Upper Los Angeles River Area Watermaster

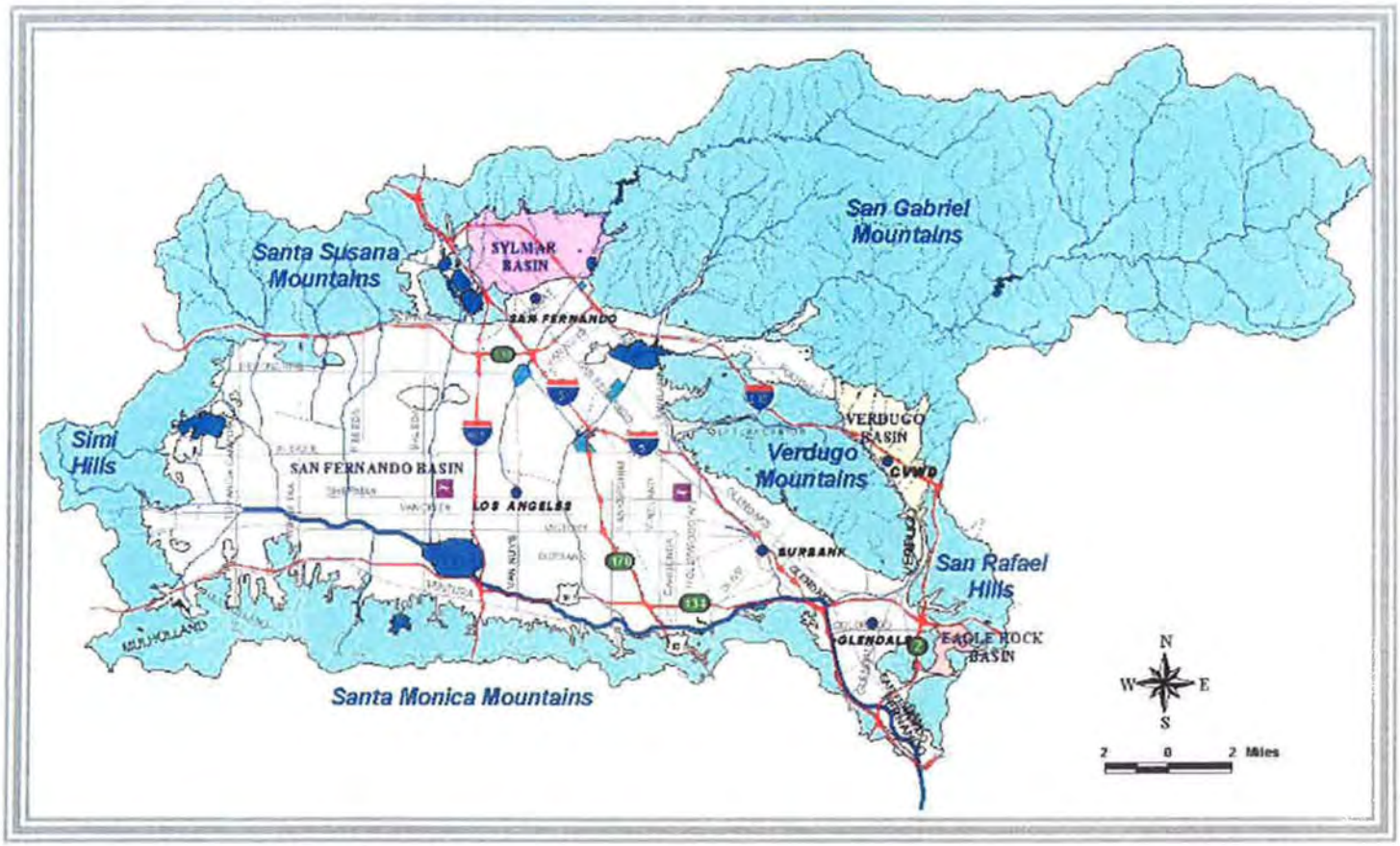
City of Los Angeles vs. City of San Fernando, et al.

Case No. 650079 – County of Los Angeles

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

2002-03 WATER YEAR

OCTOBER 1, 2002 – SEPTEMBER 30, 2003



MAY 2004

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MAY 2004

FOREWARD

I am pleased to submit this annual Watermaster Report for the 2002-2003 Water Year 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, and indicates the water in storage to the credit of each party as of September 30, 2003. In addition, this report includes background information on the history of the San Fernando Case; information regarding each basin in ULARA with respect to water supply, groundwater extractions, groundwater levels, quantities of imported water use, recharge operations, and water quality conditions; and other pertinent information during the 2002-2003 Water Year.

Updates on the development of "Significant Events" through April 2004 are discussed in Section 1.5. These include chromium contamination in the San Fernando Basin, and the challenges and opportunities presented by urban runoff.

One of our most serious future challenges is the long-term decline in water levels in the Verdugo and San Fernando Basins. We must take steps to reverse this trend. A study is currently underway in the Verdugo Basin to determine the cause(s) of the decline and to recommend remedial actions. As a related matter, it is important that we manage the available storage space in these basins to achieve maximum reliability for the benefit of the ratepayers and the public.

To provide groundwater quality management of the ULARA basins, the Watermaster and Administrative Committee met quarterly during 2002-2003. As provided in Section 5.4 of the ULARA Policies and Procedures, the ninth ULARA Groundwater Pumping and Spreading Plan was completed and filed with the court in July 2003.

As Watermaster for the Upper Los Angeles River Area (ULARA) effective September 1, 2003, I thank the Court and the Administrative Committee for their confidence and support. It is an honor to serve them. In recognition of her outstanding service and accomplishments as Administrator, it was my privilege to appoint Ms. Patricia Kiechler to the position of Assistant ULARA Watermaster. Special recognition goes to Mr. Donald Froelich, Administrative Committee Member for the City of Glendale; Mr. Michael Drake, Administrative Committee Member for the City of San Fernando; and Mr. Harold Tighe, Alternate Administrative Committee Member for the City of San Fernando, on their recent retirements. They have served their respective cities, and the Administrative Committee, with professionalism and dedication. I also thank Mr. Fred Fudacz, Watermaster Special Counsel and Mr. Alfred Smith, for their continuing service to the Watermaster Office.

We welcome the appointments of Mr. Edwin Galvez, Administrative Committee Member for the City of San Fernando; Mr. David Lawrence, Alternate Administrative Committee Member for the City of San Fernando; and Mr. Peter Kavounas, Administrative Committee Member for the City of Glendale.

Finally, I offer my deepest appreciation to my friend and mentor, Mel Blevins. We owe our success to his leadership as Watermaster since 1979.

I also wish to acknowledge and thank all the parties who have provided information and data that were essential to the completion of this report.

MARK G. MACKOWSKI
ULARA Watermaster

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1. INTRODUCTION

1. INTRODUCTION

1.1 Background

The Upper Los Angeles River Area (ULARA) encompasses the entire 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 tributary 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 (SFB), 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 bedrock of 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 SFB.

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 consists of 800 acres and comprises 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 Trial Court issued its opinion on March 15, 1968. 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 with some limited entitlements to others. 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 began 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 SFB 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. However, all surface and groundwater underflows from these basins are a part of the Pueblo Waters.

The City of Los Angeles was also given rights to all SFB groundwater derived from water imported by it from outside ULARA and either spread or delivered within the SFB. The Cities of Glendale and Burbank were also given rights to all SFB 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. San Fernando has no return flow rights based on a mutual agreement between Los Angeles and San Fernando in the March 22, 1984 amendment to the Final Judgment.

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 (Judgment), signed by the Honorable Harry L. Hupp, was entered on January 26, 1979. (Copies of the Judgment are available from the ULARA Watermaster Office.) The water rights set forth in the Judgment are consistent with the opinion of the Supreme Court described above. In addition, the 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 recommended by the Supreme Court. A separate stipulation was filed in Superior Court on January 26, 1979 appointing Melvin L. Blevins as Watermaster under the Judgment in this case. On September 1, 2003 Mark G. Mackowski was appointed Watermaster by the Superior Court, succeeding Mr. Blevins after 24 years of service as Watermaster.

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
Susan Bryant-Deason	January 1, 1999
Ricardo A. Torres	January 1, 1993
Gary Klausner	December 9, 1991
Jerold A. Krieger	April 16, 1991
Sally Disco	May 25, 1990
Miriam Vogel	January 16, 1990
Vernon G. Foster	April 30, 1985

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 that has been determined to be 43,660 acre-feet per year (AF/Y). This represents Los Angeles' Pueblo water right under the Judgment.

Import Return Water

Los Angeles, Glendale, and Burbank each have a right to extract the following amounts of groundwater from the San Fernando Basin.

Los Angeles: 20.8 percent of all delivered water, including reclaimed water, to valley fill lands of the SFB.

Burbank: 20.0 percent of all delivered water, including reclaimed water, to the SFB and its tributary hill and mountain areas.

Glendale: 20.0 percent of all delivered water, including reclaimed water, to the SFB and its tributary hill and mountain areas.

Physical Solution Water

Several parties are granted limited entitlement to extract groundwater 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
	Middle Ranch	50
	Hathaway	60
	Van de Kamp[1]	120
	Toluca Lake	100
	Sportsmen's Lodge	25
City of Glendale	Forest Lawn	400
	Angelica Healthcare[2]	75
City of Burbank	Valhalla	300
	Lockheed-Martin	25

1. Van de Kamp has never pumped its physical solution right.
2. Angelica Healthcare no longer pumps its physical solution rights.

Stored Water

Los Angeles, Glendale, and Burbank each have a right to store groundwater and the right to extract equivalent amounts.

Sylmar Basin

Native Water

As of March 22, 1984, Los Angeles and San Fernando were assigned equal rights to the safe yield of the basin. The Administrative Committee on July 16, 1996 approved increasing the safe yield in the Sylmar Basin by 300 AF to 6,510 AF/Y based on the evalution and recommendation of the Watermaster. The only potentially active private party with overlying rights within the Sylmar Basin is Santiago Estates, a successor to Meurer Engineering, M.H.C. Inc. Santiago Estates' pumping is deducted from the safe yield and the two cities divide the remainder. Santiago Estates has not pumped since the 1998-1999 Water Year. The pump was removed from their well.

Stored Water

Los Angeles and San Fernando each have a right to store groundwater by in-lieu practices and the right to extract equivalent amounts.

Verdugo Basin

Native Water

Glendale and the Crescenta Valley Water District (CVWD) have appropriative and prescriptive rights to extract 3,856 and 3,294 AF/Y, respectively. In past years CVWD has requested and been given approval by the Watermaster and Administrative Committee to pump an adjusted amount above its water right. Due to a falling water table CVWD was unable to pump its adjudication during the 2002-03 Water Year. In June 2003, CVWD received an A.B.303 grant from the California Department of Water Resources (DWR) to prepare a groundwater storage and conjunctive use feasibility study of the Verdugo Basin. A final report will be delivered to DWR by May 2005.

Eagle Rock Basin

Native Water

The Eagle Rock Basin has a small 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 majority of the safe yield of the basin. Los Angeles has the right to extract or allow to be extracted the safe yield of the basin.

Physical Solution Water

DS Waters (successor to Sparkletts and Deep Rock) has physical solution rights to extract groundwater pursuant to a stipulation with the City of Los Angeles, and as provided in Section 9.2.1 of the 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 8.3 of the 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, 2004, are:

BURBANK, CITY OF
Fred Lantz (President)
Bill Mace (Alternate)

GLENDALE, CITY OF
Peter Kavounas (Vice-President)
Leighton Fong (Alternate)

SAN FERNANDO, CITY OF
Edwin Galvez
David Lawrence (Alternate)

LOS ANGELES, CITY OF
Thomas Erb
Mario Acevedo (Alternate)

CRESCENTA VALLEY WATER DISTRICT
Michael Sovich
David Gould (Alternate)

The Watermaster may convene the Administrative Committee 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 Committee met in December, February, April, June and August of the 2002-03 Water Year. The Committee approved the 2002-03 Watermaster Report on April 28, 2004.

1.5 Significant Events through April 2004

Burbank Operable Unit (BOU)

The Burbank Operable Unit, operated by Burbank under a contract with United Water, Inc., and funded by Lockheed-Martin, removes volatile organic compounds (VOCs) from elevated nitrate groundwater and then blends it with water from MWD for delivery to the City of Burbank. The City of Burbank, in cooperation with Lockheed-Martin, is making design and operational changes to bring the facility up to the design capacity of 9,000 gallons per minute (gpm), or 14,000 AF annually. During the 2002-03 Water Year 9,170 AF of groundwater were treated at

the facility. Burbank is reducing the levels of chromium in its groundwater supply by blending with imported supplies from MWD before delivery to the City of Burbank.

Glendale Operable Unit (GOU)

The GOU removes VOCs and has the capability of treating up to 5,000 gpm from the Glendale North and South OU Well Fields. Treated water is blended with MWD supplies to reduce hexavalent chromium levels. The GOU treated 7,508 AF during the 2002-03 Water Year.

The USEPA has accepted Glendale's proposed plan for an interim pumping pattern to pump at a lower rate from high chromium wells and at higher rates from lower chromium wells. Glendale has received more than $1 million from federal appropriations and the American Water Works Research Foundation to investigate technology capable of large-scale treatment of hexavalent chromium and to develop a pilot study. The pilot study is now in Phase II. This study will also benefit other pumpers in the SFB including the cities of Burbank and Los Angeles.

North Hollywood Operable Unit (NHOU)

The NHOU, funded in part by the USEPA, treats VOCs using a system of seven wells and air stripping. The City of Los Angeles submitted the Final Feasibility Study for the Enhancement of the NHOU to the USEPA in September 2003. The study recommends drilling two or three additional wells to improve reliability and increase the rate of treatment to expedite cleanup of VOCs. In the process of locating sites for the proposed wells a source of high levels of hexavalent chromium was discovered upgradient from the NHOU. The USEPA and the City of Los Angeles are working with the Regional Water Quality Control Board (RWQCB) to identify the Responsible Parties. On February 21, 2003, a Cleanup and Abatement Order was issued to one of the Potentially Responsible Parties, Honeywell International Inc. (formerly Allied Signal). A total of 1,838 AF were treated in the 2002-03 Water Year.

Pollock Wells Treatment Plant

The LADWP 3,000 gpm Pollock Wells Treatment Plant uses four GAC vessels to remove VOCs. A total of 1,720 AF of groundwater were treated during the year.

Verdugo Park Water Treatment Plant

The City of Glendale Verdugo Park Water Treatment Plant treats groundwater from the Verdugo Basin for turbidity and bacteria, and is operating at 500 gpm instead of the expected

700 gpm. Methods to increase the efficiency of the groundwater collection system are being investigated. A total of 632 AF were treated in the 2002-03 Water Year.

Glenwood Nitrate Removal Plant

CVWD's Glenwood Nitrate Removal Plant treated 216 AF during the 2002-03 Water Year. The amount of treated water is 50% less than the previous year due to the lower water table in the Verdugo Basin and the reduced amount of pumped groundwater.

Verdugo Basin Evaluation

In June 2003 CVWD obtained an AB 303 grant to determine the cause(s) of the decline in Verdugo Basin groundwater levels, develop alternatives to reverse the decline, enhance conjunctive use of the basin, and reduce CVWD's reliance on imported supplies. The Watermaster serves on the Technical Advisory Committee. A final report is scheduled to be completed in May 2005.

East Valley Water Recycling Project

The East Valley Water Recycling Project (EVWRP) was originally designed to deliver tertiary treated water from the Donald C. Tillman Water Reclamation Plant to the Hansen Spreading Grounds (HSG) for groundwater recharge, and for industrial and irrigation uses along the pipeline route. The Los Angeles Department of Water and Power (LADWP) has suspended work on the groundwater recharge component and is focusing on the non-potable (irrigation, industrial, commercial) aspects of the EVWRP. LADWP is ready to deliver recycled water to Woodley Golf Course in the Sepulveda Basin as soon as the Regional Water Quality Control Board concerns regarding chloride levels are resolved.

The Hansen Area Water Recycling Project Phase I, scheduled to be online by early 2006, will use some of the recycled water for cooling towers at the Valley Generating Station. The Hansen Area Water Recycling Project Phase II is still in a pre-design stage, and will deliver recycled water to the Angeles National Golf Course (formerly Canyon Trails Golf Club) and the Hansen Dam Recreation Area. LADWP expects to complete construction of facilities to deliver recycled water to the West Valley, including Pierce College, in 2007.

Headworks Spreading Grounds (HSG)

LADWP has proposed a multi-objective project at HSG that would replace the system capacity of Silver Lake and Ivanhoe Reservoirs with a buried tank having a capacity of 110 million

gallons. In addition, the project would restore riparian and wetlands habitat, while providing an opportunity for passive recreation. If approved, construction could begin in January 2007.

Chromium

Chromium has continued to concern water purveyors and regulatory agencies during the 2002-03 Water Year. A significant hexavalent chromium groundwater plume in the San Fernando Basin has been documented by the USEPA and the RWQCB (Plate 17). As a result, the RWQCB has issued Cleanup and Abatement Orders related to hexavalent chromium to the following companies: Drilube, Honeywell (Allied Signal), Lockheed-Martin, PRC-DeSoto, Excello Plating, and B.F. Goodrich (Menasco).

The current California Maximum Contaminant Level (MCL) for total chromium is 50 parts per billion (ppb), and the USEPA/Federal MCL is 100 ppb. There are no California or Federal MCLs specifically for hexavalent chromium. However, they are under development, and an ongoing National Toxicology Program (NTP) study and a treatment study underway in Glendale should help in setting state and federal MCLs for hexavalent chromium.

Tujunga Spreading Grounds Task Force

The Watermaster initiated the Tujunga Spreading Grounds Task Force in May 1998. The use of the Tujunga Spreading Grounds has been significantly limited in above-normal runoff years because of environmental issues associated with methane gas migration from the nearby Sheldon-Arleta Landfill. The purpose of the task force is to restore the historic recharge capacity; enhance methane gas control and monitoring; and improve storm water management. The task force consists of representatives of the Los Angeles County Department of Public Works (LACDPW), Los Angeles Bureau of Sanitation, LADWP, and the Watermaster Office. During a study in May 2003, a consultant analyzed the impact of a controlled release of native water from the Big Tujunga Dam to test the gas collection system at the Sheldon-Arleta Landfill. Preliminary results suggest that a release of 100 cubic feet per second (cfs) into the spreading grounds over a one week period has no negative impact on the methane gas movement. A Phase 2 test is tentatively planned for the 2003-04 Water Year.

United States Forest Service (USFS)

During the 2002-03 Water Year, the Big Tujunga Dam Retrofit Proposal Planning and Coordination Task Force met to discuss the operation of the dam during seismic retrofit construction and after the retrofit completion. The task force includes representatives from the Federal Emergency Management Agency (FEMA), USFS, United States Fish and Wildlife

Service (USFWS), California Department of Fish and Game, Los Angeles County Department of Public Works (LACDPW), LADWP, and the Watermaster Office.

The USFS and USFWS are mandated to protect the Santa Ana Sucker (SAS) under the Endangered Species Act. They view the dam retrofit as an opportunity to reduce peak flows during the winter to prevent damage to the SAS and its habitat, and to provide low flows during the dry summer season to prevent the stream bed from drying out and adversely impacting the population of SAS.

The LACDPW is required by law to operate the dam to protect life and property from flooding. Furthermore, the LACDPW, LADWP, and Watermaster view the retrofit as an opportunity to conserve more native water, which belongs to the City of Los Angeles under its Pueblo Right.

If large controlled releases are not allowed during the winter storm season, the limited storage capacity of the reservoir could cause uncontrolled releases over the dam spillway, resulting in flood damage to property and SAS habitat along Tujunga Wash.

If small releases from the dam are required during the dry summer months, this water may not reach the spreading grounds where it recharges the San Fernando Basin, reducing the water available to the City of Los Angeles and adversely impacting its Pueblo Right.

The Watermaster will continue to work with the parties to reach an agreement that preserves Los Angeles' Pueblo Water Right, maximizes water conservation, protects against flood damage, and preserves the habitat of the SAS.

Standard Urban Stormwater Mitigation Plan (SUSMP)

The RWQCB adopted SUSMP on March 8, 2000. It requires some new developments and redevelopments to contain or treat the first ¾-inch of rainfall runoff from every storm, and encourages on-site infiltration. The Watermaster placed a moratorium on urban stormwater infiltration in the San Fernando Basin due to concerns over potential impacts on groundwater quality. For the past several years we have been monitoring water quality data from several demonstration sites, and have determined that infiltration in residential and light commercial areas can be safely accomplished under certain conditions. The Watermaster is currently working with the City of Los Angeles' Watershed Protection Division to modify the City's Best Management Practices Handbook to allow infiltration if those criteria are met.

Sun Valley Watershed Committee

The Watermaster Office is a stakeholder on the Sun Valley Watershed Committee. The objective of the group is to identify alternative ways to solve the local flooding problems in the Sun Valley area. These alternatives could replace or augment the traditional approach of an improved storm drain system. Some of the alternatives under consideration include local infiltration of storm runoff and the acquisition of gravel pits for conversion into spreading basins. The storm runoff includes contaminants that are potentially hazardous to the basin. The Watermaster is concerned about potential impacts to groundwater quality as well as conflicts with established water rights, but is working closely with the committee to resolve these issues. The Sun Valley Watershed Environmental Impact Report was distributed in October 2003 for public comment. Comments have been incorporated and the final EIR should be submitted to the Los Angeles County Board of Supervisors for approval by mid-March 2004.

Water Augmentation Study (WAS)

The Los Angeles and San Gabriel Rivers Watershed Council has developed a WAS to determine the feasibility of infiltrating urban runoff to reduce local flooding, recharge groundwater, and reduce surface water pollution. The Watermaster serves on the Technical Advisory Committee and provides guidance with respect to water quality and water rights within ULARA. The WAS now has six sites throughout the greater Los Angeles area where it infiltrates urban stormwater and monitors the effects on underlying groundwater. These demonstration sites have given us a better understanding of the effects on groundwater quality, and an increased level of confidence in the use of urban runoff to augment recharge of our local aquifers.

Integrated Resources Plan (IRP)

The IRP is Los Angeles' plan to integrate its wastewater, storm water, potable water, and reclaimed water programs for the next 20 years. Phase I, the Integrated Plan for Wastewater Program, emphasized community outreach to help direct the program and was completed in 2001. The goal of Phase II is to develop and implement the program. The IRP uses a broader "watershed" approach to promote more efficient use of all water within the City. The Watermaster is represented on the Management Advisory Committee and guides the process with respect to water rights and water quality within ULARA.

The Los Angeles Unified School District IRP has been formed to ensure that new and retrofitted schools conform to the overall goals of the City's IRP.

Taylor Yard

The Union Pacific Railroad owns this large parcel along the Los Angeles River Narrows. It has attracted the interest of many stakeholders including the State Parks Department and the California State Coastal Conservancy as a potential site for habitat restoration and recreation. There is significant soil and groundwater contamination at the site, and potential issues involving water rights. The Watermaster Office is working with the stakeholders to resolve these issues. A final feasibility study was issued in June 2002. The reports are available through the Coastal Conservancy.

Los Angeles City Ad Hoc Committee on the Los Angeles River

This Committee, chaired by Councilman Ed Reyes, was formed in June 2002 to study the revitalization of the Los Angeles River and its tributaries. The Committee has reviewed the successful efforts of San Antonio, Texas; Denver, Colorado; and Tempe, Arizona to develop their rivers into centers of recreational and economic opportunities for their communities. A $1.069 million appropriation has been secured for the US Army Corps of Engineers for river revitalization. A portion of these funds will be used for hydrology and hydraulics studies for the river. The Committee directed the establishment of an intra-department task force to coordinate City department river efforts. The Watermaster Office enforces the San Fernando Judgment, which adjudicated the surface and subsurface water rights of the Los Angeles River and its tributaries. The Watermaster will provide guidance to the Committee on an as-needed basis with respect to water rights and water quality.

Dewaterers

The groundwater table in parts of the SFB is near the ground surface. Dewatering is occasionally required to maintain subsurface structures. If dewatering is needed, the dewaterer is required to meter the discharge and enter into an agreement with the affected party for payment for the pumped water. The City of Los Angeles is developing a dewatering ordinance. The Watermaster Office currently receives reports from several dewaterers in the SFB, and is investigating several additional possible sites.

Unauthorized Pumping within ULARA

Portions of ULARA located in unincorporated Los Angeles County are without water service. Working in cooperation with the County Department of Health Servces and County Planning, the Watermaster and LADWP have developed a process to identify and monitor water usage through a water license agreement. The agreements allow the use of groundwater on overlying

property until a water service becomes available, establish maximum annual groundwater usage, and require the monthly reporting of groundwater production to the Watermaster's Office and annual payment to the City of Los Angeles.

1.6 Summary of Water Supply, Operations, and Hydrologic Conditions

Highlights of operations for the 2001-02 and 2002-03 Water Years are summarized in Table 1-3. Details of the 2002-03 Water Year operations and hydrologic conditions are provided in Section 2. Locations of the groundwater basins, water service areas of the parties and individual producers, and other pertinent hydrologic facilities are shown on Plates 2 through Plate 9.

Average Rainfall

Precipitation on the valley floor area during the 2002-03 Water Year was 19.41 inches, 118 percent of the calculated 100-year mean (16.48 inches). Precipitation in the mountain areas was 22.36 inches, 103 percent of the calculated 100-year mean (21.76 inches).

Spreading Operations

A total of 16,468 AF of water were spread. This represents a significant decrease from the average annual spreading for the 1968-2003 period of 32,129 AF, but an increase over the 2,664 AF spread during the record dry 2001-2002 Water Year.

Extractions

Total extractions amounted to 107,011 AF. This is an increase of 8,386 AF from 2001-02 and more than the 1968-2003 average of 98,834 AF. Of the total for the 2002-03 Water Year, 2,783 AF were for non-consumptive use. Appendix A contains a summary of groundwater extractions for the 2002-03 Water Year.

Imports

Gross imports (including pass-through water) totaled 590,191 AF, an increase of two percent from 2001-02. Net imports used within ULARA amounted to 311,055 AF, a 15,996 AF decrease from 2001-02.

Exports

A total of 347,800 AF were exported from ULARA. Of the 347,800 AF exported, 68,644 AF were from groundwater extractions, and 279,136 AF were from imported supplies (pass-through).

Treated Wastewater

A total of 96,741 AF of wastewater were treated in ULARA. The majority of the treated water was discharged to the Los Angeles River, a portion was delivered to the Hyperion Treatment Plant, and approximately six percent was used as recycled water.

Recycled Water

Total recycled water used in ULARA was 5,635 AF, a 2,725 AF decrease from last year. The recycled water is used for landscape irrigation, in-plant use, power plant use (i.e. cooling), and other industrial uses.

Sewage Export

Sewage export was estimated at 91,930 AF; this was the amount of sewage delivered by pipeline to the Hyperion Treatment Plant. The estimate does not include treated wastewater discharged to the Los Angeles River that leaves ULARA as surface flow.

Groundwater Storage

Groundwater storage in the SFB during 2002-03 decreased by 15,835 AF; the total cumulative increase in groundwater storage since October 1, 1968 is 106,786 AF. The 2002-03 change in storage declined due to reduced spreading operations and continued heavy pumping. The change in groundwater storage for the Sylmar, Verdugo, and Eagle Rock Basins was (-609), (–672), and + 43 AF, respectively.

Wells

During the 2002-2003 Water Year the City of Glendale completed decommissioning the final four of nine Grandview wells and the City of Burbank completed decommissioning well No. 14.

TABLE 1-3: SUMMARY OF OPERATIONS IN ULARA

Item	Water Year 2001-02	Water Year 2002-03
Active Pumpers (parties and nonparties)	24	29
Inactive Pumpers (parties within valley fill)[1]	9	9
Valley Rainfall, in inches		
Valley Floor	5.95	19.41
Mountain Area	7.07	22.36
Spreading Operations, in acre-feet	2,664	16,468
Extractions, in acre-feet		
Used in ULARA	36,615	38,130
Exported from ULARA	62,010	68,881
Total	**98,625**	**107,011**
Gross Imports, in acre-feet		
Los Angeles Aqueduct Water	195,318	219,342
MWD Water	381,124	370,849
Total	**576,442**	**590,191**
Exports, in acre-feet		
Los Angeles Aqueduct Water	93,674	108,071
MWD Water	155,717	171,065
Groundwater	62,010	68,664
Total	**311,401**	**347,800**
Net Imports Used in ULARA, in acre-feet	327,051	311,055
Recycled Water Use, in acre-feet	8,360	5,635
Total Water Use in ULARA, in acre-feet [2]	372,026	354,820
Treated Wastewater, in acre-feet [3]	85,663	96,741
Sewage Export to Hyperion, in acre-feet [4]	112,080	91,930

1) The nine inactive pumpers are Hinkley-Schmidt (Deep Rock), Van de Kamp, Disney, Angelica, Santiago Estates,Boeing, Greef, Sears, Waste Management.
2) Extractions used in ULARA plus Net Imports and Recycled Water.
3) Most treated wastewater flows to LAR, a portion to Hyperion (see T2-7), and for recycled water.
4) Sewage outflow includes estimates of outflow from each of the four basins, and discharges to Hyperion from the Tillman and Los Angeles-Glendale Water Reclamation Plants.

1.7 Allowable Pumping for the 2003-04 Water Year

Table 1-4 shows a summary of extraction rights for the 2003-04 Water Year and stored water credit as of October 1, 2003, for the Cities of Los Angeles, Burbank, Glendale, San Fernando, and the CVWD. The calculation of these values is shown in more detail in Section 2.

TABLE 1-4: ALLOWABLE PUMPING 2003-04 WATER YEAR
(acre-feet)

	Native Safe Yield Credit[1]	Import Return Credit[2]	Total Native+Import	Stored Water Credit (as of Oct. 1, 2003)	Allowable Pumping 2003-04 Water Year
San Fernando Basin					
City of Los Angeles	43,660	43,094	86,754	270,113	356,867
City of Burbank	—	4,622	4,622	27,429	32,051
City of Glendale	—	5,805	5,805	68,408	74,213
Total	**43,660**	**53,521**	**97,181**	**365,950**	**463,131**
Sylmar Basin					
City of Los Angeles	3,255	—	3,255	6,081	9,336
City of San Fernando	3,255	—	3,255	426	3,681
Total	**6,510**	**—**	**6,510**	**6,507**	**13,017**
Verdugo Basin[3]					
CVWD	3,294	—	3,294	—	3,294
City of Glendale	3,856	—	3,856	—	3,856
Total	**7,150**	**—**	**7,150**	**—**	**7,150**

1) Native Safe Yield extraction right per Judgment, page 11.
2) Import Return extraction right per Judgment, page 17.
3) 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 33 inches in the San Gabriel Mountains. Approximately 80 percent of the annual rainfall occurs from December through March.

In the 2002-03 Water Year the valley floor received 19.41 inches of rain (118 percent of the 100-year mean), while the mountain area received 22.36 inches (103 percent 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 areas was 21.22 inches (108 percent 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

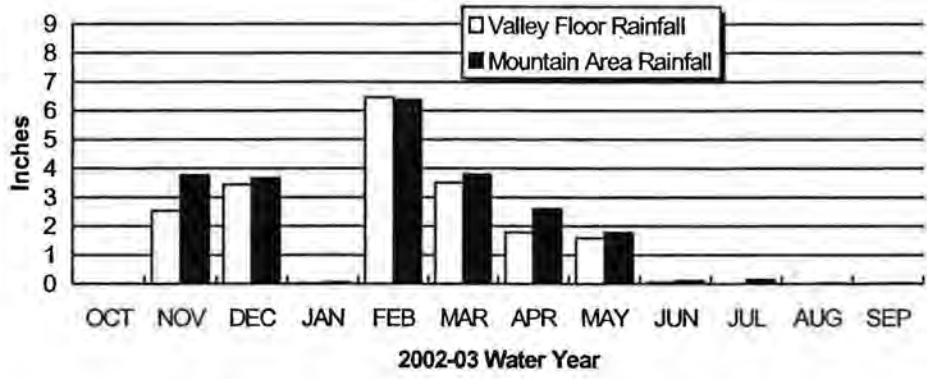

TABLE 2-1: 2002-2003 PRECIPITATION

(inches)

LACDPW Rain Gage Stations No.	Name	2002-03 Precipitation	100-Year Mean (1881-1981)	Percent of 100-Year Mean
	Valley Stations			
13C	North Hollywood-Lakeside	18.42	16.63	111%
1087D	Green Verdugo Pumping Plant [2]	18.59	14.98	124%
465C	Sepulveda Dam	17.14	15.30	112%
21B	Woodland Hills	16.32	14.60	112%
23B	Chatsworth Reservoir	18.03	15.19	119%
25C	Northridge-LADWP	19.68	15.16	130%
251C	La Crescenta	23.72	23.31	102%
293B	Los Angeles Reservoir	23.36	17.32	135%
	Weighted Average[1]	**19.41**	**16.48**	**118%**
	Mountain Stations			
11D	Upper Franklin Canyon Reservoir	20.95	18.50	113%
17	Sepulveda Canyon at Mulholland	16.96	16.84	101%
33A	Pacoima Dam	27.41	19.64	140%
47D	Clear Creek - City School	25.38	33.01	77%
53D	Monte Cristo Ranger Station	21.26	29.04	73%
54C	Loomis Ranch-Alder Creek	18.24	18.62	98%
210C	Brand Parks	16.31	19.97	82%
797	DeSoto Reservoir	21.90	17.52	125%
1074	Little Gleason	27.37	21.79	126%
	Weighted Average[1]	**22.36**	**21.76**	**103%**
	Weighted Average Valley/Mountain Areas[1]	**21.22**	**19.64**	**108%**

1. Weighted Average calculations performed according to Report of Referee-7/62. Mountain Station Weighted Average estimated due to incomplete data.

