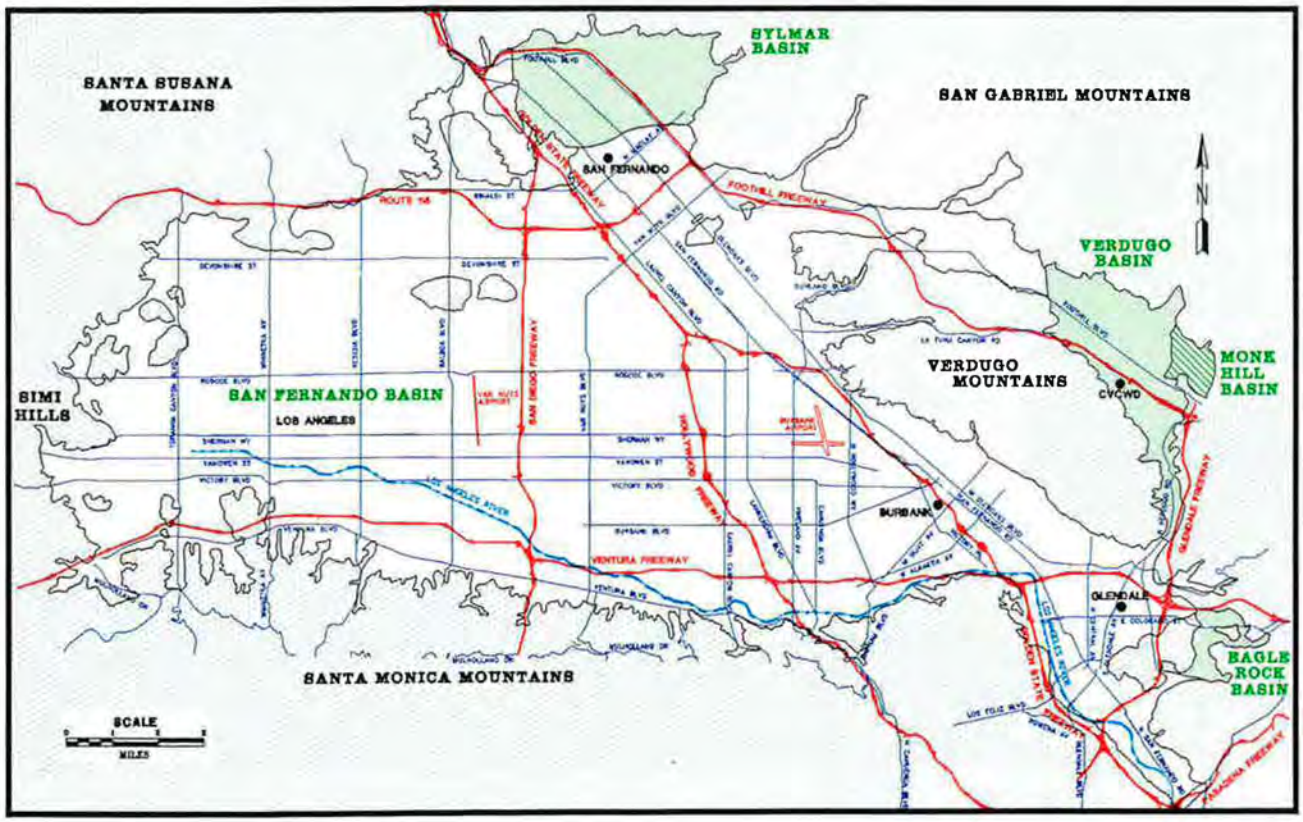
UPPER LOS ANGELES RIVER AREA WATERMASTER

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

1995-96 WATER YEAR
OCTOBER 1, 1995 - SEPTEMBER 30, 1996



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MAY 1997

FOREWORD

As Watermaster for the Upper Los Angeles River Area (ULARA), I am pleased to submit this report of the water supply in accordance with the provisions of the Final Judgment signed by the Los Angeles Superior Court on January 26, 1979.

This report describes the water rights in each basin, lists the allowable pumping for the 1995-96 Water Year, and indicates the water in storage to the credit of each party as of October 1, 1996. In addition, this report includes background information on the history of the San Fernando Case, information as to each basin and the ULARA, with respect to water supply, groundwater extractions, groundwater levels, quantities of imported water use, recharge operations, water quality conditions, and other pertinent information occurring during the 1995-96 Water Year pursuant to the provisions of the Judgment.

Updates on the development of significant issues that took place through the printing of this report are discussed in Section 1.5. These include the status of the Headworks Wellfield Remediation Project, the progress of the East Valley Water Recycling Project, the status of the Pollock Wells Treatment Plant Project, Burbank's Reclaimed System Expansion, the Burbank and Glendale OUs, and the Glendale Water Treatment Plant in the Verdugo Basin. The progress of the San Fernando Valley Remedial Investigation and related activities is discussed in Section 3.6.

Other matters that are under investigation are CalMat's operations in the San Fernando Basin, Meurer Engineering (Santiago Estates) in the Sylmar Basin, wells installed in Monteria Lakes Estates, and the Tegatz/Pankow (former DeMille party) water rights evaluation. Other action items to be evaluated in the 1995-96 water year include the water rights of parties, rising water outflow (Gage F57), and other basin activities (see Appendix L).

In an effort to provide a more extensive groundwater quality management for the San Fernando Valley basins, the ULARA Administrative Committee met on a monthly basis during 1995-96. As provided in Section 2.9 of the ULARA Policies and Procedures, the second "ULARA Groundwater Pumping and Spreading Plan" (dated September 1996) was completed. This report will now be published in July of each year.

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
ULARA Watermaster

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1. INTRODUCTION

1. INTRODUCTION

1.1 Background

The 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 Department of Public Works (LACDPW) Gaging Station F-57C-R, near the junction of the Los Angeles River and the Arroyo Seco (Plates 1 and 5). ULARA encompasses 328,500 acres, composed of 122,800 acres of valley fill, referred to as the groundwater 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 groundwater basins. The water supplies of these basins are separate and are replenished by deep percolation from rainfall, surface runoff and from a portion of the water that is delivered for use within these basins. The four groundwater basins in ULARA are the San Fernando, Sylmar, Verdugo, and Eagle Rock Basins.

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 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, 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 groundwater 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.

1.2 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, et al., Defendants, signed March 14, 1968, by the Honorable Edmund M. Moor, Judge of the Superior Court. Numerous pretrial conferences 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 an "Order of Reference to State Water Rights Board to Investigate and Report upon the Physical Facts (Section 2001, Water Code)" on June 11, 1958.

A final Report of Referee was approved on July 27, 1962 and filed with the Court. The Report of Referee made a complete study of the geology, insofar as it affects the occurrence and movement of groundwater and the surface and groundwater hydrology of the area. In addition, investigations were made of the history of 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 groundwater in the basin and their quality; and all sources of water, whether they be diverted, extracted, imported, etc. The Report of Referee served as the principal basis for geological and hydrological facts for the original Trial Court Judgment in 1968, the Decision of the Supreme Court in 1975 (14 Cal 3d 199, 123 Cal Rept 1), and the Trial Court Final 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 Appeal, 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 Appeal. 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 groundwater 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 groundwaters of the Sylmar and Verdugo Basins.

The City of Los Angeles was also given rights to all San Fernando Basin groundwater derived from water imported by it from outside ULARA and either spread or delivered within ULARA. The Cities of Glendale and Burbank each were also given rights to all San Fernando Basin groundwater 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 the ULARA Watermaster's office at Post Office Box 51111, Room 1463, 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 physical solution water for certain parties as suggested by the Supreme Court.

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. In response to the Watermaster's letter and a Minute Order of this Court, the Cities of Los Angeles and San Fernando responded by letter 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 would be limited in their pumping to bring the total pumping within the safe yield of the basin, including any rights exercised by private parties.

The following table lists the judges who have succeeded Judge Hupp as Judge of Record for the San Fernando Judgment.

TABLE 1-1: JUDGES OF RECORD

Judge	Date Appointed
Vernon G. Foster	April 30, 1985
Miriam Vogel	January 16, 1990
Sally Disco	May 25, 1990
Jerold A. Krieger	April 16, 1991
Gary Klausner	December 9, 1991
Ricardo A. Torres	January 1, 1993

1.3 Extraction Rights

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 safe yield water which is evaluated to be 43,660 acre-feet per year.

Import Return Water: Los Angeles, Glendale, and Burbank each has a right to extract the following amount:

Los Angeles: 20.8% of all delivered water (including reclaimed water) to valley fill lands of the San Fernando Basin.

Burbank: 20.0% of all delivered water (including reclaimed water) to the San Fernando Basin and its tributary hill and mountain areas.

Glendale: 20.0% of all delivered water (including reclaimed water) to the San Fernando Basin and its tributary hill and mountain areas (i.e., total delivered water [including reclaimed water] less 105% of total sales by Glendale in the 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 following table lists the parties and their maximum physical solution quantities.

TABLE 1-2: PHYSICAL SOLUTION PARTIES

Chargeable Party	Pumping Party	Allowable Pumping (acre-feet)
City of Los Angeles	City of Glendale	5,500
	City of Burbank	4,200
	Van de Kamp	120
	Toluca Lake	100
	Sportsmen's Lodge	25
City of Glendale	Forest Lawn	400
	Angelica Healthcare	75
City of Burbank	Valhalla	300
	Lockheed	25

Stored Water: Los Angeles, Glendale, and Burbank each has a right to store water and the right to extract equivalent amounts.

Sylmar Basin

Native and Import Return Water: As of October 1, 1984, Los Angeles and San Fernando were assigned equal rights to the safe yield of the basin. The Administrative Committe on July 16, 1996 approved increasing the safe yield in the Sylmar Basin on a trial basis by 300 AF to 6,510 AF/yr. The only potentially active private overlying right is Santiago Estates. As a successor to Meurer Engineering, Santiago Estates as of October 1995 was owned by Ellenberg Capital which is pumping for landscaping irrigation. Santiago Estates pumping is deducted from the safe yield and the two cities divide the remainder.

Stored Water: Los Angeles and San Fernando each has a right to store water and the right to extract equivalent amounts.

Verdugo Basin

Native and Import Return Water: Glendale and the Crescenta Valley Water District own prescriptive rights to extract 3,856 acre-feet and 3,294 acre-feet per year, respectively. Glendale is not currently pumping its full prescriptive right. Crescenta Valley Water District has requested and been given approval by the Administrative Committee to once again pump an adjusted amount above its prescriptive amount for the 1996-97 water year (Appendix I). During the 1995-96 water year Crescenta Valley pumped approximately 400AF above its prescriptive right.

Eagle Rock Basin

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

Imported Return Water: Los Angeles delivers imported water to lands overlying the basin, and return flow from this delivered water constitutes the entire safe yield

of the basin. Los Angeles has the right to extract or cause to be extracted the safe yield of the basin.

Physical Solution Water: McKesson Water Products (successor to Sparkletts) and Deep Rock each have physical solution rights to extract water pursuant to a stipulation with the City of Los Angeles, and as provided in Section 9.2.1 of the Final Judgment.

1.4 Watermaster Service and Administrative Committee

In preparing the annual Watermaster Report, the Watermaster collected and reported all information affecting and relating to the water supply, water use and disposal, groundwater levels, water quality, and ownership and location of new wells within ULARA. Groundwater pumpers report their extractions monthly to the Watermaster. This makes it possible to update the Watermaster Water Production Accounts on a monthly basis and determine the allowable pumping for the remainder of the year.

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 May 1, 1997, are:

Burbank, City of
Fred Lantz (President)
Ross Burke (Alternate)

Glendale, City of
Donald Froelich (Vice-President)
Wil Wilson (Alternate)

San Fernando, City of
Michael Drake
Harold Tighe (Alternate)

Los Angeles, City of
Robert Y. Yoshimura
Gerald Gewe (Alternate)

Crescenta Valley Water District
Michael Sovich
Phil McCleaf (Alternate)

The Administrative Committee may be convened by the Watermaster at any time in order to seek its advice. Each year the Committee is responsible for reviewing and approving with the

Watermaster the proposed annual report. The 1995-96 Watermaster Report was approved by the Committee on April 15, 1997.

1.5 Significant Events Through April 1997

Headworks Well Field Remediation Project

Until the early 1980s, the Headworks wells were the most productive wells (6 wells) in the Los Angeles water system, each well pumping between 2500-4000 gpm. However, the wellfield was taken out of service when it was discovered that the well water was contaminated with industrial solvents, primarily TCE and PCE. The project goal is to reactivate the well field by using some form of groundwater treatment process. Presently, an alternative study is under internal review to evaluate available treatment technologies. The preliminary concept is to pump approximately 13,000 gpm from six wells, convey the groundwater to a central treatment facility located at the Headworks Spreading Grounds, remove the contaminants, and finally pump the supply back into the River Supply Conduit distribution system.

East Valley Water Recycling Project

The LADWP continues to make progress in the implementation of this project. The East Valley Water Recycling Project (EVWRP) is the cornerstone of the City's water recycling efforts and will ultimately fulfill nearly half the goal of reusing about 40 percent of the city's wastewater by 2010. This project, originally entitled the East Valley Water Reclamation Project (EVWRP), will utilize up to 35,000 acre-feet per year of reclaimed water from the Tillman Water Reclamation Plant, primarily for groundwater recharge in the Sun Valley area of the San Fernando Valley. Other incidental uses will be for irrigation and industrial applications. About 25% of the 20,000 feet of the pipeline contract has been constructed. Design of the pump station is near completion. Construction of the monitoring well network system has also begun. This system will provide the necessary data to evaluate the effectiveness of the soil and aquifer system as natural filtration and cleansing media for the reduction of the of total organic carbon and nitrogen constituents from the process water.

Pollock Wellfield Treatment Plant

The Pollock Wellfield, which is located in the Los Angeles River Narrows area, was removed from service in the late 1980s because the water quality was significantly degraded with industrial solvents. The LADWP is proceeding to construct the Pollock Wells Treatment Plant to restore two of the existing Pollock production wells to operation by treating the groundwater with liquid

phase Granular Activated Carbon to remove VOCs and then blending for nitrate reduction. Another significant purpose of the Pollock project is to reduce the rising groundwater discharges from the Los Angeles River Narrows area. The Pollock plant will also provide increased flexibility in utilizing the basin. Plant construction began in March 1997 with a completion date for May 1998.

Pacoima Area Groundwater Investigation

A significant groundwater contaminant plume has been identified in the Pacoima area near the intersection of the Simi Valley (118) Freeway and San Fernando Road (Plate 7). LADWP, working in cooperation with the RWQCB, Cal-EPA Department of Toxics Substance Control, USEPA, City of Los Angeles-Industrial Waste Division, and the ULARA Watermaster's Office has developed a plan to further investigate the extent and nature of the contaminant plumes. LADWP has installed one monitoring well downgradient of the contaminant plumes to enhance the contaminant characterization and to provide an early warning detection system for the Tujunga Well Field.

Burbank EPA Consent Decree Project

Phase II of the EPA Consent Decree project (Burbank OU), will be completed in 1998. The Second Consent Decree will specifiy the obligations of operation and maintenance on the treatment facility for the next 18 years. Lockheed BOU began delivering water to the Burbank distribution system January 1996. Flows as high as 8,250 gpm were attained during the months of May and June, following which a range of problems developed mainly calcium bicarbonate forming carbon clumps and carbon crystals. On September 19, 1996 the Lockheed BOU was shut down because of carbon fines in the drinking water. The problem has been mitigated and after receiving approvals from USEPA, the Lockheed BOU was restarted on November 18, 1996. The carbon and calcium carbonate particles posed no health threat to the public.

Glendale EPA Project

The City of Glendale and the DreamWorks Studios SKG entered into an agreement permitting the DreamWorks to develop a studio on the Crystal Springs site which had been previously selected as the site for the treatment plant of the operable unit. The City of Glendale, USEPA, and the Glendale Respondents Group have spent most of the year negotiating the resulting changes to the original design and the affected construction schedule. DreamWorks plans to have its animation studio operating by December 1997.

Glendale-Verdugo Park Water Treatment Plant

The City completed construction of the Verdugo Park Water Treatment Plant, but this facility is running at 400 gpm instead of the expected 700 gpm. Alternative methods to increase the efficiency of the wells are being investigated.

Redtail Golf Course

A public golf course has been proposed for a portion of the Tujunga Wash east of the 210 freeway. The developer has requested permission to investigate pumping groundwater high in nitrates and unsuitable for drinking water to irrigate the golf course. This use could have the double benefit of recycling and reducing the nitrates in the groundwater and reducing chemical fertilization of the golf course turf. The overall impact could be the reduction of nitrates for an extended period of time. Costs for the water would be established by the Department of Water and Power with approval from its Board of Commissioners and the City Council.

Sunset Farms Business Park

The Watermaster received a request from a land developer for information regarding water rights for their tract of land located near the northeast corner of the 210 and 5 freeways. The developers were informed that their property was within the boundaries of the ULARA watershed, and governed by the San Fernando Judgment, and Section 2.7 of the "ULARA Policies and Procedures," dated July 1993. They were referred to the City of Los Angeles Department of Water and Power which denied their request on the basis that there was no special need to pump groundwater.

CalMat

Under the Judgment, CalMat (successor to Conrock, defendant No. 18) was assigned rights to pump groundwater to be used for processing sands and gravel in their mining operations. The Judgment established that the pumped groundwater would be a non-consumptive or minimal consumptive (10%) use. The intent was to recharge or replenish the aquifer with the remaining 90% of the same processed groundwater. However, there appear to be continuing violations of the spirit of the Judgment which include evaporative losses at the desilting ponds of the Trout-Sweitzer and Sun Valley pits, substantial evidence of exposed water table at the Sheldon Pond, and the possibility of mining at the Boulevard Pit which could expose the water table. The Watermaster is working to develop a plan that would protect groundwater rights of the City of Los Angeles, while at the same time allowing CalMat to maintain its operations in the basin.

Monteria Lake

Under the Judgment, the Monteria Lake Association was declared a Defaulting Party, that is, a party specifically not assigned any water rights. During the past year, the Watermaster was made aware that groundwater was possibly being pumped for irrigation by private parties in the Monteria Lake and Estates Associations. The Watermaster investigated and confirmed the installation of illegal wells and tanks, as well as, encroachment on the City of Los Angeles Department of Water and Power easements. All the individual homeowners of the community have been notified that they may not pump groundwater and that the groundwater rights of the San Fernando Basin have been assigned to the City of Los Angeles and groundwater pumping is a violation of these rights. The property on which the wells were installed will continue to be monitored by the Watermaster until the wells are abandoned.

Tegatz/Pankow (DeMille)

Additional Watermaster investigations included the DeMille Estate, a Disclaiming Party which gave up any water rights during the San Fernando litigation. In the mid 1980s this property was purchased by the Tegatz/Pankow Estate. The Watermaster has met several times with the property owner to provide information and an explanation of groundwater rights in the San Fernando Basin and to describe the methods used by the Court to define basin boundaries and the associated groundwater system. The responsibilities of Tegatz/Pankow have been detailed and include metering and reporting of well pumping activities. The Watermaster will continue to work with the property owner to ensure that the water rights of the City of Los Angeles are protected.

Dewaterers

The groundwater table in parts of the San Fernando Basin is near the ground surface that in some instances requires dewatering to maintain subsurface structures. A process for notifying the ULARA Watermaster has been reinstituted with the Department of Building and Safety. As permits are requested in the San Fernando Basin, the Watermaster's Office is notified and sets of plans are submitted for review. If the property has the potential for short-term or long-term dewatering, instructions are provided. If not, the party is released from any further responsibilities. Appendix F provides a copy of the instructions.

1.6 Summary of Water Supply, Operations, and Hydrologic Conditions

Highlights of operations for the 1994-95 and 1995-96 Water Years are summarized in Table 1-3. Details of the 1995-96 Water Year operations and hydrologic conditions are given in Section 2. Locations of the ground water basins, water service areas of the parties and individual producers, and other pertinent hydrologic facilities are shown on Plates 2 through 9.

Average Rainfall

Precipitation on the valley fill floor area during 1995-96 was 12.03 inches, 73 percent of the calculated 100-year mean (16.48 inches); precipitation in the mountain areas was 16.02 inches, 74 percent of the calculated 100-year mean (21.62 inches).

Spreading Operations

A total of 21,239 acre-feet of water was spread -- a large decrease from the 69,108 acre-feet spread during the rainy 1994-95 water year. Average annual spreading for the 1968-1996 period was 34,800 acre-feet.

Extractions

Total ULARA extractions amounted to 94,659 acre-feet. Of this total, 1,007 acre-feet was for non-consumptive use. Total extractions increased 23,099 acre-feet from the previous water year. This increase was related to decreased surface water available statewide. Appendix A contains a summary of ground water extractions for the 1995-96 Water Year.

Imports

Gross imports (which include pass-through water) totaled 510,116 acre-feet, an increase of one percent from 1994-95; net imports used within ULARA amounted to 309,693 acre-feet, a 28,661 acre-feet increase.

Exports

A total of 278,722 acre-feet of water was exported from ULARA, an increase of 9,324 acre-feet from the previous year. Of the 278,722 acre-feet exported, 68,514 acre-feet was from ground water extractions, and 210,208 acre-feet was from imports (pass-through).

Treated Wastewater

A total of 99,524 acre-feet of wastewater was treated in ULARA. The majority of the treated water was discharged to the Los Angeles River, a small amount was delivered to the Hyperion Treatment Plant, and approximately seven percent was used as reclaimed water.

Reclaimed Water

Total reclaimed water used in ULARA was 7,760 acre-feet, a 336 acre-feet increase from last year. The reclaimed water is used for in-plant use, power plant use (i.e. cooling), irrigation and landscaping.

Sewage Export

Sewage export was estimated at 119,233 acre-feet; this was the amount of sewage delivered by pipeline to the Hyperion Treatment Plant. It does not include treated wastewater discharged to the Los Angeles River which leaves ULARA as surface flow.

Groundwater Storage

Groundwater storage in the San Fernando Basin during 1995-96 decreased by 49,223 acre-feet; the total cumulative increase in groundwater storage since October 1, 1968 is 261,986 acre-feet. The 1995-96 decrease is due to a combination of decreased spreading activities by the LACDPW, below-average rainfall, and about average groundwater pumping. The change in groundwater storage for the Sylmar, Verdugo, and Eagle Rock Basins was -3,128, -973, and -108 acre-feet, respectively. The total change in groundwater storage in ULARA was -53,171 acre-feet.

Wells

During the 1995-96 Water Year, no wells were drilled for use in groundwater investigations within ULARA and no wells were destroyed. Sixteen new monitoring wells for the East Valley and the Pacoima Investigations will be installed beginning February 1997.

TABLE 1-3: SUMMARY OF OPERATIONS IN ULARA

Item	Water Year 1994-95	Water Year 1995-96
Active Pumpers (party and nonparties)	29	29
Inactive Pumpers (parties within valley fill)(a)	2	3
Valley Rainfall, in inches		
Valley Floor	32.69	12.03
Mountain Area	33.36	16.02
Spreading Operations, in acre-feet	69,108	21,239
Extractions, in acre-feet		
Used in ULARA	17,232	24,098
Exported from ULARA	53,981	68,714
Nonconsumptive Use	347	1007
Testing (b)	0	113
Clean-up/Dewaterers		612
Total	71,560	94,544
Gross Imports, in acre-feet		
Los Angeles Aqueduct Water	353,168	450,917
MWD Water	150,600	59,199
Total	503,768	510,116
Exports, in acre-feet		
Los Angeles Aqueduct Water	168,898	198,779
MWD Water	46,519	1,644
Ground Water	53,981	68,714
Total	269,398	269,137
Net Imports Used in ULARA, in acre-feet	288,351	309,693
Reclaimed Water Use, in acre-feet	7,424	7,877
Total Water Use in ULARA, in acre-feet (c)	313,007	341,668
Treated Wastewater, in acre-feet (d)	99,815	99,524
Sewage Export to Hyperion, in acre-feet (e)	116,540	119,233

(a) The three inactive pumpers are Deep Rock Bottled Water Company, Van de Kamp, Disney.
(b) Parties are allowed to extract a limited amount for facility testing purposes.
(c) Extractions plus Net Imports used plus Reclaimed.
(d) Most treated wastewater flows to LAR, a portion to Hyperion (see T2-7), and for reclaimed water.
(e) Sewage outflow includes estimates of outflow from each of the four basins, and discharges to Hyperion from the Tillman and Los Angeles-Glendale Reclamation Plants.

1.7 Allowable Pumping for the 1996-97 Water Year

Table 1-4 shows a summary of extraction rights for the 1996-97 Water Year and stored water credit as of October 1, 1996, for the Cities of Los Angeles, Burbank, Glendale, San Fernando, and the Crescenta Valley Water District. The calculation of these values is shown in more detail in Section 2.

TABLE 1-4: ALLOWABLE PUMPING 1996-97 WATER YEAR
(acre-feet)

	Extraction Right			Stored Water Credit (as of Oct. 1, 1996)	Allowable Pumping 1996-97 Water Year
	Native Safe Yield Credit (a)	Import Return Credit (b)	Total Sum of Native + Import		
San Fernando Basin					
City of Los Angeles	43,660	43,701	87,361	302,670	390,031
City of Burbank	—	4,625	4,625	61,415	66,040
City of Glendale	—	5,424	5,424	54,797	60,221
Total	43,660	53,750	97,410	418,882	516,292
Sylmar Basin					
City of Los Angeles	—	—	3,255	3,986	7,241
City of San Fernando	—	—	3,255	2,313	5,568
Total	—	—	6,510	6,299	12,809
Verdugo Basin (c)					
CVWD	—	—	3,294	—	3,294
City of Glendale	—	—	3,856	—	3,856
Total	—	—	7,150	—	7,150

(a) Native Safe Yield, Per Judgment, p.11
(b) Import Return, Per Judgment p.17
(c) There is no Stored Credit assigned in the Verdugo Basin.

2. WATER SUPPLY, OPERATIONS, AND HYDROLOGIC CONDITIONS

2. WATER SUPPLY, OPERATIONS, AND HYDROLOGIC CONDITIONS

2.1 Precipitation

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 1995-96 Water Year experienced below average rainfall. The valley floor received 12.03 inches of rain (73% of the 100-year mean), while the mountain area received 16.02 inches (74% of the 100-year mean). Figure 2.1 shows monthly valley floor and mountain area rainfall in ULARA. The weighted average of both valley and mountain area was 14.48 inches (74% of the 100-year mean). Table 2-1 shows a record of rainfall at the valley and mountain precipitation stations, and Plate 5 shows their locations.

FIGURE 2.1 - MONTHLY RAINFALL

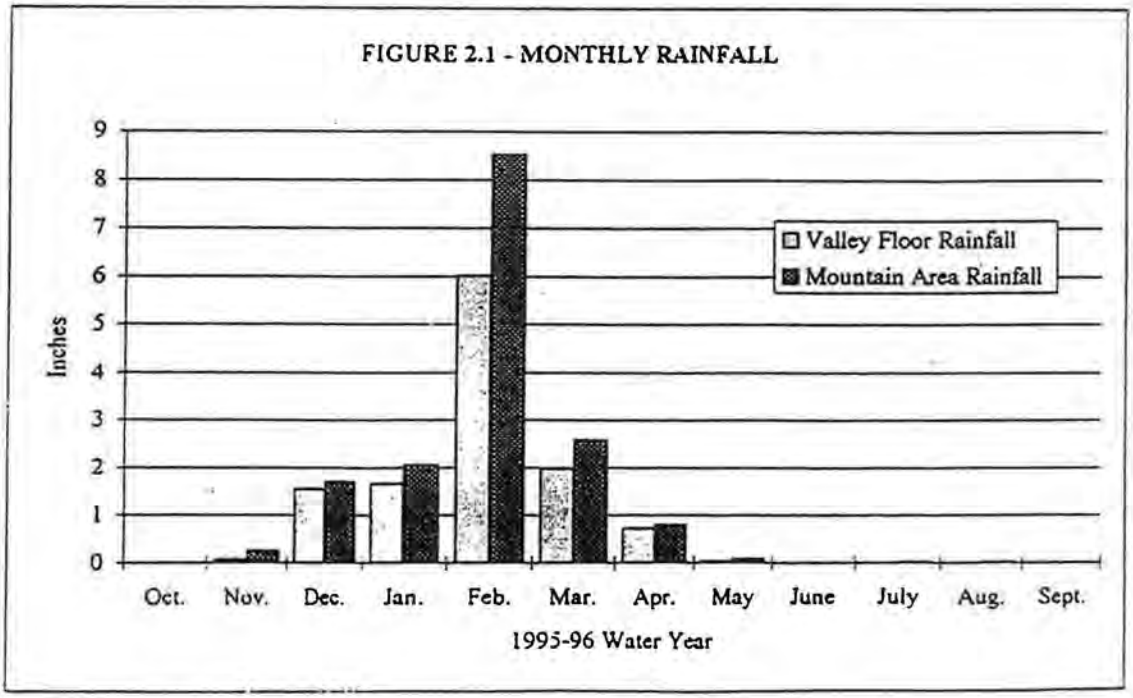


TABLE 2-1: 1995-96 PRECIPITATION
(inches)

LACDPW Rain Gage Stations No.	Name	1995-96 Precipitation	100-Year Mean (1881-1981)	Percent of 100-Year Mean
	Valley Stations			
13C	North Hollywood-Lakeside	12.19	16.63	73%
14C	Roscoe-Merrill	10.28	14.98	69%
465C	Sepulveda Dam	9.39	15.30	61%
21B	Woodland Hills	9.98	14.60	68%
23B	Chatsworth Reservoir	12.20	15.19	80%
25C	Northridge-LADWP	10.61	15.16	70%
251C	La Crescenta	19.76	23.31	85%
293B	Los Angeles Reservoir	13.80	17.32	80%
	Weighted Average*	12.03	16.48	73%
	Mountain Stations			
11D	Upper Franklin Canyon Reservoir	12.18	18.50	66%
17	Sepulveda Canyon at Mulholland	15.60	16.84	93%
33A	Pacoima Dam	15.18	19.64	77%
47D	Clear Creek - City School	28.10	33.01	85%
53D	Colby's	21.90	29.04	75%
54C	Loomis Ranch-Alder Creek	11.32	18.62	61%
210C	Brand Parks	15.70	19.97	79%
797(a)	DeSoto Reservoir	14.03	17.52	80%
	Weighted Average (b)	16.02	21.76	74%
	Weighted Average of both Valley and Mountain Areas (b)	14.48	19.64	74%

(a) Station 797 replaced Station 259 which has been discontinued.

*Weighted Average calculations performed according to Report of Referee-7/62

2.2 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 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, industrial and sanitary waste discharges, and rising water.

A number of stream-gaging stations are maintained throughout ULARA, either by the LACDPW or the United States Geological Survey (USGS). The Watermaster has selected six key gaging stations which record runoff from the main hydrologic areas in ULARA (Plate 5 shows the location of the stations). The six gage stations are as follows:

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

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

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

4. Station F-300-R registers all flow east of Lankershim Boulevard plus the portion of outflow from Hansen Dam which is not spread. These records also include flow through the Sepulveda Dam, which may include extractions from the Reseda wells.

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

6. Station F-118B-R registers all releases from Pacoima Dam. Runoff below this point flows to the Los Angeles River through lined channels, or can be diverted to the Lopez and Pacoima spreading grounds. This station, severely damaged in January 1994 during the Northridge Earthquake, began reporting again in November 1996.

Table 2-2 summarizes the 1994-95 and 1995-96 monthly runoff for these stations. The lower runoff in 1995-96 is related to lower rainfall in 1995-96 than in 1994-95. The mean daily discharge rates for these six stations during 1995-96 are summarized in Appendix B.

TABLE 2-2: MONTHLY RUNOFF AT SELECTED GAGING STATIONS
(acre-feet)

Station	Water Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
F-57C-R	1995-96	8,386	7,685	13,079	14,652	31,590	13,516	8,886	7,972	8,625	11,327	13,931	11,507	151,156
LA River	1994-95	12,670	12,060	13,840	242,900	18,220	81,610	5,387	10,610	10,730	9,402	12,240	8,898	438,567
Arroyo Seco														
F-252-R	1995-96	152	149	505	1,315	5,746	4,832	220	185	103	143	89	83	13,522
Verdugo Wash	1994-95	141	140	1,648	18,690	2,373	8,589	470	178	1,107	138	114	108	33,696
F-285-R	1995-96	785	762	802	1,004	7,740	1,247	629	624	552	620	581	603	15,949
Burbank	1994-95	2,209	1,444	3,336	6,692	1,551	7,544	954	989	1,374	839	920	835	28,687
Storm Drain														
F-300-R	1995-96	4,628	4,979	8,709	9,211	18,450	8,804	6,140	4,882	4,597	4,892	4,642	4,690	84,624
LA River	1994-95	6,884	5,603	7,812	77,510	838	38,040	7,308	5,185	5,074	4,317	5,197	4,001	167,769
Tujunga Ave.														
F-168-R	1995-96	191	208	240	121	2,104	2,412	983	926	337	271	178	135	8,106
Big Tujunga	1994-95	117	116	100	8,665	4,428	12,410	4,074	2,127	1,649	444	215	184	34,529
Dam														
F-118B-R	1995-96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pacoima Dam	1994-95	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

F-57-R Data Provided by US Army Corp of Engineers telemetry system.

F118B-R Out of service due to 1994 earthquake damage.

2.3 Components of Surface Flow

The surface flow of the Los Angeles River at Gaging Station F-57C-R consists of:

1. Storm flows
2. Reclaimed wastewater from the Tillman, Burbank, and Los Angeles-Glendale Water Reclamation Plants
3. Industrial discharges

In the Report of Referee (Volume II, Appendix O), procedures were developed for the calculation of rising groundwater for the period 1928-1958. Some of the important factors of that study are no longer significant -- releases of Owens River water, operation of the Chatsworth Reservoir, and (temporarily, at least) operation of the Headworks Spreading Grounds. As shown on Figure O-2 of the Report of Referee, rising water was considered to have fallen to zero by the late 1950s. Groundwater levels along the course of the Los Angeles River were studied recently in the January 1993 report by Brown and Caldwell, "Potential Infiltration of Chlorides from the Los Angeles River into the Groundwater Aquifer". Figure 2-4 of that report is especially informative. As of the end of the drought period in 1977, groundwater levels in the Los Angeles Narrows were very low, with very little potential for rising groundwater. Heavy runoff occurred during the 1978-83 period, which, combined with reduced pumping in the Crystal Springs and Pollock Well Fields, permitted large recoveries of groundwater levels in the Los Angeles Narrows.

An even greater factor affecting hydrologic conditions in the Los Angeles Narrows has been the increasing releases of reclaimed waters. Releases from the Los Angeles-Glendale Plant were started in 1976-77 and from the Tillman Plant in 1985-86. These large year-round releases tend to keep the alluvium of the Los Angeles River Narrows full, even in dry years. There is opportunity for continuing percolation in the unlined reach, both upstream and downstream of the paved section near the confluence of the Verdugo Wash and the Los Angeles River. Water percolating in the unlined reach is believed to circulate through shallow zones and re-appear as rising groundwater downstream from Los Feliz Boulevard. Also, there is up to 3,000 acre-feet of recharge from delivered water within the Los Angeles Narrows-Pollock Well Field area that adds to the rising groundwater conditions.

