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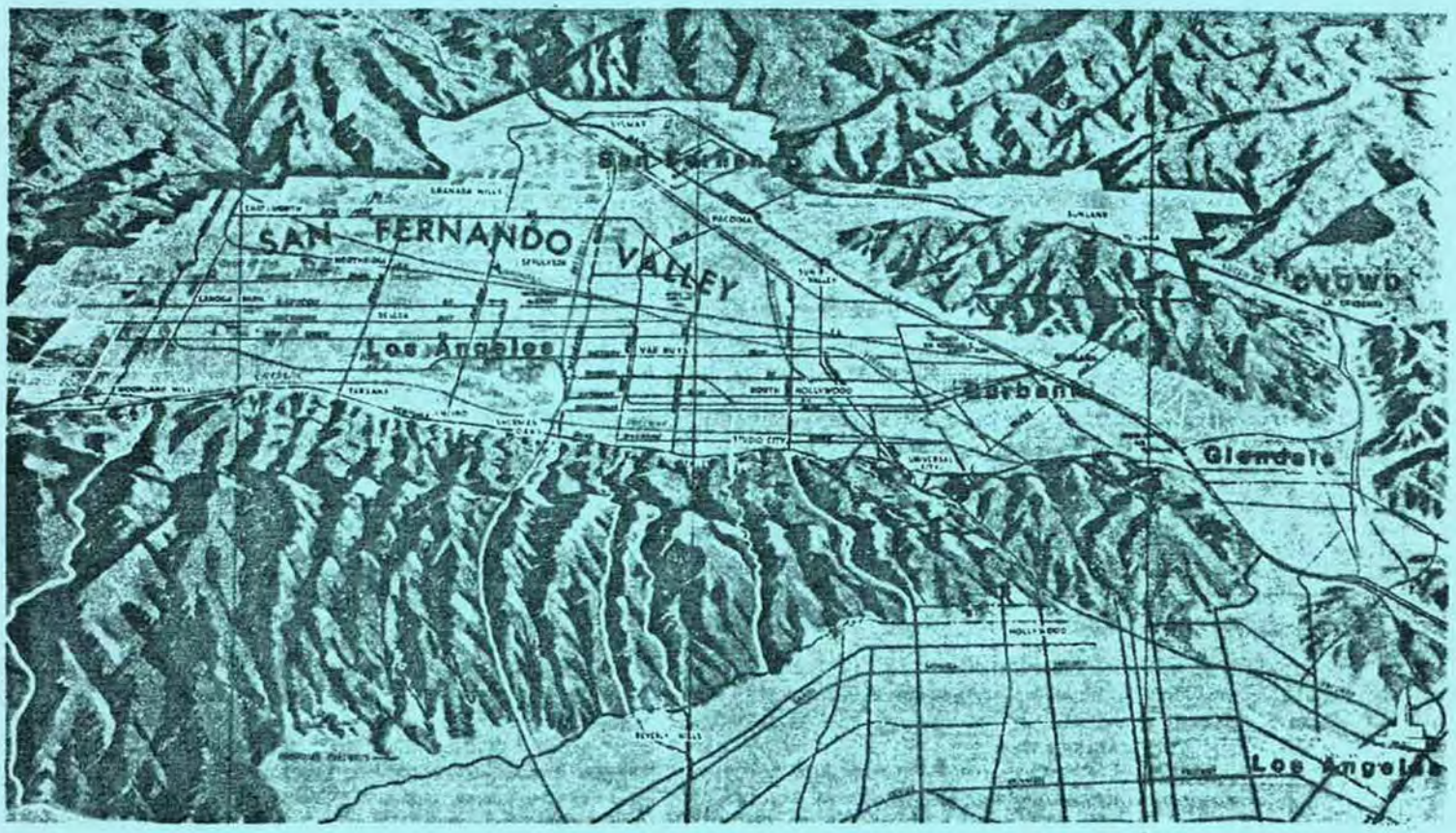
UPPER LOS ANGELES RIVER AREA WATERMASTER

CITY OF LOS ANGELES VS. CITY OF SAN FERNANDO, ET AL
CASE NO. 650079 — COUNTY OF LOS ANGELES

WATERMASTER SERVICE IN THE UPPER LOS ANGELES RIVER AREA LOS ANGELES COUNTY

OCTOBER 1, 1978 - SEPTEMBER 30, 1979



MAY 1980

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Cover picture furnished by California Division of Mines & Geology

CONVERSION FACTORS

English to Metric System of Measurement

Quantity	English unit	Multiply by	To get metric equivalent
Length	inches (in)	25.4	millimetres (mm)
		.0254	metres (m)
	feet (ft)	.3048	metres (m)
	miles (mi)	1.6093	kilometres (km)
Area	square inches (in^2)	6.4516×10^{-4}	square metres (m^2)
	square feet (ft^2)	.092903	square metres (m^2)
	acres	4046.9	square metres (m^2)
		.40469	hectares (ha)
		.40469	square hectometres (hm^2)
		.0040469	square kilometres (km^2)
	square miles (mi^2)	2.590	square kilometres (km^2)
Volume	gallons (gal)	3.7854	litres (l)
		.0037854	cubic metres (m^3)
	million gallons (10^6 gal)	3785.4	cubic metres (m^3)
	cubic feet (ft^3)	.028317	cubic metres (m^3)
	cubic yards (yd^3)	.76455	cubic metres (m^3)
	acre-feet (ac-ft)	1233.5	cubic metres (m^3)
		.0012335	cubic hectometres (hm^3)
		1.233×10^{-6}	cubic kilometres (km^3)
Volume/Time (Flow)	cubic feet per second (ft^3/s)	28.317	litres per second (l/s)
		.028317	cubic metres per second (m^3/s)
	gallons per minute (gal/min)	.06309	litres per second (l/s)
		6.309×10^{-5}	cubic metres per second (m^3/s)
	million gallons per day (mgd)	.043813	cubic metres per second (m^3/s)
	miners inch*	.70792 (.56634)	litres per second (l/s)
Mass	pounds (lb)	.45359	kilograms (kg)
	tons (short, 2,000 lb)	.90718	tonne (t)
		907.18	kilograms (kg)
Power	horsepower (hp)	0.7460	kilowatts (kW)
Pressure	pounds per square inch (psi)	6894.8	pascal (Pa)
Temperature	Degrees Fahrenheit (°F)	$\frac{tF - 32}{1.8} = tC$	Degrees Celsius (°C)

*Section 24 of Water Code = 1/40 of second foot.
() 1/50 of second foot commonly used in Southern California

FOREWORD

As Watermaster for the Upper Los Angeles River Area (ULARA), I am pleased to submit this report of the water supply conditions in ULARA during the 1978-79 water year. It was prepared in accordance with the provisions of the Final Judgment, signed by the Honorable Harry L. Hupp of the Superior Court on January 26, 1979.

The Final Judgment in the San Fernando Case (City of Los Angeles v. City of San Fernando, et al, No. 650,079) was entered on January 26, 1979, and I was appointed ULARA Watermaster effective that date. The State Department of Water Resources (DWR) served as interim Watermaster until July 1, 1979. On that date all records and other responsibilities were transferred to my office.

This report describes the water rights in each basin, lists the allowable pumping for the water year 1979-80, and indicates the water in storage to the credit of each party as of October 1, 1979. In addition, this report includes background information on the history of the San Fernando Case, information as to each basin and the ULARA in total on water supply, groundwater extractions, groundwater levels, quantities of imported water use, recharge operations including amounts thereof, water quality conditions, and other pertinent information occurring during the water year pursuant to the provisions of the Judgment.

I wish to acknowledge and express appreciation to all parties that have provided information and data which were essential to the completion of this report. A special thanks is given to the State DWR for handling the ULARA Watermaster responsibilities through July 1, 1979. Without their support the transition would have been very difficult.

Sincerely,

Melvin L Blevins

MELVIN L. BLEVINS
Hydrologic Engineer and ULARA Watermaster
(Reg. C.E. No. 12863)

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ULARA WATERMASTER REPORT FOR WATER YEAR 1978-79

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I. INTRODUCTION

Upper Los Angeles River (ULARA) encompasses all the watershed of the Los Angeles River and its tributaries above a point in the River designated as Los Angeles County Flood Control District (LACFCD) Gaging Station F-57C-R, near the junction of the Los Angeles River and the Arroyo Seco (Plate 1). ULARA encompasses 328,500 acres, composed of 122,800 acres of valley fill, referred to as the ground water basins, and 205,700 acres of hills and mountains. ULARA is bounded on the north and northwest by the Santa Susana Mountains, on the north and northeast by the San Gabriel Mountains, on the east by the San Rafael Hills which separate it from the San Gabriel Basin, and south by the Santa Monica Mountains which separate it from the Los Angeles Basin, and on the west by the Simi Hills.

ULARA has four distinct ground water basins. The water supplies of these basins are separate and are replenished by deep percolation from a portion of the water that is delivered for use within these basins. The four ground water basins in ULARA are the San Fernando, Sylmar, Verdugo, and Eagle Rock Basins (Plate 1).

The San Fernando Basin, the largest of the four basins, consists of 112,000 acres and comprises 91.2 percent of the total valley fill. It is bounded on the east and northeast by the San Rafael Hills, Verdugo Mountains and San Gabriel Mountains, on the north by the eroded south limb of the Little Tujunga syncline which separates it from the Sylmar Basin, on the northwest and west by the Santa Susana Mountains and Simi Hills, and on the south by the Santa Monica Mountains.

The Sylmar Basin, in the northerly part of ULARA, consists of 5,600 acres and comprises 4.6 percent of the total valley fill. It is bounded on the north and east by the San Gabriel Mountains, on the west by a topographic divide in the valley fill between the Mission Hills and the San Gabriel Mountains, on the southwest by the Mission Hills, on the east by the Upper Lopez Canyon Saugus formation along the east bank of the Pacoima Wash, and on the south by the eroded south limb of the Little Tujunga syncline, which separates it from the San Fernando Basin.

The Verdugo Basin, north and east of the Verdugo Mountains in ULARA, consists of 4,400 acres and comprises 3.6 percent of the total valley fill. It is bounded on the north by the San Gabriel Mountains, on the east by a ground water divide separating it from the Monk Hill Subarea of the Raymond Basin, on the southeast by the San Rafael Hills, and on the south and southwest by the Verdugo Mountains.

The Eagle Rock Basin, the smallest of the four basins, is in the extreme southeast corner of ULARA. It comprises 800 acres and consists of 0.6 percent of the total valley fill.

History of Adjudication

ULARA was established by the JUDGMENT AFTER TRIAL BY COURT in Superior Court Case No. 650079, entitled The City of Los Angeles, a Municipal Corporation, Plaintiff, vs. City of San Fernando, et al., Defendants, Signed March 14, 1968 by the Honorable Edmund M. Moor, Judge of the Superior Court. Prior to the Judgment, numberous pretrials were held subsequent to the filing of the action by the City of Los Angeles in 1955 and before the trial commenced on March 1, 1966.

On March 19, 1958, an Interim Order of Reference was entered by the Court directing the State Water Rights Board, now known as the State Water Resources Control Board (SWRCB), to study the availability of all public and private records, documents, reports, and data relating to a proposed order of reference in the case. The Court subsequently entered on June 11, 1958, an "Order of Reference to State Water Rights Board to Investigate and Report upon the Physical Facts (Section 2001, Water Code)".

A final Report of Referee was approved on July 27, 1962, and filed with the court. The Report of Referee made a complete study of the geology, insofar as it affects the occurrence and movement of ground water and the surface and ground water hydrology of the area. In addition, investigations were made of: the history of the horizontal and vertical location of the beds, banks, and channels of the Los Angeles River and its tributaries; the areas, limits, and directions of flow of all ground water within the area; the quality of the ground water in the basin; all sources of water, whether they be diverted, extracted, or imported, etc. Said Report of Referee served as the principal basis for geological and hydrological facts for the original Trial Court Judgment in 1968 and Decision of the Supreme Court in 1975 (14 Cal 3d 199) and the Trial Court Judgment on remand on January 26, 1979.

The City of Los Angeles filed an appeal with the Court of Appeals, which held a hearing on November 9, 1972, and issued its opinion on November 22, 1972. The opinion, prepared by Judge Compton and concurred in by Judges Roth and Fleming, reversed, with direction, the original Judgment handed down by Judge Moor. In essence, the City of Los Angeles was given rights to all water in ULARA including the use of the underground basins. The defendants, however, were given the right to capture "return water", which is water purchased from the Metropolitan Water District of Southern California (MWD) that percolates into the basin.

A petition for rehearing was filed on December 7, 1972, but was denied by the Court of Appeals. On January 2, 1973, the defendants appealed to the State Supreme Court. The Court on March 2, 1973, advised the parties it would hear the case. The hearing was held on January 14, 1975.

On May 12, 1975, the California Supreme Court issued its decision on the 20-year San Fernando Valley Water Litigation. This decision, which became final on August 1, 1975, upheld the Pueblo Water Rights of the City of Los Angeles to all ground water in the San Fernando Basin derived from precipitation within ULARA. The City of Los Angeles' Pueblo Water Rights were not allowed to extend to the ground waters of the Sylmar and Verdugo Basins.

The City of Los Angeles was also given rights to all San Fernando Basin ground water derived from water imported by it from outside ULARA and either spread or delivered within ULARA. The Cities of Glendale and Burbank each were given rights to all San Fernando Basin ground water derived from water that each imports from outside ULARA and delivered within ULARA. San Fernando was not a member of M.W.D. until the end of 1971, and had never prior thereto imported any water from outside ULARA.

The final Judgment, signed by the Honorable Harry L. Hupp of the Superior Court, was entered on January 26, 1979. Copies of the final judgment are available from the ULARA Watermaster, Post Office Box 111, Los Angeles, California 90051, Rm. 1469. The water rights set forth in the Judgment are consistent with the opinion of the Supreme Court described above. In addition, the Final Judgment includes provisions and stipulations regarding the calculation of Imported Return Water Credit, Stored Water Credit and arrangements for a physical solution for certain parties as suggested by the Supreme Court. The extraction rights are to be as follows:

SAN FERNANDO BASIN

Native Water - Los Angeles has an exclusive right to extract and utilize all the native waters which, under the Judgment, are evaluated to be 43,660 acre-feet per year.

Imported Return Water - Los Angeles, Glendale, Burbank and San Fernando each have a right to extract from the San Fernando Basin the following amounts:

Los Angeles:	20.8 percent of all delivered water (including reclaimed water) to valley fill lands of San Fernando Basin.
San Fernando:	26.3 percent of all imported and reclaimed water delivered to valley fill lands of San Fernando Basin.
Burbank:	20.0 percent of all delivered water (including reclaimed water) to San Fernando Basin and its tributary hill and mountain areas
Glendale:	20.0 percent of all delivered water (including reclaimed water) to San

Fernando Basin and its tributary hill and mountain areas (i.e., total delivered water [Including reclaimed water], less 105 percent of total sales by Glendale in Verdugo Basin and its tributary hills).

Physical Solution Water - Several parties are granted limited rights to extract water chargeable to the rights of others upon payment of specified charges. The parties and their maximum physical solution quantities are as follows:

As to Los Angeles' Water -

Glendale	5,500	acre-feet per year
Burbank	4,200	"
Van de Kamp	120	"
Toluca Lake	100	"
Sportsmens Lodge	25	"

As to Glendale's Water -

Forest Lawn	400	acre-feet per year
Southern Service Co.	75	"

As to Burbank's Water -

Valhalla	300	acre-feet per year
Lockheed	25	"

As to San Fernando's Water - San Fernando may extract ground water from the Sylmar Basin in a quantity sufficient to utilize its San Fernando Basin import return water credit, and Los Angeles shall reduce its Sylmar Basin extractions by an equivalent amount and receive an offsetting entitlement for additional San Fernando Basin extractions.

Stored Water - Los Angeles, Glendale, Burbank and San Fernando each have rights to store water in the San Fernando Basin and the right to extract equivalent amount.

SYLMAR BASIN

Native Water - San Fernando and Los Angeles have rights of 3,580 and 1,560 acre-feet per year, respectively, to extract native water of Sylmar Basin. Private parties Meurer Engineering and Kisag Moordigian have overlying rights to extract and use on their lands overlying the Sylmar Basin all native water reasonably necessary to meet beneficial uses.

Import Return Water - Los Angeles and San Fernando have a right to extract import return water equal to 35.7 percent of the preceeding water years imported water delivered to lands overlying Sylmar Basin.

Stored Water - Los Angeles and San Fernando each have a right to store water in the Sylmar Basin.

Physical Solution Water - Refer to physical solution provisions under San Fernando Basin as to San Fernando's water.

VERDUGO BASIN

Glendale and Crescenta Valley own mutually prescriptive rights to extract 3,856 acre-feet and 3,294 acre-feet per year, respectively.

EAGLE ROCK BASIN

Native Water - The Eagle Rock Basin has no significant native safe yield.

Imported Return Water - Los Angeles has the right to extract or cause to be extracted the recharge to the basin.

Physical Solution Water - Foremost and Deep Rock have rights to extract water chargeable to Los Angeles.

Watermaster Service

In preparing the 1978-79 annual report, Watermaster collected and reported all information affecting and relating to the water supply and disposal within ULARA. Such information includes the following items:

1. Water supply
    a. Precipitation and runoff
    b. Imports and exports
2. Water use and disposal
    a. Extractions
        (1) Used in valley fill area
        (2) Exported from each basin
    b. Water outflow
        (1) Surface
        (2) Subsurface
        (3) Sewers
3. Water levels
4. Water quality
5. Ownership and location of new wells

Administrative Committee

Section 8, Paragraph 8.3 of the ULARA Judgment established an Administrative Committee for the purpose of advising the Watermaster in the administration of his duties. The duly appointed members of the Committee, as of September 30, 1979, are:

City of Burbank:

Martindale Kile, Jr.
Ronald O. Snyder - (Alternate)

City of Glendale:

Steven J. Meyerhofer
Norman C. Koontz - (Alternate)

City of Los Angeles:

Duane L. Georgeson
Bruce W. Kuebler - (Alternate)

City of San Fernando:

Joseph E. Comstock
Rick Navarro - (Alternate)

Crescenta Valley County Water District:

Robert K. Argenio
Robert Sloan - (Alternate)

Private Parties:

Charles Meurer
Roger Meurer
Kisag Moordigian

Martindale (Dale) Kile, Jr. is President of the Committee and Steven Meyerhofer is Vice President.

The administrative Committee may be convened by the Watermaster at any time in order to seek its advice. In addition, the committee is responsible for reviewing with the Watermaster the proposed annual report.

During the 1978-79 water year the Administrative Committee was convened on April 26, 1979 to discuss the following items:

1. Election of Officers

2. Review of ULARA Judgment

3. Interim State DWR Watermaster Activities and Transfer of Responsibilities

4. Proposed Policies and Procedures for Watermaster Service in the ULARA

5. Annual Report for 1977-78

Summary of 1978-79 Operating Conditions

Table 1 compares statistics for this period of record and the prior water year.

Rainfall in the valley fill area was 132 percent of normal as compared to 215 percent of normal the year before. Runoff decreased by 62 percent, decreasing by 26 percent the amount of water conserved by LACFCD in its spreading basins. Total precipitation falling on the San Fernando Valley and its tributary hill and mountain areas was nearly 660,000 acre-feet for the water year 1978-79. Of this total approximately 123,000 acre-feet flowed from the valley as storm runoff, leaving 537,000 acre-feet which was beneficially used within the area (over 81% of the total).

Ground water extractions decreased in the San Fernando, Sylmar, and Verdugo Basins and increased in the Eagle Rock Basin. Total ULARA extractions amounted to 75,483 acre-feet as compared to a safe yield of 104,040 acre-feet. Extractions used within ULARA decreased by 6 percent (1,751 acre-feet) from last year.

For ULARA, gross imports increased by 68,477 acre-feet or 15 percent while imports used within ULARA increased by 13 percent (31,670 acre-feet). Exports of Owens River water increased by 36,807 acre-feet or 17 percent. Total imports and extractions used within ULARA were 11 percent greater (29,919 acre-feet) than last year.