2.2 Runoff and Outflow from ULARA

The watershed 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 and sub-surface flow originates as runoff from the hills and mountains, runoff from the impervious areas of the valley, industrial and sanitary waste discharges, domestic irrigation runoff, and rising groundwater.

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 gaging 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.

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.

Table 2-2 summarizes the 2001-02 and 2002-03 monthly runoff for these stations. The higher runoff in 2002-03 is related to higher rainfall than in 2001-02. The mean daily discharge rates for these six stations during 2002-03 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	JUN	JUL	AUG	SEP	TOTAL
F-57C-R	2001-02	7,860	14,630	11,830	15,410	9,730	13,170	8,850	7,480	7,150	7,610	8,740	8,360	**120,820**
L.A. River	2002-03	7,380	14,870	21,940	7,710	40,170	23,350	13,210	14,110	9,970	9,330	11,160	12,690	**185,890**
Arroyo Seco														
F-252-R	2001-02	644	1,550	932	633	262	594	499	367	368	660	364	665	**7,538**
Verdugo Wash	2002-03	281	564	1,120	278	1,800	1,560	864	697	378	285	284	239	**8,350**
E-285-R	2001-02	698	1,400	1,330	822	549	623	565	616	595	642	637	777	**9,254**
Burbank	2002-03	757	955	1,450	673	2,740	2,360	1,140	863	587	588	582	705	**13,400**
Storm Drain														
F-300-R	2001-02	3,260	8,560	7,130	7,530	5,000	5,250	4,170	5,120	4,710	5,120	4,710	4,950	**65,510**
L.A. River	2002-03	5,300	11,320	16,790	5,300	32,210	18,370	11,390	11,950	5,520	5,720	5,830	5,740	**135,440**
Tujunga Ave.														
F-168-R	2001-02	10	1	102	137	2	3	2	238	434	4	0	0	**932**
Big Tujunga	2002-03	0	15	25	21	60	2,140	25	3,870	590	0	34	0	**6,780**
Dam														
F-118B-R	2001-02	404	0	0	0	0	0	0	4	0	0	0	0	**408**
Pacoima Dam	2002-03	0	341	0	111	126	1,170	0	897	0	0	0	0	**2,645**

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. Treated wastewater from the Tillman, Burbank, and Los Angeles-Glendale Water Reclamation Plants;
3. Industrial discharges and domestic irrigation runoff; and,
4. Rising groundwater.

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, excess rising groundwater was considered to have fallen to zero by the late 1950s. The January 1993 report by Brown and Caldwell, "Potential Infiltration of Chlorides from the Los Angeles River into the Groundwater Aquifer" studied groundwater levels along the course of the Los Angeles River. The Watermaster provided the insight and data for this evaluation. As of the end of the drought period in 1977, groundwater levels in the Los Angeles River Narrows were very low, with very little potential for excess rising groundwater. Heavy runoff occurred during the 1978-83 period,

which, combined with reduced pumping in the Crystal Springs, Grandview, and Pollock Well Fields, caused large recoveries of groundwater levels in the Los Angeles River Narrows.

An even greater factor affecting hydrologic conditions in the Los Angeles River Narrows has been the increasing releases of treated wastewater. 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 saturated, even in dry years. There is opportunity for continuing percolation in the unlined reach, both upstream and downstream of the lined 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-appears as rising groundwater downstream from Los Feliz Boulevard. Also, there is up to 3,000 AF 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 Wash Narrows, and in the unlined reach of the Los Angeles River 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 groundwater above Gage F-57C-R has been considered to be related to the increase of rising groundwater above the Verdugo Narrows. From 2001-02 to 2002-03, flows of rising water at Gage F-252-R were estimated at 3,167 AF. For 2002-03 the rising groundwater flow at Gage F-57C-R was estimated at 3,869 AF. The Verdugo Basin study should provide a clearer understanding of the amount of rising water as distinct from waste discharges between these two gages.

Field inspection during 1998-99 confirmed significant unmetered flows of domestic irrigation passing through storm drains resulting in year-round flows of water from residences, golf courses and others sites that flow down to the Los Angeles River through the Sycamore Channel and several other storm drains north of Gage F-57C-R. The Watermaster Office is working with the Los Angeles County Department of Public Works (LACDPW) to more precisely measure the source of surface flows and rising groundwater.

TABLE 2-3: ESTIMATED SEPARATION OF SURFACE FLOW AT STATIONS F-57C-R & F-252-R

(acre-feet)

Water Year	F-57C-R Rising Groundwater*	F-57C-R Waste Discharge	F-57C-R Storm Runoff	F-57C-R Total Outflow	F-252-R Rising Groundwater*	F-252-R Storm Runoff	F-252-R Total Outflow
2002-03	3,869	75,159	106,862	185,890	3,167	5,183	8,350
2001-02	2,126	74,737	43,937	120,800	1,819	5,721	7,540
2000-01	3,000	91,795	94,065	188,860	1,500	6,370	7,870
1999-00	1,980	78,009	62,202	142,190	824	4,243	8,470
1998-99	2,000	72,790	39,110	113,900	1,000	2,534	7,250
1997-98	4,000	97,681	245,079	346,730	4,000	12,140	16,140
1996-97	3,000	75,827	76,485	155,312	3,000	13,860	16,860
1995-96	3,841	86,127	61,188	151,156	2,577	10,946	13,523
1994-95	4,900	66,209	367,458	438,567	4,809	28,881	33,696
1993-94	2,952	60,594	73,149	136,695	1,387	6,156	7,543
1992-93	4,900	77,000	478,123	560,023	3,335	20,185	23,520
1991-92	3,000	120,789	197,040	320,829	1,412	13,209	14,621
1990-91	3,203	75,647	117,779	196,629	1,157	6,865	8,022
1989-90	3,000	76,789	55,811	167,639	1,182	2,938	4,120
1988-89	3,000	80,020	56,535	136,843	1,995	4,453	6,448
1987-88	3,000	81,920	74,074	156,204	3,548	10,493	14,041
1986-87	3,000	64,125	19,060	83,295	2,100	1,690	3,790
1985-86	3,880	48,370	102,840	155,090	2,470	6,270	8,740
1984-85	3,260	21,600	46,300	71,160	2,710	3,970	6,680
1983-84	3,000	17,780	49,090	69,870	4,000	n/a	n/a
1982-83	3,460	17,610	384,620	405,690	5,330	21,384	26,714
1981-82	1,280	18,180	80,000	99,460	3,710	5,367	9,077
1980-81	4,710	19,580	51,940	76,230	5,780	2,917	8,697
1979-80	5,500	16,500	n/a	n/a	5,150	7,752	12,902
1978-79	2,840	16,450	119,810	139,100	2,470	n/a	n/a
1977-78	1,331	7,449	357,883	366,663	1,168	23,571	24,739
1976-77	839	7,128	58,046	66,013	1,683	2,635	4,318
1975-76	261	6,741	32,723	39,725	2,170	2,380	4,550
1974-75	427	7,318	56,396	64,141	1,333	4,255	5,588
1973-74	2,694	6,366	79,587	88,878	1,772	5,613	7,385
1972-73	4,596	8,776	100,587	113,959	1,706	7,702	9,408
1971-72	—	—	—	—	2,050	2,513	4,563

*Includes unaccounted water and the influence of treated waste water.

2.4 Groundwater Recharge

Precipitation has a marked influence on groundwater recharge and, with some delay, groundwater storage. Urban development in ULARA has resulted in a significant portion of the rainfall being collected and routed into lined channels that discharge into the Los Angeles River. To partially offset the increased runoff due to urbanization, Pacoima, Big Tujunga 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, however, it has been inactive since 1983. The LACDPW, in cooperation with the City of Los Angeles, operates the Tujunga Spreading Grounds. The spreading grounds are utilized for spreading native and imported water. Table 2-4 summarizes the spreading operations for the 2002-03 Water Year, and Plate 7 shows the locations of the spreading grounds.

TABLE 2-4: 2002-2003 SPREADING OPERATIONS IN THE SAN FERNANDO BASIN
(acre-feet)

Agency	Spreading Facility	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
LACDPW														
	Branford	17	113	99	17	151	325	73	61	18	21	20	17	932
	Hansen	0	27	345	199	2,020	2,120	736	3,270	590	120	0	0	9,427
	Lopez	0	0	0	57	68	171	0	222	0	0	0	0	518
	Pacoima	6	801	320	0	671	934	220	587	0	0	0	0	3,539
	Tujunga	0	66	47	0	173	44	46	1,390	0	0	97	51	1,914
	Total	**23**	**1,007**	**811**	**273**	**3,083**	**3,594**	**1,075**	**5,530**	**608**	**141**	**117**	**68**	**16,330**
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
	Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Basin Total	**23**	**1,007**	**811**	**273**	**3,083**	**3,594**	**1,075**	**5,530**	**608**	**141**	**117**	**68**	**16,330**

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 104,040 AF/Y. This amounted to a reduction of approximately 50,000 AF from the previous six-year average. The State Supreme Court's opinion, as implemented on remand in the Judgment, entered on January 26, 1979, restricts groundwater pumping within each basin, and by each party within each basin.

Figure 2.2 illustrates the imported water used in ULARA and annual groundwater extractions, 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 AF/Y, in contrast to the past 35 years (1968-69 to 2002-03) where imports have exceeded extractions by 110,000 to 250,000 AF/Y (Refer to Figure 2.3 - Monthly Extractions and Imports).

A total of 107,011 AF were pumped from ULARA during the 2002-03 Water Year: 95,431 AF from the SFB, 6,906 AF from the Sylmar Basin, 4,457 AF from the Verdugo Basin, and 217 AF from the Eagle Rock Basin. The respective safe yield values for the 2002-03 Water Year were 99,916 AF (Native Safe Yield of 43,660 plus an import return credit of 56,256 AF) for the SFB; 6,510 AF for the Sylmar Basin; and 7,150 AF for the Verdugo Basin. Appendix A contains a summary of groundwater extractions for the 2002-03 Water Year, Plate 8 shows the locations of the well fields, and Plate 11 illustrates the pattern of groundwater extractions.

Of the total amount pumped in the SFB (95,431 AF), 91,053 AF constitutes extractions by Parties to the Judgment; 2,783 AF constitutes nonconsumptive use; and 1,597 AF were used for physical solutions, groundwater cleanup, testing/well development, and dewatering parties (Appendix E). Table 2-5 summarizes 2002-03 private party pumping in the SFB, and Plate 3 shows the locations of the individual producers.

DS Waters (formerly Sparkletts Drinking Water Corporation and Deep Rock Water Company) is the only Physical Solution party that has a right to extract water from the Eagle Rock Basin. This party pays the City of Los Angeles for pumped groundwater pursuant to the Judgment.

FIGURE 2.2 - YEARLY IMPORTS USED IN ULARA AND TOTAL ULARA EXTRACTIONS

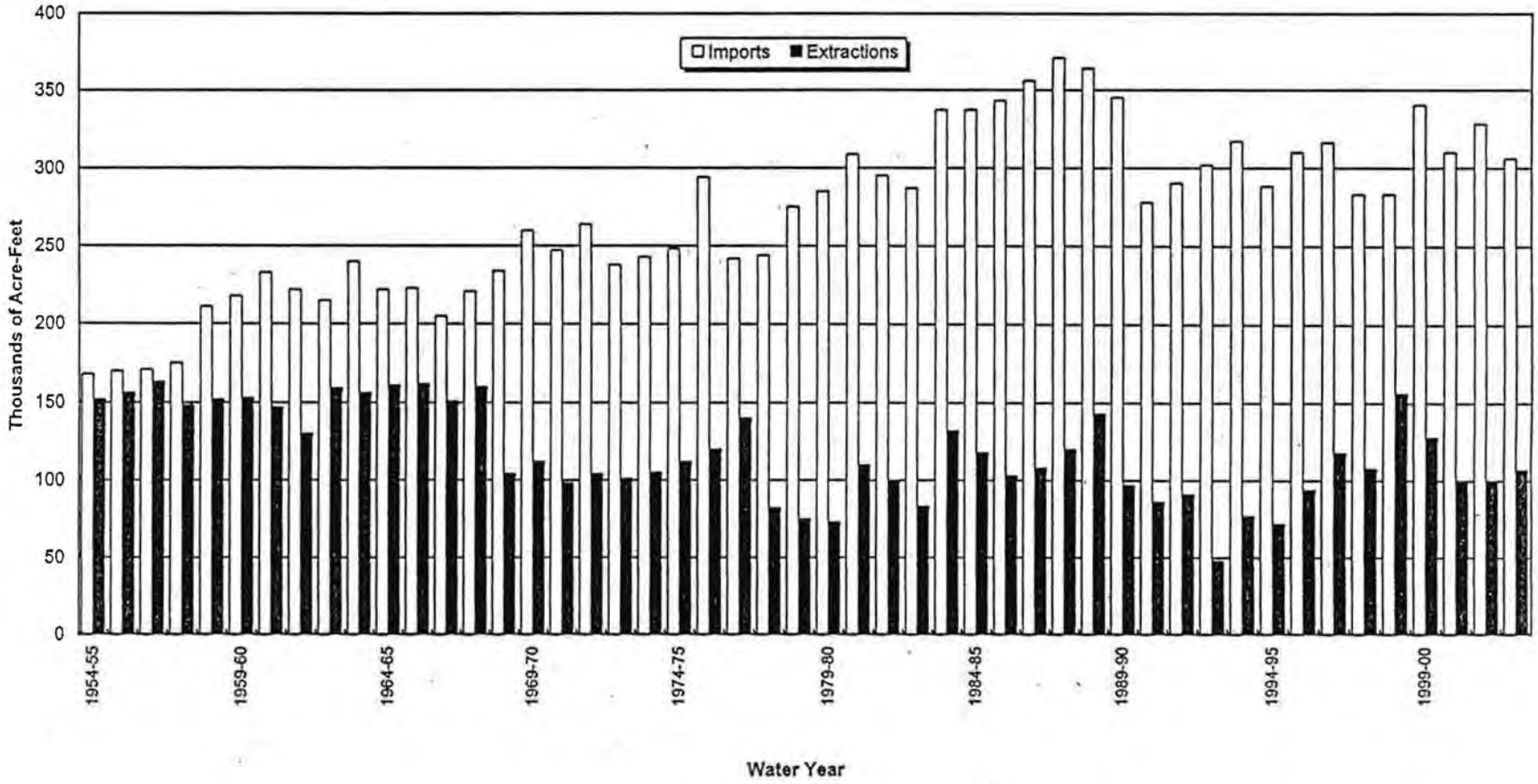

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TABLE 2-5: 2002-03 PRIVATE PARTY PUMPING - SAN FERNANDO BASIN
(acre-feet)

Nonconsumptive Use or Minimal Consumption		Groundwater Dewatering	
CalMat	2,775.15	Auto Stiegler	2.02
(Gravel washing)		(Charged to Los Angeles' water rights)	
Sears, Roebuck and Company	0	First Financial Plaza Site	28.18
(Air Conditioning; well disconnected 2000))		(Charged to Los Angeles' water rights)	
Sportsmen's Lodge	0.9	Trillium Corporation	28.41
Toluca Lake Property Owners	6.67	(Charged to Los Angeles' water rights)	
(Lake overflows to LA River)		Metropolitan Transportation Agency	37.46
Walt Disney Productions	0	(Charged to Los Angeles' water rights)	
(3 wells inactive/ Not abandoned.)		Metropolitan Water District (MWD)	162.60
		(Charged to Los Angeles' water rights)	
		Warner Properties Plaza 6 and 3	24.40
		(Charged to Los Angeles' water rights)	
Total	**2,782.72**	**Total**	**283.07**
Groundwater Cleanup		**Physical Solution**	
Raytheon (Hughes)	3.14	Vulcan-CalMat Division	308.35
(Charged to Los Angeles' water rights)		(Charged to Los Angeles' water rights)	
Menasco	0.08	Forest Lawn Cemetery Assn.	430.74
(Charged to Los Angeles' water rights)		(Charged to Glendale's water rights)	
Micro Matics USA, Inc.	3.08	Hathaway (deMille)	49.50
(Charged to Los Angeles' water rights)		(Charged to Los Angeles' water rights)	
Mobil Oil Corporation	0.50	Middle Ranch (deMille)	10.27
(Charged to Los Angeles' water rights)		(Charged to Los Angeles' water rights)	
3M-Pharmaceutical	59.17	Toluca Lake Property Owners Ass	30
(Charged to Los Angeles' water rights)		(Charged to Los Angeles' water rights)	
		Valhalla Memorial Park	382.53
		(Charged to Burbank's water rights)	
		Waterworks District No. 21	33.95
		(Charged to Los Angeles' water rights)	
		Wildlife Waystation	1.96
		(Charged to Los Angeles' water rights)	
		Diaz Property	0.21
		(Charged to Los Angeles' water rights)	
Total	**65.97**	**Total**	**1,247.51**
Total Extractions	**4,379**		

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 MWD. Los Angeles Aqueduct water consists of runoff from the Eastern Sierra Nevada and groundwater from Owens Valley. The MWD supplies consist 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 SFB. Exports of wastewater are by pipeline to Hyperion Treatment Plant.

Table 2-6 summarizes the nontributary imports and exports from ULARA during the 2001-02 and 2002-03 Water Years, and Figure 2.3 shows the monthly extractions and imports.

FIGURE 2.3 - TOTAL MONTHLY EXTRACTIONS AND GROSS IMPORTS

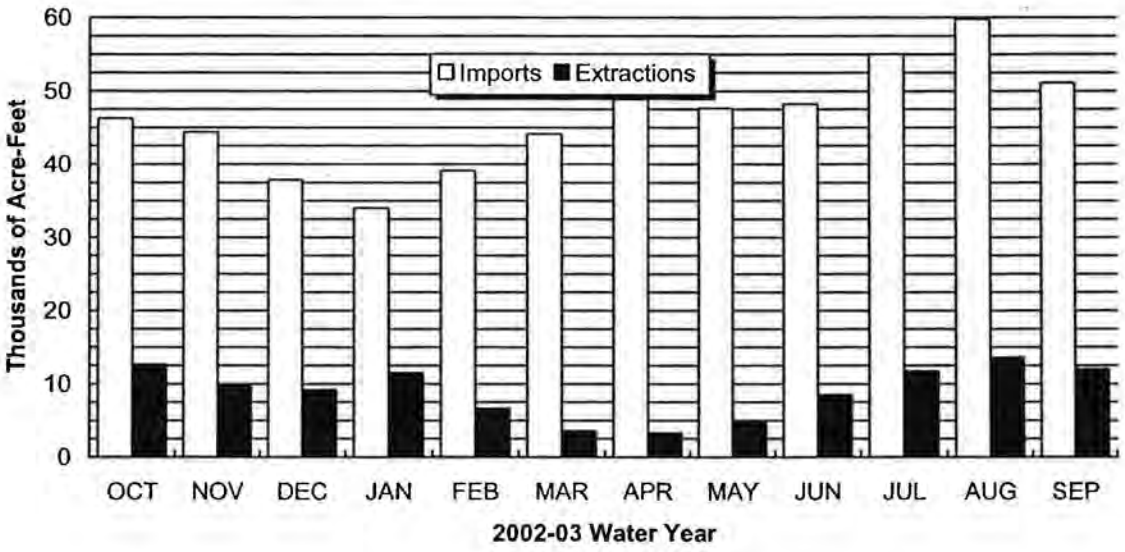


TABLE 2-6: ULARA WATER IMPORTS AND EXPORTS

(acre-feet)

Source and Agency	Water Year 2001-02	Water Year 2002-03
Gross Imported Water		
Los Angeles Aqueduct		
City of Los Angeles	195,318	219,342
MWD Water		
City of Burbank	12,086	13,158
Crescenta Valley Water District	2,556	2,868
City of Glendale	24,378	22,844
City of Los Angeles [1]	333,185	322,821
La Canada Irrigation District [1]	1,324	1,277
Las Virgenes Municipal Water District [1]	7,594	7,619
City of San Fernando		263
Total	**381,123**	**370,850**
Grand Total	**576,441**	**590,192**
Exported Water (Pass-Through)		
Los Angeles Aqueduct		
City of Los Angeles	93,674	108,071
MWD Water		
City of Los Angeles	155,717	171,065
Total	**249,391**	**279,136**
Net Imported Water	**327,050**	**311,056**

1. Deliveries to those portions of these Districts that are within ULARA.

2.7 Water Recycling

Water recycling presently provides a source of water for irrigation, industrial, and recreational uses. In the future, water recycling may provide water for groundwater recharge. Four wastewater reclamation plants are in operation in ULARA. The Las Virgenes Municipal Water District operates a water recycling facility outside ULARA but uses part of the treated water in ULARA. Table 2-7 summarizes the 2002-03 reclamation plant operations, and Plate 5 shows their locations.

TABLE 2-7: 2002-03 WASTEWATER RECYCLING OPERATIONS
(acre-feet)

Plant/Agency	Treated Water	Water Discharged to L.A. River	Water Discharged to Hyperion	Recycled Water	Recyled Water Delivered to SFB
City of Burbank	8,770	7,147	4,171	488 [1]	488
Los Angeles-Glendale	17,995	13,530	1,560	3,725 [2]	---
Los Angeles					83
Glendale					1,293
Donald C. Tillman	69,935	45,772	23,154	616 [3]	0
The Independent Order of Foresters	41	0	0	41 [4]	41
Las Virgenes MWD	---	0	0	1,352	1,352
Total	**96,741**	**66,449**	**28,885**	**6,222**	**3,257**

1. Of the total recycled water (488 AF), 117 AF was delivered to the Burbank power plant. Of that, 28 AF is for cooling and 89 AF is for discharge to the Los Angeles River. 371 AF was used by CalTrans, DeBell Golf Course and other landscape irrigation.
2. Of the total recycled water (3,725 AF), 1,293 AF was delivered to Glendale for use in Glendale's Power Plant and for irrigation water for CalTrans, Forest Lawn and Brand Park; 765 AF was for in plant use; 800 AF was delivered to Griffith Park by Los Angeles for irrigation; and 866 AF was used by CalTrans, Lake Side, Mt. Sinai Memorial Park, Forest Lawn 2, and Universal City MCA for irrigation.
3. Recycled water was for in plant use and then discharged to the Los Angeles River.
4. Recycled water is used for irrigation.

2.8 Water Level Elevations

The 2003 contour maps for the Spring (April) and the Fall (September) were produced by using the 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 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 by 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 2003 contours were simulated by incorporating the estimated monthly recharge (e.g. spread water, precipitation, etc.) and discharge (groundwater extractions, rising groundwater, etc.) values for the 2002-03 Water Year. The model was then run for twelve consecutive stress periods beginning October 2002 through September 2003. The simulated head values at the end of the April and September stress periods were then plotted by utilizing groundwater contouring software.

The simulated Spring and Fall 2003 Groundwater Contour Maps are shown as Plates 9 and 10. These contours are intended to depict the general trend of groundwater flow for April and September 2003. Up-to-date groundwater elevations for specific locations can be obtained by contacting the Watermaster's Office at (213) 367-0921.

Plate 11 exhibits the change in groundwater elevation from the Fall of 2002 to the Fall of 2003. The rise in groundwater levels in the north portion of the SFB, specifically near the Hansen Spreading Grounds, is attributed to the increased volume of Native Runoff water spread at Hansen, 9,427 AF compared to the previous year of 2001-02 when only 1,342 AF were spread. The area in the vicinity of Pacoima Spreading Grounds recovered by about seven feet from the previous year. The water spread at Pacoima was increased by about 2,916 AF compared to the 2001-02 Water Year.

The three to six foot decline in groundwater levels near the Rinaldi-Toluca and North Hollywood Well Field areas is primarily due to increased groundwater extractions. Extractions for these two well fields increased by 34 percent from 2001-02 to 2002-03 (33,994 AF to 45,392 AF). The area near the Tujunga Well Field shows an increase in groundwater levels, as much as six feet, due to increased spreading at the Tujunga Spreading Grounds by about 180 percent, and reduced pumping by about 2,660 AF from 2001-02 to 2002-03 (23,219 AF to 20,559). The

vicinity of the Burbank Well Field shows an increase in groundwater levels of approximately two feet as a result of reduced pumping from 10,540 AF to 9,170 AF. In general, the SFB shows a continuous decline in groundwater levels as a result of continued heavy pumping and low artificial recharge.

Figure 2.4 shows historic well hydrographs of wells throughout ULARA and their locations.

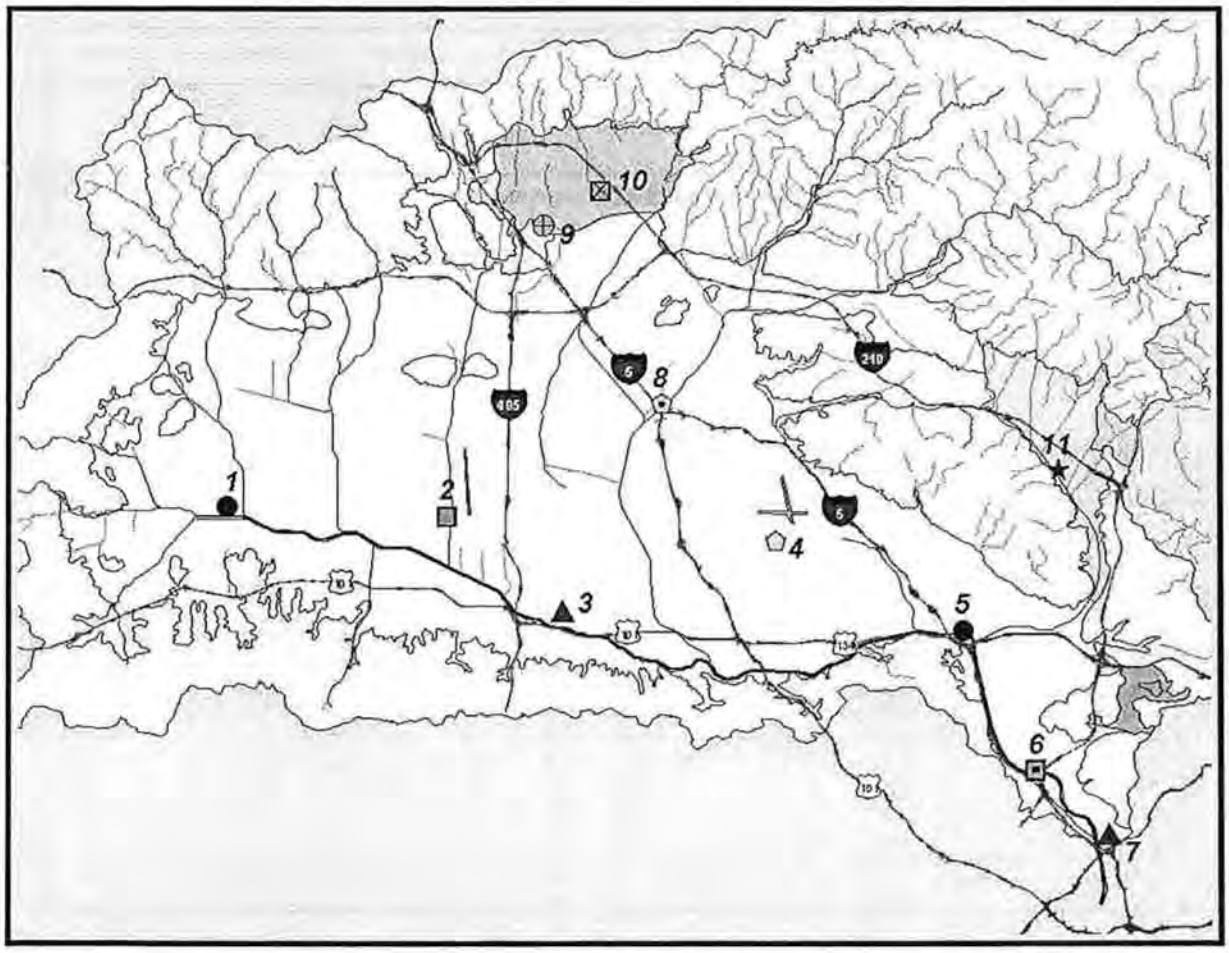
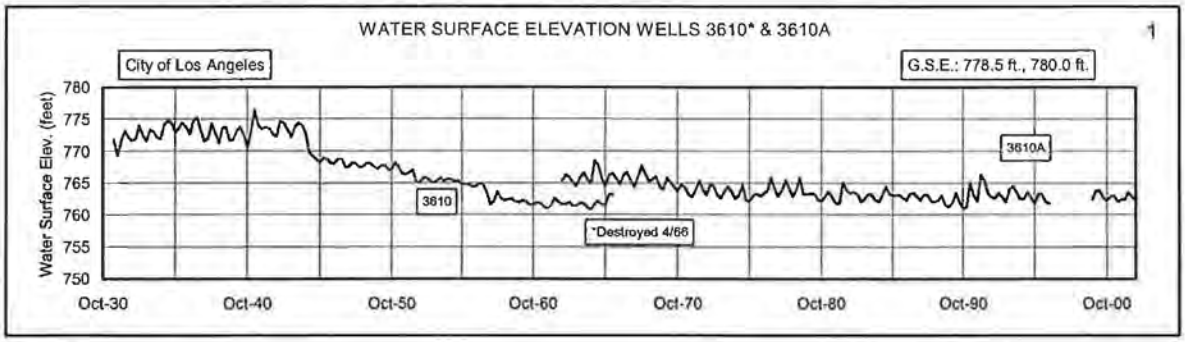
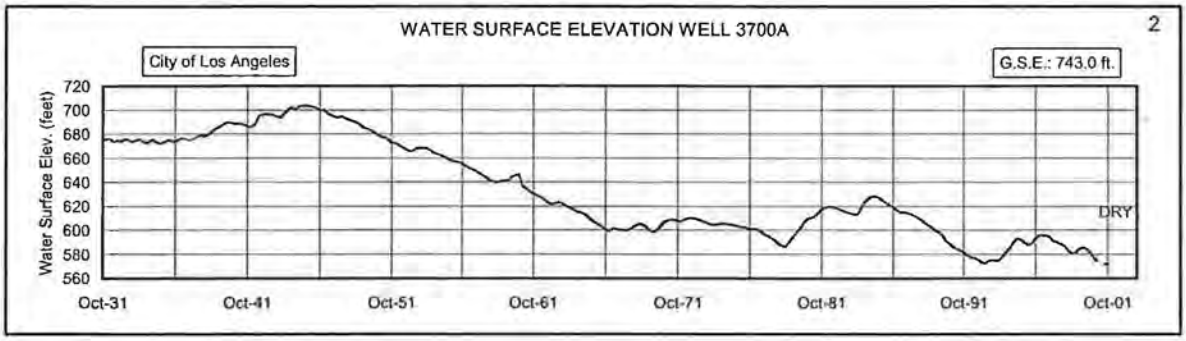
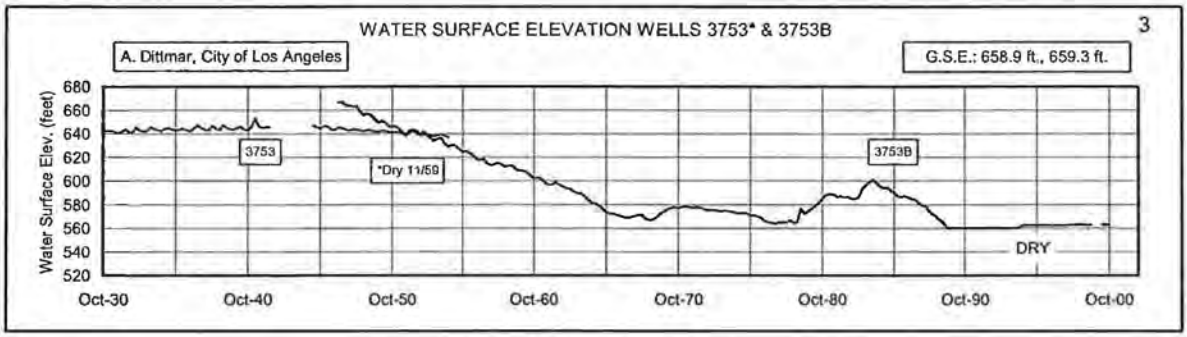