Rising groundwater also occurs above the Verdugo Narrows, and in the reach upgradient from Gage F-57C-R. During dry periods conditions in the unlined reach are stabilized with regard to percolation and rising water by releases of treated water. In wet periods rising water above gage F-57C-R has been considered to be related to the increase of rising water above the Verdugo Narrows. Thus from 1991-92 (Table 2-3) to the very wet year of 1992-93 there was an increase of rising water at Gage F-252-R of about 1,900 acre-feet. From 1994-95 to 1995-96, flows of rising water at gage F-252-R decreased by about 2,232. For 1995-96 the rising water flow at gage F-57C-R was estimated to have decreased by 1,059 acre-feet to 3,841 acre-feet, similar to the estimate for the year of 1985-1986.

TABLE 2-3
ESTIMATED SEPARATION OF SURFACE FLOW AT STATIONS F-57C-R & F-252-R
(acre-feet)

Water Year	Base Flow		Storm Runoff	Total Measured Outflow
	Rising Ground Water	Waste Discharge		
		Station F-57C-R		
1972-73	4,596	8,776	100,587	113,959
1973-74	2,694	6,366	79,587	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	16,450	119,810	139,100
1979-80	5,500	16,500	n/a	n/a
1980-81	4,710	19,580	51,940	76,230
1981-82	1,280	18,180	80,000	99,460
1982-83	3,460	17,610	384,620	405,690
1983-84	3,000	17,780	49,090	69,870
1984-85	3,260	21,600	46,300	71,160
1985-86	3,880	48,370	102,840	155,090
1986-87	3,000	64,125	19,060	83,295
1987-88	3,000	81,920	74,074	156,204
1988-89	3,000	80,020	56,535	136,843
1989-90	3,000	76,789	55,811	167,639
1990-91	3,203	75,647	117,779	196,629
1991-92	3,000	120,789	197,040	320,829
1992-93	4,900	77,000	478,123	560,023
1993-94	2,952	60,594	73,149	136,695
1994-95	4,900	66,209	367,458	438,567
1995-96	3,841	86,127	61,188	151,156
		Station F-252-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	n/a	n/a
1979-80	5,150	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	0	21,384	26,714
1983-84	4,000	0	n/a	n/a
1984-85	2,710	0	3,970	6,680
1985-86	2,470	0	6,270	8,740
1986-87	2,100	0	1,690	3,790
1987-88	3,548	0	10,493	14,041
1988-89	1,995	0	4,453	6,448
1989-90	1,182	0	2,938	4,120
1990-91	1,157	0	6,865	8,022
1991-92	1,412	0	13,209	14,621
1992-93	3,335	0	20,185	23,520
1993-94	1,387	0	6,156	7,543
1994-95	4,809	0	28,881	33,696
1995-96	2,577	0	10,946	13,523

2.4 Groundwater Recharge

Precipitation has a marked influence on groundwater recharge and, with some delay, groundwater storage. Urban development during the past years in ULARA has resulted in approximately 20 percent of the rainfall being collected and routed into paved channels which discharge into the Los Angeles River. To partially offset the increased runoff due to urbanization, Pacoima and Hansen Dams, originally built for flood control, are utilized to regulate storm flows and allow recapture of the flow in downstream spreading basins operated by the LACDPW and the City of Los Angeles.

The LACDPW operates the Branford, Hansen, Lopez, and Pacoima spreading grounds; the City of Los Angeles operates the Headworks spreading grounds. The LACDPW, in cooperation with the City of Los Angeles, operates the Tujunga spreading grounds. The spreading grounds operated by the LACDPW are utilized for spreading native water, and imported water under agreements. Table 2-4 summarizes the spreading operations for the 1995-96 Water Year, and Plate 6 shows the locations of the spreading basins.

TABLE 2-4: 1995-96 SPREADING OPERATIONS IN THE SAN FERNANDO BASIN
(acre-feet)

Agency	Spreading Facility	1995			1996								Total
		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
LACDPW														
	Branford	14	18	89	48	72	39	27	13	7	6	6	6	345
	Hansen	0	0	689	1,089	2,723	1,234	1,349	555	216	373	4	0	8,232
	Lopez	0	0	0	0	69	97	172	25	0	0	0	0	363
	Pacoima	0	0	61	250	1,544	2,172	505	0	0	0	0	0	4,532
	Tujunga	372	497	277	26	1,740	3,250	0	750	336	0	255	264	7,767
	Total	386	515	1,116	1,413	6,148	6,792	2,053	1,343	559	379	265	270	21,239
City of Los Angeles														
	Tujunga	0	0	0	0	0	0	0	0	0	0	0	0	0
	Headworks	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hansen*	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Burbank														
	Pacoima	0	0	0	0	0	0	0	0	0	0	0	0	0
Basin Total		386	515	1,116	1,413	6,148	6,792	2,053	1,343	559	379	265	270	21,239

*East Valley Water Recycling Project will be spread in approximately 1998.

2.5 Groundwater Extractions

The original trial court adjudication of groundwater rights in ULARA restricted all groundwater 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 from 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 groundwater pumping.

McKesson Water Products (formerly Sparkletts Drinking Water Corporation) and Deep Rock Water Company are the only parties which have rights to extract water from the Eagle Rock Basin. These parties pay the City of Los Angeles for pumped ground water pursuant to the Judgment.

Figure 2.2 illustrates the annual groundwater extractions and imported water used in ULARA, beginning with the 1954-55 Water Year. It can be noted that for the 14 years prior to pumping restrictions (1954-55 to 1967-68), imports exceeded extractions by 50,000 to 90,000 acre-feet per year, in contrast to the past 28 years (1968-69 to 1995-96) where imports have exceeded extractions by 110,000 to 250,000 acre-feet per year (Refer to Figure 2.3 - Monthly Extractions and Imports).

A total of 94,659 acre-feet was pumped from ULARA during the 1995-96 Water Year- 82,862 acre-feet from the San Fernando Basin, 5,752 acre-feet from the Sylmar Basin, 5,838 acre-feet from the Verdugo Basin, and 208 acre-feet from the Eagle Rock Basin. The respective safe yield values for the 1995-96 Water Year are 106,271 acre-feet (Native Safe Yield of 43,660 and an import return of 49,251 acre-feet) for the San Fernando Basin, 6,510 acre-feet for the Sylmar Basin, and 7,150 acre-feet for the Verdugo Basin. Appendix A contains a summary of groundwater extractions for the 1995-96 Water Year, Plate 9 shows the locations of the well fields, and Plate 10 describes the pattern of groundwater extractions.

Of the total amount pumped in the San Fernando Basin (82,862 acre-feet), 80,267 acre-feet constitutes extraction rights by Parties to the Judgment, 1,007 acre-feet constitutes nonconsumptive use, and 1,589 acre-feet was by physical solution parties, groundwater cleanup, testing/well development, and dewatering parties (Appendix G). Table 2-5 summarizes 1995-96 private party pumping in the San Fernando Basin, and Plate 3 shows the locations of the individual producers.

FIGURE 2.2 - YEARLY IMPORTS USED IN ULARA AND TOTAL EXTRACTIONS UPPER LOS ANGELES RIVER AREA

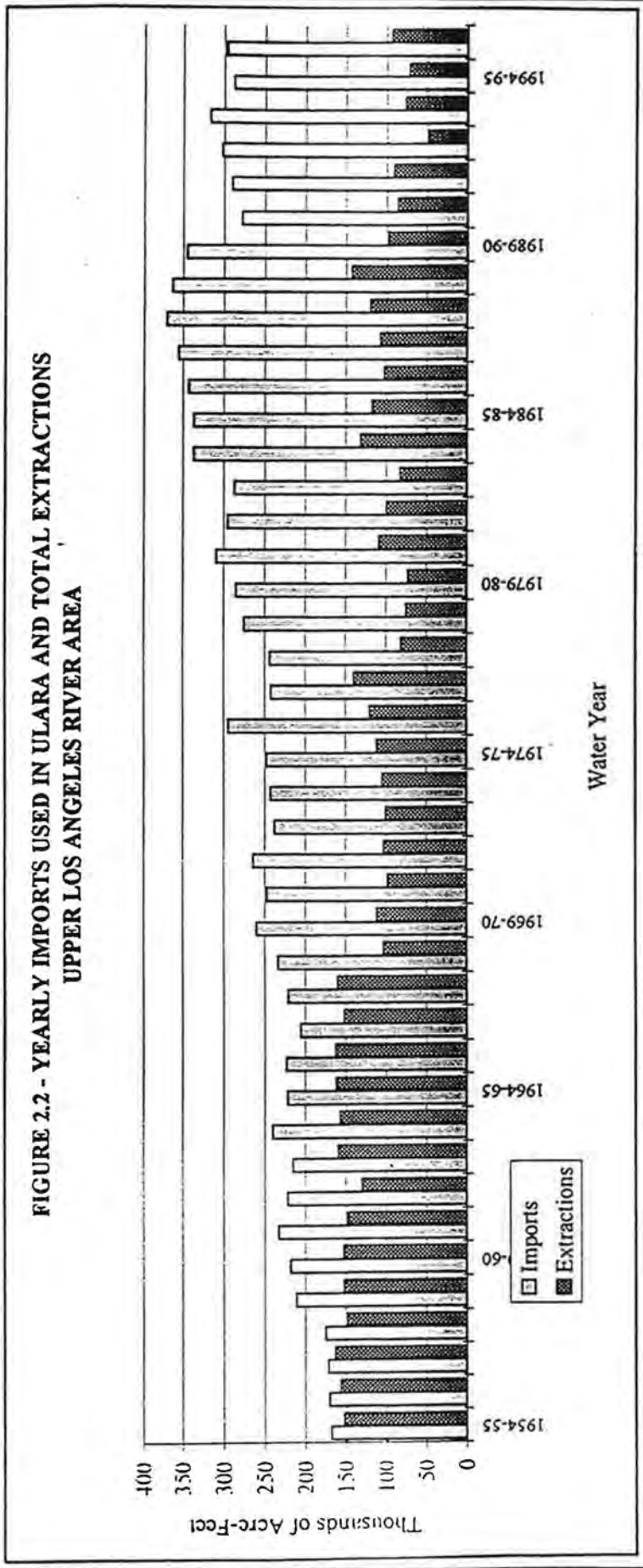


TABLE 2-5: 1995-96 PRIVATE PARTY PUMPING
SAN FERNANDO BASIN
(acre-feet)

Nonconsumptive Use	
CalMat (Gravel washing)	775
Sears, Roebuck and Company (Air Conditioning)	222
Sportsmen's Lodge	1
Toluca Lake Property Owners Ass'n (Lake overflows to LA River)	9
Walt Disney Productions	0
Total	1,007
Groundwater Cleanup	
Burbank GAC (GAC restart to Basin Account)	63
Lockheed-Burbank Operable Unit (Well Development to Basin Account)	35
Los Angeles-Headworks (Well Development to Basin Account)	16
Greeff Fabrics (Recharged to groundwater)	21
Hughes (Charged to City of Los Angeles' water right)	7
Mobil Oil Corporation (Charged to City of Los Angeles' water right)	8
Philips Components (Recharged to groundwater)	89
Rockwell International (Charged to City of Los Angeles' water right)	299
3M-Pharmaceutical (Recycled for on-site use)	11
Total	548
Physical Solution	
Angelica Healthcare Services (various uses)	0
CalMat (10% applied to evaporative loss)	86
Forest Lawn Cemetery Assn. (Charged to City of Glendale's water right)	394
Sportsmen's Lodge (Charged to City of Los Angeles' water right)	0
Toluca Lake Property Owners (Charged to City of Los Angeles' water right)	30
Valhalla Memorial Park (Charged to City of Burbank's water right)	339
Total	849
Groundwater Dewatering	
Auto Stiegler (Charged to City of Los Angeles' water right)	20
First Financial Plaza Site (Charged to City of Los Angeles' water right)	20
Trillium Corporation (Charged to City of Los Angeles' water right)	14
Metropolitan Transportation Agency (MTA) (Charged to Basin Account)	122
	177
Tegatz/Pankow (Estimated pending conclusion of Watermaster investigation)	15
Total Extractions:	2,596

2.6 Imports and Exports of Water

Residential, commercial, and industrial expansions in ULARA have required the importation of additional water supplies to supplement that provided by the groundwater basins.

The imported supplies to ULARA are from the Los Angeles Aqueducts and the Metropolitan Water District (MWD). Los Angeles Aqueduct water consists of runoff from the Eastern Sierra Nevada and groundwater from Owens Valley; MWD supplies consists of State Water Project and Colorado River Aqueduct waters.

Exports from ULARA include imported Los Angeles Aqueduct and MWD water (pass-through), and groundwater from the San Fernando Basin. Exports of wastewater are by pipeline to Hyperion Treatment Plant.

Table 2-6 summarizes the nontributary imports and exports from ULARA during the 1994-95 and 1995-96 Water Years, and Figure 2.3 shows the monthly extractions and imports.

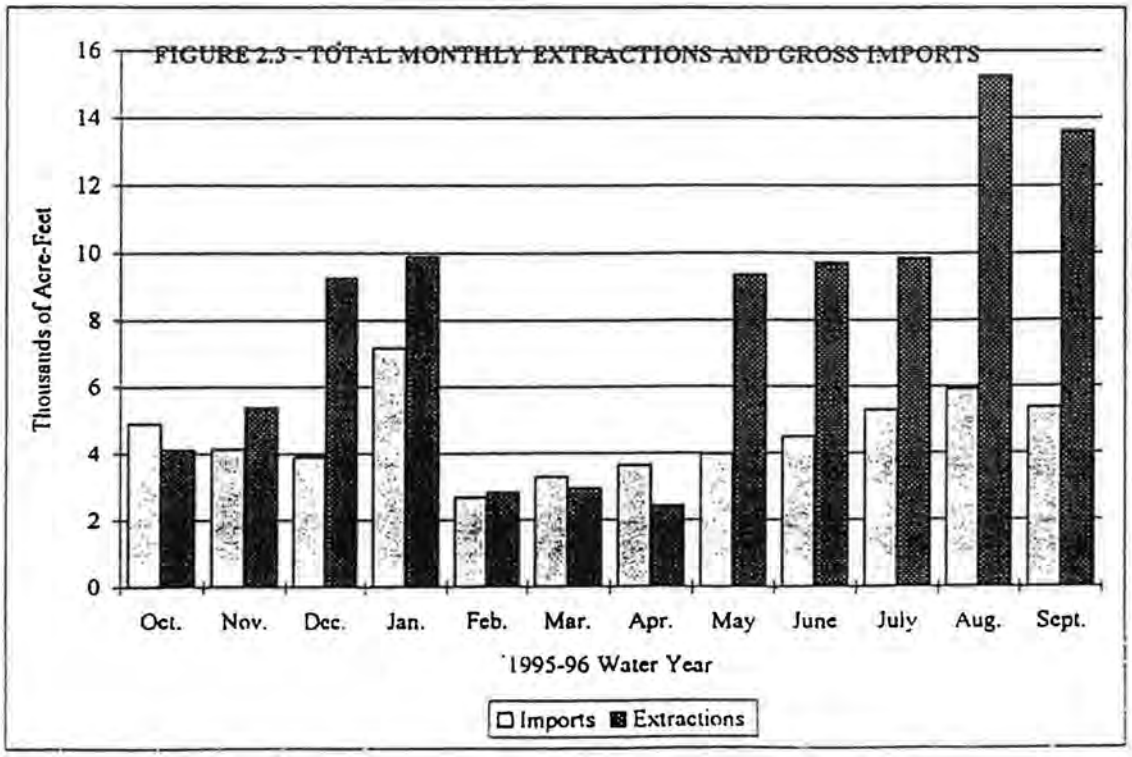


TABLE 2-6: ULARA NONTRIBUTARY WATERS IMPORTS AND EXPORTS
(acre-feet)

Source and Agency	Water Year 1994-95	Water Year 1995-96
Gross Imported Water		
Los Angeles Aqueduct		
City of Los Angeles	353,168	450,917
MWD Water		
City of Burbank	17,173	12,937
Crescenta Valley Water District	979	1,644
City of Glendale	26,219	27,961
City of Los Angeles *	99,371	8,459
La Canada Irrigation District*	949	1,121
Las Virgenes Municipal Water District*	5,899	6,463
City of San Fernando	10	615
Total MWD Water	150,600	59,200
Total Imported Water	503,768	510,117
Exported Water (Pass-through)		
Los Angeles Aqueduct		
City of Los Angeles	168,898	198,779
MWD water		
City of Los Angeles	46,519	1,644
Total Exported Water	215,417	200,423
Net Imported Water Used in ULARA:	288,351	309,694

* Deliveries to those portions of these Districts that are within ULARA

2.7 Water Reclamation

Water reclamation presently provides a source of water for irrigation, industrial, and recreational uses. In the future, water reclamation will provide water for groundwater recharge within the Hansen/Headworks and Pacoima spreading basins. Six wastewater reclamation plants are in operation in ULARA. The Las Virgenes Municipal Water District operates a water reclamation facility outside ULARA but uses part of the treated water in ULARA. The goal of the East Valley Water Recycling Project is to use up to 35,000 acre-feet/year of reclaimed water from the Tillman Plant for groundwater recharge. Table 2-7 summarizes the 1995-96 reclamation plant operations, and Plate 6 shows their location.

TABLE 2-7: 1995-96 WASTEWATER RECLAMATION PLANT OPERATIONS
(acre-feet)

Plant/Agency	Treated Water	Discharged to		Reclaimed Water	
		L.A. River	Hyperion		
City of Burbank	8,124	5,627	6,305	1,879	(a)
Los Angeles-Glendale	22,035	15,274	3,508	3,892	(b)
Donald C. Tillman	69,278	60,036	9,241	616	(c)
Indian Hills Mobile Homes				20	(d)
The Independent Order of Foresters	87	0	0	87	(d)
Rocketdyne (Canoga Park)	N/A	N/A	N/A	N/A	(e)
Las Virgenes MWD	---	0	0	1,265	(f)
Total	99,524	80,937	19,054	7,760	

(a) Of the total reclaimed water (1,879 AF), 1,523 AF was delivered to the Burbank power plant. Of that, 304 ac-ft is for cooling and 1,219 AF is for discharge to the river. Half of the water for cooling is also included in the "river discharges" column. 356 AF was used by CalTrans, DeBell Golf Course, and other landscape irrigation.

(b) Of the total reclaimed water (3,262 AF), 596 AF was delivered to Glendale for use in Glendale's Phosphate Plant and for irrigation water for CalTrans and Forest Lawn; 580 AF was for in plant use; 1,706 AF was was delivered to Griffith Park by Los Angeles for irrigation; and 380 AF was used by CalTrans, Lake Side, Sinai Memorial Park, and Universal City MCA for irrigation.

(c) Reclaimed water was for in plant use and then discharged to river.

(d) Reclaimed water is used for irrigation.

(e) Rocketdyne: Treated water is reused within the facility.

(f) Portion of reclaimed water is used within ULARA for irrigation.

2.8 Water Level Elevations

The 1997 Watermaster Report uses computer simulated groundwater contours for the Spring (April) and the Fall (September) of 1996. Up until 1994-95, the groundwater contour maps were developed by using actual water level data to interpolate the contours, and manually plotting the interpolations. The 1996 contours were produced by using the San Fernando Basin (SFB) Groundwater Flow Model. The SFB model was initially developed during the Remedial Investigation (RI) Study of Groundwater Contamination in the San Fernando Valley. The RI study was funded through the U.S. EPA's Superfund program.

The model is comprised of up to four layers, in the deepest portion of the eastern SFB, and includes 22,016 cells, ranging in size from 1,000 to 1,000 feet to 3,000 by 3,000 feet. The model parameters were calibrated by matching the simulated hydraulic-head fluctuations with the historical water level fluctuations measured at selected key monitoring wells for a 10-year period. The 1996 contours were simulated by incorporating the estimated monthly recharge (e.g. spread water, precipitation, etc.) and discharge (groundwater extractions, rising water, etc.) values for the 1995-96 water year. The model was then run for twelve consecutive stress periods beginning October 1995 through September 1996. The simulated head values at the end of the April and September stress periods were then plotted by utilizing a groundwater contour software package.

The simulated Spring and Fall 1996 Groundwater Contour Maps are shown as Plates 11 and 12. These contours are intended to depict the general trend of groundwater flow for April and September of 1996. Up-to-date groundwater elevations for specific locations can be obtained by contacting the Watermaster's Office at (213) 367-0921.

Plate 13 exhibits the change in groundwater elevations from the Fall of 1995 to the Fall of 1996. In the north-eastern portion of the San Fernando Basin (near the Hansen Spreading Grounds), a 30-60 foot depression is shown in the groundwater elevations. Also, near the Tujunga Wellfield a 20-40 foot recession is observed in the groundwater elevations. Finally, a 30 foot pumping hole is depicted in the Burbank area. All of these trends, in large part, are due to a number of conditions. First, basin pumping rose from 58,000 AF (1994-95) to 83,000 AF (1995-96). Rainfall precipitation fell drastically from the previous water year, 33.36 inches to 12.03 inches. This generally coincides with the level of recharge both as rainfall on the valley floor and captured storm runoff spread in the basin's recharge facilities. The localized depression near the Hansen grounds was affected because Hansen spreading fell from 35,000 AF to 8,200 AF. The localized depression near the Tujunga grounds can be attributed to the Tujunga Wellfield pumping which

increased from 8,000 AF to 12,600 AF and Tujunga spreading which decreased from 18,000 AF to 7,800 AF. The Burbank area depression can be attributed to the activation of the Burbank Operable Unit.

2.9 Groundwater Storage

San Fernando Basin

The total groundwater storage capacity of the San Fernando Basin was estimated in the Report of Referee to be approximately 3,200,000 acre-feet, of which a regulatory storage capacity of 360,000 acre-feet is required by the Judgment.

The estimated change in groundwater storage for 1995-96 is -49,223 acre-feet (Table 2-8). From the start of safe yield operation in the Fall of 1968 through Fall of 1996, the amount of groundwater in storage has increased by +261,986 acre-feet. However, during the 1968-96 period there has been an accumulation of 418,882 acre-feet of stored water credit through spreading and in-lieu activities of the parties. Such groundwater can be extracted at any time by the credited parties in excess of normal pumping rights. If this water were to be removed, the cumulative change in storage since 1969 would be -156,896 acre-feet.

An annual comparison is made between the hydrologic conditions of the water year and change in storage. Table 2-8 summarizes the annual precipitation and change in storage from 1968-69 through 1995-96. Plate 15 shows the cumulative change in storage from Fall 1928 to the present.

Sylmar Basin

The groundwater storage capacity of the Sylmar Basin is approximately 310,000 acre-feet. The estimated change in storage for 1995-96 is -3,128 acre-feet, and the cumulative change in storage from 1968-69 through 1995-96 is +304 acre-feet.

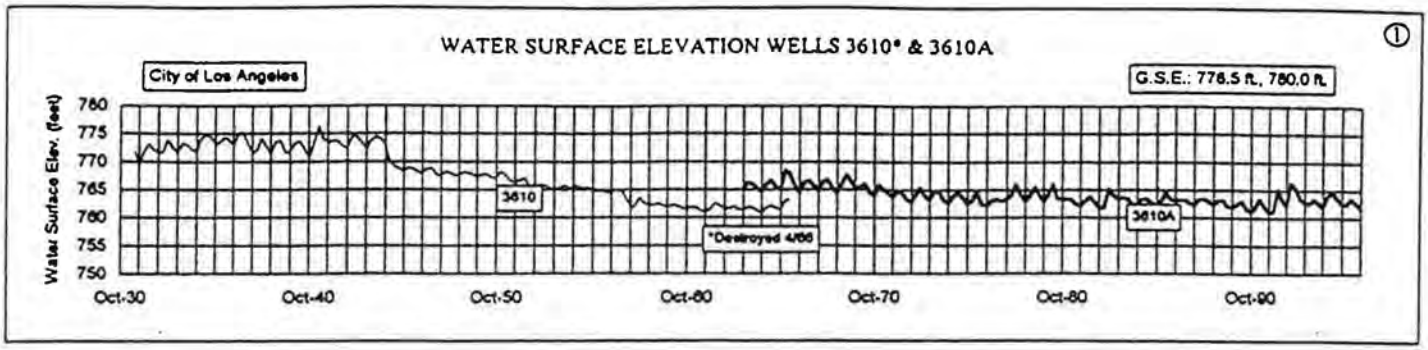
Verdugo Basin

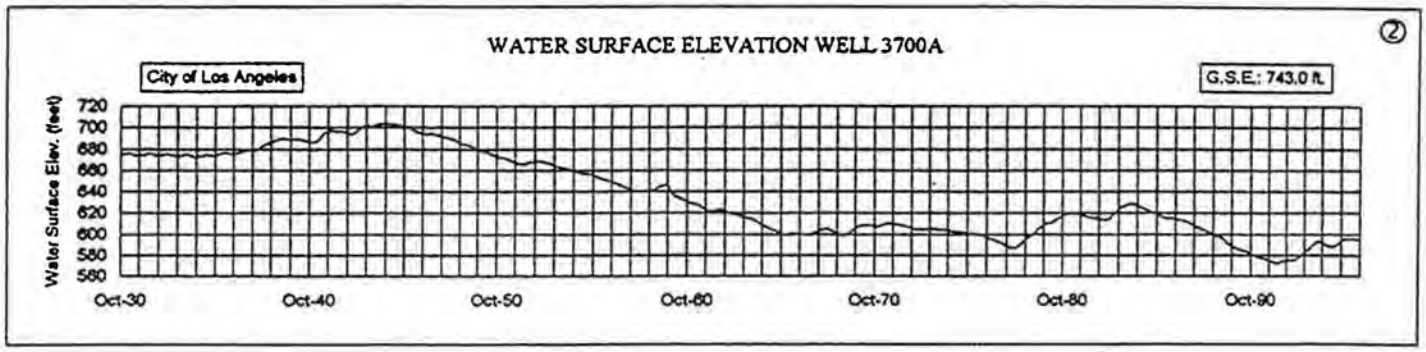
The groundwater storage capacity of the Verdugo Basin is approximately 160,000 acre-feet. The estimated change in storage for 1995-96 is -973 acre-feet, and the cumulative change in storage from 1968-69 through 1995-96 is -5,190 acre-feet.

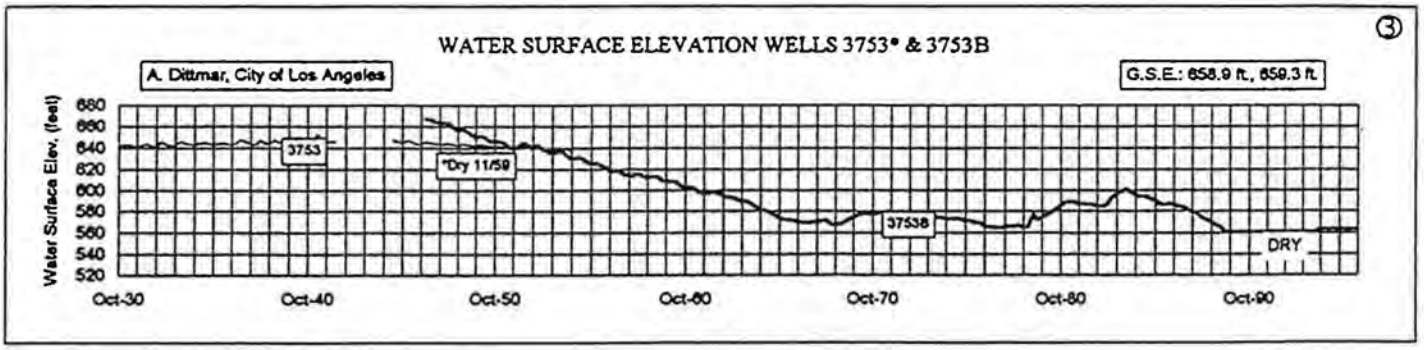
Eagle Rock Basin

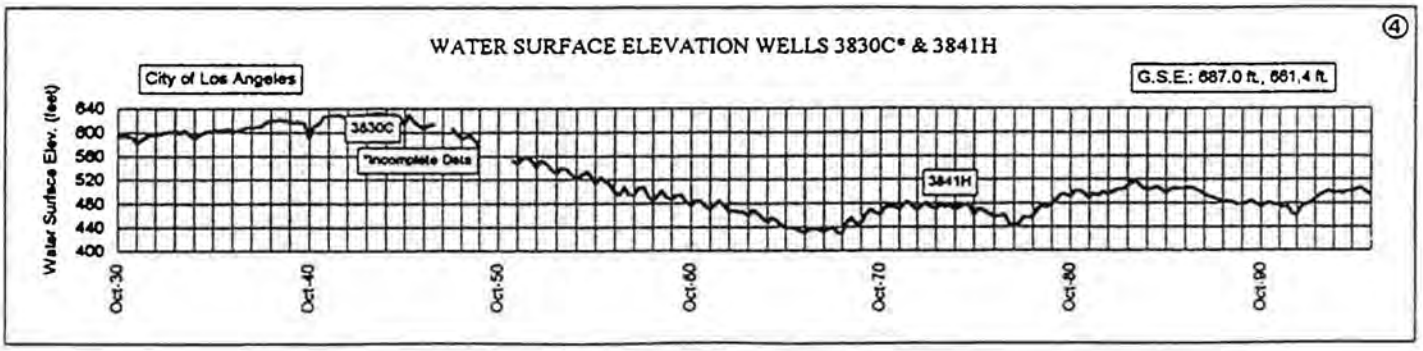
The estimated change in storage is -108 acre-feet.