Sewage export was 109,683 acre-feet in 1978-79, an increase of 1 percent. Total reclaimed water either used within ULARA or discharged to L. A. River was 10,644 acre-feet, an increase of 6 percent.

72,460 acre-feet of water, 38,052 native and 34,408 Owens River, was spread during the year, which was a 15 percent decrease from last year.

TABLE 1

SUMMARY OF OPERATING CONDITIONS
1977-78 AND 1978-79

Item	Water Year 1977-78	1978-79
Parties	24	24
Active pumpers	20	19
Active nonpumpers (within valley fill)	0	0
Valley rainfall, in inches	35.43	21.76
Spreading operations, in acre-feet[a/]		
LACFCD	51,181	38,052
Los Angeles, City of	34,268	34,408
Extractions, in acre-feet	81,552	75,483
Used in ULARA	28,660	26,909
Gross imports, in acre-feet		
MWD water	52,450	55,287
Owens River water[b/]	406,615	472,255
Total	459,065	527,542
Exports, in acre-feet		
Owens River water	215,474	252,281
Imports used in ULARA, in acre-feet	243,591	275,261
Reclaimed water, in acre-feet	10,078	10,644
Sewage export, in acre-feet	108,601	109,683

a/ Breakdown of spreading operations as to sources of water is shown in Table 5.

b/ This value represents the summation of the gross amount of water delivered to and exported from ULARA. It does not include operational releases, reservoir evaporation, and water spread during the year.

Summary of Allowable Pumping for 1979-80

Table 1A gives a summary of allowable pumping for the Cities of Los Angeles, Burbank, Glendale, San Fernando and Crescenta Valley County Water District. Stored water is also shown as a credit for these parties as of October 1, 1979.

TABLE 1A

SUMMARY OF ALLOWABLE PUMPING FOR ENSUING YEAR 1979-80

(In Acre-feet)

	Extractions			Stored Water Credit*
	Native	Import Credit	Total	
San Fernando Basin				
Los Angeles	43,660	38,148	81,808	90,092
Burbank	-	4,847	4,847	3,947
Glendale	-	4,166	4,166	2,612
San Fernando	-	-	-	32
Sylmar Basin				
Los Angeles	1,560	2,280	3,840	-
San Fernando	3,580	-	3,580	-
Verdugo Basin				
Crescenta	-	-	3,294	-
Glendale	-	-	3,856	-

* As of October 1, 1979

Note: Calculation of these values shown in more detail in Tables 10 and 11.

II. WATER SUPPLY CONDITIONS

The present water supply of ULARA consists of: precipitation on the watershed which includes portions of the San Gabriel, Verdugo, Santa Monica, and Santa Susana Mountains; ground water that is in storage in the four basins; imports from the Mono Basin-Owens River system; imports from the Colorado River; imports from Northern California made available by the State Water Project; and reclaimed water.

Precipitation

ULARA has the climate of an interior valley and is hotter in the summer and wetter in the winter than the coastal areas.

Precipitation varies considerably throughout ULARA, depending on topography and elevation. Mean seasonal precipitation ranges from about 14 inches at the western end of the San Fernando Valley to 35 inches in the San Gabriel Mountains. Approximately 80 percent of the annual rainfall occurs from December through March.

The 1978-79 water year experienced above average rainfall. The valley floor received 21.76 inches of rain, whereas the mountains received approximately 25.48. The weighted average of both valley and mountain areas was 24.07 inches, a decline of 20.77 inches from last year. The 90-year (1881-1971) average precipitation for the valley and mountains is 16.45 inches and 21.35 inches respectively. Table 2 presents a record of rainfall at 18 key precipitation stations which were used to develop the 90-year average rainfall and are described in the Report of Referee.

In the safe yield evaluation, precipitation on the valley is determined separately from that on the hills and mountains. The valley is made up of the four ground water basins, whereas the hills and mountains comprise the remaining areas in ULARA. Precipitation in the hills and mountains is evaluated to relate the runoff from the watersheds of Big Tujunga, Pacoima Creek, and Sycamore Canyon to the runoff records which are included in this report and also to calculate the ground water recharge. (See Plate 4 for location of precipitation stations.)

Runoff and Outflow from ULARA

The drainage area of ULARA contains 328,500 acres, of which 205,700 acres are hills and mountains. The drainage system, in turn, is made up of the Los Angeles River and its tributaries. Surface flow originates as: storm runoff from the hills and mountains; storm runoff from the impervious areas of the valley; operational spills of imported water; industrial and sanitary waste discharges; and rising water.

TABLE 2

PRECIPITATION[a/]
(inches)

Station		90-year mean	1977-78 Precipitation	1978-79	
LACFCD Number	Name			Precipitation	Percent of 90-year mean
11C	Upper Franklin Canyon Reservoir	18.31	43.92	23.44	128
13B	Hollywood-Blix[b/]	16.69	38.20	20.79	125
14C	Roscoe-Merrill[b/]	15.40	38.82	20.73	135
15A	Van Nuys[b/]	15.07	36.69	21.85	145
17	Sepulveda Canyon-Mulholland Highway	19.07	44.98	27.06	142
21B	Woodland Hills[b/]	14.39	37.31	22.51	156
23B-E	Chatsworth Reservoir[b/]	14.57	33.80	18.93	130
25C	Northridge-LADWP[b/]	14.52	31.44	21.81	150
29D	Granada Hills	17.33	[c/]	[d/]	
30B	Sylmar[b/]	16.66	39.37	21.40	128
33A-E	Pacoima Dam	18.72	39.10	23.32	125
47D	Clear Creek-City School	30.59	73.08	31.43	103
53D	Colby's Ranch	29.75	61.86	29.70	100
54C	Loomis Ranch-Alder Creek	20.47	39.30	20.29	99
210B	Brand Park	18.71	41.90	23.60	126
251C	LaCrescenta[b/]	23.50	52.25	26.17	111
259D	Chatsworth-Twin Lakes	17.88	36.05	22.52	126
1074E	Little Gleason	24.65	58.94	30.77	125

Weighted average for valley stations - 21.76 inches (1978-79)
Weighted average for mountain stations - 25.48 inches (1978-79)

a/ Data furnished by Los Angeles County Flood Control District (LACFCD).

b/ Valley Station

c/ Incomplete record (1977-78)

d/ Discontinued

A number of stream-gaging stations are maintained throughout ULARA, either by LACFCD or U. S. Geological Survey (USGS). The watermaster has selected six key gaging stations which, in effect, record major runoff from hydrologic areas in ULARA.

Table 3 summarizes the monthly runoff for these gaging stations and compares the 1977-78 water year with the 1978-79 year. The changes in runoff reflect the decrease in rainfall in the valley and in the mountains.

Station F-57C-R registers all surface outflow from ULARA.

Station F-252-R registers flow from Verdugo Canyon plus flows from Dunsmore and Pickens Canyons.

Station E-285-R registers flow from the westerly slopes of the Verdugo Mountains and some flow east of Lankershim Boulevard. It also records any releases of reclaimed waste water discharged by the City of Burbank.

Station F-300-R registers all flow west of Lankershim Boulevard plus outflow from Hansen Dam that is not spread. These records also include releases from Sepulveda Dam, which may include extractions from Reseda wells.

Station F-168-R registers all releases from Big Tujunga Dam, which collects runoff from Tujunga Canyon northeast of the Dam. Runoff below this point flows to Hansen Dam.

Station 118B-R registers all releases from Pacoima Dam that originate in Pacoima Canyon. Runoff below this point flows to the Lopez and Pacoima spreading grounds and on down to the Los Angeles River.

TABLE 3

MONTHLY RUNOFF AT SELECTED GAGING STATIONS
(in acre-feet)

Station	Water Year	Month												Total
		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
F-57C-R	1977-78	454	548	21557	42969	100936	156710	24728	7987	1267	1474	1639	6394	366,663
Los Angeles River	1978-79	3170	9270	6660	48460	16680	31430	4310	6290	3390	3260	3030	3150	139,100
F-252-R	1977-78	108	73	1402	2401	11896	8295	341	66	15	72	48	22	24,739
Verdugo Channel	1978-79	12	19	1220	incl.	incl.	997	228	incl.	incl.	incl.	455	468	incl.
E285-R	1977-78	732	651	1970	2484	7925	10987	5913	922	727	778	799	797	34,685
Burbank Storm Drain	1978-79	589	878	1060	2310	1130	2060	556	845	565	603	921	868	12,385
F-300-R	1977-78	84	159	10570	30047	77737	151444	47284	3632	1069	938	1151	4990	329,105
L. A. River Tujunga Ave.	1978-79	1760	9160	5300	36880	11470	21540	3080	1970	1900	2180	1680	1390	98,310
F-168-R	1977-78	474	85	311	4894	18244	38608	11409	6297	6453	1855	1053	897	90,580
Big Tujunga Dam	1978-79	849	748	1320	4170	4580	6640	5630	3160	1410	838	340	294	29,979
118B-R	1977-78	0	0	0	2412	8651	15493	5614	2673	2139	1610	344	300	39,236
Pacoima Dam	1978-79	242	232	478	418	320	3874	3334	2031	+	+	+	1091	12,020

The locations of these key gaging stations are shown on Plate 4. The mean daily discharge rates for these six gaging stations during 1978-79 are summarized in Appendix B.

The Watermaster has computed the surface flow of the Los Angeles River at gaging Station F-57C-R as to the sources, i.e., storm runoff from precipitation, Owens River water, rising water and industrial and reclaimed waste water discharges. The Watermaster utilized the procedures outlined in the Report of Referee for estimating the approximate flow rates and sources of water passing gaging Station F-57C-R. A similar calculation was made for Station F-252-R. A summary of the procedures used follows, and a tabulation of the computed flows is shown in Table 4.

The base low flows were separated from the surface runoff by the use of the hydrographs of Station F-57C-R. Base flows consist of rising water and industrial waste plus reclaimed water. Separation of base flow from surface runoff is based on the following assumptions:

> Rising water equals base low flow minus the sum of industrial waste and reclaimed water. Industrial wastes are estimated from City of Los Angeles waste permits, Los Angeles - Glendale Reclamation plant discharges and low flows in the Burbank-Western Storm drain which includes waste water.
>
> When the City of Los Angeles diverts water at the Headworks spreading grounds, most of the rising water is diverted.
>
> When there is no diversion, a portion of the rising water may percolate upstream from Station F-57C-R.

Historically, the surface runoff obtained from the hydrographs of Station F-57C-R consisted primarily of storm runoff and Owens River water. The last releases of Owens River water into the Los Angeles River occurred in February, 1971 due to the San Fernando earthquake. Releases in the future are expected to be minimal, but if they do occur, separation of surface runoff will be based on the following assumptions:

> Net storm runoff equals surface runoff minus Owens River water.
>
> If the Headworks diversion structure is used, all releases of Owens River waters are diverted to the Headworks spreading grounds. If the Headworks diversion structure does not divert water, all releases of Owens River waters are considered as passing Station F-57C-R.

TABLE 4

SEPARATION OF SURFACE FLOW AT STATIONS F-57C-R AND F-252-R

(in acre-feet)

Period	Base low flow		Storm runoff	Total measured outflow
	Rising water	Waste discharge		
Station F57C-R				
1971-72	3,602[a/]	8,219	35,049	46,870
1972-73	4,596[a/]	8,776	100,587	113,959
1973-74	2,694[a/]	6,366	79,818	88,878
1974-75	427[a/]	7,318	56,396	64,141
1975-76	261[a/]	6,741	32,723	39,725
1976-77	839[a/]	7,128	58,046	66,013
1977-78	1,331[a/]	7,449	357,883	366,663
1978-79	2,840[a/]	16,450	119,810	139,100
29-year average 1929-57	6,810	770	30,790	39,950
Station F252-R[c/]				
1971-72	2,050	0	2,513	4,563
1972-73	1,706	0	7,702	9,408
1973-74	1,772	0	5,613	7,385
1974-75	1,333	0	4,255	5,588
1975-76	2,170	0	2,380	4,550
1976-77	1,683	0	2,635	4,318
1977-78	1,168	0	23,571	24,739
1978-79	2,470	0	b/	b/

a/ May include rising water past rubber dam at Headworks Spreading Grounds, Verdugo Channel, and L. A. River Narrows

b/ Incomplete record

c/ Verdugo Basin

Ground Water Recharge

Local precipitation can have a marked influence on the ground water supply and water in storage. However, there is a wide variation in the annual amount of runoff as a result of changes in both precipitation and retentive characteristics of the watershed.

Continued urban development in ULARA has resulted in much of the rainfall being collected and routed into paved channels, which discharge into the Los Angeles River, and subsequently being carried out of the Basin.

To somewhat overcome the rapid outflow due to urbanization, Pacoima and Hansen Dams, originally built for flood protection, were utilized to regulate storm flows to recapture the flow in dowm-stream spreading basins operated by LACFCD, as well as the City of Los Angeles.

LACFCD operates the Branford, Hansen, Lopez, and Pacoima spreading grounds. The City of Los Angeles, in turn, operates the Tujunga and Headworks spreading grounds. Plate 1 shows the location of these spreading basins. The spreading grounds operated by LACFCD are utilized for spreading native water, whereas the spreading grounds operated by the City of Los Angeles are utilized to spread Owens River and native waters, ground water and the discharge from the Reseda wells. Table 5 summarizes the spreading operations for the 1978-79 water year.

TABLE 5

SPREADING OPERATIONS

(in acre-feet)

Month	Native Water Spread by Los Angeles County Flood Control District				Water Spread by City of Los Angeles				
	Spreading Basins				Tujunga Spreading Grounds		Headworks Spreading Grounds		
	Branford	Hansen	Lopez	Pacoima	Native water	Owens River water	Owens River water	Reseda wells	Surface runoff[a/]
1978									
Oct.	6	0	0	0	0	4,760	0	0	234
Nov.	58	0	0	208	0	5,362	0	0	444
Dec.	46	836	0	489	0	3,980	0	0	316
1979									
Jan.	55	4,631	0	1,312	0	6,429	0	0	199
Feb.	33	4,773	0	647	0	5,072	0	0	413
Mar.	50	5,707	378	3,747	0	5,021	0	0	236
Apr.	1	6,034	354	3,115	0	792	0	0	621
May	5	1,817	286	1,761	0	90	0	0	0
June	9	899	0	0	0	439	0	0	0
July	10	0	0	0	0	0	0	0	0
Aug.	16	0	0	0	0	0	0	0	0
Sept.	12	0	0	757	0	0	0	0	0
Totals	301	24,697	1,018	12,036	0	31,945	0	0	2,463

a/ Includes industrial discharge, ground water effluent, and surface runoff diverted from Los Angeles River

Ground Water Table Elevations

During the 1978-79 water year, the Watermaster collected and processed data to determine prevailing ground water conditions in ULARA during the spring and fall of 1979. Plates 5 and 6 show these conditions. Change in ground water surface elevation from fall of 1978 to fall of 1979 as presented in Plate 7 reflects the effects of variations in spreading, ground water extractions, and rainfall.

Due to above normal rainfall in the water year 1978-79, a rise of approximately 10 feet in water levels occurred in the eastern part of the basin due to increased spreading and decreased pumping. Water levels declined in the Sylmar Basin because extractions were greater than safe yield, and continued to rise in the Verdugo Basin because extractions were less than safe yield.

Figures 1 and 2 depict the water levels at key wells; their approximate locations are indicated by number shown on map on Figure 2.

Water Reclamation

Water reclamation could provide a source of water for irrigation, industrial, and recreational uses. Six waste water reclamation plants are in operation in ULARA. A tabulation of operating water reclamation plants is shown on Table 6.

The design of the Sepulveda Basin Water Reclamation Plant has been completed. It provides for a plant capacity of 40 million gallons per day--mgd, with treated effluent possibly being used for irrigation of the Sepulveda Basin recreation area. The project will not proceed until the Environmental Protection Agency (EPA) completes an assessment of the facility's needs and the approval of State and Federal construction grants has been received.

The City of Los Angeles, along with other local agencies, is participating in the development of a regional water reclamation study entitled: "Orange and Los Angeles County Water Reuse Study". The objective of this report is to prepare a coordinated water reclamation plan for these two areas. This study is estimated to be completed in 1982.

Water Quality

Water resources management must take into account water quality as well as water supply. The total dissolved solids (TDS) concentration in water is the quality indicator that is generally used. A comparison of the TDS content in the various water sources is shown in Figure 3. Representative mineral analyses of imported, surface, and ground waters for 1978-79 are contained in Table 7.

