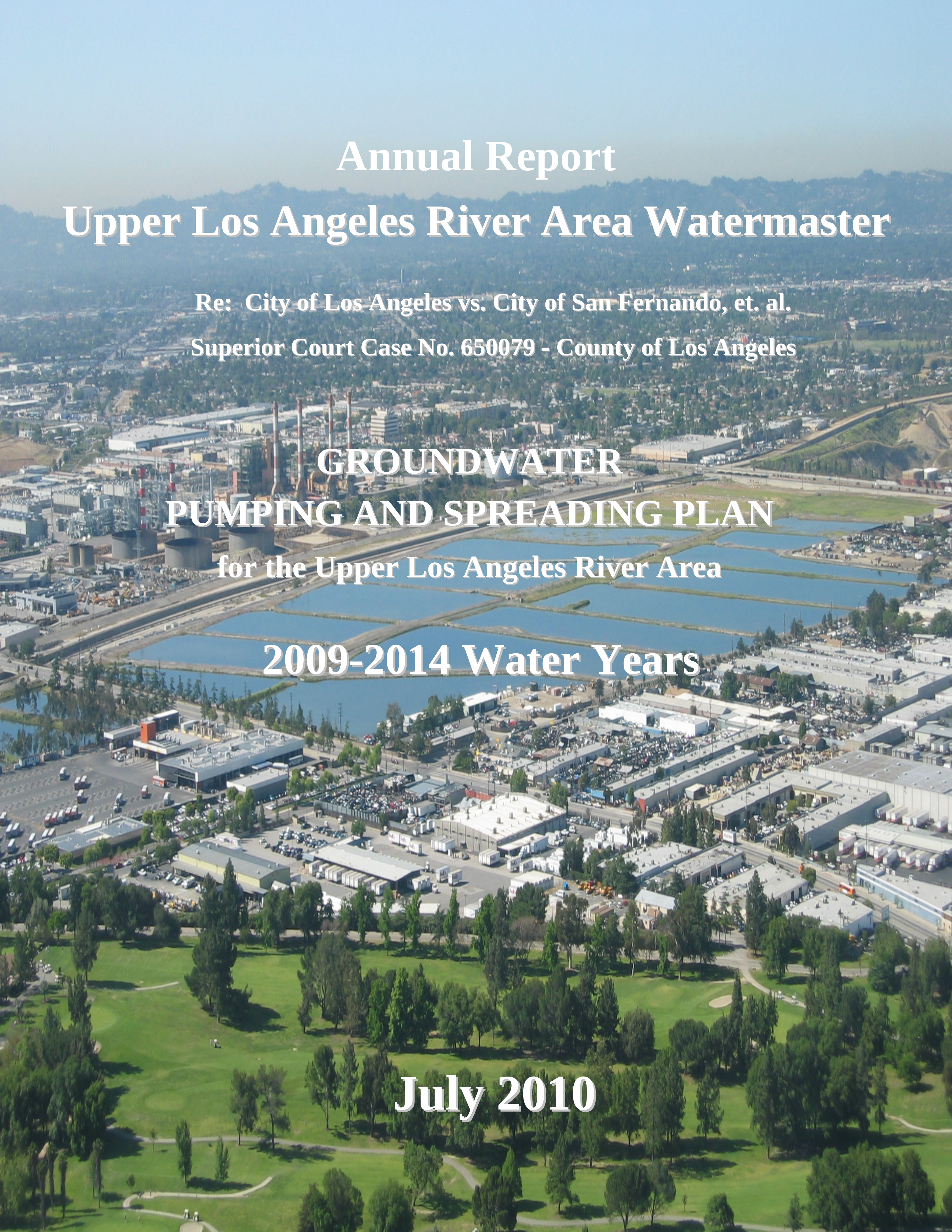

Annual Report
Upper Los Angeles River Area Watermaster

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

Superior Court Case No. 650079 - County of Los Angeles

GROUNDWATER
PUMPING AND SPREADING PLAN
for the Upper Los Angeles River Area

2009-2014 Water Years

July 2010

ANNUAL REPORT

UPPER LOS ANGELES RIVER AREA WATERMASTER

Re: City Of Los Angeles vs. City Of San Fernando, et. al.
Superior Court Case No. 650079 - County Of Los Angeles

GROUNDWATER PUMPING AND SPREADING PLAN FOR THE UPPER LOS ANGELES RIVER AREA (ULARA) LOS ANGELES COUNTY, CALIFORNIA

2009-2014 WATER YEARS
October 2009 – September 2014

ULARA WATERMASTER
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JULY 2010

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I. EXECUTIVE SUMMARY

As the Watermaster for the Upper Los Angeles River Area (ULARA), I am pleased to submit this Annual Report for the ULARA Groundwater Pumping and Spreading Plan for the 2009-2014 Water Years. This report is prepared in compliance with Section 5.4 of the ULARA Watermaster's Policies and Procedures that established the Watermaster's responsibility for management of the four groundwater basins in ULARA (the San Fernando, Verdugo, Sylmar and Eagle Rock basins). This Pumping and Spreading Plan includes, as appendices, the individual plans submitted by the five major pumping parties (the cities of Burbank, Glendale, Los Angeles and San Fernando, and the Crescenta Valley Water District); this report also discusses the estimated changes in recharge, spreading, pumping, and pumping patterns, especially in relation to the present and future plans for groundwater cleanup in the eastern portion of the San Fernando Groundwater Basin.

In this current Water Year which ends September 30, 2010, both the cities of San Fernando and Los Angeles have encountered pumping difficulties in the Sylmar Basin and expect to pump less than their annual entitlements from this basin. Overall pumping in the San Fernando Basin (SFB) will be less than the long-term average. The cities of Glendale and Burbank are on track to produce more than their adjudicated water rights, while the City of Los Angeles continues to experience considerable challenges with groundwater contamination in this basin and will pump less groundwater than its annual entitlement. In the Verdugo Basin, both Glendale, due to its limited pumping capacity, and Crescenta Valley Water District (CVWD), due to local problems with groundwater contamination, expect to produce less than their full water right during the current Water Year.

Currently, there are five major groundwater cleanup facilities (each with its own water wells and treatment plant) in operation in ULARA: the North Hollywood Operable Unit (OU) and the Pollock Wells Treatment Plant in the City of Los Angeles; the Burbank OU (BOU) in Burbank; the Glendale OU (GOU) in Los Angeles; and the CVWD Glenwood Nitrate Removal Plant in La Crescenta. Glendale completed and now operates its Chromium Removal Demonstration Facilities to remove hexavalent chromium from a portion of the groundwater produced by wells in the Glendale OU. This new facility is demonstrating two promising treatment technologies, weak-base anion exchange (WBA), and reduction, coagulation and filtration (RCF). The City of Los Angeles also constructed and began operating wellhead treatment facilities on two of its twelve wells at the Tujunga Wellfield in May 2010.

The Watermaster has continued to address the decline of groundwater stored in the SFB. This effort was initiated by the prior Watermaster (Mr. Mark Mackowski) who filed a "white paper" with the Superior Court in March 2007 entitled, "Is the San Fernando Groundwater Basin Undergoing a Long-Term Decline in Storage?" As a result of that filing, the cities of Burbank, Glendale, and Los Angeles entered into a Stipulated Agreement in 2007 to limit their pumping of Stored Water Credits in the SFB. A copy of this Stipulated Agreement is provided in the Annual Watermaster Report dated May 1, 2010.

Further, to help address the decline in water levels and groundwater in storage in the SFB, the Administrative Committee, which is comprised by a representative from each of the five main Parties to the ULARA Judgment of January, 1979 (Superior Court Case No. 650079), retained an engineering consultant in late-2008 to perform a re-evaluation of the safe yield study of this basin. A Technical Subcommittee, comprised by Mr. Glenn Brown (representing the cities of Burbank and Glendale), Mr. Mark Mackowski (former Watermaster), Mr. Hadi Jonny (from the City of Los Angeles), the current Watermaster and Mr. Mel Blevins, frequently met with the consultant and actively reviewed the in-progress findings and preliminary conclusions in a 90% Draft report prepared by that consultant. Certain findings and conclusions in that Draft report were deemed to be inconsistent with the known hydrogeologic conditions in the SFB. As a result, the 90% Draft report will not be finalized. The Parties have agreed with the Watermaster to re-direct efforts over the next few years toward collecting more surface and subsurface data, more accurate data, and more data from different locations within the SFB. These new data could then be made available to another consultant in 5 or 6 years in order to conduct a more detailed and definitive re-evaluation of the safe yield of the SFB.

The groundwater model prepared and updated this year by the Los Angeles Department of Water and Power (LADWP) simulates the combined effects of projected pumping on groundwater elevations in the SFB for the five-year period ending September 30, 2014. The most significant effects shown by the model include the substantial rebound of simulated water levels in the basin resulting from increased recharge activity in the spreading basins and the expected reductions in groundwater pumping by Los Angeles. As simulated by the model, water levels may increase by as much as 50 feet in some areas. However, Los Angeles would likely reduce its pumping in response to water quality concerns due to the existence of certain contaminants that occur in the groundwater at concentrations that exceed their regulatory limits. As a result, LADWP is taking steps to deploy treatment systems to treat the contaminated groundwater and not lose the operation of its wellfields over these next several years. Also noteworthy are the simulated groundwater contours in the areas near the BOU wells which show the continued effectiveness of plume containment by those wells. In summary, the estimated cumulative amounts of recharge have been projected to exceed the cumulative amounts of extractions by approximately 181,765 AF over the next five years, as simulated by the model.

In closing, I wish to acknowledge the timely responses of each party and express appreciation to each of those parties for providing information and data that were essential to the completion of this Annual Pumping and Spreading Report. The continued efforts of the Watermaster Support Services team at the Los Angeles Department of Water and Power (including Mr. Hadi Jonny, Ms. Fatema Akhter, Ms. Araceli Carrillo and Mr. Greg Reed) have been very much appreciated during the writing, analyses and publishing of this report.

RICHARD C. SLADE
ULARA Watermaster

II. INTRODUCTION

As a result of the groundwater contamination that was detected in certain water wells in the eastern portion of the San Fernando Basin in the late-1970s, the original ULARA Watermaster and the Administrative Committee, together with the Los Angeles Regional Water Quality Control Board (LARWQCB), revised the ULARA Watermaster's Policies and Procedures (in July 1993) to help prevent further degradation of groundwater quality and limit the spread of contamination in the four ULARA groundwater basins. The Policies and Procedures were revised again in February 1998 to organize the material into a more comprehensive document.

Section 5.4 of the Policies and Procedures assigns the responsibility to each of the five municipal-supply purveyors (Parties) in ULARA to prepare its own annual Groundwater Pumping and Spreading Plan for each successive five-year period. These five Parties include the cities of Burbank, Glendale, Los Angeles, and San Fernando, and the Crescenta Valley Water District (CVWD). Thus, each of these municipal-supply pumpers is required to annually submit (on or before May 1 of each Water Year) a Groundwater Pumping and Spreading Plan to the ULARA Watermaster. This plan is to include their five-year projected groundwater pumping and spreading volumes, recent water quality data for each well, and any modifications planned for key facilities (e.g., constructing or destroying wells, building or modifying treatment plants, etc).

The ULARA Watermaster is required to: evaluate the five individual plans in regard to their potential impacts of the combined pumping and spreading activities by all parties regarding the implementation of the San Fernando Judgment of January 26, 1979; and provide, if needed, recommendations for improving groundwater management and/or for protecting groundwater quality in the ULARA groundwater basins. The Watermaster's evaluation and recommendations are to be included in each Annual Groundwater Pumping and Spreading Plan, and the Administrative Committee is to review and approve the plan by July 1 of each Water Year.

This Annual Report represents the July 2010 Groundwater Pumping and Spreading Plan for the five-year period of 2009-2014 for ULARA, and it has been prepared pursuant to the Policies and Procedures. This report provides guidance to the Administrative Committee for use in improving basin management, providing protection of the water rights of each party, and protecting water quality within ULARA.

III. PLANS FOR THE 2009-2014 WATER YEARS

A. Projected Groundwater Pumping for 2009-10 Water Year

The total volume of groundwater pumped by all parties during the current Water Year is projected to be 81,977 acre feet (AF) as shown on Table 3-1B; this volume is 13,685 AF less than the 30-year historical average (1979-2009). The estimated volume of pumping for next Water Year (2010-11) is 78,814 AF, which is also less than the historical long-term average of 95,662 AF.

As shown in Table 3-1B, the City of Burbank plans to pump 10,255 AF of groundwater from the SFB; this volume exceeds its annual pumping entitlement. Excluding 300 AF of pumping by Valhalla Mortuary, extractions by Burbank will be 1,371 AF more than its five-year average and 5,037 AF higher than its long-term average. Burbank's annual entitlement for the 2009-10 Water Year was 4,432 AF, based on its 20 percent import return credit. The planned extractions by Burbank support groundwater clean-up operations by the BOU facilities, which have a capacity of 9,000 gallons per minute (gpm) or about 14,000 acre-feet per year (AF/Y). Burbank can account for its pumping in excess of the annual import return credit by electing to purchase as much as 4,200 AF of Physical Solution groundwater from Los Angeles. Burbank can also use a portion of its *available* groundwater storage credits, which were 4,861 AF as of October 1, 2009 (Burbank also has an additional 14,385 AF of stored water credits *on reserve*). Burbank may also purchase and import water from the Metropolitan Water District of Southern California (MWD) and store it in the SFB, or obtain stored water credits from Los Angeles and/or Glendale.

CVWD plans to pump 2,705 AF in 2009-10, which is less than its full right of 3,294 AF/Y. This planned pumping by CVWD from the Verdugo Basin is 144 AF less than its long-term average pumping since 1979, and 530 AF less than its five-year average.

The City of Glendale resumed significant pumping from the SFB when the GOU began operating in September 2000. In the 2009-10 Water Year, Glendale plans to pump 7,705 AF from the SFB; this volume is 155 AF less than its five-year average. In the SFB, Glendale's annual water right is approximately 5,200 AF, based on its 20 percent import return credit for water delivered to its service area within the SFB during the 2008-09 Water Year. Glendale has the right to purchase up to 5,500 AF/Y of Physical Solution water from Los Angeles to cover the excess pumping. Glendale can also use a portion of its *available* stored water credits, which totaled 13,764 AF as of October 1, 2009 (Glendale also has an additional 40,733 AF of stored water credits *on reserve*). In the Verdugo Basin, Glendale plans to pump 2,600 AF in 2009-10;

this volume is 311 AF less than its 30-year historical average, but represents an increase of 182 AF above its average pumping during the recent five year period. Glendale is taking steps to increase its pumping capacity from the Verdugo Basin. An old, unused well on Foothill Boulevard is undergoing renovation and should be online later in 2010. Additionally, a new well at the Rockhaven Sanitarian is under design.

The City of Los Angeles expects to pump 52,857 AF this year from the SFB, a volume that is 23,557 AF less than its long-term (1979-2009) annual average of 76,414 AF, and 399 AF less than its average pumping over the past five years. Los Angeles expects to pump 2,979 AF of groundwater from the Sylmar Basin; this volume is 143 AF more than its 1979-2009 average. As of October 1, 2009, Los Angeles' available stored water credits were 108,574 AF in the SFB (Los Angeles also has an additional 321,316 AF of stored water credits *on reserve* in the SFB) and 11,960 AF in the Sylmar Basin.

In 2009-10, the City of San Fernando plans to pump 2,876 AF from the Sylmar Basin. This volume is 331 AF less than its average pumping for the past five years and also 224 AF less than its 30-year average. San Fernando has a stored water credit of 915 AF as of October 1, 2009 in Sylmar Basin.

Estimated pumping capacities of the ULARA wellfields are provided in Table 3-1. Actual and projected amounts of pumping and spreading by the major parties during 2009-10 are shown in Tables 3-1A, 3-1B, and 5-1A.

B. Constraints on Pumping as of 2009-10

CONSTRAINTS ON PUMPING IN THE SAN FERNANDO BASIN

In September 2008, the cities of Burbank, Glendale, and Los Angeles signed a Stipulated Agreement entitled, "Interim Agreement for the Preservation of the San Fernando Basin Water Supply." The Stipulated Agreement became effective in the 2007-08 Water Year and included a provision that limits the pumping of the Stored Water Credits owned by these three cities in the SFB to amounts that would not cause the volume of groundwater in storage to fall below its 1968 volume; this 1968 date is when the Superior Court placed the SFB on safe yield operation (Judgment Section 4.2.6.1). A copy of the Stipulated Agreement is in Appendix G of the Annual Watermaster Report dated May 2010 or it can be obtained upon request from the Watermaster Office.

City of Burbank – The United States Environmental Protection Agency (USEPA) Consent Decree project implemented the Burbank Operable Unit (BOU) treatment facility which became fully operational on January 3, 1996. In late-June 2000, the treatment plant was taken out of service due to breakthrough of 1,2,3-trichloropropane (TCP) in the plant effluent. The plant returned to service after the California Department of Public Health (CDPH) approved an operation and sampling plan and the carbon was changed out in the liquid phase contactors. BOU Well No. 6 was removed from service at that time due to the high concentrations of 1,2,3-TCP. The overall production capacity of the BOU facilities of 9,000 gallons per minute (gpm) was also constrained during this period due to general mechanical problems in the BOU, including the vapor phase granulated activated carbon (GAC) screens, the wearing of well pumps/motors, and the failure of well level sensors. Replacement of distribution headers and under drains in the liquid phase carbon contactors was completed in December 2003.