SAN FERNANDO BASIN

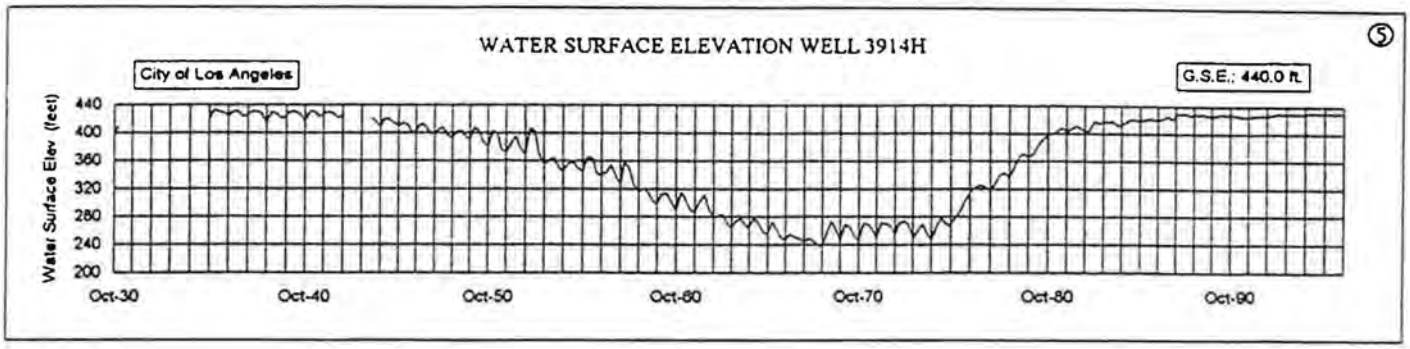


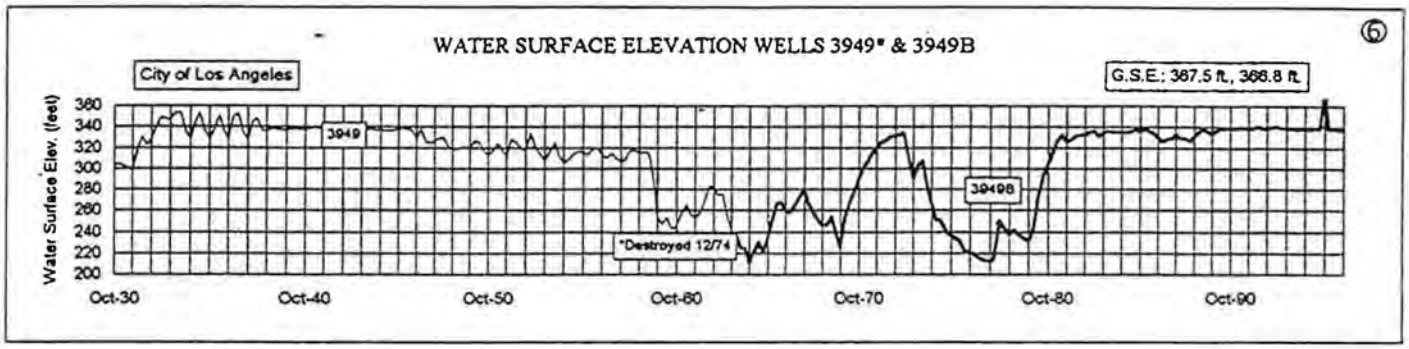


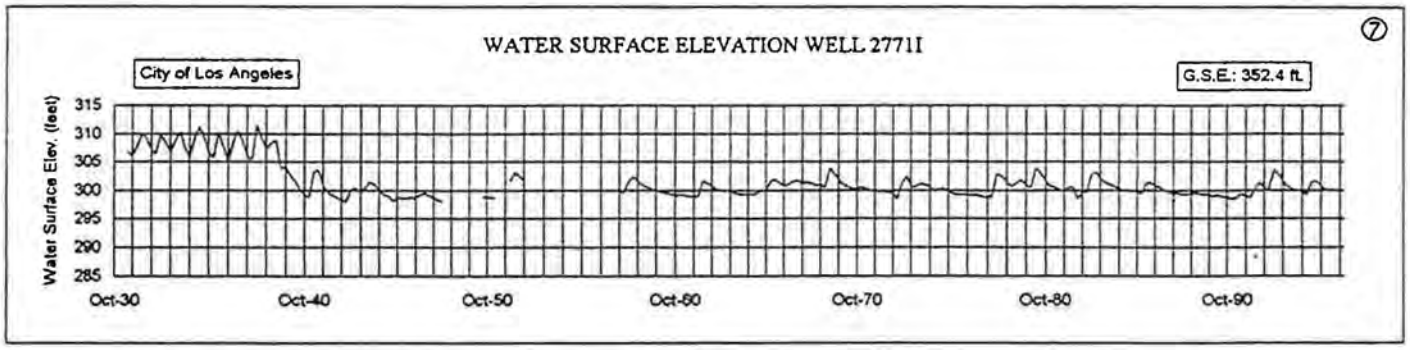




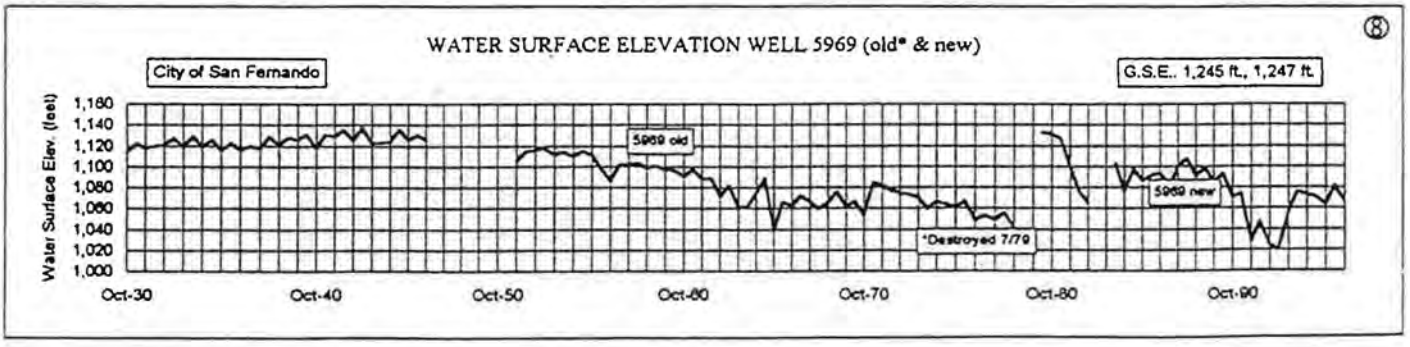
SAN FERNANDO BASIN



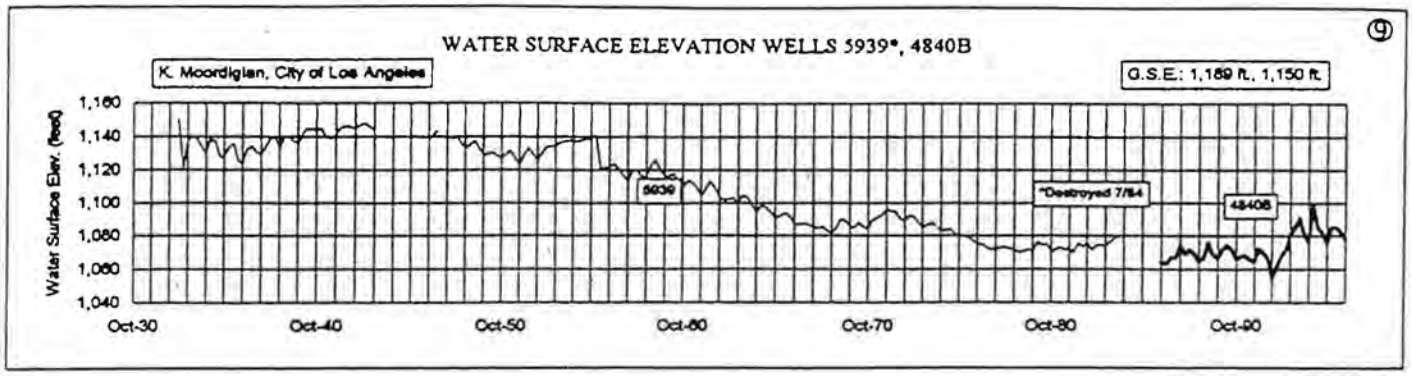




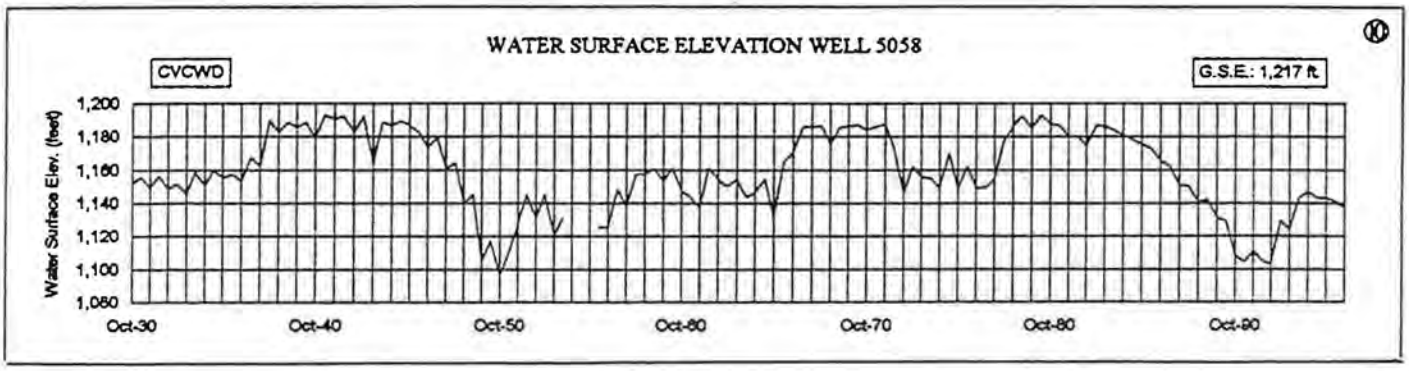
SYLMAR BASIN



SYLMAR BASIN



VERDUGO BASIN



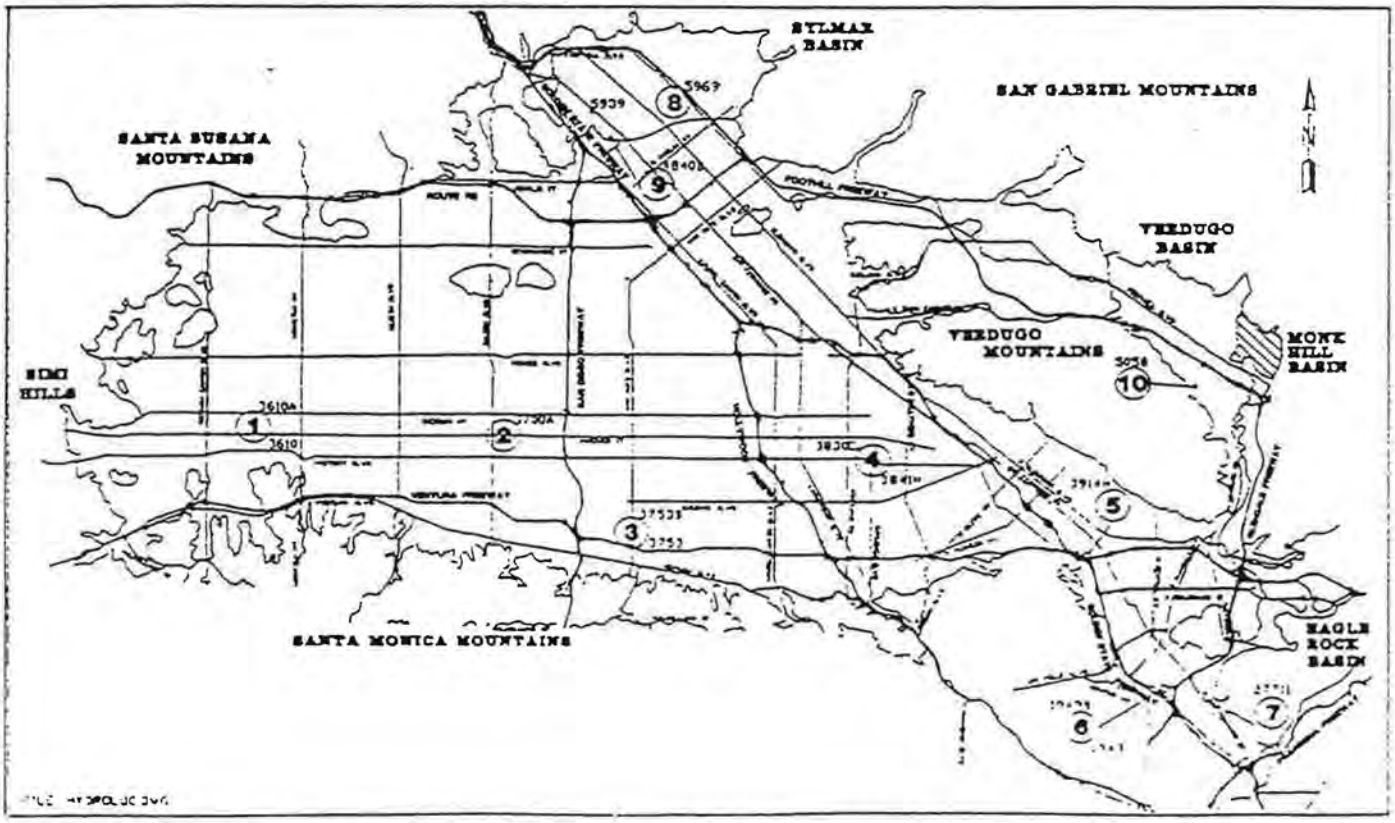


FIGURE 2.4 - HYDROGRAPHS OF WELLS THROUGHOUT ULARA AND WELL LOCATION MAP

2.10 Water Supply and Disposal - Basin Summaries

Tables 2-9A, 2-9B, 2-9C, and 2-9D summarize water supply and disposal in the San Fernando, Sylmar, Verdugo, and Eagle Rock Basin, respectively. The Watermaster made computations of subsurface outflows based on similar computations made by the State Water Rights Board in the Report of Referee.

2.11 Extraction Rights and Stored Water Credit - Basin Summaries

San Fernando Basin

Tables 2-10A and 2-11A show the calculation of San Fernando Basin extraction rights for the 1996-97 Water Year and stored water credit (as of October 1, 1996) for the Cities of Burbank, Glendale, and Los Angeles. All rights are based on the City of Los Angeles vs. City of San Fernando, et al., Judgment, dated January 26, 1979.

Sylmar Basin

Tables 2-10B and 2-11B show the calculation of Sylmar Basin extraction rights for the 1996-97 Water Year and stored water credit (as of October 1, 1996) for the Cities of Los Angeles and San Fernando. All rights are based on the March 22, 1984 stipulation between the City of San Fernando and the City of Los Angeles (filed with the Superior Court) and the action by the Administrative Committee on July 16, 1996 to increase the safe yield from 6,210 AF/YR to 6,510 AF/YR.

TABLE 2-8: CHANGE IN GROUND WATER STORAGE SAN FERNANDO BASIN

Water Year	Valley Floor Precipitation (Inches)	Change in Storage (AF)	Cumulative Change in Storage (AF)	San Fernando Basin Pumping (AF)
1968-69	29.00	79,240	79,240 *	84,186
1969-70	10.50	(9,740)	69,500	88,856
1970-71	15.57	15,340	84,840	79,010
1971-72	8.10	(17,090)	67,750	84,140
1972-73	20.65	17,020	84,770	82,004
1973-74	15.75	(21,820)	62,950	88,017
1974-75	14.74	(22,580)	40,370	95,830
1975-76	9.90	(30,090)	10,280	103,740
1976-77	14.19	(50,490)	(40,210)	125,445
1977-78	35.43	136,150	95,940	66,314
1978-79	21.76	78,080	174,020	59,843
1979-80	30.25	99,970	273,990	58,915
1980-81	11.04	(32,560)	241,430	92,791
1981-82	17.18	(530)	240,900	84,682
1982-83	39.64	121,090	361,990	68,394
1983-84	9.97	(63,180)	298,810	115,611
1984-85	11.00	(31,690)	267,120	101,591
1985-86	20.27	(7,980)	259,140	86,904
1986-87	5.99	(31,940)	227,200	91,632
1987-88	18.62	(5,000)	222,200	105,470
1988-89	9.12	(30,550)	191,650	127,973
1989-90	8.20	(29,941)	161,709	81,466
1990-91	14.38	(14,122)	147,587	71,065
1991-92	30.05	411	147,998	76,213
1992-93	36.62	106,317	254,315	36,419
1993-94	10.19	(22,238)	232,077	62,990
1994-95	33.36	79,132	311,209	58,121
1995-96	12.03	(49,223)	261,986	82,862
27 Year Average	18.34	9,357		

* Assumes storage as of October 1, 1968, to be zero.

TABLE 2-9A: SUMMARY OF 1995-96 WATER SUPPLY AND DISPOSAL
SAN FERNANDO BASIN
(acre-feet)

Water Source and Use	City of Burbank	City of Glendale	City of Los Angeles	City of San Fernando	All Others	Total
Extractions						
Municipal Use	7,969	26	72,270	—	627	80,892
Testing	0	0	0	—	113	113
Physical Solution (a)	339	394	—	—	116	849
Non-consumptive Use	—	—	—	—	1,007	1,007
Total	8,308	420	72,270	0	1,863	82,861
Imports						
LA Aqueduct Water	—	—	450,917	—		450,917
MWD Water	12,937	27,961	4,092	559	6,463 (c)	52,012
Groundwater from Sylmar Basin	—	—	2,767	2,692	—	5,459
Total	12,937	27,961	457,776	3,251	6,463	508,388
Reclaimed Water Use	1,879	1,039	3,892	0	1,066	7,877
Exports						
LA Aqueduct Water	—	—	208,564	—	—	208,564
MWD Water out of ULARA			1,644			1,644
to Verdugo Basin	—	2,300		—		2,300
Groundwater	—	—	68,506		—	68,506
Total	0	2,300	278,714	0	0	281,014
Total Delivered Water	23,124	27,121	255,224	3,251	9,392	318,112
Water Delivered to Hill and Mountain Areas	—	—	45,122	—	—	45,122
Water Outflow						
Surface (Sta. F-57C-R)	—	—	—	—	—	438,567
Subsurface	—	—	—	—	—	376
Sewage	6,305	16,134	71,000 (b)	2,243	—	95,682
Reclaimed Water to the LA River	5,627	—	—	—	—	5,627
Total	11,932	16,134	71,000	2,243	0	540,252

(a) Includes Valhalla (Burbank) and Forest Lawn (Glendale)

(b) Estimated from historic data.

(c) Las Virgenes Municipal Water District

TABLE 2-9B: SUMMARY OF 1995-96 WATER SUPPLY AND DISPOSAL
SYLMAR BASIN
(acre-feet)

Water Source and Use	City of Los Angeles	City of San Fernando	All Others	Total
Total Extractions	2,767	2,985	1 (a)	5,753
Imports				
LA Aqueduct Water	9,029	--	--	9,029
MWD Water	91	55	--	146
Total	9,120	55	0	9,175
Exports (transfers) Groundwater to the San Fernando Basin	2,767	2,692	0	5,459
Total Delivered Water	9,120	349	1	9,470
Water Outflow				
Subsurface	460 (b)	--	--	460
Sewage	830 (c)	202	--	1,032
Total	1,290	202	0	1,492

(a) Pumping for landscape irrigation by Santiago Estates.
(b) Estimated in the Report of Referee.
(c) Estimated.

TABLE 2-9C: SUMMARY OF 1995-96 WATER SUPPLY AND DISPOSAL
VERDUGO BASIN
(acre-feet)

Water Source and Use	Crescenta Valley Water District	City of Glendale	La Canada Irrigation District	City of Los Angeles	Total
Total Extractions	3,705 (a)	2,133	0	--	5,838
Imports					
LA Aqueduct Water	--	--	--	756	756
MWD Water	1,644	2,300	1,121	8	5,073
Total	1,644	2,300	1,121	764	5,829
Exports	0	0	0	0	0
Total Delivered Water	5,349	4,434 (b)	1,121	764	11,667
Water Outflow					
Subsurface to:					
Monk Hill Basin	--	--	--	--	300 (c)
San Fern. Basin	--	--	--	--	70 (c)
Sewage	1,688	1,107	0	190 (c)	2,985
Total	1,688	1,107	0	190	3,355

(a) Administrative Committee and Watermaster approval (11/96), on a temporary basis, that CVWD may pump in excess of its prescriptive rights and until the city of Glendale is able to pump its complete prescriptive right. Appendix I.
(b) Verdugo Basin metered sales x 105%.
(c) Maximum with high groundwater levels (Report of Referee).

TABLE 2-9D: SUMMARY OF 1995-96 WATER SUPPLY AND DISPOSAL EAGLE ROCK BASIN

(acre-feet)

Water Source and Use	City of Los Angeles	Deep Rock Water Company	McKesson Water Products Co.	Total
Total Extractions	0	0 (a)	208 (a)	208
Imports				
LA Aqueduct Water	0	--	--	0
MWD Water	4,268	--	--	4,268
Total	4,268	0	0	4,268
Exports				
Groundwater	0	0	208	208
Total Delivered Water	4,268	0	0	4,268
Water Outflow				
Surface	--	--	--	0
Subsurface	0 (b)	--	--	0
Sewage	1,940 (c)	0	0	1,940
Total	1,940	0	0	1,940

(a) Deep Rock Water Co. and McKesson Water Products Co. (formerly Sparkletts Drinking Water Co.) are allowed to pump under a stipulated agreement with The City of Los Angeles; extractions are limited to 500 AF/year, and they are allowed to export equivalent amounts.

(b) Estimated in Supplement No. 2 to Report of Referee for dry years 1960-61. Currently considered insignificant.

(c) Estimated.

TABLE 2-10A: CALCULATION OF 1996-97 EXTRACTION RIGHTS
SAN FERNANDO BASIN
(acre-feet)

	City of Burbank	City of Glendale	City of Los Angeles *
Total Delivered Water, 1995-96	23,124	27,121	255,224
Water Delivered to Hill and Mountain Areas, 1995-96	---	---	45,122
Water Delivered to Valley Fill, 1995-96	23,124	27,121	210,102
Percent Recharge Credit	20.0%	20.0%	20.8%
Return Water Extraction Right	4,625	5,424	43,701
Native Safe Yield Credit	---	---	43,660
Total Extraction Right for the 1996-97 Water Year (a)	**4,625**	**5,424**	**87,361**

(a) Does not include stored water credit.

TABLE 2-10B: CALCULATION OF 1995-96 EXTRACTION RIGHTS
SYLMAR BASIN
(acre-feet)

	City of Los Angeles	City of San Fernando	All Others
Extraction Right for the 1996-97 Water Year (a)	**3,255**	**3,255**	(b)

(a) Does not include stored water credit. The safe yield of the Sylmar Basin has been increased on a trial basis to 6,510 AF/YR effective 10/1/95 (Appendix J). Effective October 1, 19 safe yield less pumping by one overlying party is equally shared by Los Angeles and San Fernando.
(b) Santiago Estates (Home Owners Group) is pumping for irrigation.

TABLE 2-11A: CALCULATION OF STORED WATER CREDIT
SAN FERNANDO BASIN
(acre-feet)

	City of Burbank	City of Glendale	City of Los Angeles
1. Stored Water Credit (as of October 1, 1995)	63,215	50,191	294,093
1a. Physical Solution Payment	2,000		(2,000)
1b. Correction to Extraction Right		84	
2. Extraction Right for the 1995-96 Water Year	4,508	4,942	83,461
3. 1995-96 Extractions			
Party Extractions	7,969	26	72,278
Physical Solution Extractions	339	394	116
Clean-up/Dewaterers			490
Total:	8,308	420	72,884
4. Total 1995-96 Spread Water	0	0	0
5. Stored Water Credit (as of October 1, 1996)	**61,415**	**54,797**	**302,670**

Note: Item 5 = 1+1a + 1b+2 - 3 + 4

1a. Burbank exercized option under Physical Solution pumping and purchased 2000AF from Los Angeles.

1b. Glendale received a credit for excessive calculation of extraction by in 5/95 and 5/96.

TABLE 2-11B: CALCULATION OF STORED WATER CREDIT
SYLMAR BASIN
(acre-feet)

	City of Los Angeles	City of San Fernando
1. Stored Water Credit (as of October 1, 1995)	3,498	2,043
2. Extraction Right for the 1995-96 Water Year	3,255 (a)	3,255 (a)
3. Total 1995-96 Extractions	2,767	2,985
Santiago Estates	0.5	0.5
4. Stored Water Credit (as of October 1, 1996)	**3,985.5**	**2,312.4**

Note: Item 4 = 1 + 2 - 3

(a) The safe yield of the Sylmar Basin has been increased on a trial basis to 6,510 as of 10/1/95 (Appendix J).

(b) Santiago Estates pumping is equally taken from the rights of San Fernando and Los Angeles.

3. WATER QUALITY, TREATMENT, AND REMEDIAL INVESTIGATION ACTIVITIES

3. WATER QUALITY, TREATMENT, AND REMEDIAL INVESTIGATION ACTIVITIES

3.1 Water Quality

Imported Water

1. Los Angeles Aqueduct 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/L) for 30 years before 1969. The highest on record was 320 mg/L on April 1, 1946. TDS concentration on June 10, 1996 was 148 mg/L.

2. 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 high TDS concentration of 875 mg/L in August 1955 and a low of 625 mg/L in April 1959. The average TDS concentration over the 34-year period was approximately 740 mg/L. Tests conducted at Lake Matthews showed an average TDS concentration of 689 mg/L for the 1995-96 Fiscal Year.

3. 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 has had a high TDS concentration of 410 mg/L and a low of 247 mg/l. Tests conducted at the Joseph Jensen Filtration Plant showed an average TDS concentration of 373 mg/L during the 1995-96 Fiscal Year.

4. Colorado River/Northern California water were first blended at Weymouth Plant in May, 1975. Blending ratios vary at the Weymouth Plant and tests are taken from the effluent. Tests conducted at the Weymouth Plant showed an average TDS concentration of 612 mg/L suring the 1995-96 Fiscal Year.

Surface Water

Surface runoff contains salts dissolved from rocks in the tributary areas and is sodium-calcium, sulfate-bicarbonate in character. The most recent tests taken in September 1995 from flows in the

Los Angeles River at the Arroyo Seco, showed a TDS concentration of 667 and a total hardness of 270 mg/L. These values also reflect the inclusion of rising groundwater in the Los Angeles River reach between Los Feliz Blvd. and Gage F-57C-R.

Groundwater

Groundwater in ULARA is moderately hard to very hard. The character of groundwater 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 in character.

Groundwater is generally within the recommended limits of the California Title 22 Drinking Water Standards, except for: 1) areas of the eastern San Fernando Basin where high concentrations of TCE, PCE, and nitrates are present; 2) wells in the western end of the San Fernando Basin having excess concentrations of sulfate; and 3) areas throughout the Verdugo Basin that have abnormally high concentrations of nitrate. In each area the groundwater delivered is either being treated or blended in order to meet State Drinking Water Standards.

A history of the TDS content in the various water sources and mineral analyses of imported, surface, and groundwaters are contained in Appendix F.

3.2 Groundwater Quality Management Plan

During the 1995-96 Water Year, the Interagency Coordinating Committee continued to implement the recommendations of the "Groundwater Quality Management Plan - San Fernando Valley Basins" issued in July 1983. The objective of this effort is to protect and upgrade the quality of stored water held in ULARA. Special emphasis is placed on monitoring and removing the organic contaminants Trichloroethylene (TCE) and Perchloroethylene (PCE) found in the groundwater. Table 3-1 summarizes the number of wells in the ULARA well fields exceeding the Maximum Contaminant Levels of the California Drinking Water Standards of 5 ppb for TCE and 5 ug/L for PCE.

TABLE 3.1 - 1995-96 NUMBER OF WELLS IN THE ULARA WELL FIELDS EXCEEDING CALIFORNIA STATE MCL FOR TCE AND PCE

	Number of Wells Exceeding Contaminant Level													
	City of Los Angeles									Sub-	Others			Grand
	NH	RT	P	HW	E	W	TJ	V	AE	Total	B	G	CVWD	Total
TCE Levels ug/L														
5-20	8		0	0	2	4	3	3	0	20	0	3	0	23
20-100	6		3	5	1	3	0	0	6	24	5	4	0	33
>100	2		0	1	0	0	0	0	1	4	4	2	0	10
Total	16		3	6	3	7	3	3	7	48	9	9	0	66
PCE Levels ug/L														
5-20	6		0	3	0	0	0	1	5	15	1	2	1	19
20-100	1		3	1	0	0	0	0	1	6	4	0	0	10
>100	0		0	0	0	0	0	0	0	0	4	0	0	4
Total	7		3	4	0	1	0	1	6	21	9	2	1	33

Well Fields:
- NH - North Hollywood
- P - Pollock
- HW - Headworks
- E - Erwin
- W - Whitnall
- TJ - Tujunga (added this year)
- V - Verdugo
- AE - LADWP Aeration Tower Wells
- B - City of Burbank
- G - City of Glendale
- CVCWD - Crescenta Valley Water District

Notes:
1) Wells are categorized based upon maximum TCE and PCE values attained during the 1995-96 Water Year, where data was not available for 1995-96, data from the most recent water year was used.
2) MCL: Maximum Contaminant Level
3) ug/L: Micrograms per liter

3.3 Underground Tanks, Sumps, and Pipelines

The City of Los Angeles Fire Department (LAFD) continues to implement the State-mandated Underground Storage Tank Program (UST) and is actively carrying on a program to bring the large number of underground tanks in the San Fernando Valley into compliance with current law. During the 1995-96 Water Year, a total of 116 sites were remediated under the direction of the LAFD.

The main focus of the LAFD UST in ULARA has been the monitoring and removal of gasoline, diesel, and their related constituents from the soils, in order to prevent contamination of the underlying groundwater. If a site investigation indicates contamination, the site is referred to the Los Angeles Regional Water Quality Control Board (RWQCB) for further action. Since October 1, 1988, 2,739 sites have been assigned to the Underground Tank Plan Check Unit and of these, 1,220 have been remediated. In addition, 861 sites have been referred to the RWQCB. Currently, the Environmental Unit of the LAFD is monitoring the remediation of 660 sites.

3.4 Private Sewage Disposal Systems (PSDS)

In order to eliminate existing commercial and industrial PSDS and their discharges of wastewater to the groundwater basin, a sanitary sewer construction program has been in progress for many years. This program is continuing to systematically install sanitary sewers in eighteen designated areas throughout the San Fernando Valley. At the end of the 1995-1996 water year, a total of twelve areas have had construction completed, and five areas are in various stages of right-of-way acquisition and processing. A contract for project construction for the remaining area may be awarded during the 1996-97 water year. Plate 8 shows the locations of the Districts.

The sewer construction program ordered by the City Council was affected through Assessment Act provisions. Proposition 218 approved by the electorate on November 5, 1996, will require a weighted majority mail-in ballot of property owners for any new or increased assessments. The passage of Proposition 218 may impede the were construction program for the remaining six areas.

The Industrial Waste Management Division (formerly the Enforcement Division) of the Bureau of Sanitation continued to pursue the enforcement aspect to the PSDS elimination program. There

had been good compliance with the mandatory sewer hook-up ordinance and more than 1180 properties have already abandoned PSDS and connected to the public sewer.

A group of 50 owners of PSDS were recently notified of the requirement to discontinue use of their PSDS and connect to newly constructed sanitary sewers.

3.5 Landfills

Solid Waste Assessment Test (SWAT) reports, for major SWAT Rank 1 to 4 landfills in the Los Angeles area have been completed and submitted to the RWQCB for approval. The reports reviewed by RWQCB-are listed in Table 3-2.

As stipulated by Article 5 of Chapter 15, a follow-on sampling program under an Evaluation Monitoring Plan was required for some landfills due to the presence of volatile organic compounds in the underlying groundwater.

The SWAT report of the Pendleton landfill, owned by the Water System of the Los Angeles Department of Water and Power (LADWP) was approved by the RWQCB. The landfill Closure Plan has been filed with RWQCB. Closure activities are in progress.

TABLE 3-2: LANDFILLS WITH SWAT INVESTIGATIONS

(reported to Interagency Coordinating Committee)

Name	Rank	Status	Current Owner	Location	SWAT Report Completed	Final SWAT Submitted	Phase II SWAT Required	Approved by RWQCB	Site Leak	Type of Emission	Further Groundwater Monitoring
Bradley West	1	Open	WMDSC	Sun Valley, Southeast of Sheldon Street	6/87	11/90		4/92	Y/G	NHA i/o	d
Sheldon-Arleta	1	Closed	City of Los Angeles Bureau of Sanitation	Sun Valley District Near Hollywood & Golden State Freeways.	5/87	5/87		2/90			b
Scholl Canyon	1	Open	City of Glendale	San Rafael Hills, 1 mile West of Rose Bowl.	7/87	4/88		8/90	Y/G	NHA i/o	d
Scholl Canyon	2	Closed	City of Glendale	San Rafael Hills, 1 mile West of Rose Bowl.	7/87	1/91		12/93			c
Bradley East	2	Closed	WMDSC	Southeast of Sheldon St.	6/87	11/90		4/92	Y/G	NHA i/o	b*
Bradley West Extension	3	Open	WMDSC	Canyon Blvd. Sun Valley District Sheldon St., San Fernando	7/88	7/89		4/92	Y/G	Insert Site	b*
Sunshine Cyn. LA City	2	Closed	Browning - Ferris Industries	Southeast Santa Susana Mtns. West of Golden State Fwy.	7/88	7/89		4/94			a
Sunshine Cyn. LA County	2	Open	Browning - Ferris Industries	Southeast Santa Susana Mtns. West of Golden State Fwy.	7/88	7/89		4/94			a
Gregg Pit/Bentz	2	Closed	Cal Mat Properties	Between Pendleton Street and Tujunga Ave.	7/89	7/89		2/90	Y/G	NHA	b
Branford	2	Closed	City of Los Angeles Bureau of Sanitation	Sun Valley District Northwest of Tujunga Wash	7/88	10/90	X				c
Cal Mat (Sun Valley #3)	2	Open	Cal Mat Properties	Sun Valley District Northeast of Glenoaks Blvd.	7/88	11/90		6/92	N		a
Lopez Canyon	2	Closed	City of Los Angeles Bureau of Sanitation	North of Hansen Dam Between Lopez and Kagel Cyn.	6/88	6/88	X				a
Toyon Canyon	2	Closed	City of Los Angeles Bureau of Sanitation	Griffith Park	6/88	3/89		4/91	Y/L	NHA i/o	b*
Tuxford Pit	2	Closed	Asdlin Bros. (Los Angeles By-Products Co.)	Sun Valley District Southwest of Golden State Freeway and Tujunga Ave.	6/88	12/90		6/92			b*
Penrose	2	Closed	Los Angeles By-Products Co.	N. of Strathern St., Tujunga Ave.	6/88	7/89		9/89	Y/G	NHB i/o	b
Newberry	3	Closed	Los Angeles By-Products Co.	N. of Strathern St., Tujunga Ave.	6/88	7/89		9/89	Y/G	NHB i/o	b
Hewitt Pit	2	Closed	Cal Mat Properties	North Hollywood District Hollywood Fwy., Laurel	6/88	7/89		5/91	Y/G	NHB i	
Pendleton St.	4	Open	Department of Water & Power	Sun Valley intersection Pendelton St., Glenoaks Blvd.	7/90	5/91		6/92	N		
Stough Park	2	Open	City of Burbank	Bel Air Dr. & Cambridge Dr.	6/88	12/88		4/90	Y/G	NHA	d
Strathern										Insert site	

* Groundwater contamination Evaluation Monitoring Program (EMP) required under chapter 15.

(a) All open landfills are required to have groundwater monitoring under Chapter 15. Monitoring results are submitted to the Regional Board quarterly.

(b) Closed landfills with groundwater monitoring required under Chapter 15. Monitoring results are submitted to the Regional Board periodically.

(c) Subject to SWAT requirements. Further monitoring may be required under Chapter 15.

(d) Under Chapter 15 Corrective Action Program (CAP), after completion of EMP.

(e) Semi-annual groundwater monitoring.

(i) Inorganic (o)- Organic

Y - Yes N - no G- gas L-liquid

NHA - Non-Hazardous but above state drinking water regulatory levels., H - Hazardous waste based on Title 22, CCR.

NHB - Non-Hazardous but below state drinking water regulatory levels., H - Hazardous waste based on Title 22, CCR.

3.6 San Fernando Valley Remedial Investigation (RI) and Related Activities

A remedial investigation (RI) of groundwater contamination in the San Fernando Valley was initiated in July 1987 by the United States Environmental Protection Agency (EPA) to characterize the San Fernando Basin (SFB) and the Verdugo Basin and their contamination with TCE and PCE. The LADWP was selected by the EPA to serve as the its lead agency in conducting the RI and entered into a cooperative agreement that has provided over $21 million in federal funding to LADWP since July 1987. In August 1987, the LADWP selected James M. Montgomery, Consulting Engineers, Incorporated (JMM) to serve as its consultant to perform various RI tasks.

The report, "Remedial Investigation of Groundwater Contamination in the San Fernando Valley," was completed in December 1992 and is a comprehensive, five-volume report which presents the findings and characterizations of the SFB and the Verdugo Basin with regard to their geology, hydrogeology, and nature and extent of contamination. The RI report also provides a description and the documentation of the SFB Groundwater Flow Model, summarizes the RI field investigation activities, and evaluates potential risks to human health and the environment.

The SFB Groundwater Flow Model was developed as a part of the San Fernando Valley Remedial Investigation and is a comprehensive, three-dimensional, regional-scale model. A three-dimensional mass transport model has also been developed for the SFB. The model has been utilized for the East Valley Water Recycling Project and other groundwater remediation projects to analyze the storage, characteristics, and quality of groundwater in the SFB.

EPA's consultant, CH2M HILL, continues to periodically sample the 87 groundwater monitoring wells that were installed as part of the RI. CH2M HILL also obtains groundwater quality and groundwater elevation data from the LADWP, other municipalities, and various agencies and facilities in the San Fernando Valley to update the SFB database. CH2M HILL utilizes the data to produce contaminant plume maps.

The RI Report and semi-annual sampling reports are available for public use at the Superfund Primary Information Repositories, which are located in the following agencies' libraries: City of Glendale, City of Burbank, LADWP, California State University-Northridge, and the University of California - Los Angeles.

The LADWP also maintains a current SFB database for use with the SFB flow model and generation of groundwater contour maps and contaminant plume maps. CH2M HILL forwards current groundwater quality data for incorporation into the LADWP database.

3.7 Water Treatment

EPA Operable Units

The EPA is proceeding with enforcement actions against potentially responsible parties (PRPs) for the North Hollywood, Burbank, Glendale North, and Glendale South Operable Units (OUs), which are part of the EPA's overall, long-term groundwater remediation activities in the San Fernando Basin. The OUs are described below.

1. North Hollywood OU - The North Hollywood OU which was funded by USEPA and DHS, was shut down from October 10, 1995 to December 21, 1995 because of repair work at the North Hollywood Sump and the eastbound collection line. The North Hollywood OU continued to operate satisfactorily during the 1995-96 water year, treating a total of 380 million gallons (1,165 acre-feet) of groundwater.

2. Burbank OU - The Lockheed Burbank OU removes pollutants from high nitrate groundwater and then blends it with water from the Metropolitan Water District for delivery to the City of Burbank. Lockheed started pumping and delivering groundwater to Burbank on January 3, 1996, pursuant to Phase I of the Consent Decree. A monthly peak of 944 acre feet was pumped and delivered to Burbank in June 1996. On September 18, 1996 the City of Burbank issued a stop notice to Lockheed for a violation above the standard for turbidity and color, though neither posed any health problem. High levels of carbon and calcium carbonate were identified as the source of the discoloration. The problem was corrected, and the plant resumed delivery of water to the City of Burbank on November 18, 1996. Phase II of the project is slated for completion in 1998 and is planned to increase the pumping capacity to 9,000 gpm. Throughout this year there have been on-going negotiations to bring closure to the the Second Consent Decree which will specify the obligations for 18 years of operation and maintenance on the treatment plant.

3. Glendale North and Glendale South OUs - The City of Glendale and the DreamWorks Inc. reached an agreement for the development of the original proposed treatment site, the Crystal Springs Yard, as an animation studio late in 1995. The agreement necessitated a relocation of the treatment plant to city property at the Glendale Recyling Center approximately 500 feet from the previously proposed location. The change in site has delayed the construction process significantly. DreamWorks Inc. is on schedule to have its facility completed by December 1997, but the City of Glendale, the EPA and the Glendale Respondents Group are still in negotiations to establish a schedule for completion of the required activities for the treatment plant.

4. Pacoima Area Groundwater Investigation

Progress has been made in the Pacoima Area investigation by a coordinated effort of the RWQCB, Cal-EPA Department of Toxics Substance Control, the USEPA, LA Department of Sanitation, LADWP and the Watermaster's Office. A potential groundwater contaminant plume was identified in the Pacoima district near the intersection of the Simi (118) Freeway and San Fernando Road (Plate 7). The contaminant plume is comprised of volatile organic carbon compounds (VOCs) with levels upward of 12,000 ug/L of TCE, 3,900 ug/L of PCE and 7,600 ug/L of 1,1,1-TCA. This site is approximately 2.5 miles upgradient of LADWP's Tujunga wellfield, which can supply up to 120 cfs of groundwater. LADWP will install monitoring wells downgradient of the contaminant plumes located near the identified companies: Kleinert Industries, Inc., Price Pfister, Inc. and Holchem Inc., to enhance the contaminant characterization and provide an early warning detection system for the Tujunga Wellfield. The first analysis of data is anticipated in April of 1997.