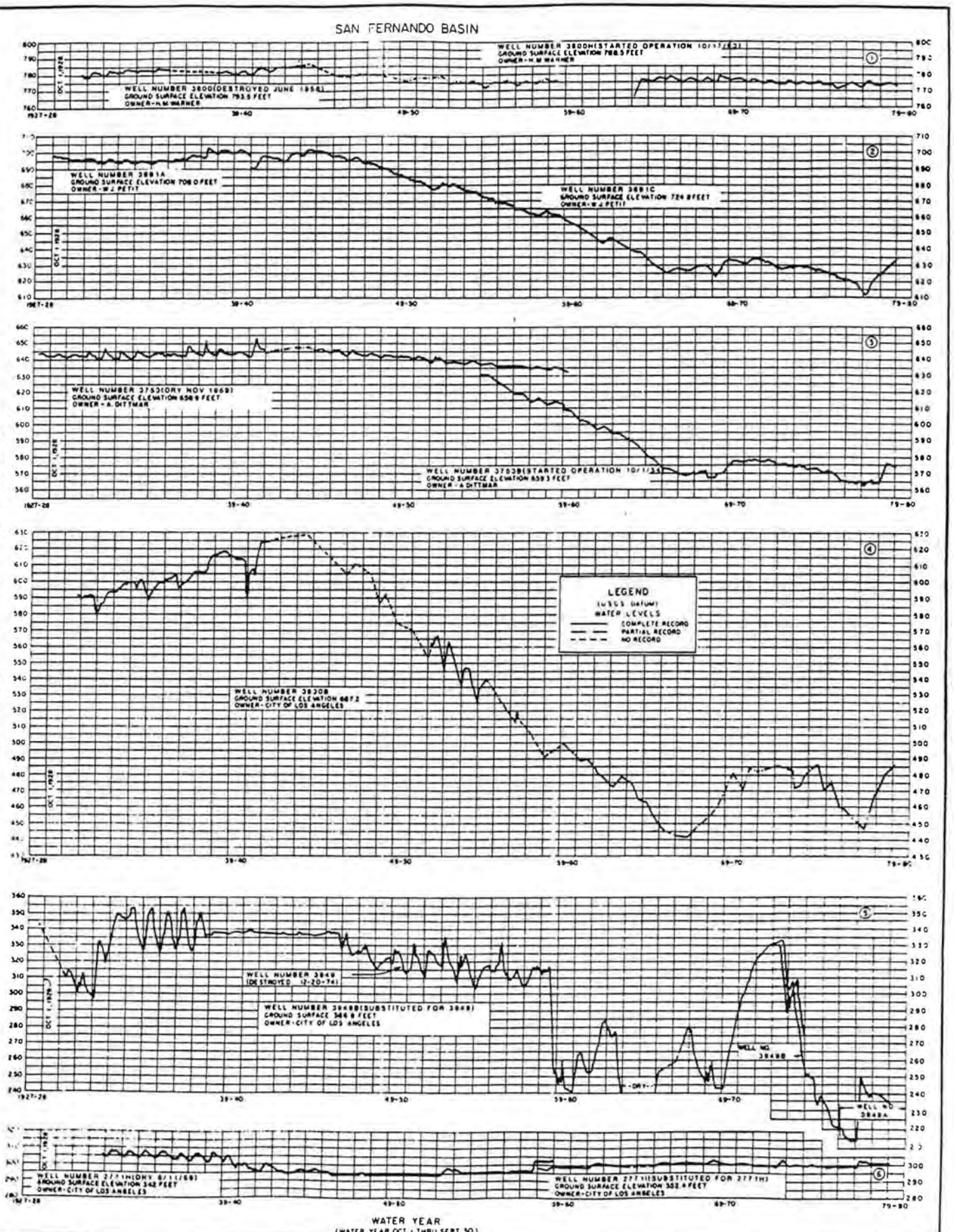


Figure 1—FLUCTUATION OF WATER LEVEL ELEVATION AT WELLS IN THE SAN FERNANDO BASIN

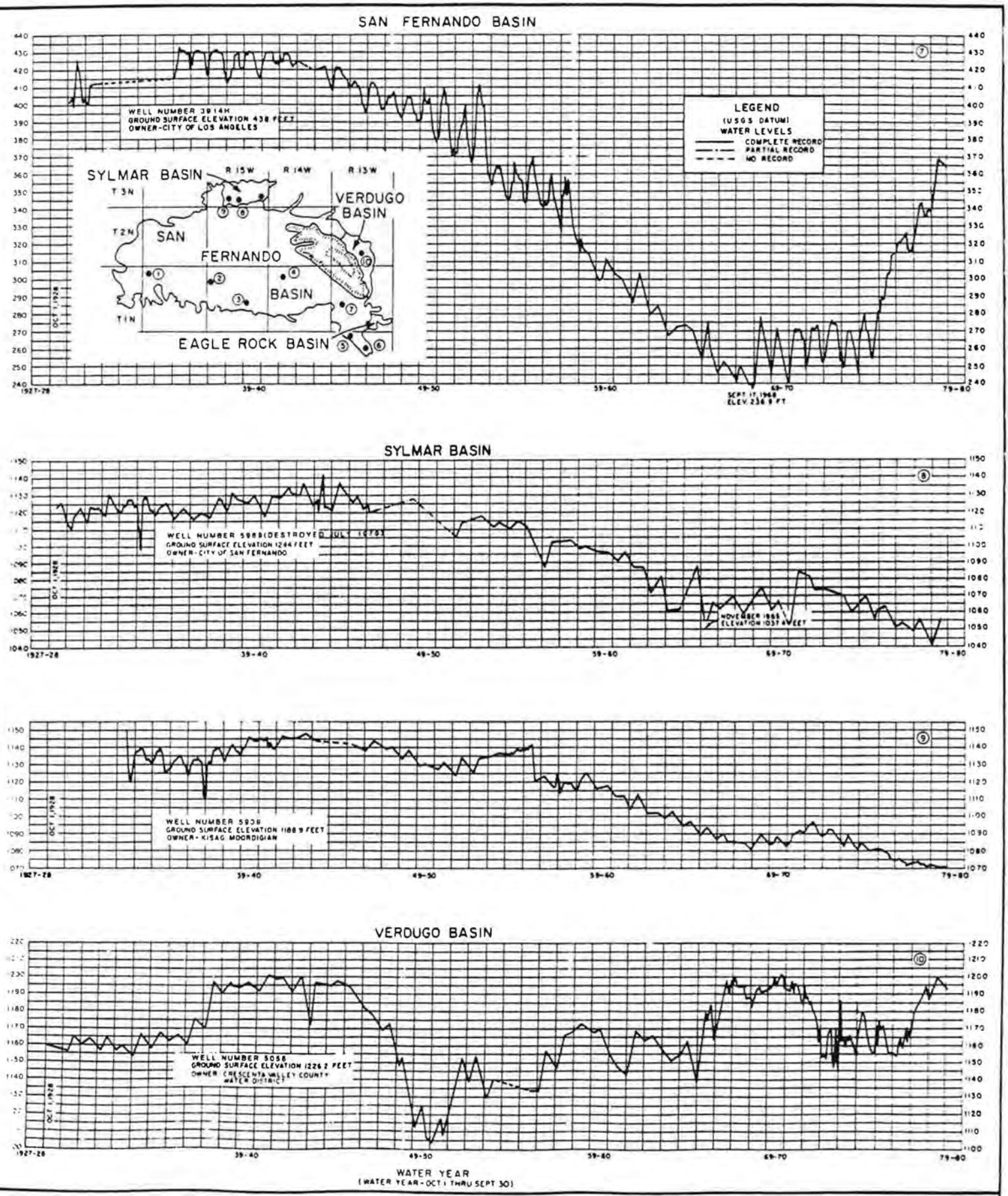


Figure 2 – FLUCTUATION OF WATER LEVEL ELEVATION AT WELLS IN THE SAN FERNANDO, SYLMAR AND VERDUGO BASINS

TABLE 6

WATER RECLAMATION PLANTS, 1978-79

(in acre-feet)

Plant	Treated	Used
San Fernando Basin		
City of Burbank	5,585	2,263[a/]
Los Angeles-Glendale	4,858	70.5[b/]
Indian Hills Mobile Homes[d/]	21	21[c/]
Rocketdyne (Santa Susana Field Laboratory)	49.2	49.2[c/]
The Independent Order of Foresters[e/]	17.3	17.3[c/]
Verdugo Basin		
Crescenta Valley County Water District	113.9	113.9[c/]

a/ Total water delivered to Burbank cooling towers includes 50 percent evaporation and the rest to Los Angeles River.

b/ Total water delivered to phosphate plant in Glendale includes 50 percent evaporation and the rest to Los Angeles River.

c/ Land irrigation.

d/ Water supply from nearby well.

e/ Water supply from pipeline from LADWP.

Imported Water

A. Owens River-Mono Basin water is sodium bicarbonate in character and is the highest quality water available to ULARA. Its TDS concentration averaged about 210 milligrams per litre (mg/l) for 30 years before 1969, the highest record being 320 mg/l on April 1, 1946, and the lowest, 150 mg/l on September 17, 1941. Average TDS concentration for 1978-79 was 160 mg/l, which was lower than the 230 mg/l for 1977-78. This drop in TDS was caused by a greater export of stream flows (90 TDS average) and a decreased export of pumped ground waters (195 TDS average) from the Owens Valley.

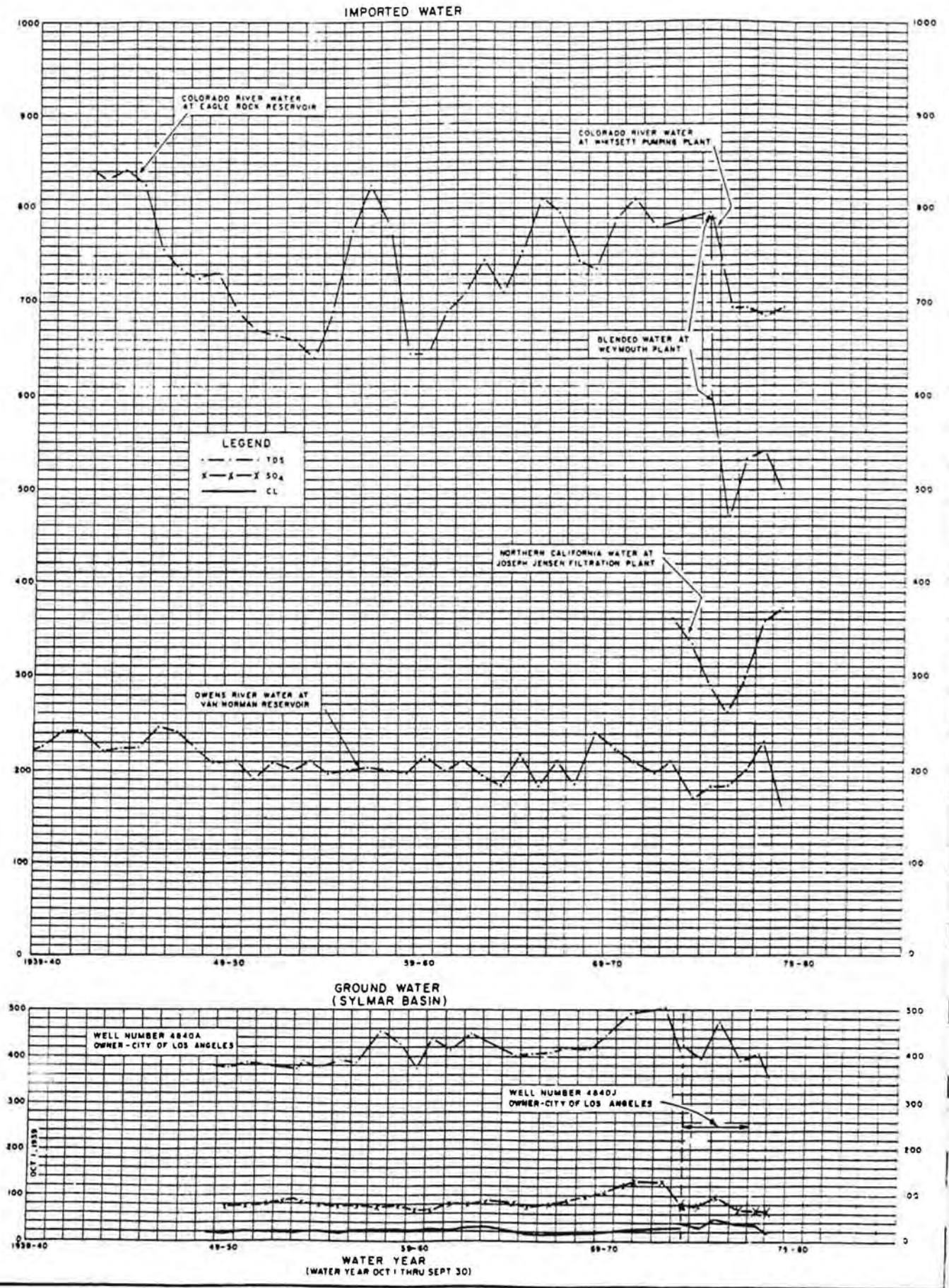


Figure 3— MINERAL CONSTITUENTS OF WATER SOURCES IN THE ULARA

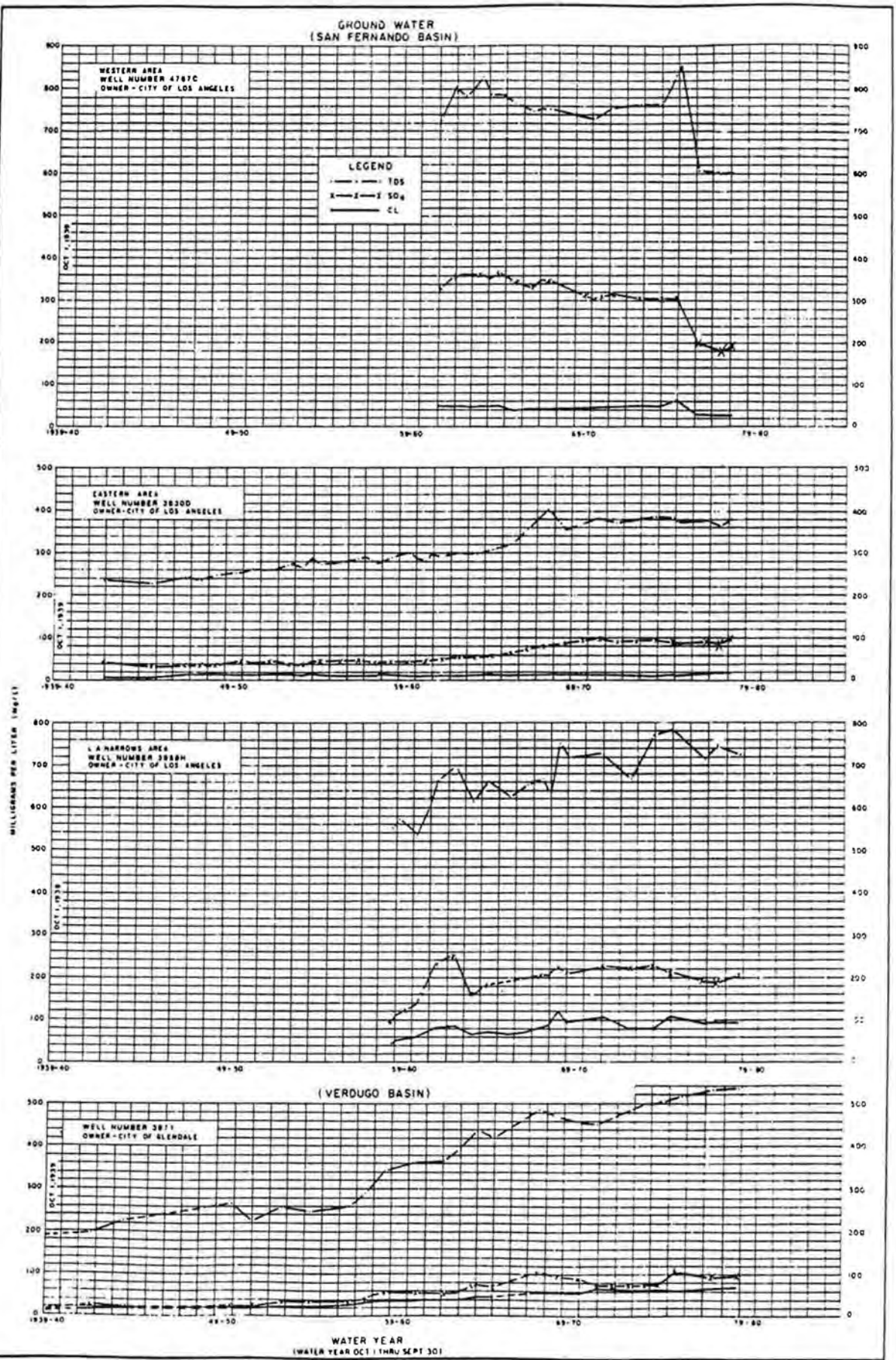


Figure 3(Cont.) — MINERAL CONSTITUENTS OF WATER SOURCES IN THE ULARA

TABLE 7

REPRESENTATIVE MINERAL ANALYSES OF WATER

Well Number or Source	Date Sampled	EC x 10^6 at 25°C	PH	Mineral Constituents in Milligrams per liter (mg/l) / Milliequivalents per liter (me/l)											TDS Total Dissolved Solids mg/l	Total Hardness as $CaCO_3$ mg/l
				Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	NO_3	F	B		
Imported Waters																
Blended State Project and Colorado River water at Eagle Rock Reservoir	78-79	814	8.05	54 2.70	21 1.50	82 3.57	3.5 0.09	0 0	102 1.67	191 1.99	75 2.14	2.1 0.03	0.24 0.01	0.17 0.02	502	222
Owens River water at Upper Van Norman Reservoir Inlet	78-79	258	7.85	21 1.05	3.3 0.55	27 1.17	2.7 0.07	0 0	89 1.46	20 0.21	11 0.31	0.5 0.01	0.48 0.03	0.38 0.03	160	66
State Project Water at Joseph Jensen Filtration Plant (effluent)	78-79	624	8.08	50 2.50	18 1.50	50 2.17	3.3 0.08	0 0	125 2.05	121 2.52	55 1.55	0.90 0.02	0.36 0.02	0.20 ----	373	198
Surface Water																
Los Angeles River at Sepulveda Blvd.	11/1/78	1,380	8.70	133 6.64	47 7.83	112 4.87	4.8 0.12	25 0.83	185 3.03	370 3.85	105 3.00	3.5 0.06			1,073	524
	4/4/79	1,860	8.17	208 10.4	78 13.00	118 5.13	5.0 0.13	0 0	285 4.67	650 6.77	111 3.17	4.5 0.07			1,530	840
Los Angeles River at Burbank-Western Wash	11/1/78	1,030	7.70	53 2.64	20 3.33	116 5.04	12 0.31	0 0	120 1.97	170 1.77	111 3.17	9.2 0.15			650	212
	4/4/79	1,180	7.95	66 3.30	26 4.33	125 5.43	12 0.31	0 0	138 2.26	255 2.66	115 3.29	6.6 0.11			800	272
Los Angeles River at Colorado Blvd.	11/1/78	923	8.40	85 4.24	26 4.33	76 3.30	5.4 0.14	0 0	202 3.31	150 1.56	68 1.94	5.1 0.08			654	320
	4/4/79	1,010	8.46	99 4.94	35 5.83	67 2.91	3.8 0.10	12 0.40	178 2.92	240 2.50	60 1.71	4.5 0.07			774	392
Groundwaters																
(San Fernando Basin - Western Portion)																
4757C (Reseda No. 6)	11/9/78	955	7.26	120 6.00	29 4.83	44 1.91	1.8 0.05	0 0	250 4.10	193 2.01	29 0.83	8.1 0.13	0.29 0.02	0.22 0.02	602	416
(San Fernando Basin - Eastern Portion)																
3830D (No. Hollywood No. 19)	6/28/79	604	7.60	69 3.45	18 3.00	34 1.48	2.9 0.07	0 0	183 3.00	98 1.02	18 0.51	17 0.27	0.51 0.03	0.15 0.01	380	244
(San Fernando Basin - L. A. Narrows)																
3958H (Pollock No. 6)	6/28/79	1,150	7.35	104 5.2	44 7.33	84 3.65	2.8 0.07	0 0	260 4.26	205 2.14	94 2.69	3.2 0.05	0.28 0.01	0.33 0.03	724	440
(Sylmar Basin)																
4840J (Mission No. 5)	11/6/78	567	7.35	66 3.30	16 2.67	28 1.22	2.7 0.07	0 0	195 3.20	65 0.38	16 0.46	15 0.24	0.29 0.02	0.15 0.01	357	237
(Verdugo Basin)																
3971 (Glorietta No. 3)	7/14/78	820	6.8	88 4.42	31.5 2.59	32 1.39	2.6 0.07	0 0	194 3.18	96 2.00	70 1.97	---- ----	0.2 0.01	---- ----	534	351

B. Colorado River water is predominatly sodium-calcium sulfate in character, changing to sodium sulfate after treatment to reduce total hardness. Samples taken at the Burbank turnout between 1941 and 1975 indicated a TDS concentration high of 875 mg/l in August 1955 and a low of 625 mg/l in April 1959. The average TDS over the 34-year period was approximately 740 mg/l. Tests conducted at the Whitsett Intake Pumping Plant showed an average TDS of 695 mg/l for 1978-79, an increase of 2 percent from last year.

C. Northern California water (State Water Project water) is sodium bicarbonate-sulfate in character. It generally contains less TDS and is softer than local and Colorado River water. Since its arrival in Southern California in April 1972, the water had a high TDS concentration of 390 mg/l and a low of 247 mg/l. Tests of the Northern California water are taken at the Joseph Jensen Filtration Plant. Average TDS concentration during 1978-79 was 373 mg/l, an increase of 5 percent from last year.

D. Colorado River and Northern California water were first blended at the Weymouth Plant in May 1975. In the 1978-79 period, TDS had an average value of 496 mg/l which was a 10 percent decrease from 1977-78. Blending ratios vary at the Weymouth Plant and tests are taken from the effluent.

Surface Water

Surface runoff contains salts dissolved from rocks in the tributary areas. Surface water is sodium-calcium, sulfate-bicarbonate in character. In 1978-79, low flows in the Los Angeles River above the Los Angeles Narrows had an average TDS content of 650 mg/l and a total hardness of 270 mg/l, an increase over last year of 71 and 108 percent respectively. These values increased considerably because of the poor quality water being released from Hansen Dam and increased quantities of high TDS Colorado River water used by Burbank and eventually discharged into the Los Angeles River from the Burbank Water Reclamation Plant.

Ground Water

Ground water in ULARA is moderately hard to very hard. The character of ground water from the major water-bearing formations is of two general types, each reflecting the composition of the surface runoff in the area. In the western part of ULARA, it is calcium sulfate-bicarbonate in character, while in the eastern part, including Sylmar and Verdugo Basins, it is calcium bicarbonate. TDS increased in the western part of the San Fernando Basin by less than one percent over 1977-78, increased by 4 percent in the eastern part, decreased by 7 percent in the Sylmar Basin and remained unchanged in the Verdugo Basin.

Ground water is generally within the recommended limits of the United States Public Health Service Drinking Water Standards, except perhaps for wells in the western end of the San Fernando Basin having excess concentrations of sulfate and those in the lower part of the Verdugo Basin having abnormally high concentrations of nitrate.

III. WATER USE AND DISPOSAL

Water delivered for use in ULARA is either imported water, local ground water, local surface diversions, reclaimed, or a mixture of local and imported water, depending on the area and water system operation. During the 1978-79 water year, the total amount delivered to water users in ULARA was 302,170 acre-feet. Of this total 26,909 acre-feet were pumped and used within ULARA and the remaining 275,261 acre-feet were imports. Refer to Figure 5 for a monthly breakdown. The Basin contains 528 wells, of which 136 are active and 392 are inactive, observation, test capped, etc.

