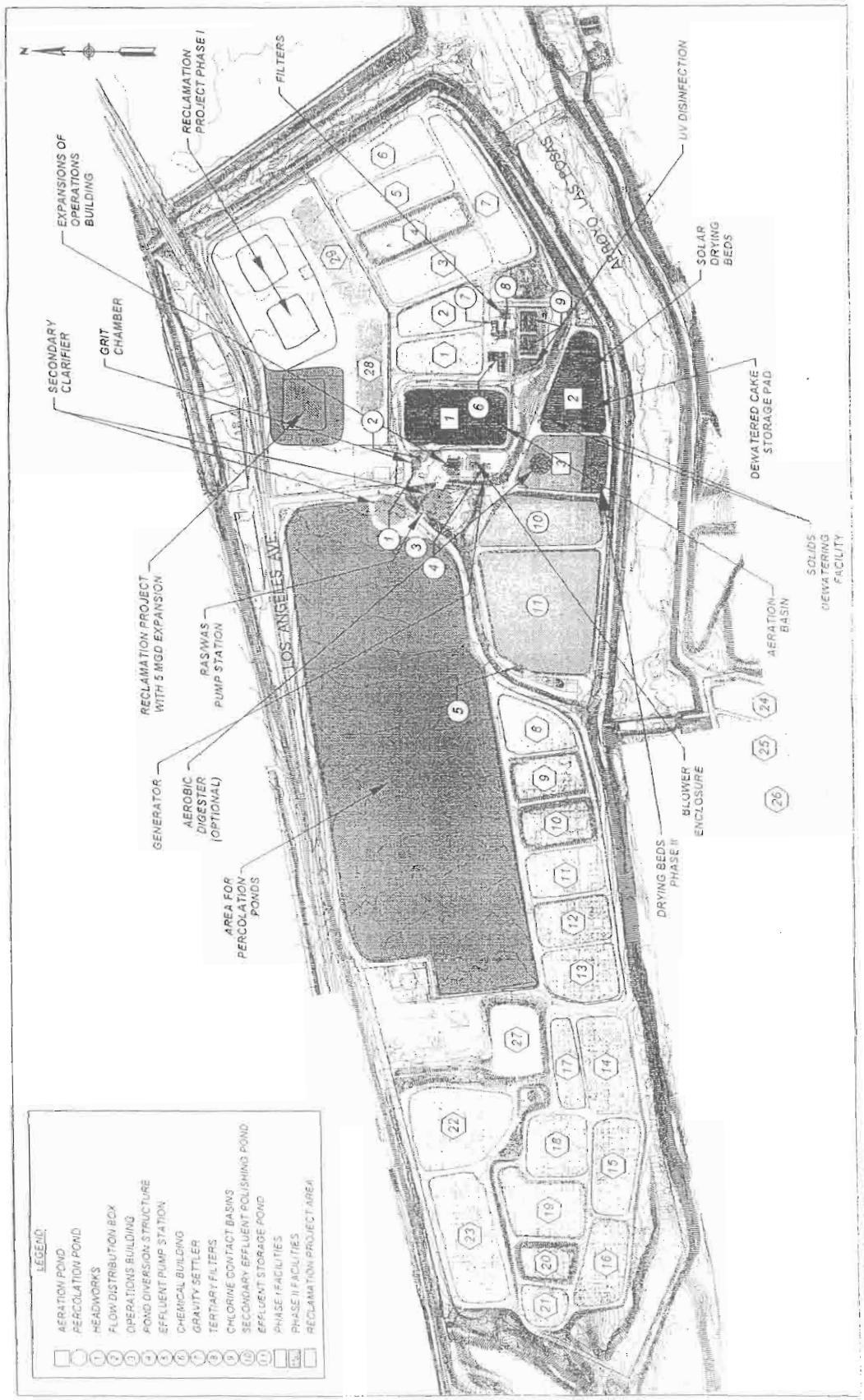


Figure 4. Layout of the Treatment Plant and Percolation Ponds

Figure 5

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

MONITORING AND REPORTING PROGRAM NO. 8371
FOR
VENTURA COUNTY WATERWORKS DISTRICT NO. 1
(Moorpark Wastewater Treatment Plant)
(Title 22 Recycled Water)
(File No. 01-122)

The Producer shall implement this monitoring and reporting program on the effective date of this Order.