On February 23, 2008, fire erupted in the dehumidifier housing of BOU treatment "A" Train. USEPA directed the shut down of the "B" Train until the cause of the fire could be determined. Safety enhancements were completed on the "B" Train, allowing its return to service on April 11, 2008. Repairs to the fire-damaged "A" Train were completed in June 2008. Modifications to the vapor-phase carbon contactors were completed on both trains by September 2008 and operation has been highly reliable since then.

Burbank's consultant, Montgomery Watson Harza conducted the Well Field Performance Attainment Study to evaluate the BOU wellfield and appurtenant facilities in an effort to increase groundwater extractions up to 9,000 gpm. The Well Field Performance Attainment Study was completed and reviewed by the USEPA and Lockheed-Martin. An operation plan is being developed to implement various recommendations in the report, including such actions as drilling additional wells and/or deflating the packers that have been used in existing BOU wells. The results of this study will guide the next steps in optimizing the BOU wellfield to reliably meet the 9,000 gpm capacity of the BOU plant.

Groundwater extracted by the City of Burbank also contains chromium, which cannot be removed by the BOU or by Burbank's other groundwater treatment facility (the Lake Street GAC Treatment Plant). In January 2002, USEPA approved a mode of operation using the existing wells and then blending the groundwater extractions with imported MWD water to keep total chromium at concentrations at or below 5 micrograms per liter (µg/L); 1 µg/L is equivalent to one part per billion (ppb). This 5 µg/L concentration limit is the goal established by the Burbank City Council for delivered water within the City.

Currently, the BOU operations are limited by fluctuations in consumptive demand and blending requirements to manage chromium concentrations. However, Burbank plans to continue the voluntary shut down of the Lake Street GAC Treatment Plant and nearby wells due to the inability to blend the extracted groundwater to lower chromium concentrations to 5 µg/L or less. Although the GAC Treatment Plant and Lake Street wells were operated for short periods during Water Year 2008-09, the treated extractions were used for cooling tower water at Burbank's power plant when recycled water was unavailable. Lockheed-Martin had arranged to utilize the capacity of the GAC Treatment Plant, when available, to augment the production of the BOU to reach the 9,000 gpm capacity of the BOU plant.

<u>City of Glendale</u> – The Glendale OU began operating in September 2000 but hexavalent chromium was encountered shortly thereafter in the pumped groundwater. However, because the Glendale OU was not designed to treat for chromium, Glendale has had to blend the treated water with imported supplies from MWD to achieve the target concentration of 5 µg/L for this contaminant, the goal set by the Glendale City Council.

Glendale has received several grants from federal appropriations and the American Water Works Association Research Foundation (AWWARF) to investigate technology capable of large-scale treatment of hexavalent chromium. As a result, Glendale constructed the Chromium Removal Demonstration Facilities to remove hexavalent chromium from groundwater produced by GOU Well GS-3 using WBA exchange and from a small amount of the groundwater processed by the Glendale Water Treatment Plant; this plant uses reduction, coagulation and filtration (RCF) technology. The treatment facilities using the two technologies identified in a study by Malcolm Prinie, were constructed and placed into service in March and April 2010; additional evaluations continue at this time.

<u>City of Los Angeles</u> - All wellfields operated by Los Angeles within the SFB have been impacted by groundwater contamination, primarily from volatile organic compounds (VOCs), such as trichloroethylene (TCE) and perchloroethylene (PCE). This contamination has greatly impacted the ability of Los Angeles to pump groundwater from the SFB. While Los Angeles' five-year pumping plans reflect continued reductions in its groundwater pumping, this Party is responding to the challenges of groundwater contamination by pursuing plans to build new facilities for contamination removal; when

completed, these facilities will restore Los Angeles' ability to pump and serve potable groundwater to its customers.

The Pollock Wellfield was partially restored when the Pollock Wells Treatment Plant was placed into service on March 17, 1999. Recently, however, this facility has encountered problems with breakthrough of 1,1 dichloroethene (DCE) within the liquid-phase GAC vessels and other problems with mechanical reliability. Certain wells within the Tujunga and Rinaldi-Toluca wellfields, have also experienced increased concentrations over time of TCE, PCE, and nitrate above their respective Maximum Contaminant Levels (MCLs); these trends are being evaluated at this time. Low concentrations of perchlorate ($Cl0_4$) have recently been detected in certain wells in these two wellfields. Los Angeles recently completed installing and testing liquid-phase GAC wellhead treatment for the VOCs on two of its wells in its Tujunga Wellfield. The CDPH permitted the facility for discharge of the processed groundwater to the Los Angeles distribution system as of May 2010.

Hexavalent chromium contamination also resulted in the discontinued operation of one of Los Angeles' extraction wells, Aeration Well No. 2, at the North Hollywood Operable Unit (NHOU) facility. Under a March 2007 Amendment to an existing Clean-up and Abatement Order (CAO) issued by the LARWQCB, Honeywell International Inc. (Honeywell) was ordered to, among other things, provide or pay LADWP for uninterrupted replacement water, which may include well treatment, for this extraction well; Honeywell continues to develop the treatment process and the project's effluent is currently being discharged to the sanitary sewer while the treatment process is being permitted to allow the treated groundwater from this well to be delivered to Los Angeles' distribution system.

CONSTRAINTS ON PUMPING IN THE SYLMAR BASIN

City of San Fernando - All of the groundwater pumped by the City of San Fernando is extracted from the Sylmar Basin. Up to now, VOC contamination has not been detected in any of its municipal-supply wells in this basin. However, elevated concentrations of nitrate have been detected in wells owned by San Fernando. To date, two wells have exceeded the MCL, one (Well 7A) was placed on inactive status; and the other (Well 3) is on stand-by status while awaiting implementation of a mitigation plan. Old septic systems and past agricultural practices in the region are the likely causes of these elevated nitrate concentrations. San Fernando is pursuing state grants to fund the installation of wellhead treatment facilities for nitrate.

City of Los Angeles - Los Angeles was unable to pump its full adjudicated water right from the Sylmar Basin in 2008-09 due to physical deterioration of the Mission Wells facility. Elevated levels of VOCs that were also detected in one of the City's water-supply wells in this basin have also constrained groundwater pumping. A project to rehabilitate the Mission Wells facilities is underway, including recent construction of a new groundwater storage tank and the planning for a new pumping station and three new water-supply wells. The new facilities will enable Los Angeles to pump both its annual water right and its stored water credits from this basin.

CONSTRAINTS ON PUMPING IN THE VERDUGO BASIN

Crescenta Valley Water District - All of the groundwater rights of CVWD occur in the Verdugo Basin. Contamination from VOCs is minimal, however, nitrate contamination is widespread and methyl tertiary butyl ether (MTBE), a component of gasoline, has also been detected in a few wells also. Elevated nitrate concentrations are mitigated in the water supply by treating a portion of the pumped groundwater using anion exchange at the Glenwood Nitrate Removal Plant, and by blending untreated groundwater with treated groundwater and/or with imported MWD supplies in order to meet drinking water standards.

In past years, CVWD has been given permission on an annual basis by the Watermaster to pump in excess of its right until the City of Glendale is able to pump its entire right from Verdugo Basin. During Water Years 2004-05, 2005-06, and 2006-07, CVWD pumped in excess of its adjudication without obtaining permission from the Watermaster. The Watermaster did not grant CVWD permission to over-pump because Glendale had expressed its intention to increase its production from the Verdugo Basin in the near future; Glendale has not increased its production from Verdugo Basin in the past several years. CVWD and Glendale reached an agreement to settle past over-pumping for Water Years 2004-05 and 2005-06. Glendale and CVWD continue to work on a settlement of the 2006-07 over–pumping issue; progress on an agreement is on-going, but a conclusion has not yet been reached.

Since 2005, CVWD has detected concentrations of MTBE ranging from just above 0.22 μg/L to as high as 50 μg/L in all of its 12 water wells. In August 2006, concentrations of

MTBE increased to values above its Primary MCL of 13 µg/L in Well 7 and this well was taken out of service. The prior Watermaster responded by establishing the Verdugo Basin MTBE Task Force in November 2006 which included the CDPH, the LARWQCB, the ULARA Watermaster, Glendale Water and Power, CVWD, and various oil companies and independent gas station owners. The Task Force has been meeting on a bi-monthly basis to coordinate site-remediation activities among the responsible parties.

In April 2008, MTBE concentrations in CVWD Well 7 decreased to less than 0.5 µg/L, thereby allowing this well to be put back into service. Since then, CVWD has continued to monitor the water quality in its water wells for MTBE. From initial observations in July 2008, MTBE concentrations in Well 5 increased to as high as 14 µg/L in September 2008. As a result, Well 5 was taken out of service and data from continued monitoring have shown concentrations for this contaminant had increased over time to 57 µg/L as of September 2009. Currently Well 5 remains out of service. The loss of groundwater production from Well 5, CVWD's largest producing well at 500 gpm, has seriously impacted the ability of CVWD to utilize the local groundwater resources in a time of a state-wide drought. CVWD obtained CDPH approval for grant funding to construct a GAC treatment system for MTBE removal with the goal of completing the treatment system by the end of 2010.

CVWD’s Well 9 was also out of service due to bacteriological problems, but this well should be back in service within the current water year.

<u>City of Glendale</u> - The City of Glendale has made limited use of its adjudicated rights of 3,856 AF/Y from the Verdugo Basin, due to water quality problems, groundwater level declines, and limited extraction capacity. Glendale is in the process of planning the construction of one new municipal-supply well and rehabilitating a previously-abandoned water well. Glendale expects to begin pumping its full adjudicated right from the Verdugo Basin by 2012.

TABLE 3-1: ESTIMATED CAPACITY OF EXISTING WELLFIELDS

Party/Well Field	Number of Active Wells	Number of Standby Wells	Estimated Capacity (All Wells) (cfs)	(gpm)
SAN FERNANDO BASIN				
City of Los Angeles				
Aeration (NHOU)	7	---	2.6	1,170
Erwin	2	---	5.8	2,600
North Hollywood	14	3	86.0	38,600
Pollock	2	---	6.3	2,830
Rinaldi-Toluca	15	---	107.0	48,030
Tujunga	12	---	105.9	47,530
Verdugo	2	---	7.2	3,230
Whitnall	4	---	18.8	8,440
City of Burbank	8	2	24.5	11,000
City of Glendale	8	---	11.6	5,200
TOTAL	74	5	375.7	168,630
SYLMAR BASIN				
City of Los Angeles	2	---	6.2	2,780
City of San Fernando	3	1	9.8	4,400
TOTAL	5	1	16.0	7,180
VERDUGO BASIN				
CVWD	12	---	5.12	2,300
City of Glendale	5	---	3.8	1,700
TOTAL	17	---	8.92	4,000

Note:

A. There are no municipal-supply water wells in the Eagle Rock Basin.

TABLE 3-1A: REPORTED GROUNDWATER EXTRACTIONS 2008-09

(Acre-feet)

Party/Well Field	2008			2009									Total
	Oct.	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
						SAN FERNANDO BASIN							
City of Los Angeles													
Aeration (NHOU)	12	0	0	0	0.20	130	43	93	96	119	92	77	662
Erwin	263	178	0.92	0	0.16	0.60	79	171	200	296	172	215	1,576
North Hollywood	1,455	1,748	1,384	1,190	452	382	938	1,451	679	1,721	284	587	12,272
Pollock	134	401	214	358	178	98	0	0	0	0	0	315	1,698
Rinaldi-Toluca	611	1,001	838	784	949	942	1,676	1,556	1,684	2,198	2,304	2,279	16,823
Tujunga	1,356	639	853	8	416	272	9	618	1,347	1,611	1,415	1,431	9,973
Verdugo	309	197	243	198	146	0.39	89	185	220	310	190	249	2,335
Whitnall	499	374	450	360	253	2.32	358	1,346	546	1,458	871	1,039	7,557
SUB TOTAL City of Los Angeles:	4,639	4,539	3,982	2,898	2,394	1,827	3,192	5,420	4,772	7,714	5,327	6,191	52,896
City of Burbank (A)	647	918	722	797	398	589	842	1,014	924	1,188	1,209	1,062	10,312
City of Glendale	637	641	663	677	554	682	608	470	285	669	652	613	7,151
TOTAL San Fernando Basin:	**5,923**	**6,098**	**5,367**	**4,372**	**3,346**	**3,098**	**4,642**	**6,904**	**5,982**	**9,571**	**7,189**	**7,867**	**70,359**
						SYLMAR BASIN							
City of Los Angeles	0.09	0.32	0	0	0	0	102	104	208	67	214	173	868
City of San Fernando	328	278	236	261	211	257	283	319	290	347	341	323	3,473
TOTAL Sylmar Basin:	**328**	**278**	**236**	**261**	**211**	**257**	**385**	**422**	**498**	**414**	**554**	**497**	**4,341**
						VERDUGO BASIN							
Crescenta Valley Water Dist.	268	256	236	250	178	255	274	253	225	264	260	238	2,957
City of Glendale	160	141	119	164	218	217	196	199	190	174	153	155	2,087
TOTAL Verdugo Basin:	**428**	**398**	**355**	**413**	**396**	**471**	**471**	**452**	**416**	**438**	**413**	**393**	**5,043**
ULARA TOTAL:	**6,679**	**6,774**	**5,959**	**5,046**	**3,953**	**3,826**	**5,497**	**7,778**	**6,896**	**10,422**	**8,156**	**8,757**	**79,743**

Notes:

A. Includes BOU and Valhalla.

B. There are no municipal-supply water wells in the Eagle Rock Basin.

TABLE 3-1B: HISTORIC AVERAGE AND PROJECTED GROUNDWATER EXTRACTION

(Acre-feet)

Party/Wellfield	Historic Average Pumping (AF)		Projected Groundwater Pumping (AF)				
SAN FERNANDO BASIN							
City of Los Angeles	1979-2009 (A)	2004-2009 (B)	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
Aeration (NHOU)	-	1,163	1,357	1,380	1,937	1,937	1,937
Erwin	-	1,749	1,194	1,196	0	0	0
North Hollywood	-	15,290	10,612	6,172	4,367	2,967	1,567
Pollock	-	2,139	2,634	1,994	2,178	2,178	2,178
Rinaldi-Toluca	-	16,500	16,935	7,099	6,550	4,451	2,350
Tujunga	-	11,387	13,697	23,963	15,674	15,674	15,674
Verdugo	-	1,592	1,728	2,549	2,687	2,687	2,553
Whitnall	-	3,436	4,700	4,652	8,607	5,106	1,741
SUBTOTAL City of Los Angeles	76,414	53,256	52,857	49,005	42,000	35,000	28,000
City of Burbank (C)	4,918	8,584	10,255	11,326	11,026	11,026	11,026
City of Glendale (D)	3,256	7,860	7,705	7,720	7,720	7,720	7,720
TOTAL San Fernando Basin:	**84,588**	**69,701**	**70,817**	**68,051**	**60,746**	**53,746**	**46,746**
SYLMAR BASIN							
City of Los Angeles	2,836	2,214	2,979	1,756	1,500	1,400	1,300
City of San Fernando	3,100	3,207	2,876	2,876	2,876	2,876	2,876
TOTAL Sylmar Basin:	**5,935**	**5,421**	**5,855**	**4,632**	**4,376**	**4,276**	**4,176**
VERDUGO BASIN							
Crescenta Valley Water District	2,849	3,235	2,705	3,190	3,294	3,294	3,294
City of Glendale	2,289	2,418	2,600	2,941	3,807	3,856	3,856
TOTAL Verdugo Basin:	**5,138**	**5,653**	**5,305**	**6,131**	**7,101**	**7,150**	**7,150**
TOTAL ULARA:	95,662	80,775	81,977	78,814	72,223	65,172	58,072

Notes:

A. 30-year average of muncipal well field pumping (Appendix F). Historic pumping averages include wells that are no longer in service.

B. 5-year average.

C. Includes BOU. Valhalla pumping included in the projected numbers only.

D. Includes Forest Lawn, GOU, and sewer installation pumping.

E. There are no municipal-supply water wells in the Eagle Rock Basin.

IV. GROUNDWATER PUMPING AND TREATMENT FACILITIES

A. Wellfields

There are twelve municipal-supply wellfields located in the San Fernando Basin (SFB), two in the Sylmar Basin, and two in the Verdugo Basin; there are no municipal-supply wellfields in the Eagle Rock Basin. The locations of wellfields within the SFB are shown on Plate 3. The estimated capacity and the current number of active wells in each wellfield are provided in Table 3-1.

B. Active Groundwater Pumping and Treatment Facilities

Glendale OU (GOU) – City of Glendale

The GOU has been producing and treating groundwater for VOCs since September 2000. On April 23, 2001, the City of Glendale assumed operation of the GOU. Prior to that time, the Glendale Respondents Group had operated the treatment plant through a contract with Camp Dresser & McKee, a consulting engineering firm.

The GOU is comprised of a treatment plant, eight groundwater extraction wells, a pumping plant, a disinfection facility, and associated piping. The facility is designed to treat groundwater contaminated by TCE and PCE at a combined rate of 5,000 gpm using aeration and granulated activated carbon (GAC). The treated water is then blended with imported supplies to control nitrate concentrations. Currently, the wells are being pumped and operated in a manner to limit hexavalent chromium concentrations to achieve the target of 5 µg/L, in the treated, blended effluent. Glendale has continued to pursue an aggressive research program to identify large-scale treatment technologies for the removal of hexavalent chromium. A study by Malcolm Pirnie was presented to an expert panel in October 2006 that identified two promising technologies: weak-base anion (WBA) exchange; and reduction-coagulation-filtration. The City of Glendale completed construction and began operating the WBA Chromium Removal Demonstration (WBA-CRD) Facility in March and April 2010 to demonstrate and further study these two treatment technologies.