The original trial court adjudication of ground water rights in ULARA (no longer in effect) restricted all ground water extractions, effective October 1, 1968. On that date, extractions were restricted to approximately 104,000 acre-feet per water year. This amounted to a reduction of approximately 50,000 acre-feet below the previous 6-year average. The State Supreme Court's decision, as implemented in the final judgment entered on January 26, 1979, provides a similar restriction in ground water pumping. Refer to previous section entitled, "History of Adjudication" for details of allowed pumping.

Sparkletts Drinking Water Corporation and Deep Rock Water Company are the only parties that extract water from the Eagle Rock Basin.

Figure 4 illustrates the annual ground water extractions and total water imported in ULARA, beginning with the 1944-45 water year. Note the change from 1968-69 through the present.

It can also be noted that, for 10 years before pumping was restricted, imports exceeded extractions from 50,000 to 90,000 acre-feet per year and that, for the water years 1968-69 to 78-79, the difference increased to between 110,000 and 200,000 acre-feet.

Figure 5 provides an analysis of the monthly relationship between rainfall, ground water extractions, and imported supply. Data relates to all ULARA and not to any one specific ground water basin. The precipitation values were obtained from stations on the valley floor (Table 2).

Ground Water Extractions

Appendix A is the record of ground water extractions for the 1978-79 water year. A total of 64,645 acre-feet were pumped from the San Fernando Basin, 7,164 acre-feet from the Sylmar Basin and 3,509 acre-feet from the Verdugo Basin. The respective safe yield values for these three basins are 90,680, 6,210 and 7,150 acre-feet. Only in the Sylmar Basin did pumping exceed safe yield. Pumping in the Verdugo Basin is less than safe yield due to water quality problems.

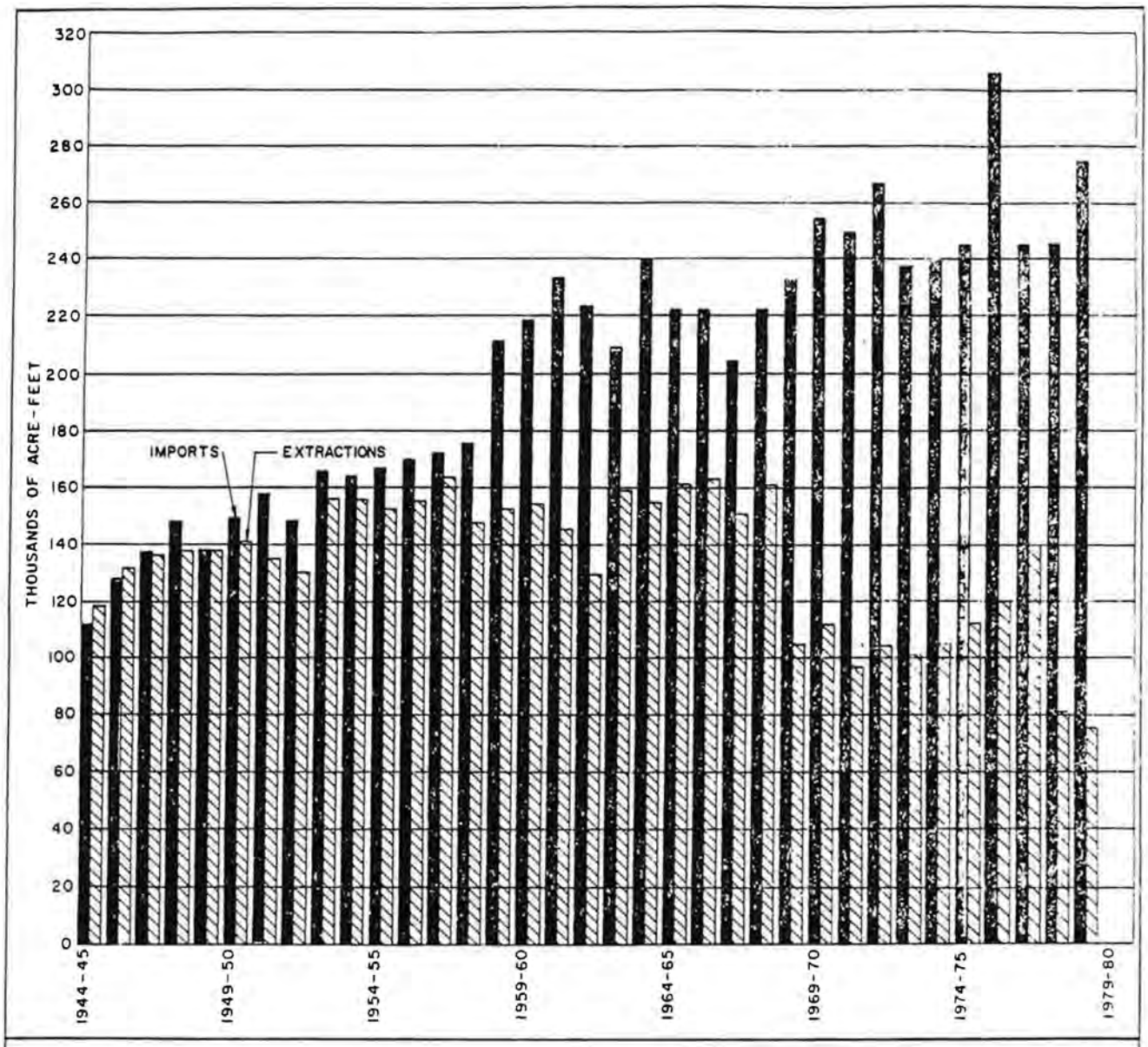


Figure 4- GROUND WATER EXTRACTIONS AND USE OF IMPORTED WATER IN UPPER LOS ANGELES RIVER AREA

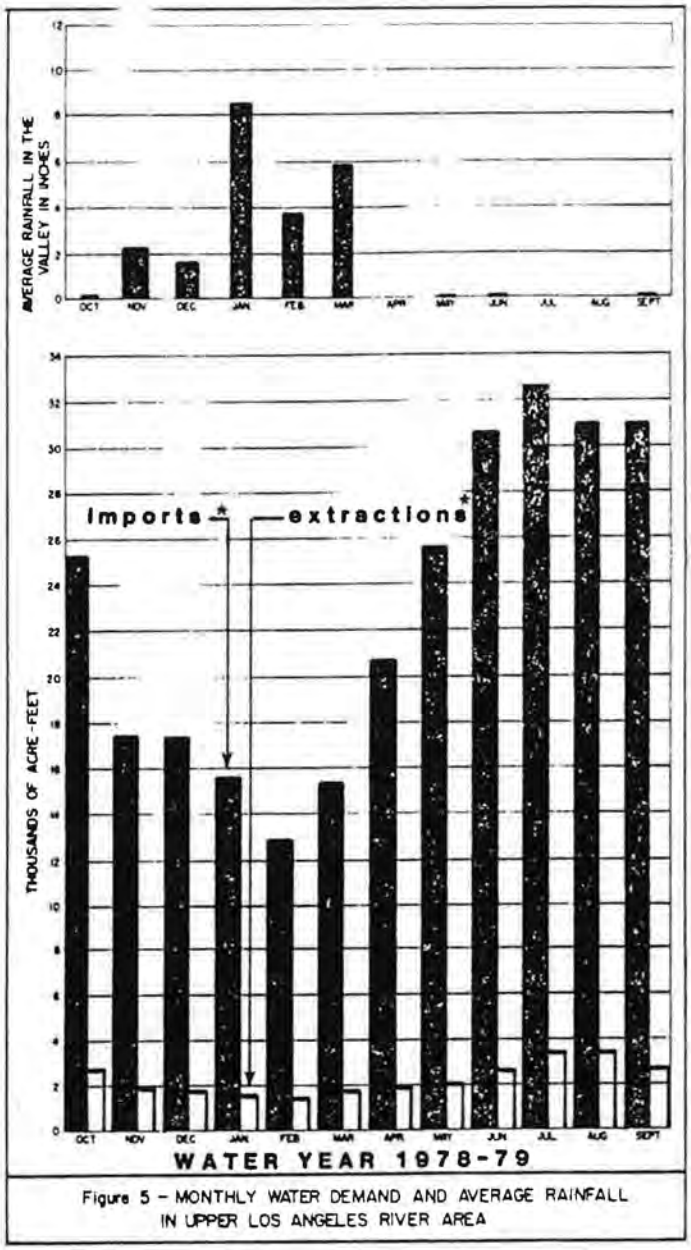


Figure 5 – MONTHLY WATER DEMAND AND AVERAGE RAINFALL IN UPPER LOS ANGELES RIVER AREA

* Used within ULARA

Imports and Exports of Water

Residential, commercial, and industrial expansion in ULARA requires the importation of additional water supplies to supplement that provided by the ground water basins.

The imported supplies to ULARA are from the City of Los Angeles' Owens-Mono Basin Aqueduct and through the MWD distribution system, which consist of California and Colorado River Aqueduct waters.

Exports from ULARA, exclusive of sewage, are limited to the City of Los Angeles, which exports imported and ground water. Table 8 summarizes the nontributary imports and exports from ULARA. Ground water imports and exports in and out of ULARA are listed in Table 9.

Physical Data by Basins

The watermaster has collected and summarized data in Table 9 which show the water supply and disposal in each of the basins.

The information for Table 9 was submitted by the parties. In instances where estimates were made by the parties, such as water delivered to hill and mountain areas, sewage exported, etc., these were based upon methods consistent with previous estimates computed by SWRCB for the San Fernando Valley Reference. The Watermaster also made computations of subsurface outflows based on similar computations made by SWRCB.

Pumping by private parties is summarized in Table 9A.

San Fernando Basin Allowable Extractions

Table 10 lists San Fernando Basin extraction rights for the Cities of Burbank, Glendale, Los Angeles, and San Fernando for the water year 1979-80. Table 11 shows San Fernando Basin stored water as of October 1, 1978 and October 1, 1979. All rights are based on the City of Los Angeles vs. City of San Fernando, et al. Judgment, dated January 26, 1979.

Facts Relevant to Ground Water Storage Capacity*

San Fernando Basin. The total ground water storage capacity of San Fernando Basin is approximately 3,200,000 acre-feet, with a regulatory storage capacity of 350,000 acre-feet required by the Judgment. As of 1954-55, the temporary surplus in the Basin had been exhausted by the over-extraction of approximately 520,000 acre-feet.

Sylmar Basin. Sylmar Basin consists of confined aquifers with a ground water storage space of approximately 310,000 acre-feet.

Verdugo Basin. The ground water storage capacity of Verdugo Basin is approximately 160,000 acre-feet.

* Information obtained from the City of Los Angeles vs. City of San Fernando, et al., Findings of Fact and Conclusions of Law dated January 26, 1979.

TABLE 8

ULARA IMPORTS AND EXPORTS

Source and Agency	Quantity, in acre-feet			
	1977-78		1978-79	
Imports				
MWD water[a/]				
Burbank, City of	17,252		20,633	
Crescenta Valley County Water District	1,838		2,225	
Glendale, City of	18,723		21,638	
Los Angeles, City of	4,072		1,188	
La Canada Irrigation District	808		786	
Las Virgenes Municipal Water District (nonparty)	9,700		8,817	
San Fernando, City of	57		0	
	52,450		55,287	
Owens River water				
Los Angeles, City of	406,615[b/]		472,255[b/]	
Total	459,065	459,065	527,542	527,542
Exports				
Owens River water				
Los Angeles, City of	215,474	-215,474	252,281	-252,281
Net Import		243,591		275,261

a/ Colorado River and Northern California waters combined.

b/ This value represents the summation of the gross amount of water delivered to and exported from ULARA. It does not include operational releases, reservoir evaporation, and water spread during the year.

TABLE 9

1978-79
SUMMARY OF WATER SUPPLY AND DISPOSAL
SAN FERNANDO BASIN
(in acre-feet)

Water Source and Use	City of Burbank	City of Glendale	City of Los Angeles	City of San Fernando	All Others	Total
Extractions						
Total quantity extracted	1,338	1,865	56,693	0	4,749*	64,645
Used in valley fill	d/	d/	8,119	d/	d/	d/
Imports						
MWD water	20,633	21,638	1	0	8,817	51,089
Owens River water	--	--	464,701	--	--	464,701
Ground water from Sylmar Basin	--	--	3,772	3,087	0	6,859
Ground water from Verdugo Basin	--	0	--	--	--	0
Reclaimed water	2,263e/	70e/	--	--	--	2,333
Exports						
Ground water:						
to Verdugo Basin	--	0	0	--	0	0
out of ULARA	--	--	48,574	--	--	48,574
Owens River water:						
to Eagle Rock Basin	--	--	2,499	--	--	2,499
out of ULARA	--	--	252,281	--	0	252,281
MWD:						
to Verdugo Basin	--	2,743	0	--	0	2,743
Total net delivered water	24,234	20,830a/	221,813	3,087	13,566	283,530
Water delivered to hill and mountain areas						
Ground water	d/	d/	0	0	0	d/
Owens River water	--	--	38,408	--	--	38,408
MWD water	d/	d/	1	0	8,817	8,818
Verdugo Basin water	--	d/	--	--	--	d/
Water outflow						
Surface	--	--	--	--	--	139,100b/
Subsurface	--	--	--	--	--	170
Sewers	12,696c/	15,650	75,950	1,600	--	105,896

* See Table 9A for parties included.

a/ Total delivered water to the City of Glendale was 25,269 a.f. Verdugo Basin metered sales times 105 percent equaled 4,439 a.f. Therefore the San Fernando Basin delivered water was 20,830 a.f. (25,269 a.f. minus 4,439 a.f.). Refer to Section 5.2.1.3 of Judgment.

b/ At Station F-57C-R where 29-year mean (1929-57) base low flow is 7,580 acre-feet.

c/ Includes reclaimed water discharged into Burbank-Western storm channel by Burbank.

d/ These values are no longer calculated as per Judgement.

e/ Delivered to cooling towers of steam plant in Burbank and phosphate plant in Glendale. Assumed 50 percent evaporation and 50 percent to Los Angeles River.

Note: Colorado River and Northern California waters now combined and listed as MWD water.

TABLE 9

1978-79
SUMMARY OF WATER SUPPLY AND DISPOSAL
SYLMAR BASIN
(in acre-feet)

Water Source and Use	City of Los Angeles	City of San Fernando	All Others	Total
Extractions				
Total quantity	3,772	3,392	0	7,164
Used in valley fill	0	305	0	305
Imports				
Owens River water	6,743	--	--	6,743
Exports				
Ground water: to San Fernando Basin	3,772	3,087	0	6,859
Water delivered to hill and mountain areas				
Owens River water	356	--	--	356
Water outflow				
Surface	--	--	--	5,000[g/]
Subsurface: to San Fernando Basin[f/]	--	--	--	--
Sewers	770	160	0	930

f/ Computation not possible, well destroyed.
g/ Surface outflow is not measured. Calculated average surface outflow by Mr. Laverty - SF Exhibit 57.

TABLE 9

1978-79
SUMMARY OF WATER SUPPLY AND DISPOSAL
VERDUGO BASIN
(in acre-feet)

Water Source and Use	Crescenta Valley County Water District	City of Glendale	La Canada Irrigation District	City of Los Angeles	Total
Extractions					
Total quantity	1,815	1,696	0	0	3,511
Used in valley fill	1,740	k/	0	0	1,740
Imports					
MWD water	2,225	2,743	786	0	5,754
Owens River water	--	--	--	811	811
Ground water from:					
San Fernando Basin	--	0	--	--	0
Exports					
Ground water to:					
San Fernando Basin	--	0	--	--	0
Water delivered to hill and mountain areas					
MWD water	61	k/	0	0	61
Owens River water	--	--	--	269	269
Ground water from:					
Verdugo Basin	75	k/	--	0	75
San Fernando Basin	--	0	0	0	0
Water outflow					
Surface	--	--	--	--	h/
Subsurface:					
to Monk Hill Basin	--	--	--	--	300 i/
to San Fernando Basin	--	--	--	--	70
Sewage	0	1,347	0	0	1,347

h/ Information obtained from Station F-252C-R. Incomplete record this year.
i/ Based on 29-year average (1929-57).
k/ These values are no longer required.

TABLE 9

1978-79
SUMMARY OF WATER SUPPLY AND DISPOSAL
EAGLE ROCK BASIN
(in acre-feet)

Water source and use	City of Los Angeles	Deep Rock[o/] Water Company	Sparkletts Drinking[o/] Water Corporation	Total
Extractions				
Total quantity	0	5	160	165
Used in valley fill	0	0	0	0
Imports				
Owens River	2,499	--	--	2,499
MWD water	1,187	--	--	1,187
Ground water	0	0	0	0
Exports				
Ground water	0	5	160	165
Water delivered to hill and mountain areas				
MWD water	862	--	--	862
Owens River water	1,119	--	--	1,119
Water outflow				
Surface[m/]	--	--	--	--
Subsurface[n/]	--	--	--	--
Sewers	1,860	0	0	1,860

m/ Information not available.

n/ Estimated in Supplement No. 2 to Report of Reference for dry years 1960-61. Currently, data not available for direct evaluation.

o/ Deep Rock Water Company and Sparkletts Drinking Water Corporation under a stipulated agreement with the City of Los Angeles extract; limited to 500 AF/year, and export given amount.

TABLE 9A

1978-79
PUMPING BY PRIVATE PARTIES
SAN FERNANDO BASIN
(in acre-feet)

Party	Amount
1. Conrock Co.	2,169
2. Forest Lawn Cemetery Assn.	400
3. Harper, Cecelia De Mille	2
4. Livingston-Graham, Inc.	584
5. Mena, John and Barbara	1
6. Sears, Roebuck and Company	24
7. Southern Service Company	41
8. Sportsmens Lodge, Inc.	0*
9. Toluca Lake Property Owners Assn.	34
10. Valhalla Memorial Park	201
11. Walt Disney Productions	1,293
12. Total	4,749

* 0.14 AF

Items 1, 4, 6 & 11 = Nonconsumptive use parties
Items 2, 7, 8, 9 & 10 = Physical solution parties
Items 3 & 5 = Pumping without rights

TABLE 10

1979-80
SAN FERNANDO BASIN EXTRACTION RIGHTS
(in acre-feet)

Item	Cities of			
	Burbank	Glendale	Los Angeles	San Fernando
1. Delivered water 1978-79	24,234	20,830	221,813	--
2. Import delivered 1978-79	--	--	--	0
3. Delivered to hill & mountain 1978-79	--	--	38,409	--
4. Delivered to valley fill 1978-79	--	--	183,404	--
5. Percent recharge	20%	20%	20.8%	26.3%
6. Return water extraction right 1979-80	4,847	4,166	38,149	0
7. Native safe yield	0	0	43,660	0
8. Total extraction right 1979-80	4,847	4,166	81,808	0

Items 1, 2 & 3	=	Table 9
Item 4	=	Item 1 minus Item 3
Item 5	=	Article 5.2.1.3, page 17 of Judgment
Item 6, cols. (1) & (2)	=	Item 1 x Item 5
col. (3)	=	Item 4 x Item 5
col. (4)	=	Item 2 x Item 5
Item 7	=	Article 4.2.4, page 11 of Judgment
Item 8	=	Item 6 + Item 7
--	=	Data not required

TABLE 11

STORED WATER
SAN FERNANDO BASIN
(in acre-feet)

	Cities of			
	Burbank	Glendale	Los Angeles	San Fernando
1977-78				
1. Delivered water 1976-77	22,743	20,281	169,864	65
2. Return water extraction right 1977-78	4,549	4,056	35,332	17
3. Native safe yield	0	0	43,660	0
4. Total extraction right	4,549	4,056	78,992	17
5. Extractions for year	3,767	3,502	59,085	0
6. Spread water	0	0	18,247	0
7. Stored water as of Oct. 1, 1978	782	554	38,154	17
1978-79				
8. Delivered water 1977-78	22,513	19,617	162,028	57
9. Return water extraction right 1978-79	4,503	3,923	33,702	15
10. Native safe yield	0	0	43,660	0
11. Total extraction right	4,503	3,923	77,362	15
12. Extractions for year	1,338	1,865	56,693	0
13. Physical solution extractions	(201)	(441)	34	0
14. Spread water	0	0	31,945	0
15. Stored water as of Oct. 1, 1979	3,947	2,612	90,092	32

Items 2 & 9 = Items 1 & 8 x percent recharge

Items 4 & 11 = Items 2 + 3 & 9 + 10 respectively

Item 7 = Items 4 - 5 +6

Item 13 = All subtracted from Los Angeles

col. (1) = Valhalla pumping (201 a.f.)

col. (2) = Forest Lawn (400 a.f.) & Southern Service pumping (41 a.f.)

col. (3) = Toluca Lake (34 a.f.) & Sportsmen's Lodge pumping (0.1 a.f.)