I. SUBMITTAL OF MONITORING AND ANNUAL REPORTS

A. Monitoring reports shall be submitted quarterly and received at the Regional Board by the 15th day of the second month following the end of the quarterly monitoring period. The first monitoring report under this program shall be received at the Regional Board by May 15, 2002, covering the monitoring period from January 25 to March 31, 2002. Subsequent monitoring reports shall be received at the Regional Board according to the table below:

Reporting Period	Report Due
January – March	May 15th
April – June	August 15th
July – September	November 15th
October – December	February 15th

B. By March 1 of each year, the Producer shall submit an annual report to the Board. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous calendar year. These data shall be submitted to the Regional Board on hard copy and on 3 1/2" computer diskette. The submitted data must be IBM compatible, preferably using Microsoft Excel software. The Producer shall discuss the compliance record and the corrective actions taken or planned, which may be needed to bring the recycled water into full compliance with water recycling requirements.

The annual report shall also include a list of the analytical methods employed for each test and associated laboratory quality assurance/quality control procedures. The report shall restate, for the record, the laboratories used by the Producer to monitor compliance with this Order, their status of certification, and provide a summary of performance.

The annual report shall address operator certification and provide a list of current operating personnel and their grade of certification. The report shall also include the date of the facility's Operation and Maintenance Management Plan, the date the plan was last reviewed, and whether the plan is complete and valid for the current facilities.

C. All monitoring and annual summary reports must be addressed to the Regional Board, Attention: Information Technology Unit. Reference the reports to Compliance File No. CI-8371 to facilitate routing to the appropriate staff and file.

D. Database Management System: The Regional Board and State Water Resources Control Board are developing a compliance monitoring database management system that may require the Producer to submit the monitoring and annual summary reports electronically in a standard format when it becomes fully operational.

II. MONITORING AND REPORTING REQUIREMENTS

A. Whenever possible, quarterly monitoring shall be performed during the months of February, May, August, and November; and annual monitoring shall be conducted during the third quarter of each calendar year. However, if the discharge of recycled water does not occur during that monitoring period, the Producer shall collect a sample during the next discharge event. Results of monthly, quarterly, and annual analyses shall be reported in the following quarterly monitoring report. If there is no discharge of recycled water during the reporting period, the report shall so state. Monitoring reports shall continue to be submitted to the Regional Board, regardless of whether or not there was a discharge of recycled water.

B. All chemical and bacteriological analyses shall be conducted at a laboratory certified for such analyses by the California Department of Health Services Environmental Laboratory Accreditation Program (ELAP) or approved by the Executive Officer. A copy of the laboratory certification shall be submitted with the annual summary report.

C. Recycled water samples must be analyzed within allowable holding time limits as specified in 40 CFR Part 136.3. All QA/QC analyses must be run on the same dates when samples were actually analyzed. The Producer shall make available for inspection and/or submit the QA/QC documentation upon request by Regional Board staff. Proper chain of custody procedures must be followed and a copy of that documentation shall be submitted with the quarterly report.

D. The monitoring report shall specify the USEPA analytical method used, the Method Detection Limit (MDL) and the Minimum Level (ML) for each chemical constituent. For the purpose of reporting compliance with numerical limitations, analytical data shall be reported using the following reporting protocols:

1. An actual numerical value for sample results greater than or equal to the ML; or

2. "Detected, but Not Quantified (DNQ)" with an estimated chemical concentration of the sample if results are greater than or equal to the laboratory's MDL but less than the ML; or

3. "Not-Detected (ND)" for sample results less than the laboratory's MDL with the MDL indicated for the analytical method used.

The MLs are those published by the State Water Resources Control Board in the *Policy for the Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, March 2, 2000.*

E. The MLs employed for effluent analyses shall be lower than the permit limits prescribed in this Order, unless the Producer can demonstrate that a particular ML is not attainable and obtains approval for a higher ML from the Executive Officer.

F. For determination of compliance with the concentration-time (CT) requirement of 450 milligram-minutes per liter at all times, the Producer shall obtain the following information in a 24-hour period. The CT is the product of total chlorine residual and modal contact time measured at the same time.

1. Modal contact time under highest flow and corresponding chlorine residual at that time.
2. Lowest chlorine residual and corresponding modal contact time.
3. Highest chlorine residual and corresponding modal contact time.
4. Modal contact time under lowest flow and corresponding chlorine residual at that time.