Other Treatment Facilities

1. Glendale-Verdugo Park Water Treatment Plant (VPWTP) - The Glendale-Verdugo Park Treatment Plant has failed to produce at the anticipated pumping rate of 700 gpm. The water supply is poor at the lower end of the Verdugo Basin. For brief periods of time after the plant has been down and comes back on line, the water flows at 7-800 gpm followed by a decreasing flow rate. Even during the rainy season, the

water flow does not remain high for an extended period of time. Glendale is investigating alternative areas to pump, possibly in the eastern end where the aquifer is deeper.

2. Glenwood Nitrate Water Treatment Plant - The Crescenta Valley Water District's Glenwood Nitrate Water Treatment Plant, which uses an ion-exchange process for nitrate removial, continued to operate satisfacorily during the water year 1995-96. A total of 462 million gallons (1,418 acre-feet) of groundwater was treated.

3. Pollock Wells Treatment Plant Project - The construction phase of the Pollock Wells Treatment Plant, planned to treat 3,000 gallons per minute of groundwater, is slated for March 1997 by S.W. Industries. The Pollock Project's main focus is to reactivate the Pollock wellfield and to reduce rising groundwater flowing past gaging station F-57C-R. The groundwater will be processed through liquid-phase granular activated carbon (GAC) vessels intended for VOC removal, followed by blending of the chlorinated groundwater to reduce nitrate levels. The processed water will then be delivered to LADWP's distribution system. The pumping pattern, through two existing wells, will be for a period of six-months each year. Completion of the treatment facility is anticipated for May 1998.

4. Headworks Well Field Remediation - The reactivation of the Headworks wellfield will restore six wells in the Headworks Well Field and treat at a rate of 13,500 gpm. An alternative technology study is under internal review considering Aeration, Liquid-phase GAC, and advanced oxidation processing. Present characterization of the aquifer from HW-29 shows that TCE and PCE concentrations are approximately 200 ug/L and 100 ug/L, respectively.

5. Burbank GAC Treatment Plant - The City of Burbank Lake Street GAC System allowed 2,295 acre feet of water to be processed in 1995-96 from the combined pumping of Burbank Wells No.7 and No.15. The treatment plant has been incorporated into Phase II of the Consent Decree between USEPA, Lockheed, and Burbank. Production at the GAC may be considered as part of the designated average annual pumping goal of 9,000 gpm for the Burbank OU.

3.8 Groundwater Quality Investigations

During the 1995-96 Water Year, several groundwater contamination investigations were performed at various sites. As part of these investigations groundwater monitoring wells have been drilled and groundwater has been extracted for the purpose of well development, testing or cleanup. Some of the major sites and their activities through April 1997 are summarized below:

Philips Components

Groundwater remediation, which involves extraction, air-stripping, and recharge through a trench was started in July 1988. The main contaminant is methylene chloride (MEC) which has been found only in Extraction Well (EW-1), and in a nearby monitoring well (MW-19). Concentrations of MEC continue to exhibit a downward trend. During 1995-96, 88 acre-feet were pumped, treated and recharged. The TCE and PCE present in most of the monitoring wells is believed to originate off-site, to the north. The site has been sold to Nichola International Co., an olive production company. Philips will continue to monitor and clean up the site.

Rockwell-Rocketdyne (Canoga Park)

Contaminants at this site include chloroform, TCE, PCE, 1,1-DCE, TCA and Freon 113. There are also free-floating hydrocarbons derived from several upgradient service stations. There are 85 monitoring wells--65 in the shallow zone, 14 in the upper zone, and 6 in the lower zone. Additionally, there are another 31 monitoring wells near the four upgradient service stations. Nine extraction wells feed a treatment facility in the southeast portion of the property. During the 1995-96 Water Year, about 300 acre-feet were pumped. A one year pilot project was started in June 1996 to divert water to a cooling tower. Other alternative water uses include the possibility of designing misting heads for cooling purposes.

3M (Formerly Riker Lab)

The main pollutant is chloroform. There has been an interim groundwater extraction and treatment system since 1988. REW-1 and REW-2 pump from the shallow zone and RMW-1 from the lower water-bearing zone. There are numerous monitoring wells on the property, and off-site to the south. Treatment is by three GAC columns in series, thence to an on-site holding tank. The pumping rate of the three wells is demand driven for the cooling tower. During the 1995-96 Water Year the amount pumped through the interim groundwater treatment system was 11 acre-feet. A soil remediation system started up in October 1996 and underwent shakedown and performance testing in November and December 1996. Construction contracts for the final groundwater remediation system were awarded in December 1996 and construction commenced

in January 1997. Start up for the groundwater treatment facility is expected in the summer of 1997.

Allied-Signal (Formerly Bendix Corp.)

TCE was detected in the groundwater samples collected from six of the ten groundwater monitoring wells during the third quarter 1995 sampling event at concentrations above the MCL. TCE was also detected at concentrations above the MCL in samples collected from all seven groundwater monitoring wells during the fourth quarter 1995. The concentration of PCE detected exceeded the MCL in the groundwater samples obtained from one groundwater monitoring well during the third quarter 1995 and from two different groundwater monitoring wells in the fourth quarter 1995. There is no remediation system. Allied-Signal was named a potentially responsible party (PRP) by the EPA for the Burbank OU. Allied Signal has reached an agreement with the EPA regarding its share of the Superfund cleanup costs.

Hughes (Canoga Park)

The most prominent contaminant is 1,1-DCE with lesser amounts of TCE, PCE, TCA, and 1,1-DCA. Petroleum compounds (BTEX) are found in the northwest area (buildings 269 and 270). TDS is in excess of the Basin Plan objectives, and may not be discharged to the Los Angeles River, even though the origin of the high TDS is related to the naturally occurring groundwaters. As a result of the high TDS, the treatment plant effluent is stored in holding tanks, and used for on-site irrigation. 17 groundwater recovery wells pump an average of 4 gpm. The airsparge and soil vapor extraction systems were shut down to replace the existing thermal oxidation unit with granular activated carbon. Since September 1995, approximately 6,700 lbs. of hydrocarbons and 500 lbs. of chlorinated hydrocarbons have been removed. The 54 vapor extraction wells have contained migration of vapors resulting in no odors in the area. The site has been sold to Coast Federal.

Greeff Fabrics (Formerly Wickes)

The main contaminant from an on-site source is chlorotoluene. Other plumes from off-site sources are mostly TCE and PCE. There are three extraction wells. The pumped water is treated by chemical oxidation and returned to the groundwater via a percolation trench. Approximately 21 acre-feet of groundwater were extracted, treated, and discharged to the percolation trench in 1995-96.

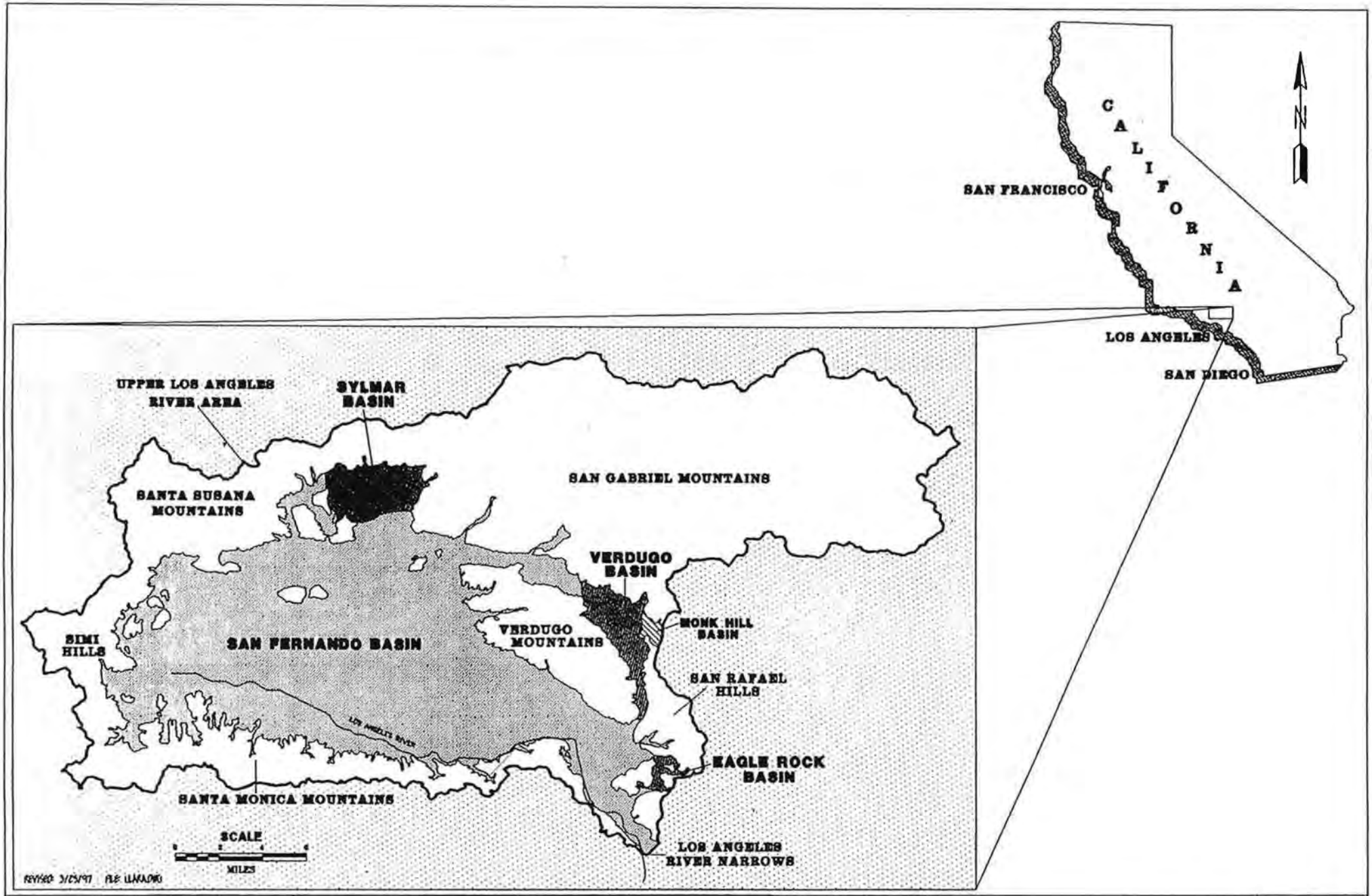
Taylor Yard (Narrows Area)

The remediation of the Taylor Yard of the Southern Pacific Transportation Company is under the jurisdiction of the Department of Toxic Substances Control (DTSC) of the California Environmental Protection Agency (Cal-EPA). To expedite the remediation, the Taylor Yard has been divided in two parts - active yard and sale parcel. Part of the Taylor Yard was sold to Metropolitan Transportation Authority (MTA) for an MTA industrial facility. The two areas of contamination previously reported are in the northern part of the Taylor Yard and in the northeast section. A monitoring well at the outflow of the Taylor Yard system is clean. The installation of temporary wells upgradient and downgradient of the contaminated area are being considered in order to define the plume boundary.

MTBE (Methyl Tertiary Butyl Ether)

MTBE, a highly soluble gasoline additive, has been found in the groundwater of Santa Monica production wells forcing the shut down of this city's production wells. The MTBE rates in Santa Monica have been as high as 500 ug/L. At levels around 35 ug/L, MTBE has a distinct odor. The chemical appears to have leaked from underground tanks. MTBE is lighter than water, and presents unique problems when it enters the groundwater. It was manufactured in the mid 1970s, and in the 1980s was added to gasoline to increase the octane levels. In 1992 it was mandated as an oxygenate to reduce emissions. The problems are that it is non-biodegradable and is difficult to remediate. Aeration and LPGAC are not effective treatments. It was also detected during a routine water quality sampling in LADWP's Verdugo Wells No. 1 (2.3 ug/L) and 2 (0.7 ug/L).

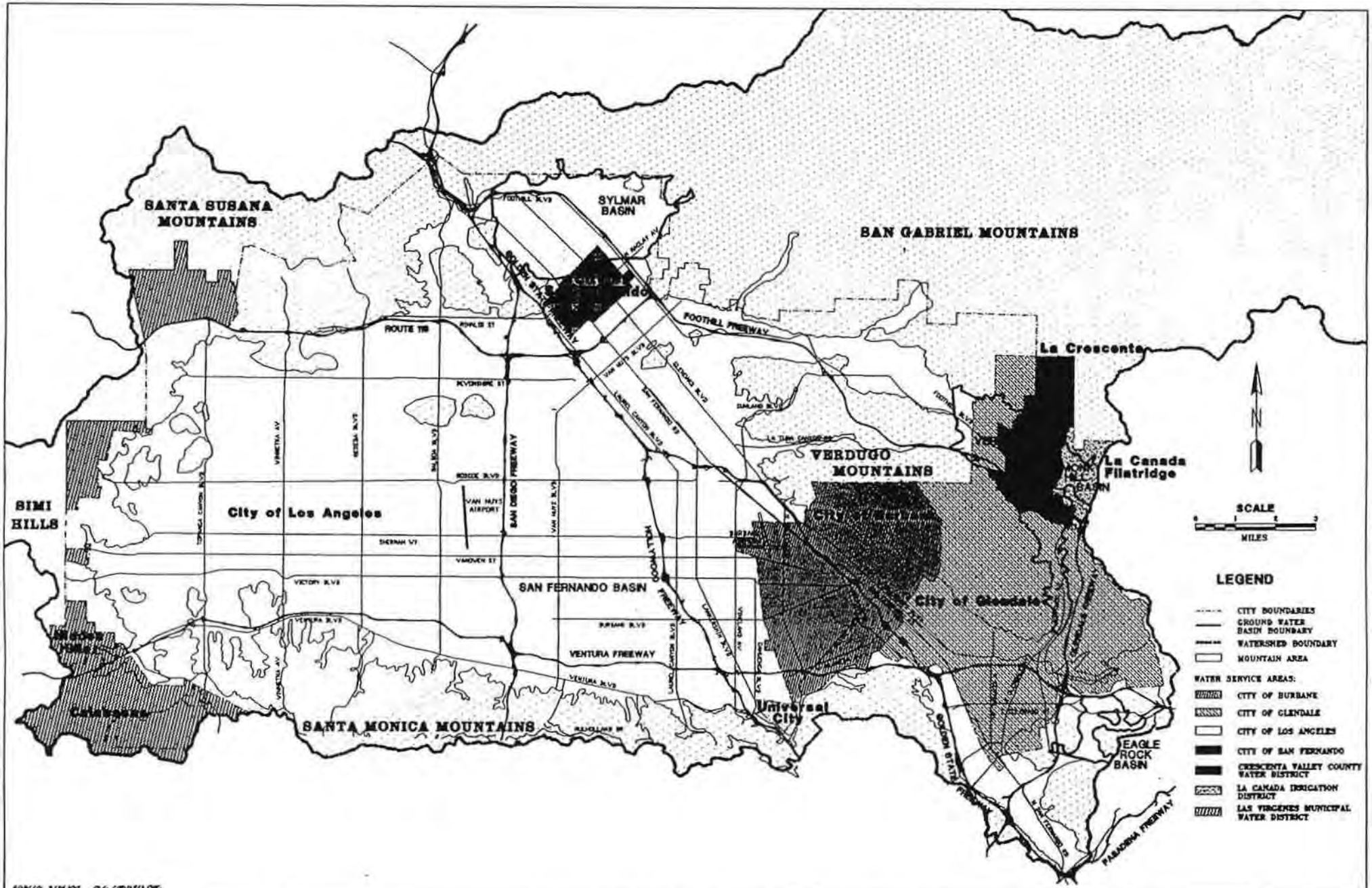
PLATES



1995-96 Water Year
ULARA Watermaster
Report

Upper Los Angeles River Area
Vicinity and Location Map

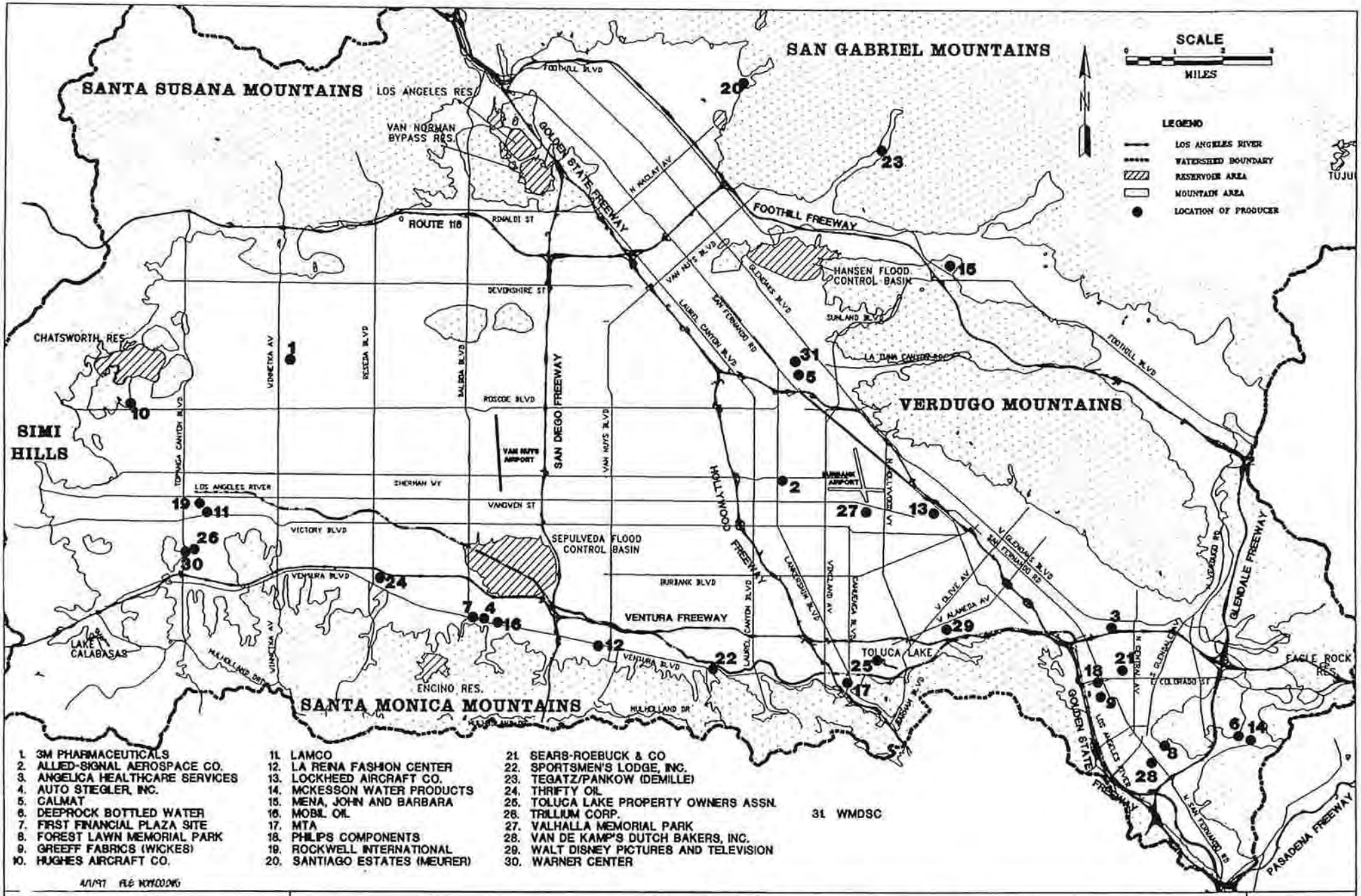
PLATE 1



1995-96 Water Year
ULARA Watermaster
Report

Upper Los Angeles River Area: Water Service Areas of Public Agencies

PLATE 2



1995-96 Water Year
ULARA Watermaster Report

Upper Los Angeles River Area: Locations of Individual Producers

PLATE 3

UPPER LOS ANGELES RIVER AREA

LOCATION OF WELLS AND HYDROLOGIC FACILITIES

LEGEND

- IMPEDIMENTS TO GROUNDWATER FLOW
- GROUNDWATER CASCADES
- QUESTIONABLE IMPEDIMENT OR GROUNDWATER CASCADE
- CLIMATIC STATION
- SURFACE WATER GAGING STATION
- SURFACE WATER SAMPLING POINT
- KEY WELL USED FOR HYDROGRAPHS
- KEY WELL USED FOR SAMPLING
- ACTIVE, OBSERVATION, OR TEST WELL
- SURFACE AND GRAVITY DIVERSION

N

SCALE

FEET

SANTA SUSANA MOUNTAINS

SIMI HILLS

SANTA MONICA MOUNTAINS

VERDUGO MOUNTAINS

Indian Hills Mobile Homes Wastewater Treatment Plant

Rocketdyne Santa Susana Field Laboratory Wastewater Treatment Plants

PACOIMA RESERVOIR

L.A. Aqueduct Filtration Plant

LOS ANGELES RESERVOIR

Foothill Wastewater Treatment Plant

SAN GABRIEL RESERVOIR

GROUNDWATER DIVIDE

CVCWD Wastewater Treatment Plant

Van Nuys Airport

Burbank-Glendale-Pasadena Airport

City Of Burbank Wastewater Treatment Plant

Donald C. Tillman Water Reclamation Plant

SEPULVEDA FLOOD CONTROL DAM

L.A. - Glendale Wastewater Treatment Plant

CHATSWORTH RES. AREA

CANOGA PARK

WOODLAND HILLS

ENCINO RESERVOIR

GRANADA HILLS

CHATSWORTH

NORTHRIDGE

RESEDA

VAN NUYS

SHERMAN OAKS

NORTH HOLLYWOOD

BURBANK

GLENDALE

EAGLE ROCK

TUJUNGA

LA CRESCENTA

SUNLAND

SYLMAR

SAN FERNANDO

PACOIMA

DEVONSHIRE ST.

ROSCOE BLVD.

SEPULVEDA BLVD.

VENTURA BLVD.

VICTORY BLVD.

COLORADO BLVD.

FOOTHILL FRWY.

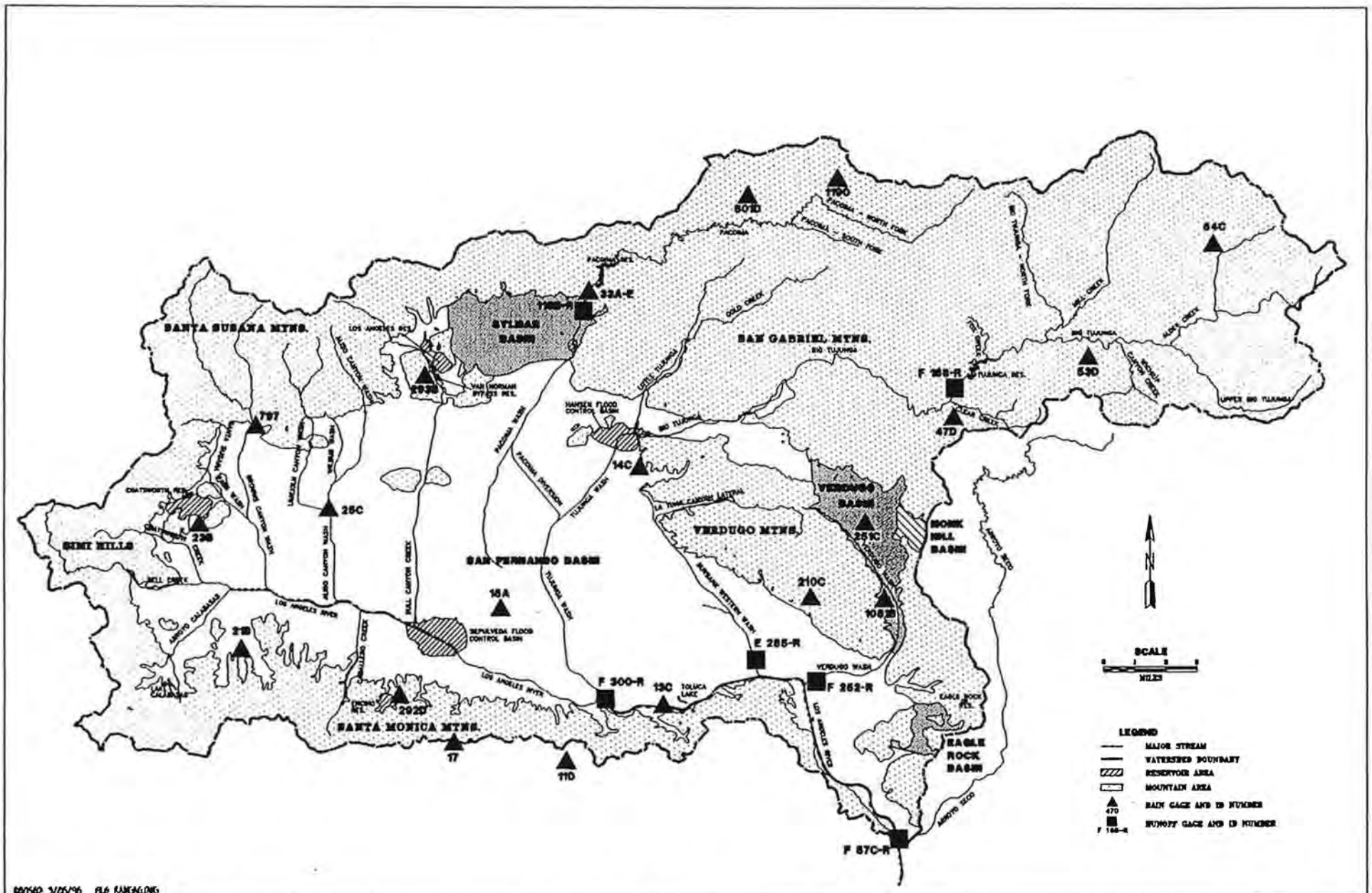
HOLLYWOOD FRWY.

SAN DIEGO FRWY.

GOLDEN STATE FRWY.

SAN FERNANDO FRWY.

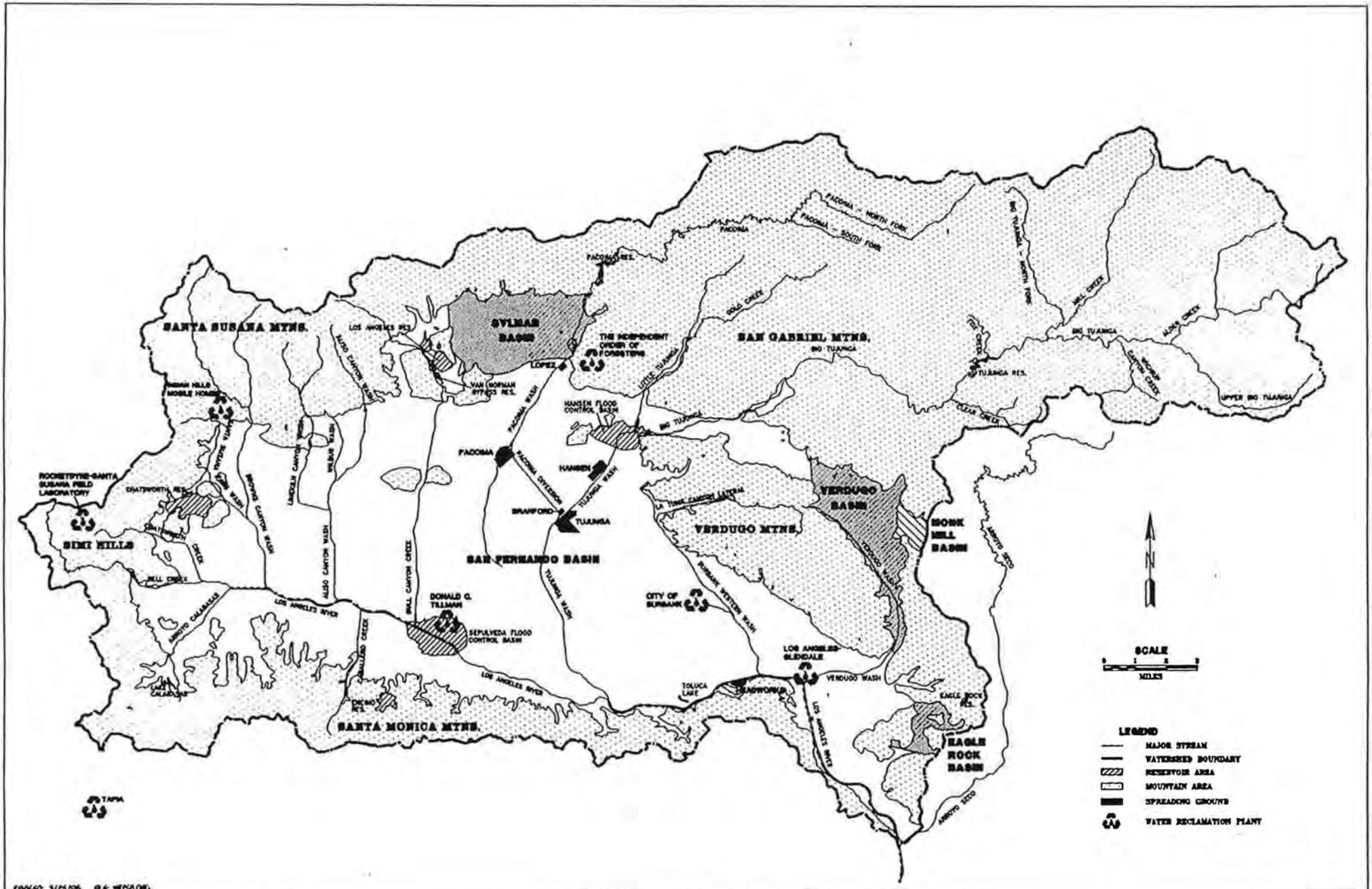
NOTE: 4.25 miles to Tapia Water Reclamation Plant which delivers water to a portion of the west end of ULARA area.