Burbank OU (BOU) – City of Burbank

The remediation of groundwater contamination in the SFB was significantly enhanced by the startup of the BOU on January 3, 1996. The BOU, which consists of eight water wells and air-stripping towers followed by liquid- and vapor-phase GAC, has a total design capacity of 9,000 gpm (14,000 AF/yr). Under the terms of the Second Consent Decree, Burbank assumed operation of the BOU on March 12, 2001 and will be the long-term primary operator for the next 18 years. The City of Burbank, in cooperation with the United States Environmental Protection Agency (USEPA) and Lockheed-Martin, continued with design improvements and operational changes to make the facility mechanically more reliable. During the 2008-09 Water Year, a total of 9,818 AF of groundwater was treated at the BOU, an increase of nearly 3,000 AF from the volume of the prior water year. As a requirement of the Consent Decree, Burbank also reduces the levels of nitrate by blending the treated effluent with imported supplies from MWD at its blending facility before delivery to customers in the City of Burbank.

GAC Treatment Plant - City of Burbank

This facility, which includes the two Lake Street wells, was operated by the City of Burbank from 1992-2001. These two wells can deliver water at a combined rate of 2,000 gpm to the liquid-phase GAC plant for removal of volatile organic compounds (VOC). When the plant is in use, the treated water supplements production from the BOU and can be delivered to the Burbank distribution system. The GAC Treatment Plant would normally operate during the summer season. However, current plans are to keep the plant shut down, except for emergencies, because of hexavalent chromium (Chromium VI) in the well water. The existing GAC treatment process does not remove chromium, and blending facilities are not available. Total chromium in the plant effluent would exceed the limit of 5 µg/L set by Burbank City Council as a policy for water delivered to its distribution system.

North Hollywood OU (Aeration Facility) - City of Los Angeles

This facility is designed to treat up to 2,000 gpm of VOC-contaminated groundwater by air-stripping and to then deliver the treated water to the water distribution system of the City of Los Angeles. The facility now operates below design capacity due to numerous mechanical issues and a declining water table in the area. In September 2009, the USEPA issued its Record of Decision (ROD) for the NHOU Second Interim Remedy (NHOU IR2). To increase the effectiveness of plume containment and contaminant removal, the plan is to deepen or replace several of the existing extraction wells, and construct new wells and a treatment facility in order to treat VOCs, chromium, 1,4 dioxane and other contaminants of concern.

Hexavalent chromium levels have increased significantly, forcing LADWP to discontinue operating one of its NHOU wells. Under a March 2007 Amendment to an existing CAO issued by the LARWQCB, Honeywell began operating this well to treat and discharge the effluent to the sewer while remedial alternatives are evaluated. Honeywell has also constructed 26 groundwater monitoring wells to further characterize the water quality and hydrogeology of the area, and may install additional monitoring wells in the near future.

At this time, LADWP is only operating four of its other NHOU wells, and pumping rates for these wells have dropped below the combined design flow due to a decline in the water table. Two other wells were shutdown, also due to this decline. A total of 662 AF of groundwater was treated during the 2008-09 Water Year.

The five-year USEPA review of the NHOU that was published in September 2003 determined that the interim remedy of the NHOU "currently protects human health and the environment because the concentration of trichloroethylene (TCE) and perchloroethylene (PCE) in treated groundwater is less than the Record of Decision (ROD) selected cleanup goals and no other Contaminants of Concern (COCs) currently exceed health-based standards." However, wells in the NHOU have not been successful in controlling the migration of the VOC and/or COC contaminant plumes.

Pollock Wells Treatment Plant - City of Los Angeles

Pollock Wells Treatment Plant, with a design capacity of 3,000 gpm, began operating in March 1999. This project is funded, owned, and operated by the City of Los Angeles. Wells that pump to the Pollock Wells Treatment Plant help reduce rising groundwater in the area that otherwise would flow out of the Upper Los Angeles River Area (ULARA). These wells also serve to enhance overall groundwater cleanup in the Los Angeles River Narrows area of the SFB. The groundwater is treated by liquid-phase GAC vessels for VOC removal, followed by chlorination and then blending to reduce nitrate concentrations. The treated water is then delivered to LADWP's distribution system.

Tujunga Well Field Treatment Study Project – City of Los Angeles

This recently constructed project restores the use of two of Los Angeles' twelve water-supply wells and provides an additional 12,000 AF/Y of pumping capacity that was previously unavailable due to water quality contamination. The project utilizes liquid-phase GAC adsorption vessels on Well Nos. 6 and 7 to treat the groundwater and remove certain VOCs like TCE, PCE, carbon tetrachloride, and 1,1 dichloroethene (DCE). As of May 2010, CDPH permitted the operation of these wellhead treatment facilities for discharge of the treated water to the water distribution system of the City of Los Angeles .

Glenwood Nitrate Removal Plant – Crescenta Valley Water District

Groundwater pumped from wells operated by Crescenta Valley Water District (CVWD) in the Verdugo Basin is often high in nitrate. A portion of the pumped groundwater is treated by ion exchange and then blended with untreated water and/or imported Metropolitan Water District of Southern California (MWD) water to reduce nitrate concentrations to values that are below its MCL of 45 mg/L. In the 2008-09 Water Year, the ion-exchange plant was in operation for the majority of the year to help maximize the use of local groundwater.

TABLE 4-1 HISTORIC AND CURRENT GROUNDWATER TREATMENT

(Acre-feet)

Water Year	Burbank GAC	Lockheed Aqua Detox	Burbank OU	Glendale North/South OU	CVWD Glenwood Nitrate Removal Plant	North Hollywood OU	Pollock Wells Treatment Plant	Annual Total
1985-86		1						1
1986-87		1						1
1987-88		1						1
1988-89		924						924
1989-90		1,108				1,148		2,256
1990-91		747				1,438		2,185
1991-92		917			847	786		2,550
1992-93	1,205	692			337	1,279		3,513
1993-94	2,395	425	378		1,550	726		5,474
1994-95	2,590		462		1,626	1,626		6,304
1995-96	2,295		5,772		1,419	1,182		10,668
1996-97	1,620		9,280		1,562	1,448		13,910
1997-98	1,384		2,580		1,391	2,166		7,521
1998-99	1,555		9,184		1,281	1,515	1,513	15,048
1999-00	1,096		11,451	979	1,137	1,213	1,851	17,727
2000-01	995		9,133	6,345	989	1,092	1,256	19,810
2001-02	0		10,540	6,567	515	998	1,643	20,263
2002-03	0		9,170	7,508	216	1,838	1,720	20,452
2003-04	0		9,660	6,941	164	1,150	1,137	19,052
2004-05	0		6,399	7,541	782	1,042	1,752	17,517
2005-06	0		10,108	6,777	997	1,766	2,442	22,090
2006-07	0		9,780	7,562	644	1,307	2,231	21,524
2007-08	0		6,817	7,347	660	1,038	2,573	18,435
2008-09	148		9,818	7,148	459	662	1,698	19,932
Total AF	**15,283**	**4,815**	**120,533**	**64,715**	**16,576**	**25,421**	**19,816**	**267,158**

TABLE 4-2 PROJECTED GROUNDWATER TREATMENT

(Acre-feet)

	Burbank GAC	Burbank OU	Glendale North/South OUs [1]	CVWD Glenwood Nitrate Removal Plant	Los Angeles North Hollywood OU	Los Angeles Pollock Wells Treatment Plant	Los Angeles Tujunga Wells Treatment Plant [2]	Annual Total
2009-10	0	9,955	7,300	490	1,357	2,634	12,000	33,736
2010-11	0	11,026	7,300	500	1,380	1,994	12,000	34,200
2011-12	0	11,026	7,300	500	1,937	2,178	12,000	34,941
2012-13	0	11,026	7,300	500	1,937	2,178	12,000	34,941
2013-14	0	11,026	7,300	500	1,937	2,178	12,000	34,941
TOTAL	**0**	**54,059**	**36,500**	**2,490**	**8,548**	**11,162**	**60,000**	**172,759**

1. Groundwater treatment includes chromium removal demonstration technologies (weak-base anion exchange and reduction-coagulation-filtration), which are treating a portion of the groundwater produced by the GOU treatment plant.
2. Treatment plant utilizing GAC wellhead treatment only on Wells #6 and #7 of the twelve extraction wells at Tujunga Wellfield

C. Other Issues

1. Future Groundwater Pumping and Treatment Facilities

Verdugo Basin Wells – City of Glendale

Glendale is currently rehabilitating an existing water well and planning for the construction of a new water-supply well in the Montrose area of the Verdugo Basin to increase its extraction capacity and obtain its full adjudicated water right from this basin. The Foothill Well Rehabilitation Project is expected to be completed by December 2010 and the new Rockhaven Well is currently under design and is expected to be in service in early-2012.

GAC Treatment Facility – Crescenta Valley Water District

In April 2008, CVWD re-applied to the California Department of Public Health (CDPH) for grant funding under the Drinking Water Treatment and Research Fund for installation of a new granulated activated carbon (GAC) water treatment system for removal of methyl tertiary butyl ether (MTBE) at the Mills Plant. The application was revised in August 2008 to move the location of the GAC treatment plant to the Well 5 site since MTBE concentrations in that well had risen above the Maximum Contaminant Level (MCL) for this contaminant. The application was approved in September 2009 and CVWD is awaiting a letter of commitment from the CDPH in the next few months. The goal is for Well 5 to be back in service by the end of 2010.

Mission Wells Wellfield Rehabilitation – City of Los Angeles

LADWP developed a project in the Sylmar Basin to construct a new water storage tank, three new municipal-supply wells, a booster pump station and appurtenant facilities at its Mission Wellfield. Phase 1 construction of the water storage tank is complete; inlet and outlet lines, control systems, and other appurtenances are being constructed. The new tank may be in service as early as October 2010. Phase 2, which includes construction of three new water-supply wells, a new booster pump station, and other appurtenant facilities, is currently in the planning phase. It is expected that construction of the new water wells will begin in mid-2011.

Groundwater Treatment Studies – City of Los Angeles

Los Angeles is developing various groundwater treatment projects that may help to recover its pumping capacity lost to contamination in the San Fernando Basin. Technologies to be demonstrated on a pilot scale include, but are not limited to, bio-remediation, advanced oxidation, high-efficiency granular activated carbon, and other systems to permit the removal of nitrate, perchlorate, and other constituents that adversely impact the groundwater pumped by its wellfields. It is expected that such pilot scale treatment facilities will be implemented by 2012.

2. Other Groundwater Remediation Projects

Many privately-owned industrial-type properties in ULARA have been found to have contaminated the soils and/or the groundwater beneath their facilities, and some are under Cleanup and Abatement Orders from the LARWQCB. Each contaminated site typically has groundwater monitoring wells and some have extraction wells and treatment facilities.

The USEPA has been including hexavalent chromium in the quarterly sampling from its monitoring wells as a step in the eventual containment and cleanup of this contaminant.

3. Dewatering Operations

Temporary Construction Dewatering

Temporary construction excavations, such as for subterranean parking structures and pipelines, sometimes require dewatering in areas that have a high (shallow) water table. All groundwater that is discharged from such temporary dewatering operations is required to be accounted for by the Watermaster, and the annual groundwater withdrawals by these dewatering activities are deducted from the water right holder.

Permanent Dewatering Operations

Some facilities along the southern and western boundaries of the SFB have deep foundations that have been excavated into areas of shallow groundwater; these facilities require permanent dewatering. The amount of groundwater pumped at each of these facilities is required to be reported to the Watermaster. These activities are subject to approval by the affected municipal-supply party, and the dewaterer is required to pay for the replacement cost of the extracted groundwater. The pumped groundwater is subtracted from the affected party's water right by the Watermaster.

4. Unauthorized Pumping in the County

There are numerous individuals, primarily within the unincorporated hill and mountain area of ULARA, who are pumping groundwater without reporting the annual volume of production to the Watermaster, as is required by the Judgment. This groundwater was adjudicated and is the property of the City of Los Angeles. Although the volume produced by each pumper is probably small, the cumulative effect may be significant. Working in cooperation with the Los Angeles County Department of Public Health and Los Angeles County Planning, the former Watermaster and LADWP have developed a process to help identify and monitor the water usage of these private pumpers through a water license agreement.

V. GROUNDWATER RECHARGE FACILITIES AND PROGRAMS

A. Agency-Owned Spreading Facilities

There are five active spreading facilities located in the SFB (Plate 1). The Los Angeles County Department of Public Works (LACDPW) operates the Branford, Hansen, Lopez, and Pacoima spreading grounds, whereas the LACDPW, in cooperation with the City of Los Angeles, operates the Tujunga Spreading Grounds. These spreading facilities are used for spreading native and imported water, when available. Estimated capacities of the existing spreading facilities in the San Fernando Basin are shown in Table 5-2. Projects are underway to deepen and improve the capacity of these spreading basins and the LACDPW and the LADWP are also working to identify ways to maximize spreading, including possible changes to the operations at each spreading basin. The City of Burbank recently completed construction of MWD’s new Foothill Feeder connection, which is capable of delivering 50 cfs to the Pacoima Spreading Grounds, in order to enable Burbank to spread imported water when it is available. These facilities also allow Burbank to direct water to the Lopez Spreading Grounds.

B. Proposed Spreading Facilities

Boulevard Pit

Vulcan Materials, CalMat Division, is currently mining sand and gravel from its Boulevard Pit, located between the existing Hansen and Tujunga spreading grounds. The LADWP, LACDPW, and the Watermaster are investigating the feasibility of acquiring the Boulevard Pit for conversion into a new stormwater retention and/or recharge facility.

Sheldon Pit

Vulcan Materials also owns Sheldon Pit, the former site of gravel mining, located northeast of Hansen Spreading Grounds. Sheldon Pit is included in the Los Angeles County-Sun Valley Watershed Management Plan as a potential project for conversion into a stormwater retention facility.

Strathern Pit

Located near the Hansen Spreading Grounds, Strathern Pit is a former gravel pit that is now being used as a landfill for inert materials. The pit is being considered for conversion into a stormwater retention and recharge facility.

C. Actual and Projected Spreading Operations

Table 5-1A shows the recent and projected volumes of water spread in the San Fernando Basin for the current 2009-10 Water Year. An estimated 36,199 AF of native runoff will be spread compared to both the long term (1968-2009) average of 25,781 AF of native runoff and imported water and the past five-year average of 31,673 AF. Precipitation on the valley fill area in the San Fernando Basin is estimated at 19.56 inches for 2009-10 compared to the long-term average of 17.91 inches per year; the previous five-year average was 18.0 inches per year.

TABLE 5-1A RECENT AND PROJECTED SPREADING OPERATIONS 2009-10

(Acre-feet)

Month	Basin Operator					Total
	LACDPW				LACDPW and LADWP	
	Branford	Hansen	Lopez	Pacoima	Tujunga*	
Actual						
Oct-09	86	0	0	58	180	324
Nov-09	8	0	0	0	224	232
Dec-09	101	78	7	602	653	1,441
Jan-10	95	4,400	1	1,900	1,850	8,246
Feb-10	92	5,140	124	2,180	3,630	11,166
Mar-10	0	3,700	0	0	727	4,427
Projected						
Apr-10	12	2,090	40	217	1,510	3,869
May-10	12	0	80	2,500	2,250	4,842
Jun-10	12	1,300	40	300	0	1,652
Jul-10	0	0	0	0	0	0
Aug-10	0	0	0	0	0	0
Sep-10	0	0	0	0	0	0
TOTAL	418	16,708	292	7,757	11,024	36,199
2004-2009 Average	766	14,084	515	6,440	9,867	31,673
1968-2009 Average	549	13,834	527	6,453	4,419	25,781

Headworks Spreading Grounds out of service since 1981-82. The average spreading from 1968-69 to 1981-82 was 5,283 AF.
*Includes native and imported water.

TABLE 5-1B HISTORICAL PRECIPITATION ON THE VALLEY FILL

(Inches per year)

1968-09	2004-09	2004-05	2005-06	2006-07*	2007-08	2008-09	2009-10**
17.91	18.0	42.64	16.46	4.39	15.10	11.64	19.56

* Historic Low
** Projected

TABLE 5-2 ESTIMATED CAPACITIES OF EXISTING SPREADING GROUNDS

Spreading Ground	Type of Facility	Total Wetted Area (acres)	Capacity (AF/Y)
Operated by LACDPW			
Branford	Deep basin	7	2,100
Hansen	Med. Depth basin	105	35,000
Lopez	Shallow basin	12	2,000
Pacoima	Med. Depth basin	107	23,000
Operated by LACDPW and LADWP			
Tujunga	Shallow basin	83	43,000
	TOTAL:	314	105,100

D. Stormwater Recharge Capacity Enhancements

Background Information

During the 1997-98 Water Year, weighted-average precipitation in the valley-fill and hill-and-mountain areas in ULARA was approximately 225 percent of normal. This event provided an above-average volume of stormwater runoff that became available for capture in upstream reservoirs and diversion into existing spreading grounds. In April 1998, the Watermaster received notice from the LACDPW that spreading at both the Hansen and Tujunga spreading grounds would be temporarily suspended. The reasons for curtailing spreading were that: the water table had risen to a level that threatened to inundate the base of the Bradley-East Landfill near the Hansen Spreading Grounds; and methane gas generated from the refuse was migrating from the Sheldon-Arleta Landfill and into the surrounding neighborhood due to the recharge operations at the nearby Tujunga Spreading Grounds. At that time, reservoirs in Los Angeles County were full, and thus thousands of acre-feet of surface water runoff would be spilled and lost to the ocean. The spreading activities were suspended for at least one month at that time.