CT values shall be calculated from these four sets of data and the lowest value shall be used to determine worst case CT for the period. For the purpose of this determination, modal contact time shall be derived from a predetermined plot correlating modal contact times to varying flow conditions (results of tracer studies required in Order No. R4-2002-0028, Section A.1.a.i.). The daily lowest CT value and the daily lowest modal contact time shall be included in the monitoring reports.

Should the Producer use another method to determine CT compliance, the alternative method shall first be approved by the State DOHS and the Regional Board.

III. RECYCLED WATER MONITORING

The sampling station shall be established where representative samples of recycled water can be obtained. For this recycling project, recycled water samples shall be obtained from the effluent channel downstream of the chlorine contact basin. Should there be any change in the sampling station, the proposed station shall be approved by the Executive Officer prior to its use.

A. Monitoring Program for Title 22 Recycled Water

Constituent	Units	Type of Sample [1]	Minimum Frequency of Analysis
Total recycled water flow	MGD	---	continuous
Turbidity [2]	NTU	---	continuous
Chlorine residual [3]	mg/L	---	continuous
pH	pH units	grab	daily
Coliform [4]	MPN/100ml	grab	daily
Suspended solids	mg/L	24-hr composite	weekly
$BOD_5 20°C$	mg/L	24-hr composite	weekly
Oil and grease	mg/L	grab	monthly
Total dissolved solids	mg/L	24-hr composite	monthly
Chloride	mg/L	24-hr composite	monthly

Constituent	Units	Type of Sample [1]	Minimum Frequency of Analysis
Boron	mg/L	24-hr composite	monthly
Sulfate	mg/L	24-hr composite	monthly
Nitrate nitrogen	mg/L	24-hr composite	quarterly
Nitrite nitrogen	mg/L	24-hr composite	quarterly
Ammonia nitrogen	mg/L	24-hr composite	quarterly
Total organic carbon	mg/L	24-hr composite	quarterly
Hexavalent chromium	mg/L	grab	quarterly
Priority pollutants [5]	µg/L	grab, 24-hr composite	annually
Radioactivity	pCi/L	24-hr composite	annually

1. Grab sample is an individual sample collected in a short period of time not exceeding 15 minutes. Grab samples shall be collected during normal peak loading conditions for the parameter of interest, which may or may not be during hydraulic peaks.

   When an automatic composite sampler is not used, composite sampling shall be done as follows: If the duration of the discharge is equal to or less than 24 hours but greater than eight (8) hours, at least eight (8) flow-weighted samples shall be obtained during the discharge period and composited. For discharge duration of less than eight (8) hours, individual 'grab' sample may be substituted.

2. Turbidity shall be continuously monitored and recorded at a point after final filtration. The average value recorded each day, the amount of time that 5 NTU is exceeded, and the incident of exceeding 10 NTU, if any, shall be reported.

3. Chlorine residual concentration shall be continuously monitored and recorded at a point after the final chlorine contact basins. Both the minimum and maximum values shall be reported daily.

4. Samples shall be obtained subsequent to the chlorination process.

5. Priority pollutants are listed on page T-7. Grab samples shall be used for analyses of volatile organics and cyanide; composite samples shall be used for others.

IV. RECYCLED WATER USE MONITORING

The Producer shall submit a quarterly report, in a tabular form, on the list of users serviced during the quarter, the amount of recycled water delivered to each user, and the use of the recycled water. A summary of these data shall be included in the annual report.

V. GENERAL MONITORING AND REPORTING REQUIREMENTS

A. The Producer shall summarize and arrange the monitoring data in tabular form to demonstrate compliance with requirements.

B. For every item where the requirements are not met, the Producer shall submit a statement of the actions undertaken or proposed which will bring the recycled water into full compliance with requirements at the earliest possible time, and submit a timetable for implementation of the corrective measures.

C. Monitoring reports shall be signed by either the principal Executive Officer or ranking elected official. A duly authorized representative of the aforementioned signatories may sign documents if:

1. The authorization is made in writing by the signatory;
2. The authorization specifies the representative as either an individual or position having responsibility for the overall operation of the regulated facility or activity; and
3. The written authorization is submitted to the Executive Officer of this Regional Board.