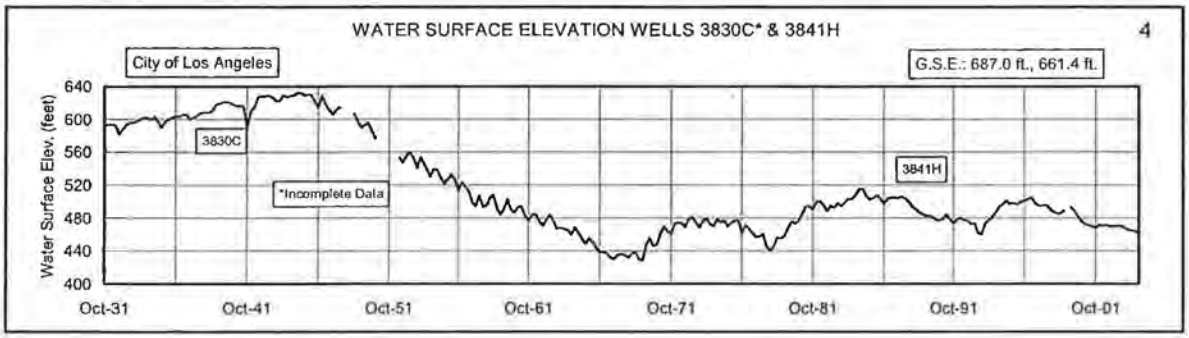
FIGURE 2.4 HYDROGRAPHS AND LOCATIONS OF WELLS THROUGHOUT ULARA

SAN FERNANDO BASIN

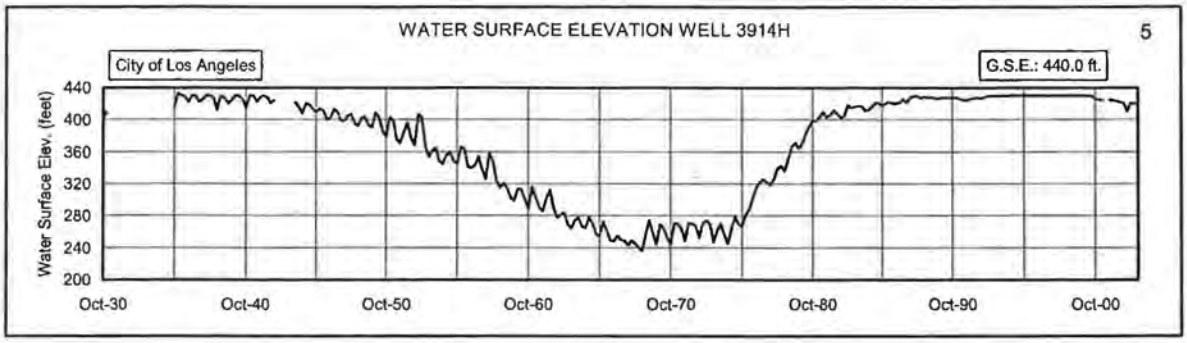


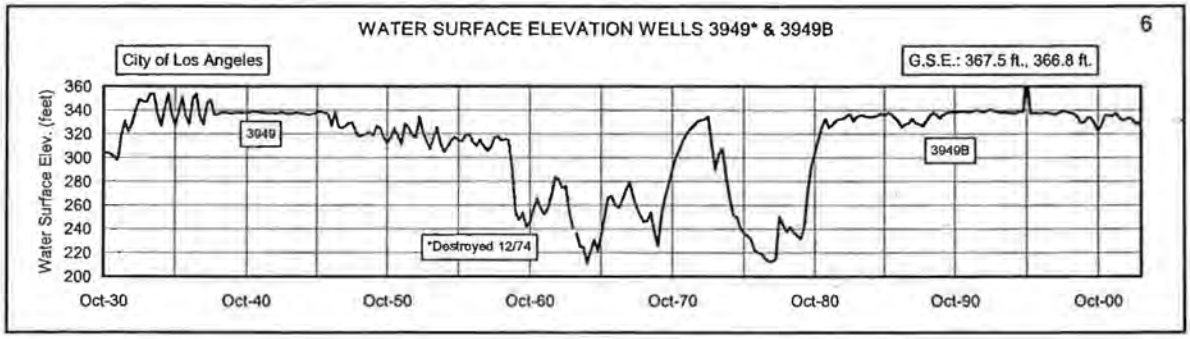


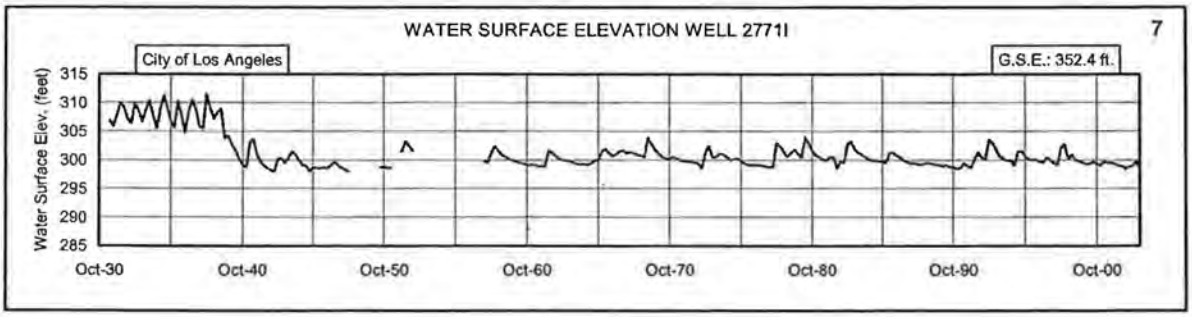


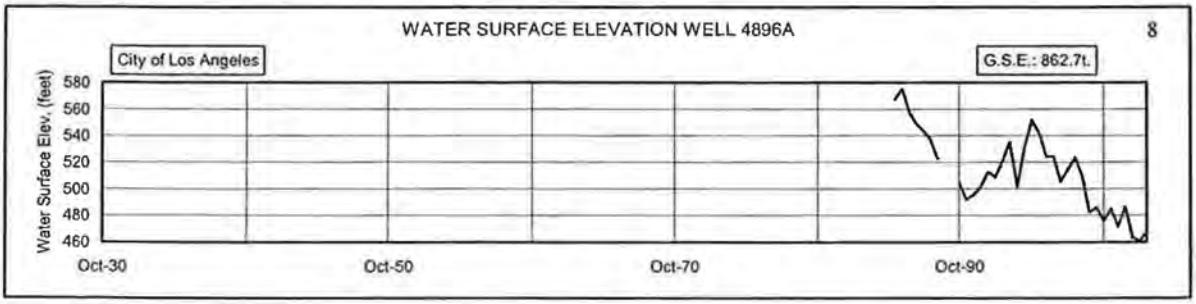


SAN FERNANDO BASIN

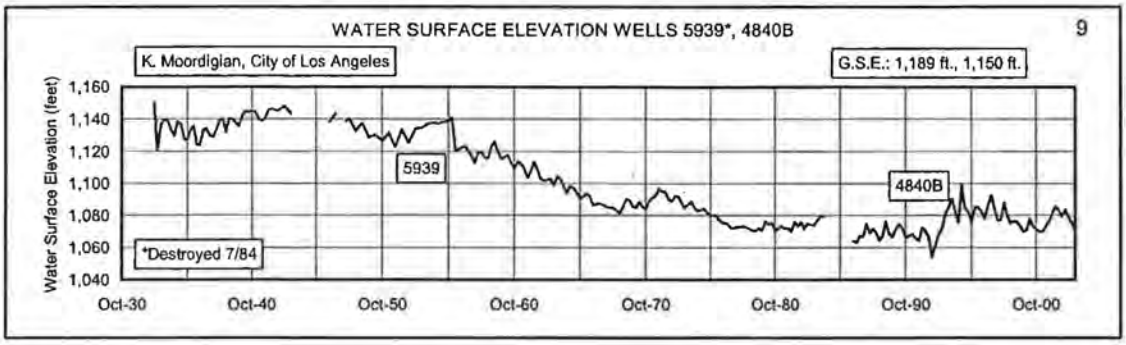


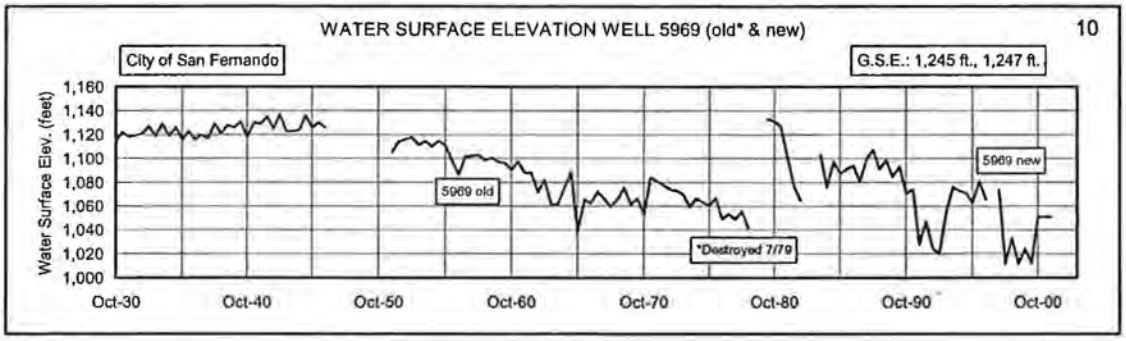






SYLMAR BASIN





VERDUGO BASIN

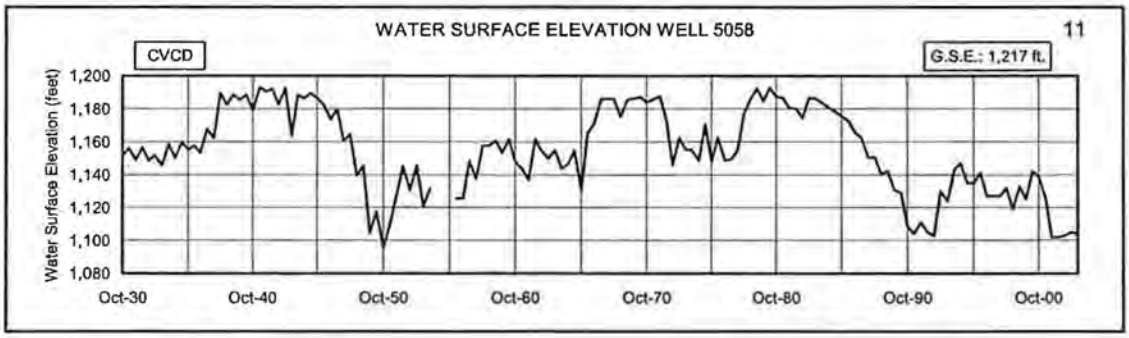


TABLE 2-8: CHANGE IN GROUNDWATER STORAGE SAN FERNANDO BASIN

Water Year	Valley Floor Precipitation (in)	Artificial Recharge (acre-feet)	Change in Storage (acre-feet)	Cumulative Change in Storage (acre-feet)	Pumping (acre-feet)
2002-03	19.41	16,330	(15,835)	106,786	95,431
2001-02	5.95	2,664	(27,094)	122,621	87,992
2000-01	19.52	17,939	(6,930)	149,715	86,946
1999-00	14.84	14,106	(31,044)	156,645	116,357
1998-99	9.81	14,662	(82,673)	187,689	141,757
1997-98	37.04	61,119	44,113	270,362	94,682
1996-97	15.17	23,172	(35,737)	226,249	105,899
1995-96	12.03	21,239	(49,223)	261,986	82,862
1994-95	33.36	69,108	79,132	311,209	58,121
1993-94	10.19	19,981	(22,238)	232,077	62,990
1992-93	36.62	64,658	106,317	254,315	36,419
1991-92	30.05	39,624	411	147,998	76,213
1990-91	14.38	18,718	(14,122)	147,587	71,065
1989-90	8.20	4,154	(29,941)	161,709	81,466
1988-89	9.12	5,713	(30,550)	191,650	127,973
1987-88	18.62	23,161	(5,000)	222,200	105,470
1986-87	5.99	7,952	(31,940)	227,200	91,632
1985-86	20.27	28,350	(7,980)	259,140	86,904
1984-85	11.00	22,493	(31,690)	267,120	101,591
1983-84	9.97	38,283	(63,180)	298,810	115,611
1982-83	39.64	102,925	121,090	361,990	68,394
1981-82	17.18	24,253	(530)	240,900	84,682
1980-81	11.04	31,891	(32,560)	241,430	92,791
1979-80	30.25	73,543	99,970	273,990	58,915
1978-79	21.76	72,454	78,080	174,020	59,843
1977-78	35.43	85,450	136,150	95,940	66,314
1976-77	14.19	8,197	(50,490)	(40,210)	125,445
1975-76	9.90	14,805	(30,090)	10,280	103,740
1974-75	14.74	22,786	(22,580)	40,370	95,830
1973-74	15.75	16,488	(21,820)	62,950	88,017
1972-73	20.65	24,342	17,020	84,770	82,004
1971-72	8.10	10,595	(17,090)	67,750	84,140
1970-71	15.57	24,143	15,340	84,840	79,010
1969-70	10.50	27,579	(9,740)	69,500	88,856
1968-69	29.00	71,506	79,240	79,240 [1]	84,186
35 Year Average	**18.15**	**32,125**	**3051**		**88,273**

1. Accumulation of storage begun as of October 1, 1968.

2.9 Groundwater Storage

San Fernando Basin

The total groundwater storage capacity of the SFB was calculated by the State Water Rights Board in the Report of Referee to be approximately 3,200,000 AF. Each year the storage is evaluated in two ways - the first is between one year and the next, and then for its cumulative change since the start of Safe Yield Operation in 1968.

In Fall 1968, following the Trial Court Judgment, Safe Yield Operation of the SFB was instituted to halt the overdraft in groundwater levels that began in 1954 (Plate 13). Methodology established by the State Water Rights Board was used to derive a regulatory storage requirement of 360,000 AF for the SFB that considered normal wet-dry cycles, operational flexibility, and pumping based on the calculated safe yield. The upper boundary of 210,000 AF above 1954 levels was based on the need to prevent excess rising groundwater from leaving the basin, and the lower boundary of 150,000 AF below 1954 levels provided storage space for wet year supply. Ideally, the basin should be operated between the upper and lower boundaries of the regulatory storage range.

The calculated change in groundwater storage in the SFB from 2001-02 to 2002-03 is (–15,835) AF (Table 2-8). At the start of Safe Yield Operation there was a cumulative change in storage of (-655,370) AF referenced to 1928 water levels. From 1968 through 2003, the amount of groundwater in storage has increased by +106,786 AF for a cumulative change of (–548,584) AF, referenced to 1928 water levels.

However, since Fall 1978 there has been an accumulation of 365,950 AF of Stored Water Credit through in-lieu activities of the parties (leaving groundwater in storage rather than pumping it). Stored groundwater can be extracted by the credited parties in excess of normal pumping rights with the approval of the Watermaster. If this groundwater was pumped, the cumulative change in storage since 1928 would be (–914,534) AF. As a result, the basin would be 259,164 AF below the beginning of the Safe Yield Operation that began in 1968. The difference between actual groundwater in storage and Stored Water Credit continues to increase (Plate 13-A).

Plate 13 also illustrates a general 23-year decline in basin water levels below the regulatory storage range beginning in 1980. The trend becomes clearer when the temporary effects of above-normal rainfall years of 1982-83, 1992-93, 1994-95, and 1997-98 are excluded. Since 1980 the basin has declined approximately 167,000 AF, or an average of approximately 7,200

AF/yr, despite an increase in storage credits of approximately 215,000 AF. If that rate of annual decline continues, it is likely that within 15 years the basin will be at or below the level at which Safe Yield Operation commenced in 1968, and very near the lowest historic level (1977). Probable causes of this decline include increased urbanization and runoff leaving the SFB, reduced artificial recharge, and continued heavy pumping.

It is not too early to begin addressing this issue. Efforts to reduce this trend are currently underway, such as exploring ways to increase artificial recharge, and capturing and beneficially using urban runoff. Clearly, the long-term solution will require close cooperation between the three major pumping parties in the SFB - Los Angeles, Glendale, and Burbank.

The Watermaster is required to continue evaluating the change in groundwater storage and the safe yield within ULARA, to notify the parties of significant changes, and to consider corrective measures for the future if the imbalance continues.

Although Los Angeles, Glendale, and Burbank have stored significant amounts of water through in-lieu storage, consideration should also be given to other types of conjunctive use programs such as storage of imported water. Although these programs would not address the structural cause of the decline, they can use the available storage to take advantage of imported supplies when and where they occur, as well as provide future drought protection. In addition, grants and other financial incentives may make such programs economically attractive. Basin storage space is a valuable resource, and the Watermaster Office supports its wise use for the benefit of the public.

Sylmar Basin

The groundwater storage capacity of the Sylmar Basin is approximately 310,000 AF. The estimated change in storage from 2001-02 to 2002-03 is (-609) AF, and the cumulative change in storage from 1968-69 through 2002-03 is (–3,091) AF.

Verdugo Basin

The groundwater storage capacity of the Verdugo Basin is approximately 160,000 AF. The estimated change in storage for 2001-02 compared to 2002-03 is (–672) AF, and the cumulative change in storage from 1968-69 through 2002-03 is (–17,962) AF.

The long-term decline in Verdugo Basin groundwater levels continues. Probable causes include increased urbanization and runoff leaving the basin, and a significant reduction in

groundwater recharge from septic systems following the installation of sewers beginning in the 1980s. An evaluation of the basin is currently underway, and should be completed by May 2005.

Eagle Rock Basin

The estimated change in storage from 2001-02 to 2002-03 is + 43 AF.

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 basins, respectively. The Watermaster made computations of 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 SFB extraction rights for the 2002-03 Water Year and Stored Water Credit (as of October 1, 2003) 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 2002-03 Water Year and Stored Water Credit (as of October 1, 2003) 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/Y to 6,510 AF/Y.

Verdugo Basin

Glendale and CVWD have rights to extract 3,856 and 3,294 AF/yr. respectively. Glendale has never pumped its full right. In the past, CVWD has extracted in excess of its right with the

permission of Glendale and the approval of the Watermaster. During the 2002-03 Water Year, CVWD was unable to pump its entire right due to the declining groundwater level in the basin.

Los Angeles has a right to extract its Import Return Flows in the Verdugo Basin, but has never exercised its right.

There are no Stored Water Credits in the Verdugo Basin.

Eagle Rock

Los Angeles has the right to extract, or cause to be extracted, the entire safe yield of the basin that consists mostly of return flows of delivered water by Los Angeles. Los Angeles does not pump groundwater from the Eagle Rock Basin. DS Waters, as successor to Sparkletts and Deep Rock, has a physical solution right to extract groundwater to supply its bottled drinking water requirements. DS Waters pumped 217 AF in the 2002-03 Water Year.

TABLE 2-9A: SUMMARY OF 2002-03 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	9,100	8,507	73,376	—	0	90,983
Basin Account		0	0	—	70 [1]	70
Physical Solution	383 [2]	431 [2]	—	—	434	1,248
Cleanup/Dewaterers	—	—	—	—	349	349
Non-consumptive Use	—	—	—	—	2,783	2,783
Total	**9,483**	**8,937**	**73,376**	**0**	**3,636**	**95,431**
Imports						
LA Aqueduct Water	—	—	219,342	—	—	219,342
MWD Water (25+35)	13,158	22,844	289,085	236	7,619 [3]	332,943
Groundwater from						
Sylmar Basin	—	—	3,549	3,055	—	6,604
Verdugo Basin		632				632
Total	**13,158**	**23,477**	**511,976**	**3,292**	**7,619**	**559,522**
Delivered Reclaimed Water	488	904	2,432 [4]	0	1,394	5,217
Exports						
LA Aqueduct Water						
out of ULARA	—	—	108,071	—	—	108,071
to Verdugo Basin			329			329
to Sylmar Basin			4,354			4,354
to Eagle Rock Basin	—	—	46	—	—	46
MWD Water						
out of ULARA	—	—	141,584	—	—	141,584
to Verdugo Basin	—	3,476	437	—	—	3,912
to Sylmar Basin	—	—	5,771	—	—	5,771
to Eagle Rock Basin			62			62
Groundwater	20 [5]	815 [5]	67,759	—	70	68,664
Total	**20**	**4,291**	**328,413**	**0**	**70**	**332,794**
Delivered Water						
Hill & Mountain Areas	—	—	52,189	—	—	52,189
Total - All Areas	23,108	29,027	259,370	3,292	12,578	327,376
Water Outflow						
Surface (Sta. F-57C-R)	—	—	—	—	—	142,790
Subsurface	—	—	—	—	—	390
Sewage	4,171	17,497	61,733	2,343	—	85,743
Reclaimed Water to						
the LA River	7,147	—	—	—	—	7,147
Total	**11,318**	**17,497**	**61,733**	**2,343**	**0**	**236,071**

1. Basin Account water for Burbank.
2. Includes Valhalla (Burbank) and Forest Lawn (Glendale).
3. Las Virgenes Municipal Water District
4. LA total recyled water is 2,432 AF of which 83 AF were delivered to valley fill and 2,349 delivered to hill/mountains.
5. Glendale OU and Burbank OU treated groundwater discharged to Los Angeles River.

TABLE 2-9B: SUMMARY OF 2002-03 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	3,549	3,358	0 [1]	6,906
Imports				
LA Aqueduct Water	4,354	--	--	4,354
MWD Water	5,771	26	--	5,798
Total	**10,125**	**26**	**0**	**10,151**
Exports - Groundwater to San Fernando Basin	3,549	3,055	0	6,604
Total Delivered Water	10,125	328	0	10,454
Water Outflow				
Surface	5,000 [4]			5,000
Subsurface	460 [3]	--	--	460
Sewage	830 [3]	211	--	1,041
Total	**6,290**	**211**	**0**	**6,501**

1. Pumping for landscape irrigation by Santiago Estates. The well was capped in 1999.
2. Surface outflow is not measured. Value based on Mr. F. Laverty – SF Exhibits 57 and 64.
3. Estimated in the Report of Referee.
4. Estimated.

TABLE 2-9C: SUMMARY OF 2002-03 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	Other	Total
Total Extractions	2,836	1,613	—	—	8 [1]	4,457
Imports						
LA Aqueduct Water	—	—	—	329		329
MWD Water	2,868	3,476	1,277	437		8,058
Total	2,868	3,476	1,277	766		8,387
Exports to San Fernando Basin	0	632	0	0		632
Delivered Reclaimed Water		417				417
Total Delivered Water	5,704	4,873	1,277	766	8	12,628
Water Outflow						
Subsurface to:						
Monk Hill Basin	—	—	—	—		300 [2]
San Fernando Basin	—	—	—	—		80 [2]
Sewage	1,647	1,087	0	473		3,206
Total	**1,647**	**1,087**	**0**	**473**		**3,586**

1. Private party extractions.
2. Estimated.

TABLE 2-9D: SUMMARY OF 2002-03 WATER SUPPLY AND DISPOSAL EAGLE ROCK BASIN

(acre-feet)

Water Source and Use	City of Los Angeles	Suntory Deep Rock Water Company	Danone Waters McKesson Water Products Co.	Total
Total Extractions	0	0 [1]	217 [1]	217
Imports				
LA Aqueduct Water	46	--	--	46
MWD Water (25+35)	62			62
MWD Water (17)	33,736			33,736
Groundwater from SFB	0	--	--	0
Total	**33,844**	**0**	**0**	**33,844**
Exports				
MWD Water (17)	29,481.4			29,481
Groundwater	0	0	217	217
Total Delivered Water	4,363	0	0	4,363
Water Outflow				
Surface	--	--	--	-- [4]
Subsurface	0 [2]	--	--	50
Sewage	1,940 [3]	0	0	1,940
Total	**1,940**	**0**	**0**	**1,990**

1. Suntory (formerly Deep Rock Water Co.) and McKesson/Danone 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 each, and they are allowed to export equivalent amounts. November 2003 the two firms were merged into DS Waters.
2. Estimated in Supplement No. 2 to Report of Referee for dry years 1960-61. Currently considered insignificant.
3. Estimated.
4. Not quantified.

TABLE 2-10A: CALCULATION OF 2002-03 EXTRACTION RIGHTS SAN FERNANDO BASIN

(acre-feet)

	City of Burbank	City of Glendale	City of Los Angeles
Total Delivered Water, 2002-03	23,108	29,027	259,371
Water Delivered to Hill and Mountain Areas, 2002-2003	—	—	52,189
Water Delivered to Valley Fill, 2002-2003	23,108	29,027	207,182
Percent Recharge Credit	20.0%	20.0%	20.8%
Return Water Extraction Right	4,622	5,805	43,094
Native Safe Yield Credit	—	—	43,660
Total Extraction Right for the 2003-2004 Water Year[1]	**4,622**	**5,805**	**86,754**

1. Does not include Stored Water Credit and Physical Solution.

TABLE 2-10B: CALCULATION OF 2002-2003 EXTRACTION RIGHT SYLMAR BASIN

(acre-feet)

	City of Los Angeles	City of San Fernando	All Others
Extraction Right for the 2003-2004 Water Year[1]	3,255	3,255	—[2]

1. Does not include Stored Water Credit. The safe yield of the Sylmar Basin was increased to 6,510 AF/YR effective 7/16/1996. Effective October 1, 1984 safe yield less pumping by Santiago Estates is equally shared by Los Angeles and San Fernando.
2. Santiago Estates (Home Owners Group) stopped pumping in 1999.

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, 2002)	31,625	71,761	254,789
1a. Physical Solution Water[1]	300		
2. Extraction Right for the 2002-03 Water Year	4,987	5,585	89,344
3. 2002-03 Extractions			
Party Extractions	9,100	8,507	73,376
Physical Solution Extractions	383	431	434
Clean-up/Dewaterers			348
Total	9,483	8,938	74,158
4. Total 2002-03 Spread Water[2]	0	0	138
5. Stored Water Credit[3] (as of October 1, 2003)	**27,429**	**68,408**	**270,113**

1. A Physical Solution purchase by Burbank.
2. LADWP trunkline rupture that discharged 184 AF of which 138 AF were captured and spread at the Pacoima Spreading Grounds.
3. Item 5 = 1 + 2 – 3 + 4.

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, 2002)	6,375	529
2. Extraction Right for the 2002-03 Water Year	3,255	3,255
3. Total 2002-03 Extractions	3,549	3,358
Santiago Estates[2]	0.0	0.0
4. Stored Water Credit[3] (as of October 1, 2003)	**6,081**	**426**

1. The safe yield of the Sylmar Basin was increased to 6,510 AF/YR as of 7/16/1996.
2. Santiago Estates pumping is equally taken from the rights of San Fernando and Los Angeles. Santiago Estates capped well in 1999.
3. Item 4 = 1 + 2 - 3

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 Total Dissolved Solids (TDS) concentration averaged about 210 parts per million (ppm) for 30 years before 1969. The highest on record was 320 ppm on April 1, 1946. TDS concentration on August 26, 2003 was 236 ppm.

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 ppm in August 1955 and a low of 625 ppm in April 1959. The average TDS concentration over the 34-year period was approximately 740 ppm. Tests conducted at Lake Matthews showed an average TDS concentration of 593 ppm for Fiscal Year 2003.

3. *NORTHERN CALIFORNIA* water (State Water Project) 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 ppm and a low of 247 ppm. Tests conducted at the Joseph Jensen Filtration Plant showed an average TDS concentration of 315 ppm during Fiscal Year 2003.

4. *COLORADO RIVER/NORTHERN CALIFORNIA* water were first blended at the Weymouth Plant in May 1975. Blending ratios vary, and tests are taken from the effluent. Tests conducted at the Weymouth Plant showed an average TDS concentration of 444 ppm during Fiscal Year 2003.

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 666 ppm and a total

hardness of 270 ppm. These values also reflect the inclusion of rising groundwater in the Los Angeles River between Los Feliz Blvd. and Gage F-57C-R.

Chlorides in Surface Water

In 1997 the RWQCB Amended Resolution No. 90-04 was rescinded by Resolution No. 97-02 on chlorides. Water quality objectives for chloride for certain surface waters were revised to accommodate fluctuations in chloride concentrations that may be caused by future droughts. The Amendment to the Water Quality Control Plan to Incorporate a Policy for Addressing Levels of Chloride in Discharges of Wastewaters for ULARA in the Waterbody – Los Angeles River- between Sepulveda Flood Control Basin and Figueroa Street (including Burbank Western Channel only) currently has a maximum of 190 ppm. Chloride levels are reported in Appendix D.

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 SFB where high concentrations of Trichloroethylene (TCE), Tetrachloroethylene (PCE), Hexavalent Chromium, and nitrates are present; 2) wells in the western end of the SFB having excess concentrations of sulfate and TDS; and 3) areas throughout the Verdugo Basin that have high concentrations of nitrate. In each area the groundwater delivered is either being treated or blended to meet State Drinking Water Standards.

A history of the TDS content and mineral analyses of imported, surface, and groundwater is contained in Appendix D.

3.2 Groundwater Quality Management Plan

During the 2002-03 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 improve the quality of stored water held in ULARA. Special emphasis is placed on monitoring and removing the organic contaminants TCE and PCE found in the groundwater. Table 3-1 summarizes the number of ULARA wells that are contaminated at the indicated levels above the Maximum Contaminant Level (MCL) of the California Drinking Water Standards of 5 parts per billion (ppb) for TCE and 5 ppb for PCE.

TABLE 3-1: 2002-03 NUMBERS OF WELLS IN THE ULARA WELL FIELDS EXCEEDING STATE MCL FOR TCE AND PCE

	Number of Wells Exceeding Contaminant Level[1]													
	City of Los Angeles[3]									Sub-	Others[3]			Grand
Total Number of	NH	RT	P	HW	E	W	TJ	V	AE	Total	B	G	C	Total
Wells in Well Field[2]	35	15	3	4	7	8	12	5	7	96	9	13	12	130
TCE Levels µg/L														
5-20	9	5	2	0	2	4	6	1	0	**29**	0	0	0	**29**
20-100	6	0	1	0	0	2	2	2	5	**18**	6	1	0	**25**
>100	1	0	0	3	0	0	0	0	2	**6**	2	6	0	**14**
Total	16	5	3	3	2	6	8	3	7	**53**	8	7	0	**68**
PCE Levels µg/L														
5-20	8	0	2	0	0	1	1	1	5	**18**	1	2	0	**21**
20-100	0	0	1	1	0	0	0	0	2	**4**	2	2	0	**8**
>100	0	0	0	2	0	0	0	0	0	**2**	5	2	0	**9**
Total	8	0	3	3	0	1	1	1	7	**24**	8	6	0	**38**

1. Wells are categorized based upon maximum TCE and PCE values attained during the 2002-03 Water Year. Where data was not available for 2002-03, data from the most recent water year was used. No data was available for some old inactive wells.
2. Includes active, inactive, and stand-by wells.
3. Well Fields: NH - North Hollywood; P - Pollock; HW - Headworks; E - Erwin; W - Whitnall; TJ - Tujunga; V - Verdugo; AE - LADWP Aeration Tower Wells; B - City of Burbank; G - City of Glendale; C - Crescenta Valley Water District
4. As of Dec. 2002, a total of nine wells were destroyed in City of Glendale.

3.3 Underground Tanks, Sumps, and Pipelines

The City of Los Angeles Fire Department (LAFD) continues to implement the State-mandated Underground Storage Tank (UST) Program and is actively conducting a program to bring the large number of underground tanks in the San Fernando Valley into compliance with current

law. During the 2002-03 Water Year, a total of 44 sites were remediated under the direction of the LAFD. Currently, the Environmental Unit of the LAFD is monitoring the remediation of 133 sites.

The main focus of the LAFD UST Program in ULARA has been the monitoring and removal of gasoline, diesel, and their related constituents from the soil, to prevent contamination of the underlying groundwater. If a site investigation indicates groundwater contamination, the site is referred to the RWQCB for further action. Since October 1, 1988, 4,660 sites have been assigned to the Underground Tank Plan Check Unit, and of these, 2,145 sites have been remediated. These include 33 new sites with two being remediated in the 2002-2003 Water Year.

3.4 Private Sewage Disposal Systems (PSDS)

In order to eliminate existing commercial and industrial PSDS and their discharges of nitrates to the SFB, 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. To date, a total of twelve areas have had construction completed, and six areas are in various stages of right-of-way acquisition and processing. Plate 7 shows the locations of the areas.

The sewer construction program ordered by the City Council required project design and construction to be funded though Assessment Act provisions. Proposition 218, approved by the electorate on November 5, 1996, now requires that a majority of mail-in ballots of property owners approve any new or increased assessments, in order to proceed with funding the projects through the Assessment Program. The passage of Proposition 218 and continued downsizing of the workforce of the City of Los Angeles has impeded the sewer construction program for the remaining six areas.

Toward the end of the 1998-99 Water Year, inquiries by the Watermaster regarding scheduling for the completion of the remaining six designated area projects led to the revision and re-estimation of construction plans for these improvements. Those projects were reactivated with the intent of facilitating the construction through the Assessment Program. The previously completed plans were revised as necessary and a revised construction cost estimate was prepared for each project. Those anticipated construction costs and project incidental costs were spread among the owners of benefiting property within the individual districts and the owners were notified of their proportionate share of the assessable costs for the projects.

The majority of the responding owners of each of the following five Groundwater Improvement District (GID) projects: GID No. 3 (Raymer St. Nr. Fulton Ave.), GID No. 17 (Glenoaks Blvd. Nr. Roxford St.), GID No. 19 (Sherman Way Nr. Balboa Blvd.), and GID No. 5 (Chandler Blvd. Nr. Lankershim Blvd) and GID No. 12 (San Fernando Rd. Nr. Brazil St.) voted against construction of the assessment projects. These projects are now postponed indefinitely. The responding owners serviced by the remaining project GID No. 4 (San Fernando Rd. Nr. Keswick St.) voted in favor of the project. Right-of-way acquisition for that project is nearly complete and project construction is scheduled to begin June 15, 2004.