Item 15 = Items 7 + 11 - 12 - 13 + 14

Appendix A

GROUND WATER EXTRACTIONS

1978-79 WATER YEAR
GROUND WATER EXTRACTIONS

(ACRE-FEET)

LACFCD Well Number	Owners Designation	1978-79 Extractions												
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
San Fernando Basin														
City of Burbank														
3851C	6A	0.00	0.00	28.44	0.00	0.00	0.00	0.00	38.77	40.29	3.58	156.75	0.00	267.83
3862F	7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.20	0.00	1.20
3851C	10R	15.58	0.00	20.00	0.00	0.00	0.00	6.76	0.00	0.00	52.28	0.00	25.51	120.13
3851J	11A	0.00	0.00	43.20	0.00	0.00	0.00	0.00	13.84	0.00	0.00	14.43	0.00	51.47
3851B	12	30.16	0.00	24.08	0.00	0.00	0.00	0.00	0.00	39.40	0.00	0.00	48.96	142.60
3851K	13A	445.32	69.66	19.26	0.00	0.00	0.00	12.55	0.00	16.55	48.74	2.86	90.20	0.00	495.14
3850E	14A	0.00	24.16	33.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.40	0.00	11.51	163.66
3862T	15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.52	0.00	2.52
3841F	17	0.00	0.00	0.00	0.00	0.00	0.00	13.42	0.00	0.00	0.00	22.21	0.00	26.18	61.61
3841G	18	0.00	0.00	15.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.63	0.00	41.61
	Party Total	271.26	93.82	184.55	0.00	0.00	12.55	19.98	69.16	126.23	179.35	291.03	112.16	1338.09
Cowpock Co.														
4916A	2	93.26	131.38	74.81	71.82	70.86	92.02	101.64	94.68	88.96	83.41	78.65	72.77	1054.16
4916	3	49.94	89.64	77.06	74.48	77.96	103.46	105.59	111.18	109.01	107.20	96.44	98.06	1100.02
4926	4926	3.44	8.47	1.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.23
	Party Total	146.64	229.49	153.19	146.30	148.82	195.48	207.23	205.86	197.87	190.61	175.09	170.83	2169.41
Forest Lawn Cemetery Assn.														
3947A	2	18.68	6.37	5.77	1.66	0.75	2.19	13.10	20.68	17.48	22.32	22.36	16.09	147.45
3947B	3	21.01	7.13	6.57	1.79	0.84	0.68	11.96	23.21	19.91	25.49	25.21	16.18	159.98
3947C	4	10.97	3.47	2.90	0.66	0.31	0.09	0.00	0.00	0.00	0.00	0.00	0.00	18.40
3950E	7	12.64	3.69	3.47	0.99	0.42	1.27	7.81	12.10	10.29	12.23	9.04	0.00	74.17
	Party Total	63.30	20.66	18.71	5.10	2.32	4.23	32.89	56.19	47.68	60.04	56.61	32.27	400.00
City of Glendale														
3924B	SFPT1	32.27	0.00	0.00	0.00	43.13	18.17	72.68	17.03	32.90	40.28	49.90	50.31	356.67
3924A	SFPT2	10.22	59.34	81.83	74.83	25.25	0.99	2.45	0.42	4.51	51.83	23.81	21.06	356.34
GVIRT	GVIRT	134.11	106.49	99.76	129.83	102.81	104.65	103.11	69.35	174.32	61.08	34.99	31.61	1151.77
	Party Total	176.60	165.83	181.59	204.66	171.19	123.81	178.24	86.80	211.73	153.19	108.70	102.98	1864.78
Harper, Cecelia Deville														
4930I	Cerro	0.26	0.07	0.01	0.07	0.30	0.46	0.64	--	--	--	--	--	1.81
4940A	Norte	--	--	--	--	--	--	--	0.10E	0.10E	0.10E	0.10E	0.10E	0.50
	Party Total	0.26	0.07	0.01	0.07	0.30	0.46	0.64	0.10	0.10	0.10	0.10	0.10	2.31
Livingston-Graham, Inc.														
4911B	Bevel	39.80	64.70	41.47	48.68	48.86	40.26	51.08	57.48	56.38	45.90	51.12	38.57	583.90
City of Los Angeles														
3914L	CS-45	148.37	144.28	0.00	0.00	0.00	0.00	0.00	0.00	1.72	15.54	0.00	0.00	309.91
3914M	CS-46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.12	312.63	307.92	686.67
3914S	CS-50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.98	0.00	0.00	15.98
	CS Total	148.37	144.28	0.00	0.00	0.00	0.00	0.00	0.00	1.72	97.84	312.63	307.92	1012.56
3831M	E-1	17.15	0.00	0.00	0.00	8.40	80.62	75.51	102.46	130.90	84.60	0.00	199.15	698.79
3831G	E-3	119.33	0.00	0.00	0.00	5.74	108.52	168.32	231.93	139.51	236.53	228.33	219.12	1457.33
3821P	E-4	0.09	0.00	0.00	0.00	8.40	115.29	172.66	243.39	129.20	9.27	0.00	23.83	702.13
3831F	E-5	173.19	178.58	0.00	0.00	9.55	91.32	85.97	254.48	269.58	246.70	270.55	168.55	1748.47
3821M	E-6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	242.77	247.20	33.70	523.67
3811F	E-10	102.50	109.21	0.00	0.00	5.62	128.08	60.97	5.33	1.56	0.00	0.00	0.00	411.27
	E Total	412.26	287.79	0.00	0.00	37.71	523.81	563.43	837.59	670.75	819.87	746.08	644.35	5541.66
3894M	N-25	28.19	0.44	0.00	0.00	0.00	0.00	0.00	10.81	328.49	328.24	321.01	251.45	1268.63
3893L	N-26	19.72	0.30	0.00	0.00	10.61	0.00	0.00	11.64	322.80	323.12	317.06	121.83	1127.08
3893K	N-27	271.35	21.65	0.09	0.00	10.88	0.00	0.00	10.42	311.16	309.32	304.98	117.98	1357.83
3893N	N-28	238.20	0.00	0.00	0.00	15.61	0.00	0.00	0.00	246.67	470.66	469.22	182.21	1622.57
3893H	N-29	65.82	124.22	0.00	0.00	0.00	0.00	0.00	0.00	291.62	490.29	490.09	190.66	1653.00
	N Total	623.28	146.61	0.09	0.00	37.10	0.00	0.00	32.87	1500.74	1921.63	1902.36	864.43	7029.11
3800	MW-2	0.14	0.00	0.00	0.00	10.65	0.00	51.26	0.00	196.26	245.43	320.39	286.25	1110.38
3780A	MW-4	0.09	0.00	0.00	0.00	6.38	0.00	27.53	0.00	0.00	5.99	0.00	0.00	39.99
3810E	MW-5	0.14	0.00	0.00	0.00	6.77	0.00	12.46	87.99	206.29	107.97	0.00	86.71	528.33
3770	MW-7	0.11	0.00	0.00	0.00	7.35	0.00	0.00	0.00	0.00	7.28	120.59	0.00	135.33
3810	MW-11	0.11	0.00	0.00	0.00	8.33	0.00	0.00	177.32	0.00	0.00	196.53	135.61	517.90
3810A	MW-13	0.11	0.00	0.00	0.00	7.23	0.00	48.51	0.00	135.01	221.83	196.72	46.21	657.62
3810B	MW-14A	0.18	0.00	0.00	0.00	9.80	0.00	77.69	59.09	180.95	152.57	0.00	0.00	480.28
3820D	MW-16	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
3820C	MW-17	0.16	0.00	0.00	0.00	0.00	11.27	78.44	278.24	333.84	188.02	81.45	331.06	1306.48
3820B	MW-18	0.28	0.00	0.00	0.00	12.42	0.00	0.00	304.66	219.33	346.33	356.94	237.28	1477.24
3820J	MW-19	0.16	0.00	0.00	0.00	13.36	64.19	140.04	0.00	215.31	331.66	329.25	209.09	1303.06
3830C	MW-20	199.33	0.00	0.00	0.00	8.95	0.00	0.00	0.00	0.00	77.66	0.00	0.00	285.94
3830B	MW-21	0.14	0.00	0.00	0.00	0.00	9.53	0.00	228.08	91.25	9.02	0.00	0.00	337.02
3790C	MW-22	0.14	0.00	0.00	0.00	10.84	0.00	72.52	0.00	195.98	248.37	234.90	20.94	783.69
3790D	MW-23	0.25	0.00	0.00	0.00	11.85	0.00	44.56	155.90	357.53	284.83	332.92	82.19	1270.03
3800C	MW-24	0.00	0.00	0.00	0.00	0.00	0.00	15.06	0.00	38.32	193.89	0.00	83.47	330.74
3790F	MW-25	0.14	0.00	0.00	0.00	12.70	0.00	61.91	118.71	388.18	202.76	216.92	88.73	1090.05
3790E	MW-26	0.09	0.00	0.00	0.00	11.94	0.00	0.00	0.00	0.00	12.24	0.00	0.00	24.27
3820F	MW-27	0.09	0.00	0.00	0.00	7.78	0.00	51.95	0.00	0.00	7.44	58.04	189.00	314.30

1978-79 WATER YEAR
GROUND WATER EXTRACTIONS

(ACRE-FEET)

LACFCD Well Number	Owner's Designation	1978-79 Extractions												
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
							San Fernando Basin							
City of Los Angeles - Contd.														
3810K	WH-28	328.28	0.00	0.00	0.00	13.13	0.00	88.18	309.14	342.50	37.08	0.00	152.32	1270.63
3810L	WH-29	269.28	0.00	0.00	0.00	12.42	0.00	82.21	0.00	0.00	35.08	91.35	355.24	845.58
3800D	WH-30	0.16	0.00	0.00	0.00	11.36	0.00	0.00	0.00	0.00	70.29	0.00	100.92	182.73
3810T	WH-31	0.21	0.00	0.00	0.00	12.28	0.00	50.21	53.67	0.00	0.00	0.00	0.00	116.37
3770C	WH-32	0.00	0.00	0.00	0.00	10.12	0.00	0.00	0.00	0.00	0.00	215.02	0.00	225.14
3780C	WH-33	0.11	0.00	0.00	0.00	10.03	0.00	0.00	0.00	0.00	9.92	0.00	70.34	90.40
3790G	WH-34	0.14	0.00	0.00	0.00	11.24	0.00	0.00	0.00	0.00	11.27	0.00	155.31	207.97
3810W	WH-35	0.11	0.00	0.00	0.00	4.02	0.00	64.62	168.18	20.29	6.68	0.00	45.62	309.52
3790H	WH-36	74.29	0.00	0.00	0.00	14.35	0.00	0.00	0.00	157.35	229.57	316.32	0.00	791.52
3790J	WH-37	354.25	0.00	0.00	0.00	0.00	0.00	74.33	0.00	226.40	237.49	329.04	104.02	1325.62
3810M	WH-38	0.28	0.00	0.00	0.00	16.55	279.27	0.00	0.00	0.00	16.14	400.26	254.04	966.54
3810N	WH-39	0.09	0.00	0.00	0.00	15.93	185.41	475.90	96.67	0.00	0.00	0.00	0.00	734.00
3810P	WH-40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	278.70	101.75	0.00	0.00	380.45
3810Q	WH-41	0.30	0.00	0.00	0.00	0.00	15.24	332.21	93.14	0.00	106.80	381.96	243.37	1173.02
3810R	WH-42	0.28	0.00	0.00	0.00	0.00	15.06	123.03	89.85	11.82	30.19	0.00	0.00	470.23
	WH Total	1229.60	0.00	0.00	0.00	279.79	519.97	2192.62	2220.64	3595.40	3535.55	4184.60	3307.72	21083.89
3904J	CS-52 (#1)	2.48	2.44	2.18	1.35	1.40	2.06	2.53	3.42	3.58	1.51	3.00	2.14	28.09
3904J	CS-52 (#2)	2.22	2.15	1.99	0.98	1.46	1.84	2.26	1.05	1.20	1.15	2.85	1.70	25.05
	CS Total	4.70	4.59	4.17	2.33	2.86	3.90	4.79	8.47	6.78	2.66	5.85	3.84	53.14
3959E	P-4	100.55	101.47	106.75	106.63	92.17	101.24	95.96	93.32	86.66	88.73	86.09	78.86	1138.43
3948C	P-5	112.83	27.89	81.61	125.23	103.65	113.41	107.21	99.29	88.38	91.94	89.99	77.37	1118.80
3958E	P-6	170.57	164.14	60.26	63.02	145.78	172.29	161.96	157.60	154.27	159.09	162.19	151.17	1722.34
3958J	P-7	0.00	0.00	0.00	11.89	16.41	0.00	0.00	0.00	0.00	0.00	0.11	0.00	28.41
	P Total	383.95	293.50	248.62	306.77	358.01	386.94	365.13	350.21	329.31	339.76	338.19	307.40	4007.98
4994C	Foothill 2	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
4994B	Foothill 3	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
	FTHL Total	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
4992A	TOPLT	144.26	142.49	145.91	137.69	112.65	127.36	133.54	76.91	47.31	37.03	21.19	6.41	1132.71
3853F	V-2	13.93	54.84	0.00	0.00	7.05	56.91	144.42	125.94	0.00	4.11	0.00	41.30	448.50
3863J	V-4	15.47	58.08	0.00	0.00	7.78	101.33	158.65	136.87	144.06	230.51	223.35	212.93	1289.03
3853G	V-13	0.00	0.07	0.00	0.00	2.92	16.94	86.94	9.30	0.00	0.00	0.00	0.00	116.17
3843K	V-16	12.58	116.32	0.00	0.00	6.29	52.30	0.00	93.76	0.00	83.91	187.42	176.79	729.37
3854F	V-22	8.49	19.35	0.00	0.00	3.86	22.93	107.53	61.96	0.00	0.00	0.00	21.19	245.31
3844R	V-24	243.55	66.44	0.00	0.00	8.31	108.08	170.25	146.10	157.55	249.96	248.79	236.00	1635.03
	V Total	294.02	315.10	0.00	0.00	36.21	358.49	667.79	573.93	301.61	568.49	659.56	688.21	4463.41
3820E	W-1	23.42	0.00	0.00	0.00	11.21	121.30	11.27	307.76	326.95	339.47	242.80	1.99	1387.79
3821B	W-2	261.78	0.00	0.00	0.00	11.29	119.05	101.42	149.20	249.80	89.60	31.47	325.67	1339.29
3821C	W-3	244.74	104.96	0.00	0.00	0.25	0.00	0.00	0.00	131.52	0.00	59.37	169.77	710.61
3821D	W-4	0.00	0.00	0.00	0.00	0.00	118.80	97.04	159.60	348.49	304.80	10.22	204.31	1243.96
3821E	W-5	107.85	84.99	0.00	0.00	13.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	206.27
3831J	W-6A	381.98	349.91	0.00	0.00	14.14	136.75	408.88	415.50	372.89	410.98	409.45	398.20	3298.50
3832K	W-7	64.37	0.00	0.00	0.00	6.38	152.11	221.81	214.51	93.43	201.79	186.66	167.61	1308.49
3832L	W-8	72.22	9.30	0.00	0.00	9.02	124.33	179.16	266.71	256.31	255.83	245.16	222.77	1640.91
3832M	W-9	81.36	53.26	0.00	0.00	0.00	0.00	0.00	0.00	52.59	148.99	148.28	139.37	623.85
3842E	W-10	0.04	29.18	0.00	0.00	2.48	26.08	129.98	130.04	12.42	53.90	119.61	108.79	616.56
	W Total	1237.77	631.62	0.00	0.00	70.22	798.42	1149.56	1643.33	1844.40	1807.36	1452.24	1737.10	12366.02
	City of Los Angeles Total	4478.21	1966.07	398.79	446.75	932.55	2738.91	5076.86	5741.95	8298.02	9130.39	9622.89	7861.38	56692.77
Mena, John and Barbara														
4973J	4973J	0.08E	0.08E	0.08E	0.08E	0.08E	0.08E	0.08E	0.08E	0.08E	0.08E	0.08E	0.08E	0.96
Sears Roebuck and Company														
3945	3945	3.23	1.29	0.49	1.58	0.08	0.32	0.33	2.10	6.25	0.96	3.74	1.51	23.88
Southern Service Company														
3934A	Meter 1	1.42	1.37	1.53	1.51	1.55	1.11	1.02	1.12	1.28	0.88	1.25	1.37	15.41
3934A	Meter 2	1.55	1.27	1.27	1.14	1.26	1.11	0.88	1.07	0.83	1.09	1.21	0.94	13.62
3934A	Meter 3	1.16	1.40	1.11	1.42	0.80	0.81	0.73	0.52	1.09	1.06	1.20	0.81	12.13
	Party Total	4.13	4.04	3.91	4.07	3.61	3.05	2.63	2.71	3.20	3.03	3.66	3.12	41.16
Sportsmens Lodge, Inc.														
3785A	1	0.02E	0.01E	0.02E	0.01E	0.01E	0.01E	0.01E	0.01E	0.01E	0.01E	0.01E	0.01E	0.14
Toluca Lake Property Owners Assn.														
3845F	3845F	0.00	0.00	2.18	0.01	1.32	1.20	1.86	5.18	6.59	3.12	6.17	5.91	33.54
Valhalla Memorial Park														
3830M	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.69	23.69	46.34	2.98	95.70
3840K	4	16.87	4.74	4.69	2.04	0.63	0.70	25.90	36.47	5.65	0.00	0.00	7.75	105.44
	Party Total	16.87	4.74	4.69	2.04	0.63	0.70	25.90	36.47	28.34	23.69	46.34	10.73	201.14
Walt Disney Productions														
3874E	East	0.00	0.00	0.00	90.37	51.85	63.80	3.36	6.43	0.02	79.40	121.25	173.52	530.00
3874F	West	113.03	90.07	83.22	39.22	0.00	11.75	69.38	88.39	149.06	46.30	11.54	0.13	702.69
	Party Total	113.03	90.07	83.22	129.59	51.85	75.55	72.74	94.82	149.08	126.30	132.79	173.65	1232.69
	Basin Total	5313.43	2640.87	1054.88	988.72	1361.62	3196.61	5670.47	6358.61	9133.56	9912.37	10498.33	8515.30	64644.77

Note: Zero production for Lockheed and Van De Kamp

1978-79 WATER YEAR
GROUND WATER EXTRACTIONS

(ACRE-FEET)

LACFCD Well Number	Owners Designation	1978-79 Extractions												
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Sylmar Basin														
City of Los Angeles														
--	Mission	458.52	438.71	447.91	447.45	406.18	440.29	16.00	0.00	0.00	456.39	490.36	174.01	3771.82
Maurer Engineering Co.														
5958	3	0.01E	0.01E	0.01E	0.01E	0.01E	0.01E	0.01E	0.01E	0.01E	0.01E	0.01E	0.01E	0.12
City of San Fernando														
5958B	2A	0.00	0.00	84.07	7.27	5.50	13.09	65.50	218.45	233.44	241.08	239.46	230.22	1340.08
5959	3	161.55	140.75	104.04	162.88	144.99	169.51	138.33	55.96	80.80	68.22	74.81	100.97	1398.81
5969	4	44.31	45.50	8.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56.00
5968	7A	57.18	43.72	33.87	51.06	43.93	30.28	48.74	24.72	33.68	60.33	57.61	50.14	517.38
	Party Total	263.04	230.04	226.17	221.21	194.42	230.88	252.57	299.18	347.92	369.63	371.88	381.33	3352.27
	Basin Total	721.57	662.76	676.09	668.69	602.61	671.18	268.58	299.17	347.93	826.03	864.25	555.35	7164.21

Note: Charles T. Brown well 4860C destroyed as of August 1979 field inspection.
Plumb and Borsh now Maurer Engineering Co.