1995-96 Water Year
ULARA Watermaster
Report

Upper Los Angeles River Area
Locations of Rain and Runoff Measuring Stations

PLATE 5



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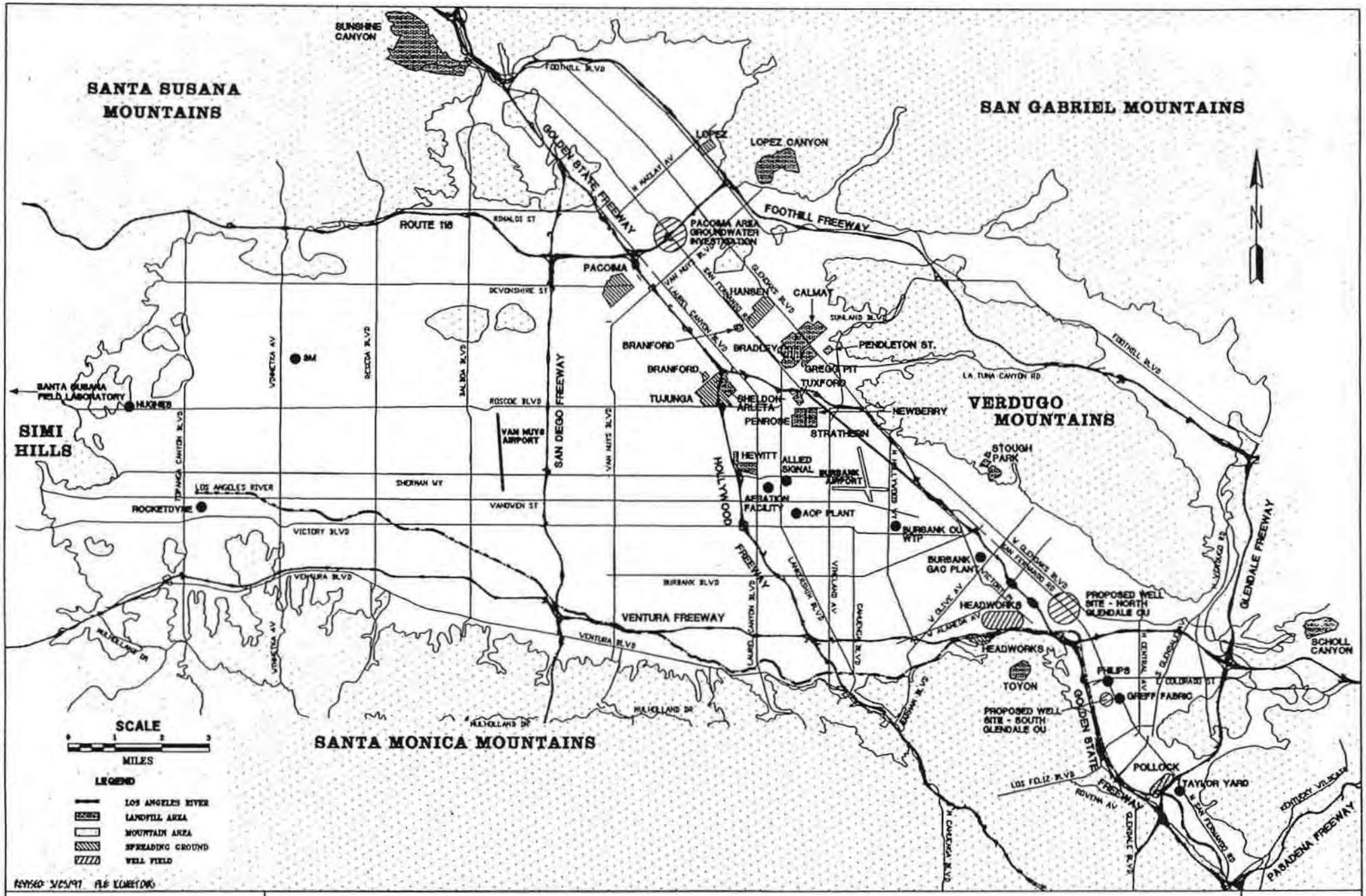
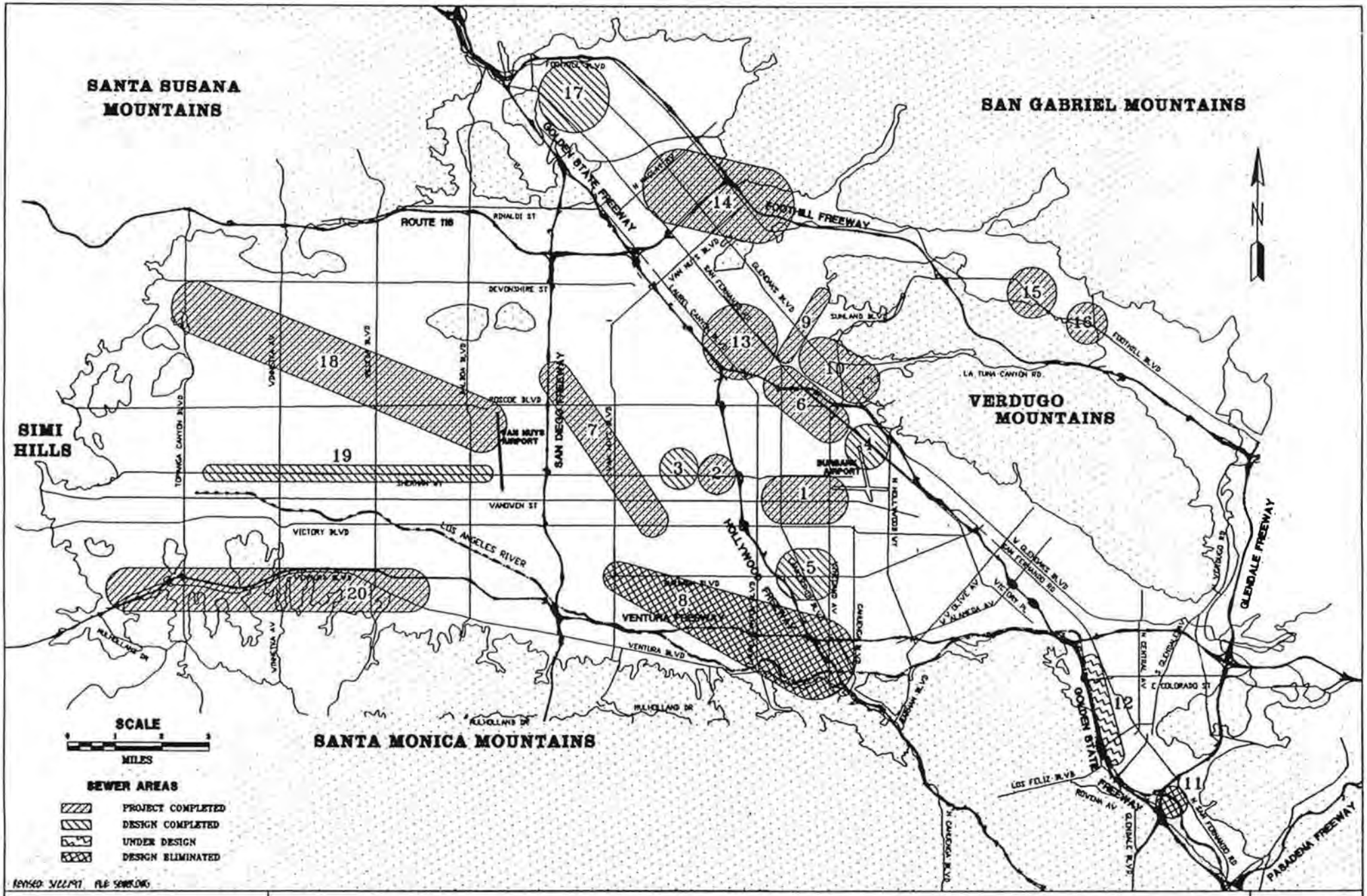
1995-96 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: Spreading Basins and Water Reclamation Plants	PLATE 6



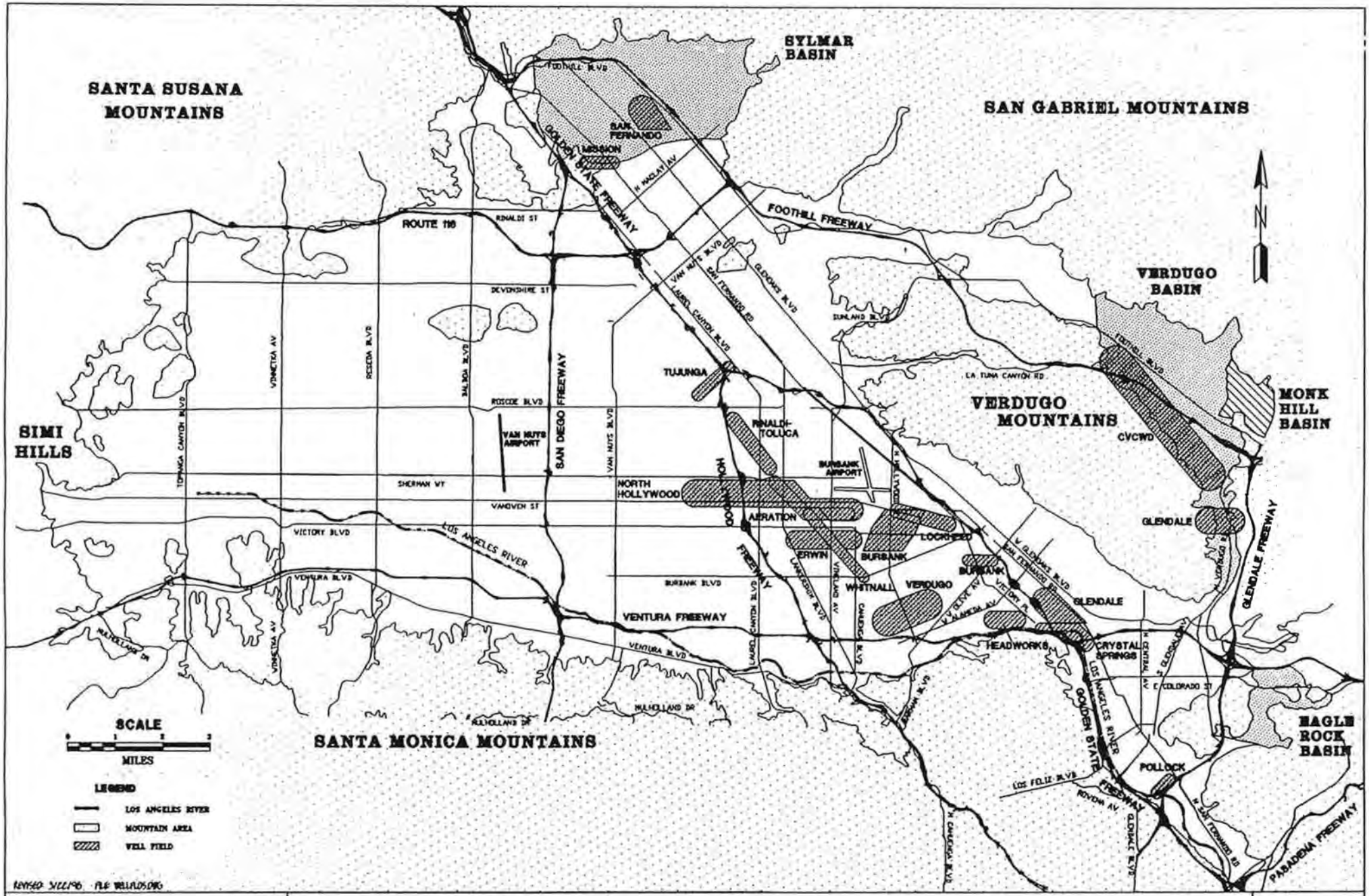
1995-96 Water Year ULARA Watermaster Report

RELEVANT SITE AND LANDFILL LOCATIONS

PLATE 2



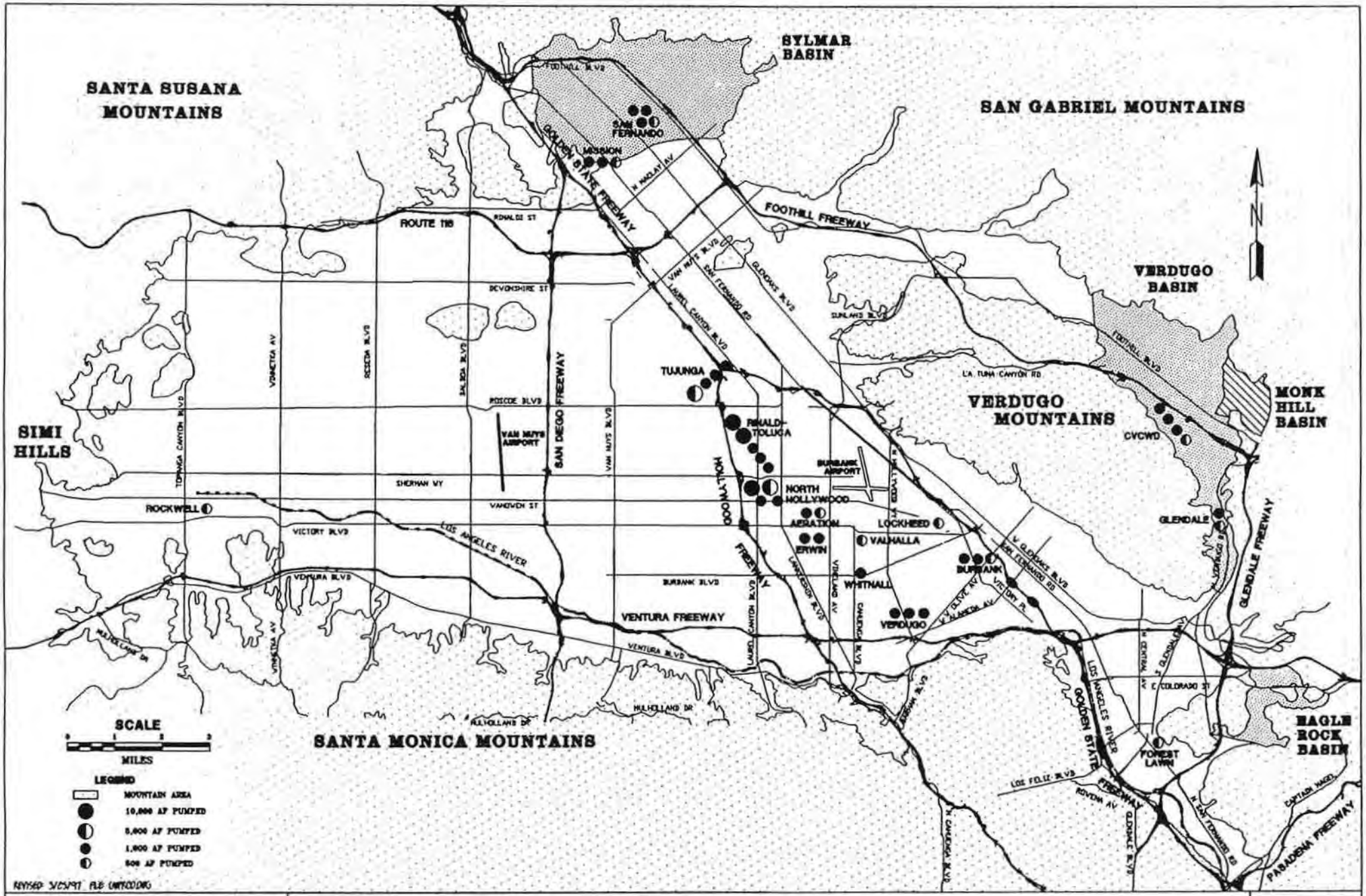
1995-96 Water Year ULARA Watermaster Report	**Upper Los Angeles River Area: Los Angeles Bureau of Sanitation Sewer Construction Program**	PLATE 8



1995-96 Water Year ULARA Watermaster Report

Upper Los Angeles River Area: Well Field Locations

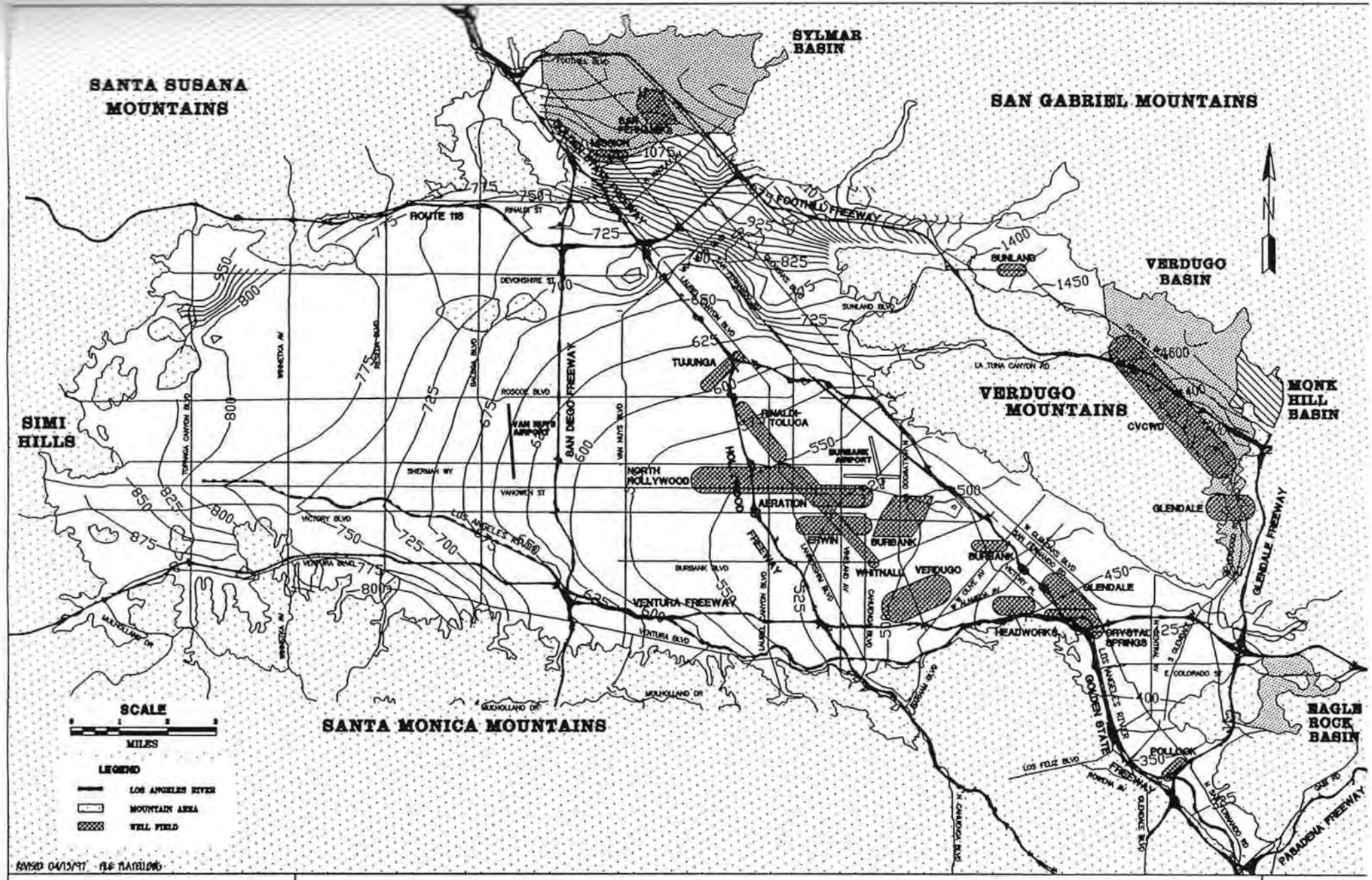
PLATE 9



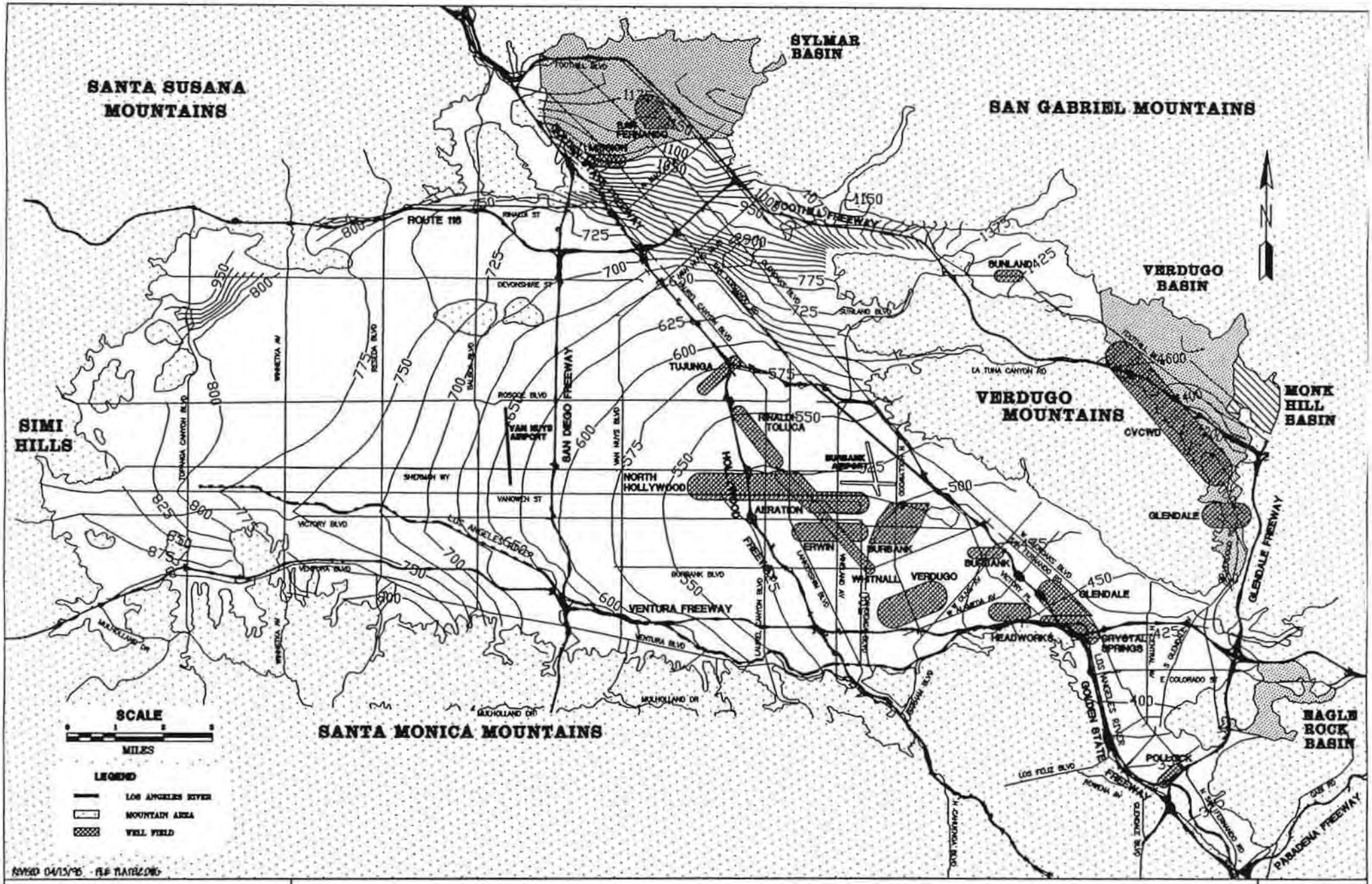
1995-96 Water Year ULARA Watermaster Report

Upper Los Angeles River Area Pattern of Groundwater Production

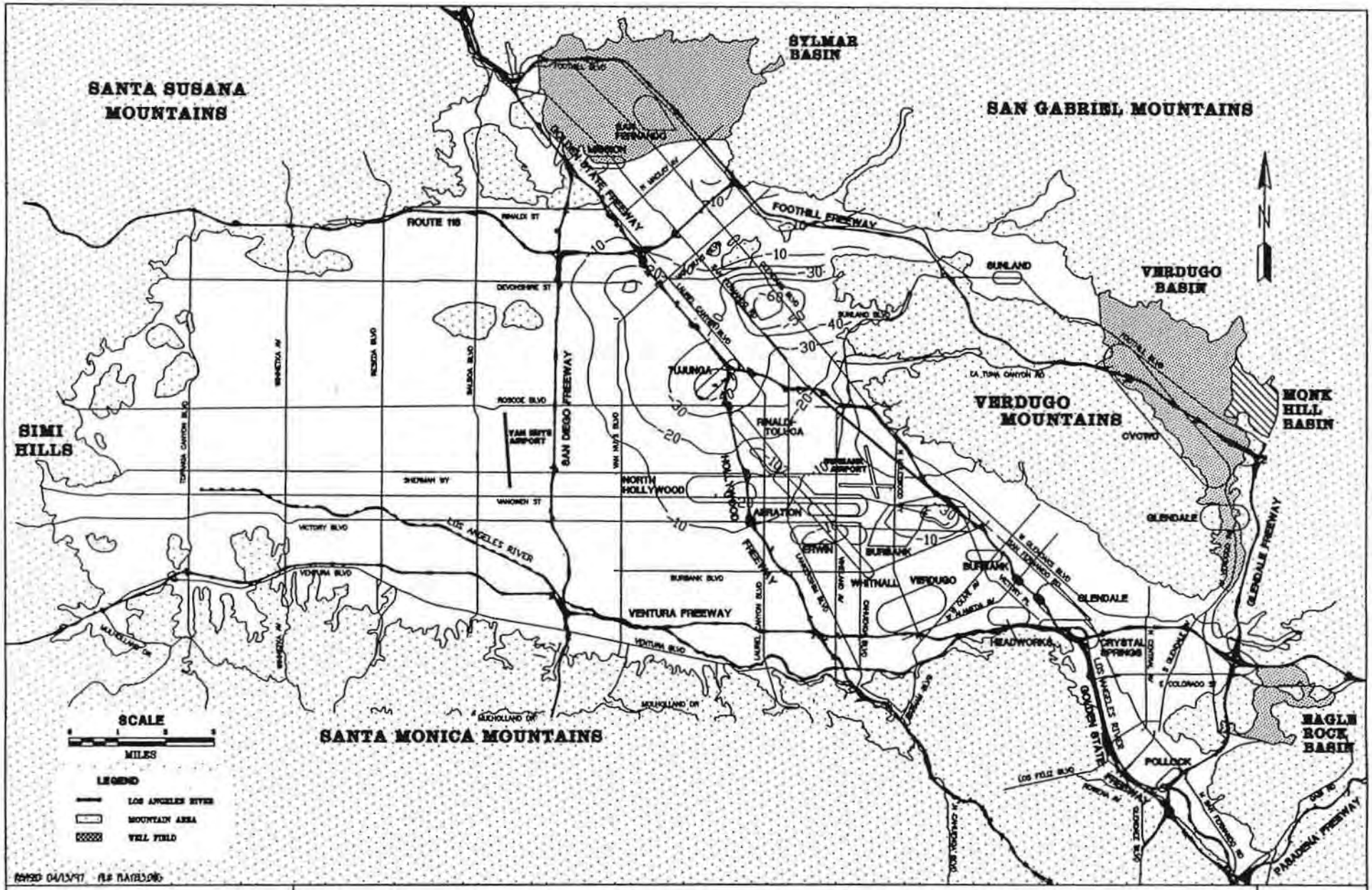
PLATE 10



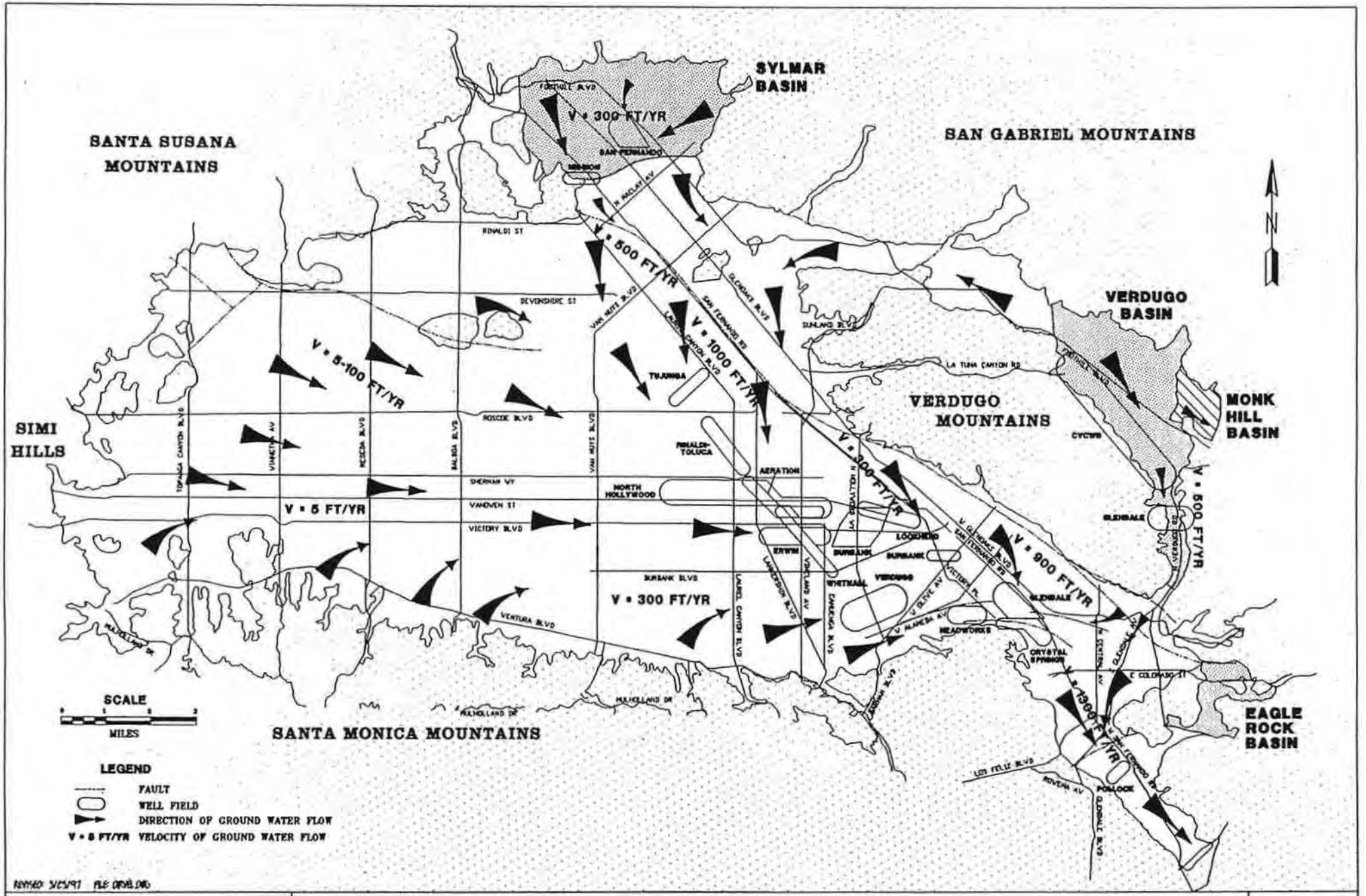
1995-96 Water Year **ULARA** **Watermaster Report**	**Simulated Groundwater Contours** **SPRING (April) 1996**	PLATE 11



1995-96 Water Year **ULARA** **Watermaster Report**	**Simulated Groundwater Contours** **FALL (September) 1996**	PLATE 12



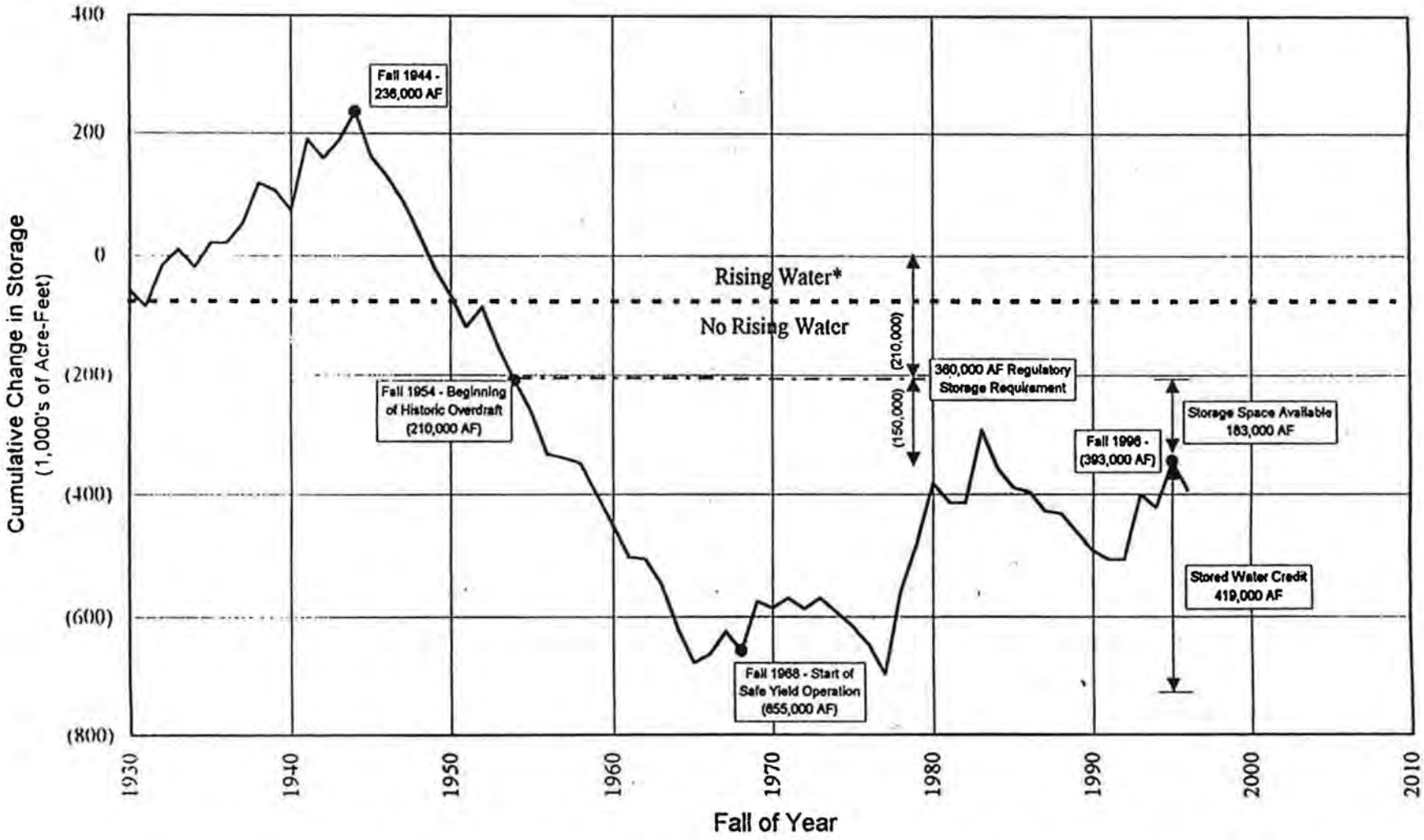
1995-96 Water Year **ULARA** **Watermaster Report**	**Change in Groundwater Elevations** **FALL 1995 - FALL 1996**	PLATE 13



1995-96 Water Year
ULARA Watermaster
Report

Upper Los Angeles River Area:
Estimated Directions and Velocities of Groundwater Flow

PLATE 14



* This line indicates levels at which excess rising ground water occurs and can be controlled by reduction of storage. Rising ground water can also occur naturally at lower levels.