Work on the five postponed projects has been deferred because of the fiscal impact to the City of Los Angeles for right-of-way acquisition and construction. The City Council will be notified of the current impasse regarding these projects. Further work on the projects will be contingent upon direction from the City Council and authorization for alternative financing of the projects.

In order to determine the number of properties not connected to a sewer, the Bureau of Sanitation updated the database for water users not being billed for sewer usage. The analysis initially revealed that in the San Fernando Basin approximately 5,700 of these properties are located within 50 feet of an existing sewer, and 7,700 of these properties are more than 50 feet from an existing sewer. The Bureau of Sanitation will continue its follow-up work to confirm connections to sewers.

City Councilman Alex Padilla, Council District 7, obtained federal funds to subsidize sewer installation for lower-income families in the northeast San Fernando Valley. Funding applications, which became available in March 2001, are currently being processed only for properties that have an existing available sewer to which connections can be made without construction of new public sewers. Seven property owners have applied for the low-income loans. The Bureau of Sanitation has prepared a map that shows the unsewered properties and municipal water supply wells within ULARA. The map will assist Bureau of Sanitation in prioritizing field inspections, beginning with unsewered properties within 1,000 feet of a production well.

The Industrial Waste Management Division (IWMD) of the Bureau of Sanitation continued to pursue the enforcement provisions of the PSDS elimination program. There has been good compliance with the mandatory sewer connection ordinance, and more than 2,025 properties have already abandoned PSDS and connected to the public sewer. As of December 2001, all

properties owning or operating a PSDS referred to IWMD that are subject to the City Code (LAMC Section 64.26) provisions that require abandonment of their PSDS and connection to the City sewer, will either have to connect to the sewer or will be granted a variance, but only in those instances that qualify for a variance.

3.5 Landfills

The 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 the RWQCB are listed in Table 3-2. As stipulated by Article 5 of Title 27, a follow-up sampling program under an Evaluation Monitoring Plan was required for some landfills due to the presence of VOCs in the underlying groundwater.

The Bradley West Landfill has applied for a permit to increase the height of the waste pile by approximately 40 feet.

Sunshine Canyon Landfill has been granted a conditional permit by the Los Angeles RWQCB to increase the size of the active landfill within the unincorporated Los Angeles County portion of the landfill. The State Water Resources Control Board is reviewing an appeal of the conditional permit filed by the landfill operator.

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 Req.	Approved by RWQCB	Site Leak (1)	Type of Emission (2)	Further Monitoring
Bradley West	1	Open	WMDSC	Sun Valley, SE of Sheldon St.	6/87	11/90		4/92	G	NHA (I/O)	3
Sheldon-Arleta	1	Closed	City of Los Angeles Bureau of Sanitation	Sun Valley District near Hollywood & Golden State Fwys	5/87	5/87		2/90	G	MSW	4,7
Scholl Canyon	1	Open	City of Glendale	San Rafael Hills, 1 mile West of Rose Bowl	7/87	4/88		8/90	G	NHA (I/O)	3
Scholl Canyon	2	Closed	City of Glendale	San Rafael Hills, 1 mile West of Rose Bowl	7/87	8/90		12/93	G	NHA	5
Bradley East	2	Closed	WMDSC	SE of Sheldon St	6/87	11/90		4/92	G	NHA (I/O)	4, 8
Bradley West Extension	3	Open	WMDSC	Near Canyon Blvd & Sheldon St	7/88	7/89		4/92	G	MSW	3, 8
Sunshine Cyn. LA City	2	Closed	Browning - Ferris Industries	SE Santa Susana Mtns W of Golden State Fwy	7/88	7/89		4/94	G	MSW	6
Sunshine Cyn. LA County	2	Open	Browning - Ferris Industries	SE Santa Susana Mtns W of Golden State Fwy	7/88	7/89		4/94		MSW	6
Gregg Pit/Bentz	2	Closed	CalMat Properties	Between Pendleton St & Tujunga Ave	7/89	7/89		2/90	G	NHA	4
Branford	2	Closed	City of Los Angeles Bureau of Sanitation	Sun Valley District, NW of Tujunga Wash	7/88	10/90	X	6/92		MSW	4,7
CalMat (Sun Valley #3)	2	Open	CalMat Properties	Sun Valley District, NE of Glenoaks Blvd	7/88	11/90		6/92	N	Inert site	N,7
Lopez Canyon	2	Closed	City of Los Angeles Bureau of Sanitation	N of Hansen Dam near Lopez and Kagel Cyn	6/88	6/88	X				8
Toyon Canyon	2	Closed	City of Los Angeles Bureau of Sanitation	Griffith Park	6/88	3/89		4/91	L	NHA (I/O MSW)	3
Tuxford Pit	2	Closed	Aadlin Bros. (LA By-Products Co.)	Sun Valley District, SW of Golden State Fwy & Tujunga Ave	6/88	12/90		6/92		MSW	4, 8, 9
Penrose	2	Closed	Los Angeles (LA By-Products Co.)	N of Strathern St, Tujunga Ave	6/88	7/89		9/89	G	NHB (I/O)	4
Newberry	3	Closed	Los Angeles (LA By-Products Co.)	N of Strathern St, Tujunga Ave	6/88	7/89		9/89	G	NHB (I/O)	4
Hewitt Pit	2	Closed	CalMat Properties	North Hollywood District Hollywood Fwy, Laurel	6/88	7/89		5/91	G	NHB (I)	N
Pendleton St.	4	Closed	City of Los Angeles Bureau of Sanitation	Sun Valley, Pendelton St & Glenoaks Blvd	7/90	5/91		6/92	N	Inert Site	5
Slough Park	2	Open	City of Burbank	Bel Air Drive & Cambridge Drive	6/88	12/88		4/90	G	NHA Inert Site	3
Strathern			Never completed. Application 12/88.	Strathern St. & Tujunga Ave							10

1. G – Gas, L – Liquid. MSW – Municipal Solid Waste
2. NHA - Non-Hazardous but above state drinking water regulatory levels
   NHB - Non-Hazardous but below state drinking water regulatory levels
   I – Inorganic, O – Organic; N-No, Y-Yes
3. Under Title 27 Corrective Action Program (CAP), after completion of EMP.
4. Closed landfills with groundwater monitoring required under Title 27. Monitoring results are submitted to the Regional Board periodically.
5. Subject to SWAT requirements. Further monitoring may be required under Title 27.
6. All open landfills are required to have groundwater monitoring under Title 27. Monitoring results are submitted to the Regional Board quarterly or semi-annually.
7. Semi-annual groundwater monitoring.
8. Groundwater contamination Evaluation Monitoring Program (EMP) required under Title 27.
9. EPA involved in evaluation.
10. Under permit as Inert Landfill.

3.6 San Fernando Valley Remedial Investigation Activities

A remedial investigation (RI) of groundwater contamination in the San Fernando Valley was initiated in July 1987 by the USEPA to characterize the San Fernando Basin and the Verdugo Basin and their contamination with TCE and PCE. The LADWP was selected by the USEPA to serve as the lead agency in conducting the RI and entered into a cooperative agreement that has provided over $22 million in federal funding to LADWP since July 1987. In August 1987, the LADWP selected James M. Montgomery, Consulting Engineers, Incorporated 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 that 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 various groundwater projects to analyze the storage and physical characteristics of groundwater in the SFB.

USEPA'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 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

USEPA Operable Units

The USEPA is proceeding with enforcement actions against Potentially Responsible Parties (PRPs) for the North Hollywood, Burbank, and Glendale North and South Operable Units, which are part of the USEPA's overall, long-term groundwater remediation activities in the SFB. The OUs are described below.

1. *NORTH HOLLYWOOD OU* - The North Hollywood OU (NHOU) was funded by the USEPA and the DHS. The NHOU removes VOCs by air stripping. In 2002-03, 599 million gallons (1,838 AF) of groundwater were treated. The facility has been operating with seven water supply wells on line.

   The quality of air discharged to the atmosphere from the aeration tower was monitored on a regular basis to verify its conformance with permit requirements of the South Coast Air Quality Management District. The facility was shut down in September 2003 for a week for the granular activated carbon (GAC) replacement in the Emission Control Unit. The operation was restarted in October 2003.

   A final feasibility study to enhance the NHOU is being reviewed by the USEPA. This plan proposes to install several new wells northwesterly of the NHOU. The discovery of hexavalent chromium above 5,000 ppb upgradient of the proposed well locations has added to the complexity of reviewing the plan. The RWQCB has issued a Cleanup and Abatement Order to a Potentially Responsible Party in the vicinity of the chromium plume.

2. *BURBANK OU* - The Burbank OU, funded by the USEPA and operated by Burbank, uses aeration and liquid-phase GAC to remove VOCs from high

nitrate groundwater and then blends it with water from the Metropolitan Water District for delivery to the City of Burbank.

Burbank assumed operation and maintenance of the BOU in 2001. Since that time, the facility has been unable to sustain operation at the designed treatment rate of 9,000 gpm. Burbank, Lockheed-Martin, USEPA, and the Watermaster Office have been cooperating in an effort to determine the cause(s) of the reduced treatment capacity. As a result, several modifications were needed to the liquid-phase and vapor-phase GAC vessels. The modification of the liquid-phase GAC vessels is complete, and the vapor-phase modification is scheduled for completion in June 2004. In addition, the study showed that additional well capacity may be required to sustain operation at 9,000 gpm.

In order to increase production, Burbank has proposed the removal of a well packer in one well. The USEPA is reviewing the proposal to ensure that removing the well packer under current hydrologic conditions will not negatively impact the established remedial action.

Burbank is also concerned about hexavalent chromium in water produced at the BOU and has been blending with imported water to keep the level of hexavalent chromium at, or below, 5 ppb. A total of 9,170 AF were treated in the 2002-03 Water Year.

3. *GLENDALE NORTH AND SOUTH OUS.* Construction of the Glendale North and South Operable Units was completed and treated water was ready for delivery on September 26, 2000. The system includes four Glendale North OU extraction wells with a capacity of 3,300 gpm and four Glendale South OU extraction wells with a capacity of 1,700 gpm. The process uses aeration and liquid-phase GAC to treat groundwater contaminated with VOCs and then blends it with MWD water at the refurbished Grandview Pump Station. A total of 7,508 AF were treated in 2002-03.

The USEPA accepted Glendale's pumping plan to minimize chromium levels by reducing pumping in wells with elevated levels of chromium and increasing the pumping rate from the other wells.

Other Treatment Facilities

1. *VERDUGO PARK WATER TREATMENT PLANT (VPWTP)* – Glendale's VPWTP produces about 500 gpm and serves as a chlorination and turbidity treatment facility. A total of 632 AF were treated in 2002-03.

2. *GLENWOOD NITRATE WATER TREATMENT PLANT* - CVWD's Glenwood Nitrate Water Treatment Plant, which uses an ion-exchange process for nitrate removal, continued to operate satisfactorily during the 2002-03 Water Year. A total of 85 million gallons (216 AF) of water were treated. The 50 percent decline in the amount of treated water is due to the lower water table that has reduced the availability of groundwater, necessitating an increase in purchases of imported water. In addition, nitrate levels in the groundwater have declined during the past several years.

3. *POLLOCK WELLS TREATMENT PLANT* – The LADWP 3,000 gpm Pollock Wells Treatment Plant restored Pollock Wells No. 4 and No. 6 to operation. The operation of these production wells reduces groundwater discharge to the Los Angeles River due to excess rising groundwater in the area. The treated water is chlorinated before distribution in the water system. The facility uses four GAC vessels in two sets operating in series to remove VOCs. A total of 560 million gallons (1,720 AF) of groundwater were treated during the year.

4. *BURBANK GAC TREATMENT PLANT* - The City of Burbank GAC system was shut down in March 2001 due to the levels of hexavalent chromium in the groundwater and remained out of service during the 2002-03 Water Year. The City of Burbank has a goal of accepting a maximum of 5 ppb of hexavalent chromium after blending for distribution to its water system. If the plant is returned to service, production may be considered as part of the designated average pumping goal of 9,000 gpm for the Burbank OU.

3.8 Groundwater Quality Investigations

There are several ongoing groundwater quality investigations in the San Fernando Basin. Some of the major sites and related activities are summarized below.

Verdugo Study Area

In October 2003 the USEPA issued a letter stating that the San Fernando Valley Verdugo Study Area Superfund Site located in the Verdugo Basin does not warrant remedial action for VOCs, and that "No action is necessary at the site to ensure adequate protection of human health and the environment."

Boeing/Rocketdyne Santa Susana Field Lab, Simi Hills

This facility, located in the hills at the western end of the San Fernando Valley, was the site of rocket testing in the 1950s and 1960s. As a result, soil and groundwater became contaminated with TCE and perchlorate. Several hundred monitoring wells have been installed and are being sampled and tested. Contaminated soils are being remediated at selected locations.

DriLube, 711 W. Broadway, Glendale

DriLube Company, a plating facility located in Glendale, was issued a Cleanup and Abatement order by the RWQCB on March 29, 2002. DriLube was named a Responsible Party by the USEPA for discharging contaminants to the Glendale South Operable Unit from its site. The results of subsurface investigations have detected soil and groundwater contaminated with chlorinated solvents, petroleum hydrocarbons, PCBs, and heavy metals including chromium. On November 15, 2002 a fire at the Drilube Company totally destroyed the Plant 1 facility and records. The RWQCB will decide a future course of action.

PRC-Desoto (formerly Courtaulds Aerospace), 5430 San Fernando Road, Glendale

The RWQCB issued a Cleanup and Abatement Order to PRC-DeSoto (formerly Courtaulds Aerospace) on August 22, 2002. This facility has been named a responsible party by USEPA for releasing chlorinated organic solvents within the Glendale South Operable Unit. The facility's principal industrial activities involve chemical formulation of adhesives and sealants used by the U.S. Department of Defense for various aerospace applications. Periodic groundwater monitoring and reporting has been conducted at the site since 1994. Trichloroethane (1,1,1-TCA), dichloroethane (DCE), TCE, PCE, and hexavalent chromium have been found in soil and groundwater beneath the site.

Coltec Industries, Inc. (formerly Menasco), 100 E. Cedar Ave., Burbank

The RWQCB issued a Cleanup and Abatement Order to Coltec Industries, Inc. on July 5, 2002. This facility has been named a Responsible Party by the USEPA for discharging contaminants to the Glendale North Operable Unit. The facility's industrial activities involved machining,

manufacturing, metal plating and anodizing of parts and equipment used by the U.S. Department of Defense for various aerospace applications. TCE, PCE, DCE, 1,1,1-TCA and hexavalent chromium have been detected on this site. The RWQCB has instructed the firm to revise its workplan.

ITT/Home Depot Site, 1200 S. Flower St., Burbank

Home Depot intends to construct a store at the former ITT Aerospace Controls site. ITT Aerospace Controls manufactured parts, and conducted metal finishing and plating. Groundwater contamination at the site consists of VOCs, petroleum hydrocarbons, PCBs, mercury and hexavalent chromium. A plan has been approved by the RWQCB to build a slurry wall under the site along the property boundaries to prevent lateral migration of contamination. A naturally occurring low-permeability zone located 50 feet below the ground surface is expected to prevent vertical migration of the contaminants. In preparation for the Remedial Action Plan implementation and in accordance with the mitigation measures set forth in the EIR, in late 2003, Home Depot installed four groundwater monitoring wells ouside of the planned location of the slurry wall to monitor the baseline condition. A City of Burbank Planning Board hearing to certify the EIR is scheduled for March 1, 2004.

A site upgradient from Home Depot has been identified as the source of a diesel fuel release. When the Home Depot slurry wall is constructed, there is concern that the diesel plume could be diverted beneath other properties.

Brenntag/Price Pfister - Pacoima Area Groundwater Investigation

Progress has been made in the Pacoima Area investigation by a coordinated effort with the lead agency Cal-EPA DTSC, the RWQCB, LADWP, and the Watermaster Office. A VOC contaminant plume was identified in the Pacoima area near the intersection of the Simi Valley Freeway (118 Freeway) and San Fernando Road. This site is approximately 2.5 miles upgradient of LADWP's Tujunga Well Field, which can supply up to 120 cfs of groundwater. LADWP installed two monitoring wells downgradient of the contaminant plume. Under DTSC guidance, Brenntag has installed a soil vapor extraction system. Brenntag installed two new wells along Sutter Avenue to the southeast of the site in Spring 2003. Brenntag now has 16 monitoring wells - 9 on-site and 7 off-site. Since start up of the SVE system in January 2003 through February 2004 more than 18,500 lbs. of VOCs have been removed. The final submittal of the Remedial Investigation is expected before the end of the first quarter 2004.

Price Pfister, located east of Brenntag, has been directed to delineate the extent of VOC contamination with on-site and off-site monitoring wells. The data will provide plume definition and help determine if the VOC plumes have merged.

Raytheon (formerly Hughes Missile Systems Company), 8433 Fallbrook Avenue, Canoga Park

The most prominent contaminant has been 1,1-DCE with lesser amounts of TCE, PCE, TCA, BTEX and 1,1-DCA. TDS is in excess of the Basin Plan objectives, so the treated water may not be discharged to the Los Angeles River even though the origin of the high TDS is related to the naturally occurring groundwater. As a result of the high TDS, the treatment plant effluent is stored in holding tanks, and used for on-site irrigation.

Due to significant decreases in contaminant concentrations, the RWQCB has approved groundwater sampling and analyses on a semiannual basis. The remediation system has reduced the extent of the plume by more than 50 percent. In January 2002 Raytheon installed 17 triple nested sparging wells along the northwest boundary and connected them to the existing sparge system. A work plan submitted to the RWQCB to perform a pilot test for the effectiveness of enhanced in-situ bioremediation was approved by the RWQCB and initial fieldwork began in September 2003. Pilot test progress sampling has indicated that site conditions are conducive for the reductive-dechlorination process to be enhanced by the injection of an electron donating substrate. Although the property is now owned by other entities, Raytheon Company is the current operator of the soil and groundwater treatment system.

3M (formerly Riker Lab), 19901 Nordhoff, Northridge

Contaminants at this site include chloroform, 1,2-DCE, and Freon 11. There has been an interim groundwater extraction and treatment system since 1988. There are numerous monitoring wells on the property, and off-site to the south. During the 2002-03 Water Year, 59.17 acre-feet of groundwater were treated, of which 50% was beneficially reused in the plant for rotoclones (dust collectors). From start-up through the beginning of December 2002, approximately 14,400 pounds of VOCs have been removed from the soil and 4,092 pounds of VOCs from the groundwater. The RWQCB approved 3M's landscape irrigation proposal that will beneficially use all the remaining treated groundwater. Installation of Phase I of the irrigation plan began March 2004. 3M has been working with the adjoining property owned by Micro Matic to continue cleanup.

Micro Matic, 19791 Bahama St., Northridge

The Micro Matic site is located adjacent to 3M. The soil and groundwater beneath a portion of the property are contaminated with PCE and 1,1,1-TCA. Groundwater treatment currently consists of liquid-phase GAC. The groundwater contamination plume extends across the property boundary onto the 3M site. 3M converted one of its monitoring wells in the northeast corner of its property to an extraction well. Micro Matic started pumping groundwater from this well in August 2002. The groundwater is being treated in the interim treatment system operated at Micro Matic.

A full scale soil and groundwater remediation plan is currently being developed on behalf of the responsible parties and their insurance companies and is expected to be implemented during the first or second quarter of 2004.

Tesoro Petroleum (former Fast Fuel, 11051 Victory Blvd., N. Hollywood)

Tesoro Petroleum is the owner of a gas station site that was leased to Fast Fuel. A leaking underground tank has caused a plume of gasoline hydrocarbons and MTBE in the groundwater that has migrated off-site toward several wells in LADWP's Whitnall Well Field. Tesoro has been performing soil remediation using soil vapor extraction. Tesoro has also been working with LADWP, Watermaster, and Regional Board to address the MTBE plume, and the parties have agreed on a groundwater cleanup plan that includes enhanced bioremediation and re-injection of the treated water.

Taylor Yard (Los Angeles River Narrows Area)

The remediation of the Taylor Yard of the Union Pacific Railroad Company is under the jurisdiction of the Cal-EPA DTSC. The Taylor Yard has been divided into two parts - active yard and sale parcel.

The 25-acre active yard is contaminated with VOCs, SVOCs, fuel hydrocarbons, and metals. Three soil vapor extraction systems have removed a total of 1,110 pounds of VOCs to date. There are currently 38 groundwater wells in the monitoring program, eight of which are sampled quarterly and 21 are sampleld biannually.

Chromium

In January 2003 the ULARA Watermaster published a report on hexavalent chromium contamination in the SFB. The RWQCB published a report of its four-year investigation of hexavalent chromium in December 2002. The presence of this contaminant threatens the use

of SFB groundwater as a reliable source of water for Burbank, Glendale, and Los Angeles, and jeopardizes the Operable Units constructed with funding from the USEPA to clean up VOCs on a regional basis. The Operable Units that treat VOCs in the groundwater were not designed to treat chromium.

Total chromium is comprised of hexavalent chromium and trivalent chromium. Hexavalent chromium is a carcinogen when inhaled, but the effects when ingested are a subject of continuing debate. Trivalent chromium is a nutrient when ingested in small amounts.

The federal and state drinking water MCLs for total chromium are 100 ppb and 50 ppb, respectively. There are no separate standards for hexavalent chromium. Until hexavalent standards are developed, the total chromium standards will continue to be used.

At the State level, the Governor approved State Senate Bill 2127 in November 2000. This bill requires the DHS to determine the levels of chromium in the drinking water supplied by public water systems from the SFB aquifer and, in consultation with OEHHA, to assess the exposures and risks to the public. The report was due January 1, 2002 but has not been published as of this writing.

A National Toxicology Program study is underway to determine a safe federal Maximum Contaminant Level (MCL) for hexavalent chromium, and should be completed in 2006. In the meantime, according to normal procedures for a contaminant under review, the existing MCL will be used.

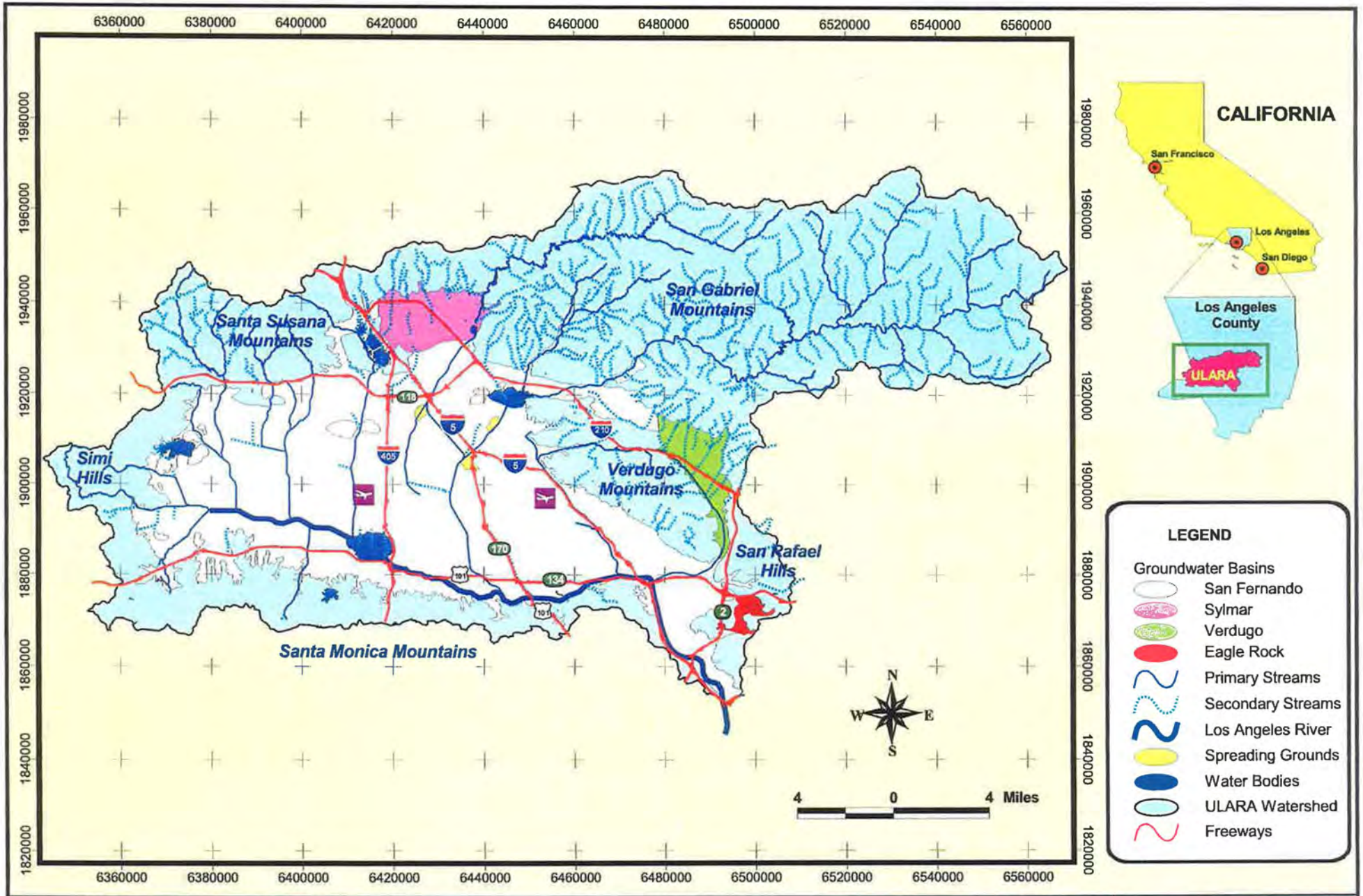
The Consent Decrees between the USEPA and the responsible parties require that certain pumping rates be maintained to control VOC plume migration and provide contaminant removal. As these wells are pumped, the chromium plumes also migrate toward the wells, albeit at a slower rate than the VOCs. Hexavalent chromium has now appeared in all of the Operable Units. Fortunately, the levels are currently low enough to allow blending with imported water to levels that meet all drinking water standards. However, it is expected that at some point in the future the levels may become too high to allow blending to reduce chromium to acceptable levels. At that time, the Operable Units would have to be shut down, and VOC removal and containment would cease.

The Regional Board, with assistance from the USEPA and the cities of Burbank, Glendale, and Los Angeles has received temporary staff support to expedite investigation of possible

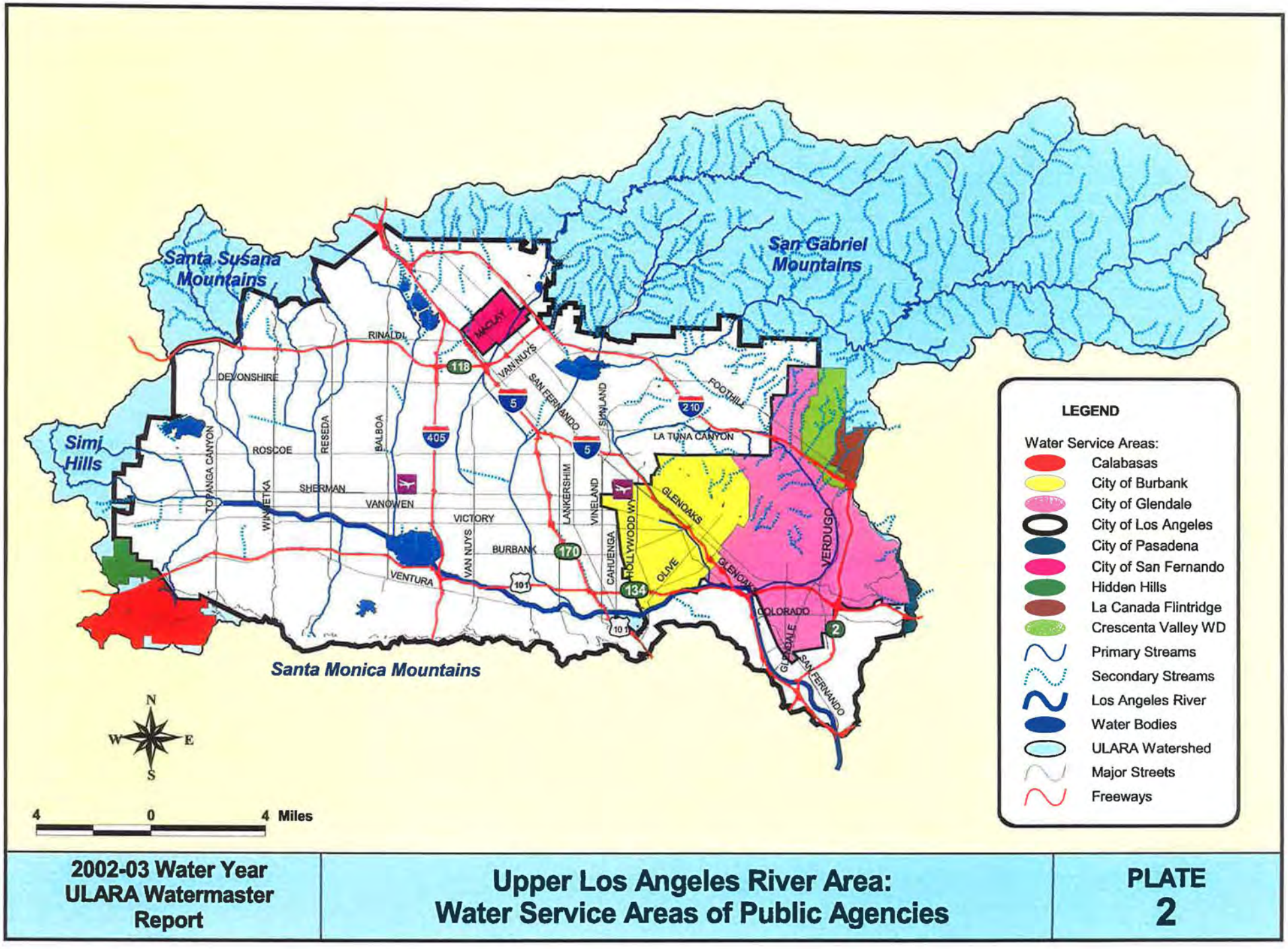
hexavalent chromium contaminated sites. The focus is on the several sites identified last year by the Regional Board with the highest reported levels of hexavalent chromium and the greatest potential impact on the three cities' Operable Units and well fields.

A study is underway to identify a cost-effective technology to remove chromium to very low levels. The USEPA, American Water Works Research Foundation, and the cities of Glendale, Los Angeles, and Burbank are funding the project.

