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, 1983 - SEPTEMBER 30, 1984

MAY 1985

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CASE NO. 650079 — COUNTY OF LOS ANGELES

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FOREWARD

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 1983-84 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.

This report describes the water rights in each basin, lists the allowable pumping for the water year 1984-85, and indicates the water in storage to the credit of each party as of October 1, 1984. 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, ground water extractions, ground water 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.

During the 1983-84 Water Year, I reported to the Court that the Sylmar Basin was in a condition of overdraft. The Cities of Los Angeles and San Fernando were in agreement with this finding. On March 22, 1984, Judge Hupp signed an order (effective October 1, 1984) that pumping within the Sylmar Basin be limited to the Safe Yield. Refer to Appendix D for a copy of the parties stipulation in this matter and the order of the Court.

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.

Sincerely,

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

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ULARA WATERMASTER REPORT FOR WATER YEAR 1983-84

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I. INTRODUCTION

Upper Los Angeles River Area (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 encompases 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; on the south by the Santa Monica Mountains, which separate it from the Los Angeles Coastal Plain; 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 rainfall and 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 San Gabriel Mountains and 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

The water rights in ULARA were 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, it al., Defendants, signed March 14, 1968 by the Honorable Edmund M. Moor, Judge of the Superior Court. Prior to the judgment, numerous 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 occurence 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 locations of the beds, banks, and channels of the Los Angeles River and its tributaries; the areas, limits, and directions of flow of all groundwater within the area; the historic extractions of ground water in the basin and their quality; and 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, 123 Cal Rept 1) and the Trial Court Judgment on remand on January 26, 1979.

The City of Los Angeles filed an appeal from the Judgment of the Trial Court 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 filed a petition for hearing with 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 filed its opinion on the 20-year San Fernando Valley water litigation. This opinion, 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 MWD until the end of 1971, and had never prior thereto imported any water from outside ULARA.

The Supreme Court reversed the principal judgment of the Trial Court and remanded the case back to the Superior Court for further proceedings consistent with the Supreme Court's opinion. On remand the case was assigned to the Honorable Harry L. Hupp, Judge of the Superior Court of Los Angeles County.

The Final Judgment, signed by the Honorable Harry L. Hupp, was entered on January 26, 1979. Copies of the Final Judgment are available from th ULARA Watermaster, Post Office Box 111, Room 1466, Los Angeles, California 90051. 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 water rights, the calculation of imported return water credit, storage of water, stored water credit, and arrangements for a physical solution for certain parties as suggested by the Supreme Court.

On August 26, 1983, the Wastermaster reported to the Court pursuant to Section 10.2 of the Judgment that the Sylmar Basin was in a condition of overdraft. In response to the Watermaster's letter and a minute Order of this Court, the Cities of Los Angeles and San Fernando responded by letters to the Court, agreeing with the Watermaster's report on overdraft. On March 22, 1984, Judge Harry L. Hupp signed a stipulation ordering, effective October 1, 1984, that the Cities of Los Angeles and San Fernando shall be limited in their pumping to bring the total pumping within the safe yield of the basin, less any rights exercised by the private parties. See Appendix D for a copy of this stipulation.

The extraction rights under the Judgment and Sylmar Basin Stipulation are as follows:

San Fernando Basin

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

Imported Return Water. Los Angeles, Glendale, and Burbank 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.
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 acre-feet per year
Van de Kamp	120 acre-feet per year
Toluca Lake	100 acre-feet per year
Sportsmens Lodge	25 acre-feet per year

As to Glendale's Water:

Forest Lawn	400 acre-feet per year
Environmentals Inc.	75 acre-feet per year

As to Burbank's Water:

Valhalla	300 acre-feet per year
Lockheed	25 acre-feet per year

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

Sylmar Basin

Native and Imported Return Water. San Fernando and Los Angeles have equal rights to pump the safe yield of the basin (6,210 acre-feet), with each party allowed to pump 3,105 acre-feet per year. 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 for the acreage owned by them to meet beneficial uses. Pumping by the private parties will be subtracted from the safe yield, with Los Angeles and San Fernando pumping the remainder.

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

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. Sparkletts and Deep Rock have rights to extract water chargeable to Los Angeles.

Watermaster Service

In preparing the 1983-84 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, 1984, 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

Le Val Lund
Bruce W. Kuebler (Alternate)

City of San Fernando

Arthur Kidman
Rick Navarro (Alternate)

Crescenta Valley County Water District

Robert K. Argenio
Ray Marsden (Alternate)

Private Parties

Charles Meurer
Roger Meurer

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 1983-84 water year the Administrative Committee met on April 10, 1984. The following items were discussed at this meeting:

1. Status of Watermaster activities within ULARA.
2. MWD's interest in spreading surplus MWD water in San Fernando Basin.
3. Status of new ground water quality monitoring wells in San Fernando Basin.
4. Sylmar Basin Stipulation.
5. City of Glendale draft EIR on Modification to Verdugo Park Ground Water Pickup System status update.
6. Hansen Dam storage problem update.
7. Administrative Committee members revisions.
8. Discharging TCE-contaminated ground water to waste.
9. Potential flooding of landfills by spreading large quanties of water at Hansen and Tujunga Spreading Grounds.
10. Annual report for 1982-83.

Summary of 1983-84 Operating Conditions

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

Rainfall on the valley fill area was 60 percent of normal as compared to 241 percent of normal the year before. Surface runoff leaving the valley at Gage F-57C-R for 1983-84 was 69,870 acre-feet. The amount conserved by the LACFCD in its spreading basins was 11,965 acre-feet, a decrease of 83 percent over last year. Total precipitation falling on the San Fernando Valley and its tributary hill and mountain areas was estimated to be 306,000 acre-feet for the water year 1983-84. Of this total, approximately 52,000 acre-feet flowed from the valley as storm runoff and rising water, leaving 254,000 acre-feet which was beneficially used within the area (83 percent of the total).

Ground water extractions increased in all four basins during 1983-84. Total ULARA extractions amounted to 132,299 acre-feet as compared to an allowable pumping of 108,319 acre-feet. Of this total, 105,099 acre-feet represents the 1983-84 extraction rights of parties in the San Fernando Basin (see 1983-84 Table 15) plus the safe yield values of Sylmar and Verdugo Basins. The remaining 3,220 acre-feet is non-consumptive use pumping (see Table 13). Extractions used within ULARA increased by 31 percent (6461 acre-feet) from last year.

TABLE I

UPPER LOS ANGELES RIVER AREA
SUMMARY OF OPERATING CONDITIONS
1982-83 AND 1983-84

Item		Water Year 1982-83	Water Year 1983-84
1. Parties		22	22
2. Active pumpers		19	19
3. Active nonpumpers (within valley fill)		0	0
4. Valley rainfall, in inches		39.64	9.97
5. Spreading operations, in acre-feet[a/]			
a. LACFCD		60,098	14,168
b. Los Angeles, City of		42,827	24,115
6. Extractions, in acre-feet		82,855	132,299
a. Used in ULARA		20,875	27,336
7. Gross imports, in acre-feet			
a. MWD water		66,155	72,955
b. Owens River water[b/]		451,712	498,738
	Total	517,867	571,693
8. Exports in acre-feet			
a. Owens River water		231,095	234,460
b. Groundwater by Los Angeles		61,980	104,797
	Total	293,075	339,257
9. Imports used in ULARA, in acre-feet		286,772	337,233
10. Reclaimed water, in acre-feet		8,607	12,413
a. Used in ULARA		1,296	2,499
11. Total delivered water used in ULARA, in acre-feet		308,943	367,068
12. Sewage export, in acre-feet[c/]		115,887	118,648

a/ Breakdown of spreading operations as to sources of water is shown in Table 6. Values include native and imported water.

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.

c/ Total of sewage outflow from all four basins, including reclaimed water which is discharged into flood control channel and flows out of basin.

For ULARA, gross imports increased by 53,826 acre-feet, or 10 percent, while imports used within ULARA increased by 18 percent (50,461 acre-feet). Exports of Owens River water increased by 3,365 acre-feet, or 1 percent. The total amount delivered to water users within ULARA was 19 percent greater (58,125 acre-feet) than last year.

Sewage export was 118,648 acre-feet in 1983-84, an increase of 2 percent. Total reclaimed water used in ULARA (cooling towers, irrigation, etc.) increased by 93 percent (1203 acre-feet), while the total water reclaimed increased from 8,607 acre-feet to 12,413 acre-feet, an increase of 44 percent. Most of the reclaimed water is discharged to the Los Angeles River.

A total of 38,283 acre-feet of water, 11,965 native and 26,318 Owens River, was spread during the year, which was a 46 percent decrease from last year in spreading of imported and native water.

Ground water levels decreased by an average of 15 and 5 feet respectively in the central and northeastern part of the San Fernando Basin, decreased by 5 feet in the central portion of the Verdugo Basin, and decreased by an average of 10 feet in the Cities of San Fernando and Los Angeles pumping area of the Sylmar Basin.

Ground water storage for the San Fernando, Sylmar, and Verdugo Basins decreased by 63,180 acre-feet, 4,430 acre-feet, and 2,810 acre-feet, respectively, during 1983-84.

Summary of Allowable Pumping for 1984-85

Table 2 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, 1984.

TABLE 2

SUMMARY OF ALLOWABLE PUMPING FOR ENSUING YEAR 1984-85

(In Acre-Feet)

	Extractions			Stored Water Credit*
	Native	Import Credit	Total	
San Fernando Basin				
Los Angeles	43,660	46,290	89,950	181,229
Burbank	--	4,985	4,985	22,659
Glendale	--	5,188	5,188	19,143
Sylmar Basin				
Los Angeles	--	--	3,105	--
San Fernando	--	--	3,105	--
Verdugo Basin				
Crescenta	--	--	3,294	--
Glendale	--	--	3,856	--

* As of October 1, 1984

Note: Calculation of these values shown in more detail in Tables 14 and 15.

II. WATER SUPPLY CONDITIONS

The present water supply of ULARA consists of ground water recharge from imported water, hill and mountain runoff, and direct precipitation on the valley floor area. This includes runoff from precipitation falling on portions of the San Gabriel, Verdugo, Santa Monica, and Santa Susana Mountains; 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 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 1983-84 water year experienced below average rainfall. The Valley floor received 9.97 inches of rain, whereas the mountains received approximately 11.90 inches. The weighted average of both valley and mountain areas was 11.18 inches, a decrease of 34.89 inches from last year. The 100-year (1881-1981) average precipitation for the valley and mountains is 16.48 inches and 21.91 inches, respectively. Table 3 presents a record of rainfall at 17 key precipitation stations which were used to develop the 100-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 5 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 3

PRECIPITATION[a/]
(Inches)

LACFCD Number	Name	100-Year Mean	1982-83 Precipitation	1983-84 Precipitation	1983-84 Percent of 100-Year Mean
11D	Upper Franklin Canyon Reservoir	18.50	46.6[c/]	11.20	61
13C	Hollywood-Blix[b/]	16.63	41.57	9.31	56
14C	Roscow-Merrill[b/]	14.98	40.14	8.65	58
15A	Van Nuys[b/]	15.30	37.82	8.93	58
17	Sepulveda Canyon-Mulholland Highway	19.82	44.8[c/]	11.54	58
21B	Woodland Hills[b/]	14.60	34.86	8.24	56
23B-E	Chatsworth Reservoir[b/]	15.19	34.29	9.34	61
25C	Northridge-LADWP[b/]	15.16	34.54	9.67	64
33A-E	Pacoima Dam	19.64	41.86	10.65	54
47D	Clear Creek-City School	33.01	70.58	15.73	48
53D	Colby's Ranch	29.04	56.7[c/]	13.20	45
54C	Loomis Ranch-Alder Creek	18.62	42.32	11.52	62
210B	Brand Park	18.13	52.5[c/]	9.10	50
251C	LaCrescenta[b/]	23.31	54.69	13.46	58
259D	Chatsworth-Twin Lakes	18.70		11.02	59
293E	Los Angeles Reservoir[b/]	17.32	38.26	12.73	73
1190	Pacoima Canyon-North Park Ranger Station	23.06	60.0[c/]	14.62	63

Weighted average for valley stations - 9.97 inches (1983-84)
Weighted average for mountain stations - 11.90 inches (1983-84)

a/ Data furnished by Los Angeles County Flood Control District (LACFCD)
b/ Valley Station
c/ Partially estimated

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

Table 4 summarized the monthly runoff for these gaging stations and compares the 1982-83 water year with the 1983-84 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 wastewater discharged by the City of Burbank.

Station F-300-R registers all flow east 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 through lined channels.

The locations of these key gaging stations are shown on Plate 5. The mean daily discharge rates for these six gaging stations during 1983-84 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 wastewater 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 5.

TABLE 4

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	1982-83	2600	28060	10030	46420	36890	201800	37340	18180	4140	2890	8050	9290	405,690
Los Angeles River	1983-84	10770	15520	18080	3700	3190	3970	2930	2600	2530	2190	2240	2150	69,870
F-252-R	1982-83	444	2270	1060	2960	2060	10380	3320	960	507	729	884	1140	26,714
Verdugo Channel	1983-84	- Data Not Available -												
E285-R	1982-83	410	2160	928	3550	2940	9590	2620	951	690	504	924	1240	26,507
Burbank Storm Drain	1983-84	915	1150	1240	395	333	523	485	439	394	351	455	401	7,081
F-300-R	1982-83	619	18150	4920	27080	28,770	157410	29670	1700	3230	2260	6280	7230	287,319
L.A. River Tujunga Ave.	1983-84	- Data Not Available -												
F-168-R	1982-83	234	927	1044	4470	8501	51372	12795	10067	3896	2389	1766	973	98,434
Big Tujunga Dam	1983-84	1648	1758	2506	1320	814	732	579	257	292	69	444	896	11,315
118B-R	1982-83	12	12	455	2547	5252	23195	5855	4330	1490	684	420	238	44,490
Pacoima Dam	1983-84	221	25	12	1104	12	12	+	+	+	+	+	+	1,386

* See Plate 5 for gaging station location.

TABLE 5

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[a/]	Waste Discharge		
Station F57C-R				
1971-72	3,602	8,219	35,049	46,870
1972-73	4,596	8,776	100,587	113,959
1973-74	2,694	6,366	79,818	88,878
1974-75	427	7,318	56,396	64,141
1975-76	261	6,741	32,723	39,725
1976-77	839	7,128	58,046	66,013
1977-78	1,331	7,449	357,883	366,663
1978-79	2,840[d/]	16,450[d/]	119,810	139,100
1979-80	5,500[d/]	16,500[d/]	[b/]	[b/]
1980-81	4,710	19,580	51,940	76,230
1981-82	1,280	18,180	80,000	99,460
1982-83	3,460[d/]	17,610	384,620	405,690
1983-84	3,000[d/]	17,780	49,090	69,870
29-year average 1929-57	6,810	770	30,790	39,950
Station F252 R				
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/]
1979-80	5,150[c/]	0	7,752	12,902
1980-81	5,780	0	2,917	8,697
1981-82	3,710	0	5,367	9,077
1982-83	5,330[d/]	0	21,384	26,714
1983-84	4,000[d/]	0	b/	b/

a/ Includes rising water past rubber dam at Headworks Spreading Grounds, Verdugo Channel, and Los Angeles River Narrows.

b/ Data Not available.

c/ Verdugo Basin. Large increase in 1979-80 due to more accurate measurements.

d/ Estimated.

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 discharge water and reclaimed water. Industrial discharge waters 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 include wastewater from the Burbank reclamation plant.
>
> 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.

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.

Urban development during the past years 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 increased runoff due to urbanization, Pacoima and Hansen Dams, originally built for flood protection,

were utilized to regulate storm flows to recapture the flow in downstream spreading basins operated by LACFCD, as well as the City of Los Angeles. Operation of Hansen Dam for the purpose of spreading water for recharge has become increasingly more difficult due to the sand and gravel that has accumulated within the forebay of the dam.

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 2 shows the locations of these spreading basins. The spreading grounds operated by LACFCD are utilized for spreading native water and imported water under contract. 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 6 summarized the spreading operations for the 1983-84 water year.

Ground Water Table Elevations

During the 1983-84 water year, the Watermaster collected and processed data to determine prevailing ground water conditions in ULARA during the spring and fall of 1984. Plates 7 and 8 show these conditions. Change in ground water surface elevation from fall of 1983 to fall of 1984 as presented in Plate 9 reflects the effects of variations in spreading, ground water extractions, and replenishment from rainfall. Plate 10 provides a diagrammatic sketch of the direction travel time for ground water flow in the San Fernando and Verdugo Basins in 1980.

TABLE 6

1983-84
SPREADING OPERATIONS
(In Acre-Feet)

Month	Native Water Spread by Los Angeles County Flood Control District					Water Spread by City of Los Angeles			Total San Fernando Basin Spreading
	Spreading Basins					Tujunga Spreading Grounds		Headworks Spreading Grounds	
	Branford	Hansen	Lopez	Pacoima Native	Pacoima Owens River	Native Water	Owens River Water		
Oct.	22	0	0	0	0	0	4,900	0	4,922
Nov.	93	0	0	198	396	0	6,344	0	7,031
Dec.	64	2,603	0	559	1023	0	6,568	0	10,817
Jan.	0	2,288	0	514	784	0	6,303	0	9,889
Feb.	0	1,637	0	71	0	0	0	0	1,708
Mar.	15	1,506	0	0	0	0	0	0	1,521
Apr.	5	1,228	0	0	0	0	0	0	1,233
May	0	630	0	0	0	0	0	0	630
June	0	0	0	0	0	0	0	0	0
July	0	169	0	0	0	0	0	0	169
Aug.	0	29	0	0	0	0	0	0	29
Sept.	14	320	0	0	0	0	0	0	334
Totals	213	10,410	0	1,342	2,203	0	24,115	0	38,283

Due to decreased spreading at Hansen, Pacoima and Tujunga spreading grounds during 1983-84, water levels declined approximately 20 feet in the vicinity of these spreading grounds. Water levels decreased by approximately 10 feet in the North Hollywood area due to increased pumping and decreased by approximately 5 feet in the Crystal Springs Area due to an increase in pumping. A decrease of 10 feet in the Cities of San Fernando and Los Angeles well fields area of the Sylmar Basin was caused by an increase in pumping, and an average decrease of 10 feet occurred in the central portion of the Verdugo Basin due to increased pumping by Glendale and Crescenta Valley County Water District.

Figures 1 and 2 depict water levels at key wells with their approximate locations indicated by numbers shown on Figure 2 map.

Water Reclamation

Water reclamation presently provides a source of water for irrigation, industrial and recreational uses, and ground water recharge which occurs in the unlined section of the Los Angeles River. Five wastewater reclamation plants are in operation in ULARA. A tabulation of operating water reclamation plants is shown on Table 7.

Construction of the Donald C. Tillman (Sepulveda Basin) Water Reclamation Plant began in November 1980, with completion expected around November 1984. A portion of the effluent from the 40 million gallons per day (mgd) plant will be used to irrigate the Japanese Garden at the Plant as well as irrigate the Sepulveda Basin recreation area, and the residual will be discharged to the Los Angeles River. In the future this residual discharge may be used for industrial cooling, freeway landscape irrigation, and ground water recharge. Direct groundwater recharge will be allowed only if the Department of Health Services permits it.

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 1983-84 are contained in Table 8.

An Interagency Coordinating Committee has been formed to coordinate the implementation of the Groundwater Quality Management Plan - San Fernando Valley Basin inorder to deal with the organic contaminants TCE and PCE found in the groundwater. Table 9 shows the total number of wells for 1983-84 exceeding the California DOHS action levels for these contaminants.