In response to this undesirable condition, in May 1998, a former Watermaster formed the Tujunga and Hansen Spreading Grounds Task Force which later became the San Fernando Basin Recharge Task Force. The task force was comprised of representatives from the LACDPW, LADWP, Los Angeles Bureau of Sanitation and the Watermaster. After a series of meetings, the task force developed preliminary mitigation measures to help improve the utilization of both spreading grounds, particularly during years of above-normal runoff and recharge.

The task force met as the Stormwater Recharge Committee for a period of time, and has since become a collaborative effort between LACDPW and LADWP to focus on projects to enhance the recharge capacity of spreading basins. As a result, watershed management groups have been formed within both the LACDPW and LADWP to address the entire cycle of pumping and recharge as an interrelated discipline, and these groups are working in partnership to study and develop solutions to enhance groundwater supply in the San Fernando Basin.

Projects

- Hansen Spreading Grounds Plan

Capital improvements planned for the spreading basins and intake diversion structure at Hansen Spreading Grounds will increase the capacity and efficiency for flood protection and stormwater retention at this facility. LACDPW is leading the project, working in partnership with LADWP. Construction improvements completed in November 2009 have deepened and enlarged the basins at this facility. Other improvements to the intake diversion structure will be constructed and in operation by the 2011-12 Water Year.

- Sheldon-Arleta Project – Cesar Chavez Recreational Complex Project (Phase I)

Located adjacent to the Tujunga Spreading Grounds is the Sheldon-Arleta Landfill, which has caused an environmental concern due to the methane gas that is produced as a byproduct of landfill operations.

During the spreading of surface water at the adjoining Tujunga Spreading Grounds, recharge water moving downward through the underlying soil displaces the air from voids within the unsaturated soil matrix. The resulting lateral migration of the air mass has the potential to displace methane gas out of the adjacent landfill. In recent years, the methane has occasionally migrated offsite and elevated concentrations of methane have been reported at a nearby school. To avoid such occurrences, limitations have been placed on the amount of stormwater that can be spread at the Tujunga Spreading Grounds.

To mitigate the displacement of methane gas, LADWP, Los Angeles Bureau of Sanitation, and Los Angeles Bureau of Engineering collaborated to replace the existing methane gas collection system at the Sheldon-Arleta Landfill with a new gas collection system. This system will enhance the containment of the methane gas within the landfill, restore the historic spreading flow capacity of 250 cfs at the Tujunga Spreading Grounds, and restore operations at some of the spreading basins closest to the landfill. Construction was substantially completed in 2009 and an evaluation to determine the maximum recharge capacity of the improved facility is currently underway by an independent consultant. It is expected that the project could increase average annual stormwater capture by 3,000 AF, to a total of 5,000 AF at the nearby spreading grounds.

- Big Tujunga Dam Seismic Retrofit

Big Tujunga Dam was constructed by LACDPW in the 1930s primarily as a flood control facility. In the 1970s, a seismic analysis indicated the dam was susceptible to damage from a large earthquake. Since then, the dam has been operated at a reduced capacity for safety reasons. LACDPW has begun a seismic retrofit of this facility to restore its storage capacity for flood control and water conservation.

This project will entail structural improvements to Big Tujunga Dam to increase its storage capacity from 1,500 AF to 6,000 AF. This will greatly enhance LACDPW's ability to retain and manage stormwater for flood protection, water conservation, and environmental restoration. Structural improvement work began in 2007 and is expected to be completed by early-2011.

- Additional Recharge Projects

LADWP is exploring partnerships, projects, and programs that promote infiltration of rainfall runoff close to its point of origin. Several partnerships that LADWP continues to develop are with LACDPW, the Los Angeles County Flood Control District (LACFCD), the MWD, Tree People, and the Los Angeles and San Gabriel Rivers Watershed Council. Some of the projects and programs being developed include facility retrofits, neighborhood retrofits, and local recharge projects such as along medians, power line easements, and parkways.

VI. GROUNDWATER INVESTIGATION PROGRAMS

Pacoima Area Groundwater Investigation

A significant volatile organic compound (VOC) contaminant plume exists in the groundwater in the Pacoima area of the San Fernando Basin (SFB) near the intersection of San Fernando Road and the Simi Valley Freeway (118 Freeway). This area is located approximately 2.5 miles north of and upgradient from the LADWP Tujunga Wellfield; groundwater pumped at this wellfield has experienced increasing concentrations of VOCs over time.

To help characterize the extent and potential migration of contamination in the Pacoima area, LADWP constructed two groundwater monitoring wells in 1997, including: PA-01, approximately 0.5 miles downgradient; and PA-02, approximately 1.25 miles downgradient from the suspected source area. This suspected source, known as the Chase Chemical (formerly Holchem) site, is under the regulatory jurisdiction of the California Department of Toxic Substances Control (DTSC). Currently a soil vapor extraction system is in operation at the site and a few groundwater monitoring wells have been constructed both onsite and offsite. The immediate remedial goal is to remove the VOCs from the soil, and eventually from the groundwater.

Another facility in the area, the Black & Decker (formerly Price-Pfister) site, is under the regulatory jurisdiction of the Los Angeles Regional Water Quality Control Board (LARWQCB). The LARWQCB has reviewed and responded to a Work Plan submitted by Black & Decker in March 2007 for additional groundwater investigation to help delineate the extent of the chromium groundwater plume at/near the site. Due to the close proximity of the Chase Chemical and the Black & Decker sites, DTSC and LARWQCB are coordinating their oversight efforts. The LARWQCB is currently evaluating groundwater monitoring data to implement a Remedial Action Plan.

Chromium Investigations

The LARWQCB, funded in part with a grant from the United States Environmental Protection Agency (USEPA), reviewed 4,040 sites for potential hexavalent chromium contamination in the SFB and published its findings in December 2002. After this review, 255 suspected hexavalent chromium sites were identified and inspected. As a result of these inspections, the LARWQCB recommended closure (i.e., no further action) for 150 of these sites and the further assessment of the remaining 105 sites. In addition, the LARWQCB has issued Cleanup and Abatement Orders to B.F. Goodrich (formerly Menasco Aerospace Division), PRC-Desoto (formerly Courtauld), Drilube, Honeywell (formerly Allied Signal), Lockheed (2), ITT, and Excello Plating, and may eventually issue additional orders to several other sites. The Cleanup and Abatement Orders require a responsible party to assess, clean up, and remediate the effects of contamination encountered in the soil and groundwater. Increasing concentrations of hexavalent chromium in the groundwater have caused the shutdown or reduced pumping of several wells associated with groundwater treatment plants that were not designed to remove either this contaminant or any other emerging chemicals. Shutdowns of these wells allow the continued vertical and lateral migration of the VOCs and chromium to other production wells, and also continue to complicate the extraction, management, and delivery of potable water within the SFB by the Parties.

On August 20, 2009 the California Office of Environmental Health Hazard Assessment (OEHHA) announced its draft Public Health Goal (PHG) for hexavalent chromium to be 0.06 μg/L (or 0.06 ppb) and invited public comments through October 19, 2009. A final PHG for hexavalent chromium will be announced when OEHHA completes its work, perhaps in the next year or two. It is expected that the CDPH would subsequently set a new Maximum Contaminant Level for this constituent after the final PHG is announced.

Tujunga Discovery Project

In 2008, the LADWP, in conjunction with USEPA and DTSC formed a task force to conduct an inter-agency investigation into contamination that is present in the Tujunga Wellfield. The investigation began with LADWP's comprehensive sampling of eight monitoring wells in the vicinity of the Tujunga Wellfield. Two additional monitoring wells were sampled in December 2009. The lack of VOCs detected in water samples collected from monitoring well TJ-MW-01 may suggest that the Sheldon-Arleta landfill, neighboring the Tujunga Wellfield, is not the source of contamination.

USEPA's contractor performed soil vapor sampling and limited soil sampling along several miles of transects upgradient of the Tujunga Wellfield. The site-specific soil vapor results indicate low levels of PCE at five of the six sites investigated. In January and March of 2010, sediment sampling was conducted in the adjacent Branford Spreading Basin to determine whether sediments in the basin might be a source of VOC contamination. USEPA has not reported the results of the sampling event as of the date of this publication.

The next stage of the investigation will involve the installation of several wells in the capture zone of the Tujunga Wellfield. The locations of the new wells will be prioritized based on data gaps in the existing wellfield, locations of potential source facilities, and proximity to the Tujunga Wellfield. Work is expected to begin in late-summer 2010.

Groundwater System Improvement Study (GSIS)

In February 2009, LADWP entered into an agreement with Brown and Caldwell Consulting Engineers to provide LADWP with professional services for the GSIS to conduct an independent, expert, and comprehensive groundwater study of the San Fernando Basin. The basic goals of the work are to provide recommendations and assistance in developing and implementing programs and/or projects that will maximize the use of this groundwater supply.

Progress on the GSIS has involved a technical review of the USEPA Focused Feasibility Study for the North Hollywood Operable Unit, preparation of conceptual layouts and renderings for a proposed Groundwater Treatment Facility, planning for the siting and design of several groundwater monitoring wells in the SFB, and independent study to identify, characterize and evaluate emerging water quality constituents.

VII. ULARA WATERMASTER MODELING ACTIVITIES

A. Introduction

LADWP continues to support the ULARA Watermaster by performing groundwater modeling of the San Fernando Basin. The purpose of this groundwater modeling is to evaluate the combined effects of the proposed groundwater pumping and estimated groundwater recharge in the SFB projected over a five-year period. The projected pumping volumes used in the model were obtained from the "Water Year 2009-14 Pumping and Spreading Plans" submitted by each Party pursuant to the provisions established in the revised February 1998 Policies and Procedures report. The pumping and spreading plan of each party is included in the appendices of this report.

The groundwater flow model used is a comprehensive three-dimensional computer model that was developed originally for the USEPA during the Remedial Investigation Study of the San Fernando Valley (December 1992). The model is a tool and it has been used herein to estimate the future response to pumping and spreading in the SFB for the five-year period ending September 30, 2014.

The model code, "Modular Three-Dimensional Finite-Difference Groundwater Flow Model," commonly called MODFLOW, was originally developed by the U.S. Geological Survey (McDonald-Harbaugh); this model is currently used to develop the San Fernando Basin Groundwater Flow Model. This model consists of 64 rows, 86 columns, and up to four layers to reflect the varying geologic and hydrogeologic characteristics of the SFB in three dimensions. In the deepest portion of the San Fernando Basin, the model is subdivided into four layers, each layer characterizing a specific depth zone. The model has a variable horizontal grid that ranges from 1,000 by 1,000 feet in size in the southeastern portion of the SFB, to 3,000 by 3,000 feet in size in the northwestern portion of this basin (Figure 7-1) or where less data are available; LADWP regularly updates this model.

B. Model Inputs

The input data for this model are illustrated in Table 7-1. Table 7-1A provides the various elements of recharge into the San Fernando Basin; recharge occurs from precipitation, delivered water, hill and mountain runoff, spreading, and subsurface inflow. Table 7-1B provides the volumes of groundwater extracted from SFB by each major producer: the City of Los Angeles; City of Burbank; City of Glendale; and other individual pumpers. Both tables show projected values for the five-year study, from Fall 2009 to Fall 2014, as well as any actual values that have been reported for the first half of the 2009-10 Water Year.

In Table 7-1A, the projected values for percolation and spreading activities were estimated using the long-term average rainfall and recharge amounts, and the resulting estimates were then used as inputs to the model. The projections for 2009-10 include the actual amounts reported for the first half of this Water Year. The spreading estimates reflect temporary shutdowns during construction of the Tujunga Spreading Grounds (TSG). Construction to enhance the spreading capacity at the TSG is planned to occur from 2011 through 2013. The anticipated spreading of imported water at the Pacoima Spreading Grounds (PSG) by the City of Burbank is also included in these projections. Subsurface inflows to the SFB occur from the Sylmar Basin (through the Sylmar Notch and Pacoima Notch) and from the Verdugo Basin. The amounts of subsurface inflows from these adjacent groundwater basins were determined in the 1962 Report of Referee and these values were used as constants in the model throughout the five-year study.

The volumes for all groundwater extractions shown on Table 7-1B and used as model inputs were obtained from the "Pumping and Spreading Plans" submitted by the five municipal–supply producers; a copy of each of these plans is included in the appendices of this report. The total extraction by each wellfield was initially allocated among the individual wells comprising each wellfield, and then a percentage of the pumping allocated to each well was assigned to each model layer based on the percentage of casing perforations considered to be contained within each layer.

The initial head values (groundwater elevations) were obtained from the actual data from Water Year 2008-09, and these values set the initial conditions for model analysis for the next five-year period. These initial conditions reflect the decline in simulated groundwater elevations observed in most areas of the SFB resulting from increased pumping, reduced artificial recharge in the spreading grounds, and decreased precipitation as compared to the 2007-08 Water Year.

At the close of every Water Year, the Watermaster staff at LADWP updates the model input files with the actual basin recharge and extraction data; this activity is performed each year by LADWP and incorporates actual data from as early as 1981.

C. Simulated Groundwater Elevations and Flow Directions

After running the model for five successive stress periods (Water Years 2009-2014), with each year entailing 365 days, MODFLOW was used to simulate the following numerical data in the

SFB: the heads (groundwater elevations); the drawdown (change in groundwater elevations); and the cell-by-cell flow (vector or flow direction data). These numerical data were used to simulate the data shown on the following figures and plates:

- The simulated groundwater (water table) contour results for Model Layer 1 for Fall 2014 are shown on Plate 1; the simulated contours for Model Layer 2 are shown on Plate 2 for the same period.

- The changes in the simulated groundwater elevation contours were generated from the drawdown data from the Fall 2009 to Fall 2014 stress period and the results are shown on Plate 3 for Layer 1 and on Plate 4 for Layer 2.

- The simulated horizontal groundwater flow directions for Fall 2014 are shown on Plate 5 for Model Layer 1 and on Plate 6 for Layer 2 for the same period.

- Plates 7 through 10 depict the most recently generated contaminant plumes for TCE, PCE, NO_3, and total dissolved chromium (as adapted from the 2007- and 2008-dated work published by the USEPA), superimposed onto the Layer 1 simulated horizontal groundwater flow direction for the year 2014.

D. Evaluation of Model Results

Plate 1: Simulated Groundwater Contour Model Layer 1 – Fall 2014

- The most noticeable feature of the simulated groundwater contours shown on Plate 1 is the cone of depression (pumping cone) that has developed around the Burbank OU. The extractions by this facility occur primarily from Layer 1, although Layer 2 does provide some recharge to Layer 1. Burbank has projected pumping of about 11,026 AF/Y from its BOU for the period from Fall 2009 to Fall 2014. The radius of influence extends as far as 3,700 feet in the downgradient (southeasterly) direction. The upgradient radius of influence is usually larger than the down-gradient radius of influence.

- In a more subtle manner, Plate 1 illustrates the pumping influence of the Glendale OU wells, and the Pollock Treatment Plant Wells.

Plate 2: Simulated Groundwater Contour Model Layer 2 – Fall 2014

- The most significant features of the simulated groundwater contours shown on Plate 2 are the simulated cones of depression near the Tujunga wellfield and the Burbank OU. Over 75 percent of the groundwater pumped from the Tujunga wellfield is from model Layers 2, 3 and 4.

Plate 3: Change in Groundwater Elevation Model Layer 1 – Fall 2009 to Fall 2014

In general, the model simulation showed a definitive increase in groundwater elevations in most areas of the basin, particularly in areas near the wellfields and the spreading grounds. This rebound in simulated water levels would result from the substantial reductions in groundwater pumping expected by the City of Los Angeles; their five-year plan indicates pumping would be reduced each year down to as low as 28,000 AF during Water Year 2013-14 (See Table 7-1G). While Los Angeles' pumping would likely be reduced in response to water quality concerns such as detection of elevated concentrations of contamination its groundwater, steps are being taken by Los Angeles to deploy treatment systems to clean and serve the groundwater and not lose the operation of its well fields over these next several years.

In summary, the estimated total recharge volumes expected over the next five years substantially exceeds total groundwater extractions over the same period by about 181,765 AF, cumulatively. The items below provide a more detailed review of Plate 3.

- The area in the vicinity of Tujunga Spreading Grounds (TSG) shows an increase in simulated water elevations of about 45 feet, as a result of resumed spreading activities in 2013 and reduced pumping at the nearby Tujunga wellfield.

- The area in the vicinity of Hansen Spreading Grounds (HSG) shows an increase in simulated water elevation of about 40 feet in response to the reactivation of spreading operations in November 2009, following the completion of renovations at HSG that increased its spreading capacity .

- The increase in simulated water levels from 2009 to 2014 in the vicinity of Pacoima Spreading Grounds (PSG) is due to the proposed spreading of imported water by Burbank in addition to the normal recharge of native surface water by Los Angeles County Department of Public Works (LACDPW).

- The simulated water table within the cone of depressions created by the Rinaldi-Toluca and North Hollywood West wellfields was shown by the model to rebound with increases in the simulated groundwater elevations by about 45 and 40 ft, respectively. This simulated rebound in water levels in areas near these wellfields would result from the reduced pumping anticipated by Los Angeles.

- The area near the Erwin, Whitnall and Verdugo wellfields was simulated to increase in groundwater elevation by 30 to 35 feet, due to the reduction in projected pumping from these wellfields between 2009 and 2014.

- The simulated groundwater level near the Burbank OU showed an expected increase by about 25 feet and the groundwater level near the Glendale North OU was projected to increase by 5 feet from 2009 to 2014.

Plate 4: Change in Groundwater Elevation Model Layer 2 – Fall 2009 to Fall 2014

- Similar to Model Layer 1, Plate 4 illustrates much of the same susbstantial increases in simulated groundwater elevations in Model Layer 2 which would also result from the reduced pumping anticipated by Los Angeles as well as the increased recharge activity at the spreading basins.