1995-96 Water Year **ULARA** **Watermaster Report**	**San Fernando Basin:** **Cumulative Change in Groundwater Storage**	PLATE 15

PLATE 15 - ULARA WATERMASTER REPORT

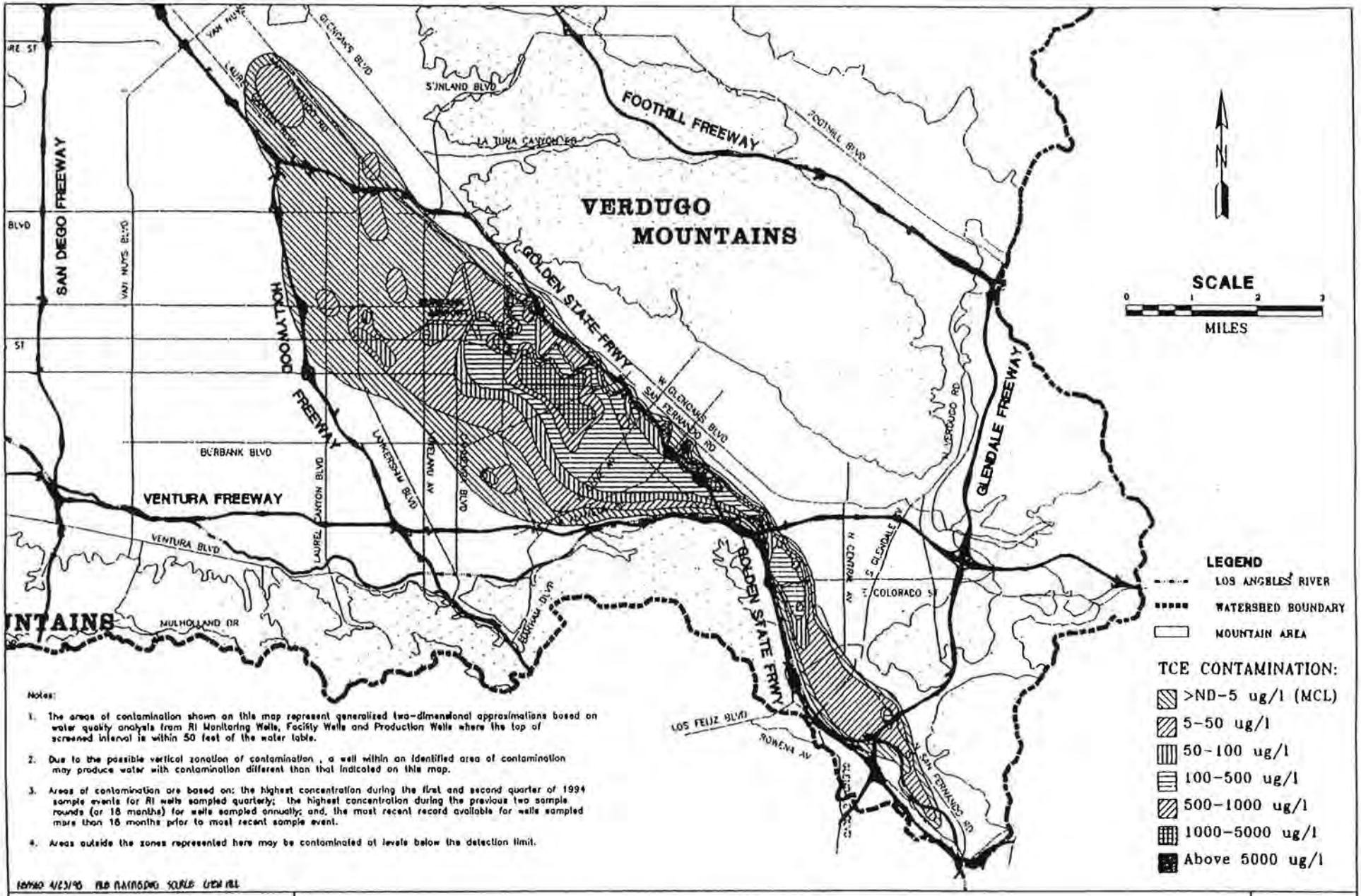
SAN FERNANDO BASIN
CUMULATIVE CHANGE IN GROUNDWATER STORAGE

Fall of Year	Change in Storage	Cumulative Chg. in Storage	Cumulative Chg. in Storage/1,000	Cumulative Chg. in Storage (1944)	Cumulative Chg. in Storage/1,000
1928	0	0	0		
1929	(41,510)	(41,510)	(42)		
1930	(15,690)	(57,200)	(57)		
1931	(26,320)	(83,520)	(84)		
1932	67,030	(16,490)	(16)		
1933	26,640	10,150	10		
1934	(28,560)	(18,410)	(18)		
1935	38,040	19,630	20		
1936	1,000	20,630	21		
1937	30,660	51,290	51		
1938	66,420	117,710	118		
1939	(12,540)	105,170	105		
1940	(32,650)	72,520	73		
1941	116,850	189,370	189		
1942	(31,230)	158,140	158		
1943	31,030	189,170	189		
1944	47,200	236,370	236	0	0
1945	(74,180)	162,190	162	(74,180)	(74)
1946	(33,300)	128,890	129	(107,480)	(107)
1947	(41,200)	87,690	88	(148,680)	(149)
1948	(52,770)	34,920	35	(201,450)	(201)
1949	(56,360)	(21,440)	(21)	(257,810)	(258)
1950	(43,390)	(64,830)	(65)	(301,200)	(301)
1951	(53,290)	(118,120)	(118)	(354,490)	(354)
1952	33,720	(84,400)	(84)	(320,770)	(321)
1953	(68,280)	(152,680)	(153)	(389,050)	(389)
1954	(56,770)	(209,450)	(209)	(445,820)	(446)
1955	(51,370)	(260,820)	(261)	(497,190)	(497)
1956	(71,390)	(332,210)	(332)	(568,580)	(569)
1957	(6,280)	(338,490)	(338)	(574,860)	(575)
1958	(9,160)	(347,650)	(348)	(584,020)	(584)
1959	(52,160)	(399,810)	(400)	(636,180)	(636)
1960	(53,080)	(452,890)	(453)	(689,260)	(689)
1961	(50,770)	(503,660)	(504)	(740,030)	(740)
1962	(3,590)	(507,250)	(507)	(743,620)	(744)
1963	(40,390)	(547,640)	(548)	(784,010)	(784)
1964	(70,220)	(617,860)	(618)	(854,230)	(854)
1965	(57,850)	(675,710)	(676)	(912,080)	(912)
1966	14,970	(660,740)	(661)	(897,110)	(897)
1967	36,720	(624,020)	(624)	(860,390)	(860)
1968	(31,350)	(655,370)	(655)	(891,740)	(892)
1969	79,240	(576,130)	(576)	(812,500)	(813)

PLATE 15 - ULARA WATERMASTER REPORT

SAN FERNANDO BASIN
CUMULATIVE CHANGE IN GROUNDWATER STORAGE

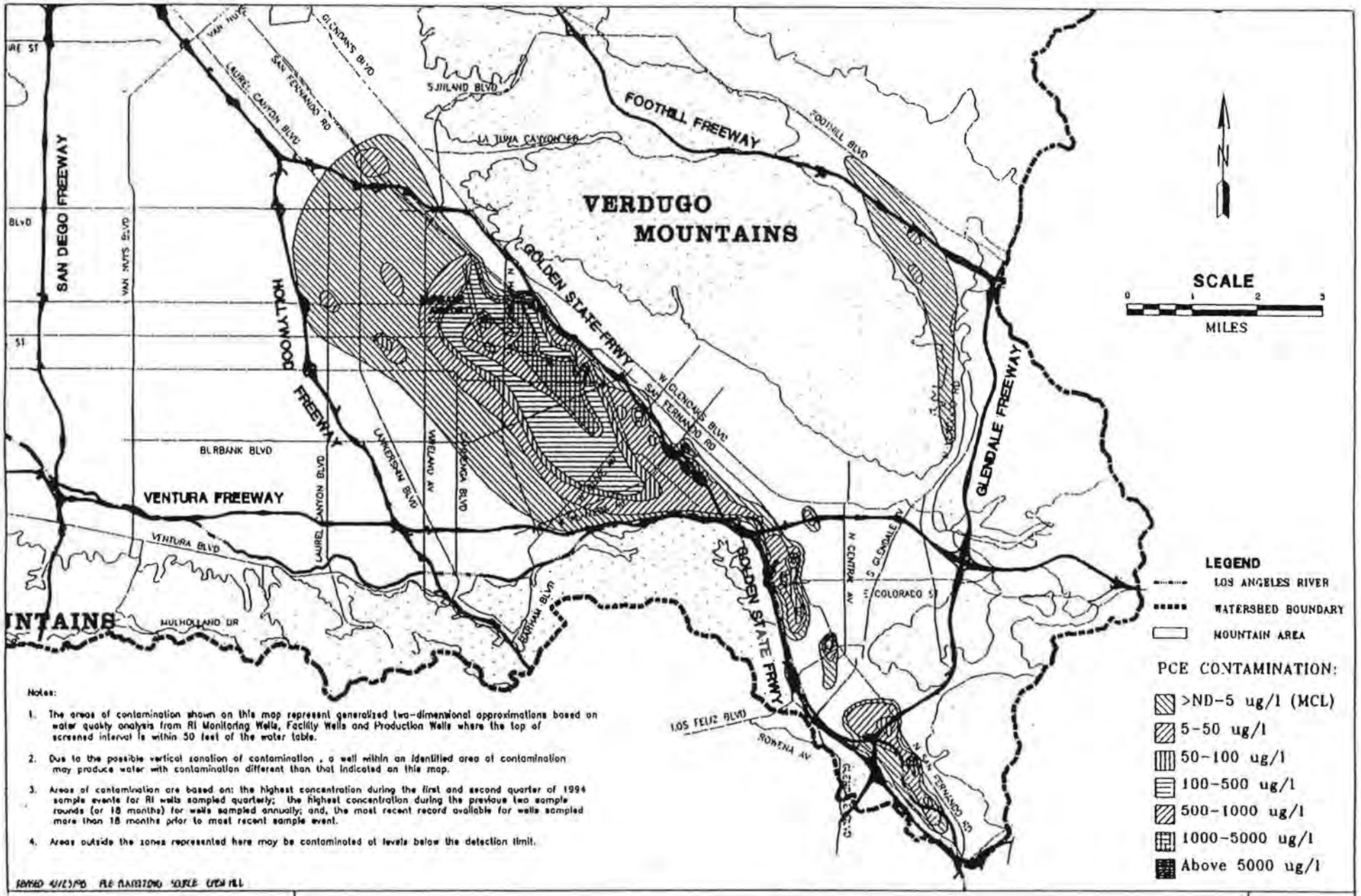
Fall of Year	Change in Storage	Cumulative Chg. in Storage	Cumulative Chg. in Storage/1,000	Cumulative Chg. in Storage (1944)	Cumulative Chg. in Storage/1,000
1970	(9,740)	(585,870)	(586)	(822,240)	(822)
1971	15,340	(570,530)	(571)	(806,900)	(807)
1972	(17,090)	(587,620)	(588)	(823,990)	(824)
1973	17,020	(570,600)	(571)	(806,970)	(807)
1974	(21,820)	(592,420)	(592)	(828,790)	(829)
1975	(22,580)	(615,000)	(615)	(851,370)	(851)
1976	(30,090)	(645,090)	(645)	(881,460)	(881)
1977	(50,490)	(695,580)	(696)	(931,950)	(932)
1978	136,150	(559,430)	(559)	(795,800)	(796)
1979	78,080	(481,350)	(481)	(717,720)	(718)
1980	99,970	(381,380)	(381)	(617,750)	(618)
1981	(32,560)	(413,940)	(414)	(650,310)	(650)
1982	(530)	(414,470)	(414)	(650,840)	(651)
1983	121,090	(293,380)	(293)	(529,750)	(530)
1984	(63,180)	(356,560)	(357)	(592,930)	(593)
1985	(31,690)	(388,250)	(388)	(624,620)	(625)
1986	(7,980)	(396,230)	(396)	(632,600)	(633)
1987	(31,940)	(428,170)	(428)	(664,540)	(665)
1988	(5,000)	(433,170)	(433)	(669,540)	(670)
1989	(30,550)	(463,720)	(464)	(700,090)	(700)
1990	(29,941)	(493,661)	(494)	(730,031)	(730)
1991	(14,122)	(507,783)	(508)	(744,153)	(744)
1992	411	(507,372)	(507)	(743,742)	(744)
1993	106,317	(401,055)	(401)	(637,425)	(637)
1994	(22,238)	(423,293)	(423)	(659,663)	(660)
1995	79132	(344,161)	(344)	(580,531)	(581)
1996	(49,223)	(393,384)	(393)	(629,754)	(630)



1995-96 Water Year
ULARA
Watermaster Report

San Fernando Basin
TCE Contamination [ug/l] In the Upper Zone [Spring 1995]

PLATE 16



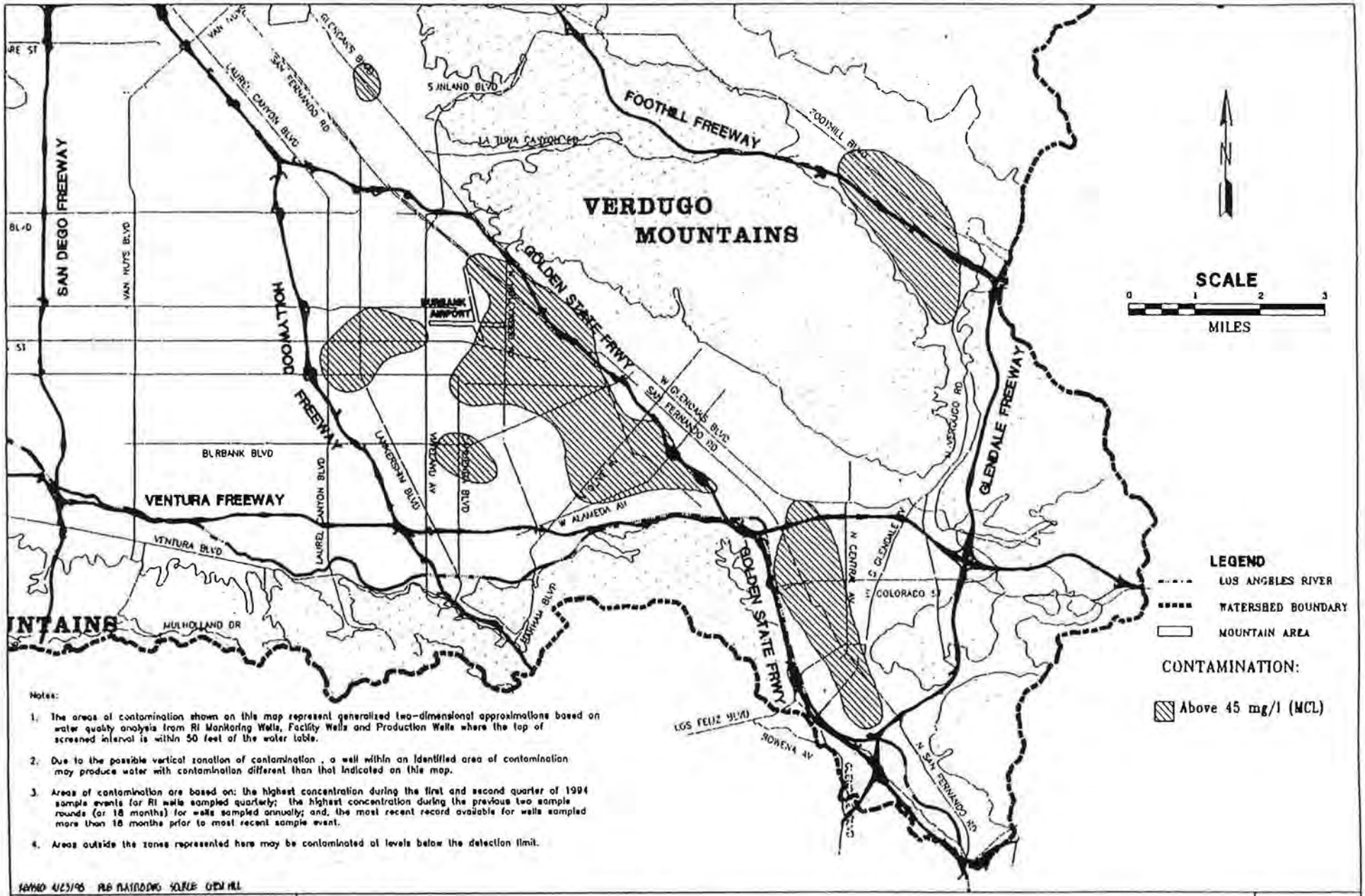
Notes:

1. The areas of contamination shown on this map represent generalized two-dimensional approximations based on water quality analysis from RI Monitoring Wells, Facility Wells and Production Wells where the top of screened interval is within 50 feet of the water table.
2. Due to the possible vertical zonation of contamination , a well within an identified area of contamination may produce water with contamination different than that indicated on this map.
3. Areas of contamination are based on: the highest concentration during the first and second quarter of 1994 sample events for RI wells sampled quarterly; the highest concentration during the previous two sample rounds (or 18 months) for wells sampled annually; and, the most recent record available for wells sampled more than 18 months prior to most recent sample event.
4. Areas outside the zones represented here may be contaminated at levels below the detection limit.

1995-96 Water Year
ULARA
Watermaster Report

San Fernando Basin
PCE Contamination [ug/l] in the Upper Zone [Spring 1995]

PLATE 17



Notes:

1. The areas of contamination shown on this map represent generalized two-dimensional approximations based on water quality analysis from RI Monitoring Wells, Facility Wells and Production Wells where the top of screened interval is within 50 feet of the water table.
2. Due to the possible vertical zonation of contamination , a well within an identified area of contamination may produce water with contamination different than that indicated on this map.
3. Areas of contamination are based on: the highest concentration during the first and second quarter of 1994 sample events for RI wells sampled quarterly; the highest concentration during the previous two sample rounds (or 18 months) for wells sampled annually; and, the most recent record available for wells sampled more than 18 months prior to most recent sample event.
4. Areas outside the zones represented here may be contaminated at levels below the detection limit.

KAMAD 4/23/96 PLB PLOTTING SOURCE OPEN FILE

1995-96 Water Year
ULARA
Watermaster Report

San Fernando Basin
NO_3 Contamination [ug/l] in the Upper Zone [Spring 1995]

PLATE 18

APPENDIX A

GROUNDWATER EXTRACTIONS

GROUND WATER EXTRACTIONS
1995-96 WATER YEAR
(acre-feet)

LACDPW Well No.	Owner Well No.	1995 Oct.	Nov.	Dec.	1996 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	TOTAL
San Fernando Basin														
Angelica Healthcare Services														
3934A	M050A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Auto Stiegler														
—	—	1.25	1.23	1.21	1.10	0.95	1.21	1.53	1.80	2.07	2.17	2.81	2.26	19.59
Burbank, City of														
3841C	6A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3882P	7	144.25	101.58	106.96	88.45	105.67	117.20	100.18	129.68	95.78	135.63	89.52	122.23	1,337.13
3851E	12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3851K	13A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3882T	15	122.75	87.03	124.85	75.38	0.00	0.00	0.00	119.84	95.87	122.52	82.23	127.30	957.77
3841G	18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	267.00	188.61	231.81	163.83	105.67	117.20	100.18	249.52	191.65	258.15	171.75	249.53	2,294.90
CalMat														
4916A	2	0.00	0.00	0.00	37.29	26.88	30.69	44.00	34.55	26.65	148.85	23.55	82.31	454.77
4916	3	14.91	43.19	33.80	27.58	19.88	22.70	32.54	25.55	19.71	25.96	88.49	51.85	406.16
	Total:	14.91	43.19	33.80	64.87	46.76	53.39	76.54	60.10	46.36	174.81	112.04	134.16	860.93
First Financial Plaza Site														
N/A	F.F.P.S.	1.82	1.61	1.86	1.61	1.82	2.19	2.13	1.68	1.61	1.30	1.52	1.26	20.41
Forest Lawn Memorial Park														
3947A	2	13.63	8.11	3.40	0.32	1.15	1.07	11.75	1.52	19.37	21.13	14.40	11.80	107.65
3947B	3	15.45	9.30	5.16	3.87	3.34	1.14	12.55	29.28	24.15	22.38	15.22	12.84	154.68
3947C	4	13.26	7.96	4.94	3.72	2.87	0.98	10.67	24.76	20.21	18.69	12.73	11.04	131.83
3858K	7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	42.34	25.37	13.50	7.91	7.36	3.19	34.97	55.56	63.73	62.20	42.35	35.68	394.16
Glendale, City of														
3924N	STPT 1	3.95	0.86	1.14	0.72	1.18	1.35	3.78	1.85	1.76	3.57	2.43	2.12	24.71
3924R	STPT 2	1.23	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.00	0.00	1.72
GVENT	GVENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	5.18	0.86	1.14	0.72	1.18	1.35	4.27	1.85	1.76	3.57	2.43	2.12	26.43
Groeff Fabrics														
—	—	2.06	1.45	2.22	1.23	2.30	1.55	1.52	2.00	1.38	1.50	1.81	1.65	20.67
Hughes														
—	—	0.59	0.28	0.46	0.74	0.51	0.62	0.67	0.63	0.43	0.41	0.63	0.68	6.65
Tegetz/Pankow														
4940A	NORTH	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	15.00
Lockheed - Burbank Operable Unit														
3871L	VO-1	0.77	0.74	0.00	76.95	17.16	95.88	143.53	114.90	157.65	60.99	81.30	80.47	830.34
3861G	VO-2	0.00	1.89	0.00	71.90	129.36	107.38	143.23	113.36	115.12	103.03	73.51	6.94	865.72
3861K	VO-3	0.00	1.42	0.00	25.47	2.87	60.94	10.70	110.19	22.01	0.00	4.33	0.26	238.19
3861L	VO-4	0.00	0.66	0.00	107.65	135.93	73.01	150.25	121.07	161.50	157.24	154.63	79.13	1,141.07
3850X	VO-5	2.87	3.62	6.52	77.95	28.55	148.27	70.75	14.08	35.26	3.93	13.77	0.55	406.12
3850Z	VO-6	5.79	5.31	1.75	126.50	202.82	53.96	221.58	250.75	239.23	217.15	84.93	128.38	1,538.15
3850	VO-7	0.00	2.59	0.00	15.47	8.98	100.59	84.23	194.08	213.46	89.44	40.20	3.75	752.79
	Total:	9.43	16.23	8.27	501.89	525.67	640.03	824.27	918.43	944.23	631.78	452.67	299.48	5,772.38

GROUND WATER EXTRACTIONS
1995-96 WATER YEAR
(acre-feet)

LACDPW Well No.	Owner Well No.	1995 Oct.	Nov.	Dec.	1996 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	TOTAL
San Fernando Basin (cont'd)														
Livingston-Graham, Inc.														
4916B	SaVal	0.03	0.06	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
Mesa, John & Barbara														
4973J		0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.96
Metropolitan Transportation Authority														
—	1065	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
—	1075	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
—	1130	5.14	8.17	7.01	5.97	3.12	6.26	6.81	5.18	6.44	8.67	13.20	19.96	95.93
—	1140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
—	1150	0.00	1.47	0.00	0.00	0.88	1.33	1.97	3.90	6.11	7.67	1.09	1.92	26.34
	Total:	5.14	9.64	7.01	5.97	4.00	7.59	8.78	9.08	12.55	16.34	14.29	21.88	122.27
Mobil Oil Corporation														
—	—	1.00	0.48	0.48	0.60	0.57	0.86	1.61	1.30	1.11	0.36	0.03	0.03	8.43
Philips Components														
—	—	8.61	7.83	8.13	7.86	7.98	8.44	7.79	7.42	6.13	7.11	6.36	4.85	88.51
Rockwell International														
—	E-1 to E-9	25.61	21.50	24.61	35.49	23.93	19.68	24.58	25.21	27.66	26.01	22.98	21.90	299.16
Sears Roebuck & Co.														
3945	3945	17.77	16.92	32.10	16.26	16.56	16.90	17.29	17.56	17.40	17.98	17.54	17.60	221.88
Sportsmen's Lodge														
3785A	1	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.08
3M-Pharmaceuticals														
—	—	1.88	1.70	1.08	0.76	0.79	0.35	0.28	1.17	0.69	0.92	0.60	0.47	10.69
Toluca Lake Property Owners Association														
3845F	3845F	4.59	2.20	0.00	0.00	1.28	0.37	3.19	6.91	3.37	6.78	6.15	4.30	39.14
Trillium Corporation														
Well #1	—	0.24	0.24	0.24	0.24	0.24	0.24	0.44	0.44	0.44	0.44	0.97	0.97	5.14
Well #2	—	0.09	0.09	0.09	0.09	0.09	0.09	1.03	1.03	1.03	1.03	2.29	2.29	9.24
	Total:	0.33	0.33	0.33	0.33	0.33	0.33	1.47	1.47	1.47	1.47	3.26	3.26	14.38
Valhalla Memorial Park and Mortuary														
3840K	4	20.88	32.86	2.28	10.65	0.00	6.85	33.17	43.30	64.57	39.00	44.43	40.78	338.77
Waste Management Disposal Services of Calif.														
4916D		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Walt Disney Pictures and Television														
3874E	EAST	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3874F	WEST	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3874G	NORTH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

GROUND WATER EXTRACTIONS
1995-96 WATER YEAR
(acre-feet)

LACDPW Well No.	Owner Well No.	1995 Oct.	1995 Nov.	1995 Dec.	1996 Jan.	1996 Feb.	1996 Mar.	1996 Apr.	1996 May	1996 June	1996 July	1996 Aug.	1996 Sept.	TOTAL
San Fernando Basin (cont'd)														
Los Angeles, City of														
Aeration (A)														
3800E	A-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3810U	A-2	5.02	0.00	11.38	4.17	22.75	17.92	7.92	13.08	—	—	18.91	14.41	115.56
3810V	A-3	17.76	0.00	0.00	21.67	26.07	15.35	15.54	23.48	30.83	3.58	36.77	24.77	215.82
3810W	A-4	38.01	0.00	0.00	11.91	29.24	26.76	21.18	22.45	35.23	14.62	33.81	18.75	251.96
3820H	A-5	0.00	0.00	0.00	0.00	0.00	2.59	3.62	0.00	1.74	6.86	7.66	6.93	29.40
3821J	A-6	32.96	0.00	0.00	6.54	7.80	15.97	0.00	0.00	5.50	28.14	46.41	34.25	177.57
3830P	A-7	32.62	0.00	8.12	6.77	3.76	10.19	20.73	14.83	35.74	27.34	39.23	35.51	234.84
3831K	A-8	41.23	0.00	7.57	15.90	31.15	37.87	22.47	0.52	0.00	0.00	0.00	0.00	156.71
	A Total:	167.60	0.00	27.07	66.96	120.77	126.65	91.46	74.36	109.04	80.54	182.79	134.62	1,181.86
Crystal Springs (CS)														
3914L	CS-45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3914M	CS-46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	CS Total:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Erwin (E)														
3831H	E-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3821I	E-2A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3831G	E-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	126.49	158.99	122.58	408.06
3821F	E-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3831F	E-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3821H	E-6	152.11	151.51	204.43	150.43	17.24	0.04	0.00	61.70	156.91	139.92	189.39	149.90	1,373.58
3811F	E-10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	183.44	229.22	171.39	584.05
	E Total:	152.11	151.51	204.43	150.43	17.24	0.04	0.00	61.70	156.91	449.85	577.60	443.87	2,365.69
Headworks (H)														
3893L	H-26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3893K	H-27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3893M	H-28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3893N	H-29	0.00	0.00	0.00	2.66	11.79	0.00	0.00	0.00	0.00	0.41	0.00	0.00	14.86
3893P	H-30	0.00	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75
	H Total:	0.00	0.00	0.00	3.41	11.79	0.00	0.00	0.00	0.00	0.41	0.00	0.00	15.61
North Hollywood (NH)														
3800	NH-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3780A	NH-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3810S	NH-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3770	NH-7	46.85	0.00	0.00	0.00	0.00	45.17	0.00	35.81	116.62	76.99	131.91	115.10	568.45
3810	NH-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3810A	NH-13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3810B	NH-14A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3790E	NH-15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3820D	NH-16	54.26	0.00	0.00	0.00	0.00	0.00	0.00	238.49	179.77	0.00	0.00	0.00	472.52
3820C	NH-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.11

GROUND WATER EXTRACTIONS
1995-96 WATER YEAR
(acre-feet)

LACDPW Well No.	Owner Well No.	1995 Oct.	Nov.	Dec.	1996 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	TOTAL
							San Fernando Basin (cont'd)							
North Hollywood (NH), cont'd														
3820B	NH-18	85.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	75.13	161.03
3830D	NH-19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3830C	NH-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3830B	NH-21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3790C	NH-22	69.28	0.00	0.00	0.00	0.00	110.51	0.00	304.98	258.97	243.91	342.90	259.80	1,590.35
3790D	NH-23	128.14	0.00	0.00	0.00	0.00	133.53	0.00	355.11	273.98	329.95	411.34	326.72	1,958.77
3800C	NH-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3790F	NH-25	83.37	0.00	0.00	0.00	0.00	81.95	0.00	32.04	175.48	214.50	226.97	222.86	1,037.17
3790E	NH-26	75.55	110.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.70	281.94
3820F	NH-27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3810K	NH-28	0.00	0.00	0.00	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61
3810L	NH-29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3800D	NH-30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3810T	NH-31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3770C	NH-32	0.02	0.00	0.00	0.00	0.00	101.65	0.00	79.45	247.81	180.78	295.63	255.83	1,161.17
3780C	NH-33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.39	113.49	124.70	197.13	143.59	623.30
3790G	NH-34	80.37	0.00	0.00	0.00	0.00	0.00	0.00	270.89	233.86	217.58	311.70	253.65	1,368.05
3830N	NH-35	0.00	0.00	0.00	201.01	321.57	121.96	0.00	245.38	302.34	305.89	379.54	301.01	2,178.70
3790H	NH-36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.57	9.57
3790J	NH-37	196.83	0.00	0.00	0.00	0.00	168.18	0.00	454.70	390.35	367.33	136.13	0.00	1,713.52
3810M	NH-38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3810N	NH-39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3810P	NH-40	163.93	0.00	0.00	61.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	225.45
3810Q	NH-41	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.54
3810R	NH-42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.18
3790K	NH-43A	68.25	0.00	0.00	0.00	0.00	85.07	0.00	226.56	200.18	186.40	264.16	213.52	1,244.14
3790L	NH-44	186.29	0.00	0.00	0.00	0.00	157.23	0.00	425.94	365.26	345.29	486.27	397.35	2,363.63
3790M	NH-45	190.08	0.00	0.00	0.00	0.00	163.03	0.00	261.29	211.96	195.93	276.62	221.96	1,520.87
	NH Total:	1,429.34	110.69	0.00	263.14	321.57	1,168.28	0.00	2,975.03	3,070.07	2,789.25	3,460.30	2,892.40	18,480.07
Pollock (P)														
3959E	P-4	0.00	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18
3958H	P-6	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
3958J	P-7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	P Total:	0.00	0.00	0.00	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38
Rinaldi-Toluca (RT)														
4909E	RT-1	0.00	0.50	355.69	353.81	53.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	763.97
4898A	RT-2	0.00	329.06	556.54	418.73	64.18	0.00	0.00	0.00	0.00	116.57	563.65	462.87	2,511.60
4898B	RT-3	0.00	20.17	242.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	262.82
4898C	RT-4	0.00	354.75	501.62	384.91	70.91	0.00	0.00	369.55	530.73	494.14	629.98	503.97	3,840.56
4898D	RT-5	0.00	393.84	457.57	237.37	71.14	0.00	0.00	370.68	532.13	496.18	504.95	0.00	3,063.86
4898E	RT-6	0.00	340.10	549.24	244.35	73.14	0.00	0.00	310.37	0.00	0.00	0.00	0.00	1,517.20
4898F	RT-7	0.00	346.09	539.76	373.85	143.52	0.00	0.00	310.69	443.93	0.00	74.03	0.00	2,231.87
4898G	RT-8	0.00	97.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.19

GROUND WATER EXTRACTIONS
1995-96 WATER YEAR
(acre-feet)

LACDPW	Owner	1995			1996								
Well No.	Well No.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	TOTAL
San Fernando Basin (cont'd)														
Rinaldi-Toluca (RT), cont'd														
4898H	RT-9	0.00	273.50	492.40	335.03	139.96	0.00	0.00	354.70	435.21	0.00	77.15	0.00	2,107.95
4909G	RT-10	0.00	291.82	598.96	470.33	72.19	0.00	0.00	0.00	0.00	130.78	632.71	539.41	2,736.20
4909K	RT-11	0.00	0.00	297.15	319.53	64.46	0.00	0.00	371.78	457.18	468.77	565.81	480.64	3,025.32
4909H	RT-12	0.00	337.39	349.58	327.08	29.82	0.00	0.00	383.19	469.97	477.70	578.07	491.29	3,444.09
4909J	RT-13	0.00	0.00	300.22	332.73	30.28	0.00	0.00	375.43	467.30	482.09	581.86	493.22	3,063.13
4909L	RT-14	0.00	279.20	527.36	396.92	11.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,214.91
4909M	RT-15	0.00	354.04	500.57	196.67	12.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,063.99
	RT Total:	0.00	3,417.65	6,269.31	4,391.31	837.71	0.00	0.00	2,846.39	3,336.45	2,666.23	4,208.21	2,971.40	30,944.66
Tujunga (T)														
4887C	T-1	0.00	0.00	0.43	371.90	0.00	0.00	0.00	0.00	0.00	0.00	243.27	407.23	1,022.83
4887D	T-2	0.00	0.00	87.46	379.33	0.00	0.00	0.00	0.00	0.00	187.25	661.84	416.39	1,732.27
4887E	T-3	0.00	0.00	144.83	319.60	0.00	0.00	0.00	0.00	0.00	169.71	622.15	399.12	1,655.41
4887F	T-4	0.00	0.00	139.50	305.41	0.00	0.00	0.00	0.00	0.00	180.41	653.65	524.44	1,803.41
4887G	T-5	0.43	0.00	195.86	310.44	0.00	0.00	0.00	0.00	0.00	0.00	247.01	528.55	1,282.29
4887H	T-6	0.41	0.00	4.01	324.42	0.00	0.00	0.00	0.00	0.00	0.00	189.09	282.18	800.11
4887J	T-7	0.18	0.00	223.37	341.27	0.00	0.00	0.00	0.00	0.00	0.00	250.96	538.86	1,354.64
4887K	T-8	0.75	0.00	169.30	349.93	0.00	0.00	0.00	0.00	0.00	0.00	229.95	380.44	1,130.37
4886B	T-9	0.00	0.00	0.78	348.30	0.00	0.00	0.00	0.00	0.00	0.00	119.03	372.38	840.49
4886C	T-10	0.00	0.00	0.71	101.90	0.00	0.00	0.00	0.00	0.00	0.00	259.36	310.99	672.96
4886D	T-11	0.00	0.00	1.07	39.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.22	42.47
4886E	T-12	0.59	0.00	235.05	20.11	0.00	0.00	0.00	0.00	0.00	0.00	53.78	0.20	309.73
	T Total:	2.36	0.00	1,202.37	3,211.79	0.00	0.00	0.00	0.00	0.00	537.37	3,530.09	4,163.00	12,646.98
Verdugo (V)														
3863H	V-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04
3863P	V-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3863J	V-4	0.00	0.00	0.04	0.00	0.00	0.16	0.00	0.36	0.00	0.00	0.00	0.00	0.56
3863L	V-11	201.01	173.71	254.79	223.41	128.37	0.11	0.00	238.22	193.73	228.58	223.71	198.64	2,064.28
3853G	V-13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3854F	V-22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3844R	V-24	176.26	229.24	182.18	161.24	113.22	0.22	0.00	69.00	0.00	0.00	137.55	194.14	1,263.05
	V Total:	377.27	402.95	437.01	384.65	241.59	0.49	0.00	307.58	193.73	228.58	361.26	392.82	3,327.93
Whitnall (W)														
3820E	W-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3821B	W-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3821C	W-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3821D	W-4	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.20
3821E	W-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	212.71	267.92	293.20	256.84	1,030.67
3831J	W-6A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3832K	W-7	162.78	82.07	274.54	129.75	84.98	0.02	0.00	163.75	134.61	128.19	144.81	108.51	1,414.01
3832L	W-8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	189.46	224.24	260.28	204.29	878.27

GROUND WATER EXTRACTIONS
1995-96 WATER YEAR
(acre-feet)

LACDPW Well No.	Owner Well No.	1995 Oct.	1995 Nov.	1995 Dec.	1996 Jan.	1996 Feb.	1996 Mar.	1996 Apr.	1996 May	1996 June	1996 July	1996 Aug.	1996 Sept.	TOTAL
						San Fernando Basin (cont'd)								
Whitnall (W), cont'd														
3832M	W-9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3842E	W-10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	W Total:	162.78	82.07	274.54	129.75	84.98	0.22	0.00	163.75	536.78	620.35	698.29	569.64	3,323.15
Los Angeles, City of														
	Total:	2,291.46	4,164.87	8,414.73	8,601.82	1,635.65	1,295.68	91.46	6,428.81	7,402.98	7,372.58	13,018.54	11,567.75	72,286.33
San Fernando Basin Total:		2,723.21	4,538.55	8,786.39	9,424.97	2,384.64	2,179.12	1,237.04	7,835.14	8,792.49	8,625.78	13,923.53	12,410.99	82,861.85

						Sylmar Basin								
Los Angeles, City of														
Plant	Mission	503.38	13.88	0.00	–	–	–	–	–	–	–	–	–	517.26
Well	5	–	–	–	0.00	0.00	27.29	134.15	146.34	0.00	145.66	210.97	0.00	664.41
Well	6	–	–	–	0.00	0.00	84.89	139.57	154.38	0.00	131.93	190.47	153.07	854.31
Well	7	–	–	–	0.00	0.00	112.30	189.30	208.26	0.00	6.58	0.71	213.36	730.51
		503.38	13.88	0.00	0.00	0.00	224.48	463.02	508.98	0.00	284.17	402.15	366.43	2,766.49
Meurer Engineering/Santiago Estates														
5998	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
San Fernando, City of														
5969D	2A	259.18	182.57	18.72	0.00	34.78	135.43	142.17	147.23	199.89	209.53	161.36	128.39	1,619.25
5959	3	38.89	65.08	15.89	0.00	12.67	75.63	115.50	144.33	126.06	128.31	118.33	102.27	942.96
5969	4	18.93	24.80	4.66	0.00	0.11	24.53	26.08	35.63	23.25	27.32	27.78	29.88	242.97
5968	7A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.60	81.94	74.40	179.94
	Total:	317.00	272.45	39.27	0.00	47.56	235.59	283.75	327.19	349.20	388.76	389.41	334.94	2,985.12
Sylmar Basin Total:		820.38	286.33	39.27	0.00	47.56	460.07	746.77	836.17	349.20	672.93	791.56	701.37	5,751.61

						Verdugo Basin								
Crescenta Valley County Water District														
5058B	1	39.24	40.49	36.98	32.46	27.83	13.03	1.72	4.40	4.52	33.37	50.04	47.31	331.39
5036A	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5058H	5	39.74	18.25	0.81	3.35	0.14	0.03	66.13	72.85	26.36	8.27	18.23	41.37	295.53
5058	6	22.60	17.66	20.70	21.90	13.93	4.41	22.33	24.62	18.36	15.11	19.51	20.85	221.98
5047B	7	29.22	21.47	10.37	14.95	3.96	32.32	7.11	48.79	45.78	17.92	13.18	19.26	264.33
5069J	8	52.30	16.04	0.00	0.00	18.88	60.57	64.15	71.03	59.89	66.11	47.39	45.61	501.97
5047D	9	33.48	19.80	12.15	16.24	9.42	8.58	6.63	41.01	37.17	34.80	36.40	27.42	283.10
5058D	10	42.38	48.58	54.70	51.62	50.06	25.86	0.00	0.00	17.54	55.92	68.10	74.77	489.53
5058E	11	38.74	10.63	43.19	31.07	12.09	29.79	44.54	44.91	39.05	36.90	31.32	31.60	393.83

GROUND WATER EXTRACTIONS
1995-96 WATER YEAR
(acre-feet)

LACDPW Well No.	Owner Well No.	1995 Oct.	Nov.	Dec.	1996 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	TOTAL
							Verdugo Basin (cont'd)							
Crescenta Valley County Water District, cont'd														
5058J	12	67.23	62.84	58.33	53.21	44.80	48.99	66.92	62.73	60.68	47.88	27.94	21.77	623.32
5069F	14	40.88	30.87	28.66	22.52	28.81	17.73	11.34	27.89	25.37	12.39	8.05	3.38	257.89
	PICK	6.13	2.90	4.97	5.42	5.09	5.46	5.32	5.70	0.73	0.00	0.00	0.00	41.72
	Total:	411.94	289.53	270.86	252.74	215.01	246.77	296.19	403.93	335.45	328.67	320.16	333.34	3,704.59
Glendale, City of														
3961-3971	GL3-5	60.85	120.63	42.97	56.60	51.81	20.25	61.01	117.75	102.75	101.75	85.49	0.00	821.86
3970	GL-6	96.91	145.13	103.65	131.64	111.86	30.08	71.66	134.02	116.40	114.09	94.27	111.41	1,261.12
—	VPCKP	-											50.40	50.40
—	MM-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	157.76	265.76	146.62	188.24	163.67	50.33	132.67	251.77	219.15	215.84	179.76	161.81	2,133.38
Verdugo Basin Total:		569.70	555.29	417.48	440.98	378.68	297.10	428.86	655.70	554.60	544.51	499.92	495.15	5,837.97

							Eagle Rock Basin							
McKesson Water Products														
3987A	1	6.73	4.71	0.25	0.00	0.00	0.23	0.95	2.35	1.65	0.80	0.21	0.25	18.13
3987B	2	6.13	6.62	8.28	9.81	8.47	8.69	8.76	8.78	7.31	4.36	2.29	2.34	81.84
3987F	3	5.67	4.95	6.56	7.50	6.69	7.56	7.77	8.90	7.33	7.66	8.44	7.65	86.68
3987G	4										5.50	8.55	7.33	21.38
	Total:	18.53	16.28	15.09	17.31	15.16	16.48	17.48	20.03	16.29	18.32	19.49	17.57	208.03
Eagle Rock Basin Total:		18.53	16.28	15.09	17.31	15.16	16.48	17.48	20.03	16.29	18.32	19.49	17.57	208.03

ULARA Total:	4,131.82	5,396.45	9,258.23	9,883.26	2,826.04	2,952.77	2,430.15	9,347.04	9,712.58	9,861.54	15,234.50	13,625.08	94,659.46

APPENDIX B

KEY GAGING STATIONS SURFACE RUNOFF

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

F57C-R LOS ANGELES RIVER ABOVE ARROYO SECO

DAILY DISCHARGE IN CUBIC FEET PER SECOND WATER YEAR OCT 1995 TO SEP 1996

Day	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	155	126	170			126						
2	158	128	183			114						
3	170	132	178			107						
4	167	131	181			674						
5	150	128	172	134		504						
6	143	133	181	126		112						
7	151	135	175	128		113						
8	150	125	178	129		111						
9	152	124	172	132		115						
10	146	126	167	137		115						
11	136	125	171	131		118						
12	120	126	457	134		931						
13	126	132	879	133		1.330						
14	132	131	182	135		441						
15	135	140	128	141		148						
16	135	132	123	535		117						
17	137	136	118	276		115						
18	137	131	123	131		118						
19	143	136	122	194		114						
20	132	138	126	128		113						
21	123	137		596		115						
22	133	138		167		112						
23	143	125		131		111						
24	125	124		125		110						
25	121	129		140		114						
26	111	138		141		115						
27	110	143		126		115						
28	112	143		247		139						
29	107	150		138		128						
30	114	162		129	------	124	------		------			------
31	105	------		2.680	------	120						
TOTAL	4.180	4.000	4.186	7.345		6.939						
MEAN	135	133	209	272		224						
MAX	170	162	879	2.680		1.330						
MIN	105	124	118	126		107						
AC-FT	8.291	7.934	8.303	14.570		13.760						

CAL YEAR 1995	TOTAL*	213.954	MEAN	604	MAX	19.90[illegible]	MIN	105	AC-FT	424.400		
WTR YEAR 1996	TOTAL*	26.65[illegible]	MEAN	192	MAX	2.68[illegible]	MIN	105	AC-FT	52.860		

* Incomplete Record

note:
F118B-R (out of service due to earthquake damage).