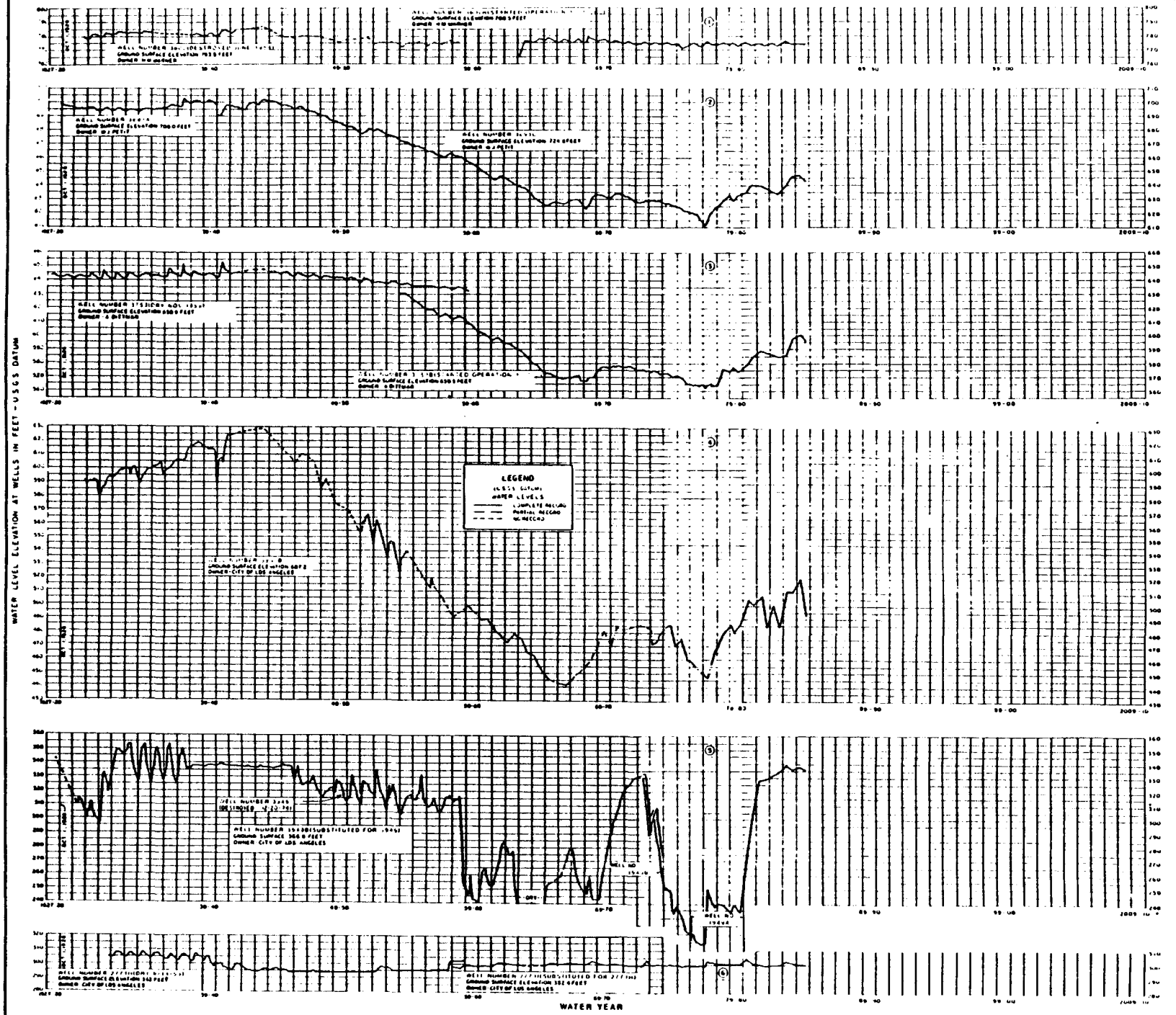

FIGURE 1 - FLUCTUATION OF WATER LEVEL ELEVATION AT WELLS IN THE SAN FERNANDO BASIN

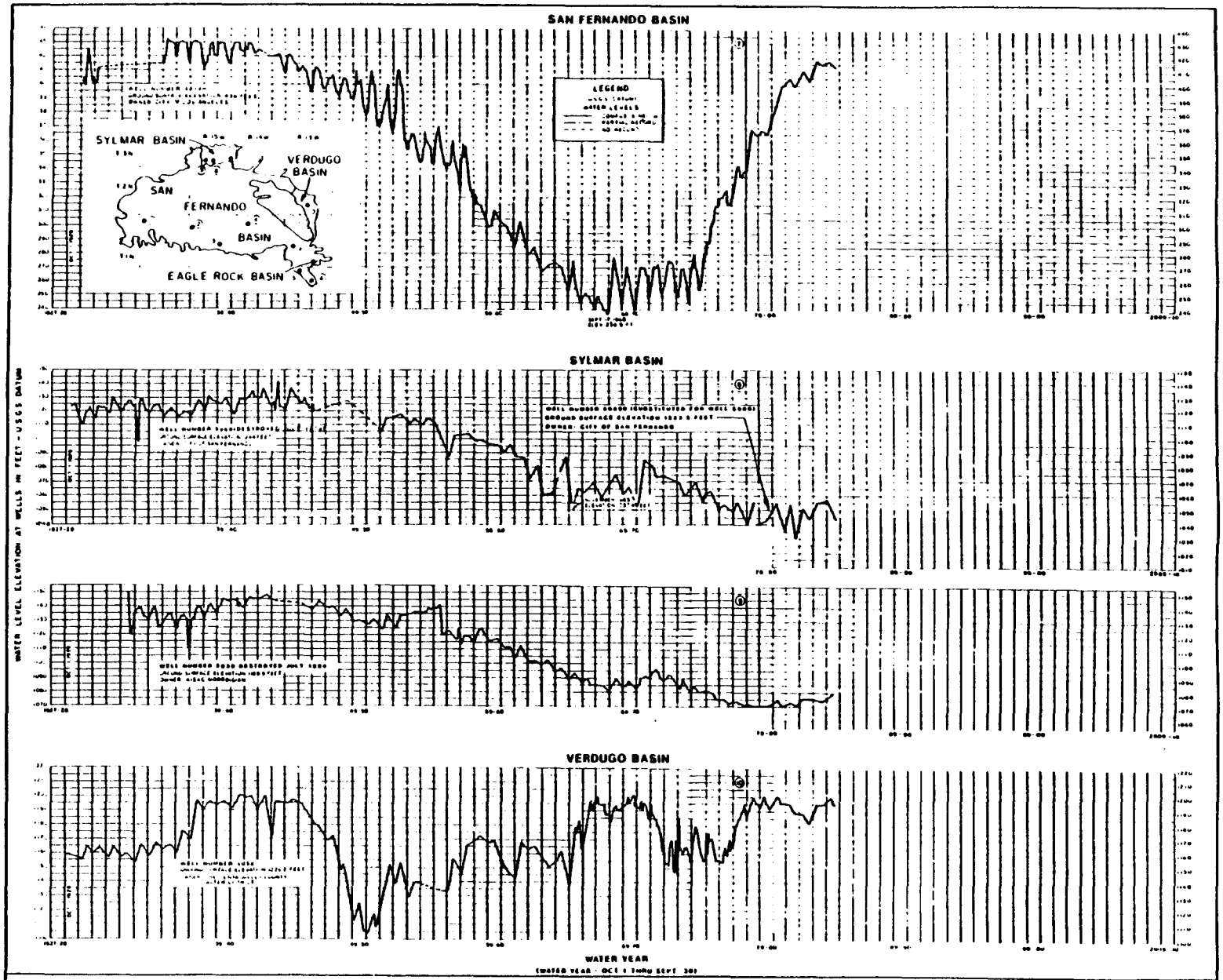

FIGURE 2 - FLUCTUATION OF WATER LEVEL ELEVATION AT WELLS IN THE SAN FERNANDO, SYLMAR AND VERDUGO BASINS

TABLE 7

WATER RECLAMATION PLANTS, 1983-84
(In Acre-Feet)

Plant	Treated	Used in ULARA	Discharged to Los Angeles River
San Fernando Basin			
City of Burbank	5,483	1,129[a/]	4,919
Los Angeles-Glendale	6,829	1,269[b/]	5,646
Indian Hills Mobile Homes[d/]	20	20[c/]	0
Rocketdyne (Santa Susana Field Laboratory)	61	61[c/]	0
The Independent Order of Foresters[e/]	20	20[c/]	0
Total	12,413	2,499	10,565

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

b/ Total water delivered (173 AF) to phosphate plant in Glendale includes 50 percent evaporation and the rest to Los Angeles River; 1076 AF delivered to Griffith Park by City of Los Angeles for irrigation and to Los Angeles-Glendale plant for wash down, cooling, and irrigation; 20 AF used by Cal/Trans for freeway landscape irrigation.

c/ Land irrigation.

d/ Water supply from nearby well.

e/ Water supply from pipeline from LADWP.

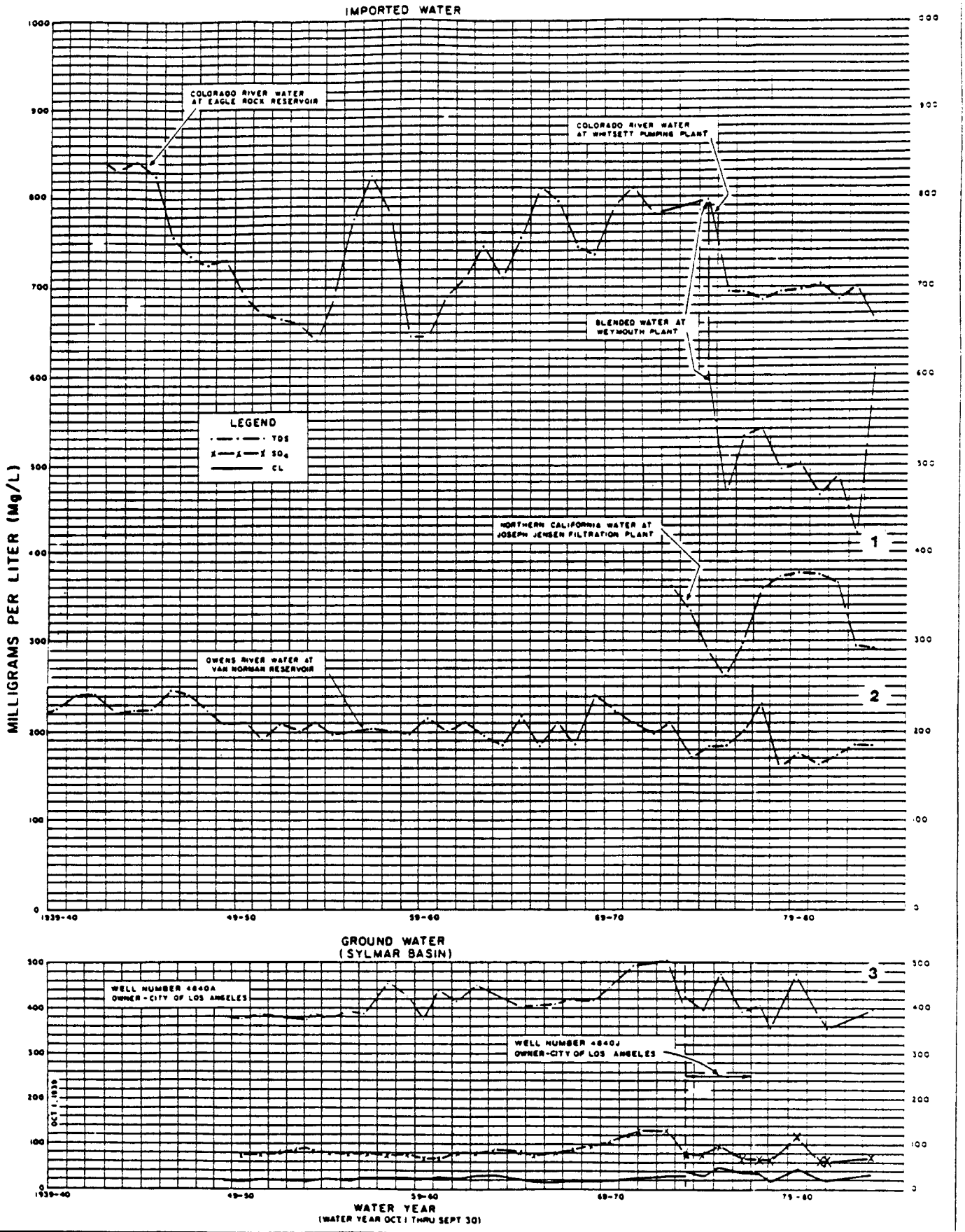

Figure 3— MINERAL CONSTITUENTS OF WATER SOURCES IN THE ULARA

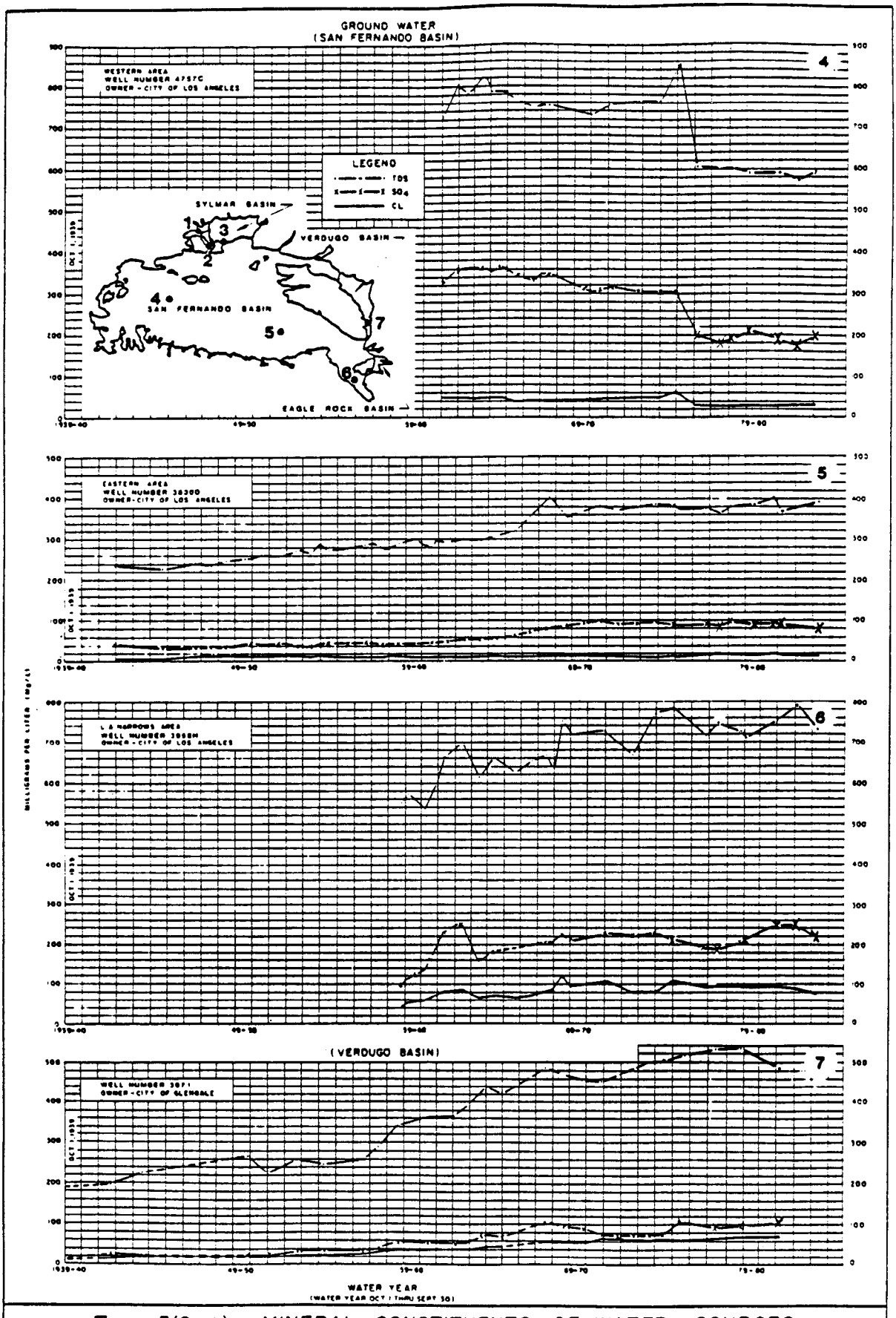

Figure 3(Cont.) — MINERAL CONSTITUENTS OF WATER SOURCES IN THE ULARA

TABLE 8

REPRESENTATIVE MINERAL ANALYSIS OF WATER

MINERAL CONSTITUENTS IN Milligrams per liter (mg/l)
Milliequivalents per liter (me/l)

Well Number or Source	Date Sampled	ECx10[b] at 25°C	Ph	Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	NO_3	F	B	TDS Total Dissolved Solids mg/l	Total Hardness as $CaCO_3$ mg/l
Imported Water																
Blended State Project and Colorado River Water at Eagle Rock Reservoir	83-84	925	8.19	66 3.30	24 1.97	84 3.65	4.0 0.10	— —	133 2.18	231 4.81	75 2.11	0.26 0.02	0.31 0.02	0.17 0.05	583	264
Owens River water Upper Van Norman Reservoir Inlet	83-84	294	7.90	21 1.05	4.4 0.36	28 1.22	3.3 0.08	— —	109 1.78	23 0.48	15 0.42	0.15 0.01	0.59 0.03	0.43 0.12	185	69
State Project Water at Joseph Jensen Filtration Plant (Influent)	83-84	490	8.15	39 1.95	14 1.67	39 1.70	2.2 0.06	0 0	116 1.90	86 1.79	37 1.04	1.05 0.02	0.34 0.02	0.20 0.06	291	154
Surface Water																
Los Angeles River at Sepulveda Blvd.	83-84	1388	8.46	147 6.35	47 3.85	102 4.43	5.4 0.14	12 0.2	206 3.38	408 8.50	98 2.76	2.7 0.19	— —	— —	1085	519
Los Angeles River at Colorado Blvd.	83-84	1080	8.92	87 4.35	40 3.28	80 3.48	5.3 0.14	28 0.46	204 3.34	234 4.88	80 2.25	2.6 0.19	— —	— —	802	386
Burbank Western Wash at Los Angeles River	83-84	1202	8.15	60 3.00	26 2.13	126 5.48	12 0.31	12 0.2	196 3.22	238 4.96	118 3.32	3.0 0.21	— —	— —	780	248
Burbank Reclamation Plant Discharge to Burbank-Western Wash	03/84	--	8.9	— —	— —	127 5.52	— —	— —	— —	221 4.60	138 3.89	3.2 0.23	0.82 0.04	1.88 0.47	810	--
Los Angeles-Glendale Reclamation Plant Discharge to L.A. River	04/11/84	--	7.7	— —	— —	— —	— —	— —	— —	116 2.42	95 2.68	— —	1.34 0.07	0.67 0.19	570	--
Groundwater																
(San Fernando Basin - Western Portion)																
4757C (Reseda No. 6)	10/13/83	944	7.80	115 5.75	31 2.54	43 1.87	4.1 0.05	— —	301 4.94	200 4.17	33 0.93	2.6 0.19	0.31 0.02	0.24 0.07	595	416
(San Fernando Basin - Eastern Portion)																
5820B (No. Hollywood No. 18)	02/14/84	625	7.49	70 3.50	18 1.48	27 1.17	3.3 0.08	— —	238 3.90	80 1.67	17 0.48	4.0 0.29	0.50 0.03	0.22 0.06	394	248
3841G (Burbank No. 18)	08/25/83	460	8.10	49 2.44	8.0 0.66	50 2.18	1.2 0.03	0 0	210 3.44	45 0.72	43 1.20	0.34 0.01	0.30 0.02	0.22 0.06	319	155
3913H (Grandview No. 16)	01/19/82	519	7.60	57 2.83	10 0.82	38 1.65	3.5 0.09	0 0	211 3.47	46 0.96	33 0.93	— —	0.45 0.02	— —	321	185
(San Fernando Basin - L.A. Narrows)																
3950H (Pollock No. 4*)	01/10/84	1160	7.11	109 5.45	36 2.95	82 3.57	3.4 0.09	— —	281 4.60	220 4.58	78 2.20	7.4 0.53	0.40 0.02	0.37 0.10	731	420
(Sylmar Basin)																
4840J (Mission No. 7**)	02/08/84	630	7.60	70 3.50	14 1.15	32 1.39	4.2 0.11	— —	214 3.50	69 1.44	33 0.93	2.8 0.20	0.37 0.02	0.24 0.07	397	235
5959 (San Fernando No. 3)	01/14/82	599	7.50	71 3.56	19 1.59	31 1.35	2.8 0.07	0 0	232 3.81	82 1.71	32 0.89	— —	0.37 0.02	— —	392	267
(Verdugo Basin)																
3971 (Glorietta No. 3)	01/19/82	790	6.70	91 4.57	28 2.30	33 1.44	3.0 0.08	0 0	191 3.13	104 2.17	69 1.95	— —	0.22 0.01	— —	486	351
5069F (CVCWD No. 14)	11/24/82	640	7.20	76 3.80	23 1.9	29 1.26	2.9 0.07	0 0	189 3.1	55 1.1	48 1.35	— —	0.3 0.02	— —	393	285

* Subsurfured for Pollock No. 6
** Subsurfured for Mission No. 5

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 liter (mg/1) for 30 years before 1969, the highest record being 320 mg/1 on April 1, 1946, and the lowest, 150 mg/1 on September 17, 1941. Average TDS concentration for 1983-84 was 185 mg/1, which was slightly lower than the 186 mg/1 for 1982-83.

B. Colorado River water is predominantly 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/1 in August 1955 and a low of 625 mg/1 in April 1959. The average TDS over the 34-year period was approximately 740 mg/1. Tests conducted at the Whitsett Intake Pumping Plant showed an average TDS of 660 mg/1 for 1983-84, a decrease of 6 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/1 and a low of 247 mg/1. Tests of Northern California water are taken at the Joseph Jensen Filtration Plant. Average TDS concentration during 1983-84 was 291 mg/1, a 1 percent decrease from last year.

D. Colorado River and Northern California water were first blended at the Weymouth Plant in May 1975. In the 1983-84 period, TDS had an average value of 608 mg/1 which was a 44 percent decrease from 1982-83. 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 1983-84, low flows in the Los Angeles River at Colorado Boulevard had an average TDS content of 802 mg/1 and a total hardness of 386 mg/1, a decrease and increase over last year of 13 and 3 percent, respectively.

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 4 percent over 1982-83; increased by 6 percent in the eastern part over 1981-82; increased by 12 percent in the Sylmar Basin over 1981-82; and decreased by 9 percent from 1977-78 to 1981-82 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.

Groundwater Quality Management Plan

During 1984 the Interagency Coordinating Committee (ICC) began implementing the eight recommendations of the Groundwater Quality Management Plan - San Fernando Valley Basin (GWQMP-SFVB) and extent of the contamination of San Fernando Valley Basin (SFVB) groundwater by several priority pollutants, primarily Trichloroethylene (TCE) and Tetrachloroethylene (PCE). A subcommittee was set up to implement each of the GWQMP recommendations. More than 20 state and local agencies are participating in the subcommittees, and several noteworthy accomplishments, described below, resulted from subcommittee activities.

Underground Tanks - The cities of Los Angeles and Glendale, and Los Angeles County, passed ordinances in December providing for regulation of underground storage tank construction and monitoring. Guidelines to direct the implementation of these ordinances are being developed by the above governmental units.