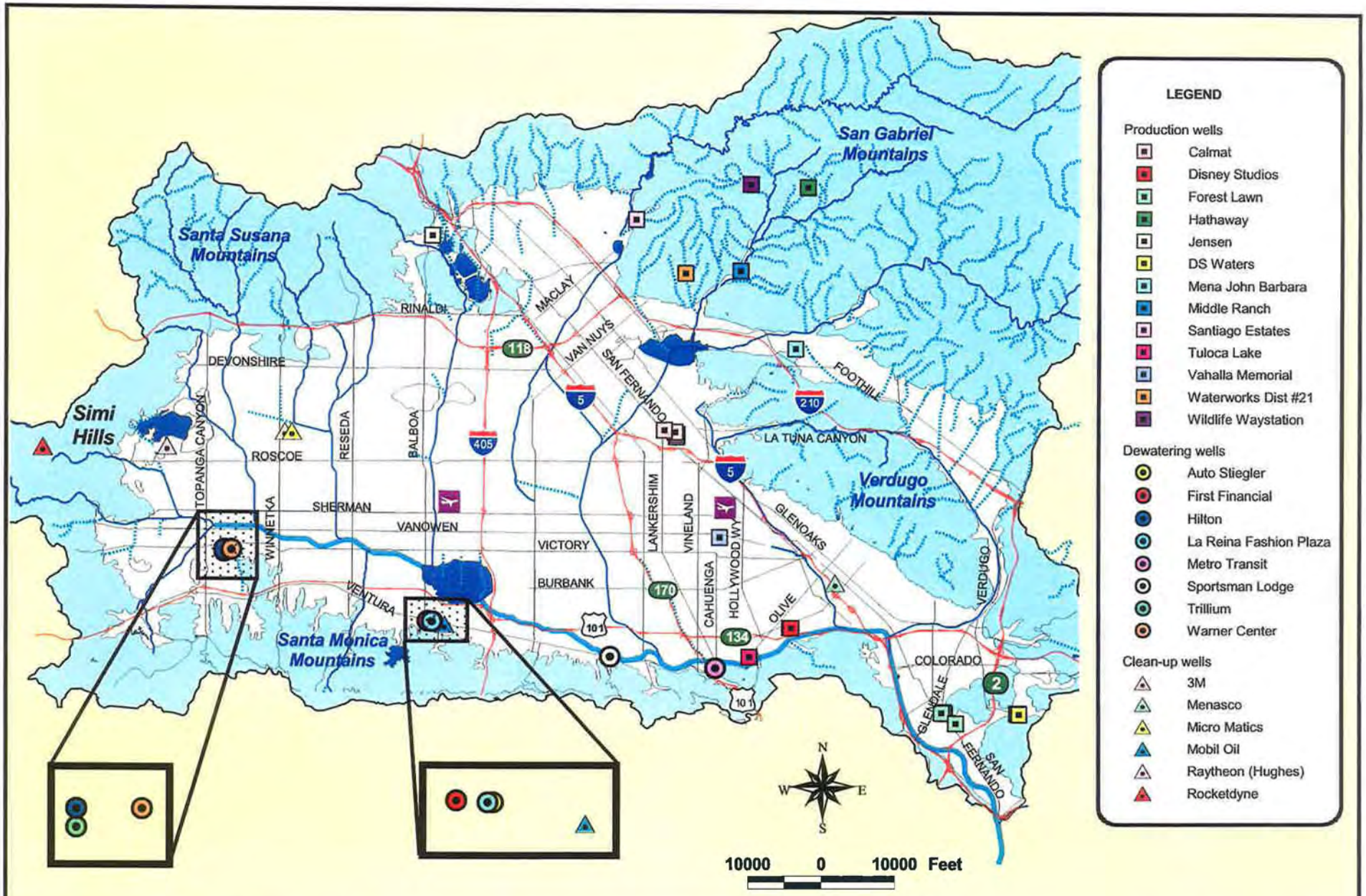
PLATES



2002-03 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: Vicinity and Location Map	PLATE 1



2002-03 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: Water Service Areas of Public Agencies	PLATE 2



2002-03 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: Location of Individual Producers	PLATE 3

UPPER LOS ANGELES RIVER AREA

LOCATION OF WELLS AND HYDROLOGIC FACILITIES

LEGEND

- X-X-X-X 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

MOUNTAINS

Indian Hills Mobile Homes Wastewater Treatment Plant

Rocketdyne Santa Susana Field Laboratory Wastewater Treatment Plants

Tapia Water Reclamation Plant

Los Angeles Reservoir

Encino Reservoir

Pacoima Reservoir

Big Tujunga Reservoir

Sepulveda Flood Control Dam

Hansen Dam

Forebay Wastewater Treatment Plant

L.A. - Glendale Wastewater Treatment Plant

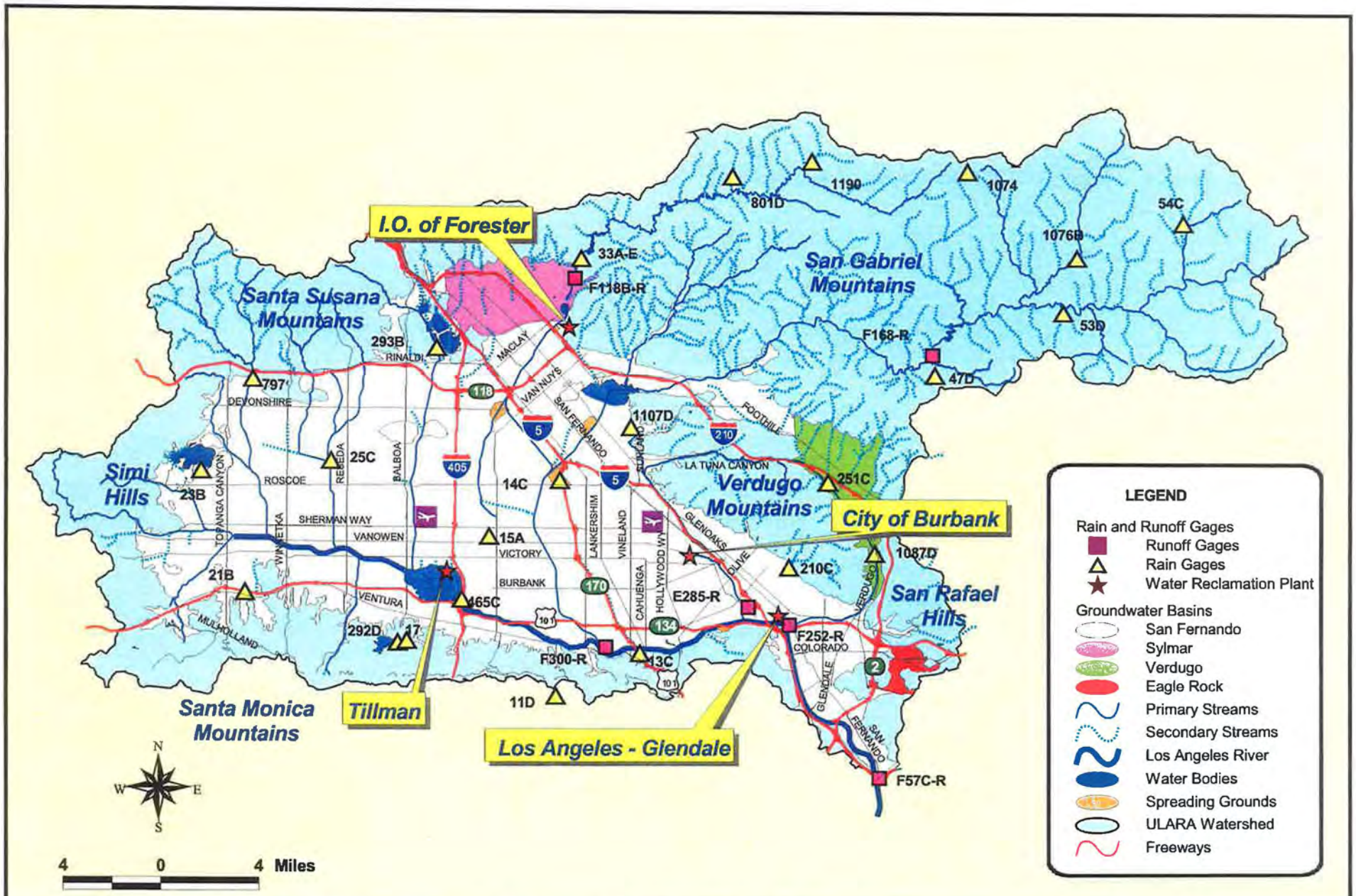
CVCWD Wastewater Treatment Plant

Burbank-Glendale-Pasadena Airport

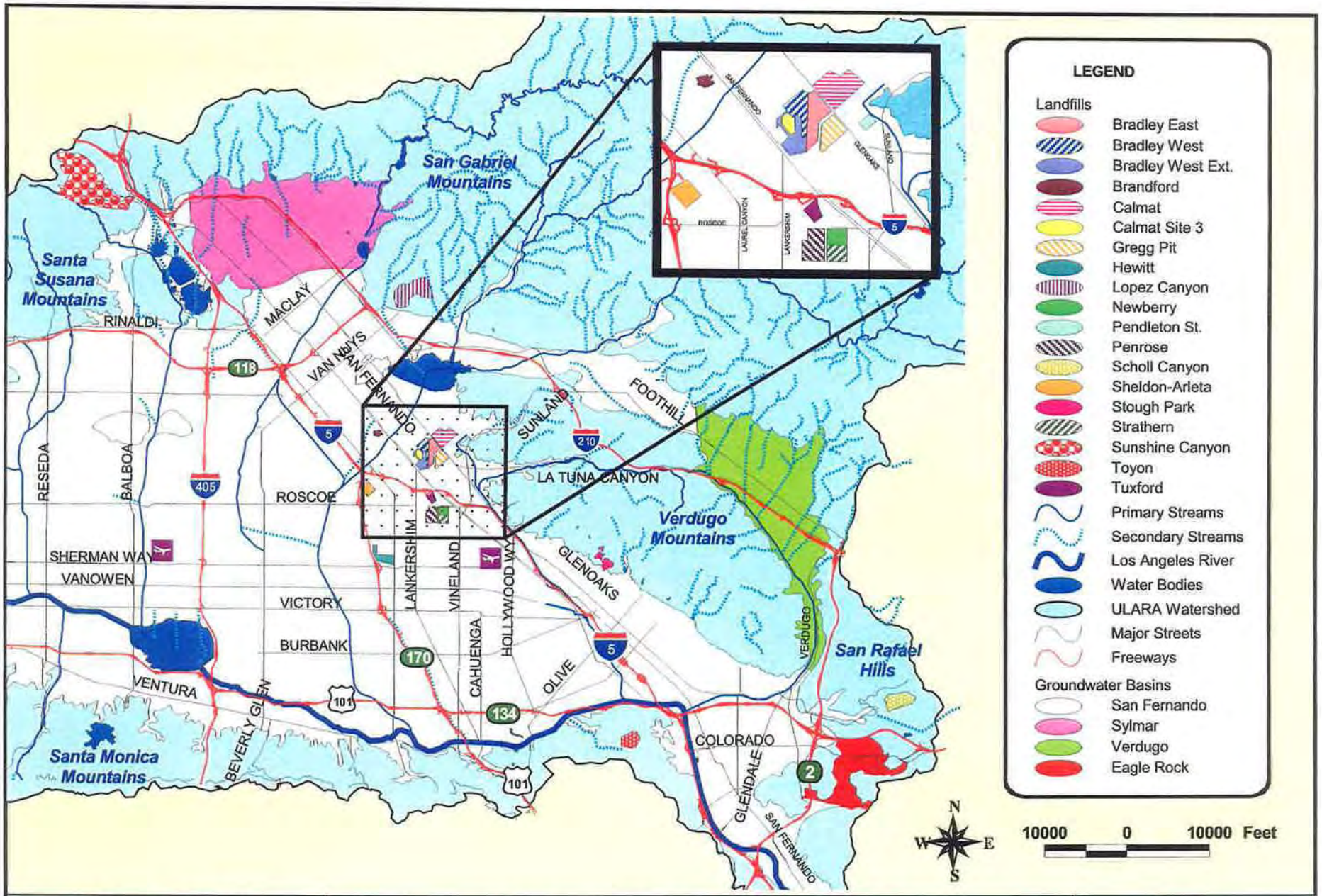
Van Nuys Airport

Groundwater Divide

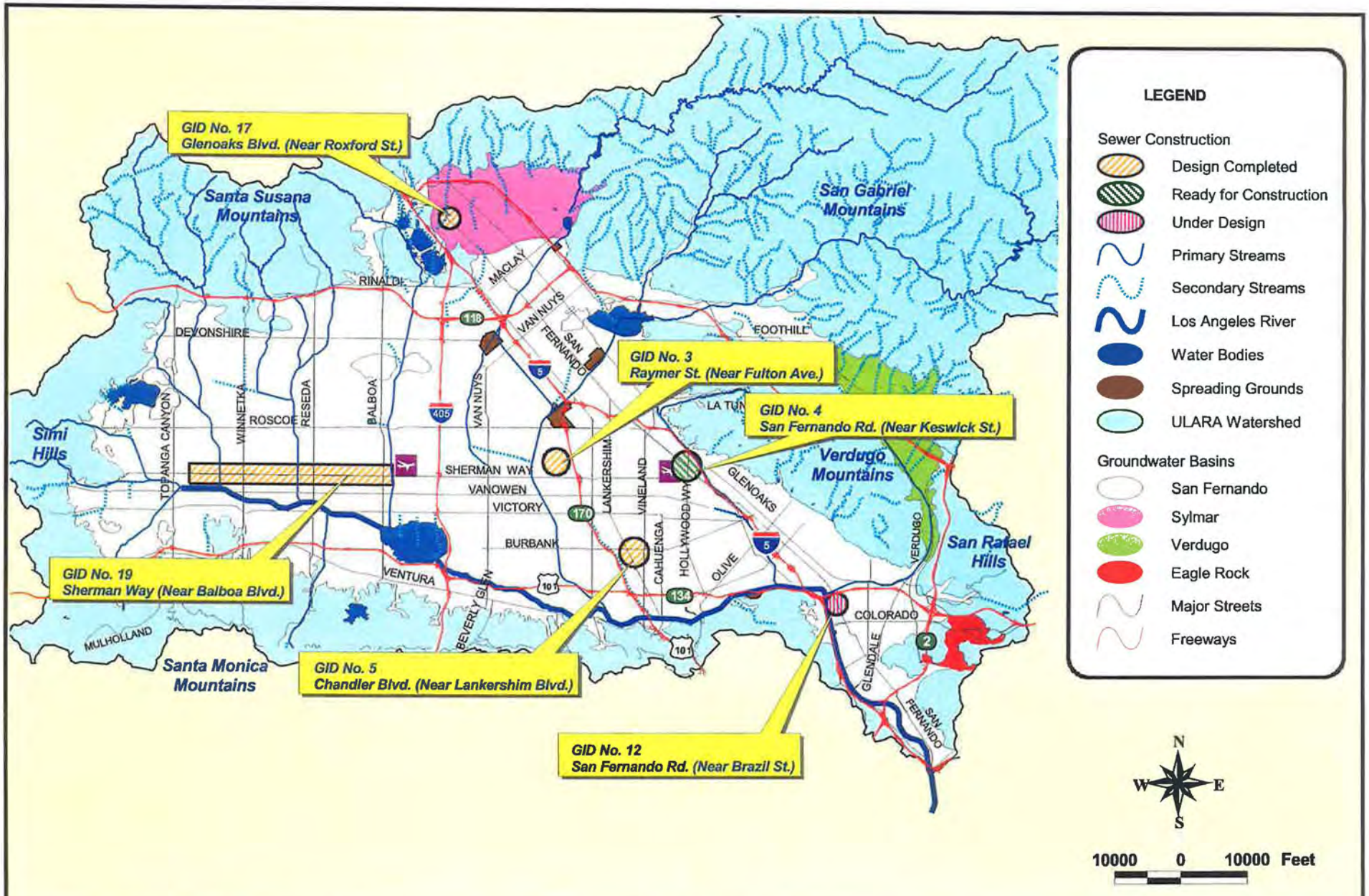
NOTE: 4.25 miles to Tapia Water Reclamation Plant which delivers water to a portion of the west end of ULARA area.



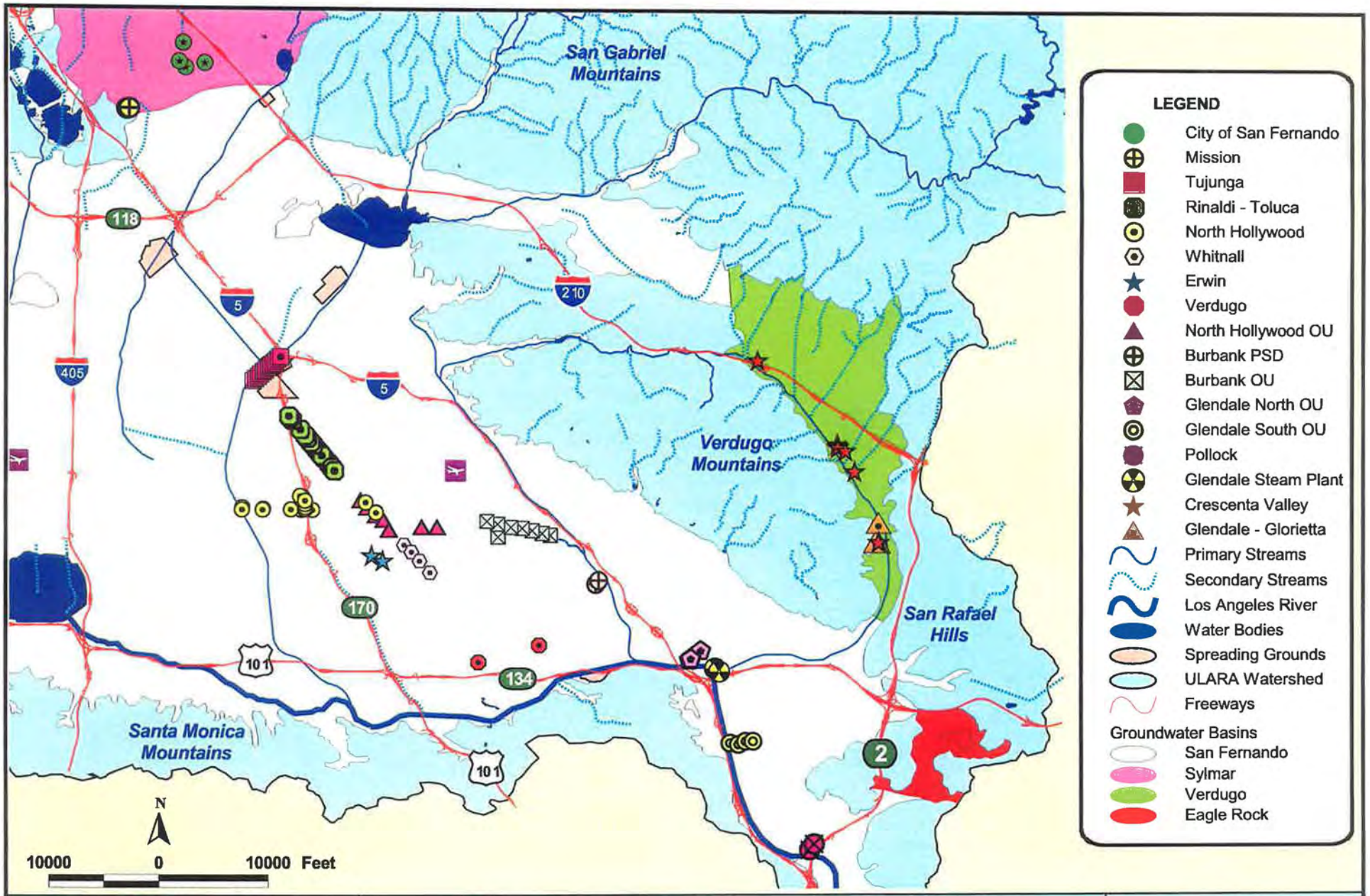
2002-03 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: Water Reclamation Plants and Rain-Runoff Gages	PLATE 5



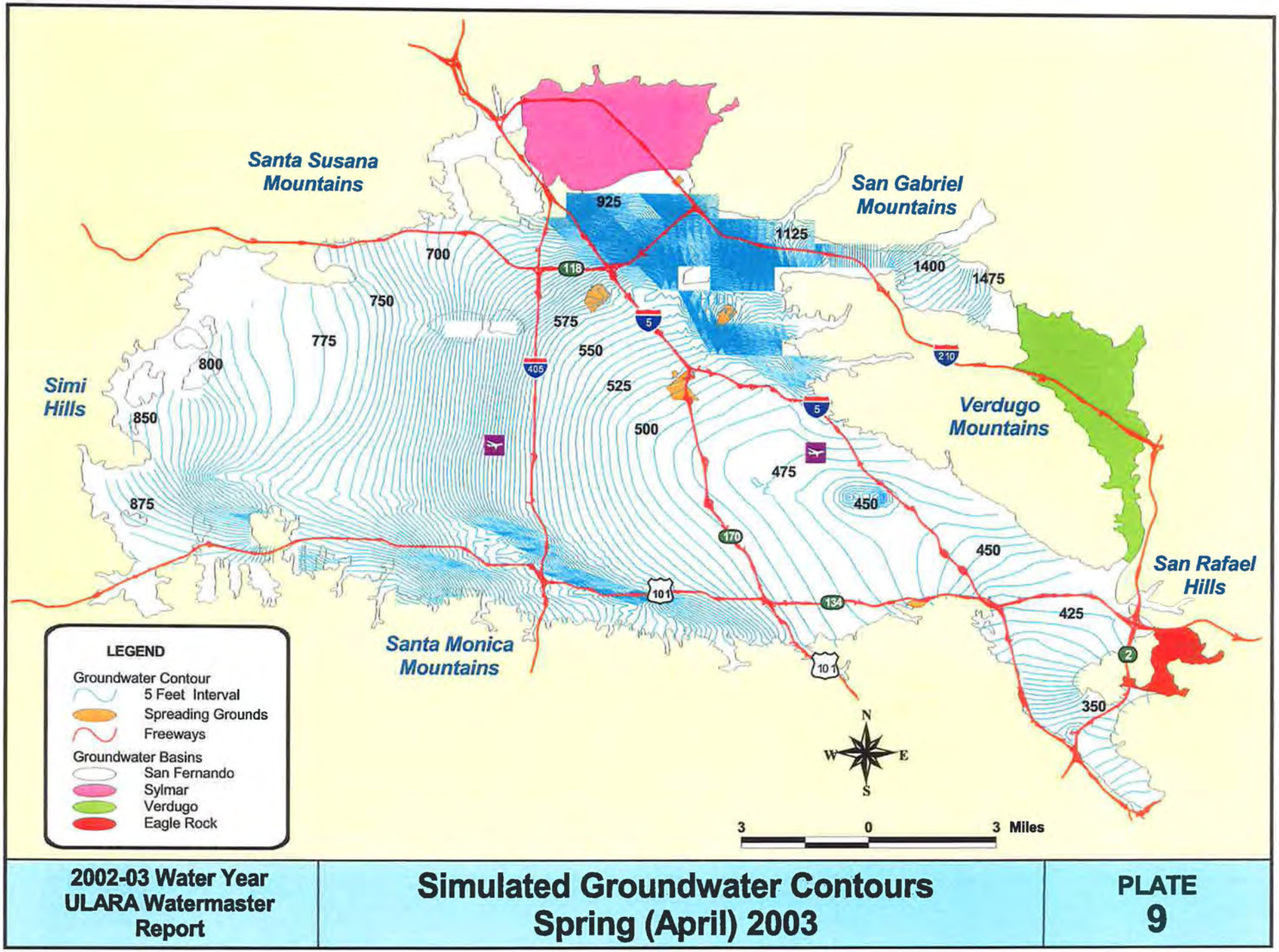
2002-03 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: Landfill Locations	PLATE 6



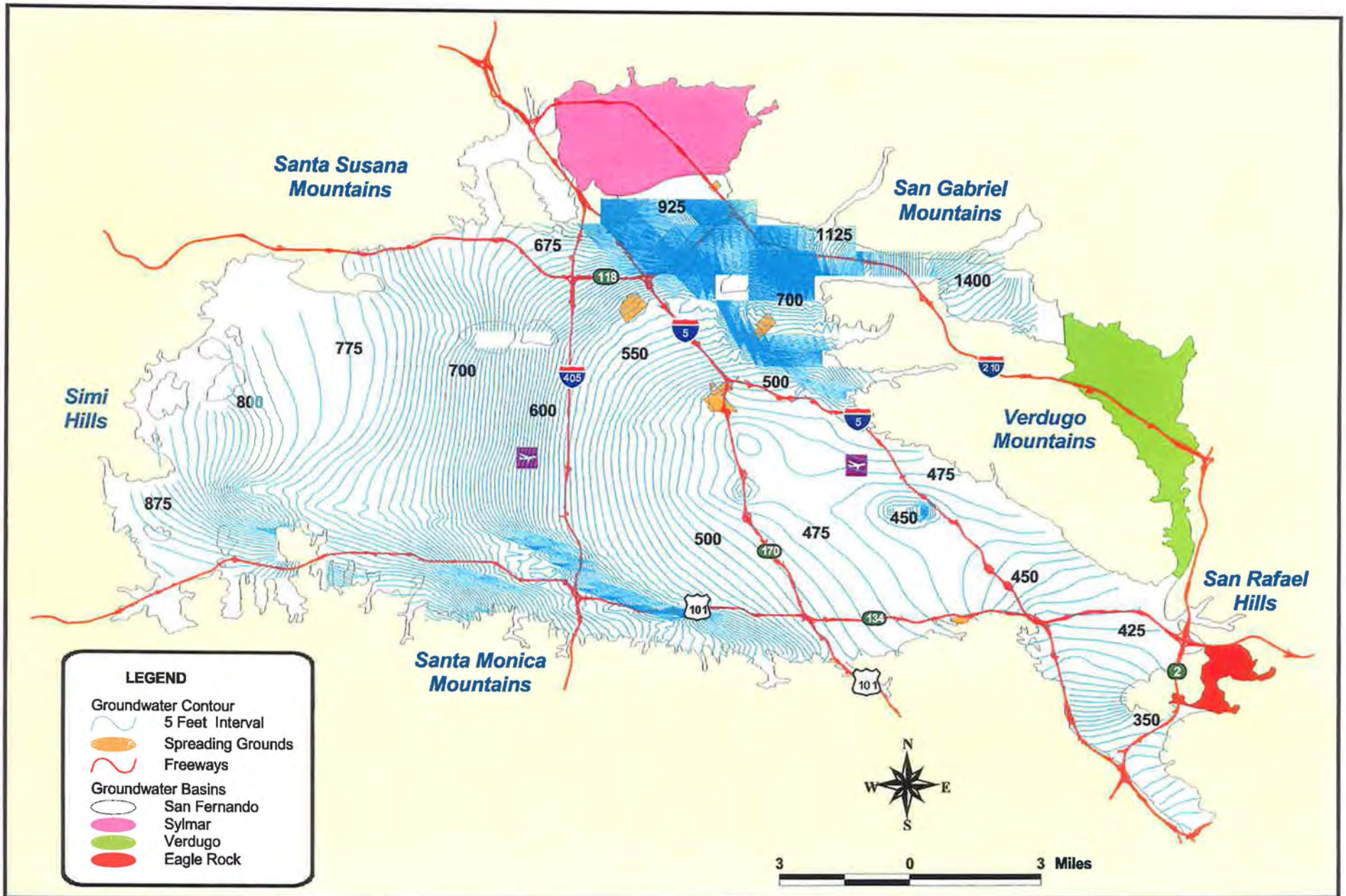
2002-03 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: Los Angeles Bureau of Sanitation Sewer Construction Program for Commercial Parcels	PLATE 7



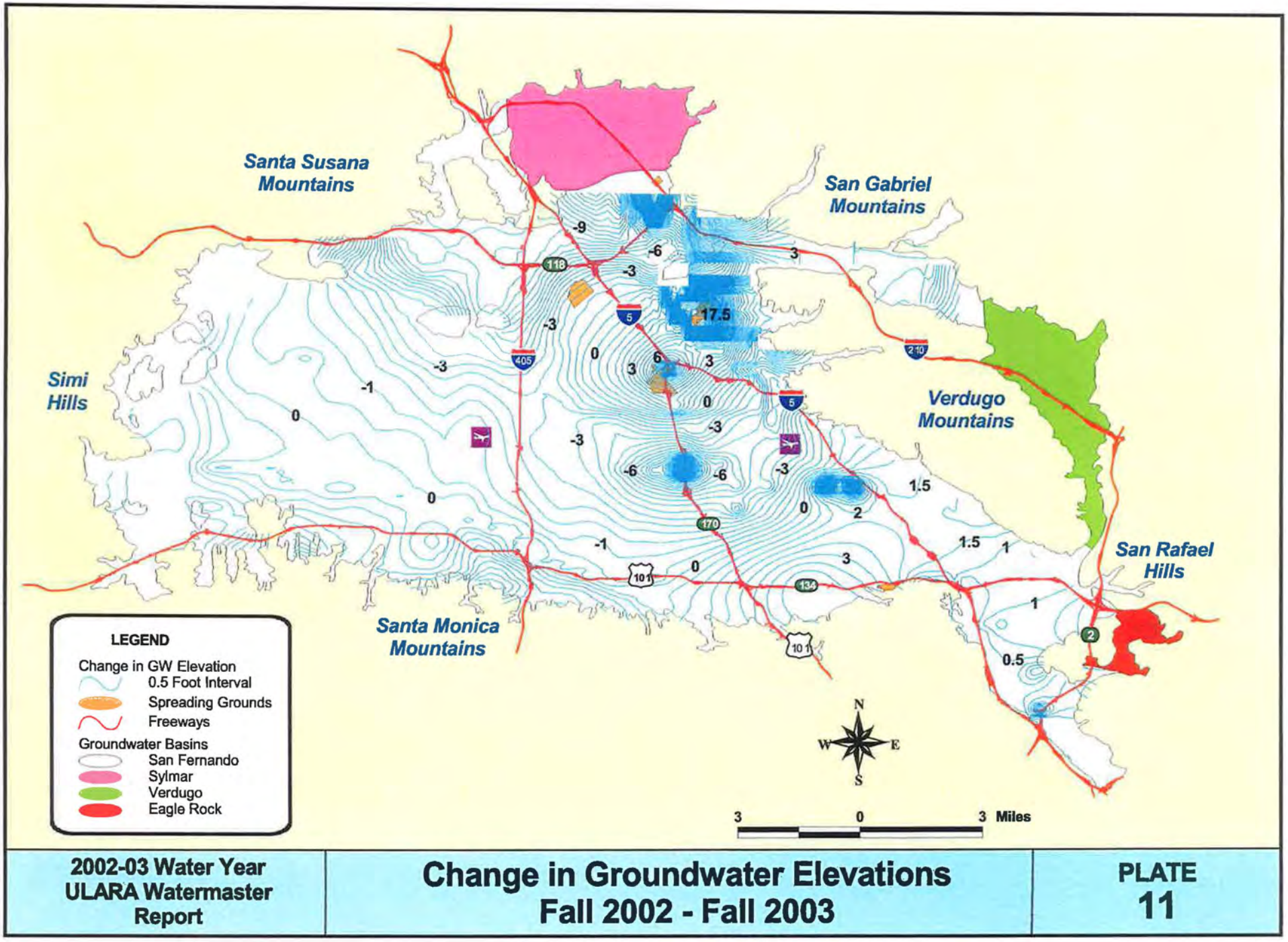
2002-03 Water Year ULARA Watermaster Report	**Upper Los Angeles River Area: Major Well Fields**	**PLATE 8**



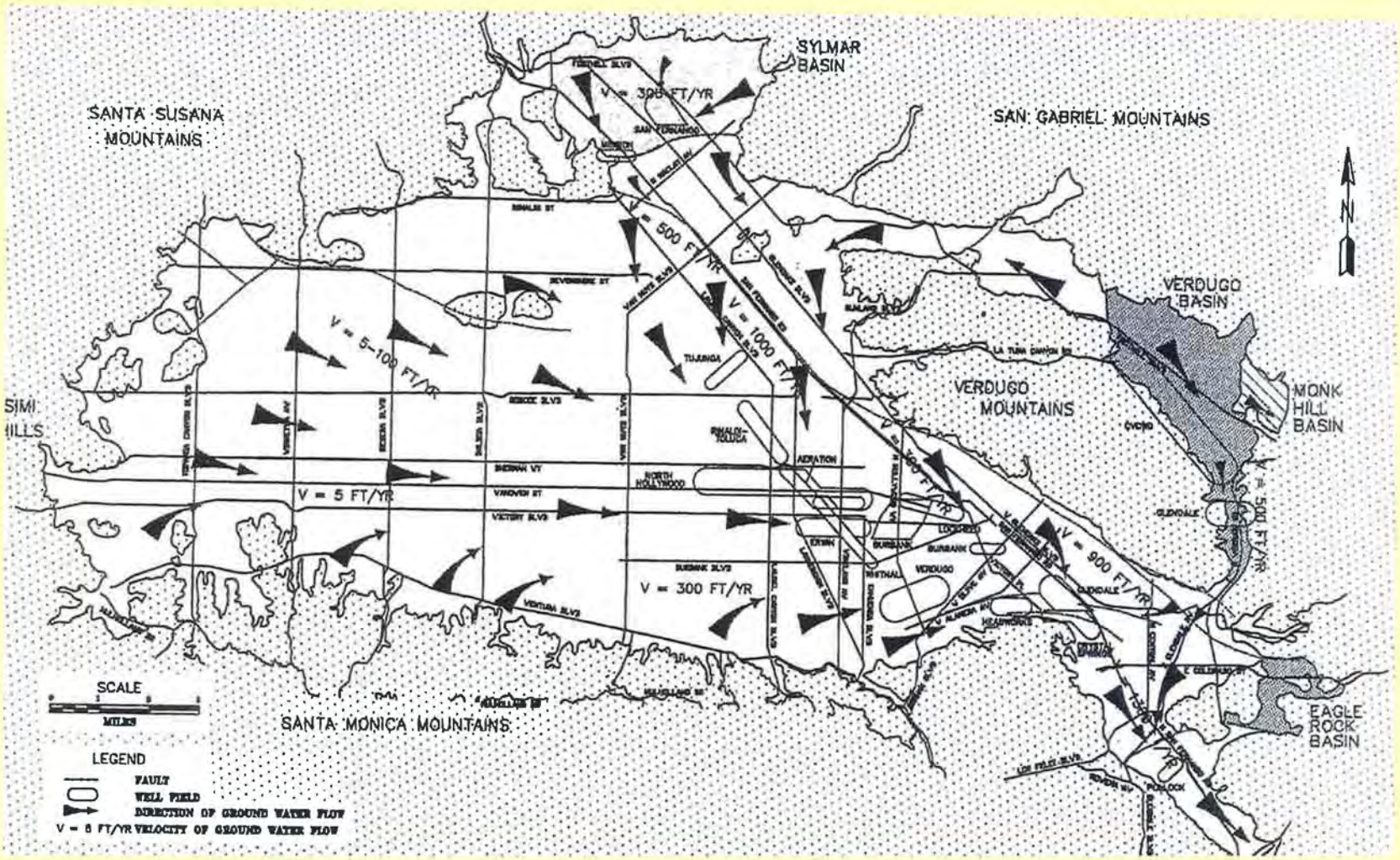
2002-03 Water Year ULARA Watermaster Report	Simulated Groundwater Contours Spring (April) 2003	PLATE 9