Verdugo Basin

Crescenta Valley County														
5058B	1	23.70	3.94	0.44	0.01	0.00	0.00	8.22	0.53	0.04	0.00	0.03	1.04	37.95
5036A	2	0.00	0.00	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38
5058A	5	0.00	0.03	0.04	0.01	0.00	0.00	0.97	7.16	24.49	27.86	53.80	54.48	173.84
5058	6	0.01	0.04	0.03	0.00	0.17	0.00	0.02	0.00	0.15	0.00	0.06	0.01	0.49
5047B	7	2.11	1.00	1.55	0.01	0.00	0.00	6.01	1.10	0.10	0.05	0.02	0.02	11.97
5069J	8	46.99	41.65	44.48	43.90	8.91	41.15	41.76	43.68	46.02	48.64	18.48	16.74	440.40
5047D	9	6.12	0.83	0.00	0.00	0.00	0.00	3.84	24.10	31.20	44.33	8.26	8.44	127.14
5058D	10	40.59	8.31	10.32	7.34	10.80	0.04	0.50	25.83	35.49	33.21	68.42	70.15	311.00
5058J	12	1.44	0.16	0.00	0.01	32.71	3.50	13.38	0.46	2.10	1.80	0.19	2.57	58.32
5069W	14	52.56	47.47	51.36	51.27	32.70	46.88	51.77	47.75	48.94	44.31	59.46	46.64	581.11
	Pick	5.82	3.61	5.80	3.60	2.15	2.94	2.92	6.26	2.93	3.46	5.31	5.79	68.79
	Party Total	179.34	109.04	114.40	106.15	90.64	97.51	132.39	156.87	195.46	203.88	214.05	205.88	1815.39
City of Glendale														
3961, 71	GL3-4	138.28	115.13	99.83	82.92	91.10	78.75	133.27	138.10	149.85	139.27	140.26	128.28	1431.04
3970	GL-6	18.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.62	53.26	92.97	77.00	262.42
	Party Total	156.83	115.13	99.83	82.92	91.10	78.75	133.27	138.10	170.47	192.53	233.23	205.28	1693.46
	Basin Total	136.17	224.17	210.23	191.07	181.74	176.26	265.66	296.97	369.93	398.21	447.28	411.16	3508.85

Eagle Rock Basin

Deep Rock Water Co.														
--	3	0.43	0.43	0.41	0.46	0.40	0.43	0.45	0.46	0.41	0.46	0.44	0.39	5.19
Sweetwater Drinking Water														
3907A	1	7.30	6.69	6.19	6.94	5.58	7.77	3.90	6.68	7.10	4.53	7.89	7.23	79.34
3907B	2	7.13	6.35	5.71	6.55	5.78	6.03	6.30	6.95	6.93	5.94	7.18	6.82	77.61
3907F	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.44	0.00	0.00	1.44
	Party Total	14.43	13.04	11.90	13.49	11.36	13.80	10.20	13.17	14.03	11.91	15.07	14.05	160.39
	Basin Total	14.86	13.47	12.31	13.95	11.70	14.23	12.65	13.63	14.44	14.37	15.51	14.44	165.58
	LEASA Total	6186.05	3541.27	1951.31	1862.43	2157.67	4058.28	6217.36	6966.38	9865.86	11150.98	11825.17	9496.25	75481.41

Appendix B

MEAN DAILY DISCHARGE
AT
KEY SURFACE RUNOFF
GAGING STATIONS

1978-79
MEAN DAILY DISCHARGE OF LOS ANGELES RIVER ABOVE ARROYO SECO
In Second Feet

Station No. F57C-R

DAY	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	66.7	36.1	57.6	52.2	654.0	1220.0	120.0	129.0	57.5	54.5	51.5	45.9
2	65.0	46.3	60.5	53.7	1810.0	97.2	92.6	129.0	56.0	56.0	54.5	44.6
3	60.5	46.4	37.8	84.6	342.0	47.7	78.9	126.0	60.5	57.5	50.0	48.6
4	59.0	47.1	43.2	176.0	91.6	34.8	70.2	126.0	62.0	57.5	43.2	53.0
5	56.0	54.5	44.6	6240.0	57.2	34.2	70.2	123.0	37.4	59.0	40.5	51.0
6	59.0	53.2	53.0	1050.0	40.5	30.5	57.5	123.0	26.1	60.0	44.6	54.5
7	59.0	48.9	45.9	90.3	59.9	38.1	51.5	120.0	37.8	57.5	45.9	44.6
8	54.5	57.4	34.6	44.0	61.8	37.3	50.0	120.0	76.9	53.0	45.9	48.8
9	59.0	60.1	27.0	299.0	52.3	35.9	51.5	120.0	100.0	53.0	44.8	47.1
10	62.0	163.0	37.2	84.4	65.3	31.7	53.0	117.0	114.0	53.0	47.3	53.0
11	63.5	533.0	40.8	24.1	60.0	38.2	54.5	114.0	71.9	51.5	47.3	44.5
12	63.5	95.7	45.1	16.5	57.0	40.8	49.1	114.0	26.1	51.5	48.6	54.5
13	63.5	256.0	30.6	14.9	55.2	275.0	40.0	111.0	25.0	57.5	50.0	56.0
14	57.5	123.0	27.8	301.0	946.0	84.7	35.1	108.0	30.4	56.0	47.3	53.0
15	51.5	52.5	42.7	4280.0	124.0	53.0	35.6	95.2	47.3	50.0	44.6	54.5
16	53.0	49.8	51.8	5410.0	29.6	68.0	34.0	85.0	49.3	40.5	51.5	50.0
17	45.5	35.1	84.2	225.0	27.3	1570.0	39.2	78.9	63.5	34.2	54.5	51.5
18	38.8	27.3	1460.0	246.0	26.1	335.0	38.9	85.4	56.0	28.4	56.0	54.5
19	41.9	32.7	712.0	129.0	31.3	512.0	38.0	100.0	44.6	45.3	54.5	54.5
20	68.1	31.9	73.6	114.0	125.0	294.0	30.8	108.0	45.9	53.0	57.5	56.0
21	57.5	807.0	34.2	164.0	2600.0	71.9	33.0	100.0	53.6	56.0	56.0	52.0
22	46.2	1330.0	32.7	175.0	175.0	59.5	30.7	74.6	73.7	53.4	56.0	57.5
23	40.5	213.0	24.2	107.0	857.0	34.4	38.4	76.2	73.7	59.0	53.0	47.4
24	18.8	93.0	21.8	74.7	75.1	24.1	163.0	268.0	62.0	57.5	53.0	53.0
25	33.4	84.2	29.4	79.9	53.0	25.0	144.0	77.2	59.0	56.0	48.6	50.0
26	36.7	84.2	30.5	64.9	51.5	28.4	138.0	57.5	65.0	60.5	47.3	59.0
27	37.2	66.0	34.0	63.5	39.2	6030.0	135.0	54.5	63.5	59.0	47.3	59.0
28	44.6	54.9	37.8	96.5	41.9	3030.0	135.0	57.5	57.5	56.0	44.6	60.5
29	42.8	54.0	31.9	72.0		908.0	132.0	57.5	57.5	53.0	47.3	57.5
30	40.1	39.1	40.5	1802.0		500.0	132.0	57.5	54.5	51.5	47.3	65.0
31	53.8		37.9	2800.0		257.0		59.0		51.5	47.3	
Total	1599.1	4675.4	3359.9	24432.2	8408.0	15,846.4	2171.7	3172.0	1707.6	1643.4	1527.5	1587.
Mean Daily Discharge	51.6	156	108	788	300	511.	72.4	102	56.9	53	49.3	52.9
Runoff in Acre-Feet	3170	9270	6660	48460	16680	31430	4310	6290	3390	3260	3030	3150
Max. Mean Daily Discharge	68.1	1330	1460	6240	2600	6030	163	268	114	60.5	57.5	65
Min. Mean Daily Discharge	18.8	27.3	21.8	14.9	26.1	24.1	30.7	54.5	25	28.4	40.5	44.5

1978-79
DAILY DISCHARGE OF LOS ANGELES RIVER AT TUNJUNGA AVENUE
In Second Feet

Station No. F 300 - R

DAY	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	30.1	26.5	35.6	7.4	358.0	778.0	194.0	61.5	21.8	39.2	29.0	23.1
2	31.0	27.9	35.3	5.8	1240.0	42.8	111.0	58.1	25.5	37.4	30.2	22.4
3	31.0	26.5	26.5	15.1	181.0	26.9	75.0	55.2	29.8	37.4	31.0	22.4
4	30.6	25.8	26.9	31.7	48.7	23.1	58.1	51.4	30.2	37.4	31.3	20.6
5	32.9	27.1	26.5	5210.0	34.8	21.2	51.1	49.9	15.2	35.3	31.7	19.8
6	33.5	25.5	25.1	584.0	31.9	19.7	25.5	47.9	5.4	33.8	32.5	26.1
7	32.1	24.8	24.8	66.0	44.1	21.6	24.8	45.5	7.8	44.2	29.4	30.2
8	30.2	23.1	24.8	29.8	40.0	20.1	25.1	42.7	53.2	44.1	27.2	19.4
9	29.4	25.1	24.1	194.0	42.9	19.1	25.8	40.5	91.0	42.3	27.2	21.3
10	28.3	218.0	24.4	35.0	57.5	18.3	27.0	37.9	94.4	40.0	27.2	21.3
11	28.3	821.0	24.8	16.2	51.4	18.3	29.5	35.9	48.9	38.7	26.9	21.5
12	29.0	228.0	23.1	13.0	45.9	18.3	25.6	31.7	15.1	40.0	29.0	20.7
13	29.0	311.0	14.4	11.3	97.4	226.0	25.7	32.1	16.4	40.9	25.3	21.4
14	26.2	93.8	12.0	302.0	747.0	26.9	22.7	30.2	18.6	41.5	29.0	22.7
15	25.0	35.5	14.0	4140.0	72.1	25.0	21.5	26.6	15.9	40.9	28.7	22.7
16	26.5	16.7	18.6	4040.0	24.8	32.7	20.3	21.6	18.9	40.0	26.5	21.6
17	26.2	13.2	407.0	149.0	22.4	869.0	19.4	21.2	18.6	39.6	27.2	22.4
18	26.5	14.2	1290.0	78.9	21.2	203.0	19.3	21.1	17.9	41.8	26.2	22.1
19	28.0	18.0	437.0	57.5	28.5	182.0	20.5	22.4	14.9	38.5	27.2	22.7
20	32.7	30.0	43.5	43.6	138.0	146.0	17.8	19.5	15.4	33.7	26.5	23.2
21	29.9	699.0	18.5	36.2	1660.0	26.9	16.4	21.9	20.2	36.2	26.5	21.5
22	26.5	1490.0	15.0	32.5	69.6	18.9	15.4	12.9	29.0	32.1	26.9	20.7
23	24.8	148.0	10.6	22.4	599.0	16.0	50.3	27.7	32.9	27.2	27.2	21.5
24	25.8	56.2	9.7	19.3	37.9	15.2	114.0	83.2	36.6	21.5	25.0	21.3
25	28.0	36.6	8.7	18.0	27.6	16.3	97.2	15.7	43.2	27.6	23.4	23.2
26	27.6	31.7	9.7	13.5	25.5	14.5	90.8	12.8	46.4	27.2	24.3	26.9
27	27.2	30.6	9.7	15.2	22.7	6280.0	69.3	13.2	44.6	26.2	23.7	25.0
28	26.2	31.0	9.3	14.3	21.0	2320.0	46.3	10.0	41.3	27.2	22.2	25.8
29	26.5	30.2	8.4	14.2		727.0	81.9	9.8	41.8	29.0	23.6	27.1
30	28.6	29.8	9.1	1360.0		436.0	72.1	11.3	41.9	29.0	28.7	34.8
31	27.7		8.0	2020.0		250.0		19.4		29.4	25.9	
Total	885.7	4616.9	2672.1	18595.9	5780.9	10859.0	1552.4	991.8	956.5	1109.0	849.5	849.5
Mean Daily Discharge	28.6	154	86.2	600	206	350	51.7	32	31.9	35.5	27.4	28.3
Runoff in Acre-Feet	1760	9160	5300	36,890	11,470	21,540	3080	1970	1900	2190	1680	1690
Max. Mean Daily Discharge	33.5	1490	1290	5,210	1660	6280	194	83.2	96.4	44.1	32.5	34.8
Min. Mean Daily Discharge	24.8	13.2	8	5.8	21.2	14.5	15.4	9.8	5.5	21.5	22.2	19.4

1978-79
MEAN DAILY DISCHARGE OF VERDUGO WASH AT ESTELL
In Second Feet

Station No. F252-R

DAY	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	0.1	.1	0.1	46.0	(a)	27.0	0.5	(b)	(b)	(b)	2.5	2.3
2	0.1	.2	0	20.7	|	1.8	0.2	|	|	|	3.9	2.5
3	0.2	.5	0	2.3	|	2.0	0.1	|	|	|	8.4	2.3
4	0.2	.7	0	2.3	|	2.8	0.1	|	|	|	14.0	3.4
5	0.2	.7	0	55.6	|	2.3	0.1	|	|	|	11.8	8.4
6	0.2	.7	0	13.6	|	1.0	1.0	|	|	|	7.3	5.4
7	0.2	.7	0	2.5	|	1.3	2.1	|	|	|	7.3	9.5
8	0.2	.7	+	2.3	|	1.5	2.3	|	|	|	12.9	9.5
9	0.2	.7	+	2.0	|	1.0	2.0	|	|	|	16.4	9.5
10	0.2	.1	+	0.2	|	1.2	1.0	|	|	|	12.9	9.5
11	0.2	.1	+	0.2	|	1.2	1.2	|	|	|	10.6	9.5
12	0.2	+	+	0.1	(a)	1.5	1.3	|	|	|	7.3	9.5
13	0.2	+	+	0.1	1.2	2.0	1.5	|	|	|	7.3	9.5
14	0.2	+	.1	1.4	2.5	1.2	1.5	|	|	|	7.3	8.4
15	0.2	+	.1	30.5	1.8	1.2	1.5	|	|	|	8.4	8.4
16	0.2	+	.1	23.5	1.8	2.2	1.8	|	|	|	9.5	8.4
17	0.2	.2	1.4	2.0	2.0	21.2	1.8	|	|	|	7.3	8.4
18	0.2	.2	31.6	1.2	2.0	5.6	2.0	|	|	|	7.3	8.4
19	0.2	.5	42.0	0.7	2.0	8.7	2.5	|	|	|	6.2	8.4
20	0.2	.5	50.0	(a)	6.6	2.0	2.5	|	|	|	6.2	8.4
21	0.2	.1	54.0	|	127.0	1.0	2.3	|	|	|	7.3	9.5
22	0.2	+	42.0	|	2.3	1.2	1.8	|	|	|	7.3	8.4
23	0.2	+	42.0	|	10.7	1.0	2.3	|	|	|	4.9	8.4
24	0.2	+	42.0	|	2.0	0.5	6.2	|	|	|	2.8	8.4
25	0.2	+	42.0	|	2.0	0.5	6.2	|	|	|	2.8	7.3
26	0.2	+	42.0	|	1.9	0.5	10.6	|	|	|	6.2	7.3
27	0.2	+	42.0	|	.5	286.0	14.0	|	|	|	7.3	7.3
28	0.2	2.0	46.0	|	.7	120.0	16.4	|	|	|	6.2	7.3
29	0.2	0.5	46.0	|	|	2.3	16.4	|	|	|	5.0	7.3
30	0.2	0.5	48.2	|	|	0.7	11.5	|	(b)	|	2.5	7.3
31	0.2		46.0	(a)	|	0.5	|	(b)	|	(b)	2.3	|
Total	6	9.7	617.6			502.9	115.2				229.4	236.1
Mean Daily Discharge	.2	.3	19.9			16.2	3.8				7.4	7.9
Runoff in Acre-Feet	11.9	19.2	1220	(a)	(a)	997	228	(b)	(b)	(b)	455	468
Max. Mean Daily Discharge	.2	2	54			286	16.4				16.4	9.5
Min. Mean Daily Discharge	.1	0	0			0.5	0.1				2.3	2.3

(a) = Incomplete (b) = Communications cover washed off, no record

1978-79
MEAN DAILY DISCHARGE OF BURBANK-WESTERN STORM DRAIN AT RIVERSIDE DRIVE
In Second Feet

Station No. E 285-R

DAY	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	10.6	3.9	14.6	9.1	39.3	86.3	10.6	10.6	10.6	10.6	13.1	14.6
2	11.9	5.6	14.6	9.1	99.2	10.6	9.1	10.6	10.6	10.6	14.6	13.1
3	11.9	11.9	14.6	7.9	11.9	10.6	9.1	9.1	10.6	9.1	14.6	14.6
4	11.9	11.9	15.7	7.9	9.1	9.1	9.1	9.1	10.6	9.1	14.6	14.6
5	11.9	10.6	15.7	249.0	9.1	9.1	10.6	10.6	10.6	9.1	13.1	14.6
6	10.6	10.6	15.7	13.1	7.9	9.1	9.1	10.6	10.6	9.1	14.6	14.6
7	11.9	10.6	15.7	7.9	9.1	9.1	9.1	9.1	10.6	9.1	15.7	14.6
8	11.9	10.6	15.7	9.1	9.1	9.1	9.1	9.1	9.1	9.1	15.7	13.1
9	11.9	11.9	15.7	13.1	7.9	9.1	10.6	10.6	9.1	7.9	14.6	13.1
10	11.9	28.3	14.6	7.9	9.1	9.1	10.6	10.6	9.1	7.9	15.7	14.6
11	11.9	45.8	14.6	9.1	7.9	9.1	9.1	10.6	9.1	7.9	14.6	14.6
12	11.9	10.6	14.6	9.1	9.1	10.6	9.1	10.6	9.1	7.9	15.7	15.7
13	10.6	23.8	14.6	9.1	16.6	18.5	9.1	10.6	9.1	7.9	15.7	14.6
14	9.1	10.6	15.7	55.9	26.3	11.9	9.1	10.6	9.1	7.9	15.7	14.6
15	9.1	9.1	17.1	219.0	7.9	11.9	9.1	10.6	9.1	7.9	14.6	14.6
16	9.1	9.1	18.5	180.0	7.9	11.9	9.1	10.6	9.1	7.9	14.6	14.6
17	9.1	9.1	23.5	11.9	7.9	111.0	9.1	10.6	9.1	7.9	14.6	14.6
18	9.1	10.6	134.0	13.1	10.6	50.2	10.6	10.6	9.1	7.9	14.6	15.7
19	7.9	11.9	16.1	9.1	10.6	40.9	9.1	10.6	9.1	7.9	14.6	15.7
20	9.1	10.6	9.1	9.1	23.7	20.7	9.1	10.6	9.1	9.1	14.6	14.6
21	9.1	50.2	9.1	9.1	124.0	9.1	9.1	10.6	9.1	10.6	15.7	13.1
22	7.9	45.1	9.1	9.1	9.1	9.1	9.1	10.6	9.1	11.9	14.6	13.1
23	7.9	10.6	9.1	9.1	46.9	9.1	9.1	14.6	9.1	11.9	14.6	13.1
24	7.9	9.1	9.1	9.1	9.1	9.1	9.1	32.6	9.1	11.9	14.6	14.6
25	7.9	9.1	9.1	9.1	10.6	9.1	9.1	30.3	9.1	11.9	14.6	14.6
26	7.9	9.1	9.1	9.1	11.9	10.6	9.1	28.0	9.1	13.1	15.7	15.7
27	9.1	10.6	9.1	9.1	10.6	338.0	9.1	23.5	9.1	13.1	15.7	15.7
28	9.1	10.6	9.1	9.1	9.1	138.0	9.1	18.5	9.1	11.9	17.1	15.7
29	6.7	10.6	9.1	9.1		18.5	9.1	19.7	9.1	11.9	17.1	15.7
30	5.6	10.6	10.6	116.0		11.9	9.1	18.5	10.6	11.9	14.6	
31	4.5		9.1	106.0		10.6		13.1		11.9	14.6	
Total	296.9	442.7	532	1163.4	571.5	1041	280.5	426	285	303.8	464.5	437.8
Mean Daily Discharge	9.6	14.8	17.2	37.5	20.4	33.6	9.3	13.7	9.5	9.8	15	14.6
Runoff in Acre-Feet	589	878	1060	2310	1130	2060	556	845	565	603	921	868
Max. Mean Daily Discharge	11.9	50.2	134	249	124	338	10.6	32.6	10.6	13.1	17.1	15.7
Min. Mean Daily Discharge	4.5	3.9	9.1	7.9	7.9	9.1	9.1	9.1	9.1	7.9	13.1	13.1