Private Sewage Disposal System - On March 28, 1984, partly as a result of an ICC subcommittee's efforts, the Los Angeles City Council adopted a policy to eliminate private sewage disposal systems (PSDS's) used by commercial and industrial organizations within the city. Following this action, the City Bureau of Engineering with assistance from the Department of building and Safety and the City Attorney's Office began writing a City ordinance requiring industrial and commercial properties to hookup to available City sewers and to properly abandon their PSDS's. The ordinance has not yet been completed.

A program to construct sewers in presently unsewered areas was initiated in the City of Los Angeles and sewer construction is currently being implemented in the La Crescenta area of Los Angeles County.

Monitoring - The Los Angeles Department of Water and Power (LADWP) and the Los Angeles City Bureau of Sanitation instituted a program of groundwater quality monitoring at several San Fernando Valley landfills. This program included constructing new monitoring wells at Brandford and Sheldon-Arleta Landfills and taking well water samples at Bradley and Sheldon-Arleta Landfills.

SFVB cities continued to monitor the volatile organic contamination in their production well fields. Table 9 shows the results of this monitoring and the scope of the contamination by listing the SFVB wells that are contaminated above the California State Department of Health Services action levels of 5 ppb for TCE and 4 ppb for PCE.

Water Treatment - The LADWP retained James M. Montgomery Consulting Engineers to determine the feasibility of utilizing an aeration tower which would remove volatile organic chemicals from groundwater. An application for a Permit to Construct was transmitted to the South Coast Air Quality Management District (AQMD) on May 1, 1984, and was approved on September 7, 1984.

The LADWP also began investigating a water treatment system using ultraviolet radiation and ozonation. This process is to decompose the volatile organic chemicals, leaving only harmless by-products such as carbon dioxide, water, and chloride ions. An AQMD permit would not be required for such a process since no discharge would be made to the atmosphere. Both the economic feasibility and the treatment efficiency of this system are being investigated.

Other accomplishments of the subcommittees included developing a public education program and a pilot program for the disposal of small quantities of hazardous waste. All of these efforts were designed to protect and enhance the groundwater quality in the San Fernandos Valley Basin.

TABLE 9

1983-84
ULARA WELL FIELDS* -
WELLS EXCEEDING CALIFORNIA DOHS ACTION LEVELS
FOR TCE AND PCE

	Number of Wells											
	City of Los Angeles								Others			Total
	NH	CS	P	HW	E	W	V	Total	B	G	CVCWD	
TCE Levels (ppb)												
5-20	7**	2	1	1	0	1**	1	13	2	1	0	16
20-100	7**	0	0	5**	1	2**	0	15	2	3	0	20
100	2**	0	0	0	0	0	0	2	1	1	0	4
Total	16	2	1	6	1	3	1	30	5	5	0	40
PCE Levels (ppb)												
4-20	2	0	1	4	0	1	0	8	2	3	5	18
20-100	0	0	0	0	0	0	0	0	1	0	0	1
100	0	0	0	0	0	0	0	0	2	0	0	2
Total	2	0	1	4	0	1	0	8	5	3	5	21

Well Fields:
NH - North Hollywood
CS - Crystal Springs
P - Pollock
HW - Headworks
E - Erwin
W - Whitnall
V - Verdugo
B - City of Burbank
G - City of Glendale
CVCWD - Crescenta Valley County Water District

*Values in table represent an average for year.

**Since several wells in the well fields were not pumped during year, a previous year's TCE annual average value was used for the unpumped wells in order to compile this table.

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 1983-84 water year, the total amount delivered to water users in ULARA was 367,068 acre-feet. Of this total, 27,336 acre-feet was ground water, 337,233 acre-feet was imported, and 2,499 acre-feet was reclaimed water. Refer to Figure 5 for a monthly breakdown. The basin contains 526 wells, of which 124 are active and 402 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 six-year average. The State Supreme Court's opinion, as implemented on remand in the Final Judgment entered on January 26, 1979, provides a similar restriction in ground water pumping. Refer to the 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 1983-84, the difference increased to between 110,000 and 210,000 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 specified ground water basin. The precipitation values were obtained from stations on the valley floor (Table 3).

Ground Water Extractions

Appendix A is the record of groundwater extractions for the 1983-84 water year, and Plate 6 shows the approximate location of the well fields which pumped this water. A total of 119,562 acre-feet was pumped from the San Fernando Basin compared to an allowable pumping of 94,959 acre-feet. Of this total, 91,739

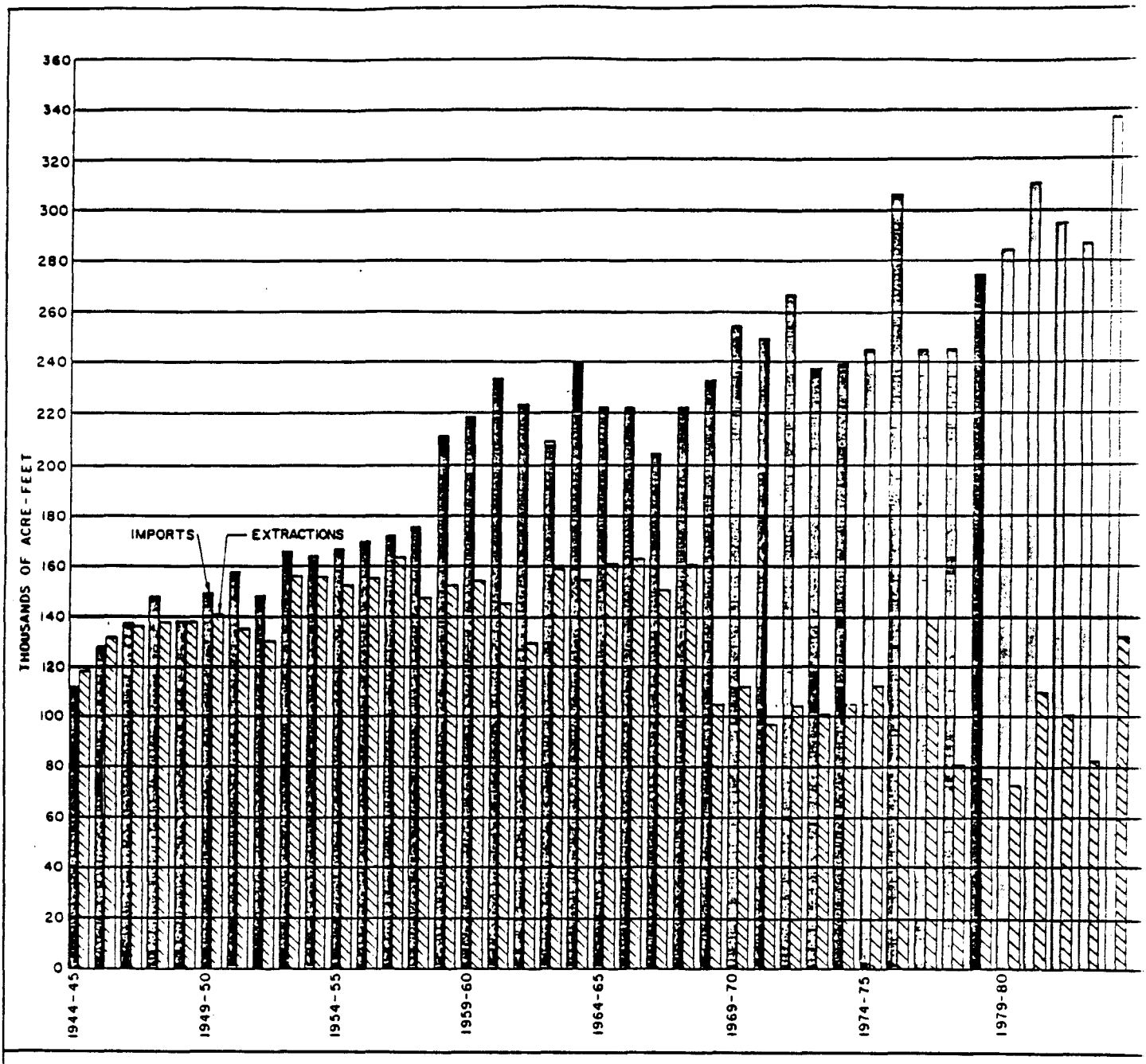

Figure 4- GROUND WATER EXTRACTIONS AND USE OF IMPORTED WATER IN UPPER LOS ANGELES RIVER AREA

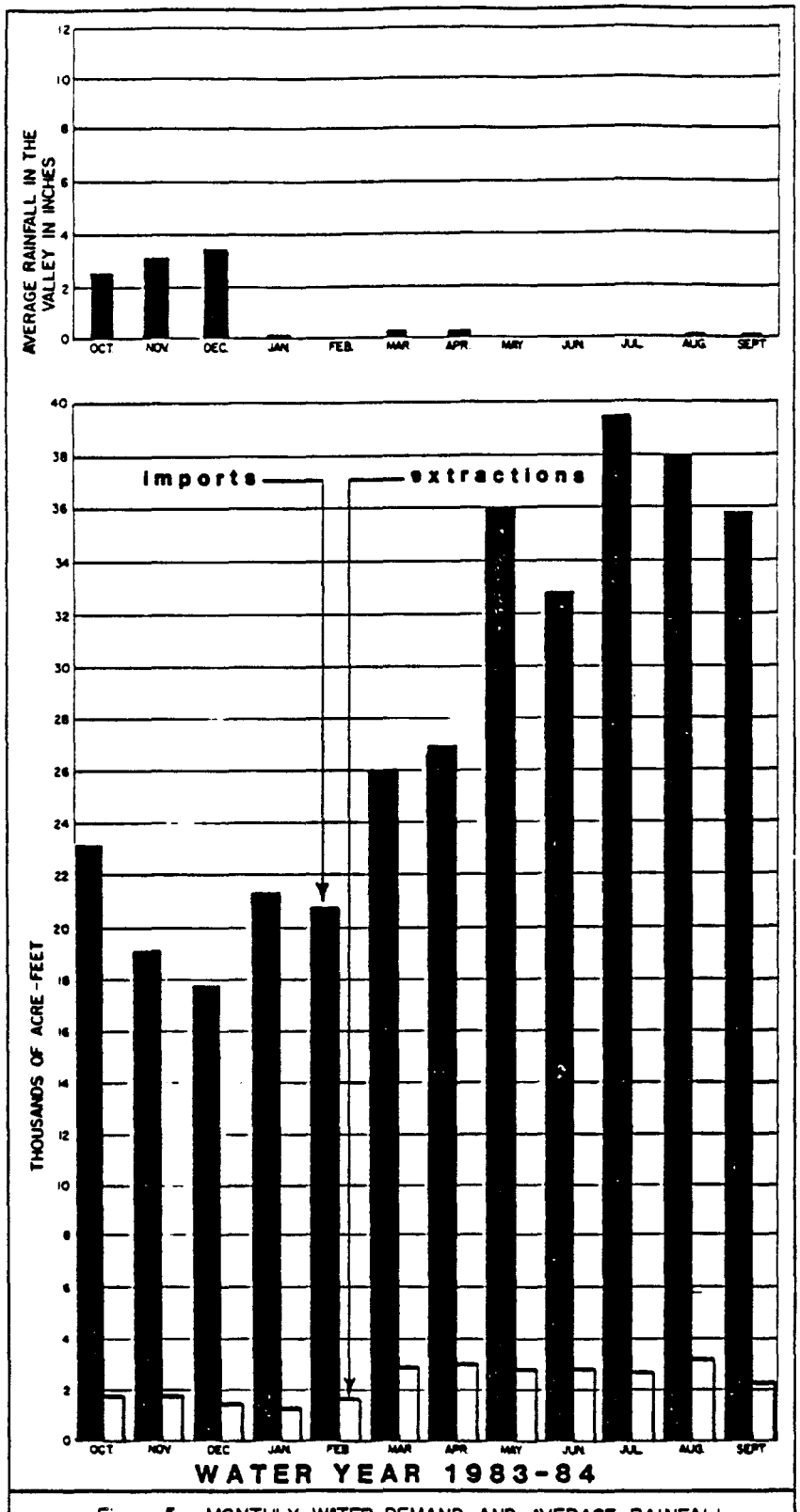

Figure 5 – MONTHLY WATER DEMAND AND AVERAGE RAINFALL IN UPPER LOS ANGELES RIVER AREA

(Used within ULARA)

acre-feet is extraction rights by parties in the San Fernando Basin (see 1983-84 Table 15), with its remaining 3,220 acre-feet being nonconsumptive use pumping (see Table 13). A total of 7,013 acre-feet was pumped from the Sylmar Basin and 5,560 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. Pumping in the Verdugo Basin is less than safe yield due to water quality problems. Construction of water blending facilities in the Verdugo Basin by the City of Glendale was completed in September 1981. This allows poorer quality Verdugo Basin ground water to be blended with MWD water and now enables Glendale to pump its prescriptive right in the Verdugo Basin.

Imports and Exports of Water

Residential, commercial, and industrial expansions in ULARA require 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 consists 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 10 summarized the nontributary imports and exports from ULARA. Ground water imports and exports in and out of ULARA are listed in Table 12.

Physical Data by Basins

The Watermaster has collected and summarized data in Table 12 which show the water supply and disposal in each of the basins.

The information for Table 12 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 13.

San Fernando Basin Allowable Extractions

Table 14 lists San Fernando Basin extraction rights for the Cities of Burbank, Glendale, Los Angeles, and San Fernando for the water year 1984-85. Table 15 shows San Fernando Basin stored water as of October 1, 1983 and October 1, 1984. 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 overextraction of approximately 520,000 acre-feet.

Sylmar Basin. Sylmar Basin consists of confined aquifers with 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.

Change in Ground Water Storage

San Fernando Basin. The change in storage for 1983-84 was -63,180 acre-feet, and the cumulative change in storage from 1954-55 through 1983-84 was -147,110 acre-feet. A comparison is made between the annual precipitation and the cumulative change in storage since the commencement of Watermaster activities for the San Fernando Basin. The average precipitation for the period 1968-69 through 1983-84 was 18.98 inches, compared to a long-term average of 16.48 inches of rainfall. During that time, the basin gained approximately 299,000 acre-feet of stored water. Of this total, 223,000 acre-feet was stored through spreading and in-lieu recharge activities. Thus, the natural change in storage due to an above normal rainfall period was 76,000 acre-feet. Refer to Table 11 for the annual precipitation and change in storage.

Sylmar Basin. The change in storage for 1983-84 was -4,430 acre-feet, and the cumulative change in storage from 1954-55 through 1983-84 was -24,990 acre-feet.

Verdugo Basin. The change in storage for 1983-84 was -2,810 acre-feet, and the cumulative change in storage from 1954-55 through 1983-84 was +22,710 acre-feet.

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* 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 10

ULARA - NONTRIBUTARY WATERS,
IMPORTS AND EXPORTS

(In Acre-Feet)

Source and Agency	1982-83	1983-84
Imports		
MWD water[a/]		
Burbank, City of	19,463	22,735
Crescenta Valley County Water District	2,316	2,906
Glendale, City of	21,913	25,104
Los Angeles, City of	10,727	6,671
La Canada Irrigation District	769	1,016
Las Virgenes Municipal Water District (nonparty)	10,887	14,492
San Fernando, City of	80	31
	66,155	72,955
Owens River water		
Los Angeles, City of	451,712[b/]	498,738[b/]
Total	517,867	571,693
Exports		
Owens River water		
Los Angeles, City of	-231,095	-234,460
Net Import	286,772	337,233

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 11

SAN FERNANDO BASIN
PRECIPITATION COMPARED TO
CHANGE IN STORAGE

Water Year	Valley Floor Precipitation (Inches)	Change in Storage (AF)	Cumulative Change in Storage (AF)
1968-69	29.00	+79240	+79240
1969-70	10.50	-9740	+69500
1970-71	15.57	+15340	+84840
1971-72	8.10	-17090	+67750
1972-73	20.65	+17020	+84770
1973-74	15.75	-21820	+62950
1974-75	14.74	-22580	+40370
1975-76	9.90	-30090	+10280
1976-77	14.19	-50490	-40210
1977-78	35.43	+136150	+95940
1978-79	21.76	+78080	+174020
1979-80	30.25	+99970	+273990
1980-81	11.04	-32560	+241430
1981-82	17.18	-530	+240900
1982-83	39.64	+121090	+361990
1983-84	9.97	-63180	+298810
16-yr. average	18.98		

Note:
(1) 100-year mean precipitation = 16.48 inches.
(2) Stored water through spreading and in-lieu pumping = 223,150 AF.
(3) Natural change in storage = +298,810 AF - 223,150 AF = 75,660 AF.

TABLE 12

1983-84
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	1,063	1,707	112,860	0	3,930	119,560
Used in valley fill	1,063	—[d/]	8,063	—[d/]	—[d/]	—[d/]
Imports						
MWD water	22,735	25,104	3,396	31	14,492	65,758
Owens River water	—	—	489,717	—	—	489,717
Ground water from Sylmar Basin	—	—	3,106	3,555	0	6,661
Ground water from Verdugo Basin	—	2,010	—	—	—	2,010
Reclaimed water	1,129[e/]	173[e/]	1,076[c/]	—	121[e/]	2,499
Exports						
Ground water:						
to Verdugo Basin	—	0	0	—	0	0
out of ULARA	—	—	104,797	—	0	104,797
Owens River water:						
to Eagle Rock Basin	—	—	430	—	—	430
out of ULARA	—	—	234,460	—	0	234,460
MWD:						
to Verdugo Basin	—	3,053	0	—	—	3,053
Total net delivered water	24,927	25,941[a/]	270,468	3,586	18,543	343,465
Water delivered to hill and mountain areas						
Ground water	—[d/]	—[d/]	0	0	0	—[d/]
Owens River water	—	—	45,158	—	—	45,158
MWD water	—[d/]	—[d/]	2,761	0	14,492	—[d/]
Verdugo Basin water	—	—[d/]	—	—	—	—[d/]
Water outflow						
Surface	—	—	—	—	—	69,870[b/]
Subsurface	—	—	—	—	—	420
Sewers	10,054	14,362	75,910	1,760	—	102,086
Reclaimed	4,354	2,823	2,823	—	—	10,000

* See Table 13 for parties included.

a/ Total delivered water to the City of Glendale was 30,535 AF. Verdugo Basin metered sales times 105 percent equaled 4,594 AF. Therefore, the San Fernando Basin delivered water was 25,941 AF (30,535 AF minus 4,594 AF). 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/ Used for irrigation at the Harding and Wilson Golf Courses and Crystal Springs picnic area. Also used for wash down, cooling, and irrigation at the Los Angeles-Glendale plant.

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

e/ Delivered to cooling towers of steam plant in Burbank and phosplate plant in Glendale. Assumed 50 percent evaporation and 50 percent to Los Angeles River. Refer to Table 7 for all others.

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

TABLE 12

1983-84
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	3,106	3,907	0	7,013
Used in valley fill	0	352	0	352
Imports				
Owens River water	8,253	--	--	8,253
MWD water	--	31	--	31
Exports				
Groundwater: to San Fernando Basin	3,106	3,555	0	6,661
Water delivered to hill and mountain area				
Owens River	415	--	--	415
Water outflow				
Surface	--	--	--	5,000[g/]
Subsurface: to San Fernando Basin[f/]	--	--	--	--
Sewers	800	174	0	974

f/ Computation not possible, well destroyed.

g/ Surface outflow is not measured. Calculated average surface outflow by Mr. Laverty - SF Exhibit 57.

TABLE 12

1983-84
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	2,009	3,551	0	0	5,560
Used in valley fill	1,958	k/	0	0	k/
Imports					
MWD water	2,906	3,053	1,016	0	6,975
Owens River water	--	--	--	768	768
Groundwater from:					
San Fernando Basin	--	--	--	--	--
Reclaimed water	--	--	--	--	--
Exports					
Groundwater to:					
San Fernando Basin	--	2,010	--	--	2,010
Water delivered to hill and mountain areas					
MWD water	74	k/	0	0	k/
Owens River water	--	--	--	118	118
Groundwater from:					
Verdugo Basin	51	k/	--	0	k/
San Fernando Basin	--	0	--	0	0
Water outflow					
Surface	--	--	--	--	Data h/ Not Available
Subsurface:					
to Monk Hill Basin	--	--	--	--	300 i/
to San Fernando Basin	--	--	--	--	70
Sewage	1,108	2,420	0	160	3,688

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

TABLE 12

1983-84
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	159	164
Used in valley fill	0	0	0	0
Imports				
Owens River water	430	--	--	430
MWD water	3,275	--	--	3,275
Groundwater	0	0	0	0
Exports				
Groundwater	0	5	159	164
Water delivered to hill and mountain areas				
MWD water	1,925	--	--	1,925
Owens River water	430	--	--	430
Water outflow				
Surface[m/]	--	--	--	--
Subsurface[n/]	--	--	--	--
Sewers	1,900	0	0	1,900

m/ Information not available

n/ Estimated in Supplement No. 2 to Report of Referee 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 13

1983-84
PUMPING BY NONCONSUMPTIVE USE, PHYSICAL SOLUTION, AND PARTIES WITHOUT RIGHTS
SAN FERNANDO BASIN

(In Acre-Feet)

I.	Nonconsumptive Use Parties	
1.	Conrock Co.	2,130
2.	Livingston-Graham, Inc.	80
3.	Sears, Roebuck and Company	27
4.	Sportsmen's Lodge, Inc.	24
5.	Toluca Lake Property Owners Assn.	1
6.	Walt Disney Productions	958
7.	Total	3,220
II.	Physical Solution Parties	
1.	Environmentals Inc.	76
2.	Forest Lawn Cemetery Assn.	400
3.	Sportsmen's Lodge, Inc.	1
4.	Toluca Lake Property Owners Assn.	30
5.	Valhalla Memorial Park	201
6.	Total	708
III.	Parties Without Rights	
1.	Harper, Cecelia De Mille	1
2.	Mena, John and Barbara	1
3.	Total	2
IV.	Total Pumping by Private Parties	3,930

Note: Sportsmen's Lodge and Toluca Lake pumping is part nonconsumptive and part physical solution.