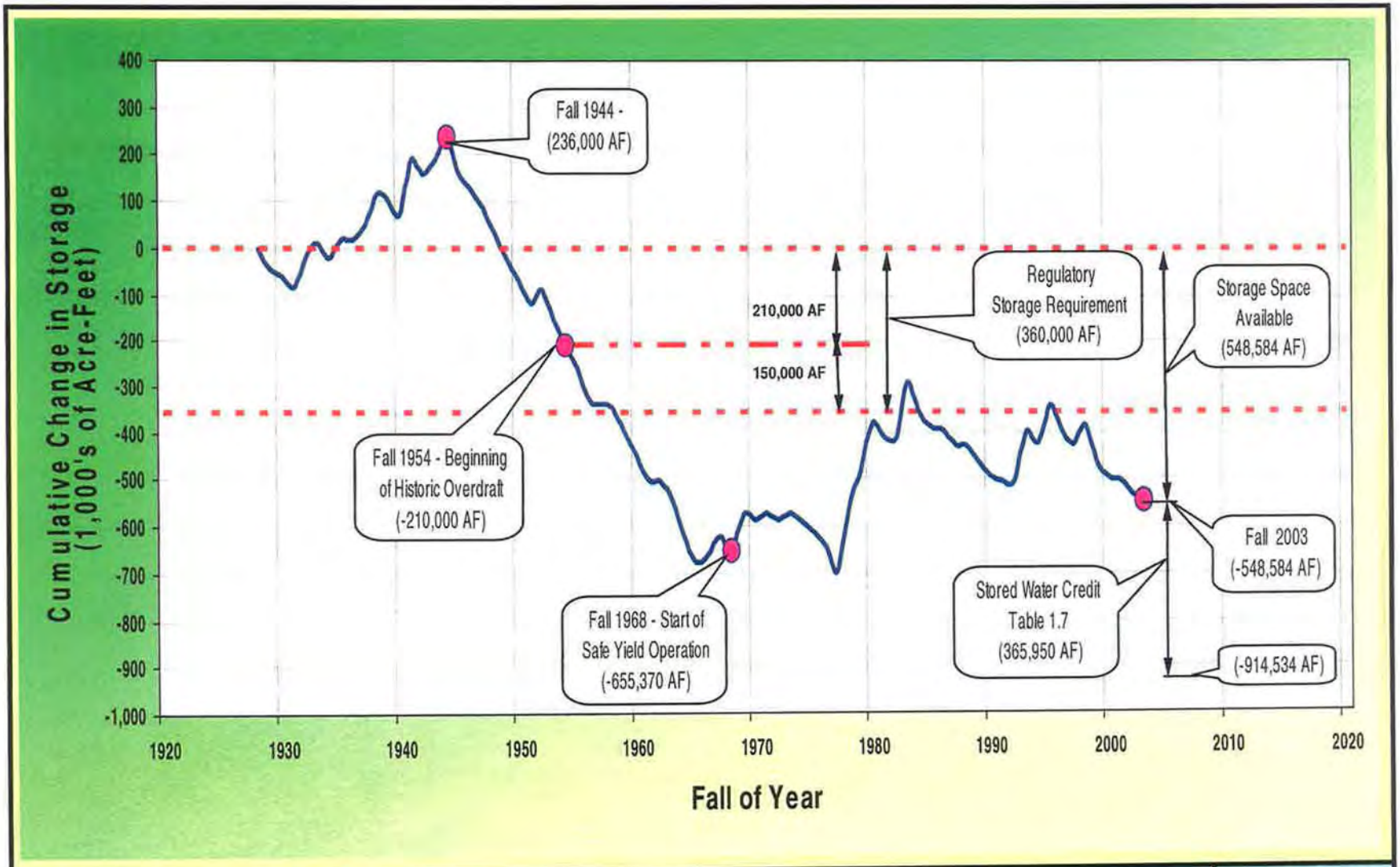
2002-03 Water Year ULARA Watermaster Report	Simulated Groundwater Contours Fall (September) 2003	PLATE 10



2002-03 Water Year ULARA Watermaster Report	Change in Groundwater Elevations Fall 2002 - Fall 2003	PLATE 11



2002-03 Water Year ULARA Watermaster Report	**Upper Los Angeles River Area: Estimated Directions and Velocities of Groundwater**	PLATE **12**



2002-03 Water Year ULARA Watermaster Report	**San Fernando Basin: Cumulative Change in Groundwater Storage**	PLATE 13

Calculated Change in Storage vs. Stored Water Credit in San Fernando Basin

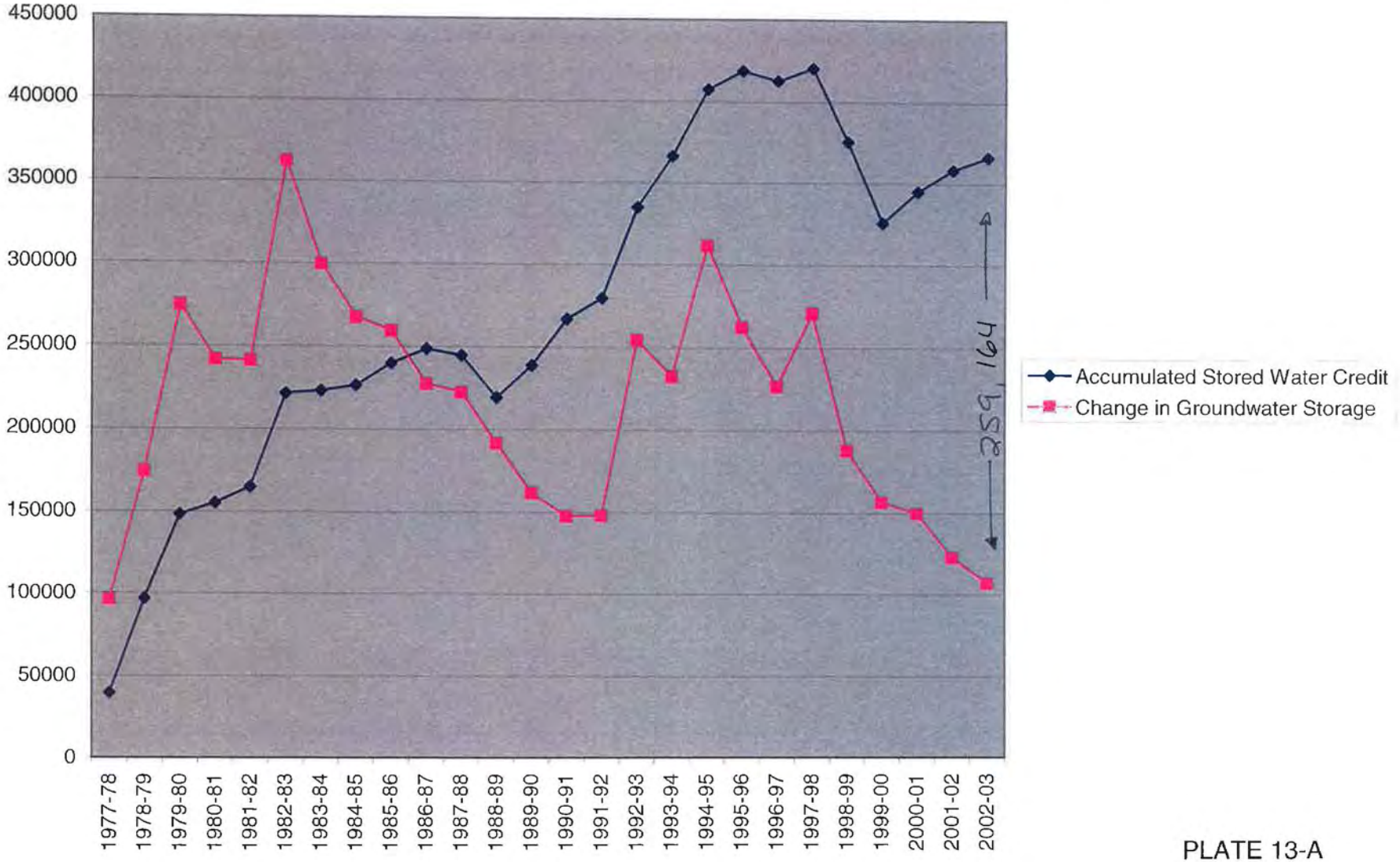


PLATE 13-A

PLATE 13 - ULARA WATERMASTER REPORT

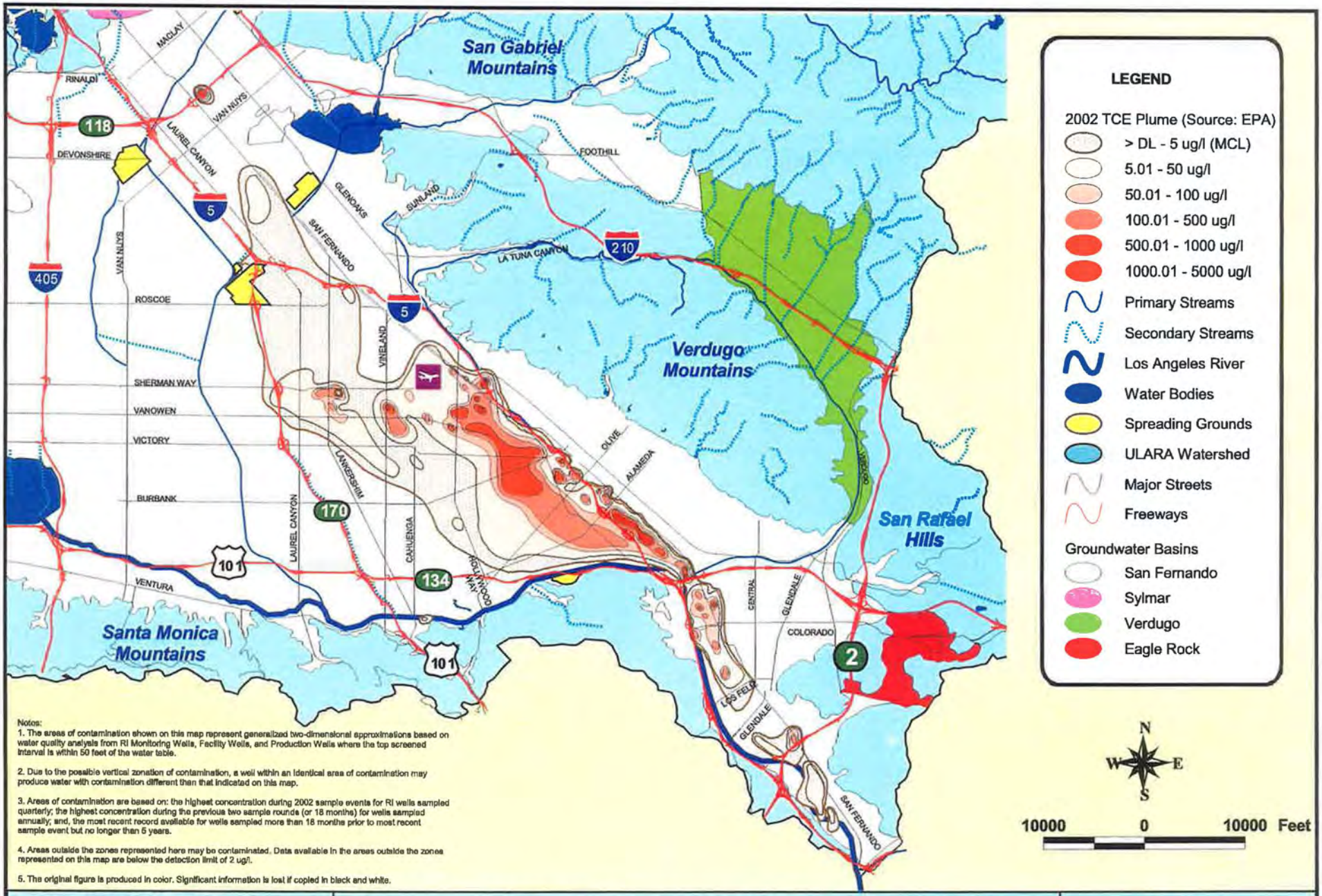
SAN FERNANDO BASIN
CUMULATIVE CHANGE IN GROUNDWATER STORAGE
(acre-feet)

Fall of Year	Change in Storage	Cumulative Chg. in Storage (1928)	Cumulative Chg. in Storage/1,000 AF	Cumulative Chg. in Storage (1944)	Cumulative Chg. in Storage/1,000 AF
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 13 - ULARA WATERMASTER REPORT

SAN FERNANDO BASIN
CUMULATIVE CHANGE IN GROUNDWATER STORAGE
(acre-feet)

Fall of Year	Change in Storage	Cumulative Chg. in Storage (1928)	Cumulative Chg. in Storage/1,000 AF	Cumulative Chg. in Storage (1944)	Cumulative Chg. in Storage/1,000 AF
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	79,132	-344,161	-344	-580,531	-581
1996	-49,223	-393,384	-393	-629,754	-630
1997	-35,737	-429,121	-429	-665,491	-665
1998	44113	-385,008	-385	-621,378	-621
1999	-82673	-467,681	-468	-704,051	-704
2000	-31,044	-498,725	-499	-735,095	-735
2001	-6,930	-505,655	-506	-742,025	-742
2002	-27,094	-532,749	-533	-769,119	-769
2003	-15,835	-548,584	-549	-784,954	-785



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 screened interval is within 50 feet of the water table.

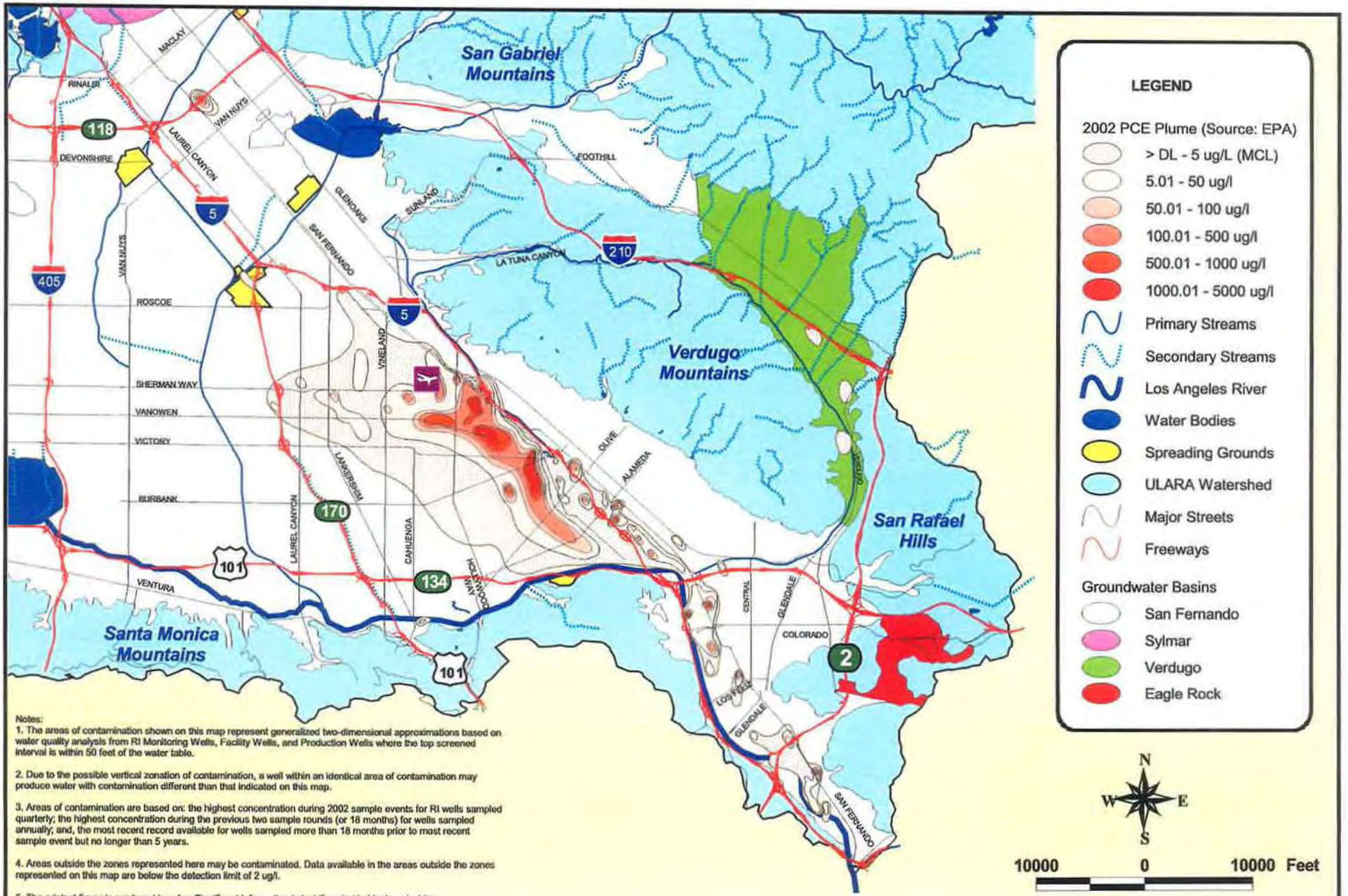
2. Due to the possible vertical zonation of contamination, a well within an identical area of contamination may produce water with contamination different than that indicated on this map.

3. Areas of contamination are based on: the highest concentration during 2002 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 but no longer than 5 years.

4. Areas outside the zones represented here may be contaminated. Data available in the areas outside the zones represented on this map are below the detection limit of 2 ug/l.

5. The original figure is produced in color. Significant information is lost if copied in black and white.

2002-03 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: TCE Contamination (ug/L) in Shallow Zone in 2002	PLATE 14



Notes:
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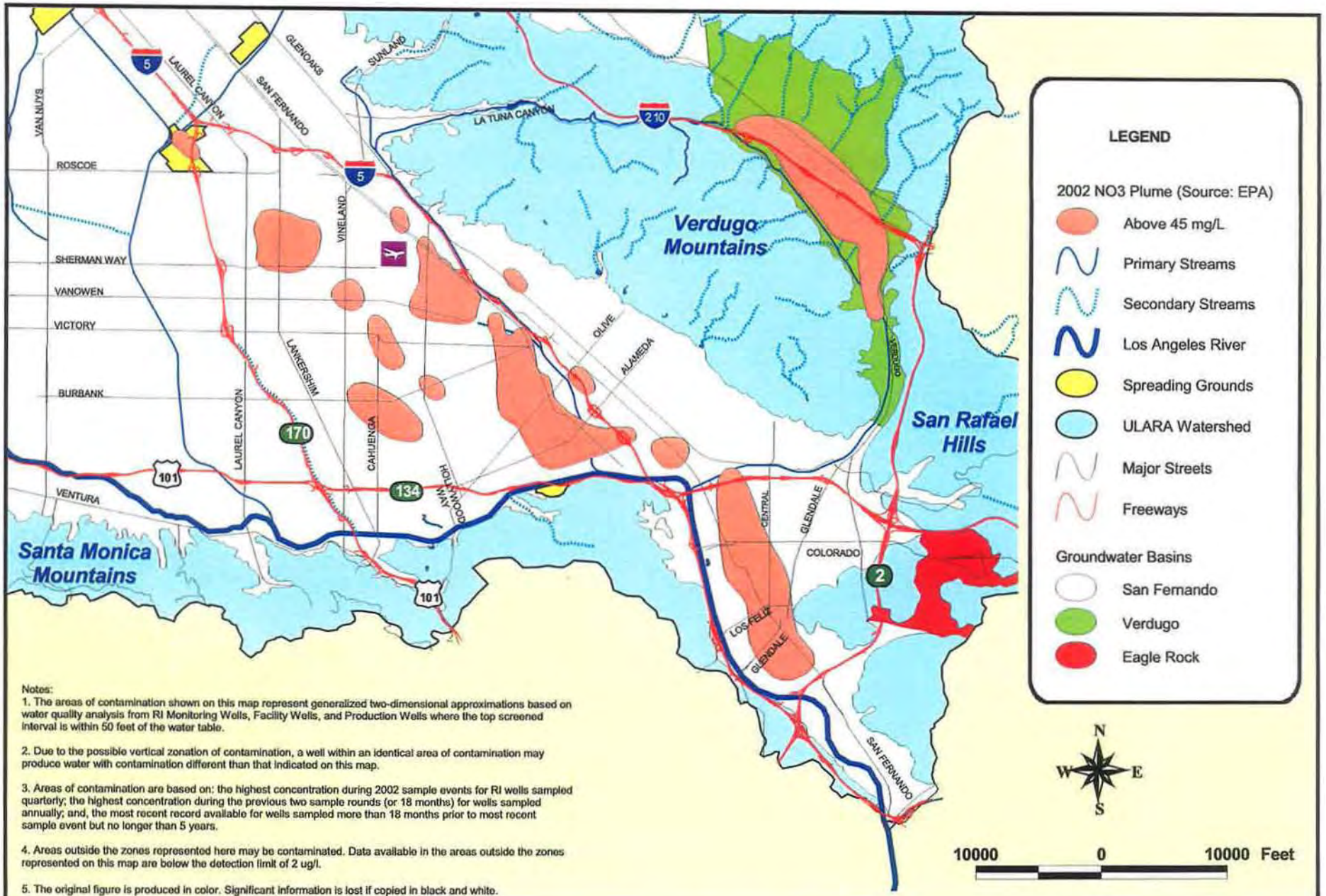
5. The original figure is produced in color. Significant information is lost if copied in black and white.

2002-03 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: PCE Contamination (ug/L) in Shallow Zone in 2002	PLATE 15



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 screened interval is within 50 feet of the water table.

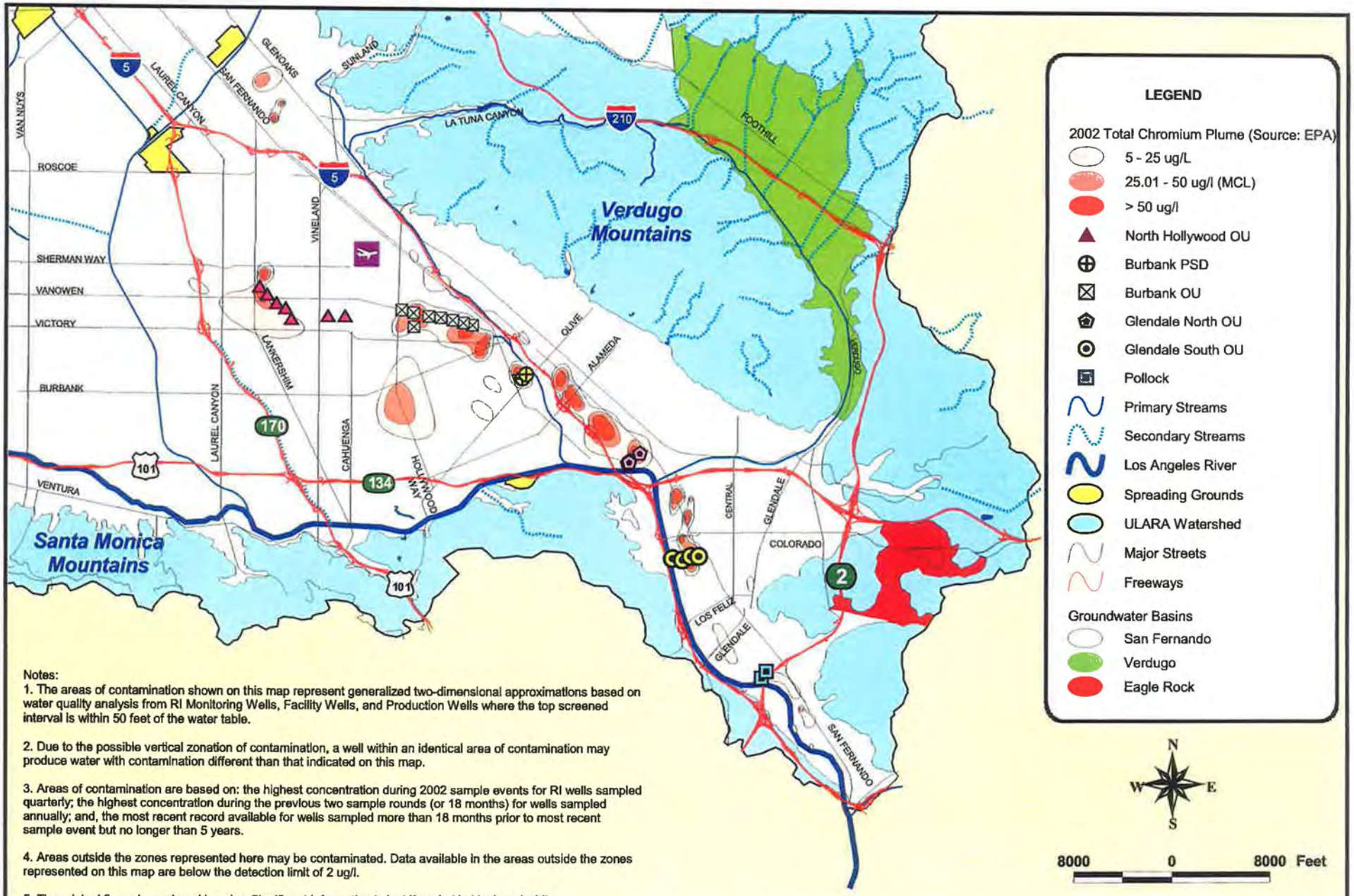
2. Due to the possible vertical zonation of contamination, a well within an identical area of contamination may produce water with contamination different than that indicated on this map.

3. Areas of contamination are based on: the highest concentration during 2002 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 but no longer than 5 years.

4. Areas outside the zones represented here may be contaminated. Data available in the areas outside the zones represented on this map are below the detection limit of 2 ug/l.

5. The original figure is produced in color. Significant information is lost if copied in black and white.

2002-03 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: NO3 Contamination (mg/L) in Shallow Zone in 2002	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 screened interval is within 50 feet of the water table.

2. Due to the possible vertical zonation of contamination, a well within an identical 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 2002 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 but no longer than 5 years.

4. Areas outside the zones represented here may be contaminated. Data available in the areas outside the zones represented on this map are below the detection limit of 2 ug/l.

5. The original figure is produced in color. Significant information is lost if copied in black and white.

2002-03 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: Total Dissolved Chromium Contamination (ug/L) in Shallow Zone in 2002	PLATE 17

APPENDIX A
GROUNDWATER EXTRACTION

2002-2003 Water Year
(acre-feet)

LACDPW Well No.	Owner Well No.	2002 Oct.	2002 Nov.	2002 Dec.	2003 Jan.	2003 Feb.	2003 Mar.	2003 Apr.	2003 May	2003 June	2003 July	2003 Aug.	2003 Sept.	TOTAL
San Fernando Basin														
A. W. Warner Properties														
Plaza Six		0.96	0.97	1.01	1.06	1.15	1.18	1.21	1.28	1.29	1.19	0.99	1.00	13.29
A. W. Warner Properties														
Plaza Three		0.78	0.81	0.86	0.90	0.99	1.01	1.05	1.07	1.05	0.97	0.80	0.82	11.11
Angelica Healthcare Services		(abandoned 12/97)												
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														
—	—	0.00	0.00	0.00	0.00	0.00	0.21	0.28	0.30	0.00	0.80	0.26	0.17	2.02
Boeing (Rockwell International No further pumping until 2000)														
---	E-1 to E-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
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	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
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	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
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:	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
Burbank Operable Unit														
3871L	VO-1	1.04	4.50	1.47	1.49	0.69	20.30	2.54	16.82	11.83	41.08	0.47	0.73	102.96
3861G	VO-2	60.75	48.85	91.35	52.70	25.56	113.46	84.52	100.90	16.56	78.70	82.05	136.17	891.57
3861K	VO-3	128.61	108.88	73.28	143.25	122.06	139.13	156.39	152.00	153.19	76.62	147.29	83.45	1,484.15
3861L	VO-4	130.28	94.39	110.84	93.78	87.87	79.41	120.43	128.98	120.04	77.66	80.93	120.86	1,245.47
3850X	VO-5	118.62	111.13	44.39	88.42	58.41	85.94	98.90	139.07	125.11	1.46	0.00	0.00	871.45
	VO-6	100.54	100.69	32.16	87.88	103.01	71.46	107.27	99.81	192.63	104.13	100.08	75.66	1,175.32
3850AB	VO-7	111.34	87.96	109.19	77.49	106.29	124.44	115.75	121.35	105.81	103.75	52.45	91.05	1,206.87
3851C	V0-8	189.33	172.09	194.17	165.32	174.73	195.66	190.94	193.71	179.44	176.52	187.21	172.95	2,192.07
	Total:	840.51	728.49	656.85	710.33	678.62	829.80	876.74	952.64	904.61	659.92	650.48	680.87	9,169.86
CalMat														
4916A	2	21.24	19.78	20.83	21.30	16.34	10.69	17.46	26.49	36.19	38.88	48.74	41.90	319.84
4916	3	56.40	45.90	47.63	53.74	44.99	30.06	41.01	52.57	33.76	19.73	0.00	77.90	503.69
4916(x)	1	104.22	69.82	76.22	77.12	64.40	43.83	61.26	83.74	91.07	82.15	110.34	97.96	962.13
Sheldon Pond		116.18	90.30	106.50	111.05	95.80	63.27	84.30	124.15	129.04	126.68	124.42	126.15	1,297.84
	Total:	298.04	225.80	251.18	263.21	221.53	147.85	204.03	286.95	290.06	267.44	283.50	343.91	3,083.50
First Financial Plaza Site														
N/A	F.F.P.S.	1.94	1.46	1.46	1.57	2.19	2.99	3.09	3.27	2.61	2.82	2.85	1.93	28.18

2002-2003 Water Year
(acre-feet)

LACDPW Well No.	Owner Well No.	2002 Oct.	Nov.	Dec.	2003 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	TOTAL
							San Fernando Basin (cont'd)							
Forest Lawn Memorial Park														
3947A	2	10.10	10.57	2.05	7.73	2.00	2.07	8.57	20.75	14.06	23.27	32.26	19.70	153.13
3947B	3	9.88	10.46	2.07	7.78	1.72	2.09	8.54	20.24	14.03	23.20	31.94	19.41	151.36
3947C	4	8.61	9.07	1.80	6.91	1.52	1.84	7.61	18.10	7.34	17.53	28.51	17.41	126.25
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:	28.59	30.10	5.92	22.42	5.24	6.00	24.72	59.09	35.43	64.00	92.71	56.52	430.74
Glendale, City of														
3924N	STPT 1	13.84	13.07	26.79	11.94	12.77	33.05	116.68	254.51	311.07	65.19	122.94	10.65	992.50
3924R	STPT 2	0.00	0.00	0.00	0.00	0.00	0.00	0.84	2.28	1.72	0.00	0.00	1.75	6.59
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:	13.84	13.07	26.79	11.94	12.77	33.05	117.52	256.79	312.79	65.19	122.94	12.40	999.09
Glendale North/South														
	GN-1	85.26	75.73	86.26	94.84	81.62	80.24	91.73	95.16	92.22	95.20	52.22	89.07	1,019.55
	GN-2	74.50	66.74	75.58	62.84	57.23	95.46	82.75	82.40	83.11	86.98	38.20	74.83	880.62
	GN-3	60.36	62.00	75.76	69.92	64.11	57.63	62.61	65.60	60.12	60.77	28.40	68.55	735.83
	GN-4	208.26	185.48	207.12	203.66	182.02	202.61	192.61	201.18	195.57	200.39	131.98	180.44	2,291.32
	GS-1	53.86	49.54	57.96	53.77	43.76	57.42	54.69	57.03	49.76	49.90	15.12	41.38	584.19
	GS-2	75.36	55.89	75.78	79.30	72.69	73.85	78.30	81.80	79.33	82.08	47.88	77.87	880.13
	GS-3	33.78	30.48	38.69	36.87	30.11	37.65	34.79	36.97	32.24	32.12	16.03	31.00	390.73
	GS-4	69.71	58.85	68.43	73.16	65.92	70.09	52.79	57.68	56.95	58.55	43.35	49.95	725.43
	Total:	661.09	584.71	685.58	674.36	597.46	674.95	650.27	677.82	649.30	665.99	373.18	613.09	7,507.80
Greeff Fabrics														
---	---	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
Hathaway (successor to deMille)														
---	1	2.28	1.65	1.46	1.70	0.97	0.96	1.64	2.69	2.38	2.56	1.85	1.83	21.97
	2	1.29	0.67	0.55	0.52	0.55	0.68	1.33	2.16	3.10	2.96	2.11	2.00	17.92
	3	1.02	0.86	0.93	0.86	0.96	1.14	0.54	0.88	0.00	0.82	0.75	0.85	9.61
	Total:	4.59	3.18	2.94	3.08	2.48	2.78	3.51	5.73	5.48	6.34	4.71	4.68	49.50
Jose Diaz														
---		0.03	0.02	0.00	0.00	0.00	0.00	0.04	0.02	0.02	0.02	0.03	0.03	0.21
Mena John & Barbara														
4973J		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
Menasco/Coltec Site														
---		0.06	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.08
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	0.48	0.40	0.33	0.31	0.37	0.42	0.46	0.32	0.30	0.33	0.27	0.29	4.28
---	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
---	1070	2.95	2.38	3.56	2.47	2.39	2.60	2.85	2.42	2.49	2.94	2.66	3.47	33.18
---	1133	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:	3.43	2.78	3.89	2.78	2.76	3.02	3.31	2.74	2.79	3.27	2.93	3.76	37.46

2002-2003 Water Year
(acre-feet)