/ESTERN HYDROLOGIC SYSTEMS - (916) 885-2480
F300-R LOS ANGELES RIVER AT TUJUNGA AVENUE

ILY DISCHARGE IN CUBIC FEET PER SECOND WATER YEAR OCT 1995 TO SEP 1996

ay	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66.4	107	82.3	81.6	352	87.6	207	87.7	72.4	78.6	87.8	73.6
2	69.2	97.7	84.6	83.9	85.6	83.9	114	92.5	72.2	79.3	80.6	65.4
3	76.3	93.9	81.0	84.0	249	75.9	79.8	95.3	81.9	80.7	78.3	79.1
4	84.1	91.5	85.1	90.0	84.3	378	85.8	91.6	82.3	80.6	77.7	80.1
5	76.8	90.5	82.6	88.0	86.1	251	79.1	81.8	80.6	81.6	83.2	81.6
6	70.2	94.1	81.3	82.8	85.6	82.9	83.5	90.0	78.9	76.2	77.2	82.3
7	77.8	89.8	86.4	83.2	77.1	80.7	81.6	91.5	81.8	80.3	85.9	86.8
8	83.8	81.1	90.9	82.1	81.2	83.1	83.0	85.9	75.1	84.3	83.1	79.4
9	89.9	77.7	88.9	88.8	80.9	78.0	86.4	88.0	77.6	82.6	75.7	82.9
0	84.5	77.8	85.7	90.3	78.9	79.5	85.6	74.7	78.9	79.7	66.0	80.4
1	68.4	74.7	90.3	88.8	78.5	83.1	68.8	62.5	77.9	76.3	76.1	82.1
2	55.5	77.4	338	89.6	84.5	552	81.8	71.0	77.2	77.8	75.2	79.8
3	58.7	86.7	565	88.2	83.0	831	80.1	75.0	82.1	76.9	80.7	76.3
4	56.5	81.7	122	86.2	85.4	251	78.6	83.8	80.2	77.1	80.1	74.9
5	72.8	85.7	91.0	90.0	84.1	109	85.6	77.3	76.7	81.1	78.9	67.0
6	71.3	86.0	85.9	309	86.9	94.5	196	101	77.0	79.3	86.2	73.0
7	73.1	84.7	82.7	153	82.7	87.3	130	73.1	77.6	79.4	80.0	83.5
8	75.5	80.9	86.8	90.1	78.2	89.4	346	81.2	72.7	78.4	77.1	78.1
9	83.2	83.6	84.9	143	516	84.3	88.5	78.4	75.9	83.0	62.5	78.5
0	76.6	86.6	85.6	84.3	3,110	81.1	84.4	84.5	81.7	76.0	64.5	82.6
1	71.2	82.8	87.8	291	2,290	83.6	81.0	76.1	78.4	73.6	63.6	78.9
2	81.4	86.8	86.1	116	330	78.1	87.4	75.0	75.2	79.0	54.7	77.1
3	89.3	68.5	1,040	91.1	137	80.3	88.4	81.2	76.7	80.5	59.0	84.9
4	80.4	70.2	99.6	85.7	101	74.9	94.4	84.2	75.5	70.3	74.1	77.8
5	75.2	74.7	82.1	97.5	250	79.3	87.4	73.2	81.7	72.9	71.3	80.3
6	73.6	77.5	84.0	88.3	101	81.3	87.7	51.0	77.5	82.0	74.3	82.9
7	82.0	82.1	87.2	77.1	339	78.1	90.3	66.6	62.7	69.6	75.3	83.0
8	77.9	78.1	88.3	178	117	103	84.9	76.1	73.2	76.5	75.0	80.4
9	71.5	80.1	82.1	86.8	88.0	82.6	82.8	70.9	79.9	93.5	79.2	75.5
0	83.0	80.3	88.6	75.3	———	77.3	85.8	66.4	76.0	89.0	80.7	76.3
1	77.4	———	83.8	1,380	———	76.9	———	73.6	———	90.2	76.4	———
OTAL	2,333.5	2,510.2	4,390.6	4,643.7	9,303.0	4,438.7	3,095.7	2,461.1	2,317.5	2,466.3	2,340.4	2,364.5
EAN	75.3	83.7	142	150	321	143	103	79.4	77.3	79.6	75.5	78.8
AX	89.9	107	1,040	1,380	3,110	831	346	101	82.3	93.5	87.8	86.8
IN	55.5	68.5	81.0	75.3	77.1	74.9	68.8	51.0	62.7	69.6	54.7	65.4
C-FT	4,628	4,979	8,709	9,211	18,450	8,804	6,140	4,882	4,597	4,892	4,642	4,690

AL YEAR 1995 TOTAL 83,569.3 MEAN 229 MAX 10,800 MIN 53.7 AC-FT 165,800
TR YEAR 1996 TOTAL 42,665.2 MEAN 117 MAX 3,110 MIN 51.0 AC-FT 84,630

AS OF 10/09/96.DW.

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

F168-R BIG TUJUNGA CREEK BELOW BIG TUJUNGA DAM

DAILY DISCHARGE IN CUBIC FEET PER SECOND WATER YEAR OCT 1995 TO SEP 1996

Day	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	3.5	3.9	1.8	3.5	54.8	23.7	13.3	8.0	5.0	2.9	4.1
2	3.1	3.5	3.9	1.8	3.5	54.8	23.7	11.7	8.0	5.0	2.9	4.1
3	3.1	3.5	3.9	1.8	3.5	54.8	23.7	9.0	8.0	5.0	2.9	4.1
4	3.1	3.5	3.9	1.8	3.5	43.6	23.7	9.0	8.0	5.0	2.9	4.1
5	3.1	3.5	3.9	1.8	0	24.8	23.7	9.0	8.0	5.0	2.9	4.2
6	3.1	3.5	3.9	1.8	0	39.0	23.7	16.3	6.6	5.0	2.9	4.2
7	3.1	3.5	3.9	1.8	0	46.8	23.7	19.9	5.9	5.0	2.9	4.3
8	3.1	3.5	3.9	1.8	0	46.8	21.2	19.9	5.9	5.0	2.9	4.3
9	3.1	3.5	3.9	1.8	0	56.2	17.0	19.9	5.9	5.0	2.9	4.3
10	3.1	3.5	3.9	1.8	0	72.0	15.5	19.9	5.6	5.0	2.9	4.2
11	3.1	3.5	3.9	1.8	0	54.1	15.5	19.9	5.0	5.0	2.9	4.1
12	3.1	3.5	3.9	1.8	0	22.8	15.5	19.9	5.0	5.0	2.9	4.1
13	3.1	3.5	3.9	1.8	0	23.5	15.5	19.9	5.0	5.0	2.9	4.1
14	3.1	3.5	3.9	1.8	0	33.4	15.5	19.9	5.0	5.0	2.9	4.1
15	3.1	3.5	3.9	1.8	0	46.8	15.5	19.9	5.0	5.0	2.9	3.4
16	3.1	3.5	3.9	1.8	0	46.8	15.5	19.9	5.0	5.0	2.9	1.9
17	3.1	3.5	3.9	2.5	0	46.8	17.3	19.9	5.0	5.0	2.9	1.9
18	3.1	3.5	3.9	2.4	0	54.2	14.4	19.9	5.0	5.0	2.9	1.9
19	3.1	3.5	3.9	1.8	0	66.5	12.6	19.9	5.0	5.0	2.9	.7
20	3.1	3.5	3.9	1.8	0	53.0	12.6	18.6	5.0	5.0	2.9	0
21	3.1	3.5	3.9	1.8	251	31.7	12.6	18.0	5.0	5.0	2.9	0
22	3.1	3.5	3.9	1.8	229	24.3	12.6	18.0	5.0	5.0	2.9	0
23	3.1	3.5	3.9	1.8	201	24.3	12.6	18.0	5.0	3.6	2.9	0
24	3.1	3.5	3.9	1.8	137	24.3	12.6	11.3	5.0	2.9	2.9	0
25	3.1	3.5	3.9	1.8	89.8	24.3	12.6	8.0	5.0	2.9	2.9	0
26	3.1	3.5	3.9	1.8	60.7	24.3	12.6	8.0	5.0	2.9	2.9	0
27	3.1	3.5	3.9	1.8	31.1	24.3	12.6	8.0	5.0	2.9	2.9	0
28	3.1	3.5	3.9	1.8	23.7	24.3	12.6	8.0	5.0	2.9	2.9	0
29	3.1	3.5	3.9	1.8	23.7	24.3	12.6	8.0	5.0	2.9	2.9	0
30	3.1	3.5	3.9	1.8	------	24.3	12.6	8.0	5.0	2.9	2.9	0
31	3.1	------	3.9	5.9	------	24.3	------	8.0	------	2.9	2.9	------
TOTAL	96.1	105.0	120.9	61.2	1,061.0	1,216.2	495.5	466.9	169.9	136.8	89.9	68.1
MEAN	3.1	3.5	3.9	2.0	36.6	39.2	16.5	15.1	5.7	4.4	2.9	2.3
MAX	3.1	3.5	3.9	5.9	251	72.0	23.7	19.9	8.0	5.0	2.9	4.3
MIN	3.1	3.5	3.9	1.8	0	22.8	12.6	8.0	5.0	2.9	2.9	0
AC-FT	191	208	240	121	2,104	2,412	983	926	337	271	178	135

CAL YEAR 1995	TOTAL	17,475.6	MEAN	47.9	MAX	475	MIN	1.8	AC-FT	34,660
WTR YEAR 1996	TOTAL	4,087.5	MEAN	11.2	MAX	251	MIN	0	AC-FT	8,107

AS OF 10/09/96.AR.

/ESTERN HYDROLOGIC SYSTEMS - (916) 885-2480
E285-R BURBANK-WESTERN STORM DRAIN

ILY DISCHARGE IN CUBIC FEET PER SECOND WATER YEAR OCT 1995 TO SEP 1996

ay	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.8	12.8	12.8	12.8	70.4	12.8	32.2	11.0	9.4	7.6	9.3	10.9
2	13.0	12.8	12.8	12.8	38.4	12.8	9.9	9.6	9.6	8.0	11.2	9.4
3	13.2	12.8	12.8	12.8	25.5	12.8	9.3	9.8	9.5	8.7	11.5	10.2
4	13.6	12.8	12.8	12.8	18.8	47.5	9.8	10.6	9.3	8.2	10.4	10.3
5	13.6	12.8	12.8	12.8	15.1	60.5	8.9	9.7	9.3	9.8	9.1	10.6
6	13.6	12.8	12.8	12.8	12.2	17.0	8.9	10.3	8.5	9.8	9.0	10.7
7	13.4	12.8	12.8	12.8	9.6	12.8	8.9	10.2	9.4	9.7	10.9	9.6
8	13.5	12.8	12.8	10.2	12.8	12.8	9.5	9.8	9.8	9.7	10.6	10.0
9	13.4	12.8	12.8	10.2	12.8	12.8	9.9	11.0	8.9	8.9	10.2	9.1
0	7.8	12.8	12.8	11.7	12.8	12.8	10.8	12.4	9.0	11.0	9.8	9.4
1	13.7	12.8	12.8	12.8	12.8	12.8	9.7	10.8	9.2	10.2	11.0	9.3
2	12.4	12.8	12.8	12.8	12.8	63.0	9.1	9.2	9.2	10.4	9.8	10.7
3	11.1	12.8	12.8	12.8	12.8	80.3	8.8	9.3	9.3	9.6	8.6	10.8
4	9.9	12.8	14.1	12.8	12.8	52.8	8.7	10.7	10.5	10.7	8.4	10.4
5	10.1	12.8	13.6	12.8	12.8	15.0	9.5	9.2	9.4	10.0	9.0	10.3
6	13.3	12.8	12.8	12.8	12.8	12.8	15.3	8.7	9.4	9.5	7.2	8.3
7	13.3	12.8	11.7	12.7	12.8	12.8	16.8	10.3	10.5	9.8	7.5	8.5
8	13.7	12.8	10.9	11.5	12.8	12.8	18.5	9.9	11.4	10.0	8.0	7.2
9	13.4	12.8	12.8	11.4	23.3	12.8	10.5	10.6	11.2	9.7	8.2	7.2
0	13.4	12.8	12.8	10.2	1,240	12.8	9.1	10.6	10.1	9.2	8.3	9.4
1	13.3	12.8	12.8	51.2	1,330	12.8	7.8	10.6	9.3	9.6	8.5	11.3
2	13.9	12.8	12.8	12.8	837	12.8	8.4	10.8	9.7	10.5	7.4	11.0
3	13.4	12.8	12.8	12.8	12.2	12.8	7.2	9.7	9.8	10.2	8.5	11.4
4	13.4	12.8	21.2	12.8	12.8	12.8	5.3	9.9	8.8	11.0	9.0	12.1
5	13.0	12.8	12.8	12.8	12.8	12.8	7.3	10.6	7.7	10.7	9.7	10.6
6	12.8	12.8	12.8	12.8	12.8	12.8	8.4	9.2	7.7	11.5	9.8	11.0
7	12.8	12.8	12.8	12.8	32.9	12.8	6.9	9.6	8.0	10.9	9.2	11.0
8	12.8	12.8	12.8	12.8	44.2	9.2	9.8	10.4	8.8	13.4	9.5	10.7
9	12.8	12.8	12.8	12.8	13.7	9.3	11.0	10.2	8.3	12.2	10.1	11.3
0	12.8	12.8	12.8	12.8	———	9.1	11.1	10.0	7.1	11.6	11.5	11.5
1	12.8	———	12.8	95.6	———	8.9	———	10.0	———	10.3	11.5	———
OTAL	396.0	384.0	404.3	506.3	3,902.5	628.6	317.3	314.7	278.1	312.4	292.7	304.2
EAN	12.8	12.8	13.0	16.3	135	20.3	10.6	10.2	9.3	10.1	9.4	10.1
AX	13.9	12.8	21.2	95.6	1,330	80.3	32.2	12.4	11.4	13.4	11.5	12.1
IN	7.8	12.8	10.9	10.2	9.6	8.9	5.3	8.7	7.1	7.6	7.2	7.2
C-FT	785	762	802	1,004	7,740	1,247	629	624	552	620	581	603

AL YEAR 1995	TOTAL	12,109.5	MEAN	33.2	MAX	743	MIN	6.0	AC-FT	24,020
TR YEAR 1996	TOTAL	8,041.1	MEAN	22.0	MAX	1,330	MIN	5.3	AC-FT	15,950

AS OF 10/08/96.DW.

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

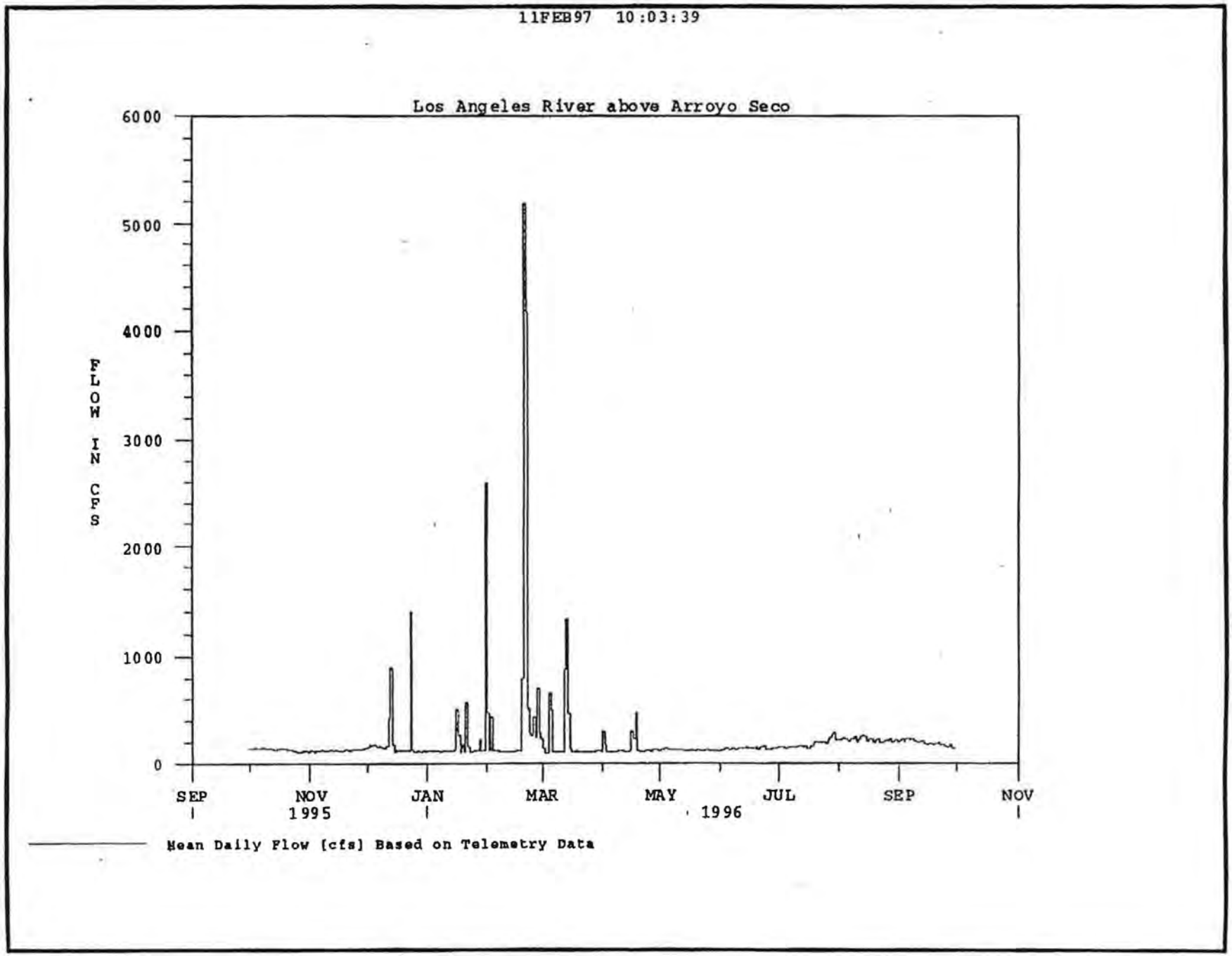
F252-R VERDUGO WASH AT ESTELLE AVENUE

DAILY DISCHARGE IN CUBIC FEET PER SECOND WATER YEAR OCT 1995 TO SEP 1996

Day	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	4.8	2.3	2.5	33.7	8.7	3.1	2.3	2.3	1.2	1.5	1.2
2	2.2	2.9	2.3	2.5	3.9	6.8	4.6	2.3	2.3	1.2	1.5	1.2
3	1.9	2.5	2.3	2.5	13.8	5.1	4.1	2.3	2.3	1.4	1.4	1.2
4	1.7	2.5	2.3	2.6	3.2	74.4	3.7	2.3	2.3	1.7	1.5	1.2
5	1.7	2.5	2.3	2.8	2.8	392	2.6	2.3	2.2	2.1	1.2	1.2
6	1.5	2.5	2.4	2.5	2.8	25.5	2.3	2.3	2.0	1.9	1.5	1.2
7	1.2	2.5	4.0	2.5	2.7	10.9	2.3	2.4	2.0	2.0	1.3	1.2
8	1.0	2.4	1.9	3.1	2.5	7.9	2.3	2.5	2.0	2.1	1.5	1.2
9	.8	2.3	1.7	3.1	2.5	4.1	2.3	2.5	2.0	2.2	1.7	1.2
10	2.2	2.3	1.7	2.5	2.5	3.9	2.5	2.9	2.0	2.1	1.5	1.2
11	2.1	2.3	1.8	2.5	2.5	3.9	2.4	2.6	2.0	2.4	1.5	1.4
12	1.8	2.3	8.0	2.5	2.5	460	2.3	2.7	1.9	2.2	1.5	1.5
13	1.7	2.3	117	2.5	2.5	848	2.3	3.2	1.7	2.3	1.5	1.5
14	1.5	2.3	2.6	2.5	2.5	426	2.3	4.1	1.7	2.3	1.5	1.5
15	1.2	2.3	1.7	2.5	2.5	78.0	2.4	5.3	1.7	2.3	1.5	1.5
16	1.0	2.3	1.9	96.6	2.5	19.6	2.9	4.7	1.8	3.3	1.5	1.5
17	6.0	2.3	1.7	3.5	2.5	9.2	9.7	3.2	2.0	5.1	1.5	1.5
18	6.6	2.3	1.7	2.3	2.5	6.9	27.8	3.2	1.4	4.7	1.5	1.5
19	2.8	2.5	1.7	7.1	121	6.4	2.5	2.6	1.5	3.9	1.5	1.5
20	2.8	2.5	1.7	2.8	1,260	5.1	2.5	2.8	1.5	2.8	1.5	1.5
21	2.8	2.3	1.7	40.9	1,070	3.9	2.5	2.7	1.5	2.6	1.5	1.5
22	2.8	2.5	1.7	2.7	233	2.9	2.5	3.0	1.5	2.6	1.5	1.5
23	3.2	2.5	64.8	2.3	37.2	3.0	2.5	2.7	1.5	2.6	1.5	1.5
24	3.9	2.5	8.6	2.3	11.7	3.4	2.5	2.9	1.5	2.2	1.5	1.5
25	3.3	2.5	2.5	2.3	12.2	3.5	2.7	2.8	1.5	2.0	1.5	1.5
26	2.8	2.5	2.0	2.3	11.6	2.9	2.3	2.8	1.3	2.0	1.5	1.5
27	2.8	2.5	1.1	2.4	14.8	2.8	2.3	3.8	1.1	1.8	1.5	1.5
28	2.8	2.5	2.3	3.5	23.3	2.8	2.3	3.6	1.0	1.8	1.3	1.5
29	2.8	2.5	2.3	2.5	11.9	2.8	2.3	3.1	1.0	1.8	1.2	1.5
30	2.8	2.3	2.3	2.5	------	2.8	2.3	3.5	1.2	1.7	1.2	1.5
31	2.8	------	2.3	448	------	2.8	------	3.7	------	1.6	1.2	------
TOTAL	76.8	75.2	254.6	663.1	2,897.1	2,436.0	111.1	93.1	51.7	71.9	45.0	41.9
MEAN	2.5	2.5	8.2	21.4	99.9	78.6	3.7	3.0	1.7	2.3	1.5	1.4
MAX	6.6	4.8	117	448	1,260	848	27.8	5.3	2.3	5.1	1.7	1.5
MIN	.8	2.3	1.1	2.3	2.5	2.8	2.3	2.3	1.0	1.2	1.2	1.2
AC-FT	152	149	505	1,315	5,746	4,832	220	185	103	143	89	83

CAL YEAR 1995	TOTAL	16,423.4	MEAN	45.0	MAX	1,710	MIN	.8	AC-FT	32,580
WTR YEAR 1996	TOTAL	6,817.5	MEAN	18.6	MAX	1,260	MIN	.8	AC-FT	13,520

AS OF 10/09/96.DW.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Los Angeles River above Arroyo Seco
FLOW IN CFS
6000
5000
4000
3000
2000
1000
0
SEP
NOV
1995
JAN
MAR
MAY
1996
JUL
SEP
NOV
Mean Daily Flow [cfs] Based on Telemetry Data

Los Angeles River above Arroyo Seco
Mean Daily Flow (cfs)

2400	30SEP1995	143.598
2400	01OCT1995	144.519
2400	02OCT1995	147.883
2400	03OCT1995	153.585
2400	04OCT1995	150.745
2400	05OCT1995	143.655
2400	06OCT1995	147.668
2400	07OCT1995	154.322
2400	08OCT1995	148.692
2400	09OCT1995	149.663
2400	10OCT1995	143.819
2400	11OCT1995	148.581
2400	12OCT1995	142.182
2400	13OCT1995	129.301
2400	14OCT1995	134.291
2400	15OCT1995	144.036
2400	16OCT1995	146.527
2400	17OCT1995	150.040
2400	18OCT1995	147.622
2400	19OCT1995	143.202
2400	20OCT1995	138.782
2400	21OCT1995	134.362
2400	22OCT1995	129.942
2400	23OCT1995	125.522
2400	24OCT1995	121.102
2400	25OCT1995	116.682
2400	26OCT1995	112.262
2400	27OCT1995	108.120
2400	28OCT1995	118.000
2400	29OCT1995	118.478
2400	30OCT1995	124.893
2400	31OCT1995	109.420
2400	01NOV1995	136.932
2400	02NOV1995	121.059
2400	03NOV1995	117.319
2400	04NOV1995	117.886
2400	05NOV1995	120.374

Note: Source of data is US Army Corps of Engineers telemetry system. Data is unchecked and not verified.

Los Angeles River above Arroyo Seco
Mean Daily Flow (cfs)

2400	30SEP1995	143.598	2400	06NOV1995	124.382
2400	01OCT1995	144.519	2400	07NOV1995	133.223
2400	02OCT1995	147.883	2400	08NOV1995	122.881
2400	03OCT1995	153.585	2400	09NOV1995	117.570
2400	04OCT1995	150.745	2400	10NOV1995	123.630
2400	05OCT1995	143.655	2400	11NOV1995	130.566
2400	06OCT1995	147.668	2400	12NOV1995	137.503
2400	07OCT1995	154.322	2400	13NOV1995	123.635
2400	08OCT1995	148.692	2400	14NOV1995	130.808
2400	09OCT1995	149.663	2400	15NOV1995	120.221
2400	10OCT1995	143.819	2400	16NOV1995	121.219
2400	11OCT1995	148.581	2400	17NOV1995	121.785
2400	12OCT1995	142.182	2400	18NOV1995	128.401
2400	13OCT1995	129.301	2400	19NOV1995	135.801
2400	14OCT1995	134.291	2400	20NOV1995	136.915
2400	15OCT1995	144.036	2400	21NOV1995	128.011
2400	16OCT1995	146.527	2400	22NOV1995	135.340
2400	17OCT1995	150.040	2400	23NOV1995	134.415
2400	18OCT1995	147.622	2400	24NOV1995	133.489
2400	19OCT1995	143.202	2400	25NOV1995	132.563
2400	20OCT1995	138.782	2400	26NOV1995	131.637
2400	21OCT1995	134.362	2400	27NOV1995	134.054
2400	22OCT1995	129.942	2400	28NOV1995	138.906
2400	23OCT1995	125.522	2400	29NOV1995	140.944
2400	24OCT1995	121.102	2400	30NOV1995	143.121
2400	25OCT1995	116.682	2400	01DEC1995	158.268
2400	26OCT1995	112.262	2400	02DEC1995	176.264
2400	27OCT1995	108.120	2400	03DEC1995	167.411
2400	28OCT1995	118.000	2400	04DEC1995	173.645
2400	29OCT1995	118.478	2400	05DEC1995	163.901
2400	30OCT1995	124.893	2400	06DEC1995	159.127
2400	31OCT1995	109.420	2400	07DEC1995	167.696
2400	01NOV1995	136.932	2400	08DEC1995	155.043
2400	02NOV1995	121.059	2400	09DEC1995	143.550
2400	03NOV1995	117.319	2400	10DEC1995	156.705
2400	04NOV1995	117.886	2400	11DEC1995	169.156
2400	05NOV1995	120.374	2400	12DEC1995	423.050
			2400	13DEC1995	893.984

Note: Source of data is US Army Corps of Engineers telemetry system. Data is unchecked and not verified.

Los Angeles River above Arroyo Seco
Mean Daily Flow (cfs)

2400 14DEC1995	176.760
2400 15DEC1995	117.141
2400 16DEC1995	118.838
2400 17DEC1995	121.622
2400 18DEC1995	122.331
2400 19DEC1995	119.850
2400 20DEC1995	123.099
2400 21DEC1995	125.709
2400 22DEC1995	125.491
2400 23DEC1995	1399.709
2400 24DEC1995	129.170
2400 25DEC1995	110.823
2400 26DEC1995	113.458
2400 27DEC1995	122.012
2400 28DEC1995	116.722
2400 29DEC1995	109.855
2400 30DEC1995	118.839
2400 31DEC1995	114.915
2400 01JAN1996	120.871
2400 02JAN1996	119.962
2400 03JAN1996	124.941
2400 04JAN1996	122.738
2400 05JAN1996	119.814
2400 06JAN1996	123.382
2400 07JAN1996	120.379
2400 08JAN1996	116.946
2400 09JAN1996	122.502
2400 10JAN1996	126.261
2400 11JAN1996	126.406
2400 12JAN1996	120.044
2400 13JAN1996	121.027
2400 14JAN1996	124.263
2400 15JAN1996	133.069
2400 16JAN1996	502.060
2400 17JAN1996	266.820
2400 18JAN1996	111.107
2400 19JAN1996	183.289
2400 20JAN1996	115.726
2400 21JAN1996	575.414
2400 22JAN1996	155.128
2400 23JAN1996	115.390
2400 24JAN1996	107.692
2400 25JAN1996	120.430
2400 26JAN1996	121.736
2400 27JAN1996	118.144
2400 28JAN1996	222.044
2400 29JAN1996	125.607
2400 30JAN1996	118.950
2400 31JAN1996	2584.681
2400 01FEB1996	474.077
2400 02FEB1996	122.931
2400 03FEB1996	441.146
2400 04FEB1996	126.563
2400 05FEB1996	119.633
2400 06FEB1996	118.455
2400 07FEB1996	113.699
2400 08FEB1996	113.388
2400 09FEB1996	113.417
2400 10FEB1996	116.300
2400 11FEB1996	117.326
2400 12FEB1996	116.859
2400 13FEB1996	113.701
2400 14FEB1996	114.723
2400 15FEB1996	116.295
2400 16FEB1996	118.622
2400 17FEB1996	122.226
2400 18FEB1996	124.396
2400 19FEB1996	795.015
2400 20FEB1996	5177.434
2400 21FEB1996	4166.756
2400 22FEB1996	512.484
2400 23FEB1996	293.328
2400 24FEB1996	270.390
2400 25FEB1996	439.499
2400 26FEB1996	251.398
2400 27FEB1996	708.958

Note: Source of data is US Army Corps of Engineers telemetry system. Data is unchecked and not verified.

Los Angeles River above Arroyo Seco
Mean Daily Flow (cfs)

2400	28FEB1996	288.301	2400	06APR1996	113.641
2400	29FEB1996	233.992	2400	07APR1996	117.036
2400	01MAR1996	143.758	2400	08APR1996	113.700
2400	02MAR1996	105.927	2400	09APR1996	121.955
2400	03MAR1996	99.906	2400	10APR1996	125.600
2400	04MAR1996	659.260	2400	11APR1996	120.501
2400	05MAR1996	506.655	2400	12APR1996	113.907
2400	06MAR1996	114.459	2400	13APR1996	113.420
2400	07MAR1996	107.485	2400	14APR1996	116.024
2400	08MAR1996	107.142	2400	15APR1996	125.419
2400	09MAR1996	108.007	2400	16APR1996	300.467
2400	10MAR1996	111.044	2400	17APR1996	239.848
2400	11MAR1996	113.976	2400	18APR1996	473.421
2400	12MAR1996	889.637	2400	19APR1996	125.952
2400	13MAR1996	1332.145	2400	20APR1996	114.725
2400	14MAR1996	470.631	2400	21APR1996	115.278
2400	15MAR1996	140.247	2400	22APR1996	114.726
2400	16MAR1996	111.100	2400	23APR1996	119.178
2400	17MAR1996	110.593	2400	24APR1996	122.805
2400	18MAR1996	118.515	2400	25APR1996	123.818
2400	19MAR1996	109.291	2400	26APR1996	116.428
2400	20MAR1996	108.498	2400	27APR1996	131.139
2400	21MAR1996	108.499	2400	28APR1996	128.922
2400	22MAR1996	109.800	2400	29APR1996	129.949
2400	23MAR1996	108.502	2400	30APR1996	127.018
2400	24MAR1996	108.498	2400	01MAY1996	134.355
2400	25MAR1996	109.483	2400	02MAY1996	135.835
2400	26MAR1996	112.660	2400	03MAY1996	140.084
2400	27MAR1996	111.101	2400	04MAY1996	143.324
2400	28MAR1996	124.874	2400	05MAY1996	133.083
2400	29MAR1996	121.005	2400	06MAY1996	132.427
2400	30MAR1996	121.031	2400	07MAY1996	139.904
2400	31MAR1996	112.353	2400	08MAY1996	135.132
2400	01APR1996	299.356	2400	09MAY1996	133.767
2400	02APR1996	180.194	2400	10MAY1996	132.405
2400	03APR1996	112.967	2400	11MAY1996	131.044
2400	04APR1996	110.817	2400	12MAY1996	129.682
2400	05APR1996	111.893	2400	13MAY1996	128.321

Note: Source of data is US Army Corps of Engineers telemetry system. Data is unchecked and not verified.