TABLE 14

1984-85
SAN FERNANDO BASIN EXTRACTION RIGHTS
(In Acre-Feet)

Item	Cities of		
	Burbank	Glendale	Los Angeles
	(1)	(2)	(3)
1. Delivered water 1983-84	24,927	25,941	270,468
2. Import delivered 1983-84	--	--	--
3. Delivered to hill & mountain 1983-84	--	--	47,919
4. Delivered to valley fill 1983-84	--	--	222,549
5. Percent recharge	20%	20%	20.8%
6. Return water extraction right 1984-85	4,985	5,188	46,290
7. Native safe yield	0	0	43,660
8. Total extraction right 1984-85	4,985	5,188	89,950

Items 1, 2 & 3 = Table 12
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
Item 7 = Article 4.2.4, page 11 of Judgment
Item 8 = Item 6 + Item 7
-- = Data not required

TABLE 15

STORED WATER
SAN FERNANDO BASIN
(In Acre-Feet)

	Cities of		
	Burbank	Glendale	Los Angeles
	(1)	(2)	(3)
1982-83			
1. Stored water as of Oct. 1, 1982	16,876	12,900	135,219
2. Delivered water 1981-82	22,120	22,354	194,221
3. Return water extraction right 1982-83	4,424	4,471	40,398
4. Native safe yield	0	0	43,660
5. Total extraction right for 1982-83	4,424	4,471	84,058
6. Extractions for year	2,002*	1,028	65,189
7. Physical solution extractions	(167)	(460)	31
8. Spread water	0	0	32,237
9. Stored water as of Oct. 1, 1983	19,298	16,343	185,667
1983-84			
10. Delivered water 1982-83	22,118	22,541	226,611
11. Return water extraction right 1983-84	4,424	4,508	39,147
12. Native safe yield	0	0	43,660
13. Total extraction right for 1983-84	4,424	4,508	82,807
14. Extractions for year	1,063	1,708	112,855
15. Physical solution extractions	(201)	(476)	31
16. Spread water	0	0	26,318
17. Stored water as of Oct. 1, 1984**	22,659	19,143	181,229

Items 3 & 11 = Items 2 & 10 x percent recharge
Items 5 & 13 = Items 3 + 4 & 11 + 12, respectively
Item 9 = Items 1 + 5 - 6 - 7 + 8
Items 7 & 15 = All subtracted from Los Angeles
col. (1) = Valhalla pumping
col. (2) = Forest Lawn & Environmentals Inc. pumping
col. (3) = Toluca Lake & Sportsmens Lodge pumping. Only consumptive use portion charged to Los Angeles.
Item 17 = Items 9 + 13 - 14 - 15 + 16
* = Excludes 185 AF of Burbank Well No. 10 pumping discharged to waste while testing for TCE.
** = Does not include return flow occurring during water year 1983-84.

APPENDIX A

GROUNDWATER EXTRACTIONS

1983-1984 WATER YEAR

GROUND WATER EXTRACTIONS

(Acre-Feet)

LACFCD Well No.	Owners Designation	Extractions Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Total
							San Fernando Basin							
City of Burbank														
3841C	6A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.20	89.48	108.16	19.91	128.28	352.03
3851E	12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	54.33	65.37	44.34	79.34	244.88
3851K	13A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.15	61.29	87.59	71.65	68.92	304.60
3841G	18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15	57.01	60.77	17.43	25.16	161.52
Party Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.00	262.11	321.89	153.33	301.70	1063.03
Conrock Co.														
4916A	2	16.53	7.80	40.00[E]	46.84	82.73	78.52	70.49	82.22	74.60	142.83	126.58	101.82	870.96
4916	3	85.22	89.34	40.00[E]	49.47	102.61	107.94	102.38	117.50	110.03	99.52	158.50	196.55	1259.06
Party Total		101.75	97.14	80.00	96.31	185.34	186.46	172.87	199.72	184.63	242.35	285.08	298.37	2130.02
Environmentals Inc.														
3934A	M050A	0.01	0.00	0.00	0.00	4.81	10.91	10.06	10.79	10.23	9.49	8.01	11.57	75.88
Forest Lawn Cemetary Assn.														
3947A	2	4.09	1.72	0.00	-	15.59	18.26	15.17	13.58	14.95	0.00	1.67	3.02	88.05
3947B	3	7.17	3.03	0.11	-	29.56	32.35	27.47	24.79	37.50	5.17	25.42	19.63	212.20
3958K	7	7.47	25.80	6.11	-	13.86	15.39	12.54	13.68	4.81	0.00	0.00	0.00	99.66
Party Total		18.73	30.55	6.22	-	59.01	66.00	55.18	52.05	57.26	5.17	27.09	22.65	399.91
City of Glendale														
3924N	STPT 1	47.91	32.32	25.38	19.79	0.73	1.64	0.01	6.38	6.23	7.41	32.71	56.96	237.47
3924R	STPT 2	1.15	0.62	0.54	0.00	0.11	0.44	0.00	0.35	5.03	0.68	0.49	2.56	11.97
GVENT	GVENT	127.67	137.49	88.69	82.86	91.45	76.11	89.92	78.87	109.56	126.75	125.22	323.47	1458.06
Party Total		176.73	170.43	114.61	102.65	92.29	78.19	89.93	85.60	120.82	134.84	158.42	382.99	1707.50
Harper, Cecelia DeMille														
4940A	North	0.10[E]	0.10[E]	0.10[E]	0.10[E]	0.10[E]	0.10[E]	0.10[E]	0.10[F]	0.10[E]	0.10[E]	0.10[E]	0.10[E]	1.20
Livingston-Graham, Inc.														
4916B	SnVal	0.00	0.00	0.00	3.61	5.49	8.64	6.71	8.44	5.56	7.32	9.11	24.84	79.72
City of Los Angeles														
3914L	CS-45	0.00	0.00	0.00	0.00	0.00	71.01	235.06	233.95	198.78	156.45	0.00	0.00	895.25
3914M	CS-46	64.81	205.95	333.31	234.44	219.58	127.25	318.83	324.77	314.17	304.18	328.42	283.04	3058.75
CS Total		64.81	205.95	333.31	234.44	219.58	198.26	553.89	558.72	512.95	460.63	328.42	283.04	3954.00
3831H	E-1	0.00	154.18	0.07	0.00	106.59	291.69	177.73	273.74	259.44	259.41	247.71	229.06	1999.62
3821I	E-2A	215.80	145.69	227.21	132.74	53.86	225.97	209.83	189.14	184.32	184.28	171.08	170.98	2110.90
3831G	E-3	191.46	102.73	0.05	0.00	6.04	36.55	116.39	215.84	208.20	202.53	187.77	171.19	1438.75
3921F	E-4	215.11	186.82	188.94	0.00	5.62	207.14	197.32	184.28	162.67	155.07	143.39	136.43	1782.79
3831F	E-5	0.00	0.00	0.07	0.00	0.00	0.00	0.00	155.88	0.00	0.00	0.00	0.00	155.95
3821H	E-6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	126.31	234.48	237.24	230.83	226.82	1055.68
3811F	E-10	0.00	181.52	100.37	0.00	5.56	194.15	184.62	188.78	183.68	184.76	164.26	128.72	1516.42
E Total		622.37	770.94	516.71	132.74	177.67	955.50	885.89	1333.97	1232.79	1223.29	1145.04	1063.20	10060.11

E - Estimated

1983-84 WATER YEAR

GROUND WATER EXTRACTIONS

(Acre-Feet)

LACFCD Well No.	Owners Designation	Extractions Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Total
						San Fernando Basin (Cont'd)								
3894BB	H-25	89.81	379.04	16.23	0.00	102.87	399.80	334.74	390.54	363.18	281.09	307.62	385.70	3050.62
3893L	H-26	0.00	0.00	0.07	0.00	0.00	0.00	8.88	0.00	0.00	0.00	0.00	0.00	8.95
3893K	H-27	0.00	0.00	0.14	0.00	0.00	0.00	36.73	0.00	0.00	0.00	0.00	0.00	36.87
3893N	H-29	16.14	0.00	0.14	0.00	0.00	0.00	18.99	484.62	187.79	0.00	0.00	0.00	707.68
3893P	H-30	250.09	514.60	567.89	457.30	0.00	0.00	56.80	556.64	523.65	38.41	19.74	0.00	2985.12
H Total		356.04	893.64	584.47	457.30	102.87	399.80	456.14	1431.80	1074.62	319.50	327.36	385.70	6789.24
3800	NH-2	193.18	305.56	308.79	0.00	141.37	313.62	292.72	305.65	280.58	290.25	292.47	281.91	3006.10
3780A	NH-4	171.37	175.76	167.17	0.00	77.96	191.39	168.14	163.80	153.65	157.32	161.27	156.34	1744.17
3810S	NH-5	0.00	0.00	0.14	0.00	0.00	167.31	160.10	1.52	0.00	0.00	0.00	0.00	329.07
3770	NH-7	122.04	111.50	0.07	0.00	84.55	215.06	200.58	198.37	188.02	191.09	192.40	184.69	1688.37
3810	NH-11	0.00	0.00	0.05	0.00	0.00	0.00	1.47	0.00	0.00	0.00	0.00	0.00	1.52
3810A	NH-13	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
3810B	NH-14A	0.00	17.47	0.05	0.00	0.00	0.00	10.74	2.11	0.00	0.00	0.00	0.00	30.37
3790B	NH-15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	106.70	121.44	228.14
3820D	NH-16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	124.82	299.54	299.86	288.91	1013.13
3820C	NH-17	273.19	159.41	0.02	0.00	154.32	376.47	360.63	364.74	348.74	205.05	0.00	0.00	2242.57
3820B	NH-18	224.61	185.03	0.00	22.38	220.64	59.87	68.66	362.88	345.98	354.52	353.68	344.93	2543.18
3830D	NH-19	0.00	0.00	0.09	0.00	0.00	0.00	78.79	43.64	0.00	0.00	168.76	0.00	291.28
3830C	NH-20	83.98	196.24	0.00	0.00	128.81	144.47	52.55	278.58	266.65	271.74	270.82	262.97	1956.81
3830B	NH-21	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
3790C	NH-22	205.24	300.55	264.30	53.99	144.06	316.32	295.94	298.69	283.82	290.87	292.70	280.88	3027.36
3790D	NH-23	309.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	309.97
3800C	NH-24	0.00	0.00	0.09	266.88	351.33	369.42	351.40	364.08	344.97	353.19	356.34	342.63	3100.33
3790F	NH-25	158.61	366.44	319.35	0.00	155.65	381.09	351.79	346.60	322.80	321.63	160.47	0.00	2884.43
3790E	NH-26	214.19	351.45	308.86	0.00	141.67	0.00	67.17	352.37	337.97	348.23	359.58	345.27	2826.76
3820F	NH-27	71.37	227.89	230.01	0.00	38.29	0.00	44.26	171.95	0.00	0.00	22.98	0.00	806.75
3810K	NH-28	0.00	0.00	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.00	0.90
3800D	NH-30	173.33	160.49	0.07	20.57	182.78	290.34	211.32	105.28	298.37	307.60	307.72	271.58	2329.45
3810T	NH-31	0.00	0.00	0.09	0.00	0.00	297.71	343.16	361.25	343.53	349.31	346.79	328.97	2370.81
3770C	NH-32	82.42	91.44	0.05	0.00	58.82	0.00	26.68	136.55	118.69	112.74	109.57	99.06	836.02
3780C	NH-33	251.13	146.99	0.07	19.31	140.73	104.89	257.67	235.06	237.65	242.47	246.08	237.49	2119.54
3790G	NH-34	190.54	300.55	299.57	9.62	204.25	327.71	291.05	285.08	268.30	273.99	269.10	251.38	2971.14
3830N	NH-35	133.38	149.27	0.07	14.07	90.29	222.48	214.30	213.09	205.07	210.65	209.62	203.40	1865.69
3790H	NH-36	287.47	452.34	440.45	13.68	246.01	178.10	445.23	452.57	430.33	439.42	432.97	416.55	4235.12
3790J	NH-37	277.34	438.64	429.46	29.20	288.32	459.05	432.95	440.57	420.99	431.96	429.27	421.61	4499.36
3810M	NH-38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.47	332.67	514.37	514.19	494.61	1857.31
3810N	NH-39	0.00	0.00	0.00	0.00	0.00	0.00	94.08	501.66	479.43	488.98	486.25	464.65	2515.05
3810Q	NH-41	112.49	34.41	0.14	0.00	15.59	502.60	473.88	476.40	461.69	475.30	480.95	457.07	3490.52
3810R	NH-42	232.10	206.50	0.11	12.17	159.34	393.37	371.88	350.51	325.83	333.57	52.53	0.00	2437.91
3790K	NH-43A	0.78	205.24	461.46	14.42	292.47	502.60	477.25	485.70	465.29	479.27	305.51	461.89	4151.88
NH Total		3768.73	4583.17	3231.57	476.29	3317.25	5813.87	6144.39	7300.17	7385.84	7743.06	7228.58	6718.23	63711.15
3904J	CS-52(#1)	0.68	0.38	0.33	0.42	0.49	0.60	0.60	0.75	0.64	0.97	0.70	0.78	7.34
3904J	CS-52(#2)	0.63	0.34	0.30	0.37	0.44	0.54	0.54	0.68	0.58	0.88	0.64	0.70	6.64
CS Total		1.31	0.72	0.63	0.79	0.93	1.14	1.14	1.43	1.22	1.85	1.34	1.48	13.98

GROUND WATER EXTRACTIONS

(Acre-Feet)

LACFCD Well No.	Owners Designation	Extractions Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Total
3859E	R-6	98.27	98.14	102.04	94.01	88.04	93.32	81.61	71.86	65.08	67.61	65.89	55.44	978.31
3859F	R-7	0.00	0.00	0.00	0.00	0.00	0.00	47.41	86.43	75.99	77.71	73.46	70.48	431.48
R Total		98.27	98.14	102.04	94.01	88.04	93.32	129.02	158.29	141.07	145.32	139.35	125.92	1409.79
3850B	R-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.46*	5.46*
4992A	TGPLT	0.00	0.00	0.00	0.00	51.81	57.69	54.18	59.09	63.68	53.97	60.97	57.05	458.44
3863H	V-1	0.00	0.00	0.00	0.00	0.00	90.24	163.38	165.27	157.51	161.11	159.80	153.12	1050.43
3853F	V-2	106.80	76.22	0.05	0.00	13.54	107.09	108.70	112.33	106.82	109.21	107.74	104.68	953.18
3863J	V-4	39.30	171.47	7.62	0.00	17.22	193.89	179.85	169.54	149.40	143.18	135.65	133.10	1340.22
3863L	V-11	305.99	297.20	12.72	145.87	125.32	309.48	268.21	301.88	283.29	290.27	289.03	277.14	2906.40
3853G	V-13	16.67	68.41	2.94	15.38	38.48	20.11	67.15	66.02	62.93	62.58	57.83	53.01	531.51
3843M	V-16	190.86	80.99	96.79	196.83	123.39	195.69	184.83	180.26	164.72	159.64	149.61	140.77	1864.38
3854F	V-22	0.00	47.29	51.91	51.58	13.52	0.00	9.89	52.23	53.79	51.42	49.91	45.68	427.24
V Total		659.62	741.58	172.05	409.66	331.47	916.50	982.01	1047.53	978.46	977.41	949.57	907.50	9073.36
3820E	W-1	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
3821B	W-2	0.00	0.00	120.66	375.71	0.83	0.00	70.48	361.96	340.06	201.52	185.45	331.66	1988.33
3821C	W-3	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
3821D	W-4	0.00	0.00	0.00	177.48	314.26	410.49	395.23	394.77	380.74	388.87	389.37	372.59	3223.80
3821E	W-5	248.85	245.02	238.52	132.83	182.16	205.58	183.45	173.90	171.86	169.10	152.60	147.25	2251.12
3831J	W-6A	344.36	330.86	319.15	351.63	265.41	336.32	318.21	306.52	308.38	247.02	309.16	257.69	3694.71
3832K	W-7	234.16	105.69	0.05	7.09	94.12	116.67	45.59	220.52	90.31	68.25	232.30	214.58	1429.33
3832L	W-8	22.52	165.61	23.97	11.04	206.15	184.80	71.24	367.47	346.70	341.30	316.12	280.86	2337.78
3832M	W-9	189.17	80.17	56.13	190.84	77.18	91.67	97.50	180.79	168.34	167.29	159.18	142.40	1600.66
3842E	W-10	6.20	33.49	32.03	109.46	48.07	108.22	67.26	101.47	94.72	92.54	86.89	78.47	858.82
W Total		1045.26	960.84	790.74	1356.08	1188.18	1453.75	1248.96	2107.40	1901.11	1675.89	1831.07	1825.50	17384.78
City of Los Angeles Total		6613.41	8254.98	5731.52	3161.31	5477.80	9889.83	10455.62	13988.40	13291.74	12600.92	12011.70	11373.08	112860.31
Mena, John & Barbara														
4971J	4971J	0.08[E]	0.08[E]	0.08[E]	0.08[E]	0.08[E]	0.08[E]	0.08[E]	0.08[E]	0.08[E]	0.08[E]	0.08[E]	0.08[E]	0.96
Sears Roebuck & Co.														
3945	3945	4.72	0.20	0.20	0.39	0.00	0.31	2.51	2.51	3.09	5.45	5.48	1.98	26.93
Sportsmen's Lodge, Inc.														
3785A	1	3.75	0.37[E]	0.37[E]	0.37[E]	0.37[E]	0.37[E]	0.37[E]	0.37[E]	4.79	4.22	5.56	4.58	25.49
Toluca Lake Property Owners Assn.														
3845F	3845F	0.00	3.52	0.00	1.13	2.16	2.74	4.71	3.80	2.95	3.88	2.88	3.52	31.29
Valhalla Memorial Park														
3840K	4	5.30	2.25	1.34	1.75	0.00	0.00	17.12	29.22	35.22	40.32	39.05	29.68	201.25
Walt Disney Productions														
3874E	East	77.14	17.83	59.36	11.17	9.34	6.15	0.00	0.00	49.24	0.00	87.02	137.02	454.27
3874F	West	0.00	35.25	7.46	44.81	26.54	65.66	62.49	77.57	53.75	0.00	130.56	0.00	504.09
Party Total		77.14	53.08	66.82	55.98	35.88	71.81	62.49	77.57	102.99	0.00	217.58	137.02	958.36
Basin Total		7001.72	8612.70	6001.26	3423.68	5863.42	10315.44	10877.75	14492.65	14081.57	13376.03	12923.47	12592.16	119561.85

*Extractions not chargeable against City of Los Angeles' Water Right Entitlement, but included in Basin Total Extractions.