LACDPW Well No.	Owner Well No.	2002 Oct.	Nov.	Dec.	2003 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	TOTAL
San Fernando Basin (cont'd)														
Metropolitan Water District														
	Jensen	13.30	12.90	13.40	13.80	12.40	14.10	13.80	13.20	13.80	14.10	14.20	13.60	162.60
Middle Ranch (Successor to deMille)														
4931 x	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
4940-1	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
new	5	0.03	0.01	0.00	0.01	0.01	0.02	0.01	0.01	0.00	0.00	0.00	0.02	0.12
4940-3	6	0.01	-0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.08	0.73	0.86
4940-2	7	0.62	0.47	0.18	0.40	0.26	0.43	0.59	0.34	0.66	0.66	0.98	0.00	5.59
new	8	0.34	0.45	0.20	0.24	0.13	0.08	0.21	0.27	0.31	0.31	0.57	0.10	3.21
	Spring 1&2	0.05	0.04	0.03	0.08	0.00	0.01	0.02	0.03	0.06	0.06	0.06	0.05	0.49
	Total	1.05	0.93	0.41	0.73	0.40	0.54	0.83	0.65	1.07	1.07	1.69	0.90	10.27
Micro Matics														
JEW	1	0.11	0.02	0.00	0.00	0.19	0.10	0.21	0.37	0.21	0.10	0.29	0.39	1.99
JEW	2	0.04	0.00	0.00	0.00	0.03	0.02	0.02	0.02	0.01	0.00	0.00	0.00	0.14
RMW	10	0.09	0.01	0.00	0.00	0.10	0.08	0.07	0.17	0.11	0.06	0.15	0.11	0.95
	Total	0.24	0.03	0.00	0.00	0.32	0.20	0.30	0.56	0.33	0.16	0.44	0.50	3.08
Mobil Oil Corporation														
---	---	0.09	0.09	0.13	0.09	0.03	0.04	0.03	0.00	0.00	0.00	0.00	0.00	0.50
Raytheon (Formerly Hughes Missile Systems)														
----	-----	0.22	0.25	0.33	0.40	0.33	0.31	0.11	0.30	0.44	0.06	0.22	0.17	3.14
Sears Roebuck & Co. (Well disconnected 10/2000)														
3945	3945	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
Sportsmen's Lodge														
3785A	1	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.09
3M-Pharmaceuticals														
---	---	5.36	4.29	5.80	5.30	4.72	5.10	4.15	2.87	5.47	4.93	6.00	5.18	59.17
Toluca Lake Property Owners Association														
3845F	3845F	3.90	3.63	2.65	0.93	0.48	0.55	1.99	2.76	5.18	5.90	3.69	5.01	36.67
Trillium Corporation														
Well #1	---	0.00	0.07	3.19	2.72	3.09	1.92	1.08	1.46	2.10	2.66	2.77	2.19	23.25
Well #2	---	0.54	0.94	1.17	0.10	0.13	0.04	0.18	0.07	0.90	1.06	0.03	0.00	5.16
	Total:	0.54	1.01	4.36	2.82	3.22	1.96	1.26	1.53	3.00	3.72	2.80	2.19	28.41
Valhalla Memorial Park and Mortuary														
3840K	4	27.48	22.62	9.59	0.00	24.51	13.94	33.35	33.35	49.25	75.63	45.71	47.10	382.53
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

2002-2003 Water Year
(acre-feet)

LACDPW Well No.	Owner Well No.	2002 Oct.	Nov.	Dec.	2003 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	TOTAL
San Fernando Basin (cont'd)														
Walt Disney Pictures and Television		(wells inactive/ not abandoned)												
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
Walt Disney Riverside Building														
—	—	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
Waterworks District No. 21														
—	—	3.94	3.50	2.76	2.46	2.59	2.45	3.56	2.32	2.91	2.52	2.32	2.62	33.95
Wildlife Waystation														
Rehab Canyon		0.00	0.00	0.00	0.00	0.00	0.26	0.34	0.35	0.29	0.24	0.18	0.18	1.84
Foreman Hill Spring		0.00	0.00	0.00	0.00	0.00	0.08	0.01	0.01	0.01	0.01	0.00	0.00	0.12
	Total:	0.00	0.00	0.00	0.00	0.00	0.34	0.35	0.36	0.30	0.25	0.18	0.18	1.96
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	0.04	0.02	0.00	15.86	15.40	10.49	18.29	16.73	13.03	18.29	21.02	13.61	142.78
3810V	A-3	39.60	25.59	32.20	35.97	31.54	21.07	33.81	33.95	18.93	36.52	42.74	28.03	379.95
3810W	A-4	1.03	1.99	0.00	10.56	30.37	22.65	17.47	15.49	12.83	33.70	32.98	14.37	193.44
3820H	A-5	7.52	4.79	4.98	3.69	3.12	3.65	4.59	5.16	3.62	5.83	5.83	3.76	56.54
3821J	A-6	31.38	26.46	31.40	39.37	23.07	11.36	30.94	36.17	28.32	39.53	37.60	28.21	363.81
3830P	A-7	0.00	10.03	14.94	39.85	29.68	28.39	19.49	38.47	28.67	37.44	38.01	25.60	310.57
3831K	A-8	46.34	28.87	33.49	40.79	25.84	32.55	32.98	12.21	24.01	38.93	42.60	31.93	390.54
	A Total:	125.91	97.75	117.01	186.09	159.02	130.16	157.57	158.18	129.41	210.24	220.78	145.51	1,837.63
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	0.00	0.00	0.00	0.00
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	128.65	181.86	310.51
3811F	E-10	86.24	66.29	52.15	95.59	36.96	0.00	0.00	0.00	0.00	0.02	86.54	73.94	497.73
	E Total:	86.24	66.29	52.15	95.59	36.96	0.00	0.00	0.00	0.00	0.02	215.19	255.80	808.24
Headworks (H)		Inactive Well Field												
3893Q	H-27A	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
3893R	H-28A	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
3893S	H-29A	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
3893T	H-30A	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
	H 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

2002-2003 Water Year
(acre-feet)

LACDPW Well No.	Owner Well No.	2002 Oct.	Nov.	Dec.	2003 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	TOTAL
San Fernando Basin (cont'd)														
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	221.14	47.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	80.71	118.02	466.97
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	121.25	73.85	88.52	126.92	63.95	17.74	0.00	0.11	72.24	113.75	113.95	89.00	881.28
3810	NH-11	0.29	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.67
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
3790B	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	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
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	0.00	0.00
3820B	NH-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
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	236.96	330.16	378.00	206.36	1,151.66
3790D	NH-23	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
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	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.00	0.25	0.00	0.79
3790E	NH-26	90.79	210.67	232.48	342.14	177.06	38.88	0.00	0.00	202.52	277.38	309.52	255.12	2,136.56
3820F	NH-27	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29
3810K	NH-28	0.45	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.00	0.92
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	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.09	0.00	0.40
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	250.13	149.97	180.11	254.26	131.49	36.57	0.00	0.16	141.96	124.24	220.08	171.67	1,660.64
3780C	NH-33	0.00	0.00	0.18	0.00	0.00	0.00	0.48	0.45	203.87	180.23	326.56	250.64	962.41
3790G	NH-34	0.75	0.18	0.00	0.16	0.18	0.78	0.00	0.45	0.32	0.45	239.66	379.32	622.25
3830N	NH-35	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
3790H	NH-36	251.33	163.65	173.64	245.68	130.14	35.35	0.00	0.25	11.77	0.09	84.55	64.07	1,160.52
3790J	NH-37	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
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	0.39	0.20	0.00	0.45	0.39	0.18	0.00	0.00	0.00	0.00	1.30	0.00	2.91
3810Q	NH-41	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
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	0.00	0.00
3790K	NH-43A	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.41	0.00	0.00	2.15	270.62	273.66
3790L	NH-44	471.25	304.13	322.79	476.03	251.40	68.91	0.00	0.00	0.50	132.39	375.20	320.25	2,722.85
3790M	NH-45	562.87	362.64	408.03	597.42	317.19	87.58	0.00	0.00	349.72	495.47	555.30	473.97	4,210.19
	NH Total:	1,971.13	1,312.59	1,405.75	2,043.59	1,071.80	285.99	0.96	2.19	1,219.86	1,654.27	2,687.93	2,599.04	16,255.10

2002-2003 Water Year
(acre-feet)

LACDPW Well No.	Owner Well No.	2002 Oct.	Nov.	Dec.	2003 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	TOTAL
San Fernando Basin (cont'd)														
Pollock (P)														
3959E	P-4	0.00	0.16	0.00	96.05	261.40	249.65	261.01	212.37	139.37	55.76	86.06	0.76	1,362.59
3958H	P-6	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	84.39	55.26	139.96
3958J	P-7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	217.86	0.00	0.00	217.86
	P Total:	0.00	0.29	0.00	96.05	261.40	249.65	261.01	212.37	139.55	273.62	170.45	56.02	1,720.41
Rinaldi-Toluca (RT)														
4909E	RT-1	0.00	0.25	0.00	0.00	0.00	0.00	0.84	0.00	0.00	0.00	0.00	0.41	1.50
4898A	RT-2	443.70	406.01	402.31	518.98	226.05	0.00	0.18	192.40	395.84	406.40	510.88	383.24	3,885.99
4898B	RT-3	424.10	403.81	382.30	515.95	226.33	0.00	0.22	196.67	38.47	325.16	584.91	452.09	3,550.01
4898C	RT-4	434.20	406.12	373.92	497.01	218.38	0.00	0.39	193.77	397.65	407.78	514.23	392.49	3,835.94
4898D	RT-5	419.26	394.28	364.99	485.95	212.30	0.00	0.00	192.99	392.19	405.16	506.74	382.28	3,756.14
4898E	RT-6	456.54	424.26	388.72	517.69	225.52	0.00	0.50	0.04	81.31	283.99	450.36	389.90	3,218.83
4898F	RT-7	429.13	392.69	368.04	505.21	223.25	0.00	0.55	186.34	379.68	403.74	517.26	373.48	3,779.37
4898G	RT-8	423.59	395.38	355.92	450.94	178.19	0.00	1.37	0.02	77.75	369.03	478.03	306.82	3,037.04
4898H	RT-9	400.13	386.63	354.82	476.26	231.26	0.00	0.00	0.02	81.93	323.62	1.92	0.00	2,256.59
4909G	RT-10	271.85	0.43	0.68	0.71	0.00	0.00	0.48	0.34	99.90	464.53	593.59	114.49	1,547.00
4909K	RT-11	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.00	0.00	0.00	0.00	0.62	1.03
4909H	RT-12	254.24	0.39	0.32	0.36	0.00	0.00	0.61	0.29	0.27	0.00	0.59	0.34	257.41
4909J	RT-13	0.43	0.41	0.34	0.34	0.00	0.00	0.73	0.27	0.27	0.00	0.57	0.32	3.68
4909L	RT-14	0.34	0.45	0.18	0.29	0.00	0.00	0.00	0.22	0.32	0.00	0.82	0.62	3.24
4909M	RT-15	0.34	0.55	0.18	0.25	0.00	0.00	0.00	0.41	0.27	0.00	0.96	0.55	3.51
	RT Total:	3,957.85	3,211.66	2,992.72	3,969.94	1,741.28	0.00	6.28	963.78	1,945.85	3,389.41	4,160.86	2,797.65	29,137.28
Tujunga (T)														
4887C	T-1	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	220.20	0.00	0.00	0.00	220.38
4887D	T-2	518.34	426.44	0.00	0.64	0.27	0.00	0.64	0.00	320.66	554.70	507.09	475.37	2,804.15
4887E	T-3	606.72	506.84	499.10	348.80	224.05	0.00	1.19	0.43	364.62	667.72	608.86	509.18	4,337.51
4887F	T-4	556.49	457.82	439.14	169.94	0.00	0.00	0.00	0.00	359.98	580.35	531.97	492.29	3,587.98
4887G	T-5	0.36	0.00	298.27	317.35	16.64	0.00	1.17	0.00	369.42	583.03	165.17	392.06	2,143.47
4887H	T-6	25.29	0.00	0.75	144.55	205.37	0.00	0.98	0.00	0.00	0.68	385.99	2.64	766.25
4887J	T-7	177.04	0.00	0.89	0.32	1.35	0.00	2.18	0.39	0.20	0.59	0.32	249.56	432.84
4887K	T-8	0.29	0.00	0.94	0.29	1.17	0.00	2.29	0.43	0.34	0.25	0.25	295.32	301.57
4886B	T-9	59.59	0.25	0.68	0.29	0.87	0.00	4.10	1.33	0.39	0.27	0.27	0.32	68.36
4886C	T-10	579.86	509.04	456.12	627.15	202.66	0.00	2.31	0.64	0.73	83.95	0.27	0.37	2,463.10
4886D	T-11	0.00	0.00	0.00	0.00	111.75	0.00	0.68	0.68	0.27	0.27	0.68	0.02	114.35
4886E	T-12	514.30	433.19	446.80	568.34	48.94	0.00	1.44	0.00	87.94	548.73	526.92	142.88	3,319.48
	T Total:	3,038.28	2,333.58	2,142.69	2,177.67	813.07	0.00	17.16	3.90	1,724.75	3,020.54	2,727.79	2,560.01	20,559.44

2002-2003 Water Year
(acre-feet)

LACDPW Well No.	Owner Well No.	2002 Oct.	2002 Nov.	2002 Dec.	2003 Jan.	2003 Feb.	2003 Mar.	2003 Apr.	2003 May	2003 June	2003 July	2003 Aug.	2003 Sept.	TOTAL
San Fernando Basin (cont'd)														
Verdugo (V)														
3863H	V-1	0.00	0.00	0.00	0.00	0.00	0.00	0.94	0.00	0.00	0.00	0.00	0.34	1.28
3863P	V-2	0.00	0.00	0.00	0.00	1.23	0.00	0.75	0.00	0.00	0.00	0.00	0.21	2.19
3863J	V-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
3863L	V-11	232.82	214.48	169.81	235.19	116.11	0.00	0.20	0.00	0.00	0.00	234.89	230.92	1,434.42
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	342.44	299.40	116.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	77.27	835.31
	V Total:	575.26	513.88	286.01	235.19	117.34	0.00	1.89	0.00	0.00	0.00	234.89	308.74	2,273.20
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	1.42	0.13	0.00	0.00	0.29	0.00	0.00	0.00	0.00	1.84
3821E	W-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
3831J	W-6A	261.38	0.00	0.00	0.48	0.09	0.00	0.00	0.16	0.11	0.16	75.36	172.82	510.56
3832K	W-7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	165.97	106.27	272.24
3832L	W-8	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
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:	261.38	0.00	0.00	1.90	0.22	0.00	0.00	0.45	0.11	0.16	241.33	279.09	784.64
Los Angeles, City of Total:		10,016.05	7,536.04	6,996.33	8,806.02	4,201.09	665.80	444.87	1,340.87	5,159.53	8,548.26	10,659.22	9,001.86	73,375.94
San Fernando Basin Total:		11,929.98	9,176.67	8,672.24	10,524.21	5,775.29	2,408.12	2,390.34	3,646.45	7,446.68	10,394.53	12,271.83	10,798.47	95,431.04

Sylmar Basin														
Los Angeles, City of														
Plant	Mission													0.00
Well	5	0.13	0.09	2.36	0.09	0.00	0.16	0.00	0.06	0.22	0.06	0.09	0.00	3.26
Well	6	0.00	0.00	57.41	130.41	146.99	236.45	154.45	171.55	133.37	194.46	202.13	162.79	1,590.01
Well	7	0.00	0.02	104.84	179.79	165.19	272.75	179.40	196.55	171.02	239.69	247.33	199.01	1,955.59
		0.13	0.11	164.61	310.29	312.18	509.36	333.85	368.16	304.61	434.21	449.55	361.80	3,548.86
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

2002-2003 Water Year
(acre-feet)

LACDPW Well No.	Owner Well No.	2002 Oct.	Nov.	Dec.	2003 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	TOTAL
					Sylmar Basin (cont'd)									
San Fernando, City of														
5969D	2A	200.32	98.40	0.00	129.31	128.88	134.87	141.94	150.39	166.53	206.02	210.58	188.36	1,755.60
5959	3	57.41	22.64	0.11	78.83	61.97	79.50	75.06	90.52	76.12	95.10	105.33	102.20	844.79
5969	4	0.00	0.00	0.00	0.00	0.00	0.00	2.23	6.13	17.78	22.52	24.64	17.47	90.77
5968	7A	69.14	38.21	0.03	64.23	40.89	56.95	51.15	60.20	64.34	76.51	75.26	69.41	666.32
	Total:	326.87	159.25	0.14	272.37	231.74	271.32	270.38	307.24	324.77	400.15	415.81	377.44	3,357.48
	Sylmar Basin Total:	327.00	159.36	164.75	582.66	543.92	780.68	604.23	675.40	629.38	834.36	865.36	739.24	6,906.34

					Verdugo Basin									
Crescenta Valley County Water District														
5058B	1	29.40	26.84	26.69	27.56	0.00	0.00	8.69	34.19	35.64	34.37	31.13	28.28	282.79
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	63.08	56.70	43.85	47.50	45.29	51.78	67.27	30.79	66.95	64.25	63.82	57.40	658.68
5058	6	0.82	1.87	0.20	1.49	0.70	0.87	0.20	0.81	1.16	0.89	1.02	0.01	10.04
5047B	7	25.60	24.75	23.56	26.40	18.48	10.82	15.26	21.48	23.11	23.71	24.25	21.51	258.93
5069J	8	35.79	32.49	36.63	35.63	30.29	34.56	33.20	34.58	33.14	34.22	33.98	32.84	407.35
5047D	9	11.72	11.82	9.16	9.75	4.83	5.32	6.59	9.89	10.24	8.05	15.85	11.37	114.59
5058D	10	12.20	18.80	10.98	16.71	0.90	5.64	4.37	20.91	16.30	20.93	14.43	3.04	145.21
5058E	11	18.04	16.32	15.71	12.34	11.58	18.38	19.99	20.73	17.05	17.29	17.11	13.98	198.52
5058J	12	25.17	21.78	25.49	24.31	19.87	29.43	27.09	22.37	22.12	20.77	22.48	27.58	288.46
5069F	14	36.40	14.95	12.69	21.20	31.88	41.79	37.29	37.95	33.26	35.81	35.88	34.27	373.37
	15	4.83	4.11	5.36	3.83	4.68	4.21	5.70	4.37	3.61	3.95	3.08	2.72	50.45
	PICKENS (CVWD)	4.12	4.01	4.00	4.10	3.65	4.04	3.69	4.09	3.88	4.02	3.99	3.86	47.45
	Total:	267.17	234.44	214.32	230.82	172.15	206.84	229.34	242.16	266.46	268.26	267.02	236.86	2,835.84
Knowltons														
	PICKENS	0.69	0.66	0.69	0.69	0.62	0.69	0.66	0.69	0.69	0.69	0.69	0.66	8.12
Glendale, City of														
3961-3971	GL3-4	35.39	32.91	32.50	35.69	33.95	36.27	0.00	0.00	33.59	45.52	70.14	102.63	458.59
3970	GL-6	48.26	45.82	46.93	46.85	42.44	44.27	0.00	0.00	50.43	73.28	69.07	54.82	522.17
---	VPCKP	57.40	54.54	52.50	59.20	52.72	55.42	56.84	44.77	41.14	59.53	48.22	50.25	632.53
---	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:	141.05	133.27	131.93	141.74	129.11	135.96	56.84	44.77	125.16	178.33	187.43	207.70	1,613.29
	Verdugo Basin Total:	408.22	367.71	346.25	372.56	301.26	342.80	286.18	286.93	391.62	446.59	454.45	444.56	4,457.25

2002-2003 Water Year
(acre-feet)

LACDPW Well No.	Owner Well No.	2002 Oct.	2002 Nov.	2002 Dec.	2003 Jan.	2003 Feb.	2003 Mar.	2003 Apr.	2003 May	2003 June	2003 July	2003 Aug.	2003 Sept.	TOTAL
Eagle Rock Basin														
Sparkletts														
3987A	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
3987B	2	5.06	4.46	5.12	5.26	3.82	4.71	3.10	1.08	5.25	7.75	3.07	3.62	52.30
3987F	3	5.74	4.15	5.02	4.42	4.70	4.90	5.38	4.87	4.34	6.07	5.17	5.42	60.18
3987G	4	9.19	7.99	8.17	8.23	7.27	8.61	8.93	8.09	9.65	10.04	9.22	8.85	104.24
	Total:	19.99	16.60	18.31	17.91	15.79	18.22	17.41	14.04	19.24	23.86	17.46	17.89	216.72
Eagle Rock Basin Total:		19.99	16.60	18.31	17.91	15.79	18.22	17.41	14.04	19.24	23.86	17.46	17.89	216.72

ULARA Total:		12,685.19	9,720.34	9,201.55	11,497.34	6,636.26	3,549.82	3,298.16	4,622.82	8,486.93	11,699.34	13,609.10	12,000.16	107,011.35

APPENDIX B
KEY GAGING STATIONS OF SURFACE RUNOFF

Los Angeles County Dept of Public Works

USDAY V30 Output 10/09/2003

Summary Report

Station: F57 Los Angeles River Above Arroyo Seco
USGS #:
Beginning Date: 10/01/2002
Ending Date: 09/30/2003

Daily Mean Discharge in Cubic feet/second Water Year Oct 2002 to Sep 2003

Day	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	115	136	146	90.0	161	98.4	110	118	140	160	157	199
2	251	140	120	94.9	158	97.5	114	146	140	148	162	202
3	131	140	120	103	153	101	119	3540	152	155	163	190
4	124	142	120	108	156	288	116	177	148	157	171	188
5	110	146	123	102	154	220	117	113	154	152	182	178
6	111	147	128	98.9	157	105	114	108	155	154	177	188
7	116	166	134	107	158	103	116	113	157	163	183	197
8	122	2560	132	114	156	106	121	109	159	157	162	215
9	126	772	147	105	152	105	120	102	164	154	175	213
10	129	175	155	102	157	105	126	105	184	152	165	224
11	127	99.8	161	105	1540	107	127	104	185	149	176	227
12	132	100	168	107	13100	107	132	105	187	150	174	240
13	124	103	180	113	1250	113	226	106	187	148	174	246
14	121	103	194	125	214	113	2950	101	184	150	183	247
15	112	91.1	229	124	129	5790	342	109	181	145	184	253
16	105	106	3780	122	107	2490	124	112	187	144	181	242
17	105	104	302	114	99.8	228	115	112	203	149	178	247
18	107	110	116	125	101	123	109	111	189	157	194	239
19	107	90.5	101	132	100	108	111	114	185	152	192	226
20	106	95.7	3010	155	98.4	105	109	116	179	142	184	219
21	111	106	207	145	95.6	111	114	116	178	147	188	204
22	112	109	166	149	96.6	104	109	121	164	146	189	214
23	108	115	96.2	147	97.1	101	112	127	161	149	192	208
24	104	114	97.7	146	108	104	113	129	159	155	188	202
25	98.2	115	93.5	149	1190	108	113	126	158	151	190	205
26	107	114	87.3	145	112	107	114	124	168	143	191	204
27	103	124	92.6	146	197	106	113	132	153	142	171	195
28	119	141	142	151	106	104	114	129	161	154	193	190
29	118	178	316	150	------	109	121	136	148	161	198	196
30	124	858	93.5	155	------	107	114	116	156	154	204	201
31	131	------	98.5	154	------	105	------	138	------	160	205	------
Total	3716.2	7501.1	11056.3	3883.8	20303.5	11778.9	6655	7115	5026	4700	5626	6399
Mean	120	250	357	125	725	380	222	230	168	152	181	213
Max	251	2560	3780	155	13100	5790	2950	3540	203	163	205	253
Min	98.2	90.5	87.3	90.0	95.6	97.5	109	101	140	142	157	178
Acre-Ft	7380	14870	21940	7710	40170	23350	13210	14110	9970	9330	11160	12690

Wtr Year 2003	Total	93760.8	Mean	257	Max	13100	Min	87.3	Acre-Ft 185900
Cal Year 2002	Total	65889.6	Mean	181	Max	3780	Min	87.3	Acre-Ft 130700

Los Angeles County Dept of Public Works

USDAY V30 Output 10/16/2003

Summary Report

Station: F118 Pacoima Creek Flume Below Pacoima Dam
USGS #:
Beginning Date: 10/01/2002
Ending Date: 09/30/2003

Daily Mean Discharge in Cubic feet/second Water Year Oct 2002 to Sep 2003

Day	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	0	0	0	0	26.1	0	0	0	0	0	0
2	0	0	0	0	0	25.9	0	0	0	0	0	0
3	0	0	0	0	0	13.2	0	0	0	0	0	0
4	0	0	0	0	0	.46	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	7.06	0	0	0	0	0	0	0	0
7	0	0	0	16.7	0	0	0	0	0	0	0	0
8	0	0	0	20.1	0	0	0	0	0	0	0	0
9	0	0	0	11.9	0	0	0	0	0	0	0	0
10	0	0	0	.16	0	17.2	0	0	0	0	0	0
11	0	0	0	0	0	26.8	0	0	0	0	0	0
12	0	0	0	0	.51	26.4	0	35.7	0	0	0	0
13	0	48.1	0	0	1.05	17.2	0	45.6	0	0	0	0
14	0	78.0	0	0	.79	.98	0	45.3	0	0	0	0
15	0	45.8	0	0	.40	1.28	0	45.0	0	0	0	0
16	0	.20	0	0	0	1.42	0	44.8	0	0	0	0
17	0	0	0	0	0	.76	0	44.5	0	0	0	0
18	0	0	0	0	0	.60	0	44.2	0	0	0	0
19	0	0	0	0	0	.60	0	43.9	0	0	0	0
20	0	0	0	0	0	.60	0	43.7	0	0	0	0
21	0	0	0	0	0	.60	0	40.6	0	0	0	0
22	0	0	0	0	0	.60	0	18.0	0	0	0	0
23	0	0	0	0	0	.60	0	0	0	0	0	0
24	0	0	0	0	0	39.0	0	0	0	0	0	0
25	0	0	0	0	0	60.1	0	0	0	0	0	0
26	0	0	0	0	8.99	59.6	0	0	0	0	0	0
27	0	0	0	0	25.3	60.9	0	0	0	0	0	0
28	0	0	0	0	26.1	63.4	0	0	0	0	0	0
29	0	0	0	0	------	63.8	0	0	0	0	0	0
30	0	0	0	0	------	62.6	0	0	0	0	0	0
31	0	------	0	0	------	21.1	------	0	------	0	0	------
Total	0	172.10	0	55.92	63.14	591.80	0	451.3	0	0	0	0
Mean	0	5.74	0	1.80	2.26	19.1	0	14.6	0	0	0	0
Max	0	78.0	0	20.1	26.1	63.8	0	45.6	0	0	0	0
Min	0	0	0	0	0	0	0	0	0	0	0	0
Acre-Ft	0	341	0	111	126	1170	0	897	0	0	0	0

Wtr Year 2003	Total	1334.26	Mean	3.66	Max	78.0	Min	0	Acre-Ft 2650
Cal Year 2002	Total	173.91	Mean	.48	Max	78.0	Min	0	Acre-Ft 345

Los Angeles County Dept of Public Works

USDAY V30 Output 10/16/2003

Summary Report

Station: F168 Big Tujunga Creek Below Big Tujunga Dam
USGS #:
Beginning Date: 10/01/2002
Ending Date: 09/30/2003

Daily Mean Discharge in Cubic feet/second Water Year Oct 2002 to Sep 2003

Day	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	0	.26	.37	.30	.62	1.09	4.22	.42	.06	0	0
2	0	0	.26	.35	.30	.56	1.14	.25	37.9	.04	0	0
3	0	0	.24	.34	.30	.58	1.13	.84	38.5	.01	0	0
4	0	0	.24	.34	.33	.64	1.15	.39	.85	0	0	0
5	0	0	.24	.34	.33	27.8	1.08	.33	.63	0	0	0
6	0	0	.23	.34	.34	1.18	1.14	.33	.54	0	0	0
7	0	1.45	.23	.34	.34	.90	1.11	.34	.47	0	0	0
8	0	1.10	.23	.36	.34	.83	.43	.34	.45	0	0	0
9	0	1.41	.22	.39	.34	.78	.06	.33	.43	0	0	0
10	0	.63	.23	.39	.39	.86	.06	.32	35.6	0	0	0
11	0	.32	.20	.39	.96	2.20	.06	.32	60.0	0	0	0
12	0	.25	.20	.41	5.79	1.33	.06	110	60.0	0	2.79	0
13	0	.23	.20	.42	3.14	1.64	.10	164	46.3	0	8.81	0
14	0	.20	.20	.35	2.06	1.80	.53	139	10.8	0	4.84	0
15	0	.17	.22	.34	1.50	3.20	.26	102	.53	0	.24	0
16	0	.17	.96	.34	1.25	3.88	.14	100	.44	0	.17	0
17	0	.17	.79	.34	1.06	196	.13	159	.38	0	.13	0
18	0	.14	.48	.34	1.01	341	.12	181	.35	0	.10	0
19	0	.14	.42	.34	.93	325	.10	172	.36	0	.08	0
20	0	.12	1.94	.32	.94	157	.10	164	.37	0	.06	0
21	0	.11	.77	.30	.89	1.99	.10	155	.37	0	.03	0
22	0	.11	.53	.30	.89	1.54	.09	146	.38	0	.01	0
23	0	.12	.44	.32	.89	1.27	.09	90.6	.35	0	0	0
24	0	.13	.39	.31	.94	1.16	.09	.45	.31	0	0	0
25	0	.11	.36	.30	1.97	1.15	.08	.23	.28	0	0	0
26	0	.09	.34	.29	1.07	1.13	.08	.16	.24	0	0	0
27	0	.09	.34	.29	1.06	1.11	.08	80.2	.20	0	0	0
28	0	.09	.35	.29	1.00	1.03	.08	101	.17	0	0	0
29	0	.09	.48	.29	------	1.06	.08	55.5	.14	0	0	0
30	0	.19	.42	.29	------	1.08	1.59	25.3	.09	0	0	0
31	0	------	.39	.30	------	1.06	------	.52	------	0	0	------
Total	0	7.63	12.80	10.43	30.66	1081.38	12.35	1953.97	297.85	0.11	17.26	0
Mean	0	.25	.41	.34	1.10	34.9	.41	63.0	9.93	.004	.56	0
Max	0	1.45	1.94	.42	5.79	341	1.59	181	60.0	.06	8.81	0
Min	0	0	.20	.29	.30	.56	.06	.16	.09	0	0	0
Acre-Ft	0	15	25	21	60	2140	25	3870	590	.22	34	0

Wtr Year 2003	Total	3424.44	Mean	9.38	Max	341	Min	0	Acre-Ft 6790
Cal Year 2002	Total	434.55	Mean	1.19	Max	29.9	Min	0	Acre-Ft 859

Los Angeles County Dept of Public Works

USDAY V30 Output 10/09/2003

Summary Report

Station: F300 Los Angeles River At Tujunga Avenue
USGS #:
Beginning Date: 10/01/2002
Ending Date: 09/30/2003

Daily Mean Discharge in Cubic feet/second Water Year Oct 2002 to Sep 2003

Day	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	85.1	84.2	90.3	67.5	85.1	88.3	91.4	94.7	92.3	84.7	103	91.4
2	313	83.3	78.6	79.4	82.4	85.1	91.0	332	91.5	80.8	105	95.7
3	98.8	80.0	80.4	88.5	78.6	89.7	92.6	2880	96.8	89.1	104	99.1
4	89.9	80.1	80.0	91.6	81.6	330	93.8	193	95.4	93.4	107	103
5	76.8	80.5	83.5	78.7	82.8	138	92.0	114	94.3	90.4	107	86.6
6	74.5	79.2	84.3	78.5	82.9	93.9	91.7	114	98.3	82.7	100	90.3
7	77.0	110	83.9	91.9	82.0	89.9	93.2	144	99.0	93.8	107	93.1
8	79.1	2270	80.5	94.0	80.8	89.8	96.7	105	98.5	90.9	93.6	98.5
9	77.7	634	86.0	96.5	78.7	85.9	97.3	103	83.7	91.0	98.1	95.8
10	78.7	138	83.5	91.4	83.4	88.8	96.7	102	85.1	87.9	93.0	92.9
11	79.2	78.0	80.4	86.7	1080	89.6	97.0	99.7	90.8	87.4	96.7	92.6
12	80.9	83.8	80.8	85.2	11000	90.7	82.3	102	86.8	89.3	100	96.1
13	78.1	84.8	84.0	91.0	814	88.1	214	99.7	90.5	90.6	90.9	97.4
14	78.5	74.4	86.5	95.5	215	89.4	2590	93.0	89.4	81.4	96.4	91.5
15	79.5	66.9	117	90.5	129	4700	318	83.6	88.5	81.8	97.7	98.3
16	80.8	84.9	2900	85.9	95.2	1390	117	82.8	90.5	76.7	92.9	95.3
17	82.6	81.6	297	64.6	95.5	298	106	80.7	90.2	80.7	91.0	99.4
18	83.1	78.9	108	84.9	95.8	117	104	93.6	98.5	99.7	94.7	97.9
19	82.5	43.3	107	84.3	91.1	104	100	99.0	104	96.9	96.8	97.7
20	81.1	67.1	2410	109	90.7	107	96.8	82.8	84.1	94.2	88.3	98.8
21	83.7	73.4	229	86.7	85.2	103	102	87.2	93.1	99.8	87.4	97.6
22	83.9	76.3	173	89.0	84.8	95.1	91.9	95.7	94.7	103	90.8	101
23	72.7	73.6	94.7	87.6	83.1	90.5	99.0	84.1	84.8	96.9	89.0	102
24	65.9	71.3	92.0	83.4	319	93.4	98.3	91.5	95.6	102	88.6	100
25	60.7	69.9	84.7	85.9	785	94.9	102	78.8	98.8	101	85.7	98.8
26	73.4	65.9	80.2	83.9	98.2	94.0	100	75.1	102	98.6	99.5	99.3
27	67.3	77.1	85.5	85.8	192	88.3	97.5	81.0	91.2	96.4	81.2	98.0
28	73.1	75.8	159	88.8	95.0	90.3	101	84.3	92.1	105	89.5	94.9
29	77.5	176	206	83.0	------	89.7	98.0	87.6	88.3	106	90.9	96.7
30	77.4	562	84.6	82.6	------	86.2	97.4	74.7	92.9	105	87.8	95.3
31	80.5	------	86.5	82.4	------	79.0	------	91.3	------	106	88.2	------
Total	2673.0	5704.3	8476.9	2674.7	16266.9	9257.6	5748.6	6029.9	2781.7	2883.1	2941.7	2895.0
Mean	86.2	190	273	86.3	581	299	192	195	92.7	93.0	94.9	96.5
Max	313	2270	2900	109	11000	4700	2590	2880	104	106	107	103
Min	60.7	43.3	78.6	64.6	78.6	79.0	82.3	74.7	83.7	76.7	81.2	86.6
Acre-Ft	5300	11320	16790	5300	32210	18370	11390	11950	5520	5720	5830	5740