- The model simulated an increase in the groundwater table by 40 to 50 feet in the area near the Rinaldi-Toluca and North Hollywood-West wellfields. Simulated groundwater elevations in the area near the Erwin, Whitnall and Verdugo wellfields were projected by the model to increase by 35 to 37 feet. The model also simulated a rebound in the groundwater elevations by about 40 feet in the area upgradient of the Tujunga Wellfield.

Plate 5: Simulated Groundwater Flow Direction Model Layer 1 – Fall 2014

- Plate 5 consists of groundwater flow direction arrows superimposed on the simulated groundwater elevation contours to illustrate the general (or regional) direction of groundwater flow within Layer 1 of the model.

- Water pumped at the Rinaldi-Toluca, Tujunga, North Hollywood, GOU, and BOU wellfields and water spread at the Hansen, Pacoima and Tujunga spreading grounds caused the most pronounced effect on the direction of groundwater flow in the SFB. In particular, the BOU may create such a significant cone of pumping depression that groundwater appears to flow inward toward the wellfield from all directions (radial flow).

- A groundwater divide apparently develops just north of the Verdugo wells and south of the Whitnall, Erwin, and Burbank OU wells. This appears to be primarily due to the ‘pumping trough” formed by the pumping at the BOU.

Plate 6: Simulated Groundwater Flow Direction Model Layer 2 – Fall 2014

- Plate 6 consists of groundwater flow direction arrows superimposed on the simulated groundwater elevation contours to illustrate the general or regional direction of groundwater flow within Layer 2 of the model.

Plates 7 – 10: Simulated Groundwater Flow Direction and TCE, PCE, NO_3, and Chromium (Cr) Contamination in Model Layer 1 – Fall 2014

- Plates 7 through 10 depict the most recent TCE, PCE, NO_3, and Cr contaminant plumes available from the work of USEPA (as of 2007 and 2008), and these plumes are superimposed onto the horizontal direction of groundwater movement in Layer 1 for Fall 2014. The BOU appears to contain most of the 1,000 to 5,000 μg/L TCE and PCE plumes and a large portion of the 0-5, 5-50, 100-500, and 500-1,000 μg/L TCE and PCE plumes. The uncaptured portions of these plumes are likely to continue migrating southeasterly in the direction of the Los Angeles River Narrows area and toward the Glendale OU.

- Pumping by the Burbank OU (11,026 AF/Y) tends to flatten the horizontal gradient in a southeasterly direction and slows the natural movement of groundwater southeasterly of the plume in the area of the Burbank OU.

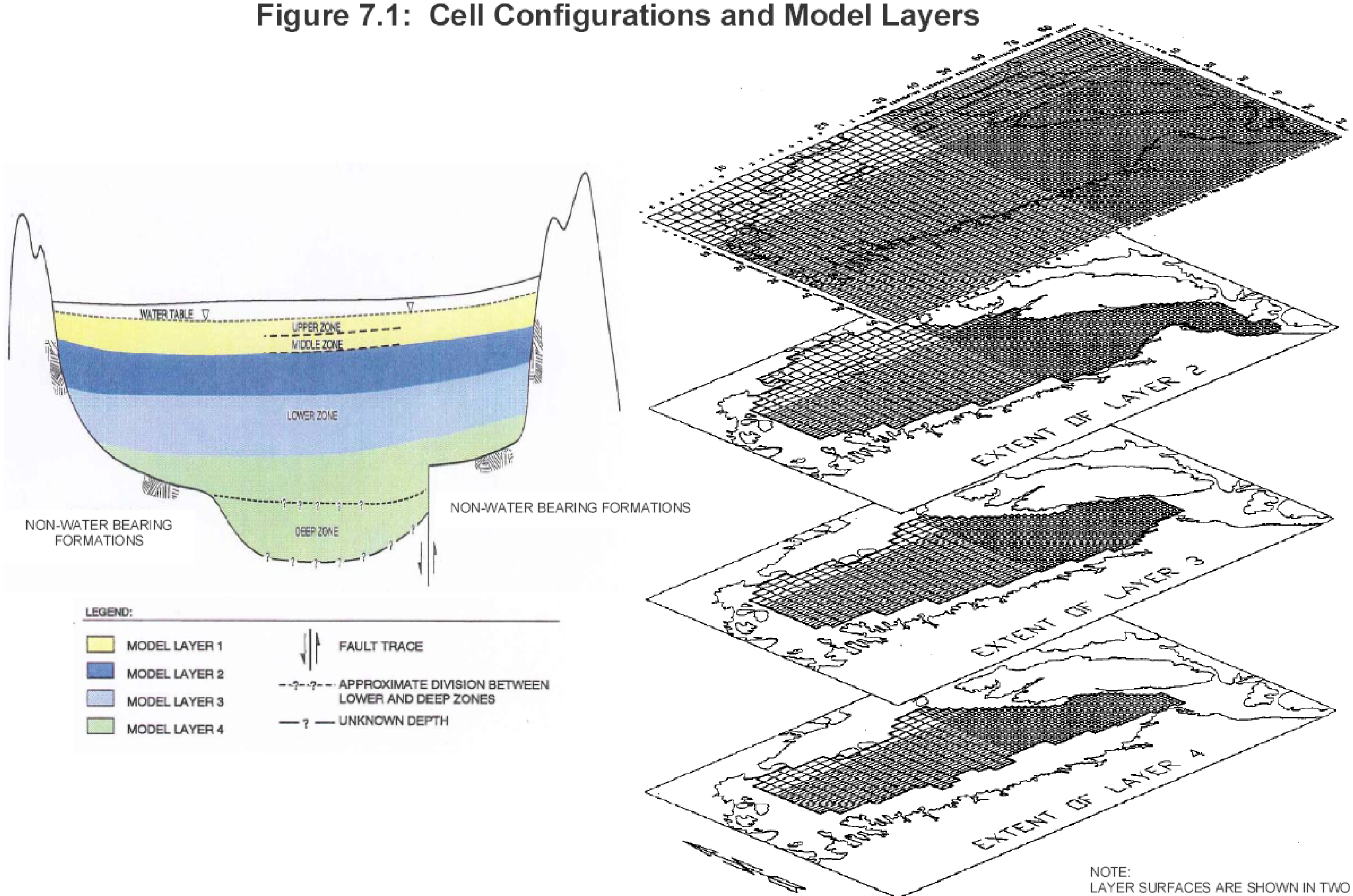
- Wells in the Glendale NOU and SOU capture a portion of the plume(s) that is (are) not captured by the Burbank OU wells.

- Pumping by the Pollock wells (2,178 AF/Y) appears to have little effect on Layer 1 because approximately 75 percent of the pumping by this facility extracts groundwater from the zones within Layer 2.

- Plate 9 (NO_3 Contamination) indicates that Layer 1 extractions by the BOU and GOU wells may be impacted by NO_3.

- Plate 10 (Total Dissolved Chromium) indicates that Layer 1 extractions by wells in the NHOU, BOU, and the north and south GOUs may be impacted by the chromium plume(s).

Figure 7.1: Cell Configurations and Model Layers



NOTE:
LAYER SURFACES ARE SHOWN IN TWO DIAMENSIONS FOR THE PURPOSE OF THIS ILLUSTRATION ONLY. ACTUAL MODEL LAYER THICKNESS VARIES BY NODE.

Source: Remedial Investigation Report of Groundwater Contamination in the San Fernando Valley, December 1992

Table 7-1
MODEL INPUT
San Fernando Basin Recharge & Extractions
2009-2014

Table 7-1A

Projected San Fernando Basin Recharge 2009-14

	RAINFALL (IN/Y)		SAN FERNANDO BASIN RECHARGE (AF/Y)															
			PERCOLATION			H&M (A)	SPREADING GROUNDS							SUBSURFACE INFLOW				
WATER YEAR	VALLEY	HILL & MTN	VALLEY FILL	RETURN WATER	SUB TOTAL	HILL & MTN	BRANFORD	HANSEN (B)	HEADWORKS	LOPEZ	PACOIMA	TUJUNGA (C)	SUB - TOTAL	PACOIMA NOTCH	SYLMAR NOTCH	VERDUGO BASIN	SUB - TOTAL	TOTAL RECHARGE
2009-10	16.46	19.56	11,435	53,516	64,951	**3,341**	394	15,408	-	172	4,957	8,774	29,705	350	400	70	820	98,817
2010-11	18.07	22.47	12,553	54,347	66,900	**3,838**	540	11,000	-	540	6,864	7,534	26,478	350	400	70	820	98,036
2011-12	18.07	22.47	12,553	54,347	66,900	**3,838**	540	18,534	-	540	6,864	0	26,478	350	400	70	820	98,036
2012-13	18.07	22.47	12,553	54,347	66,900	**3,838**	540	18,534	-	540	6,864	0	26,478	350	400	70	820	98,036
2013-14	18.07	22.47	12,553	54,347	66,900	**3,838**	540	11,000	-	540	6,864	7,534	26,478	350	400	70	820	98,036

Table 7-1B

Projected San Fernando Basin Extractions 2009-14

	SAN FERNANDO BASIN EXTRACTIONS (AF/Y)																		
	LOS ANGELES										BURBANK			GLENDALE			OTHERS		
WATER YEAR	AERATION	ERWIN	HEADWORKS	NORTH HOLLYWOOD	POLLOCK	RINALDI - TOLUCA	TUJUNGA	VERDUGO	WHITNALL	TOTAL LOS ANGELES (D)	GAC	BOU	NON-BURBANK (VMP)	CITY OF GLENDALE	OU-NORTH	OU-SOUTH	TOTAL NON-LADWP	TOTAL NON-GLENDALE (F. LAWN)	TOTAL EXTRACTION
2009-10	-1,357	-1,194	0	-10,612	-2,634	-16,935	-13,697	-1,728	-4,700	-52,857		-9,955	-300	-5	-4,745	-2,555	-1,818	-400	**-72,635**
2010-11	-1,380	-1,196	0	-6,172	-1,994	-7,099	-23,963	-2,549	-4,652	-49,005	0	-11,026	-300	-20	-4,745	-2,555	-1,818	-400	**-69,869**
2011-12	-1,937	0	0	-4,367	-2,178	-6,550	-15,674	-2,687	-8,607	-42,000	0	-11,026	0	-20	-4,745	-2,555	-1,818	-400	**-62,564**
2012-13	-1,937	0	0	-2,967	-2,178	-4,451	-15,674	-2,687	-5,106	-35,000	0	-11,026	0	-20	-4,745	-2,555	-1,818	-400	**-55,564**
2013-14	-1,937	0	0	-1,567	-2,178	-2,350	-15,674	-2,553	-1,741	-28,000	0	-11,026	0	-20	-4,745	-2,555	-1,818	-400	**-48,564**

NOTES

(A) Hill & Mountain runoff

(B) Hansen Spreading Grounds activated in the water year of 2009-10 after completing the modification work

(C) Tujunga Spreading Grounds will be taken out of service during the water years of 2011-13 for modifications to increase storage capa

(D) The values shown for Los Angeles on this extraction plan are estimates only. The estimated groundwater pumping amounts for the above-mentioned wellfields may be increased as treatment faculities are installed or as the blending with external source of water will continue to be allowable.

VIII. WATERMASTER EVALUATION AND RECOMMENDATIONS

Declining groundwater levels combined with continually increasing Stored Water Credits for the three cities in the SFB represent serious problems that require ongoing analysis and review with respect to the hydrogeology and management of this basin. The 2007-dated Stipulated Agreement between these cities (Burbank, Glendale and Los Angeles) will help to limit the future pumping of Stored Water Credits in the SFB. As part of the Stipulated Agreement, the first re-evaluation of the safe yield of the SFB since 1964-65 was initiated by a consulting engineering firm selected by the Administrative Committee in late-2008; a 90% Draft report has been issued and reviewed by the Parties, the Technical Committee and the Watermaster. Importantly, although that Draft report will not be finalized, the technical reviewers agree that the groundwater pumping by the municipal-supply purveyors will need to be reduced until basin recharge and their groundwater extraction volumes become more in equilibrium over time. Further, in an effort to increase stormwater recharge in SFB, the city and county of Los Angeles have embarked upon an ambitious and very important program to increase the recharge capacity in several of the local spreading grounds, and the city is investigating additional alternatives to increase water conservation. This Watermaster commends the city and county of Los Angeles for these vital efforts.

VOC contamination continues to be the most serious challenge to water quality and to the ability of the Parties to pump non-contaminated groundwater in the San Fernando Basin. The various contaminant plumes are still very large, despite years of pumping and treatment. For example, the VOC plumes in North Hollywood have not been completely controlled by the extraction wells in the NHOU, due in large part to declining groundwater levels which have resulted in the reduced pumping capacity of those wells. It is encouraging to see USEPA’s Second Interim Remedy for the NHOU which entails facility improvements to increase its peak pumping capacity to as much as 4,000 gpm (3,050 gpm on average). Although the planned implementation of these improvements is several years away, this Remedy should eventually help remove contaminant mass and control contaminant migration in the nearby plume(s). The Burbank Operable Unit has recently undergone several capital improvements and that facility now operates with much greater reliability to pump and treat VOC-contaminated groundwater near its 9,000 gpm design capacity on a consistent basis.

The Watermaster is also aware of the rising trends in and/or recent detections of chromium in several production wells in eastern portion of the SFB. As of this date, none of the existing water treatment plants are capable of removing chromium. As Watermaster, I continue to support an aggressive approach by regulatory agencies including USEPA, LARWQCB, and DTSC in identifying the various sources of this contaminant and in requiring cleanup by the responsible parties. The Watermaster appreciates Glendale's lead in the development of chromium treatment technology in the area and in the construction of the Chromium Removal Demonstration Facilities.

Another ongoing concern of this Watermaster is that MTBE has not only been detected at higher concentrations but it has also been encountered in additional CVWD municipal-supply water wells in the Verdugo Basin. The MTBE Task Force was successful in identifying several potential source sites and, along with the LARWQCB, is pursuing additional subsurface investigations and cleanup by the responsible parties at various active and even abandoned service stations in Verdugo Basin. The support and enforcement actions of the LARWQCB have been very helpful in helping to define and mitigate the MTBE problems in this basin.

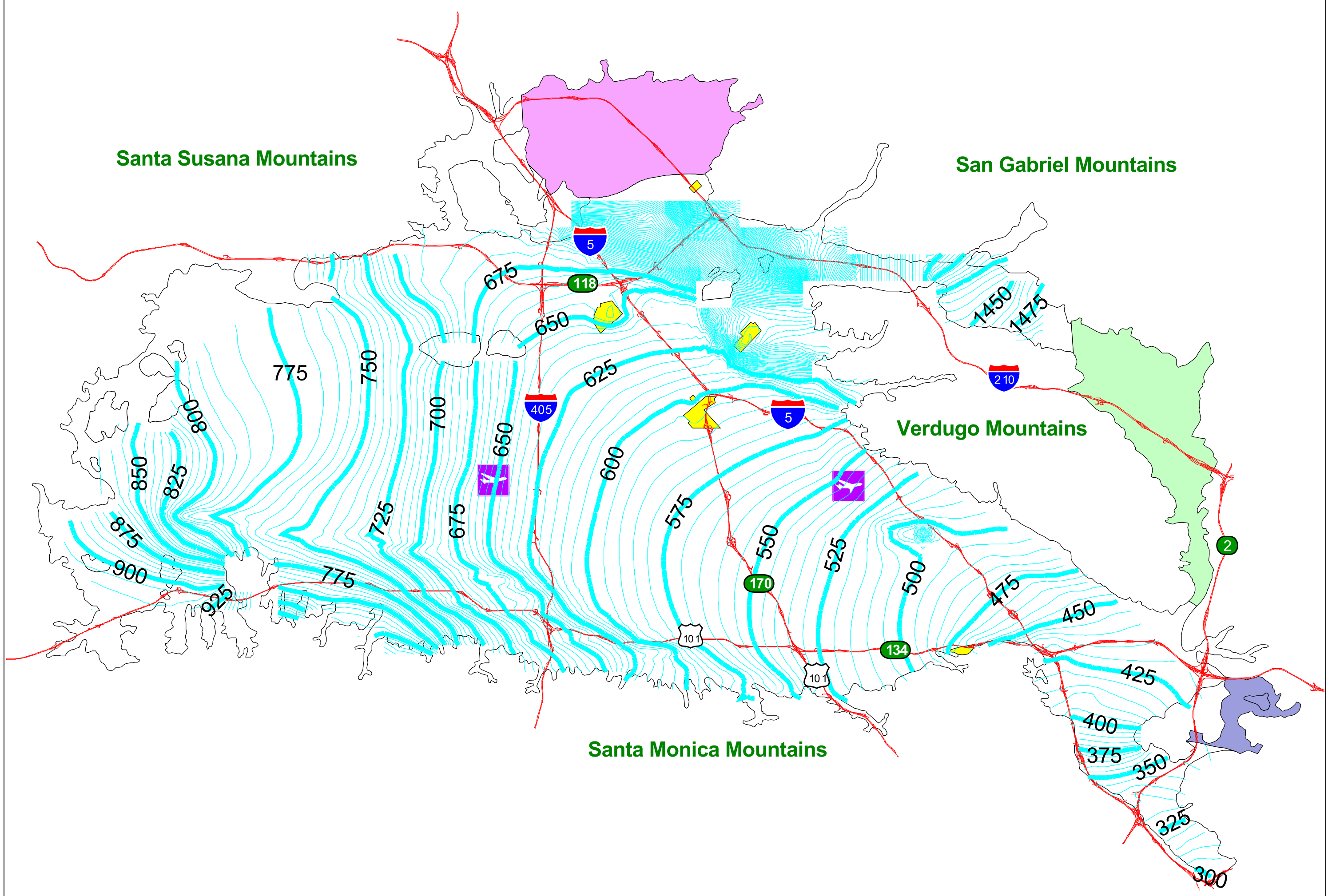
Due to the geologic conditions in the Verdugo Basin and the presence of local bedrock constrictions, groundwater tends to rise to ground surface near the Verdugo Wash Narrows and leaves the basin as surface outflow. Glendale is currently unable to pump its full right from the Verdugo Basin, but by rehabilitating one of its previously-abandoned wells and pursuing the construction of a new municipal-supply well, Glendale has taken steps to increase its extractions from the Verdugo Basin and help reduce the continued groundwater outflow from this basin. The Watermaster commends the ongoing efforts of Glendale to increase its pumping capacity and also the efforts of CVWD to begin an evaluation of potential stormwater recharge projects in Verdugo Basin.