1981- WATER YEAR

GROUND WATER EXTRACTIONS

(Acre-Feet)

LACFCD Well No.	Owners Designation	Extractions Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Total
							Sylmar Basin							
City of Los Angeles														
Plant	Mission	66.58	0.00	0.00	0.00	276.68	360.77	443.09	438.62	382.79	372.02	342.45	373.07	3106.07
Meurer Engineering Co.														
5998	3	0.01[E]	0.01[E]	0.01[E]	0.01[E]	0.01[E]	0.01[E]	0.01[E]	0.01[E]	0.01[E]	0.01[E]	0.01[E]	0.01[E]	0.11
City of San Fernando														
5969D	2A	193.48	57.94	189.06	191.87	164.24	201.09	176.10	209.46	202.26	231.23	207.99	151.40	2177.20
5959	3	59.30	112.64	36.44	36.79	60.03	66.48	92.53	114.05	103.26	119.67	138.69	122.69	1063.47
5969	4	11.68	30.13	4.55	12.54	13.39	13.99	18.77	19.32	29.27	40.06	18.32	39.72	251.75
5968	7A	16.94	0.00	5.11	23.07	28.55	28.82	33.74	51.20	43.87	52.74	67.84	62.64	414.52
Party Total		281.40	200.71	235.16	264.27	266.21	310.38	321.14	394.94	379.66	443.70	432.84	376.53	3906.94
Basin Total		347.99	200.72	235.17	264.28	542.90	671.16	764.24	833.57	762.46	815.73	825.30	749.61	7013.13
							Verdugo Basin							
Crescenta Valley County														
5058B	1	0.29	1.66	0.00	0.67	0.00	0.62	5.36	0.09	0.00	0.00	0.00	0.00	8.69
5036A	2	0.00	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.03
5058H	5	0.00	0.00	0.01	0.00	0.00	0.00	0.00	3.72	39.16	47.89	15.37	15.93	122.08
5058	6	0.00	0.04	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
5047B	7	0.00	0.00	0.00	0.00	0.01	0.01	0.00	15.29	30.95	51.13	43.95	49.41	190.79
5069J	8	12.50	7.10	6.71	11.99	20.62	28.71	30.57	41.03	8.50	6.07	11.48	7.21	191.29
5047D	9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.99	0.00	0.02	0.00	3.01
5058D	10	68.66	51.34	47.93	91.54	97.67	99.76	95.30	99.55	47.46	48.29	58.16	60.83	866.49
5058J	12	3.73	2.12	2.43	0.00	18.59	27.93	31.73	39.73	0.05	0.00	0.37	1.73	137.80
5069F	14	48.63	46.56	46.50	13.36	0.00	0.00	0.07	14.63	62.62	69.68	57.37	45.32	404.72
	Pick	6.84	6.61	6.94	7.10	6.51	6.80	6.48	6.92	7.31	7.23	6.93	6.48	82.15
Party Total		140.65	115.43	110.54	034.06	143.40	163.83	169.53	220.96	199.04	231.09	193.69	186.91	2009.13
City of Glendale														
1961-1971	GL1-4	0.00	0.00	0.00	0.00	0.00	13.99	0.00	0.00	0.00	0.00	0.00	40.85	54.84
1970	GL-6	145.29	145.87	151.39	143.66	125.24	56.74	67.64	130.16	137.46	120.46	139.61	122.61	1486.13
-	MM-1	108.81	164.01	167.69	165.23	165.38	185.94	195.47	205.35	186.50	146.39	177.48	141.79	2010.04
Party Total		254.10	309.88	319.08	308.89	290.62	256.67	263.11	335.51	323.96	266.85	317.09	305.25	3551.01
Basin Total		394.75	425.31	429.62	442.95	434.02	420.50	432.64	556.47	532.00	497.94	510.78	492.16	5560.14
							Eagle Rock Basin							
Deep Rock Water Co.														
--	1	0.45	0.44	0.48	0.51	0.34	0.57	0.32	0.33	0.37	0.35	0.35	0.37	4.88
Sparkletts Drinking Water														
3987A	1	5.51	5.77	4.88	6.18	5.78	5.33	6.31	7.25	6.55	7.14	7.43	6.76	74.89
3987B	2	6.05	6.41	5.24	6.21	5.72	5.87	6.32	7.36	6.96	7.68	7.41	5.64	76.87
3987F	3	0.86	0.73	0.12	0.40	0.39	0.66	0.46	0.68	0.84	1.37	0.29	1.11	6.91
Party Total		12.42	12.91	10.24	12.79	11.89	11.86	13.09	15.29	14.35	16.19	15.13	12.51	158.67
Basin Total		12.87	13.35	10.72	13.30	12.23	12.43	13.41	15.62	14.72	16.54	15.48	12.88	163.55
ULARA Total		7757.33	9752.08	6676.77	4144.21	6852.57	11419.53	12088.04	15898.31	15381.75	14706.24	14275.03	13846.81	132298.67

APPENDIX B

KEY GAGING STATIONS SURFACE RUNOFF

GAGING STATION SUMMARY

Station Location and Description LOS ANGELES RIVER ABOVE ARROYO SECO for Water Year 1983 to 1984

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT HYDRAULIC DIVISION

Station No. F57C-R

Drainage Area 511 Square Miles Observer H. ELDEEB Gage Read EVERY 15 MIN. Rating Table No. 69-I

DAY	OCTOBER Gage Height	Adj	Discharge	NOVEMBER Gage Height	Adj	Discharge	DECEMBER Gage Height	Adj	Discharge	JANUARY Gage Height	Adj	Discharge	FEBRUARY Gage Height	Adj	Discharge	MARCH Gage Height	Adj	Discharge	DAY
1	e		2520	1.90		1170	1.08		131	e		545	.78		62	0.73		54.5	1
2			265	1.16		177	1.02		114	e		54.5	0.77		60.5	0.73		54.5	2
3			101	1.03		117	1.59		667	e		56.	0.71		51.5	0.73		54.5	3
4			159	1.14		163	0.96		967	0.75		57.5	0.72		53	0.73		54.5	4
5			700	1.14		163	0.92		88.6	0.75		57.5	0.68		47.3	0.73		54.5	5
6			73.8	1.14		163	1.20		200.	0.76		59.	0.73		54.5	0.71		51.5	6
7			283	1.14		163	1.09		135.	0.74		56.	0.68		47.3	0.71		51.5	7
8			52.1	1.16		175.	1.01		111.	0.74		56.	0.71		51.5	0.72		53.	8
9			44.6	1.13		157.	1.79		983	0.74		56.	0.71		51.5	0.71		51.5	9
10			44.6	0.97		100.	1.17		181	0.73		54.5	0.69		48.6	0.71		51.5	10
11			44.6	1.68		1130	1.01		111.	0.77		60.5	0.68		47.3	0.76		50.	11
12			43.2	1.52		575	1.02		114	0.76		59.	0.66		44.6	0.72		53.	12
13			43.2	1.14		165.	0.77		60.5	0.76		59.	0.71		51.5	0.73		54.5	13
14			43.2	0.99		105.	0.72		53.	0.76		59.	0.7.		53	1.35		352.	14
15			43.2	0.96		103	0.71		51.5	0.75		57.5	0.74		56.	0.79		63.5	15
16			43.2	0.98		103.	0.72		53.	0.88		78.3	0.73		54.5	0.77		60.5	16
17			43.2	1.01		111.	0.74		56.	0.99		105.	0.71		50.	0.76		59.	17
18			44.6	1.08		132	0.74		56.	0.92		87.5	0.72		53.	0.77		60.5	18
19			44.6	0.92		87.5	0.71		51.5	0.78		62.	0.74		56.	0.72		53.	19
20			44.6	1.25		243.	0.75		57.5	0.74		56.	0.71		51.5	0.70		50.	20
21			44.6	1.01		111.	0.74		56.	0.74		56.	0.75		57.5	0.73		54.5	21
22			44.6	0.97		100.	0.76		59.	0.72		53.	0.84		72.	0.74		56.	22
23			44.6	1.00		108	0.75		57.5	0.74		56.	0.84		72	0.75		57.5	23
24			44.6	1.62		1040	1.73		885	0.71		51.5	0.83		70.2	0.75		57.5	24
25			43.2	1.56		627	3.13		4030	0.71		51.5	0.79		63.5	0.80		65.	25
26			44.6	0.99		105	1.16		175.	0.71		51.5	0.76		59.	0.80		65.	26
27	e		62	1.00		108	1.20		198.	0.74		56.1	0.75		57.5	0.75		57.5	27
28	0.86		75.4	1.01		111.	1.04		120.	0.68		47.3	0.74		56.	0.72		53.	28
29	0.87		77.2	1.02		114.	0.76		59.	0.78		62.	0.72		53	0.73		54.5	29
30	1.12		153.	0.97		100.	e		515	0.81		66.7				0.68		47.3	30
31	1.02		115.				e		54.5	0.82		68.5				0.69		48.6	31
	5429.5			7826.5			9116.8			1865.4			1605.8			2003.9			
	175.			261.			294.			60.2			55.4			64.6			
	10770.			15520.			18080.			3700.			3190.			3970.			
	2520.			1170.			4030.			105.			72.			352.			
	43.2			87.5			51.5			47.3			44.6			47.3			

DAY	APRIL Gage Height	Adj	Discharge	MAY Gage Height	Adj	Discharge	JUNE Gage Height	Adj	Discharge	JULY Gage Height	Adj	Discharge	AUGUST Gage Height	Adj	Discharge	SEPTEMBER Gage Height	Adj	Discharge	DAY
1	0.65		43.2	0.69		48.6	e		42.	e		43.	e		27.	e		36.	1
2	0.70		50.0	0.68		47.3			44.			44.			29.			36.	2
3	0.60		36.5	0.65		43.2			46.			45.			31.			36.	3
4	0.68		47.3	0.64		41.9			49.			42.			33.			36.	4
5	0.72		53.0	0.62		39.2			51.			39.			35.			36.	5
6	0.80		65.0	0.62		39.2			54.			36.			37.			37.	6
7	0.69		48.6	0.64		41.9			52.			33.			39.			37.	7
8	0.65		43.2	0.63		40.5			49.			30.			40.			38.	8
9	0.62		39.2	0.66		44.6			47.			27.			40.			39.	9
10	0.61		37.8	0.69		48.6			45.			28.			41.			40.	10
11	0.64		41.9	0.69		48.6			43.			30.			41.			41.	11
12	0.63		40.5	0.69		48.6			43.			31.			42.			41.	12
13	0.65		43.2	0.69		48.6			42.			32.			42.			41.	13
14	0.66		44.6	0.69		48.6			41.			34.			41.			40.	14
15	0.68		47.3	0.67		45.9			40.			35.			40.			39.	15
16	0.70		50.0	0.70		50.0			39.			36.			39.			38.	16
17	0.72		53.0	0.68		47.3			38.			37.			37.			37.	17
18	0.73		54.5	0.66		44.6			37.			36.			36.			37.	18
19	0.89		81.3	0.64		41.9			37.			39.			35.			37.	19
20	0.73		54.5	0.64		41.9			37.			41.			34.			36.	20
21	0.71		51.5	0.61		37.8			38.			42.			34.			35.	21
22	0.70		50.0	0.59		35.3			38.			44.			34.			34.	22
23	0.70		50.0	0.61		37.8			39.			45.			34.			33.	23
24	0.69		48.6	0.61		37.8			39.			42.			35.			32.	24
25	0.70		50.0	0.60		36.5			39.			39.			35.			32.	25
26	0.69		48.6	0.61		37.8			39.			36.			36.			32.	26
27	0.70		50.0	0.60		36.5			40.			32.			36.			32.	27
28	0.72		53.0	0.61		37.8			41.			29			36.			32.	28
29	0.70		50.0	0.59		35.3			42.			26			36.			32.	29
30	0.70		50.0	0.60		36.5	e		43.			23.	e		36.	e		32	30
31				0.62		39.2				e		25	e		36.				31
	1476.3			1309.3			1274.0			1103.0			1127.0			1084.0			
	49.2			42.2			42.5			35.6			36.4			36.1			
	2930.			2600.			2530.			2190.			2240.			2150.			
	81.3			50.			54.			45.			42.			41.			
	36.5			35.3			37.			23.			27.			32.			

Maximum stage 6.65 feet at 0345 on 12-25-83 Discharge 17000 Second-feet

Minimum stage 1.16 feet at on Discharge Second-feet

REMARKS

Tributary Area
Average Daily Flow in C.F.S.
Total Monthly Flow in A.F.
Maximum Average Daily Flow in C.F.S.
Minimum Average Daily Flow in C.F.S.

YEARLY TOTALS

	35,221.5
	96.2
	69900.
	4,030.
	27.

GAGING STATION SUMMARY

LOS ANGELES COUNTY
FLOOD CONTROL DISTRICT
HYDRAULIC DIVISION

Station Location and Description BURBANK WESTERN STORM DRAIN AT RIVERSIDE DR for Water-Year 1983 1984

Station No. E 285-R

Drainage Area 25.0 Square Miles (H. ELDEEB Observer)

Gage Read EVERY 15 MIN.

Rating Table No. 59-I

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY			FEBRUARY			MARCH			DAY
	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	
1	0.53		138.	0.50		124.	0.13		11.9	0.08		5.6	0.09		6.7	0.11		9.1	1
2	0.14		13.1	0.13		11.9	0.11		9.1	0.08		5.6	0.07		5.0	0.10		7.9	2
3	0.14		13.1	0.12		10.6	0.27		36.6	e		6.7	0.08		5.6	0.10		7.9	3
4	0.31		48.1	0.11		9.1	0.11		9.1			6.7	0.07		5.0	0.10		7.9	4
5	0.17		16.8	0.11		9.1	0.11		9.1			6.7	0.06		4.5	0.10		7.9	5
6	0.14		13.1	0.11		9.1	0.11		9.1			6.7	0.07		5.0	0.10		7.9	6
7	0.21		23.8	0.11		9.1	0.11		9.1			6.7	0.07		5.0	0.10		7.9	7
8	0.11		9.1	0.11		9.1	0.11		9.1			6.7	0.06		4.5	0.10		7.9	8
9	0.11		9.1	0.10		7.9	0.31		47.5			6.7	0.07		5.0	0.10		7.9	9
10	0.11		9.1	0.10		7.9	0.11		9.1			6.7	0.08		5.6	0.10		7.9	10
11	0.10		7.9	0.31		48.1	0.12		10.6			6.7	0.07		5.0	0.10		7.9	11
12	0.09		6.7	0.24		30.7	0.12		10.6			6.7	0.07		5.0	0.10		7.9	12
13	0.10		7.9	0.14		13.1	0.11		9.1			6.7	0.06		4.5	0.09		6.7	13
14	0.09		6.7	0.12		10.6	0.10		7.9			6.7	0.07		5.0	e		46.3	14
15	0.09		6.7	0.12		10.6	0.11		9.1			6.7	0.07		5.0			5.6	15
16	0.09		6.7	0.13		11.9	0.11		9.1			7.9	0.06		4.5			5.0	16
17	0.10		7.9	0.13		11.9	0.11		9.1			7.9	0.07		5.0			4.5	17
18	0.10		7.9	0.11		9.1	0.11		9.1	e		6.7	0.07		5.0			5.0	18
19	0.09		6.7	0.11		9.1	0.11		9.1	0.09		6.7	0.07		5.0			5.0	19
20	0.09		6.7	0.17		16.8	0.11		9.1	0.10		7.9	0.08		5.6			5.0	20
21	0.09		6.7	0.11		9.1	0.11		9.1	0.09		6.7	0.08		5.6			5.0	21
22	0.10		7.9	0.11		9.1	0.11		9.1	0.09		6.7	0.08		5.6			5.6	22
23	0.10		7.9	0.11		9.1	0.11		9.1	0.09		6.7	0.10		7.9			5.6	23
24	0.10		7.9	0.43		93.9	0.35		62.8	0.08		5.6	0.10		7.9			6.7	24
25	0.10		7.9	0.27		36.3	0.67		23.1	0.09		6.7	0.10		7.9			6.7	25
26	0.10		7.9	0.12		10.6	0.13		11.9	0.07		5.0	0.10		7.9			7.9	26
27	0.11		9.1	0.10		7.9	0.13		11.9	0.06		4.5	0.10		7.9	e		9.1	27
28	0.11		9.1	0.10		7.9	0.11		9.1	0.08		5.6	0.10		7.9	0.11		9.1	28
29	0.11		9.1	0.10		7.9	0.09		6.7	0.07		5.0	0.10		7.9	0.11		9.1	29
30	0.15		14.6	0.10		7.9	0.09		6.7	0.06		5.6				0.11		9.1	30
31	0.10		7.9				0.09		6.7	0.08		5.6				0.12		10.6	31
1	461.1			579.4			626.6			199.1			168.			263.6			1
2	14.9			19.3			20.2			6.4			5.8			8.5			2
3	915.			1151.			1240.			395.			333.			523.			3
4	138.			124.			231.			7.9			7.9			46.3			4
5	6.7			7.9			6.7			4.5			4.5			4.5			5

DAY	APRIL			MAY			JUNE			JULY			AUGUST			SEPTEMBER			DAY
	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	
1	0.11		9.1	0.09		6.7	0.09		6.7	0.09		6.7	e		6.7	0.08		5.6	1
2	0.11		9.1	0.09		6.7	0.09		6.7	0.09		6.7			6.7	0.09		6.7	2
3	0.11		9.1	0.10		7.9	0.10		7.9	0.09		6.7			6.7	0.09		6.7	3
4	0.11		9.1	0.10		7.9	0.10		7.9	0.10		7.9			6.7	0.09		6.7	4
5	0.11		9.1	0.10		7.9	0.11		9.1	0.10		7.9			6.7	0.08		5.6	5
6	0.12		10.6	0.10		7.9	0.09		6.7	0.10		7.9			6.7	0.08		5.6	6
7	0.10		7.9	0.10		7.9	0.10		7.9	0.10		7.9	e		5.6	0.09		6.7	7
8	0.11		9.1	0.09		6.7	0.08		5.6	0.09		6.7	0.07		5.0	0.09		6.7	8
9	0.11		9.1	0.09		6.7	0.09		6.7	0.09		6.7	0.07		5.0	0.09		6.7	9
10	0.11		9.1	0.09		6.7	0.08		5.6	0.10		7.9	0.08		5.6	0.09		6.7	10
11	0.10		7.9	0.08		5.6	0.08		5.6	0.10		7.9	0.08		5.6	0.16		15.6	11
12	0.16		7.9	0.08		5.6	0.08		5.6	0.08		5.6	0.08		5.6	0.09		6.7	12
13	0.10		7.9	0.08		5.6	0.07		5.0	0.06		4.5	0.09		6.7	0.10		7.9	13
14	0.09		6.7	0.10		7.9	0.07		5.0	0.05		3.9	0.10		7.9	0.09		6.7	14
15	0.10		7.9	0.11		9.1	0.08		5.6	0.06		4.5	0.11		9.1	0.09		6.7	15
16	0.10		7.9	0.11		9.1	0.08		5.6	0.05		3.9	0.09		6.7	0.09		6.7	16
17	0.10		7.9	0.10		7.9	0.08		5.6	0.06		4.5	0.09		6.7	0.09		6.7	17
18	0.10		7.9	0.10		7.9	0.08		5.6	0.03		2.8	0.10		7.9	0.09		6.7	18
19	0.14		12.7	0.09		6.7	0.09		6.7	0.05		3.9	0.10		7.9	0.08		5.6	19
20	0.10		7.9	0.09		6.7	0.08		5.6	0.05		3.9	0.11		9.1	0.09		6.7	20
21	0.09		6.7	0.09		6.7	0.09		6.7	0.06		4.5	0.12		10.6	0.09		6.7	21
22	0.09		6.7	0.09		6.7	0.09		6.7	0.06		4.5	0.12		10.6	0.09		6.7	22
23	0.09		6.7	0.10		7.9	0.09		6.7	0.06		4.5	0.13		11.9	0.08		5.6	23
24	0.09		6.7	0.10		7.9	0.09		6.7	0.06		4.5	0.12		10.6	0.08		5.6	24
25	0.09		6.7	0.10		7.9	0.10		7.9	0.06		4.5	0.12		10.6	0.08		5.6	25
26	0.09		6.7	0.10		7.9	0.10		7.9	e		5.0	0.11		9.1	0.09		6.7	26
27	0.11		9.1	0.09		6.7	0.10		7.9			5.6	0.10		7.9	0.09		6.7	27
28	0.10		7.9	0.08		5.6	0.10		7.9			6.7	0.08		5.6	0.08		5.6	28
29	0.09		6.7	0.08		5.6	0.09		6.7			6.7	0.08		5.6	0.09		6.7	29
30	0.09		6.7	0.09		6.7	0.09		6.7			6.7	0.08		5.6	0.09		6.7	30
31				0.09		6.7				e		6.7	0.08		5.6				31
1	244.5			221.4			198.5			177.2			229.4			202.3			1
2	8.1			7.1			6.6			5.7			7.4			6.7			2
3	485.			439.			394.			351.			455.			401.			3
4	12.7			9.1			9.1			7.9			11.9			15.6			4
5	6.7			5.6			5.0			2.8			5.0			5.6			5

Maximum stage	2.23	feet at	1530	on	11-1-83	Discharge 2190. Second-feet
Minimum stage	0.11	feet at	0645	on	07-21-84	Discharge 1.7 Second-feet

REMARKS

1 - Total CFS
2 - Average Daily Flow in CFS
3 - Total Monthly Flow in A.F.
4 - Maximum Average Daily Flow in CFS
5 - Minimum Average Daily Flow in CFS

YEARLY TOTALS

1	3,571.1
2	9.8
3	7,080.
4	231.
5	2.8

GAGING STATION SUMMARY

LOS ANGELES COUNTY
FLOOD CONTROL DISTRICT
HYDRAULIC DIVISION

Station Location and Description: PALOMA FLUME
BELOW PALOMA DAM
for Water-Year 19 83 19 84

Station No.: F 118 R

Drainage Area: 28.2 Square Miles

Observer: R.J. SARASUA

Gage Read: EACH 15 MINUTES

Rating Table No.: 44 1

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY			FEBRUARY			MARCH		
	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge
1			3.6			0.8			0.2			0.2			0.2			0.2
2			3.6			0.8			0.2			0.2			0.2			0.2
3			3.6			0.8			0.2			0.2			0.2			0.2
4			3.7			0.7			0.2			0.2			0.1			0.2
5			3.7			0.7			0.2			0.2			0.2			0.2
6			3.7			0.7			0.2			0.2			0.2			0.2
7			3.8			0.6			0.2			0.2			0.2			0.2
8			3.8			0.6			0.2			0.2			0.2	H		4.9
9			3.8			0.6			0.2			0.2			0.2			+
10			3.9			0.5			0.2			0.2			0.2			+
11			3.9			0.5			0.2			0.2			0.2			+
12			3.9			0.5			0.2			0.2			0.2			+
13	M		4.0			0.4			0.2			0.2			0.2			+
14			4.0			0.4			0.2			0.2			0.2			+
15			4.0			0.4			0.2			0.2			0.2			+
16			4.0			0.3			0.2			0.2			0.2			+
17			4.0			0.3			0.2			0.2			0.2			+
18			4.0			0.3			0.2			0.2			0.2			+
19			4.0			0.3			0.2			0.2			0.2			+
20			4.0			0.3			0.2			0.2			0.2			+
21			4.0			0.3			0.2			0.2			0.2			+
22			4.0			0.2			0.2			0.2			0.2			+
23			4.0			0.2			0.2			0.2			0.2			+
24			4.0			0.2			0.2	H		18.4			0.2			+
25			4.0			0.2			0.2	H		16.6			0.2			+
26			4.0			0.2			0.2			101			0.2			Q
27			4.0			0.2			0.2			88			0.2			Q
28			4.0			0.2			0.2			75			0.2			Q
29			0.8			0.2			0.2			75			0.2			Q
30			0.8			0.2			0.2	H		77.9						Q
31	M		0.8						0.2	H		70.1						Q
1	111.4			12.6			6.2			556.6			5.8			6.3		
2	3.6			0.4			0.2			18.0			0.2			0.2		
3	221			25			12.3			1104			11.5			12.5		
4	4			0.8			0.2			101			0.2			4.9		
5	0.8			0.2			0.2			0.2			0.2			0		

DAY	APRIL			MAY			JUNE			JULY			AUGUST			SEPTEMBER			DAY
	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	
1			Q			+			+			+			+			+	1
2						+			+			+			+			+	2
3						+			+			+			+			+	3
4						+			+			+			+			+	4
5						+			+			+			+			+	5
6						+			+			+			+			+	6
7						+			+			+			+			+	7
8						+			+			+			+			+	8
9						+			+			+			+			+	9
10						+			+			+			+			+	10
11						+			+			+			+			+	11
12			Q			+			+			+			+			+	12
13			+			+			+			+			+			+	13
14			+			+			+			+			+			+	14
15			+			+			+			+			+			+	15
16			+			+			+			+			+			+	16
17			+			+			+			+			+			+	17
18			+			+			+			+			+			+	18
19			+			+			+			+			+			+	19
20			+			+			+			+			+			+	20
21			+			+			+			+			+			+	21
22			+			+			+			+			+			+	22
23			+			+			+			+			+			+	23
24			+			+			+			+			+			+	24
25			+			+			+			+			+			+	25
26			+			+			+			+			+			+	26
27			+			+			+			+			+			+	27
28			+			+			+			+			+			+	28
29			+			+			+			+			+			+	29
30			+			+			+			+			+			+	30
31			+			+			+			+			+			+	31
1			+			+			+			+			+			+	1
2			+			+			+			+			+			+	2
3			+			+			+			+			+			+	3
4			+			+			+			+			+			+	4
5			+			+			+			+			+			+	5

REMARKS

1. Total CFS
2. Average Daily Flow in CFS
3. Total Monthly Flow in A.F.
4. Maximum Average Daily Flow in CFS
5. Minimum Average Daily Flow in CFS

YEARLY TOTALS

1	6789
2	18.7
3	1386
4	101
5	0

Maximum stage 5.5+ feet at 1153 on 1-24-84 Discharge [illegible] Second-feet.