Wtr Year 2003	Total	68333.4	Mean	187	Max	11000	Min	43.3	Acre-Ft	135500
Cal Year 2002	Total	40327.8	Mean	110	Max	2900	Min	43.3	Acre-Ft	79970

Los Angeles County Dept of Public Works

USDAY V30 Output 10/09/2003

Summary Report

Station: F252 Verdugo Wash At Estelle Avenue
USGS #:
Beginning Date: 10/01/2002
Ending Date: 09/30/2003

Daily Mean Discharge in Cubic feet/second Water Year Oct 2002 to Sep 2003

Day	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.98	6.19	10.5	3.90	5.37	5.63	6.24	5.81	6.70	5.08	3.97	5.49
2	4.47	4.08	9.91	4.33	4.95	5.22	6.24	12.5	6.69	5.01	3.56	4.96
3	4.23	3.91	9.00	4.65	5.33	5.51	6.62	166	7.58	4.68	3.59	5.51
4	5.34	4.04	8.20	4.65	4.86	17.1	7.38	8.89	7.49	4.74	4.11	4.96
5	5.34	3.90	7.23	4.36	4.75	7.47	6.04	7.09	6.65	5.98	3.41	3.77
6	5.30	3.90	6.98	4.30	4.83	6.08	5.95	6.85	6.24	5.66	3.49	4.34
7	4.20	3.91	6.24	4.33	4.60	5.81	6.91	6.24	6.26	5.15	3.61	3.78
8	3.12	105	5.99	5.53	4.51	5.51	6.36	6.24	6.35	5.36	3.97	3.64
9	3.04	81.5	5.42	6.31	4.35	5.33	6.04	6.00	7.28	4.90	3.92	3.76
10	3.48	7.04	4.55	4.88	4.33	5.91	5.85	5.42	8.90	5.05	3.21	4.14
11	3.11	5.42	3.90	4.65	108	5.70	6.16	5.42	6.11	4.37	3.34	3.92
12	2.83	4.77	3.76	4.55	524	5.56	6.83	5.69	6.17	4.33	3.75	4.05
13	3.02	4.65	3.21	4.04	60.8	6.00	11.7	6.53	6.01	3.95	4.20	4.03
14	2.99	4.06	3.00	4.02	8.83	6.36	224	6.12	5.97	4.12	4.62	4.01
15	2.96	3.90	2.57	4.14	7.08	425	26.0	6.24	6.62	4.53	6.30	4.32
16	4.91	3.90	192	3.94	6.60	166	7.44	5.86	5.86	4.53	4.22	4.09
17	5.37	3.54	18.3	4.35	6.37	9.82	6.65	5.38	5.71	4.67	6.43	4.01
18	5.56	3.21	8.73	4.65	6.21	7.97	6.24	4.97	5.49	4.61	6.78	3.47
19	4.53	3.21	5.27	4.56	6.22	7.15	6.36	5.52	6.37	4.60	4.13	3.23
20	4.67	3.21	165	4.66	6.58	7.10	6.24	6.27	8.41	4.16	5.87	3.21
21	4.70	3.21	11.8	4.29	6.10	6.80	6.37	6.24	8.50	4.28	5.83	3.21
22	5.07	3.21	8.78	4.54	6.07	6.47	6.82	6.12	6.24	4.61	5.93	3.21
23	5.06	3.21	5.49	4.62	6.00	6.37	5.97	5.56	6.24	4.45	4.87	3.21
24	5.04	2.56	4.65	4.40	20.4	6.33	5.98	4.80	5.70	3.94	4.29	3.59
25	5.38	1.41	10.2	4.39	53.1	6.24	6.63	5.00	5.86	4.06	5.64	3.64
26	4.65	.86	6.46	4.17	6.33	6.24	6.03	4.96	5.73	3.72	4.36	4.10
27	4.40	.63	4.69	4.34	13.0	6.24	6.20	5.45	5.43	3.55	5.46	4.19
28	4.28	.34	5.34	4.69	5.90	6.24	6.30	5.49	5.17	5.38	6.22	4.25
29	4.72	.15	14.5	4.32	------	6.24	7.04	5.64	4.95	4.93	5.01	4.27
30	5.51	5.27	7.13	4.45	------	6.24	6.04	6.27	4.82	4.75	4.42	4.16
31	7.44	------	4.77	4.96	------	6.24	------	6.42	------	4.27	4.38	------
Total	140.70	284.19	563.57	139.97	905.47	785.88	434.63	350.99	191.50	143.42	142.89	120.52
Mean	4.54	9.47	18.2	4.52	32.3	25.4	14.5	11.3	6.38	4.63	4.61	4.02
Max	7.44	105	192	6.31	524	425	224	166	8.90	5.98	6.78	5.51
Min	2.83	.15	2.57	3.90	4.33	5.22	5.85	4.80	4.82	3.55	3.21	3.21
Acre-Ft	281	564	1120	278	1800	1560	864	697	378	285	284	239

Wtr Year 2003	Total	4203.73	Mean	11.5	Max	524	Min	.15	Acre-Ft	8340
Cal Year 2002	Total	3211.36	Mean	8.80	Max	192	Min	.15	Acre-Ft	6370

Los Angeles County Dept of Public Works

USDAY V30 Output 10/14/2003

Summary Report

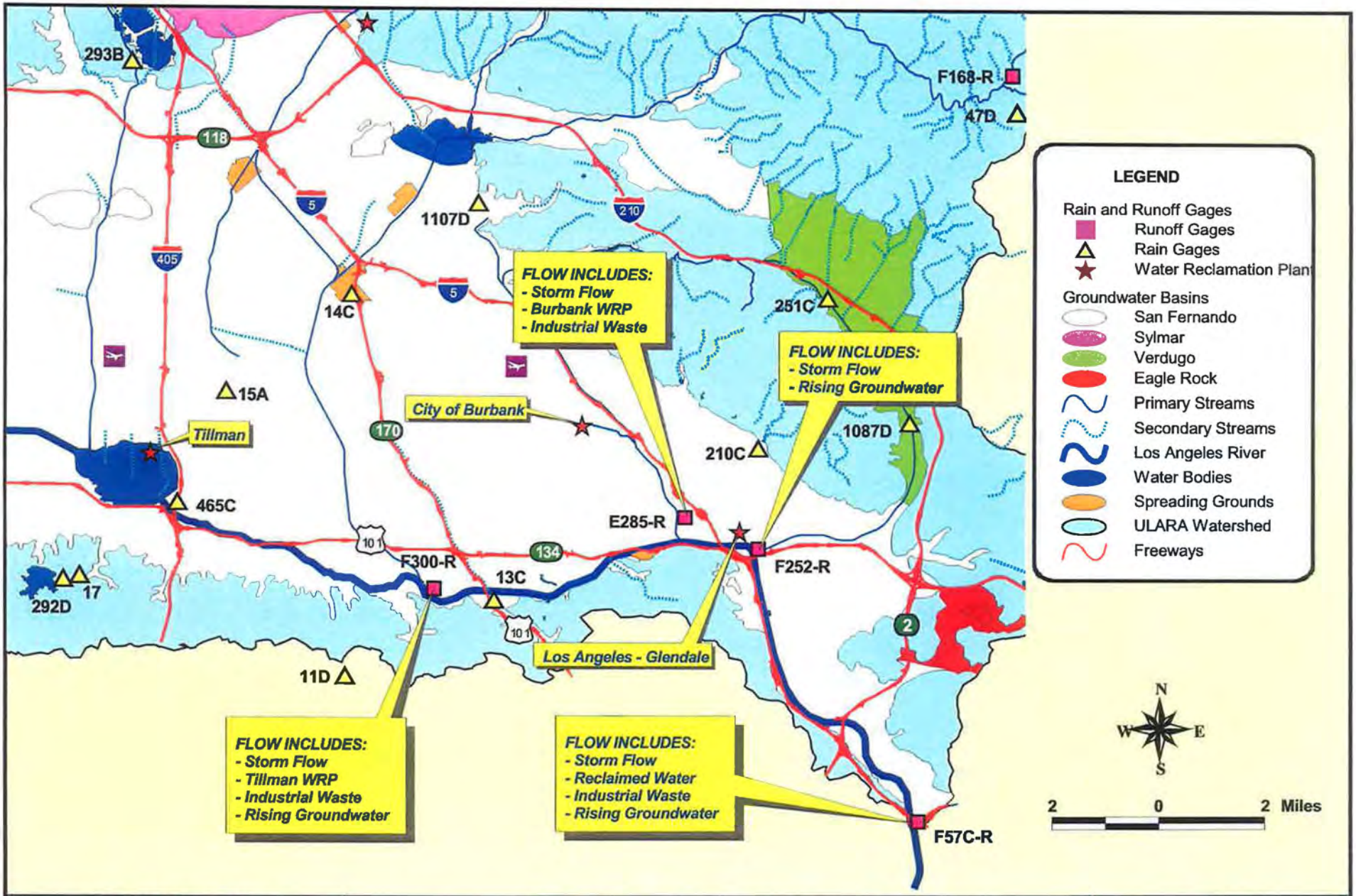
Station: E285 Burbank-Western Storm Drain
USGS #:
Beginning Date: 10/01/2002
Ending Date: 09/30/2003

Daily Mean Discharge in Cubic feet/second Water Year Oct 2002 to Sep 2003

Day	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.0	9.96	11.3	10.5	11.3	11.0	10.2	8.19	10.0	9.70	10.5	10.0
2	13.0	10.4	11.4	10.6	11.8	11.4	9.47	19.4	10.4	9.98	9.66	10.5
3	13.7	9.70	10.7	10.3	10.3	11.7	9.05	163	10.7	10.0	9.60	10.4
4	13.0	10.2	11.4	11.0	11.4	54.0	9.05	9.28	9.87	9.71	9.52	10.1
5	13.6	10.5	11.2	11.0	10.4	69.3	8.46	8.33	11.2	10.5	9.29	9.15
6	12.2	10.3	9.60	9.52	10.6	31.1	7.90	7.44	10.8	10.5	9.25	10.6
7	12.8	11.1	9.66	10.1	11.6	20.0	7.90	7.74	8.93	10.9	8.97	9.95
8	12.7	87.8	9.85	9.85	11.5	16.0	7.34	8.91	9.85	11.0	9.11*	12.2
9	12.3	49.1	10.7	10.6	11.4	14.2	7.11	7.77	10.4	10.2	9.19*	13.1
10	13.3	11.1	10.7	10.6	11.3	12.9	7.11	8.95	11.4	10.4	8.96*	12.7
11	13.6	11.0	11.2	11.1	97.1	11.7	7.11	8.85	9.82	10.4	8.86*	14.3
12	13.2	11.5	10.7	11.1	845	11.5	7.11	8.58	9.41	8.94	8.76*	14.0
13	12.1	11.4	11.0	11.2	88.1	10.9	7.11	8.84	8.81	8.65	8.66*	13.9
14	13.2	11.2	10.8	12.2	12.2	10.4	178	8.03	8.62	9.19	8.56*	14.0
15	13.5	11.3	11.0	11.5	11.2	339	102	8.44	8.89	9.70	8.52*	13.6
16	13.5	9.89	138B	11.4	11.0	201	46.1	8.62	9.71	9.32	8.80*	13.5
17	12.9	11.0	41.0B	10.8	11.0	91.2	26.0	8.61	9.57	9.47	9.12*	12.8
18	13.8	11.6	13.1	10.6	11.6	54.2	17.2	8.39	9.38	10.5	9.44*	13.0
19	13.1	11.8	10.9	10.7	11.4	35.4	12.7	7.83	9.51	9.48	9.77*	12.6
20	12.9	10.9	173	11.1	11.6	26.2	10.0	8.44	9.63	7.88	10.1*	13.0
21	13.2	11.7	29.3	11.6	11.6	20.6	8.54	9.42	10.9	8.39	10.1*	12.0
22	12.6	11.7	10.5	11.3	11.1	17.4	6.87	9.30	9.35	9.16	9.90*	12.0
23	10.4	11.9	10.2	11.1	11.4	15.3	7.14	9.13	9.33	9.27	9.69*	11.5
24	10.5	12.1	9.67	11.5	25.6	14.1	7.38	8.90	10.1	8.86	9.48*	11.8
25	9.38	11.5	9.54	11.2	54.1	13.1	7.10	8.87	9.46	8.50	9.27*	10.1
26	9.97	11.0	10.2	10.7	12.1	12.8	8.08	9.56	9.68	8.26	10.3*	9.97
27	9.85	11.8	10.7	10.9	20.9	11.9	7.63	9.00	9.88	8.55	10.5*	9.93
28	10.8	11.2	28.7	11.1	11.7	11.5	8.06	8.98	9.41	9.11	10.1	11.5
29	10.4	17.5	47.3	11.7	------	10.9	8.35	9.13	9.59	10.0	10.1	11.0
30	11.9	39.3	15.3	11.1	------	10.2	7.39	9.24	9.59	9.33	10.3	11.2
31	10.2	------	11.2	11.7	------	10.2	------	9.32	------	9.39	10.2	------
Total	380.60	481.45	729.82	339.67	1380.3	1191.1	573.46	434.49	294.19	295.24	294.58	354.40
Mean	12.3	16.0	23.5	11.0	49.3	38.4	19.1	14.0	9.81	9.52	9.50	11.8
Max	13.8	87.8	173	12.2	845	339	178	163	11.4	11.0	10.5	14.3
Min	9.38	9.70	9.54	9.52	10.3	10.2	6.87	7.44	8.62	7.88	8.52	9.15
Acre-Ft	757	955	1450	673	2740	2360	1140	863	587	588	582	705

Wtr Year 2003	Total	6749.30	Mean	18.5	Max	845	Min	6.87	Acre-Ft 13400
Cal Year 2002	Total	4530.95	Mean	12.4	Max	173	Min	3.99	Acre-Ft 8980

APPENDIX C
COMPONENTS OF LOS ANGELES RIVER FLOW



2002-03 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: Components of Los Angeles River	PLATE C.1

UPPER LOS ANGELES RIVER AREA: COMPONENTS OF LOS ANGELES RIVER FLOW								
2002-03 WATER YEAR								
TOTAL FLOW AT GAGE F-57C-R			F-57C-R: Storm, Reclaimed, Industrial, Rising Groun					
			F300-R: Storm, Tillman, Industrial Waste, and Rising					
Total:	185,890		E285-R :Storm, Burbank WRP, Industrial Waste					
			F252-R: Storm, Rising Water					
I. RECLAIMED WATER DISCHARGED TO L.A. RIVER IN ULARA								
Tillman:	45772	: Record						
L.A.-Glendale:	13530	: Record						
Burbank WRP:	7147	: Record						
Total:	66449							
II. INDUSTRIAL WATER and STORM FLOWS DISCHARGED TO L.A. RIVER IN ULARA								
Upstream of F300-R								
Industrial Water	224	: From F300-R separation of flow						
F168	6780							
F118	2645							
Storm Flows @300	80019	Storm flows less F168 and F118)						
	89668							
Between F300-R and E-285								
Burbank OU	90	Burbank Operable Unit						
MTA	37							
Storm Drains and Unaccounted water	6517	:9 cfs assumes 6,517						
Headworks:	0	:pilot project record						
Western Drain:	331	: From E285-R separation of flow						
Storm Flows @285	5922							
	12897							
Between E-285 and F57C-R								
Storm Flows@ 252	5183							
Irrigation and Industrial Flows	3167	:From F252-R separation of flow						
Glendale Operable Unit	815							
Pollock Treatment	280							
Sycamore Canyon	1100	Estimated from historic flows						
Storm Drains and Unaccounted water	2462	:3.4 cfs assumes 2,462						
	13007							
Total Part II	115572							
III. RISING WATER IN L.A. RIVER IN ULARA								
Total:	3869	: See Section 2.3 of the Watermaster's Report						

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	2003FY	764	8.1	45	20.5	76	3.6	0	124	134	88	2.2	0.18	0.13	444	197
LA Aqueduct Influent	8/26/2003	340	8.4	25.5	5.4	38	4.3	0	150	17.3	23.9	0.21	0.76	0.64	236	64.3
LA Aqueduct/MWD Filtration Plant Influent	8/26/2003	393	8.3	29.8	7.5	42.6	3.9	0	142	27.4	35.8	0.2	0.62	0.53	266	87.6
State Water Project at Joseph Jensen Filtration Plant (Influent)	2003FY	575	8.2	25	15	63	2.11	0	108	51	86	2.9	0.11	0.2	315	124
Surface Water																
Tillman Rec. Plant Discharge to LA River	2003FY	-	7.1	32.9	13.5	-	-	-	-	105	138	0.52	0.92	0.7	585	155
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	0.58	666	270
LA/Glendale Treatment Plant Station R-7	02 - 05/200(	1123	8.0	-	-	-	-	-	-	207	104	4.9	-	-	712	336
LA/Glendale Rec. Plant Discharge to LA River	2003FY	-	7.2	52	20	124	-	-	-	132	151	2.6	0.3	0.4	650	232
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)																
3800 (No. Hollywood No. 35)	9/26/2001	630	7.6	89.3	19.5	28.5	3.9	0	301	60	20.3	10.4	0.5	300	462	274
3841C (Burbank No. 7)	5/8/2001	573	7.7	60.6	13.4	35.5	3.5	ND	192	58.4	33.4	17.7	0.4	-	375	207
Glendale OU Average of North Wells	2/3/2000	540	7.6	96	26	37	4.2	0.63	260	129	50	7	ND	0.15	492	348
(San Fernando Basin - L.A. Narrows)																
3959E (Pollock No. 6)	7/26/2001	922	7.2	92.2	33.4	52.2	2.33	0	266	122	75.4	43.3	0.28	0.34	514	364
(Sylmar Basin)																
4840J (Mission No. 5)	6/27/2002	627	7.7	79.8	17.3	28.4	3.69	0	256	60.9	25.5	28.7	0.31	-	396	287
5969 (San Fernando No. 4A)	5/28/2003	445	7.8	48	9.3	27	4.3	0.72	175	47	13	15.4	0.21	-	280	158
(Verdugo Basin)																
3971 (Glorietta No. 3)	3/20/2003	1045	6.8	111	36.3	43.8	ND	ND	239	125	79.2	34.7	0.24	-	546	196
5069F (CVWD No. 14)	2003	780	7.4	110	17	34	ND	ND	210	100	63	50	0.34	ND	480	340

APPENDIX E
DEWATERING AND REMEDIATION PROJECTS

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	Commercial Project	Helfman, Haloosim & Assoc.: Varadi, Ivan	5550 Topanga Canyon	D	Jun 19, 1989
5	Encino Spectrum Project	Helfman, Haloosim & Assoc.: Varadi, Ivan	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.	Varadi, Ivan	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	Arnold, Daryl	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 Transportation Authority	Laury, Victor	Metro Red Line	D	April 1, 1995
25		Carter, Dennis	4547 Murietta Ave	P	Jan 16, 1997
26	MWD Sepulveda Feeder Pipeline Const	David Dean	Jensen Plant	TD	August 1, 1998
27	A H Warner Properties Plaza 3	Bernier, Dave	21650 Oxnard	D	June 4, 1997
28	A H Warner Properties Plaza 6	Bernier, Dave	21700 Oxnard	D	June 4, 1997
29	Brent & Miller	Brent, Stanley	4328 Mammoth Ave	D	January 13, 2000
30	Northeast Interceptor Sewer	Nick Demos	Bureau of Engineering	TD	October 1, 2001
31	MTA Underground Pedestrian Crossing	Tim Lindholm	MTA	TD	November 1, 2001
32	Eagle Rock Interceptor Sewer	Baron Miya	Bureau of Engineering	TD	May 8, 2003

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.

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	Boeing (Rockwell International)	Lafflam, S. R.	6633 Canoga Park Ave.	R	Jun 10, 1990
4	Lockheed	Gene Matsushita	N. Hollywood Way	R	Jan 5, 1989
5	3M Pharmaceutical	Bob Paschke	19901 Nordhoff St.	R	Feb 8, 1989
6	Philips Components	Wade Smith	4561 Colorado St.	R	Jul 14, 1987
7	Raytheon (Hughes)	Tim Garvey	Canoga Park, CA	R	February 1995
8	Holchem	Cuthbert, Andrew	Pacoima, CA	R	February 1, 2000
9	Micro Matic USA Inc.	Brian Thorne	Northridge CA	R	April, 1999
10	Menasco	Dan Landeck	Burbank, CA	R	October 31, 2001
11	Home Depot	Karen Arteaga	Burbank, CA	R	March 19, 2001
12	Drilube	Michael Moone	Glendale, CA	R	March 29, 2002
13	PRC-Desoto (Courtald)	Christer Sorenson	Glendale, CA	R	August 22, 2002
14	Honeywell (Allied Signal)	Benny Dehghi	No.Hollywood, CA	R	February 21, 2003
15	Excello Plating	Glen Harleman	Los Angeles, CA	R	June 20, 2003

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.

APPENDIX F
COURT ORDER re
ULARA WATERMASTER APPOINTMENT

NOSSAMAN, GUTHNER, KNOX & ELLIOTT, LLP
Frederic A. Fudacz, State Bar No. 50546
Alfred E. Smith, State Bar No. 186257
445 South Figueroa Street, 31st Floor
Los Angeles, California 90071
Telephone: (213) 612-7800
Facsimile: (213) 612-7801

Attorneys for Petitioner Upper Los Angeles River Area Watermaster

GOVT. AGENCY – NO FILING FEE (GOVT. CODE § 6103)

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

THE CITY OF LOS ANGELES, Plaintiff, v. CITY OF SAN FERNANDO, et al., Defendants.	Case No. C650 079 ~~[PROPOSED]~~ ORDER Hearing: Date: August 25, 2003 Time: 8:30 a.m. Dept: 52

Upon reading the application of the Upper Los Angeles River Area Watermaster ("Watermaster") and supporting declarations of Melvin L. Blevins and Mark G. Mackowski, for an Order to Confirm Appointment of Successor Watermaster, and good cause appearing therefor,

IT IS HEREBY ORDERED:

Mark G. Mackowski is appointed Watermaster for the Upper Los Angeles River Area, effective September 1, 2003.

DATED: 8/25/03

Susan Bryant-Deason
Judge Of the Superior Court

APPENDIX G
NOTICE BY LOS ANGELES
WATER SPREAD AT PACOIMA

Code 8701147
Rev. 1/95

MEMORANDUM

WATER RESOURCES BUSINESS UNIT

MEMO BY Thomas M. Erb TO Melvin Blevins ✓ DATE November 1, 2002

FILE TITLE Stored Water Credit Request – San Fernando Basin

On October 2, 2002, a section of the Los Angeles City Trunkline ruptured, resulting in a significant amount of water spilled and recovered at the Pacoima Spreading Ground area.

The Los Angeles Department of Water and Power requests that the Watermaster Office credit the City of Los Angeles with 138 AF of "Stored Water Credit" in the San Fernando Basin. The quantity of water recovered was determined by the Water Distribution Business Unit, and should be added to the City's current "Stored Water Credit" within the basin.

If you have any questions or require additional information, please contact me on extension 70873, or your staff may contact Mr. Alvin Z. Bautista on extension 70800.

AZB:me

c: Gerald A. Gewe
Steven J. Malinoski
Julie M. Spacht
David E. Christensen
James B. McDaniel
Fred S. Barker
Gregory T. Van
Thomas M. Erb
Richard F. Harasick
Mark G. Mackowski
David R. Pettijohn
James K. Park
Alvin Z. Bautista

Groundwater
Water Resources Business Unit

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 1472
Los Angeles, CA 90012
TELEPHONE: (213) 367-1020
FAX: (213) 367-1131

MAILING ADDRESS:
ULARA WATERMASTER
P.O. Box 51111, Room 1472
Los Angeles, CA 90051-0100

November 5, 2002

Mr. Thomas M. Erb
Director, Water Resources Business Unit
Los Angeles Department of Water and Power
111 N. Hope Street, Room 1460
Los Angeles, CA 90012

Dear Mr. Erb:

Subject: Stored Water Credit Request – San Fernando Basin

I have received your request for 138 acre-feet of Stored Water Credit regarding water discharged to the Pacoima Spreading Grounds due to the ruptured Los Angeles City Trunkline (memorandum dated November 1, 2002, enclosed).

The trunkline rupture occurred in the 2002-2003 Water Year. Therefore, credit for the requested amount of Stored Water Credit will be given to Los Angeles in the 2002-2003 Water Year, and will be shown in the Watermaster Report issued in May 2004.

If you have any questions, please call me at (213) 367-1020 or Mr. Mark Mackowski, Assistant Watermaster at (213) 367-0896.

Sincerely,

M L Blevins

Melvin L. Blevins
ULARA Watermaster

MGM:bw
A:\Pacoima SG-Stored Water Credit\MGM02
Enclosure

c: Administrative Committee Members
Mr. Fred Lantz, City of Burbank
Mr. Michael Sovich, Crescenta Valley Water District
Mr. Michael Drake, City of San Fernando
Mr. Donald Froelich, City of Glendale

Watermaster Staff
Mr. Melvin L. Blevins, Watermaster
Mr. Frederic Fudacz, Special Counsel
Mr. Mark G. Mackowski, Assistant Watermaster
Ms. Patricia T. Kiechler, Administrator

bc: ULARA Watermaster File

APPENDIX H
BASIN ACCOUNT CREDITS

UPPER LOS ANGELES RIVER AREA WATERMASTER

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

MARK G. MACKOWSKI -- WATERMASTER

OFFICE LOCATION:
111 North Hope Street, Room 1450
Los Angeles, CA 90012
TELEPHONE: (213) 367-0896
FAX: (213) 367-0939

MAILING ADDRESS:
ULARA WATERMASTER
P.O. Box 51111, Room 1450
Los Angeles, CA 90051-0100

September 17, 2003

Administrative Committee
Upper Los Angeles River Area (ULARA)
Mr. Fred Lantz, City of Burbank
Mr. Michael Sovich, Crescenta Valley Water District
Mr. Michael Drake, City of San Fernando
Mr. Donald Froelich, City of Glendale
Mr. Thomas Erb, City of Los Angeles

Dear Administrative Committee Members:

Subject: Basin Account Credits

At several recent meetings of the Administrative Committee the subject of Basin Account Credits has been discussed. The Administrative Committee clearly expressed the desire for the Basin Account policy to be predictable and applied uniformly.

The Basin Account was originally created to account for "temporary losses" (see Policies and Procedures Sections 2.1.6.2). In addition, a guiding principal in the use of the Basin Account requires that "The Watermaster shall also consider whether the temporary groundwater pumping is consistent with the purposes served by the Judgment and is for the benefit of the basin." As you know, one of the Watermaster Office's primary concerns is the long-term decline in water levels in the San Fernando and Verdugo Basins. Therefore, in addressing these concerns, I believe that routine or regular discharges should be accounted for by the respective parties and debited from their accounts.

However, it is not my intent to completely eliminate the provision for Basin Account credits. There may be rare occasions when temporary losses occur that should not be charged to the pumping party. If a pumping party believes that such a situation has occurred, it should submit the request to the Watermaster Office for consideration. These submittals will be carefully reviewed on a case-by-case basis.

If you have any questions, please call me at (213) 367-0896.

Sincerely,

Mark G. Mackowski
ULARA Watermaster

MGM:bw
A:\Basin Account\MGM02
c: Mr. Gene Matsushita, Lockheed-Martin
Mr. Kyle Kawakami, Irell and Manella

Administrative Committee Members
Mr. Fred Lantz, City of Burbank
Mr. Michael Sovich, Crescenta Valley Water District
Mr. Edwin Galvez, City of San Fernando
Mr. Donald Froelich, City of Glendale
Mr. Thomas M. Erb, City of Los Angeles

Watermaster Office
Mr. Mark G. Mackowski, Watermaster
Mr. Frederic Fudacz, Special Counsel
Mr. Melvin L. Blevins, Consultant to the Watermaster
Ms. Patricia T. Kiechler, Administrator

bc: ULARA Watermaster File

APPENDIX I
WELLS DRILLED OR ABANDONED

WELLS DRILLED OR ABANDONED

2002-2003 WATER YEAR

City of Glendale

The decommissioning of the Glendale Grandview Wells was completed in December 2002 with the decommissioning of Grandview Well No. 1 (3913), Grandview Well No. 2 (3913A), Grandview Well No. 14 (3930N), and Grandview Well No. 15 (3913G).

City of Burbank

Burbank Well No. 14A (3850K) was decommissioned in the 2002-2003 Water Year.

APPENDIX J
ACTION ITEMS 2003-2004

ACTION ITEMS

WATERMASTER ACTIVITIES FOR 2003-2004 WATER YEAR

- Support the parties in their efforts to deal with increasingly stringent stormwater discharge requirements.
- Continue to keep the parties informed regarding current and future water quality issues, such as, chromium, perchlorate, 1,4-Dioxane, and 1,2,3 TCP.
- Continue to attend meetings of public interest groups, such as the Los Angeles and San Gabriel Rivers Watershed Council, the Sun Valley Watershed Committee, Bureau of Sanitation Integrated Resources Plan Committee, the Los Angeles City Ad Hoc Committee on the Los Angeles River, and others to support and promote the goals of the parties and the overall health of the basins within ULARA.
- Continue to attend meetings of technical groups, such as the Association of Groundwater Agencies (AGWA), Groundwater Agency Technical Exchange (GATE), and others to exchange ideas and information regarding water quality and basin management.
- Explore ways to maximize the spreading of native water and increase the infiltration of urban runoff in the SFB.
- Continue to support the ongoing Verdugo Basin Groundwater Evaluation, and investigate ways to maximize conjunctive use in the Verdugo Basin.
- Continue exploring ways to maximize spreading at the Tujunga/Hansen Spreading Grounds.
- Continue to investigate the unauthorized use of groundwater in unincorporated areas of ULARA and develop processes to expedite water license agreements and access to well drilling permits for property owners.
- Continue to work with the U.S. Forest Service, U.S. Fish and Wildlife Service, LACDPW, and LADWP to support the seismic retrofit of Big Tujunga Dam, with the goal of providing maximum water conservation, protection against flood damage, preservation of habitat for endangered species, and protection of Los Angeles' Pueblo water right.

APPENDIX K
WATER EQUIVALENTS

Water Equivalents

Volume

1 gallon*.....= 3.7854 liters (L) =231** cubic inches (in^3)
.....= 0.003785 cubic meters (m^3) = 0.132475 cubic feet (ft^3)

100 cubic feet (HCF)****.....= 748 gallons (gal) = 2.83317 cubic meters (m^3)
.....= 2,832 liters (L) = 3.70386 cubic yards (yd^3)
.....= 6,230.8 pounds of water (lb) = 2,826.24 kilograms (kg)

1 acre-foot (AF)***.....= 43,560** cubic feet (ft^3) = 1233.5 cubic meters (m^3)
.....= 325,851 gallons (gal) = 1,233,476.3754 liters (L)
.....= the average amount of water used by two families for one year

Flow

1 cubic foot per
second(cfs).....= 448.83 gallons per minute (gpm) = 0.028317 cubic meters/sec (m^3/s)
.....= 646,317 gallons per day (gal/day) = 1.70 cubic meters/min
.....= 1.98 AF/day = 2446.6 cubic meters/day

1,000 gallons per
minute(gpm) .....= 2.23 cubic feet per second (cfs) = 0.063 cubic meters/sec (m^3/s)
.....= 4.42 AF/day = 5452.6 cubic meters/day
.....= 1,1613.01 AF/year = 1.99 million cubic meters/yr

1 million gallons per
day (mgd) .....=3.07 AF/day =3785 cubic meters/day
.....=1,120.14 AF/year =1.38 million cubic meters/yr.

Concentration

.....1.0 milligrams per liter (mg/L) = 1.0 parts per million (ppm)

.....1.0 micrograms per liter (µg/L) = 1.0 parts per billion (ppb)

* U.S. gallons
** Exact Value
*** An acre foot covers one acre of land one foot deep
**** This is a billing unit of DWP