1978-79
MEAN DAILY DISCHARGE OF PACOIMA DAM FLUME IN PACOIMA CANYON
In Second Feet

Station No. F 118 AR

DAY	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	4.0	3.9	3.9	0.1	50.0	44.9	63.7	48.1	*	*	*	*
2					*	104.2	61.8	48.1				
3					42.3	101.0	92.6	41.6				
4					35.9	102.0	112.0	51.4				
5					23.3	101.0	86.8	59.3				
6					*	100.0	50.1	59.3				
7						89.0	31.6	58.4				
8						99.0	32.0	58.4				
9	4.0					86.0	43.6	58.4				
10	3.9					75.7	52.5	58.4				
11						75.7	52.5	57.5				
12						75.7	18.9	57.5				
13						75.7	31.4	56.6				
14						75.7	78.6	56.6				
15						67.8	77.6	65.3				
16						54.3	69.4	77.6				
17						56.9	56.3	73.2				
18			3.9			54.8	56.3	37.1				
19			47.4			54.8	56.3	0.1				
20			80.5			54.8	56.3	0.1				
21			41.6			53.9	54.8	0.1				
22			0.1			53.0	53.9	0.1				
23						53.0	53.0	0.1				*
24						53.0	48.1	0.1				85.0
25						53.0	48.1	0.1				134.4
26						36.1	48.1	0.1				131.0
27						0	48.1	0.1				129.0
28				0.1	*	0	48.1	0.1				80.6
29				48.9		9.9	48.1	0.1				.2
30		3.9		79.8		49.5	48.1	0.1	*			.2
31	3.9		0.1	79.5		35.0		0.1		*	*	
Total	121.8	117.0	241.0	211.0	141.5	1953.1	1680.7	1024.1	+	+	+	550.2
Mean Daily Discharge	3.92	3.9	7.8	6.8	5.9	63.0	56	33.0	+	+	+	18.3
Runoff in Acre-Feet	241.6	232.06	478.0	418.5	320.1	3873.9	3333.6	2031.0	+	+	+	1091.3
Max. Mean Daily Discharge	4.0	3.9	80.5	79.8	50.0	104.2	112.0	77.6	+	+	+	134.4
Min. Mean Daily Discharge	3.9	3.9	0.1	0.1	+	0	18.9	0.1	+	+	+	*

1978-79
MEANS DAILY DISCHARGE OF BIG TUJUNGA DAM OUTFLOW
In Second Feet

Station No. F 168 R

DAY	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	14.3	12.6	12.4	30.4	100	76	166	51.9	29.1	19.7	8.4	6.0
2	15.7	12.6	12.4	30.4	96	63.9	168	55.9	23.1	17	7.1	5.8
3	15.7	12.6	12.6	30.4	80	66.6	156	50.5	13	18.4	7.5	5.3
4	14.3	12.6	12.9	26.4	76	65.3	67.5	45.2	17	21	5.8	5.3
5	15.7	12.7	14.3	33.9	112	62.6	106	50.5	26.4	16.7	6.8	4.9
6	15.7	12.7	15.7	133	47.2	66.6	90	49.2	27.7	23.7	6.7	5.3
7	14.3	12.9	15.7	76.2	+	70	82	7.9	27.7	21	6.3	6.0
8	14.3	12.9	15.7	62.6	+	76	77.3	49.2	27.7	18.4	5.4	6.7
9	15.7	12.9	15.7	70.6	+	73.3	77.3	47.8	26.4	22.4	4.1	6.8
10	15.7	12.9	15.7	67.9	+	72	81.2	45.2	25.1	23.7	4.3	6.2
11	15.7	12.7	17	73.3	+	70.6	118	45.2	25.1	21	5.4	6.4
12	14.3	12.6	15.7	77.3	.1	62.6	142	77.2	25.1	14.3	5.6	4.3
13	14.3	12.6	14.3	86.0	.1	84	142	45.2	25.1	12.9	4.6	4.1
14	14.3	12.6	15.7	94	123	78.7	132	43.8	25.1	13	5.5	3.9
15	13	12.4	15.7	106	190	65.3	116	46.3	25.1	12	5.4	6.2
16	13	12.4	15.7	199	190	58.6	61.6	114	23.7	11.6	4.4	5.9
17	13	12.6	17	217	168	57.2	1.2	100	26.4	11.6	3.8	5.3
18	13	12.6	23.7	130	134	57.2	82.5	65.3	27.7	11.3	3.8	5.5
19	13	12.7	29.1	90	100	69.3	168	59.9	31.8	11.2	5.6	5.8
20	12.9	12.7	29.1	84	49.2	88	114	47.8	27.7	10.9	5.5	4.7
21	12.9	12.6	29.1	77.3	78.6	80	84	43.2	27.7	10.9	5.3	4.6
22	12.9	12.4	29.1	97.5	126	80	82	40.6	19.7	9.6	5.6	2.9
23	12.9	12.4	29.1	16.3	122	76	140	45.2	19.7	8.9	5.5	4.2
24	12.7	12.4	30.4	9.1	114	67.9	76	33.1	22.4	8.5	5.4	3.3
25	12.7	12.4	30.4	7.1	124	59.9	58.6	42.5	22.4	9.5	5.0	3.2
26	12.7	12.3	30.4	5.4	122	53.2	54.5	46.5	22.4	6.6	5.4	2.8
27	12.7	12.3	30.4	1.8	94.5	85.8	54.5	42.5	19.7	6.8	5.4	3.5
28	12.7	12.4	30.4	2.4	61.2	389	54.5	38.5	18.4	6.4	5.5	3.4
29	12.7	12.4	30.4	.8		526	53.2	37.1	17	7.7	5.4	3.3
30	12.6	12.4	30.4	63.2		370	53.2	42.5	15.7	7.5	5.5	4.1
31	12.4		30.4	102		174		39.8		8.5	5.3	
Total	427.8	373.1	666.6	2103.2	2307.9	3345.6	2839.1	1591.4	713.1	422.3	171.3	148.1
Mean Daily Discharge	13.8	12.6	21.5	67.8	82.4	108	94.6	51.3	23.8	13.6	5.5	4.9
Runoff in Acre-Feet	849	748	1320	4170	4580	6640	5630	3160	1410	838	340	294
Max. Mean Daily Discharge	15.7	12.9	30.4	217	190	526	168	114	31.8	23.7	8.4	6.8
Min. Mean Daily Discharge	12.4	12.3	12.4	0.8	0	53.2	1.2	33.1	13	6.4	3.8	2.8

Appendix C

WELLS DRILLED AND DESTROYED

WELLS DESTROYED 1977-78 AND 1978-79

Party	LACFCD Well No.	Owner No.
LADWP	4707	
Charles T. Brown	4860C	
W. W. Gohl	4932A	
LADWP	4942A	
City of San Fernando	5969	SF-4
Meurer Engineering, Inc.	5997A	
Meurer Engineering, Inc.	5998A	

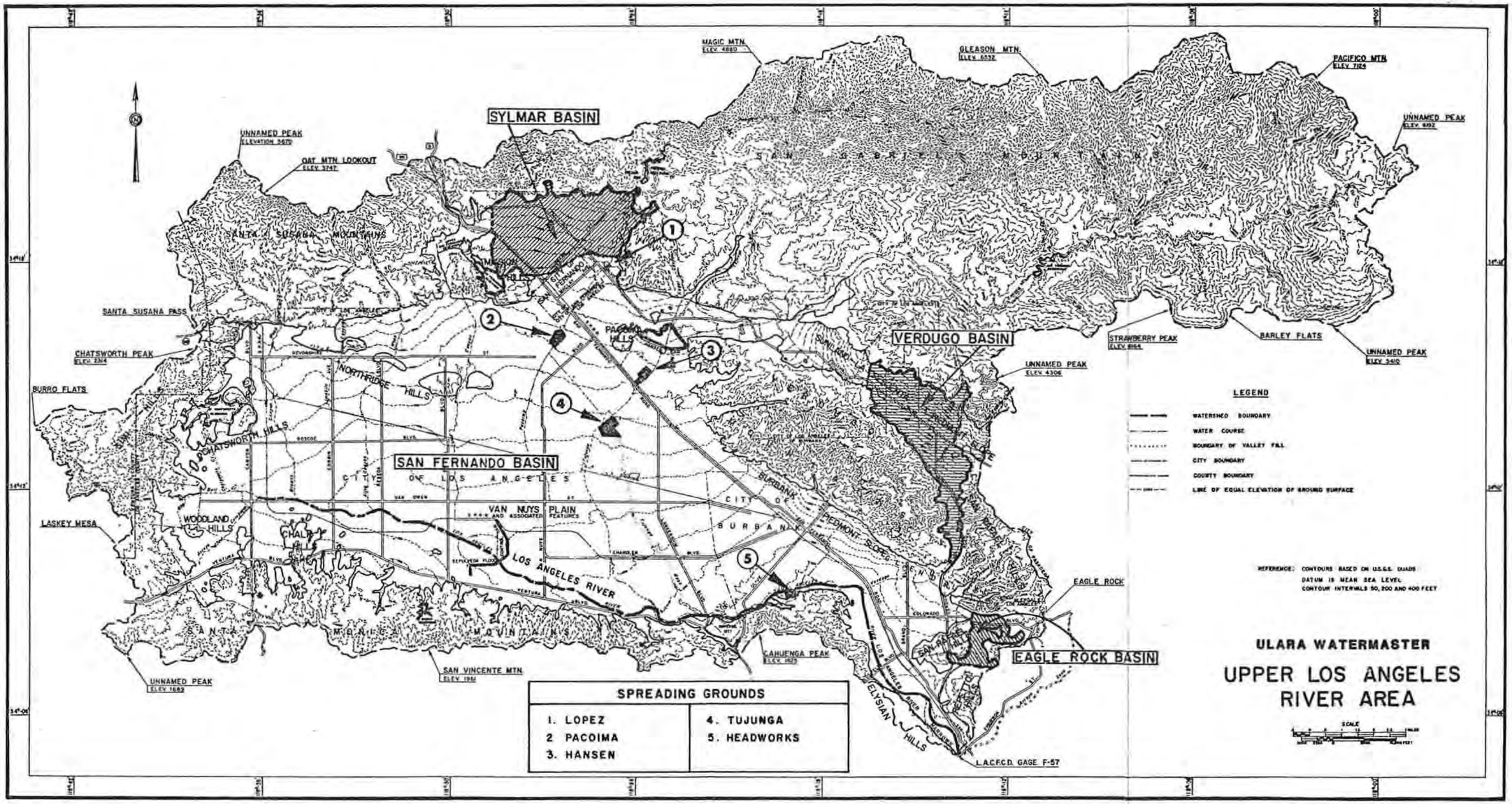
WELLS DRILLED 1977-78 AND 1978-79

LADWP	3893P	HW-30
LACFCD	4905K	
City of San Fernando		SF-4A

Appendix D

PLATES

PLATE 1



ULARA WATERMASTER

UPPER LOS ANGELES RIVER AREA

PLATE 2

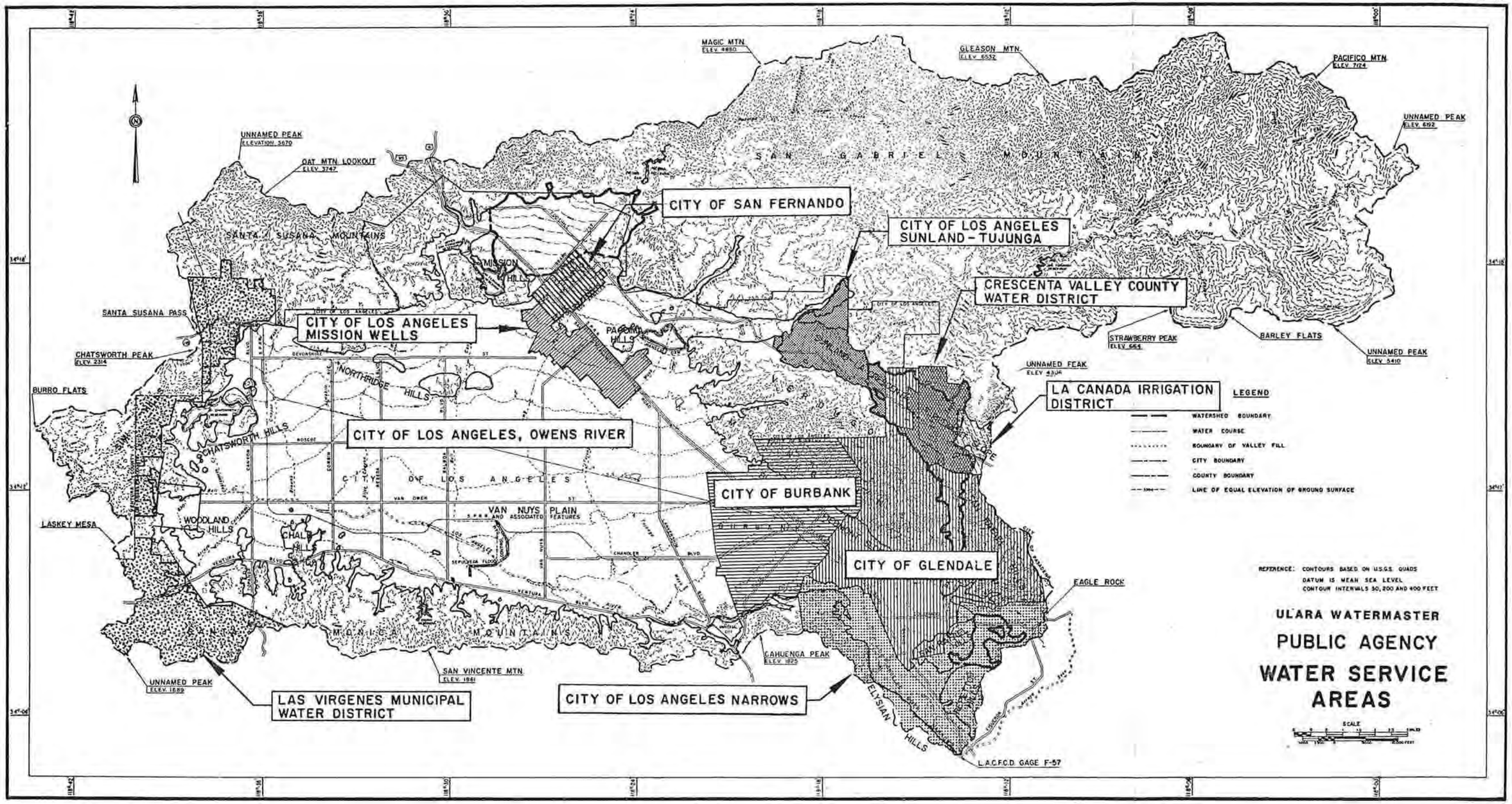
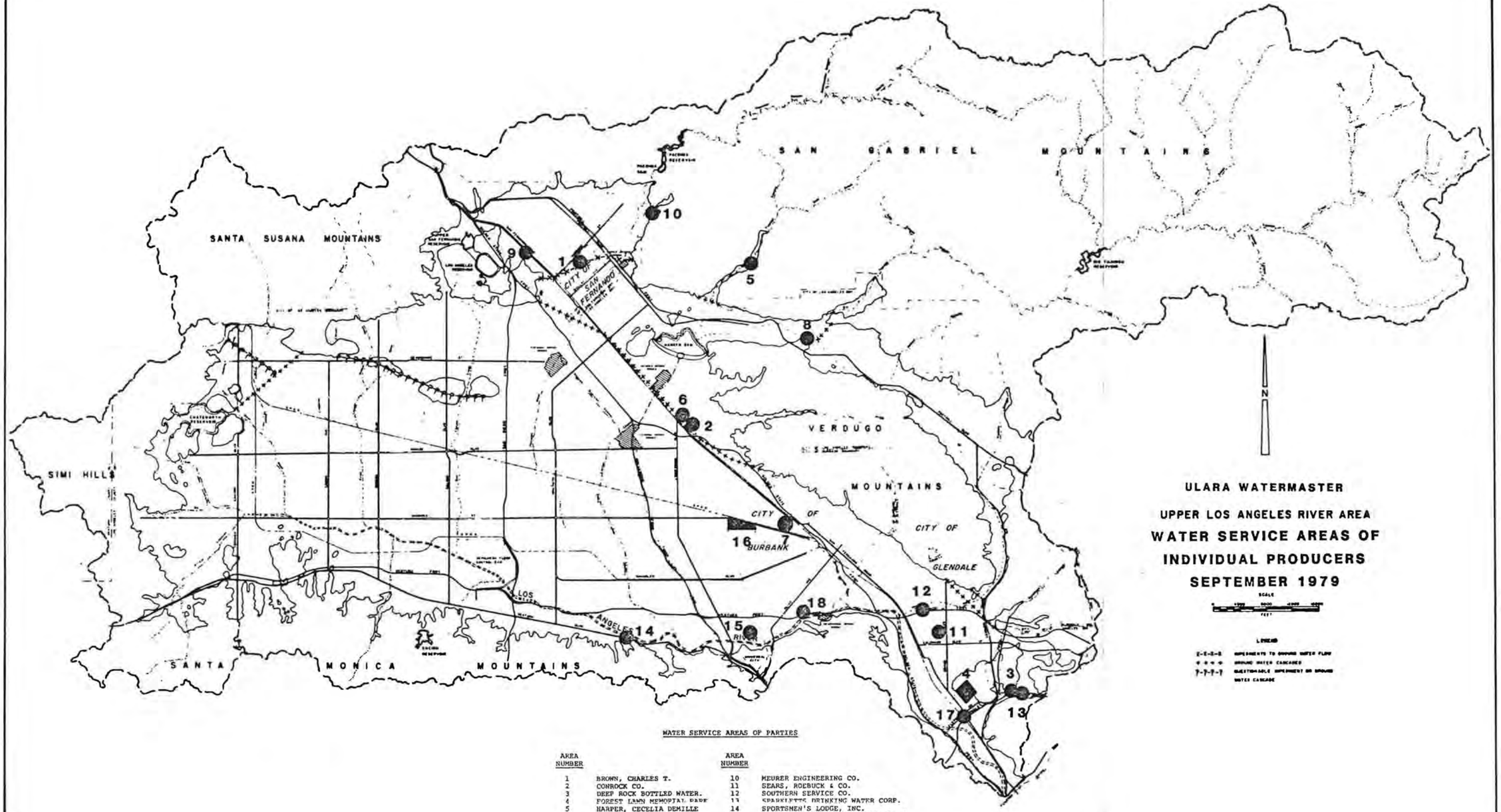