Minimum stage DRY feet at TIDES on Discharge Second-feet.

GAGING STATION SUMMARY

LOS ANGELES COUNTY
FLOOD CONTROL DISTRICT
HYDRAULIC DIVISION

Station Location and Description: BIG TUJUNGA CREEK
BELOW BIG TUJUNGA DAM
for Water-Year 19 83 19 84

Station No. F 168 R

Drainage Area: 82.7 Square Miles (R.J. SARASUA Observer)

Gage Read: EACH 15 MINUTES

Rating Table No. 78 II

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY			FEBRUARY			MARCH			DAY
	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	
1		d	45	⊢	d	31.5		d	16.0			50.5			17.0			17.0	1
2			45			62.3			16.0			43.8			17.0			17.0	2
3			45	⊢		39.5			16.0			26.4			17.0			18.4	3
4			45			22.5	⊢		30.8			14.3			17.0			18.4	4
5			45			22.5			40.0			15.7			17.0			18.4	5
6			45			22.5			40.0			30.4			17.0			18.4	6
7			45			22.5	⊢		20.5			41.1			17.0			18.4	7
8			45			22.5			20.0			34.4			17.0			18.4	8
9			45			22.5			20.0			30.4			17.0			17.0	9
10			42			22.5			20.0			21.0			17.0			17.0	10
11	⊢		27.7			22.5			20.0			18.4			17.0			17.0	11
12			17			22.5			20.0			17.0			17.0			17.0	12
13			17			22.5			20.0			17.0			17.0			17.0	13
14			17			22.5			20.0			17.0			17.0			17.0	14
15			17			22.5	⊢		23.5			17.0			17.0			11.4	15
16			17			22.5			29.7			17.0			17.0			8.1	16
17			17			22.5			29.7			12.6			17.0			8.2	17
18			17			22.5			29.7			1.0			17.0			8.2	18
19			17			22.5			29.7			12.5			17.0			8.2	19
20			17			22.5			29.7			21.0			15.7			8.2	20
21			18.2	⊢		31.6			29.7			21.0			17.5			8.2	21
22			18.2			38.3			29.7			19.7			4.3			8.2	22
23			18.2	⊢		33.4	⊢		23.4			19.7			4.3			5.4	23
24			18.2			24.2			20.0			19.7			4.3			3.5	24
25			18.2	⊢		47.0	⊢		161			19.7			4.3			3.5	25
26			18.2			63.0	⊢		179			18.4			4.3			3.5	26
27			18.2			60.0	⊢		99.6			18.4			4.3			4.9	27
28			18.2	⊢		44.0			55.4			18.4			11.4			6.1	28
29			18.2			16.0			55.4			18.4			17.0			6.1	29
30			18.2		d	16.0			55.4			17.0						9.5	30
31		d	18.2					d	55.4			17.0						11.9	31
1	930.9			335.3			1263.3			665.9			410.4			368.9			1
2	26.8			29.5			40.8			21.5			14.2			11.9			2
3	1649			1758			2506			1320			814			732			3
4	45			60			179			50.5			17.5			18.4			4
5	17			16			16			1			4.3			3.5			5

DAY	APRIL			MAY			JUNE			JULY			AUGUST			SEPTEMBER			DAY
	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	Gage Height	Adj.	Discharge	
1			11.3			5.1			3.3			7.0			8.1			0.4	1
2			11.3			5.6			5.9			7.0			10.8			0.2	2
3			11.3			5.8			5.9			2.8			10.8			0.2	3
4			11.2			5.8			5.9			+			10.8			0.1	4
5			11.2			5.6			5.9			0.1			10.8			0.1	5
6			11.2			5.8			5.9			0.4			10.9			0.1	6
7			11.2			5.1			5.9			0.5			10.9			0.1	7
8			11.2			5.8			5.9			0.5			10.9			0.1	8
9			11.0			5.8			5.9			0.5			10.9			0.1	9
10			11.0			5.8			5.9			0.5			6.1			0.1	10
11			10.9			5.8			5.9			0.5			0.9			0.1	11
12			10.9			5.8			2.9			0.5			0.1			0.1	12
13			10.8			5.8			0.1			0.4			0.1			14.3	13
14			10.8			5.8			0.2			0.4			0.1			30.4	14
15			10.8			5.8			0.2			0.4			0.1			30.4	15
16			10.8			5.8			0.2			0.4			0.1			29.1	16
17			10.8			5.8			0.2			0.4			0.1			29.1	17
18			10.6			5.8			0.2			0.4			0.1			29.1	18
19			10.6			5.8			4.0			0.4			0.1			26.4	19
20			10.5			5.8			6.8			0.4			0.1			26.4	20
21			10.5			5.8			7.0			0.4			0.1			26.4	21
22			10.6			3.1			7.0			0.4			0.1			25.1	22
23			10.3			0.9			7.0			0.4			0.1			16.8	23
24			7.5			0.8			7.0			0.4			0.1			1.8	24
25			5.6			0.8			7.0			0.3			0.1			11.6	25
26			5.6			0.6			7.0			0.3			0.1			37.1	26
27			5.6			0.6			7.0			0.2			16.4			34.4	27
28			5.6			0.6			7.0			0.3			29.1			30.4	28
29			5.6			0.6			7.0			0.3			29.1			27.7	29
30			5.6			0.6			7.0			2.1			27.7			23.7	30
31						0.6						5.5			18.5				31
1	291.8			129.7			147.1			34.7			223.6			451.7			1
2	9.7			4.2			4.9			1.1			7.2			15.1			2
3	579			257			292			68.8			444			896			3
4	11.3			5.8			7			7			29.1			37.1			4
5	5.6			0.6			0.1			0			0.1			0.1			5

REMARKS:

1. Total CFS
2. Average Daily Flow in CFS
3. Total Monthly Flow in A.F.
4. Maximum Average Daily Flow in CFS
5. Minimum Average Daily Flow in CFS

	YEARLY TOTALS
1	5704
2	15.6
3	11,315
4	179
5	0

Maximum stage 6.73 feet at 1045 on 12-25-83 Discharge 360 Second-feet.

Minimum stage feet at TIMES on Discharge + Second-feet.

APPENDIX C

WELLS DRILLED AND DESTROYED

WELLS DESTROYED 1983-84

Party	LACFCD Well No.	Owner No.	Purpose
Kisag Moordigian	5939	--	Irrigation
City of Burbank	3851B	9	City Supply

WELLS DRILLED 1983-84

LADWP	4887B	S-A* Site 1	Water Quality
Bur. of Sanitation	4895B	Bradford Landfill	" "
LADWP	4897B	S-A Site 2	" "
LADWP	4897C	S-A Site 3	" "
LADWP	4897D	S-A Site 4A	" "
Livingston Graham	4916C	--	" "
L.A. By - Products	4928A	--	" "

* Sheldon-Arleta Landfill

APPENDIX D

SYLMAR BASIN STIPULATION

IRA REINER, City Attorney
EDWARD C. FARRELL, Chief Assistant
City Attorney for Water and Power
STEPHEN R. POWERS, JR., Senior
Assistant City Attorney
RALPH GUY WESSON, Assistant City Attorney
111 North Hope Street
Los Angeles, California 90012
(213) 481-6372

Attorneys for Plaintiff

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

THE CITY OF LOS ANGELES, Plaintiff, vs. CITY OF SAN FERNANDO, et al., Defendants.	No. 650079 STIPULATION AND ORDER RE SYLMAR BASIN PURSUANT TO SECTION 10.2 OF JUDGMENT

The City of Los Angeles by and through Ira Reiner, City Attorney, Edward C. Farrell, Chief Assistant City Attorney for Water and Power, Ralph Guy Wesson, Assistant City Attorney, the City of San Fernando by and through City Attorneys Rutan and Tucker, Robert S. Bower and Arthur G. Kidman, Kisag and Dean Mordigian by Lawrence M. Dougherty, and Meurer Eng., Inc., by Roger or Charles Meurer, stipulate that the Court may enter an order as provided herein with regard to the following facts.

1. The Judgment requires in Section 10.2 that the Watermaster notify the Court and parties in the event the Sylmar Basin becomes overdrafted due to pumping by Los Angeles and San Fernando.

2. On August 26, 1983, the Watermaster reported to the Court pursuant to Section 10.2 of the Judgment that the Sylmar Basin was in a condition of overdraft (Attachment 1). In response to the Watermaster's letter and a Minute Order of this Court (Attachment 2), the Cities of Los Angeles and San Fernando responded by letters to the Court (Attachments 3 & 4), agreeing with the Watermaster's report on overdraft.

3. The Court has determined that pumping from the Sylmar Basin shall be reduced to the safe yield (6210 AF/YR at present) of the basin, effective October 1, 1984.

4. Sections 5.1.2 and 5.2.2 of the Judgment provide for the rights of the parties. The private parties within the Sylmar Basin, Defendants Kisag Moordigian and Meurer Engr. (successor to Hersch and Plumb), have decreed overlying water rights. However, Mr. Moordigian has not pumped since 1956-57 and has disposed of most of the lands originally involved in this proceeding. Meurer Engr. has pumped less than 0.5 AF/YR. since 1975-76, but may increase this amount slightly in the future. Even though the combined pumping of these private parties has been less than one acre-foot per year, provision for their rights pursuant to Section 5.1.2.2 of the Judgment is made

in this stipulation. That pumping which occurs pursuant to the overlying rights of the private parties is to be subtracted from the safe yield, with Los Angeles and San Fernando pumping the remainder.

5. Parties, City of Los Angeles and City of San Fernando, agree that pumping within the Sylmar Basin must be brought within the safe yield, determined to be 6,210 AF/YR at present. The Cities of Los Angeles and San Fernando have rights to native waters and import return waters within the Sylmar Basin. Their combined water rights to native and imported waters (Sections 5.1.2.3. and 5.2.2.1 of the Judgment) are nearly equal. Each has pumped approximately one-half of the total safe yield of the said basin for the past 14 years (1968-69 through 1982-83). The City of Los Angeles and the City of San Fernando stipulate herein that the Court may enter an order limiting each City's pumping to the following amounts less-one half of any rights exercised in accordance with paragraph 4 herein:

City of Los Angeles - 3,105 AF/YR.

City of San Fernando - 3,105 AF/YR.

6. Section 10.2 of the Judgment requires that a notice of hearing be set for this matter. However, the parties herein stipulate to waive notice and

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hearing as to the matter stated herein and to the order of court attached.

7. At the time of the entry of the Final Judgment (January 26, 1979), the Sylmar Basin was declared not to be in a condition of overdraft (Section 4.2.6.2). Thus, the Final Judgment did not provide for safe yield operations of said basin during unusual circumstances, such as dry years or water system problems.

The parties recognize the importance of preserving the Sylmar Basin as a water production and groundwater storage resource. Los Angeles and San Fernando seek to permit flexibility in the use of this resource without causing damage to the basin.

To provide for water shortages due to unusual circumstances, such as weather conditions or water system operational problems, Los Angeles and San Fernando shall have the right in any year to overextract from the Sylmar Basin an amount not to exceed 10 percent of their allowed pumping, as provided in Section 5 herein. The 10 percent annual overextraction may continue from year to year, accumulatively not to exceed 1,000 ac-ft. for each city, so long as the unusual circumstances persist. When the unusual circumstances cease, the accumulated overextractions shall be replaced by underpumping, and must be done within a 6 yr.

60

DATED: March 21, 1984

IRA REINER, City Attorney
EDWARD C. FARRELL, Chief Assistant City Attorney for Water and Power
STEPHEN R. POWERS, JR., Senior Assistant City Attorney
RALPH GUY WESSON, Assistant City Attorney

By _____
RALPH GUY WESSON
Attorneys for the City of Los Angeles and its Department of Water and Power

APPROVED:
The City ~~of~~ San Fernando

By _____
Mayor

Attest

_____
City Clerk

ARTHUR KIDMAN
RUTAN AND TUCKER
Special Counsel

By _____
ARTHUR KIDMAN
Attorneys for the City of San Fernando

_____
ROGER or CHARLES MEURER
MEURER ENG., INC.

_____
LAWRENCE M. DAUGHERTY
Attorney for Kisag and Dean Moordigian

IRA REINER, City Attorney
EDWARD C. FARRELL, Chief Assistant
City Attorney for Water and Power
STEPHEN R. POWERS, JR., Senior
Assistant City Attorney
RALPH GUY WESSON, Assistant City Attorney
111 North Hope Street
Los Angeles, California 90012
(213) 481-6372

Attorneys for Defendant

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

THE CITY OF LOS ANGELES, Plaintiff, vs. CITY OF SAN FERNANDO, et al., Defendants.	No. 650079 ORDER OF COURT RE SYLMAR BASIN PURSUANT TO SECTION 10.2 OF JUDGMENT

Good cause appearing therefore and the court having reviewed the stipulation herein presented to the Court, and having fully approved the facts and settlement set forth therein, it is ordered, effective October 1, 1984, that:

1. The Cities of Los Angeles and San Fernando shall be limited in their pumping to bring the total pumping within the safe yield of the basin, less any rights exercised by the private parties, as follows:

   City of Los Angeles - 3,105 AF/YR.

   City of San Fernando - 3,105 AF/YR.

2. It is ordered that during years of unusual circumstances (as stated in paragraph 7 of the

stipulation), the parties (Los Angeles and San Fernando) shall have the right in any year to overextract from Sylmar Basin an amount not to exceed 10 percent of their allowed pumping, as set forth in paragraph 1 above.

The 10 percent overextraction may continue from year to year, accumulatively not to exceed 1,000 ac-ft, for each city, so long as the unusual circumstances continue. When the unusual circumstances cease, the accumulated overextraction shall be replaced by underpumping, and must be done within a 6 yr. period. The amount of such underpumping will not be required to exceed 10 percent of the annual allowed pumping of any party. The Wastermaster shall review the existence and cessation of these unusual circumstances (as detailed in paragraph 7 of the stipulation) and shall approve the required overextraction and replacement operations.

3. Any party to this stipulation may make application to the Court regarding pumping amounts stipulated hereto in the event hydrologic conditions in the Sylmar Basin change.

4. In any year, Los Angeles and San Fernando each have the right to store water in the Sylmar Basin by direct spreading or in-lieu practices (underpumping). The party causing the water to be stored shall have a right to extract an equivalent

amount of groundwater from said basin. In addition to the safe yield pumping provided for herein, the right to recapture stored water can be carried over into successive water years.

5. The Final Judgment, entered on January 26, 1979, is amended pursuant to changes set forth in this stipulation. The sections of the Judgment affected are listed in paragraph 11 of the stipulation.