Los Angeles River above Arroyo Seco
Mean Daily Flow (cfs)

2400 14MAY1996	126.959	2400 21JUN1996	156.165
2400 15MAY1996	123.421	2400 22JUN1996	158.935
2400 16MAY1996	130.746	2400 23JUN1996	163.065
2400 17MAY1996	119.458	2400 24JUN1996	139.168
2400 18MAY1996	123.822	2400 25JUN1996	135.800
2400 19MAY1996	127.101	2400 26JUN1996	136.719
2400 20MAY1996	132.413	2400 27JUN1996	144.683
2400 21MAY1996	126.981	2400 28JUN1996	148.429
2400 22MAY1996	120.200	2400 29JUN1996	151.028
2400 23MAY1996	125.517	2400 30JUN1996	153.626
2400 24MAY1996	134.022	2400 01JUL1996	156.225
2400 25MAY1996	131.336	2400 02JUL1996	158.824
2400 26MAY1996	128.649	2400 03JUL1996	160.277
2400 27MAY1996	125.963	2400 04JUL1996	150.101
2400 28MAY1996	123.276	2400 05JUL1996	154.108
2400 29MAY1996	122.569	2400 06JUL1996	152.810
2400 30MAY1996	123.597	2400 07JUL1996	155.518
2400 31MAY1996	123.827	2400 08JUL1996	156.927
2400 01JUN1996	137.167	2400 09JUL1996	160.390
2400 02JUN1996	131.681	2400 10JUL1996	158.337
2400 03JUN1996	141.050	2400 11JUL1996	164.836
2400 04JUN1996	141.740	2400 12JUL1996	166.345
2400 05JUN1996	137.620	2400 13JUL1996	158.109
2400 06JUN1996	139.328	2400 14JUL1996	163.285
2400 07JUN1996	140.095	2400 15JUL1996	150.538
2400 08JUN1996	139.179	2400 16JUL1996	145.525
2400 09JUN1996	137.620	2400 17JUL1996	166.835
2400 10JUN1996	140.074	2400 18JUL1996	166.154
2400 11JUN1996	142.009	2400 19JUL1996	197.544
2400 12JUN1996	146.021	2400 20JUL1996	197.857
2400 13JUN1996	146.229	2400 21JUL1996	200.255
2400 14JUN1996	154.023	2400 22JUL1996	202.502
2400 15JUN1996	143.595	2400 23JUL1996	203.455
2400 16JUN1996	147.131	2400 24JUL1996	202.137
2400 17JUN1996	149.717	2400 25JUL1996	190.309
2400 18JUN1996	150.495	2400 26JUL1996	229.024
2400 19JUN1996	157.136	2400 27JUL1996	248.567
2400 20JUN1996	139.008	2400 28JUL1996	268.110

Note: Source of data is US Army Corps of Engineers telemetry system. Data is unchecked and not verified.

Los Angeles River above Arroyo Seco
Mean Daily Flow (cfs)

2400	29JUL1996	286.728	2400	05SEP1996	234.592
2400	30JUL1996	218.638	2400	06SEP1996	225.635
2400	31JUL1996	220.625	2400	07SEP1996	234.883
2400	01AUG1996	228.572	2400	08SEP1996	223.569
2400	02AUG1996	236.519	2400	09SEP1996	209.286
2400	03AUG1996	244.466	2400	10SEP1996	199.241
2400	04AUG1996	239.140	2400	11SEP1996	202.423
2400	05AUG1996	238.138	2400	12SEP1996	214.420
2400	06AUG1996	210.236	2400	13SEP1996	216.024
2400	07AUG1996	230.627	2400	14SEP1996	195.064
2400	08AUG1996	231.512	2400	15SEP1996	179.681
2400	09AUG1996	253.657	2400	16SEP1996	191.963
2400	10AUG1996	200.025	2400	17SEP1996	193.958
2400	11AUG1996	226.497	2400	18SEP1996	175.705
2400	12AUG1996	260.072	2400	19SEP1996	186.061
2400	13AUG1996	268.105	2400	20SEP1996	191.249
2400	14AUG1996	263.002	2400	21SEP1996	196.553
2400	15AUG1996	207.345	2400	22SEP1996	176.146
2400	16AUG1996	233.007	2400	23SEP1996	178.660
2400	17AUG1996	239.000	2400	24SEP1996	165.505
2400	18AUG1996	231.392	2400	25SEP1996	157.028
2400	19AUG1996	197.534	2400	26SEP1996	159.680
2400	20AUG1996	219.685	2400	27SEP1996 28SEP1996	149.453
2400	21AUG1996	236.741	2400	29SEP1996	145.548
2400	22AUG1996	198.311	2400	30SEP1996	137.317
2400	23AUG1996	198.924	2400	01OCT1996	128.221
2400	24AUG1996	210.880	2400	02OCT1996	131.837
2400	25AUG1996	228.896	2400	03OCT1996	121.627
2400	26AUG1996	209.984	2400	04OCT1996	139.968
2400	27AUG1996	235.239	2400	05OCT1996	127.243
2400	28AUG1996	201.218	2400	06OCT1996	121.937
2400	29AUG1996	214.556	2400	07OCT1996	127.453
2400	30AUG1996	225.039	2400	08OCT1996	118.580
2400	31AUG1996	205.097	2400	09OCT1996	134.758
2400	01SEP1996	217.715	2400	10OCT1996	168.766
2400	02SEP1996	230.303	2400	11OCT1996	161.349
2400	03SEP1996	204.054	2400	12OCT1996	153.932
2400	04SEP1996	233.289	2400	13OCT1996	146.515

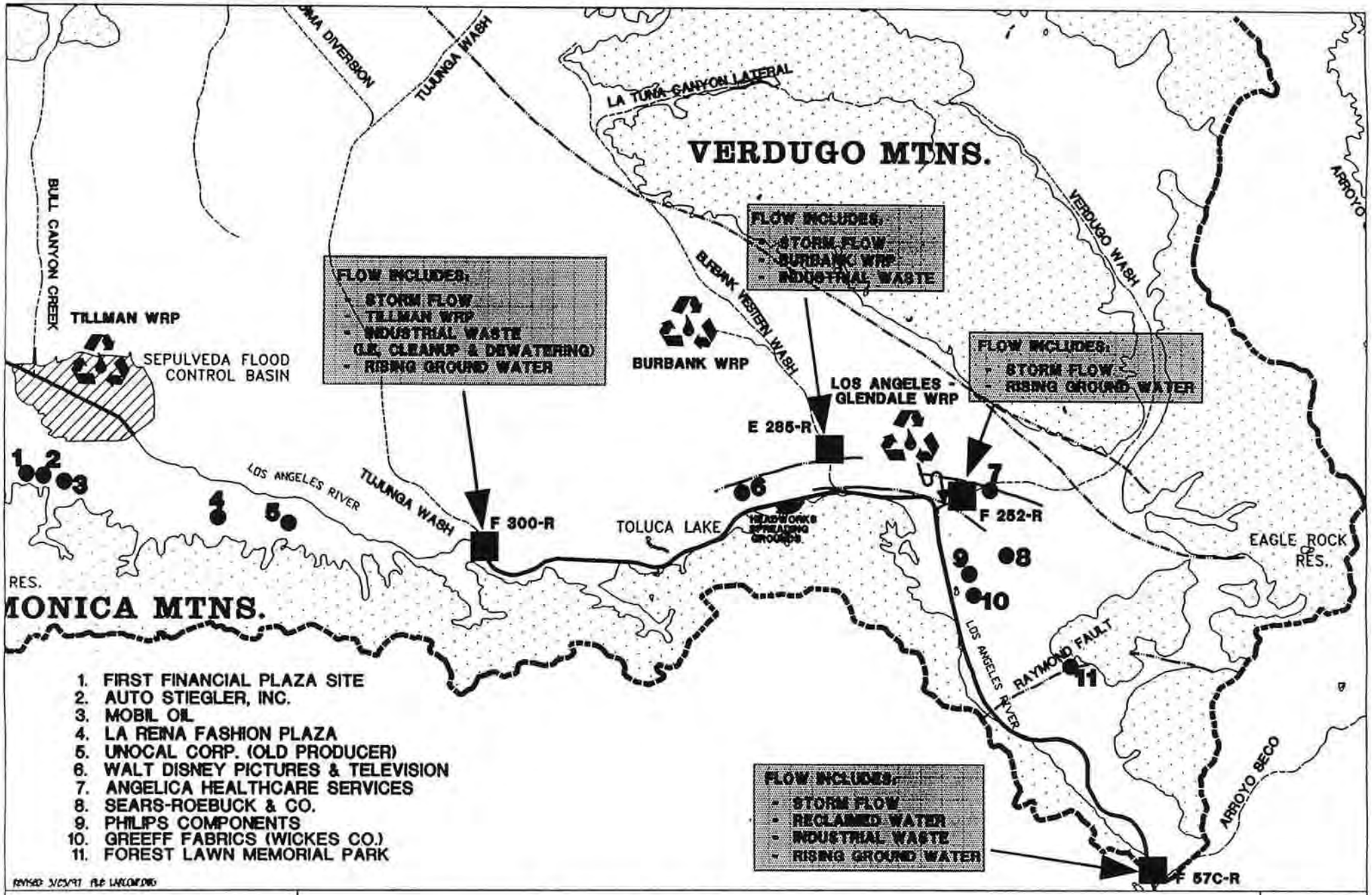
Note: Source of data is US Army Corps of Engineers telemetry system. Data is unchecked and not verified.

APPENDIX C

COMPONENTS OF LOS ANGELES RIVER FLOW

UPPER LOS ANGELES RIVER AREA: COMPONENTS OF LOS ANGELES RIVER FLOW; 1995-96 WATER YEAR

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep		
TOTAL FLOW AT GAGE F-57C-R														F-57C-R: Storm, Reclaimed, Industrial, Rising Ground Water
Total:	8386	7685	13079	14652	31590	13516	8886	7972	8625	11327	13931	11507	151156	F300-R: storm, Tillman, industrial waste, and rising water
														E285-R :storm, Burbank WRP, industrial waste
														F252-R: storm, rising water
I. RECLAIMED WATER DISCHARGED TO L.A. RIVER IN ULARA														
Tillman:	2610	2826	2683	2844	2595	2778	2942	2702	2302	2435	2445	2394		: Record 31556
L.A.-Glendale:	1253	1412	1685	1439	1237	1224	992	1269	1285	1111	1117	1251		: Record 15274
Burbank WRP:	522	467	475	460	422	447	466	522	490	505	420	431		: Record 5627
Total:	4385	4705	4843	4743	4254	4449	4400	4493	4077	4051	3982	4076	52458	
II. INDUSTRIAL WATER DISCHARGED TO L.A. RIVER IN ULARA														
Upstream of F300-R	45	38	43	59	41	36	47	47	51	47	46	43		: From F300-R separation of flow
Between F300-R and Rubber Dam														
Disney	0	0	0	0	0	0	0	0	0	0	0	0		
Other:	60	60	60	60	60	60	60	60	60	60	60	60		:20% of discharges 'Upstream of F300-R'; approximately 1cfs
Between Rubber Dam and F57C-R														
Headworks:	0	0	0	0	0	0	0	0	0	0	0	0		:pilot project record
Industrial waste:	430	417	430	430	388	430	417	430	417	430	430	417		:7 cfs assumed
Western Drain:	262	293	301	291	295	300	58	99	61	114	160	171		: From E285-R separation of flow
Total:	797	808	834	840	784	827	582	637	588	651	696	691	8736	
III. RISING WATER IN L.A. RIVER IN ULARA														
Total:	320	320	320	320	320	320	320	320	320	320	320	320	3841	: See Section 2.3 of the Watermaster's Report



1995-96 Water Year
ULARA Watermaster Report

Upper Los Angeles River Area: Components of Los Angeles River Flow

FIGURE C.1

APPENDIX D

WATER QUALITY DATA

REPRESENTATIVE MINERAL ANALYSES OF WATER

Well Number or Source	Date Sampled	Spec. Cond. µmho/c	Mineral Constituents in milligrams per liter (mg/l)												TDS mg/l	Hardness as $CaCO_3$ mg/l
			pH	Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	NO_3	F	B		
Imported Water																
Colorado River Water at Eagle Rock Reservoir	1996	991	8.0	67	27.5	97	4.6	0	136	246	91	1.02	0.23	0.14	612	281
LA Aqueduct Influent	6/10/96	244	8.2	18.8	3.56	26.7	-	0	102	19.3	13.8	0.44	0.49	0.57	148	61.7
LA Aqueduct/MWD Filtration Plant Influent	6/10/96	246	8.18	18.6	3.54	26.6	-	0	102	19.1	13.6	0.44	0.46	0.52	145	57.4
State Water Project at Joseph Jensen Filtration Plant (Influent)	95/96 FY	625	7.8	44	18	55	3.1	0	122	121	54	2.24	0.3	0.33	373	184
Surface Water																
Tillman Rec. Plant Discharge to LA River	1996 CY	-	6.9	41	12	92	12	-	-	234	135	7.9	0.6	0.8	732	152
Los Angeles River at Arroyo Seco	9/95	981	8.0	68.1	24.3	96.5	9.75	ND	171	191	108	7.4	0.3	0.575	666	270
LA/Glendale Rec. Plant Discharge to LA River	1996 CY	-	7.2	50	19	117	13	-	-	221	172	4.4	1.1	0.8	758	202
Ground Water																
(San Fernando Basin - Western Portion)																
4757C (Reseda No. 6)	10/13/83	944	7.8	115	31	43	2.1	-	301	200	33	2.6	0.31	0.24	595	416
(San Fernando Basin - Eastern Portion)																
3810 (a) (No. Hollywood No. 11)	5/9/95	513	7.2	60.2	13.7	25.2	-	0	226	64.4	12.74	8.06	0.44	0.02	301	209
3841C (Burbank No. 7) (c)	4/19/94	557	9.0	62.9	15.1	39.3	-	ND	214	46	28	14.75	0.56	-	316	199
3913H (Grandview No. 16)	1/96	540	7.8	60	14	37	3.8	ND	220	54.8	27	12.64	ND	-	326	180
(San Fernando Basin - L.A. Narrows)																
3959E (Pollock No. 4) (b)	3/8/93	794	7.5	77	24	49	NA	0	242	103	58	37.3	0.33	0.38	559	284
(Sylmar Basin)																
4840J (Mission No. 5)	11/30/94	653	7.3	81.6	17	34.5	-	0	251	37.3	35.2	27.33	0.33	0.36	426	271
5959 (San Fernando No. 3)	9/3/94	630	7.6	59	22	27	2.7	0.58	225	67	25	21	0.39	-	360	238
(Verdugo Basin)																
3971 (Glorietta No. 3)	7/24/96	840	7.0	104	38.6	40.8	4	ND	210	211	92	40.8	0.16	-	655	420
5058 (CVCWD No. 14)	6/2/96	720	7.2	81.1	27.8	30.5	2.8	<1.0	205	88.8	54.7	50.1	0.2	-	437	300

(a) Substituted for No. Hollywood No. 30

(b) Substituted for Pollock No. 6

(c) Substituted for Burbank No. 6A

APPENDIX E

DEWATERING AND REMEDIATION PROJECTS

REMEDIATION PROJECTS

No.	Company	Contact	Address	ID	Start Date
1	Mobil Oil	Alton Geoscience	16461 Ventura Blvd.	R	May 11, 1989
2	Thrifty Oil	Delta Tech. Eng.	18226 Ventura Blvd.	R	Feb 2, 1990
3	California Environmental	Buckley, Charles	5455 Van Nuys Blvd.	R	Oct 4, 1989
4	Rockwell International	Lafflam, S. R.	6633 Canoga Park Ave.	R	Jun 10, 1990
5	Lockheed	Helgerson, Ron	E. Empire Ave.	R	Jan 5, 1989
6	3M Pharmaceutical	Lee, M. E.	19901 Nordhoff St.	R	Feb 8, 1989
7	Philips Components	Smith, Wade	4561 Colorado St.	R	Jul 14, 1987
8	Greeff Fabrics	Edelson, Bruce	4000 Chevy Chase Dr.	R	March, 1993
9	Hughes Missile Systems Company	Barackman, Martin	Canoga Park, CA	R	February 1995

Notes:

1) ID - Refers to the type of project;
R: Ground water remediation site.

2) Start Date - Date project was brought to the attention of the ULARA Watermaster.

DEWATERING PROJECTS

No.	Company	Contact	Address	ID	Start Date
1	Danalax Engineering Corp.	Krell, Alex	11239 Ventura Blvd.	P	
2		Henkin, Doug	8806 Etiwanda Ave.	P	
3	Delta Tech. Engineering	Abbasi, Z. A.	12800 Ventura Blvd.	P	
4	Helfman, Hoffman & Associates	Varadi, Ivan	5550 Topanga Canyon	D	Jun 19, 1989
5	Encino Spectrum Project	Helfman, Haloosim & Ass.	15503 Ventura Blvd.	D	Jun 14, 1989
6	Home Savings of America	Eli Silon & Associates	13949 Ventura Blvd.	D	Jun 14, 1989
7	Warner Center Ent. Complex	Tsuchiyama and Kaino	5955 Owensmouth Ave.	D	Jun 26, 1989
8	T Violes Construction Company	Viole, Tim, Jr.	15840 Ventura Blvd.	P	
9		Eccleston, C. W.	22020 Clarendon St.	P	
10		Marks, Ronald	5348 Topanga Canyon	P	
11		Helfman, Haloosim & Assoc.	21820 Burbank Blvd.	P	
12	Park Hill Medical Plaza	Anjomshoaa, Mahmoud	7303 Medical Center Dr.	D	Dec 27, 1989
13	Danalex Engineering		12050 Ventura Blvd.	P	
14	Ellis Plumbing Co.	Ellis, Chris	4235 Mary Ellen Ave.	P	
15	Tarzana Office Plaza	Varadi Engineering	18701 Burbank Ave.	P	
16	Helfman, Haloosim & Associates	Varadi, Ivan	5350 White Oak Ave.	P	
17	First Financial Plaza Site	Slade, Richard	16830 Ventura Blvd.	D	Oct 9, 1987
18	Trillium	Lewis, Bill	6310 Canoga Ave.	D	Apr 27, 1988
19	LAMCO	O'Neil, John	21300 Victory Blvd?	D	Apr 27, 1988
20	La Reina Fashion Plaza	Blumenfeld, Dolores	14622 Ventura Blvd.	D	Apr 27, 1988
21	Auto Stiegler	Stiegler, John	16721 Ventura Blvd.	D	Oct 31, 1987
22	Sherway Properties	Vasquez, Rodney	4477 Woodman Ave.	P	
23	Ellis Plumbing Co.	Ellis, Chris	19951 Roscoe Blvd.	P	
24	Metropolitan Transit Authority	Higgins, John	Metro Red Line	TD	April, 1995
25		Carter, Dennis	4547 Murietta Ave	P	Jan 16, 1997

Notes:

1) ID - Refers to the type of project;
   D: Permanent dewatering required.
   P: No dewatering required presently, however there is potential for dewatering in the future.
   TD: Temporary Dewatering
2) Start Date - Date project was brought to the attention of the ULARA Watermaster.

APPENDIX F

DEWATERING NOTIFICATION PROCEDURE

Attachment 1

POLICIES AND PROCEDURES GUIDELINES
Non-Party Pumping - Physical Solution

ULARA WATERMASTER

I. Types of Physical Solution Pumping by Non-Parties

A. Dewatering for structure protection

B. Pumping for aquifer cleanup

C. Pumping of groundwater - special needs

II. ULARA Policies and Procedures

A. Section 2.5 - Pumping for clean-up by non-parties

B. Section 2.6 - Other Pumping by non-parties

C Guidelines for groundwater pumping

1. Application letter - (contact person; needs for pumping; location of wells; planned use and disposal) approval by Watermaster required

2. Groundwater pumped must be metered and monthly report made to Watermaster

3. Groundwater consumptively used - agreement needed with the city wherein the pumping occurs

4. California Regional Water Quality Control Board (CRWQCB) - approval by CRWQCB as to the potential occurrence of groundwater contaminants

III. Payment for Pumped Physical Solution Water - Dewatering for structure protection, pumping for aquifer clean-up, and special needs (non-party)

A. Non-consumptive use pumping: (spreading or re-injection); no payment is required.

B. Consumptive use pumping, discharged to the storm drain system: cost for the water is the actual cost to Los Angeles for purchasing replacement water from MWD less the average power cost for extraction of groundwater from the San Fernando Basin.

C. Consumptive use pumping - used on site: cost for the water is what would have been paid had the water been delivered from the Los Angeles distribution system, less the average energy cost for extraction of groundwater by Los Angeles from the San Fernando Basin.

VI. ULARA Watermaster notification of need to pump for clean-up

A. When a clean-up and abatement order has been issued to a non-party by the California Regional Water Quality Control Board, Los Angeles Region, contacting the ULARA Watermaster is included as one of the requirements.

V. ULARA Watermaster notification of permanent dewatering in the San Fernando Valley

A. Application for a Construction Permit from Los Angeles Department of Building and Safety

1. If a dewatering facility is part of the plans, the applicant must contact and receive clearance from the ULARA Watermaster's office before a construction permit is issued. The ULARA Watermaster's office can be contacted at (213) 367-1020 or (213) 367-0906.

2. ULARA Watermaster will provide the applicant (with copy to the Department of Building and Safety) with a written response saying that the project is not a water rights concern or an agreement with the City of Los Angeles Department of Water and Power (LADWP) for pumping is required.

3. The ULARA Watermaster will be sent a copy of the Department of Building and Safety's list of requirements for a permit.

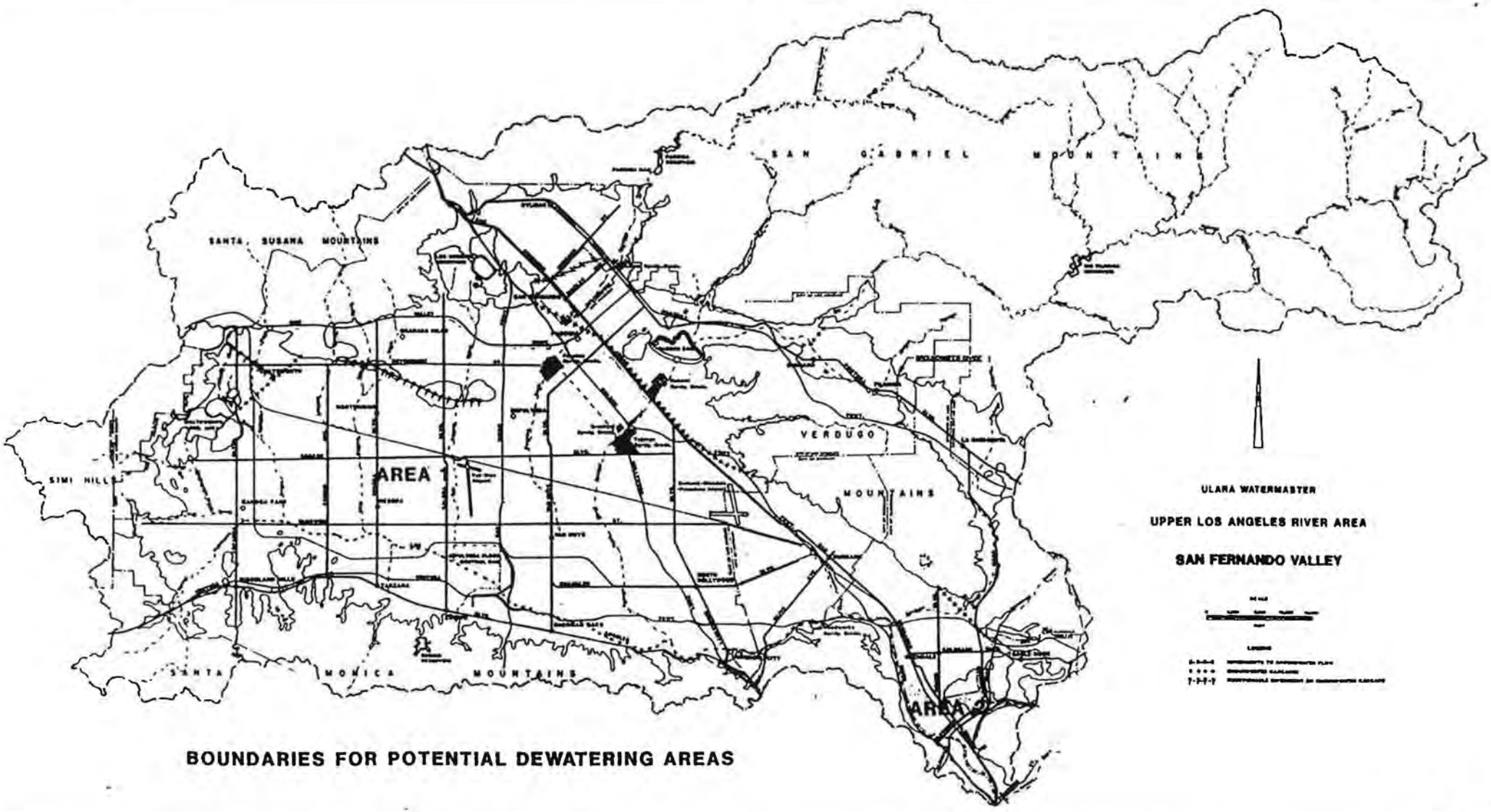
B. Applicant of a project designed to discharge water to the storm drain system is required to apply to the California Regional Water Quality Control Board (CRWQCB) for an NPDES permit. The CRWQCB can be contacted at (213) 266-7615.

C. Issuance of Certificate of Occupancy (C of O)

If an agreement with the City of Los Angeles Department of Water and Power is required, a second letter from the LADWP or the Watermaster must provide to the applicant (with a copy to the Department of Building of Safety) saying that an agreement has been reached

between the parties, or the water rights concern has been removed, and the C of O can be released as it relates to water rights.

Attachment 2



BOUNDARIES FOR POTENTIAL DEWATERING AREAS

Attachment 3

Melvin L. Blevins
ULARA Watermaster
213/367 1020
FAX 213/367 0939

TO: Building and Safety
FAX 818/ 756 9742

ULARA WATERMASTER PLAN CHECK

DATE_____

SITE ADDRESS_____

CONTRACTOR_____

PHONE_____

MAILING ADDRESS_____

_____

ULARA WATERMASTER:

1. Watermaster requirements are clear, no water rights impact_____
2. Watermaster requirements not clear, water rights impact_____
   A letter detailing responsibilities before final permit sign-off will follow.

APPENDIX G

WELLS DRILLED FOR GROUNDWATER INVESTIGATIONS

WELLS DRILLED FOR GROUND WATER INVESTIGATIONS

1995-96 WATER YEAR

1. Allied Signal
   No new wells were drilled.

2. Hughes Missile Systems Company
   No new wells were drilled.

3. Lockheed Aircraft Corp.
   No new wells were drilled.

4. City of Los Angeles
   Sixteen new monitoring wells are in the process of being drilled as of April 1997. These wells will help to characterize the contamination in the Pacoima Area and to analyze the impact of the East Valley Water Recycling Project on the groundwater.

5. Philips Components
   No new wells were drilled.

6. Rocketdyne (Canoga Park Facility)
   No new wells were drilled.

7. 3M
   No new wells were drilled.

8. Walt Disney
   No new wells were drilled.

APPENDIX H

CRESCENTA VALLEY WATER DISTRICT

(formerly Crescenta Valley County Water District)

Crescenta Valley County Water District

2700 Foothill Boulevard, La Crescenta, California 91214
Phone (818) 248-3925 Fax (818) 248-1659

October 2, 1996

Mr. Mel Blevins
ULARA Watermaster
P.O. Box 111, Room 1455
Los Angeles, CA 90051

SUBJECT: **REQUEST FOR ADJUSTMENT**
1996-97 VERDUGO BASIN PRESCRIPTIVE RIGHTS

With the recently concluded 1995-96 water year, the District pumped approximately 3701 Acre-Feet (AF) of groundwater from the Verdugo Basin. This is just slightly more than the 3294 adjudication plus 400 additional AF allowed by the Watermaster and the ULARA Administrative Committee for said year.

I would now like to formally request a similar adjustment for our Verdugo Basin pumping for the 1996-97 water year. I realize that any adjustment will take into account the City of Glendale's projection of Verdugo Basin pumping for the coming year as well as your evaluation of the total safe yield of the basin. A decision early in the water year would certainly help in the District's water production planning process. Perhaps this issue could be agendized for the next regular Administrative Committee Meeting on November 12, 1996. Thanks in advance for your consideration and please call if you need more information.

Very truly yours,

CRESCENTA VALLEY WATER DISTRICT

Michael G. Sovich
General Manager

MGS:jb

cc: Mr. Don Froelich, City of Glendale

APPENDIX I

SYLMAR BASIN SAFE YIELD

UPPER LOS ANGELES RIVER AREA WATERMASTER

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

MELVIN L. BLEVINS – WATERMASTER

OFFICE LOCATION:
111 North Hope Street, Room 1455
Los Angeles, CA 90012
TELEPHONE: (213) 367-1020
FAX: (213) 367-1131

MAILING ADDRESS:
ULARA WATERMASTER
P.O. Box 111, Room 1455
Los Angeles, CA 90051-0100

August 27, 1996

Mr. Michael Drake
Director of Public Works
City of San Fernando
117 Macneil St.
San Fernando, CA 91340

Mr. Robert Yoshimura
Director of Water Supply Division
Department of Water and Power
City of Los Angeles
111 N. Hope St., Room 1336
Los Angeles, Ca 90012

Gentlemen:

Sylmar Basin Safe Yield Re-Evaluation

In response to the City of San Fernando's request to reevaluate the Safe Yield of the Sylmar Basin, the Watermaster's office completed its study and presented it at the July 16, 1996 Administrative Committee meeting. The evaluation indicated that it is reasonable to consider an increase in the basin's Safe Yield. Therefore, I recommend increasing the Safe Yield by 300 acre-feet (AF) from 6,210 acre-feet per year (AF/yr) to 6,510 AF/yr. This increase will be on a trial basis, subject to ongoing review of the basin's levels, pumping rates and recharge activities in relation to the basin's newly established Safe Yield value.

This action is effective October 1, 1995 (Water Year 1995-96) and is guided in principle by the January 1984 stipulation between the City of Los Angeles and the City of San Fernando in that the Sylmar Basin's Safe Yield is equally shared between both parties less any extractions by the private party (Santiago Estates - formerly Muerer Engineering). Therefore, Los Angeles and San Fernando's annual groundwater rights are increased to 3,255 AF/yr each in addition to your accumulated storage rights from under pumped (in-lieu) groundwater. As of October 1, 1995, Los Angeles and San Fernando have stored 3,498 AF and 2,043 AF, respectively.

If you have any questions, please contact me at (213) 367-1020.

Sincerely,

MELVIN L. BLEVINS
ULARA Watermaster

RAN:ww

c: Administrative Committee
Upper Los Angeles River Area (ULARA)
Mr. Fred Lantz, President
City of Burbank
Mr. Michael Sovich
Crescenta Valley County
Water District
Mr. Donald Froelich
City of Glendale

Dr. John Mann

bc: Melvin L. Blevins
Edward A. Schlotman
Arthur Walsh
Scott J. Munson
Robert L. Simmons
Gerald A. Gewe
Patricia T. Kiechler
Richard A. Nagel

ULARA Watermaster
City of San Fernando

718a-SYLMAR.DOC

APPENDIX J

ACTION ITEMS 1996-97

ACTION ITEMS

WATERMASTER ACTIVITIES FOR 1996-97 REPORT

- Investigate Dewaterers and Small Pumpers
- Address CalMat Mining Operations
- Revise the Policies and Procedures Manual
- Facilitate Pacoima Area Investigation

APPENDIX K

CONVERSION FACTORS

CONVERSION FACTORS

Quantity	Metric Unit	Customary Unit	To Convert to Customary Unit Multiply Metric Unit By	To Convert to Metric Unit Multiply Customary Unit By
Length	millimeters (mm)	inches (in)	0.03937	25.4
	centimeters (cm)	inches (in)	0.3937	2.54
	meters (m)	feet (ft)	3.2808	0.3048
	kilometers (km)	miles (mi)	0.62139	1.6093
Area	square millimeters (mm^2)	square inches (in^2)	0.00155	645.16
	square meters (m^2)	square feet (ft^2)	10.764	0.092903
	square meters (m^2)	acres (ac)	0.00025	4046.9
	hectares (ha)	acres (ac)	2.4710	0.40469
	square kilometers (km^2)	square miles (mi^2)	0.3861	2.590
Volume	liters (L)	gallons (gal)	0.26417	3.7854
	megaliters	million gallons (10^6 gal)	0.26417	3.7854
	cubic meters (m^3)	gallons (gal)	264.17	0.003785
	cubic meters (m^3)	cubic feet (ft^3)	35.315	0.028317
	cubic meters (m^3)	cubic yards (yd^3)	1.308	0.76455
	cubic meters (m^3)	acre-feet (ac-ft)	0.00081	1233.5
	cubic decameters (dam^3)	acre-feet (ac-ft)	0.8107	1.2335
Flow	cubic meters per second (m^3/s)	cubic feet per second (ft^3/s)	35.315	0.028327
	liters per second (L/s)	cubic feet per second (ft^3/s)	0.035325	28.317
	liters per second (L/s)	gallons per minute (gal/min)	15.850	0.06309
	liters per minute (L/min)	gallons per minute (gal/min)	0.26417	3.7854
	liters per day (L/day)	gallons per day (gal/day)	0.26417	3.7854
	megaliters per day (ML/day)	million gallons per day (mgd)	0.26417	3.7854
	cubic decameters per day (dam^3/day)	acre-feet per day (ac-ft/day)	0.8107	1.2335
Mass	kilograms (kg)	pounds (lb)	2.2046	0.45359
	megagrams (Mg)	tons	1.1.023	0.90718
Velocity	meters per second (m/s)	feet per second (ft/s)	3.2808	0.3048
Concentration	milligrams per liter (mg/L)	parts per million (ppm)	1.0	1.0
Temperature	degrees Celsius (°C)	degrees Fahrenheit (°F)	(1.8 x °C)+32	(°F - 32)/1.8