The Parties should expect to face unprecedented challenges to both water quality and quantity in the ULARA groundwater basins during the 2009-2014 water years. It is the opinion of this Watermaster that, over the forthcoming years, it will be essential for the continuing safe yield operation of the ULARA groundwater basins to continue to: provide more recharge at existing spreading basins; define and implement new locations and/or other methods (such as the use of injection wells) for recharging these groundwater basins; and to seriously consider the possibility of using recycled water to augment the recharge that occurs seasonally in the existing spreading basins but also to begin working with CDPH and the LARWQCB to define possible constraints to the direct recharge of treated recycled water into injection wells located near or east of the 405 Freeway.

PLATES

PLATE 1

Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2009- 2014 Water Years



LEGEND

- Groundwater Contour
- Spreading Grounds
- Airport

Groundwater Basins

- San Fernando
- Sylmar
- Verdugo
- Eagle Rock

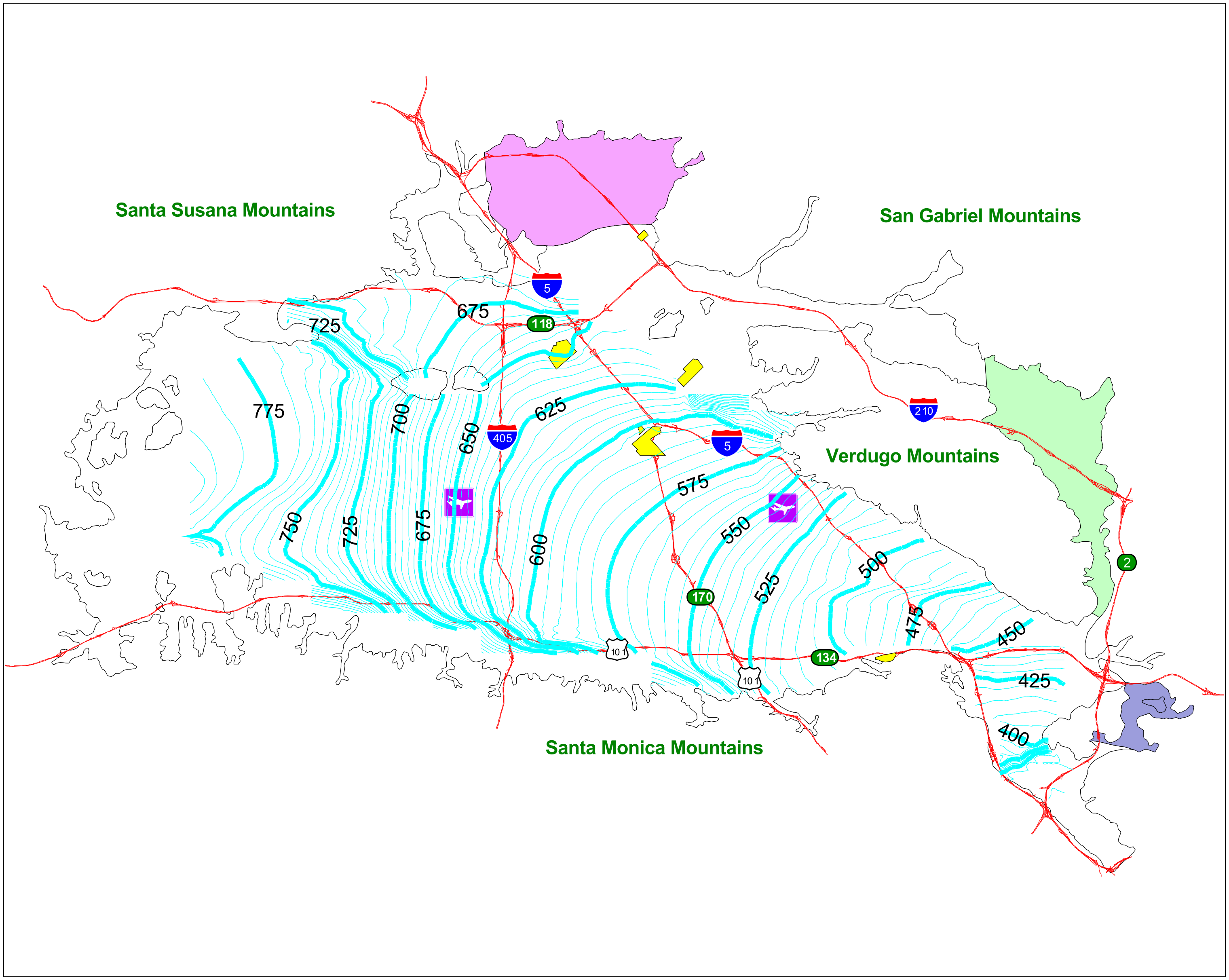
N

2 0 2 Miles

Simulated Groundwater Contours - Model Layer 1
FALL 2014

PLATE 2

Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2009 - 2014 Water Years



LEGEND

Groundwater Contour
Spreading Grounds
Airport

Groundwater Basins
San Fernando
Sylmar
Verdugo
Eagle Rock

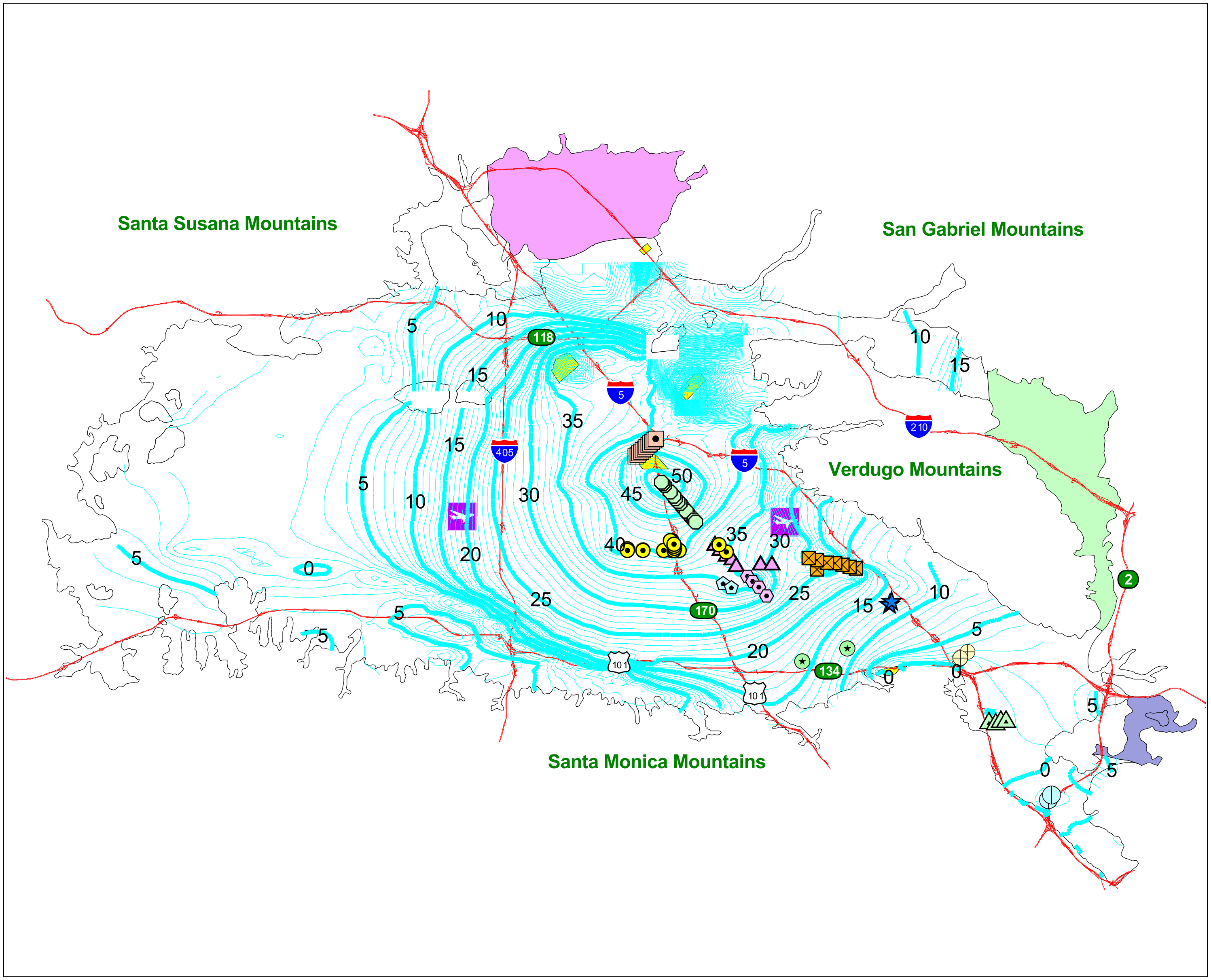
N

2 0 2 Miles

Simulated Groundwater Contours - Model Layer 2
FALL 2014

PLATE 3

Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2009 - 2014 Water Years



LEGEND

Well Fields

- Burbank OU
- Glendale North OU
- Glendale South OU
- Burbank GAC
- North Hollywood OU
- Pollock
- Tujunga
- Rinaldi - Toluca
- North Hollywood
- Whitnall
- Erwin
- Verdugo

Change in GW Elev.

Spreading Grounds

Airport

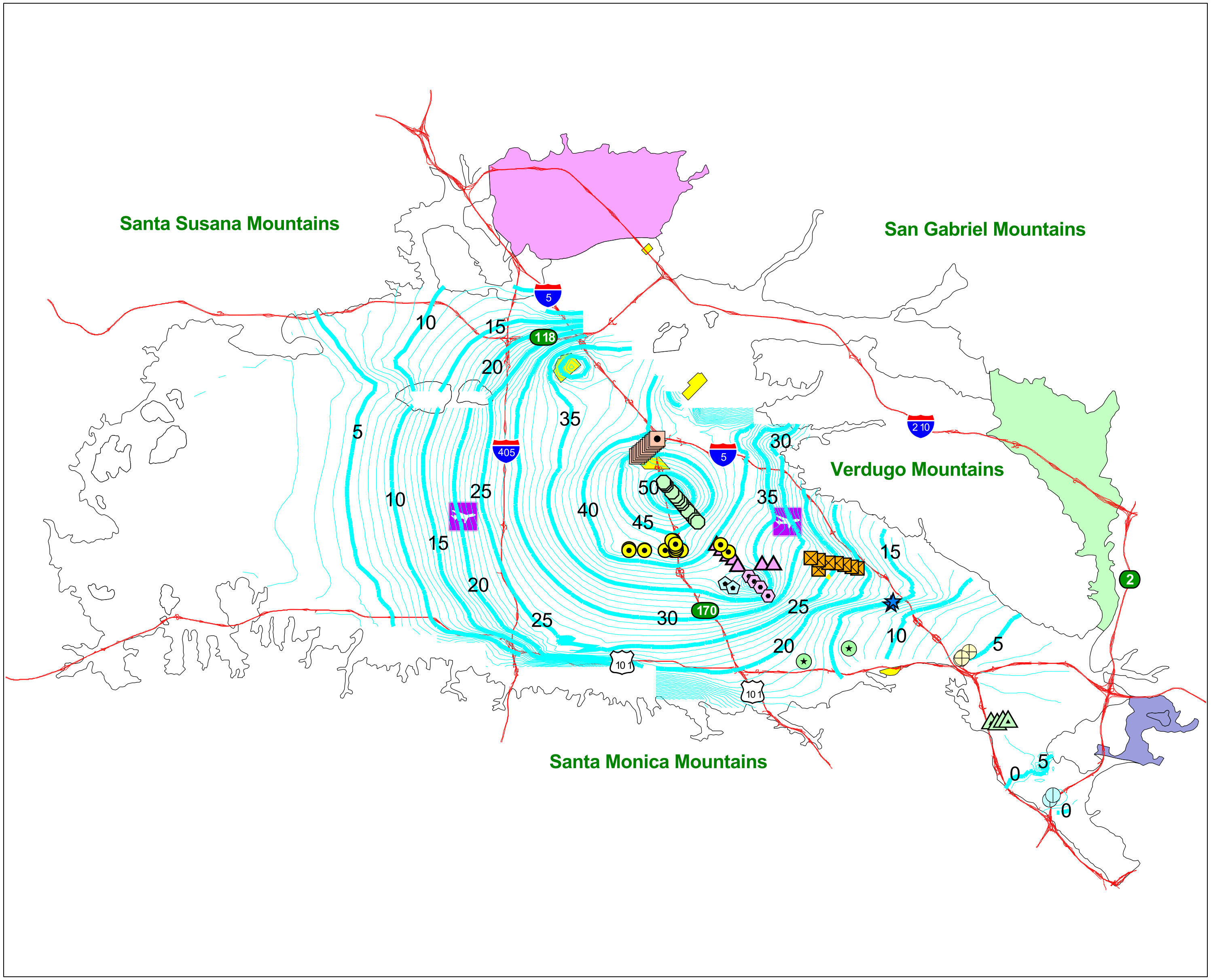
Groundwater Basins

- San Fernando
- Sylmar
- Verdugo
- Eagle Rock

Simulated Change in Groundwater Elevation - Model Layer 1
Fall 2009 - Fall 2014

PLATE 4

Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2009 - 2014 Water Years



LEGEND

Well Fields

- Burbank OU
- Glendale North OU
- Glendale South OU
- Burbank GAC
- North Hollywood OU
- Pollock
- Tujunga
- Rinaldi - Toluca
- North Hollywood
- Whitnall
- Erwin
- Verdugo

Change in GW Elev.

Spreading Grounds

Airport

Groundwater Basins

- San Fernando
- Sylmar
- Verdugo
- Eagle Rock

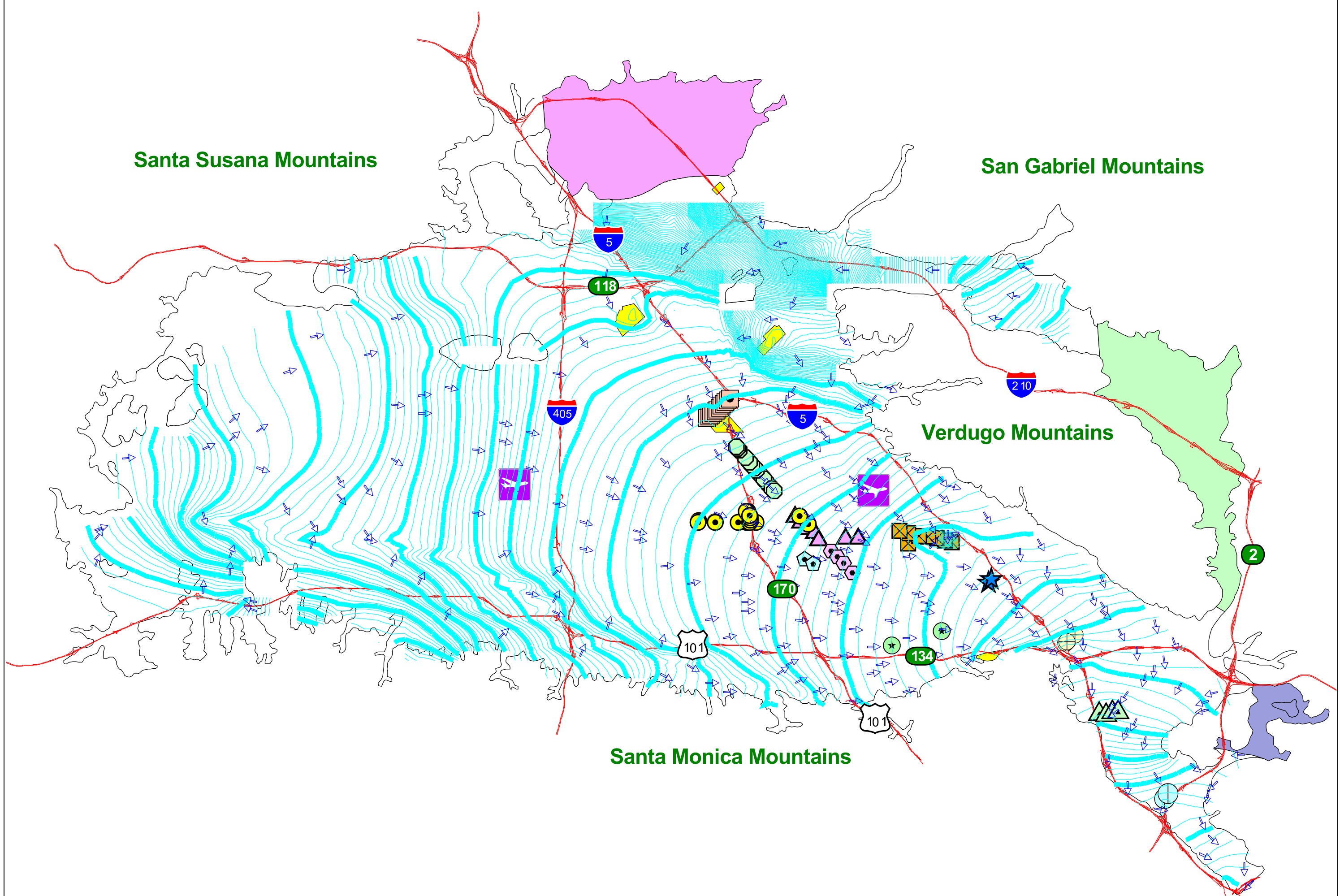
N

2 0 2 Miles

Simulated Change in Groundwater Elevation - Model Layer 2
Fall 2009 - Fall 2014

PLATE 5

Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2009- 2014 Water Years



LEGEND

Well Fields

- Burbank OU
- Glendale North OU
- Glendale South OU
- Burbank GAC
- North Hollywood OU
- Pollock
- Tujunga
- Rinaldi - Toluca
- North Hollywood
- Whitnall
- Erwin
- Verdugo
- Groundwater Flow Direction
- Groundwater Contour
- Spreading Grounds
- Airport