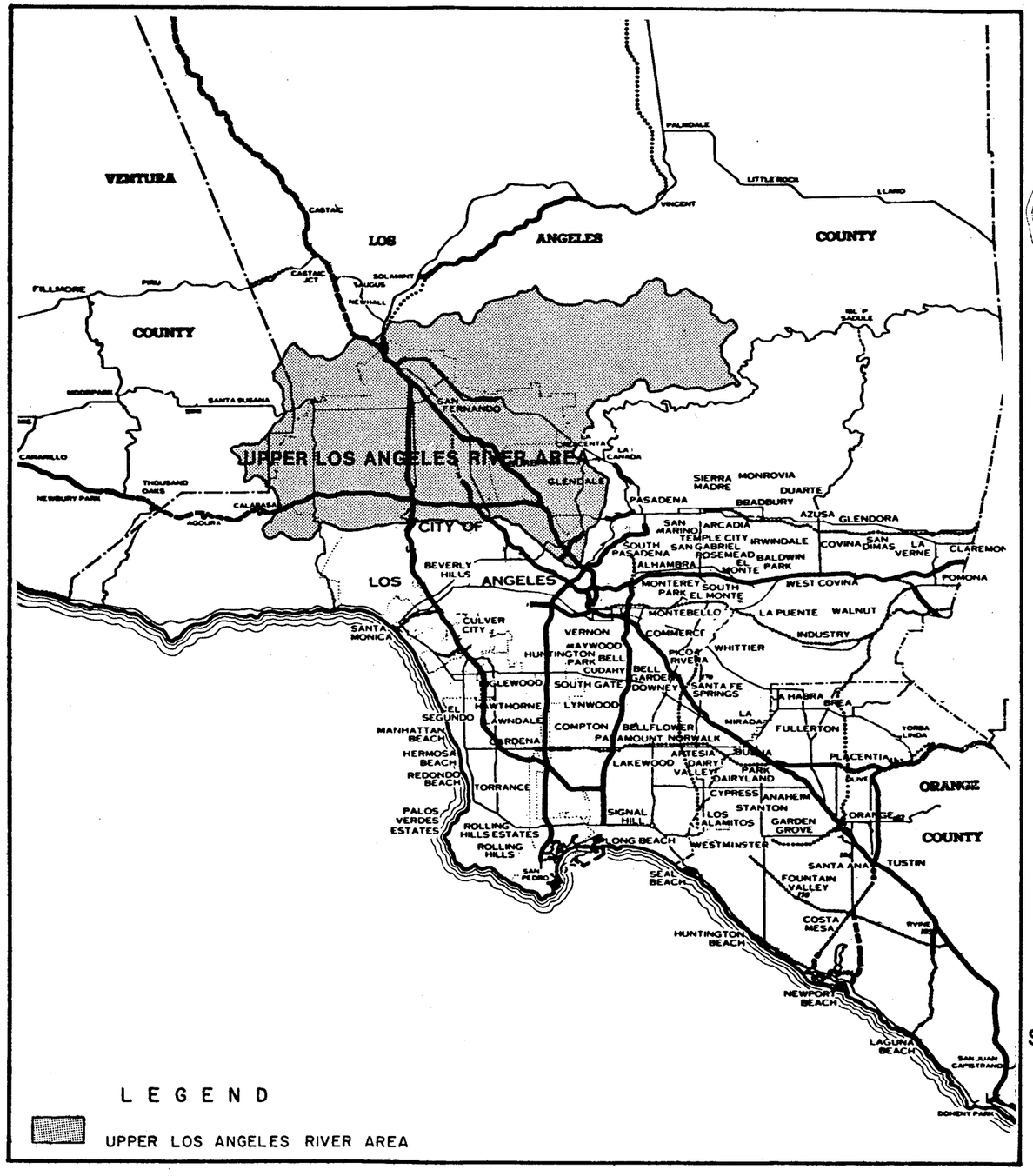
DATED: March 22, 1984

HONORABLE HARRY L. HUPP
JUDGE OF THE SUPERIOR COURT

APPENDIX E

PLATES

UPPER LOS ANGELES RIVER AREA WATERMASTER



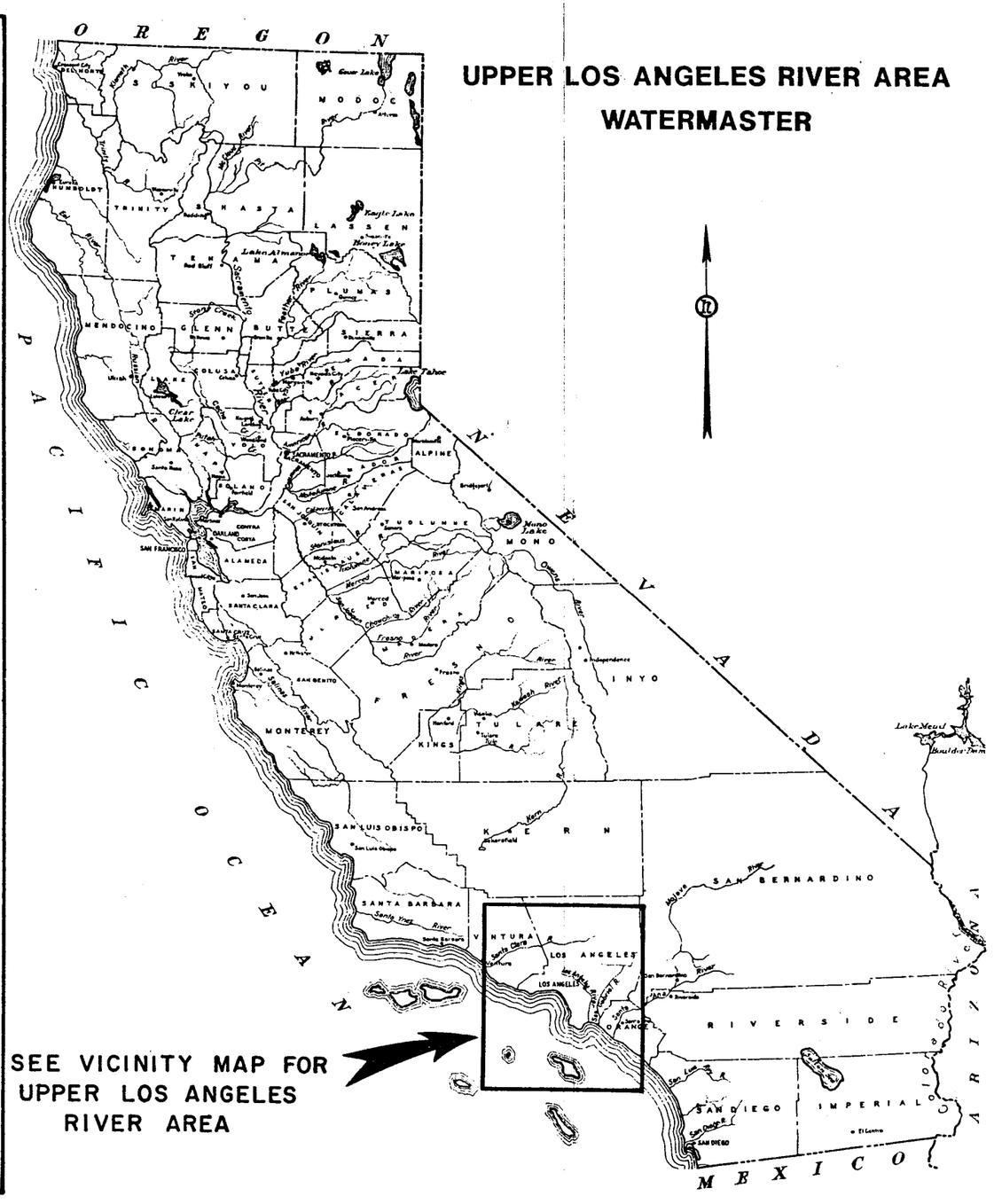
L E G E N D

UPPER LOS ANGELES RIVER AREA

VICINITY MAP

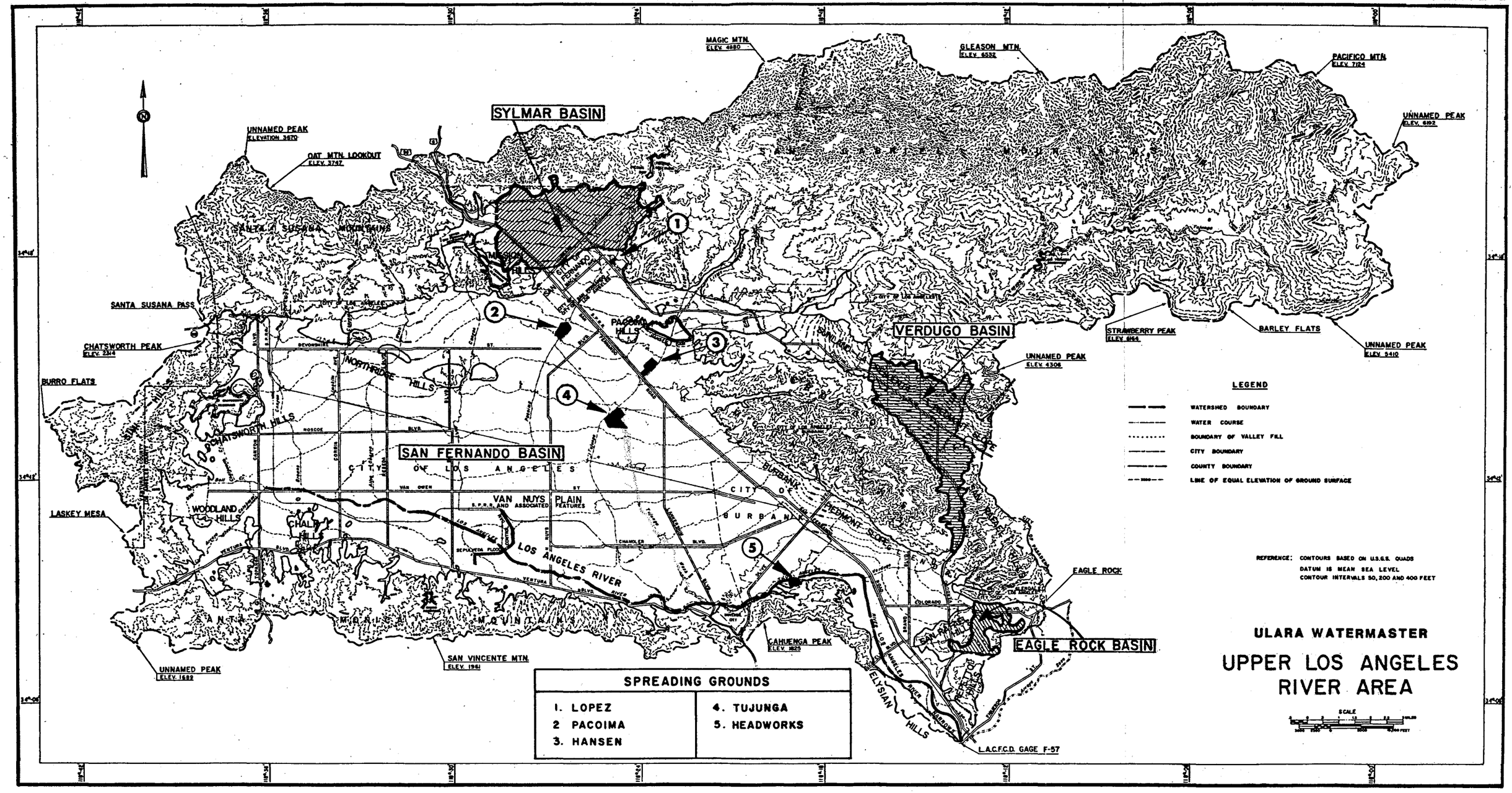
SCALE

0 5 10 15 Miles



SEE VICINITY MAP FOR UPPER LOS ANGELES RIVER AREA

LOCATION MAP



ULARA WATERMASTER

UPPER LOS ANGELES RIVER AREA

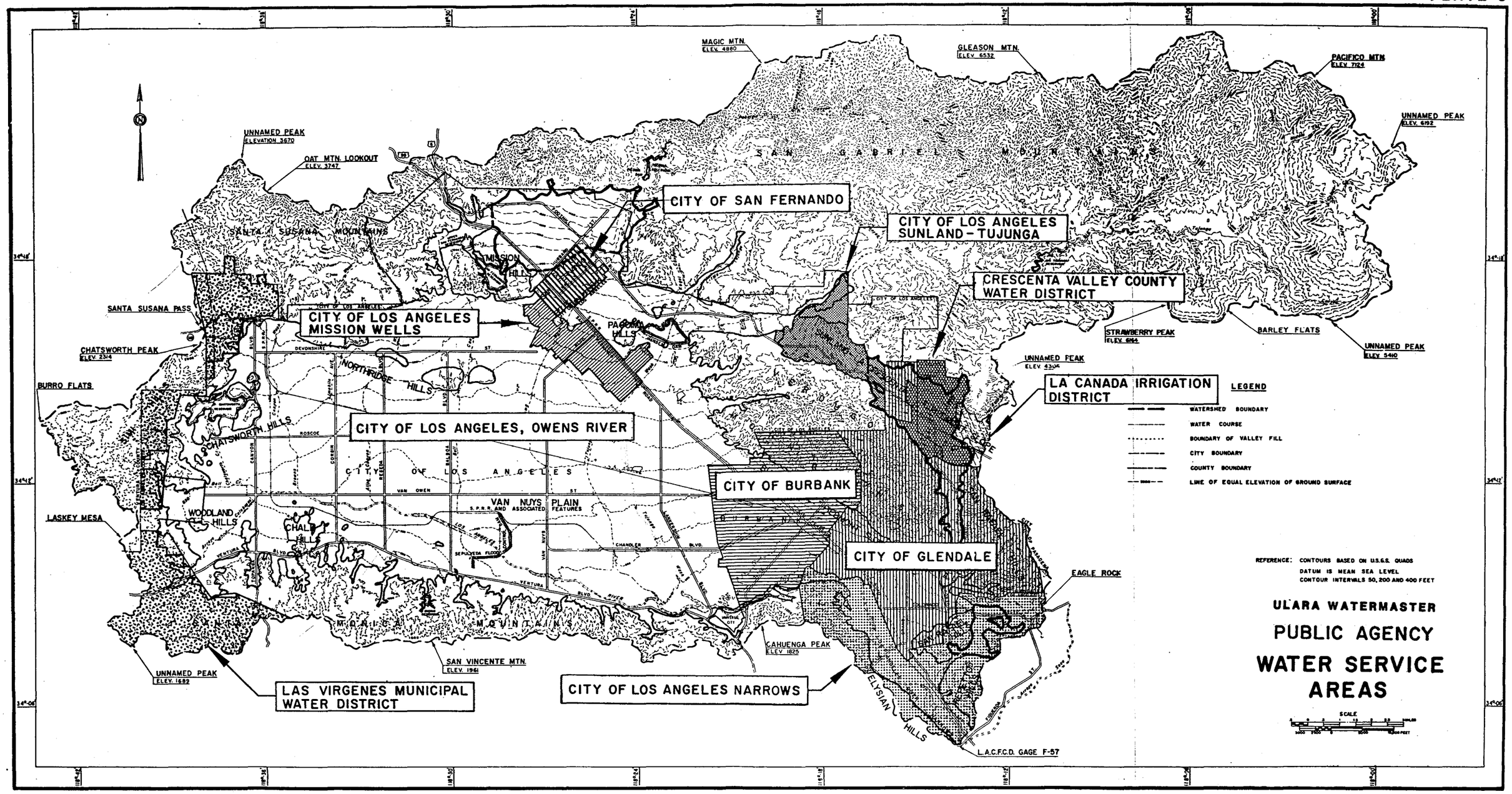
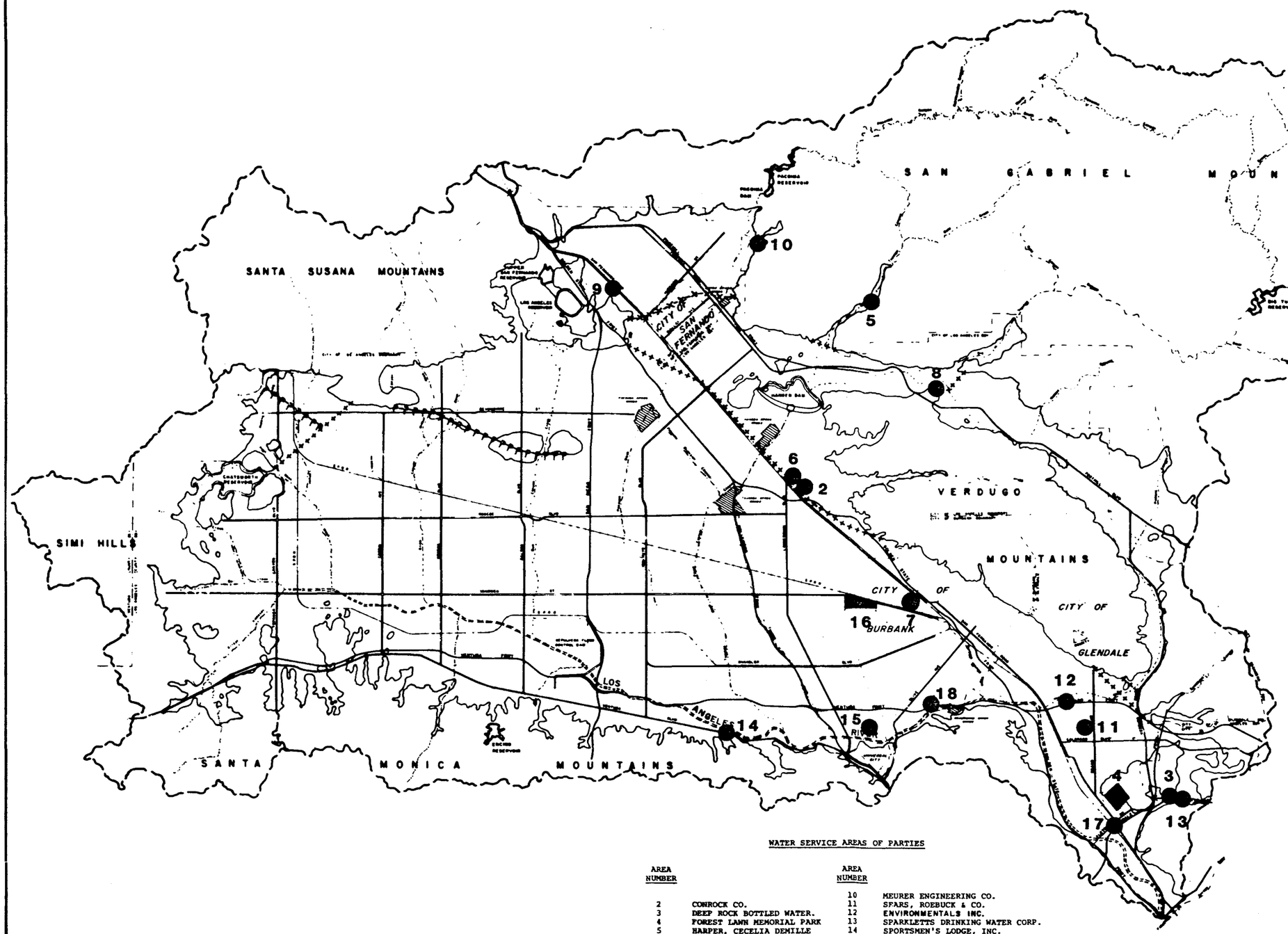

MAGIC MTN.
ELEV. 4880
GLEASON MTN.
ELEV. 6532
PACIFICO MTN.
ELEV. 7124
UNNAMED PEAK
ELEV. 6192
UNNAMED PEAK
ELEVATION 3670
OAT MTN. LOOKOUT
ELEV. 3747
SANTA SUSANA MOUNTAINS
SAN GABRIEL MOUNTAINS
CITY OF SAN FERNANDO
CITY OF LOS ANGELES
SUNLAND-TUJUNGA
CRESCENTA VALLEY COUNTY
WATER DISTRICT
MISSION HILLS
PACOIMA HILLS
SANTA SUSANA PASS
CITY OF LOS ANGELES
MISSION WELLS
CHATSWORTH PEAK
ELEV. 2314
STRAWBERRY PEAK
ELEV. 6164
BARLEY FLATS
UNNAMED PEAK
ELEV. 5410
UNNAMED PEAK
ELEV. 4305
BURRO FLATS
LA CANADA IRRIGATION
DISTRICT
NORTHRIDGE HILLS
CHATSWORTH HILLS
CITY OF LOS ANGELES, OWENS RIVER
CITY OF LOS ANGELES
CITY OF BURBANK
LASKEY MESA
WOODLAND HILLS
CHALK HILLS
VAN NUYS PLAIN
ASSOCIATED FEATURES
CITY OF GLENDALE
EAGLE ROCK
SANTA MONICA MOUNTAINS
CAHUENGA PEAK
ELEV. 1825
SAN VINCENTE MTN.
ELEV. 1961
UNNAMED PEAK
ELEV. 1689
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 4



N

ULARA WATERMASTER

UPPER LOS ANGELES RIVER AREA

WATER SERVICE AREAS OF INDIVIDUAL PRODUCERS SEPTEMBER 1983

SCALE

LEGEND

E-E-E-E MEASUREMENTS TO GROUND WATER FLOW

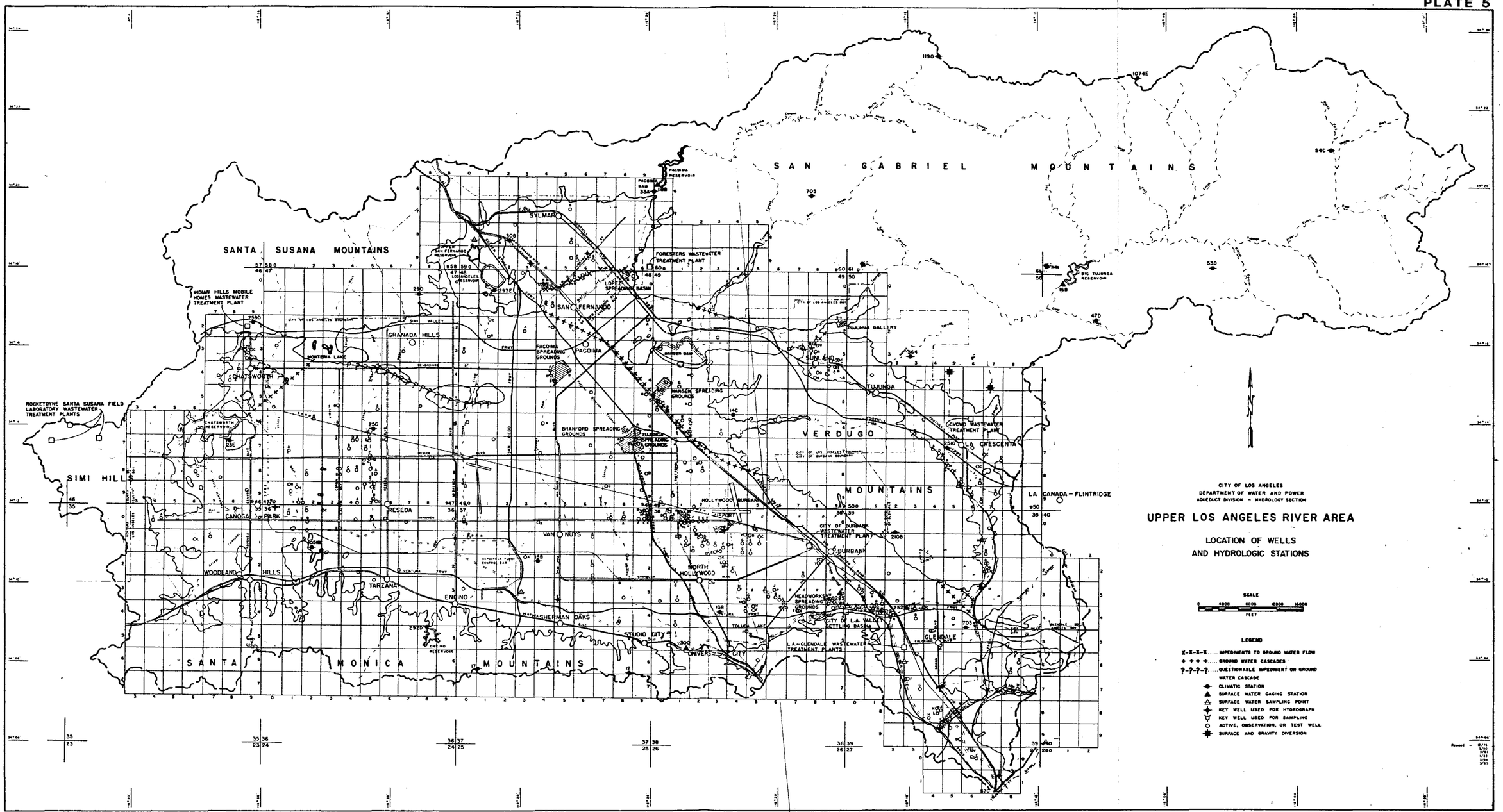
+ + + + GROUND WATER CASCADES

?-?-?-? QUESTIONABLE MEASUREMENT OR GROUND WATER CASCADE

WATER SERVICE AREAS OF PARTIES

AREA NUMBER		AREA NUMBER	
2	CONROCK CO.	10	MEURER ENGINEERING CO.
3	DEEP ROCK BOTTLED WATER.	11	SEARS, ROEBUCK & CO.
4	FOREST LAWN MEMORIAL PARK	12	ENVIRONMENTALS INC.
5	HARPER, CECELIA DEMILLE	13	SPARKLETTS DRINKING WATER CORP.
6	LIVINGSTON-GRAHAM, INC.	14	SPORTSMEN'S LODGE, INC.
7	LOCKHEED AIRCRAFT CORP.	15	TOLUCA LAKE PROPERTY OWNERS ASSN.
8	MEMA, JOHN & BARBARA	16	VALHALLA MEMORIAL PARK
9	MOORDIGIAN, KISAG	17	VAN DE KAMP'S DUTCH BAKERS, INC.
		18	WALT DISNEY PRODUCTIONS