MAGIC MTN
ELEV. 4880
GLEASON MTN.
ELEV. 6532
PACIFICO MTN
ELEV. 7124
UNNAMED PEAK
ELEV. 6192
UNNAMED PEAK
ELEVATION 3670
OAT MTN LOOKOUT
ELEV. 3747
SAN GABRIEL MOUNTAINS
CITY OF SAN FERNANDO
CITY OF LOS ANGELES
SUNLAND-TUJUNGA
CRESCENTA VALLEY COUNTY
WATER DISTRICT
SANTA SUSANA MOUNTAINS
MISSION HILLS
SANTA SUSANA PASS
CITY OF LOS ANGELES
MISSION WELLS
PACOIMA HILLS
STRAWBERRY PEAK
ELEV. 6651
BARLEY FLATS
UNNAMED PEAK
ELEV. 5410
CHATSWORTH PEAK
ELEV. 2314
UNNAMED PEAK
ELEV. 4334
LA CANADA IRRIGATION
DISTRICT
BURRO FLATS
NORTHRIDGE HILLS
CHATSWORTH HILLS
CITY OF LOS ANGELES, OWENS RIVER
CITY OF LOS ANGELES
VAN NUYS PLAIN
WOODLAND HILLS
CHALK HILL
LASKEY MESA
CITY OF BURBANK
CITY OF GLENDALE
EAGLE ROCK
SAN VINCENTE MTN.
ELEV. 1961
CAHUENGA PEAK
ELEV. 1875
UNNAMED PEAK
ELEV. 1889
LAS VIRGENES MUNICIPAL
WATER DISTRICT
CITY OF LOS ANGELES NARROWS
ELYSIAN HILLS
L.A.C.F.C.D. GAGE F-57
LEGEND
WATERSHED BOUNDARY
WATER COURSE
BOUNDARY OF VALLEY FILL
CITY BOUNDARY
COUNTY BOUNDARY
LINE OF EQUAL ELEVATION OF GROUND SURFACE
REFERENCE: CONTOURS BASED ON U.S.G.S. QUADS
DATUM IS MEAN SEA LEVEL
CONTOUR INTERVALS 50, 200 AND 400 FEET
ULARA WATERMASTER
PUBLIC AGENCY
WATER SERVICE
AREAS
SCALE

PLATE 3



ULARA WATERMASTER

UPPER LOS ANGELES RIVER AREA

WATER SERVICE AREAS OF INDIVIDUAL PRODUCERS SEPTEMBER 1979

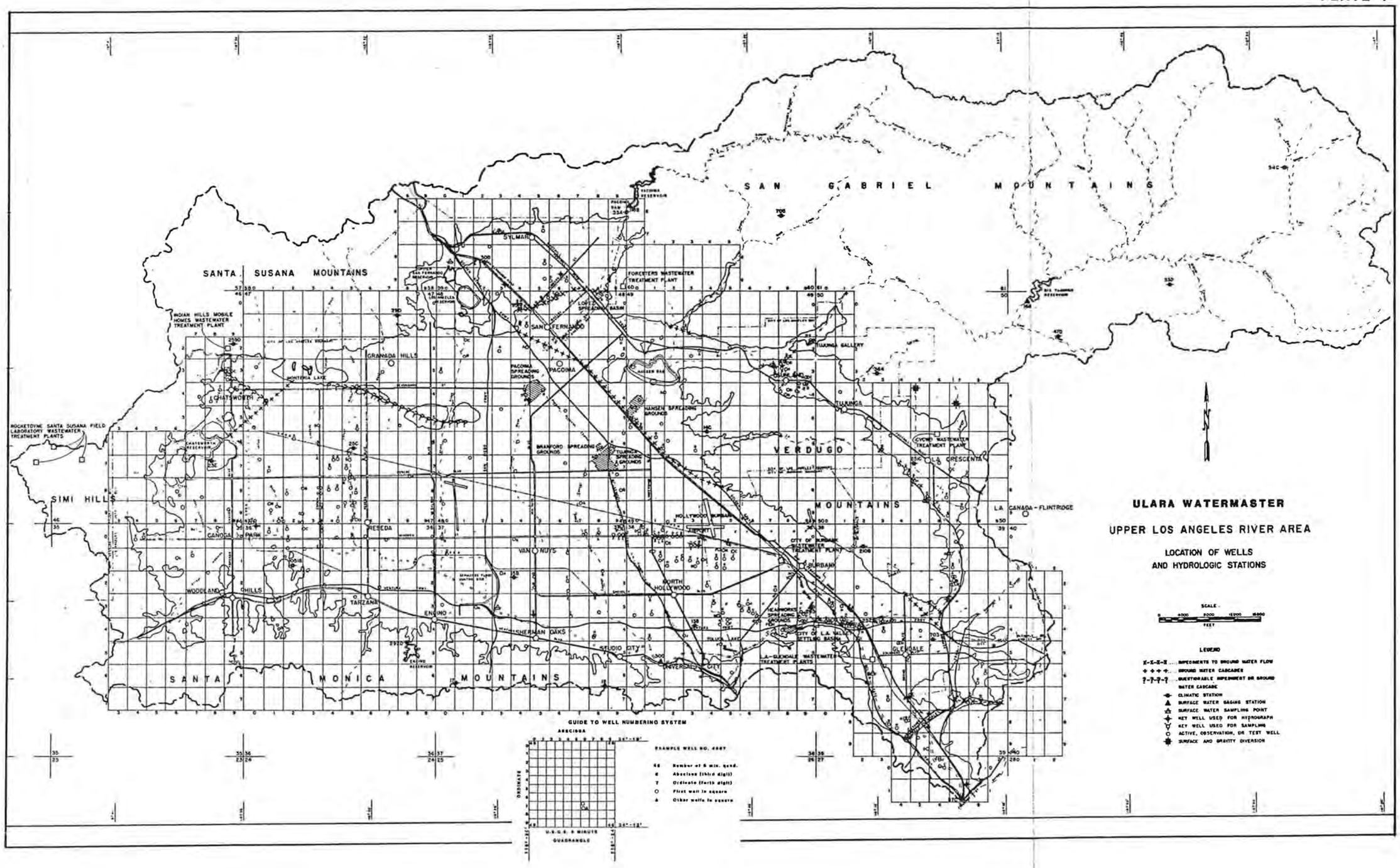
SCALE

LEGEND

WATER SERVICE AREAS OF PARTIES

AREA NUMBER		AREA NUMBER	
1	BROWN, CHARLES T.	10	MEURER ENGINEERING CO.
2	CONROCK CO.	11	SEARS, ROEBUCK & CO.
3	DEEP ROCK BOTTLED WATER.	12	SOUTHERN SERVICE CO.
4	FOREST LAWN MEMORIAL PARK	13	SPARKLETTS DRINKING WATER CORP.
5	HARPER, CECELIA DEMILLE	14	SPORTSMEN'S LODGE, INC.
6	LIVINGSTON-GRAHAM, INC.	15	TOLUCA LAKE PROPERTY OWNERS ASSN.
7	LOCKHEED AIRCRAFT CORP.	16	VALHALLA MEMORIAL PARK
8	MENA, JOHN & BARBARA	17	VAN DE KAMP'S DUTCH BAKERS, INC.
9	MOORDIGIAN, KISAG	18	WALT DISNEY PRODUCTIONS

PLATE 4



ULARA WATERMASTER

UPPER LOS ANGELES RIVER AREA

LOCATION OF WELLS
AND HYDROLOGIC STATIONS

SCALE
0 4000 8000 12000 16000
FEET

LEGEND

- X-X-X-X ... IMPEDIMENTS TO GROUND WATER FLOW
- + + + + ... GROUND WATER CASCADES
- ?-?-?-? ... QUESTIONABLE IMPEDIMENT OR GROUND WATER CASCADE
- CLIMATIC STATION
- SURFACE WATER GAGING STATION
- SURFACE WATER SAMPLING POINT
- KEY WELL USED FOR HYDROGRAPH
- KEY WELL USED FOR SAMPLING
- ACTIVE, OBSERVATION, OR TEST WELL
- SURFACE AND GRAVITY DIVERSION

PLATE 5

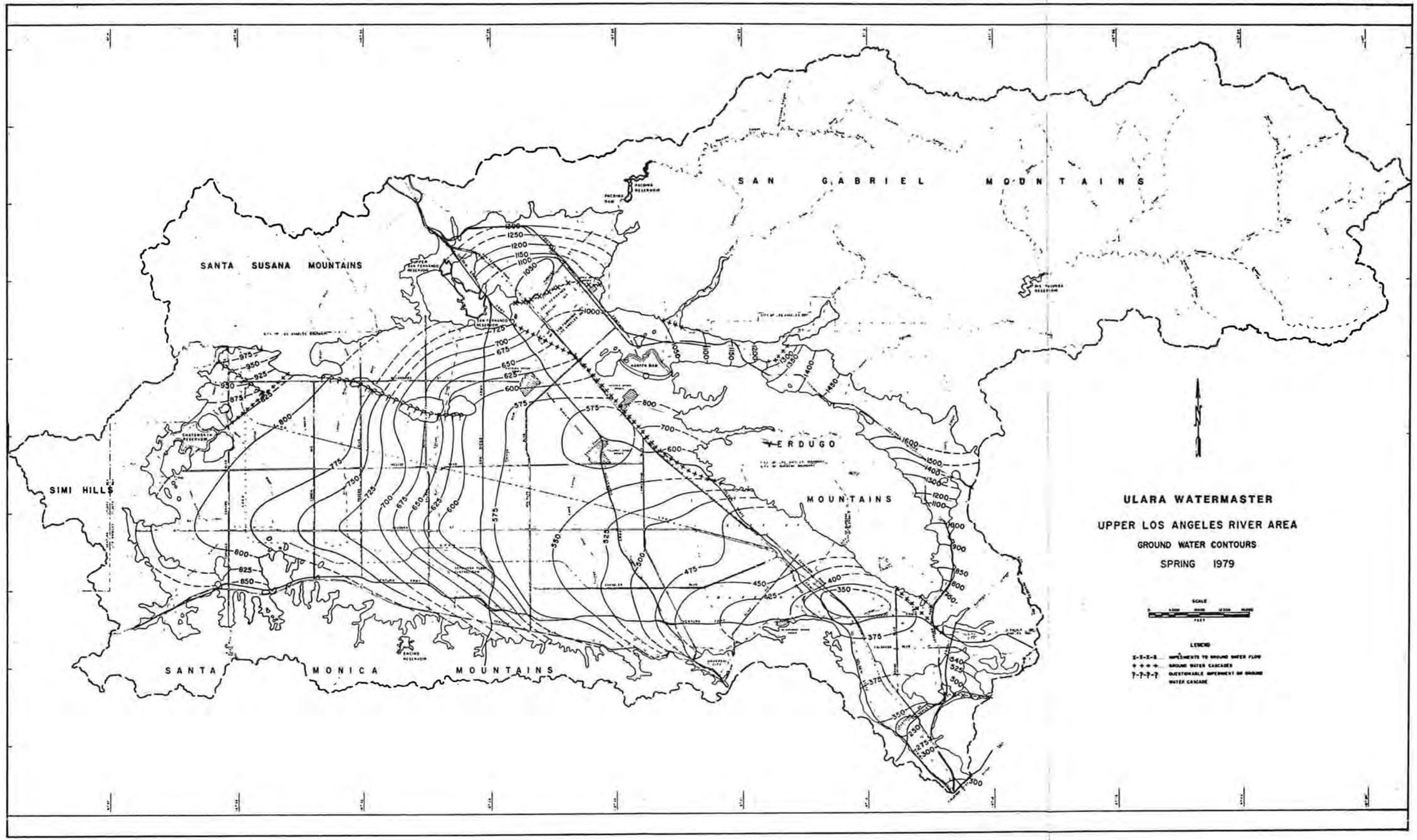
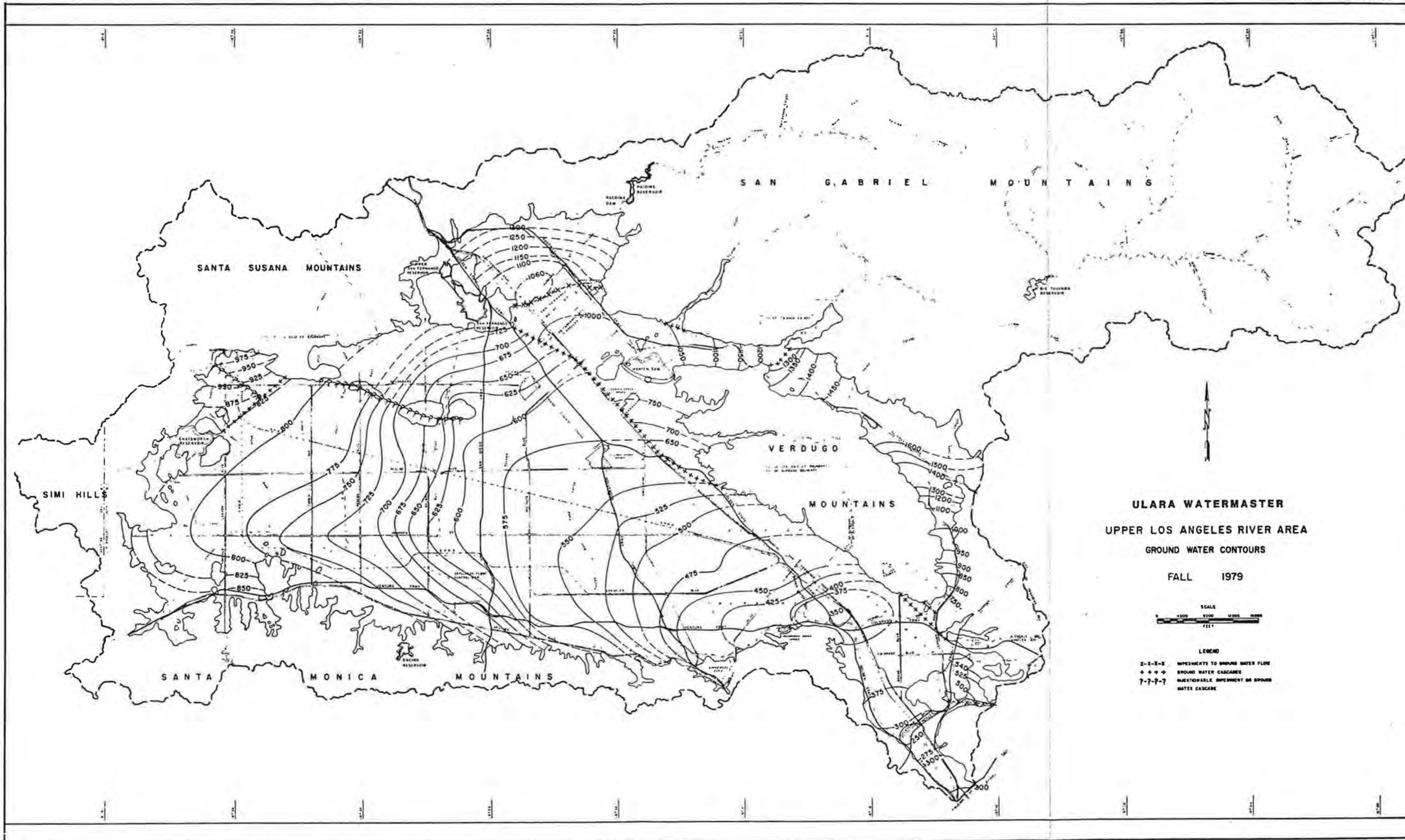
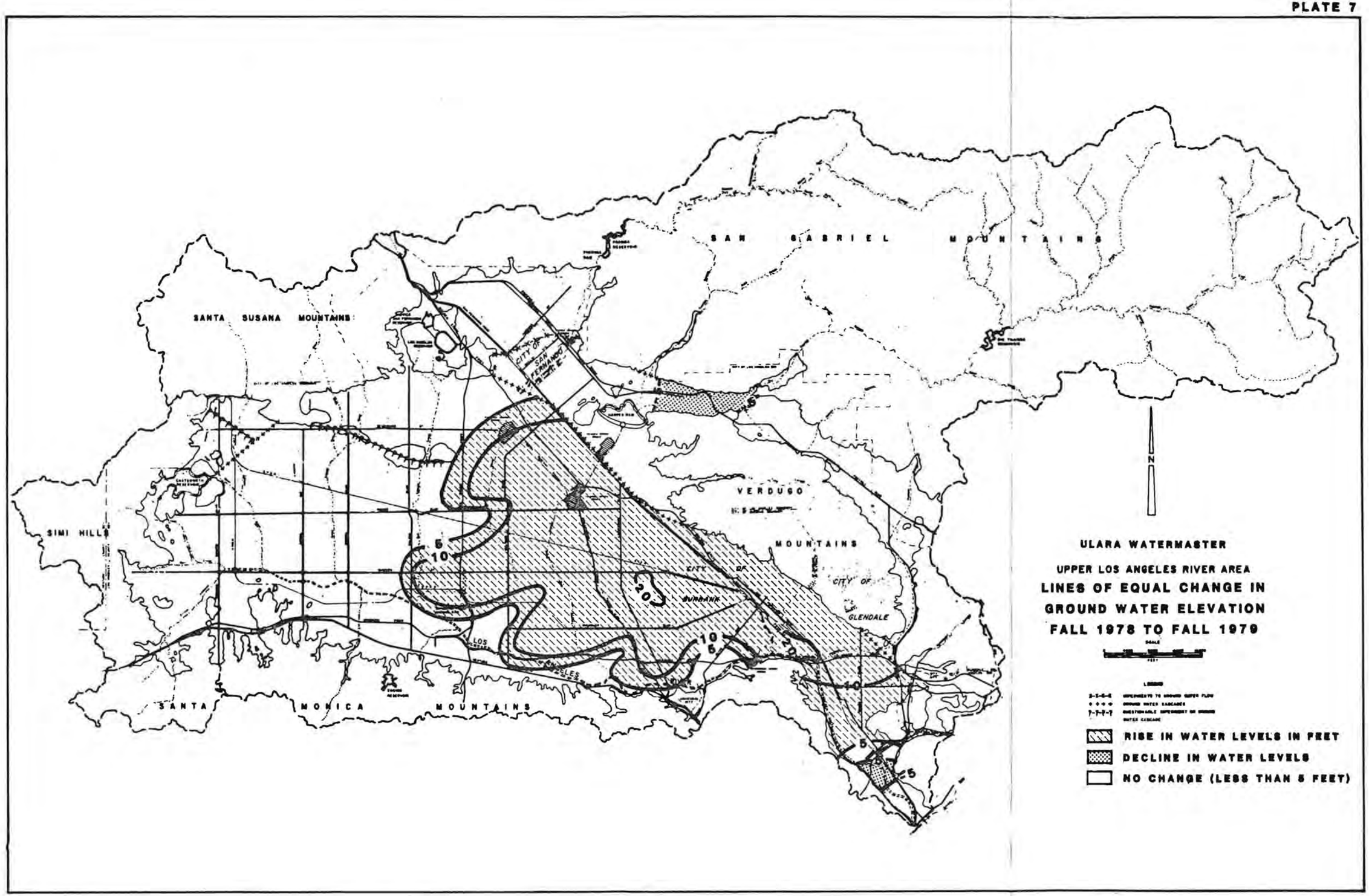

SAN GABRIEL MOUNTAINS
SANTA SUSANA MOUNTAINS
SIMI HILLS
VERDUGO MOUNTAINS
SANTA MONICA MOUNTAINS
PACOIMA RESERVOIR
PACOIMA DAM
HANSEN DAM
ENCINO RESERVOIR
CHATSWORTH RESERVOIR
LOS ANGELES RIVER
N
ULARA WATERMASTER
UPPER LOS ANGELES RIVER AREA
GROUND WATER CONTOURS
SPRING 1979
SCALE
LEGEND
S-S-S-S IMPEDIMENTS TO GROUND WATER FLOW
+ + + + GROUND WATER CASCADES
?-?-?-? QUESTIONABLE IMPEDIMENT OR GROUND WATER CASCADE

PLATE 6


ULARA WATERMASTER
UPPER LOS ANGELES RIVER AREA
GROUND WATER CONTOURS
FALL 1979
SAN GABRIEL MOUNTAINS
SANTA SUSANA MOUNTAINS
SIMI HILLS
VERDUGO MOUNTAINS
SANTA MONICA MOUNTAINS
LEGEND



ULARA WATERMASTER

UPPER LOS ANGELES RIVER AREA

LINES OF EQUAL CHANGE IN GROUND WATER ELEVATION FALL 1978 TO FALL 1979

SCALE

LEGEND

- RISE IN WATER LEVELS IN FEET
- DECLINE IN WATER LEVELS
- NO CHANGE (LESS THAN 5 FEET)