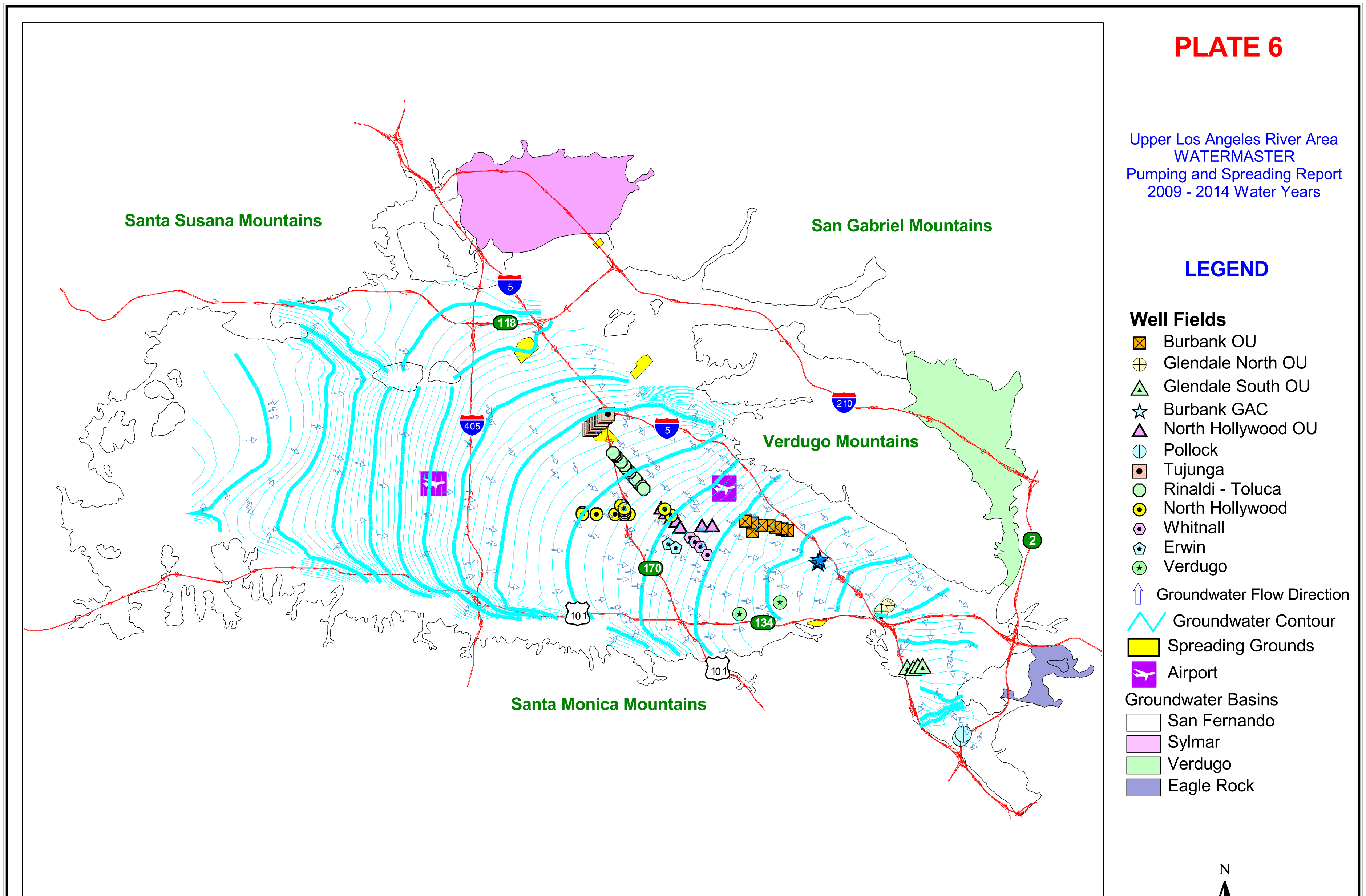
Groundwater Basins

- San Fernando
- Sylmar
- Verdugo
- Eagle Rock

N

2 0 2 Miles

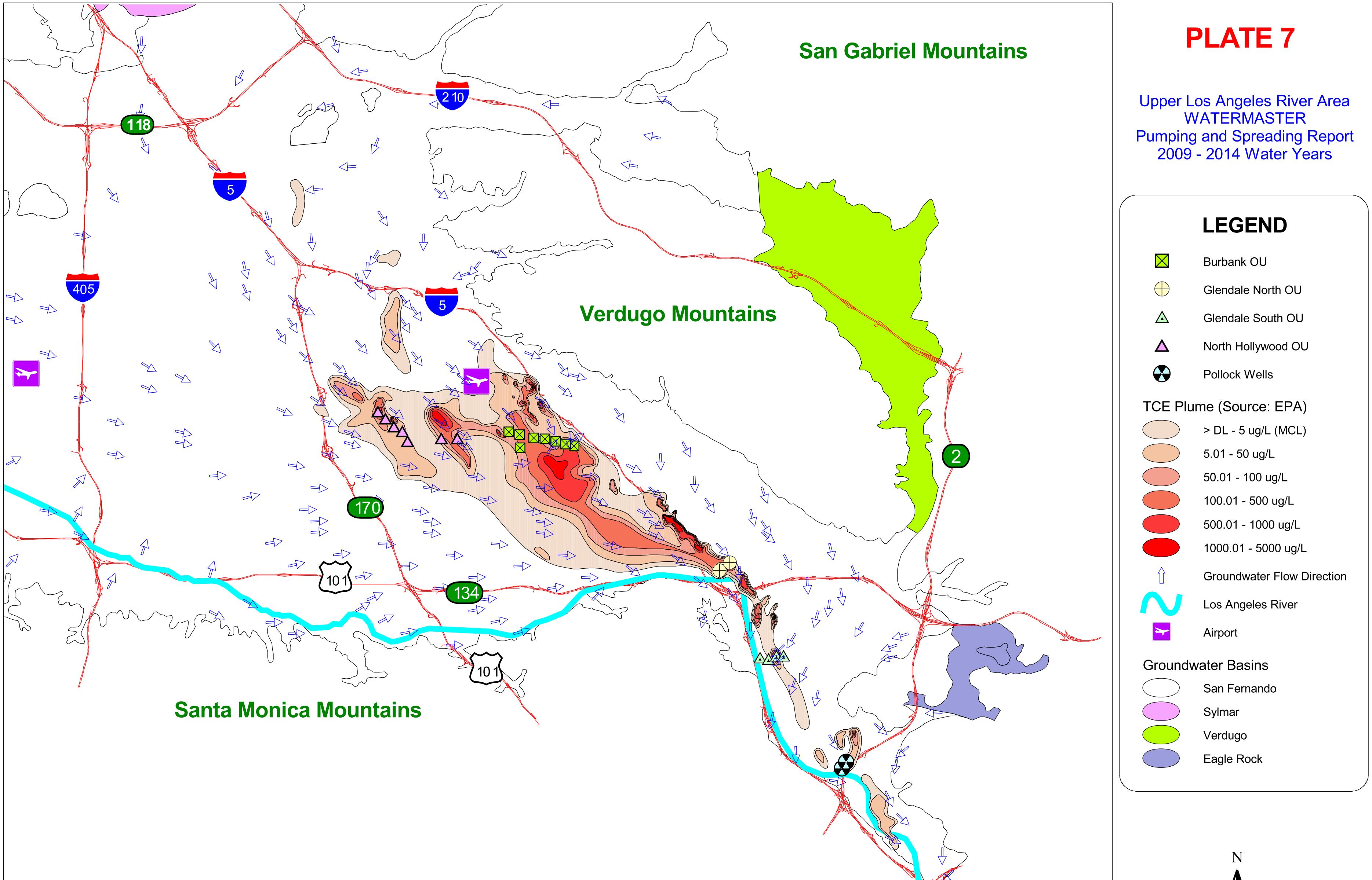
Simulated Groundwater Flow Direction - Model Layer 1
FALL 2014



Simulated Groundwater Flow Direction - Model Layer 2
FALL 2014

PLATE 7

Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2009 - 2014 Water Years



2008 TCE Contamination and 2014 Simulated Groundwater Flow Direction
Model Layer 1

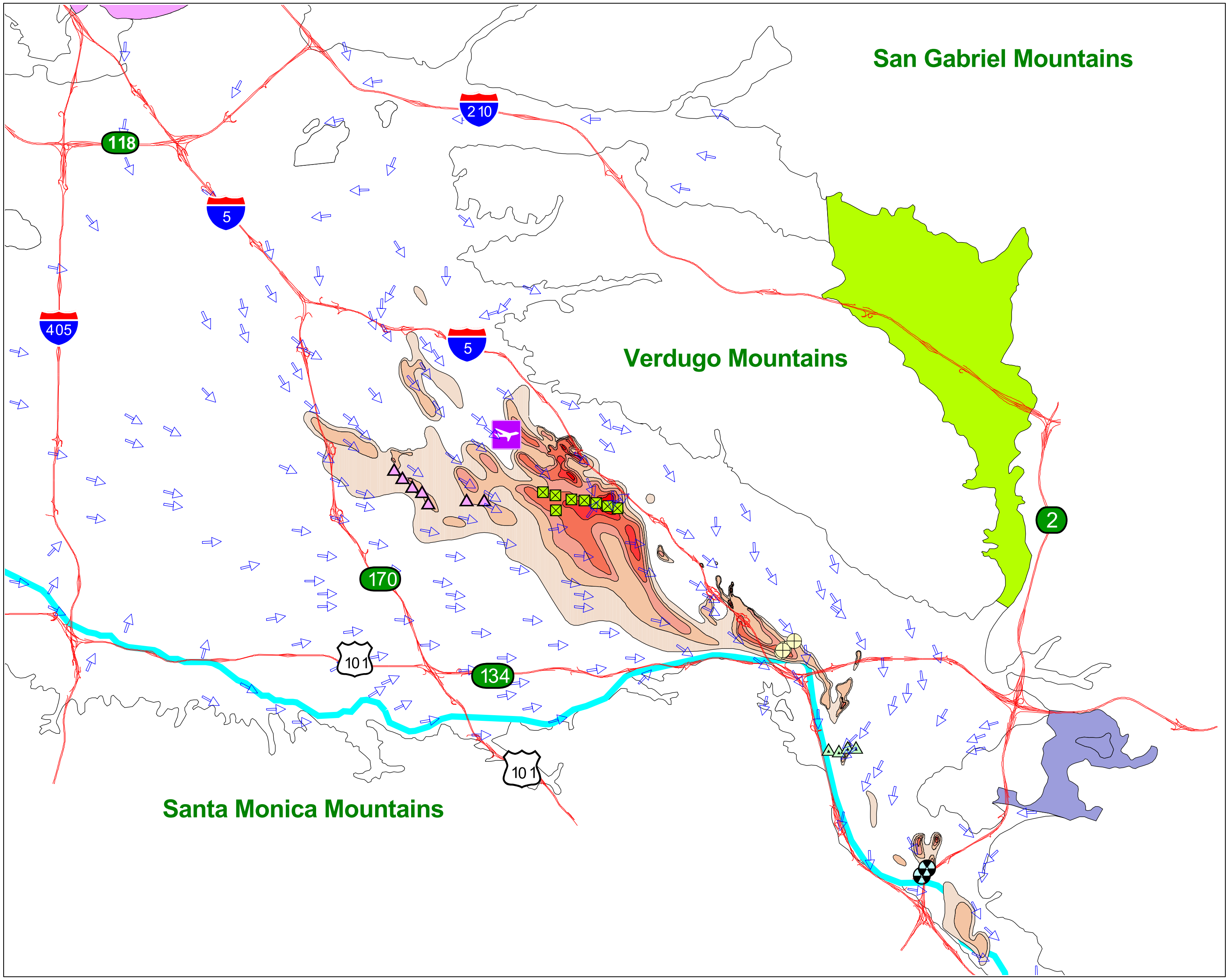


PLATE 8

Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2009 - 2014 Water Years

LEGEND

- Burbank OU
- Glendale North OU
- Glendale South OU
- North Hollywood OU
- Pollock Wells

PCE Plume (Source: EPA)
- > DL - 5 ug/L (MCL)
- 5.01 - 50 ug/L
- 50.01 - 100 ug/L
- 100.01 - 500 ug/L
- 500.01 - 1000 ug/L
- 1000.01 - 5000 ug/L
- Groundwater Flow Direction
- Los Angeles River
- Airport

Groundwater Basins
- San Fernando
- Sylmar
- Verdugo
- Eagle Rock

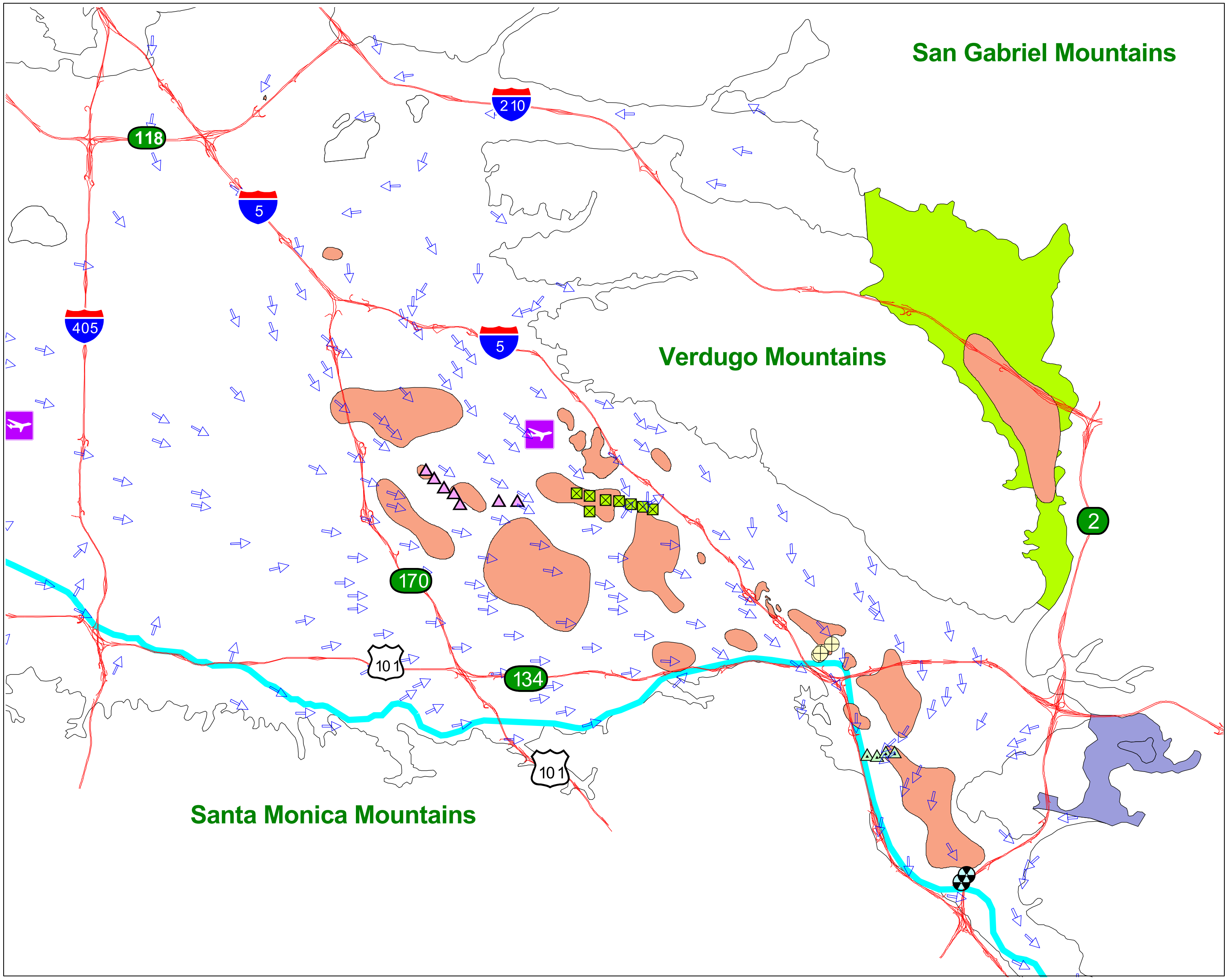
N

1 0 1 2 Miles

2008 PCE Contamination and 2014 Simulated Groundwater Flow Direction
Model Layer 1

PLATE 9

Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2009 - 2014 Water Years



LEGEND

- Burbank OU
- Glendale North OU
- Glendale South OU
- North Hollywood OU
- Pollock Wells
- NO3 Plume (Source: EPA)
- Groundwater Flow Direction
- Los Angeles River
- Airport