PLATE 5



CITY OF LOS ANGELES
DEPARTMENT OF WATER AND POWER
AQUEDUCT DIVISION – HYDROLOGY SECTION

UPPER LOS ANGELES RIVER AREA

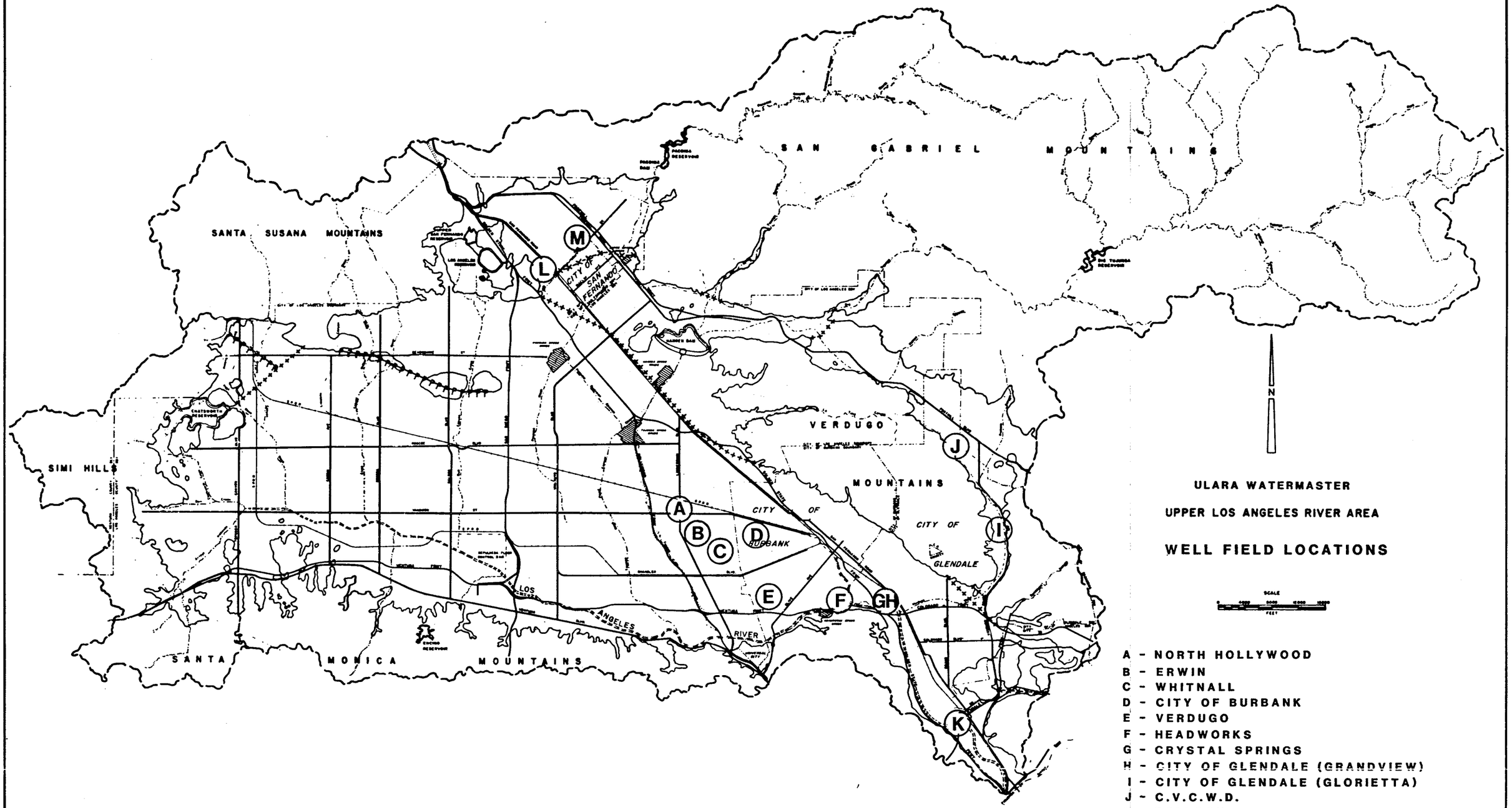
LOCATION OF WELLS AND HYDROLOGIC STATIONS

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

Revised – 12/76
5/80
5/81
1/83
5/84
5/85



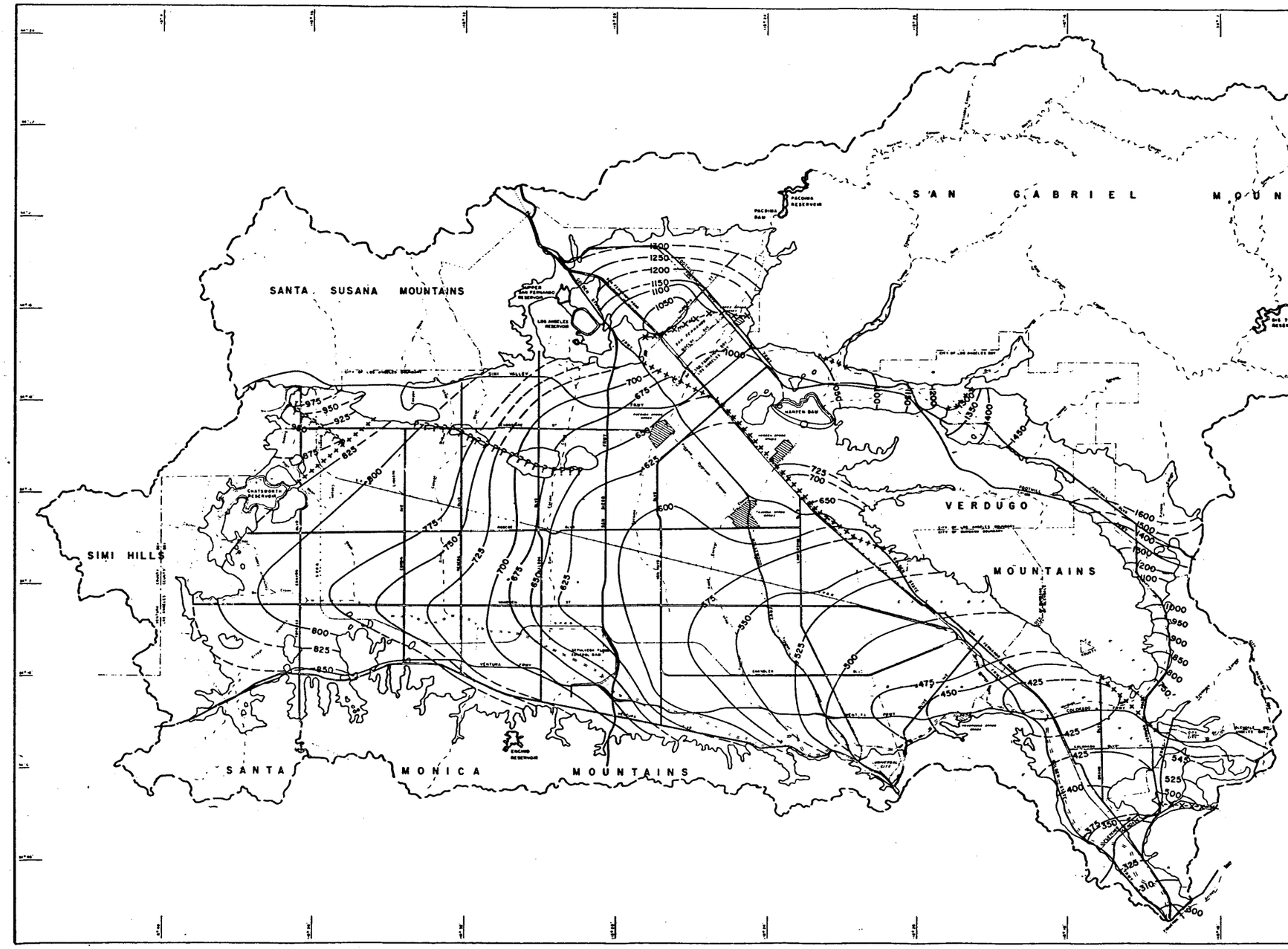
ULARA WATERMASTER

UPPER LOS ANGELES RIVER AREA

WELL FIELD LOCATIONS

SCALE

A - NORTH HOLLYWOOD
B - ERWIN
C - WHITNALL
D - CITY OF BURBANK
E - VERDUGO
F - HEADWORKS
G - CRYSTAL SPRINGS
H - CITY OF GLENDALE (GRANDVIEW)
I - CITY OF GLENDALE (GLORIETTA)
J - C.V.C.W.D.
K - POLLOCK
L - MISSION
M - CITY OF SAN FERNANDO



ULARA WATERMASTER

UPPER LOS ANGELES RIVER AREA

GROUND WATER CONTOURS

SPRING 1984

SCALE

0 4000 8000 12000 16000

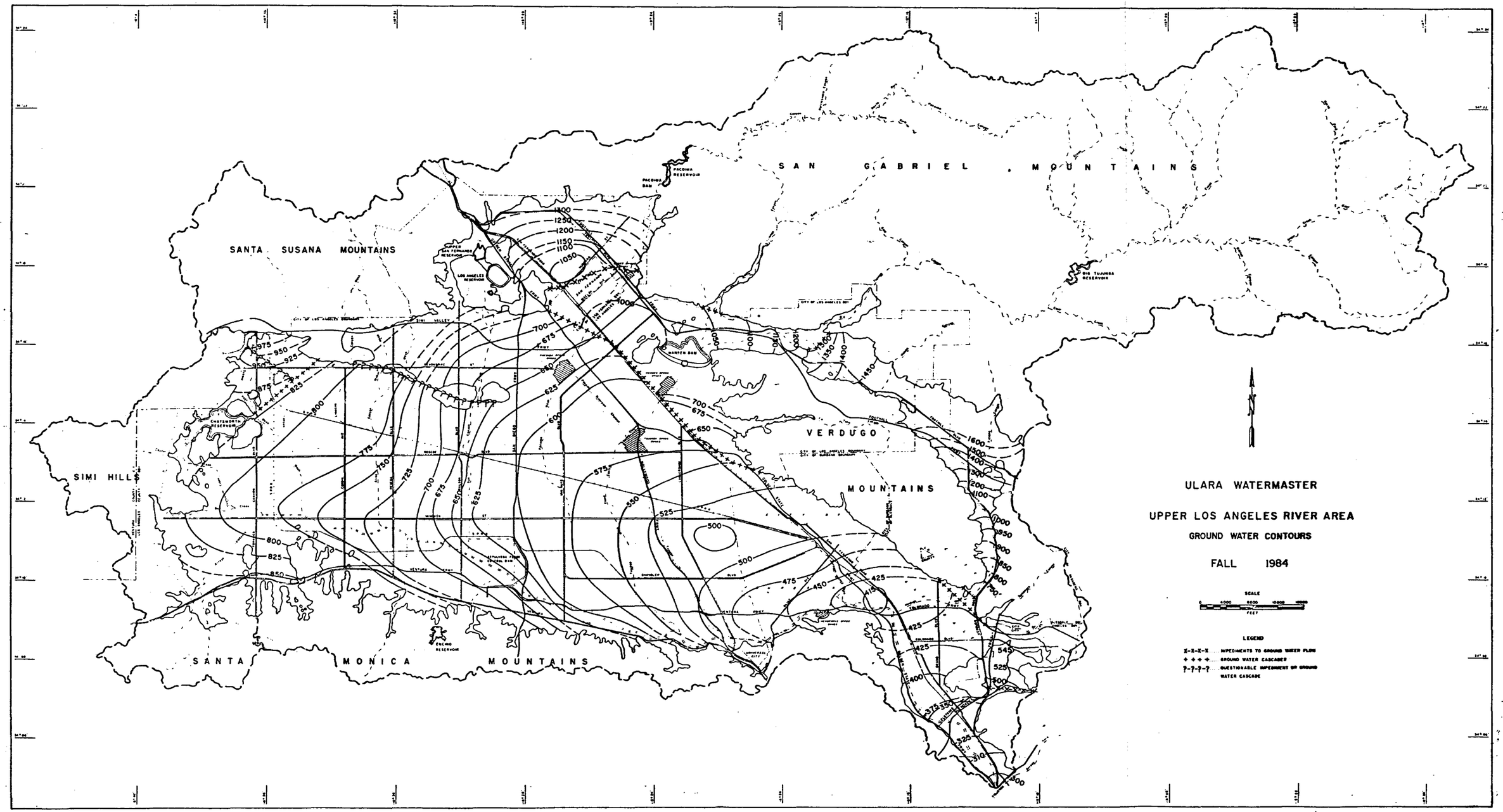
FEET

LEGEND

X-X-X-X ..... IMPEDIMENTS TO GROUND WATER FLOW

+ + + + ... GROUND WATER CASCADES

?-?-?-? ..... QUESTIONABLE IMPEDIMENT OR GROUND WATER CASCADE



ULARA WATERMASTER

UPPER LOS ANGELES RIVER AREA

GROUND WATER CONTOURS

FALL 1984

SCALE

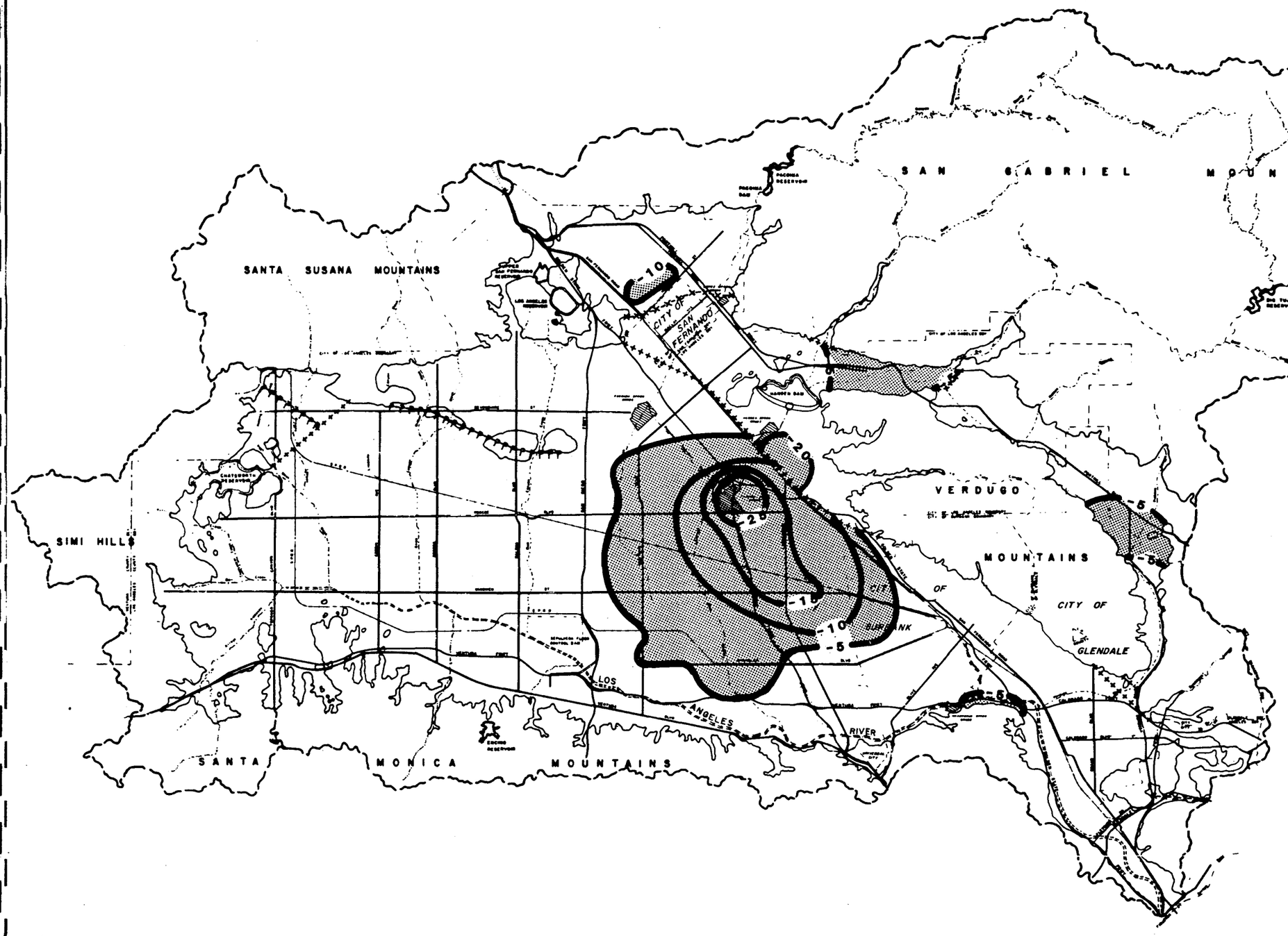
0 4000 8000 12000 16000 FEET

LEGEND

X-X-X-X ..... IMPEDIMENTS TO GROUND WATER FLOW

+ + + + ... GROUND WATER CASCADES

?-?-?-? ..... QUESTIONABLE IMPEDIMENT OR GROUND WATER CASCADE



N

ULARA WATERMASTER

UPPER LOS ANGELES RIVER AREA

LINES OF EQUAL CHANGE IN GROUND WATER ELEVATION FALL 1983 - FALL 1984

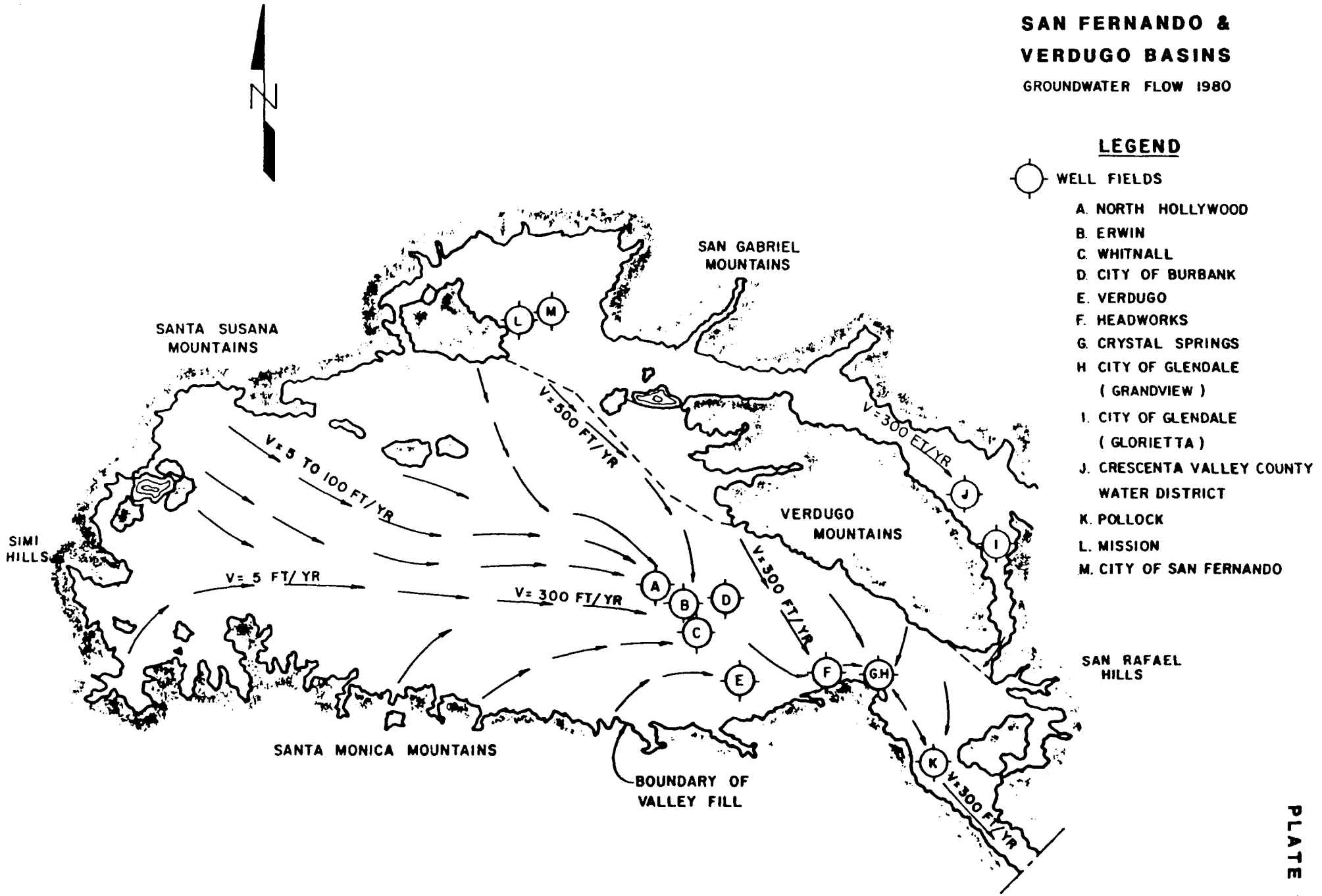
SCALE

LEGEND

- IMPEDIMENTS TO GROUND WATER FLOW
- GROUND WATER CASCADES
- QUESTIONABLE IMPEDIMENT OR GROUND WATER CASCADE
- RISE IN WATER LEVELS IN FEET
- DECLINE IN WATER LEVELS
- NO CHANGE (LESS THAN 5 FEET)

SAN FERNANDO & VERDUGO BASINS

GROUNDWATER FLOW 1980



LEGEND

WELL FIELDS

A. NORTH HOLLYWOOD
B. ERWIN
C. WHITNALL
D. CITY OF BURBANK
E. VERDUGO
F. HEADWORKS
G. CRYSTAL SPRINGS
H CITY OF GLENDALE (GRANDVIEW)
I. CITY OF GLENDALE (GLORIETTA)
J. CRESCENTA VALLEY COUNTY WATER DISTRICT
K. POLLOCK
L. MISSION
M. CITY OF SAN FERNANDO

PLATE 10