D. The monitoring report shall contain the following completed declaration:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments thereto; and that, based on my inquiry of the individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Executed on the ___ day of _____ at _____
_____ Signature
_____ Title

E. The Producer shall retain records of all monitoring information, including all calibration and maintenance, monitoring instrumentation, and copies of all reports required by this Order, for a period of at least three (3) years from the date of sampling measurement, or report. This period may be extended by request of the Regional Board or the State DOHS at any time and shall be extended during the course of any unresolved litigation regarding the regulated activity.

F. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements;
2. The individual(s) who performed the sampling or measurements;
3. The date(s) analyses were performed;
4. The individual(s) who performed the analysis;
5. The analytical techniques or methods used; and
6. The results of such analyses.

G. The Producer shall submit to the Regional Board, together with the first monitoring report required by this Order, a list of all chemicals and proprietary additives which could affect the quality of the recycled water, including quantities of each. Any subsequent changes in types and/or quantities shall be reported promptly.

An annual summary of the quantities of all chemicals, listed by both trade and chemical names, which are used in the treatment process shall be included in the annual report.

Ordered by:

Dennis A. Dickerson
Executive Officer

Date: January 24, 2002

PRIORITY POLLUTANTS

Metals

Antimony
Arsenic
Beryllium
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Selenium
Silver
Thallium
Zinc

Miscellaneous

Cyanide
Asbestos (only if specifically required

Pesticides & PCBs

Aldrin
Chlordane
Dieldrin
4,4'-DDT
4,4'-DDE
4,4'-DDD
Alpha-endosulfan
Beta-endosulfan
Endosulfan sulfate
Endrin
Endrin aldehyde
Heptachlor
Heptachlor epoxide
Alpha-BHC
Beta-BHC
Gamma-BHC
Delta-BHC
Toxaphene
PCB 1016
PCB 1221
PCB 1232
PCB 1242
PCB 1248
PCB 1254
PCB 1260

Base/Neutral Extractables

Acenaphthene
Benzidine
1,2,4-trichlorobenzene
Hexachlorobenzene
Hexachloroethane
Bis(2-chloroethyl)ether
2-chloronaphthalene
1,2-dichlorobenzene
1,3-dichlorobenzene
1,4-dichlorobenzene
3,3'-dichlorobenzidine
2,4-dinitrotoluene
2,6-dinitrotoluene
1,2-diphenylhydrazine
Fluoranthene
4-chlorophenyl phenyl ether
4-bromophenyl phenyl ether
Bis(2-chloroisopropyl)ether
Bis(2-chloroethoxy) methane
Hexachlorobutadiene
Hexachlorocyclopentadiene
Isophorone
Naphthalene
Nitrobenzene
N-nitrosodimethylamine
N-nitrosodi-n-propylamine
N-nitrosodiphenylamine
Bis(2-ethylhexyl)phthalate
Butyl benzyl phthalate
Di-n-butyl phthalate
Di-n-octyl phthalate
Diethyl phthalate
Dimethyl phthalate
Benzo(a) anthracene
Benzo(a) pyrene
Benzo(b) fluoranthene
Benzo(k) fluoranthene
Chrysene
Acenaphthylene
Anthracene
1,12-benzoperylene
Fluorene
Phenanthrene
1,2,5,6-dibenzanthracene
Indeno(1,2,3-cd) pyrene
Pyrene
TCDD

Acid Extractables

2,4,6-trichlorophenol
P-chloro-m-cresol
2-chlorophenol
2,4-dichlorophenol
2,4-dimethylphenol
2-nitrophenol
4-nitrophenol
2,4-dinitrophenol
4,6-dinitro-o-cresol
Pentachlorophenol
Phenol

Volatile Organics

Acrolein
Acrylonitrile
Benzene
Carbon tetrachloride
Chlorobenzene
1,2-dichloroethane
1,1,1-trichloroethane
1,1-dichloroethane
1,1,2-trichloroethane
1,1,2,2-tetrachloroethane
Chloroethane
Chloroform
1,1-dichloroethylene
1,2-trans-dichloroethylene
1,2-dichloropropane
1,3-dichloropropylene
Ethylbenzene
Methylene chloride
Methyl chloride
Methyl bromide
Bromoform
Dichlorobromomethane
Chlorodibromomethane
Tetrachloroethylene
Toluene
Trichloroethylene
Vinyl chloride
2-chloroethyl vinyl ether
Xylene