Groundwater Basins

- San Fernando
- Verdugo
- Eagle Rock

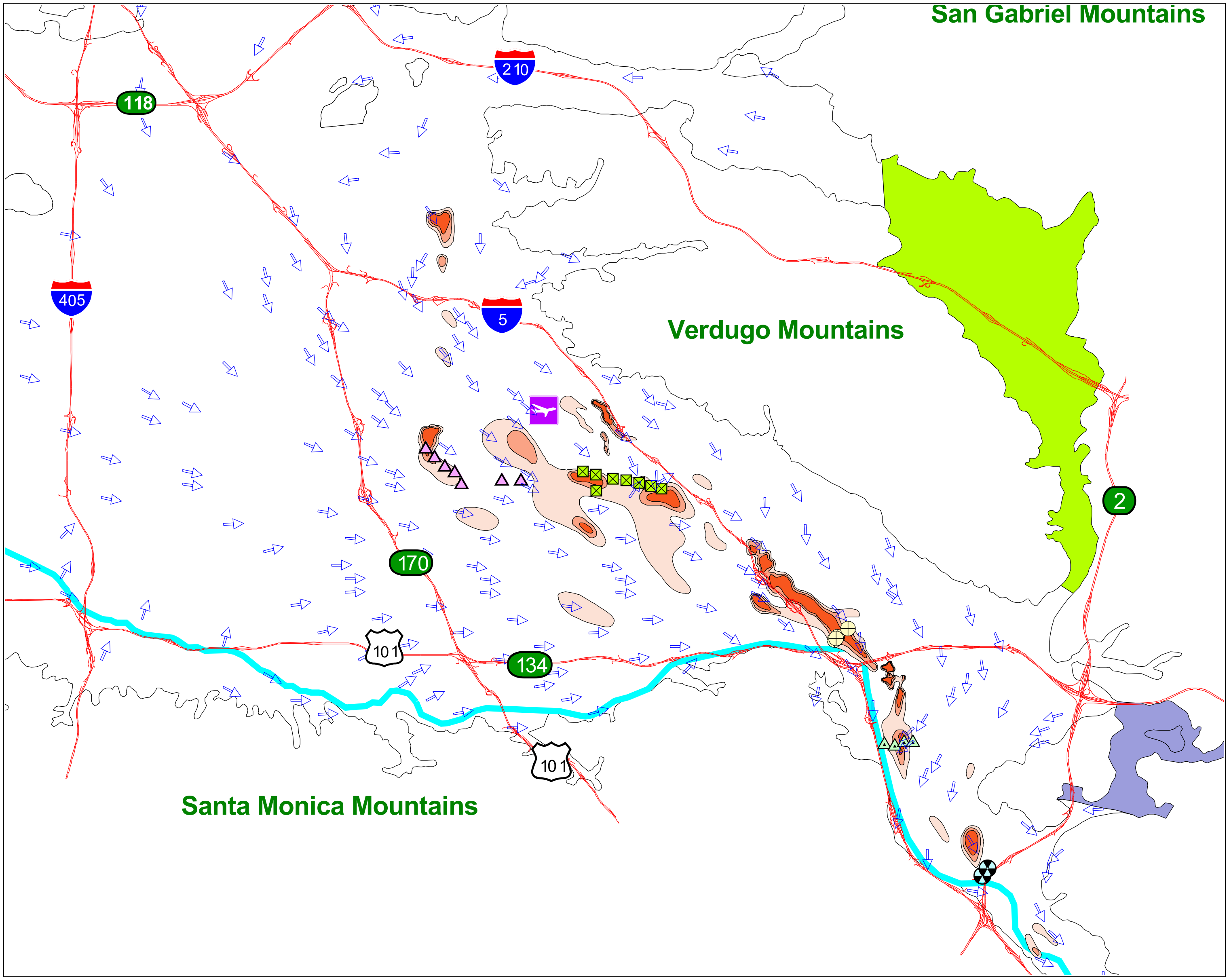
N

1 0 1 2 Miles

2007 Nitrate (as NO3) Contamination and 2014 Simulated Groundwater Flow Direction Model Layer 1

PLATE 10

Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2009 - 2014 Water Years



LEGEND

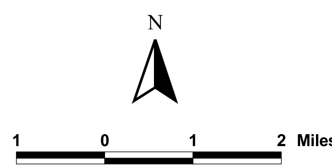
- Burbank OU
- Glendale North OU
- Glendale South OU
- North Hollywood OU
- Pollock Wells

Total Chromium Plume (Source: EPA)

- 5 - 25 ug/L
- 25.01 - 50 ug/L
- > 50 ug/L
- Groundwater Flow Direction
- Los Angeles River
- Airport

Groundwater Basins

- San Fernando
- Verdugo
- Eagle Rock



2008 Total Dissolved Chromium Contamination and 2014 Simulated Groundwater Flow Direction
Model Layer 1

APPENDIX A

CITY OF LOS ANGELES

PUMPING AND SPREADING PLAN

2009-2014 Water Years

CITY OF LOS ANGELES
GROUNDWATER PUMPING AND SPREADING PLAN
IN THE UPPER LOS ANGELES RIVER AREA
FOR THE 2009-2014 WATER YEARS

MAY 2010

Prepared by:
Groundwater Management Group
WATER QUALITY DIVISION
Los Angeles Department of Water and Power

TABLE OF CONTENTS

Introduction

The water rights in the Upper Los Angeles River Area (ULARA) were set forth in a Final Judgment, entered on January 26, 1979, ending litigation that lasted over 20 years. The ULARA Watermaster's Policies and Procedures give a summary of the decreed extraction rights within ULARA, together with a detailed statement describing the ULARA Administrative Committee operations, reports to and by the Watermaster and necessary measuring tests and inspection programs. The ULARA Policies and Procedures have been revised several times since the original issuance, to reflect current groundwater management thinking.

In Section 5.4 of the ULARA Policies and Procedures as amended in February 1998, it is stated that:

"...all parties or non-parties who pump groundwater are required to submit annual reports by May 1 to the Watermaster that include the following:

- *A 5-year projection of annual groundwater pumping rates and volumes.*
- *A 5-year projection of annual spreading rates and volumes.*
- *The most recent water quality data for each well."*

This report constitutes Los Angeles' 2010 Groundwater Pumping and Spreading Plan for the Water Years 2009 - 2014.

Section 1: Facilities Description

This section describes facilities that influence groundwater conditions in ULARA and relate to Los Angeles.

a.) Spreading Grounds: There are five spreading ground facilities that can be used for groundwater recharge of native water in ULARA. The Los Angeles County Department of Public Works (LACDPW) operates the Branford, Hansen, Lopez, and Pacoima spreading grounds. LACDPW and LADWP operate the Tujunga Spreading Grounds cooperatively. Estimated capacities for these are shown in Table 1-1 and their locations are shown in Figure 1-1.

TABLE 1-1
ESTIMATED CAPACITIES OF ULARA SPREADING GROUNDS

Spreading Ground	Type	Total wetted area [ac]	Capacity [ac-ft/yr.]
Operated by LACDPW			
Branford	Deep basin	7	2,100
Hansen	Med. Depth basins	105	35,000
Lopez	Shallow basins	12	2,000
Pacoima	Med. Depth basins	107	23,000
Operated by LACDPW and LADWP			
Tujunga	Shallow basins	83	43,000
		TOTAL:	105,100

b.) Extraction Wells: The LADWP has nine well fields in the San Fernando Basin, and one in the Sylmar Basin. The well fields are shown in Figure 1-1, and their rated capacities are shown in Table 1-2. The rated capacities are approximate as operating capacities vary depending on the water levels. Actual groundwater pumping is dependent on maintenance schedules and water quality for each well.

TABLE 1-2

RATED CAPACITIES OF LADWP WELL FIELDS IN ULARA

Well Field	Number of Wells			Rated Capacity	
San Fernando Basin	Active	Stand-by	Total	cfs	gpm
Aeration	7	---	7	2.6	1,170
Crystal Springs (A)	---	---	---	---	---
Erwin	2	0	2	5.8	2,600
Headworks			---	---	---
North Hollywood	14	3	17	86	38,600
Pollock	2	0	2	6.3	2,830
Rinaldi-Toluca	15	---	15	107	48,030
Tujunga	12	---	12	105.9	47,530
Verdugo	2	---	2	7.2	3,230
Whitnall	4	---	4	18.8	8,440
Sylmar Basin					
Mission	2	---	2	6.2	2,780
TOTAL	60	3	63	345.8	155,210

(A) Wellfield has been abandoned pursuant to sale of property to DreamWorks, Inc.

c.) Groundwater Treatment Facilities: The LADWP operates two groundwater treatment facilities. Water treated at these facilities is delivered to the water distribution system for consumption.

North Hollywood Groundwater Treatment Facility: This plant was placed into service in December 1989 to treat up to 2,000 gpm of groundwater to remove VOCs by using aeration with granular activated carbon (GAC) for off-gas treatment. This facility is a part of the North Hollywood Operable Unit (NHOU) that also includes a system of shallow wells. The NHOU is financed, in part, by the U.S. Environmental Protection Agency.

Pollock Wells Treatment Plant: This plant was placed into service in March 1999 to remove VOCs from the groundwater at a rate up to 3,000 gpm from the Pollock Well Field. The facility features the use of liquid-phase GAC, restores the use of Pollock Wells, and addresses the excessive rising groundwater discharges from the San Fernando Basin into the Los Angeles River.

Section 2: Annual Pumping And Spreading Projections

a.) Pumping Projections for the Water Years 2009-2014: The City of Los Angeles has the following four sources of water supply: 1.) Los Angeles Aqueduct supply imported from the Owens Valley/Mono Basin area; 2.) Local groundwater supply from the Central, San Fernando, and Sylmar Basins; 3.) Purchased water from the Metropolitan Water District of Southern California (MWD); and 4) Recycled water. The MWD sources of supply are the State Water Project and the Colorado River Aqueduct. Use of San Fernando Basin groundwater can fluctuate annually depending on the availability of imported water which varies due to climatic and operational constraints; the increasing levels of hexavalent chromium and other emerging chemicals; and the migration of volatile organic compounds that have spread beyond the sphere of influence created by the small capacity of the NHOU.

The San Fernando Basin and Sylmar Basin provide most of the City's local groundwater supply. The City of Los Angeles has the following average annual water rights which comprise approximately 11% of the City's supply:

San Fernando Basin	87,000 AF
Sylmar Basin	3,405 AF

Table 2-1 shows the amount of groundwater extractions that are expected during the 2009-10 Water Year from the San Fernando and Sylmar Basins. Appendix B provides groundwater extraction projections from 2009 to 2014. These projections are based upon assumed demand and Los Angeles Aqueduct flows, and are subject to yearly adjustments.

TABLE 2-1

CITY OF LOS ANGELES
ACTUAL AND PROJECTED PUMPING FOR WY 2009-2010

San Fernando Basin		Actual Extraction (Acre-Feet)						Projected Extraction (Acre-Feet)					
	TOTAL	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10
AERATION	1,357	115	118	154	111	77	92	104	108	104	126	126	122
ERWIN	1,194	155	168	247	77	0.16	0	0	111	107	111	111	107
HEADWORKS	0	0	0	0	0	0	0	0	0	0	0	0	0
NORTH HOLLYWOOD	10,612	382	437	1,016	1,710	1,210	1,199	1,012	431	417	923	923	952
POLLOCK	2,634	418	349	421	364	168	0	0	185	179	185	185	179
RINALDI-TOLUCA	16,935	2,380	1,235	1,641	1,011	1,222	2,153	2,738	923	893	923	923	893
TUJUNGA	13,697	134	827	1,061	1,190	468	0	0	2,030	1,964	2,030	2,030	1,964
VERDUGO	1,728	265	117	149	36	0.44	0	0	246	238	228	228	220
WHITNALL	4,700	810	805	587	371	0.78	0	0	431	417	431	431	417
SAN FERNANDO BASIN TOTAL:	52,857	4,660	4,055	5,276	4,869	3,146	3,444	3,854	4,465	4,319	4,957	4,957	4,854
Sylmar Basin													
MISSION	2,979	269	83	525	305	278	308	298	185	179	185	185	179
ULARA TOTAL:	55,836	4,929	4,138	5,801	5,175	3,424	3,752	4,152	4,650	4,498	5,142	5,142	5,033

b.) Spreading Projections for the 2009-10 Water Year: Native groundwater recharge from captured storm runoff occurs primarily as a result of the use of man-made spreading grounds. Spreading grounds operations are primarily controlled by the LACDPW. Table 2-2 represents the anticipated spreading volumes for 2009-10.

TABLE 2-2

ACTUAL AND PROJECTED SPREADING IN ULARA SPREADING GROUNDS 2009-10

(acre-feet)

Operated by:							
	LACDPW				LADWP	LACDPW and LADWP	Monthly Total
Month	Branford	Hansen	Lopez	Pacoima	Headworks (A)	Tujunga	
Oct-09	86	0	0	58	0	180	324
Nov-09	8	0	0	0	0	224	232
Dec-09	101	78	7	602	0	653	1,441
Jan-10	95	4,400	1	1,900	0	1,850	8,246
Feb-10	92	5,140	124	2,180	0	3,630	11,166
Mar-10	0	3,700	0	0	0	727	4,427
Projected							
Apr-10	12	2,090	40	217	0	1,510	3,869
May-10	12	0	80	2,500	0	2,250	4,842
Jun-10	12	1,300	40	300	0	0	1,652
Jul-10	0	0	0	0	0	0	0
Aug-10	0	0	0	0	0	0	0
Sep-10	0	0	0	0	0	0	0
Total	418	16,708	292	7,757	0	11,024	36,199

(A) 1992-93 Water Year was the last year of spreading.

Section 3: Water Quality Monitoring Program Description

All of LADWP's 60 active wells in ULARA are monitored in conformance with the requirements set forth in Title 22, California Code of Regulations. For all active wells, monitoring is required whether the well is in production or not. State regulations require the following types of monitoring regimens:

1. Inorganic compounds
2. Organic compounds
3. Phase II and V Initial monitoring
4. Radiological compounds
5. Quarterly organics compounds

Each well, whether on active or standby status, is monitored every three years for a full range of inorganic and organic compounds. Phase II and V Initial monitoring involves analysis for newly regulated organic compounds at all wells. Each well must be sampled for four consecutive quarters within a three-year period. Quarterly organic compounds analysis monitoring are performed four times a year for each well where organic compounds have been detected. A complete list of the parameters that must be tested for is contained in Title 22 of the California Code of Regulations. Appendix A provides a recent report for TCE, PCE, and nitrates in Los Angeles' San Fernando and Sylmar Basins wells.

Section 4: Groundwater Treatment Facilities Operations Summary

North Hollywood Operable Unit (NHOU): Throughout the 2009-2010 Water Year Wells No. 5 and No.4 were out of service due to reduced water level above the pump intake of these wells as a result of declined water table elevations. From October 2009 to February 2010 the Aeration Towers were out of service for maintenance. Starting January 2009, Honeywell is operating Well No. 2 and dischargring the water to the sewer system. LADWP is reimbursed for the amount of water being pumped by Honeywell. Honeywell will continue to discharge the water to the sewer system until the 97-005 approval is obtained from the California Department of Public Health in order to serve the water to LADWP customers.

TABLE 2-3
GROUNDWATER PRODUCTION FROM NORTH HOLLYWOOD OU
(AERATION WELLS)

	Aeration Well No. (AF)							Total (AF)	Influent to Facility TCE/PCE	Effluent from Facility TCE/PCE
Mon/Yr	2*	3	4	5	6	7	8		(ug/L)	(ug/L)
Apr-09	8.03	4.06	0.00	0.00	13.27	13.66	12.49	51.51	NS/NS	NS/NS
May-09	5.09	10.31	0.00	0.00	37.12	14.92	30.42	97.86	25.5/6.26	ND/ND
Jun-09	16.41	9.18	0.00	0.00	32.35	28.81	26.10	112.85	30.2/7.12	ND/ND
Jul-09	18.76	12.51	0.00	0.00	46.21	23.62	36.98	138.08	40.8/8.51	ND/ND
Aug-09	12.92	11.89	0.00	0.00	49.01	16.37	14.78	104.97	36.9/6.25	ND/ND
Sep-09	13.59	6.45	0.00	0.00	28.54	30.55	11.13	90.26	43.8/8.04	ND/ND
Oct-09	14.97	9.46	0.00	0.00	32.87	33.72	24.29	115.31	37.8/8.35	ND/ND
Nov-09	17.33	0.00	35.01	35.67	20.25	0.00	0.00	108.26	35.8/8.65	ND/ND
Dec-09	15.20	12.47	0.00	0.00	49.22	51.01	26.33	154.23	34.5/7.84	ND/ND
Jan-10	14.58	8.15	0.00	0.00	28.93	34.02	24.95	110.63	41.2/6.9	ND/ND
Feb-10	8.26	5.72	0.00	0.00	17.38	26.54	19.17	77.07	25.4/9.77	ND/ND
Mar-10	15.61	14.78	0.00	0.00	34.55	55.10	36.25	156.29	36.5/8.58	ND/ND

Note:
* : Well is operated by outside contractor
ND: Not Detected
NS: No Sample

Section 5: Plans For Facilities Modifications

This section describes any plans for modifications to existing facilities, or plans to construct new facilities in the 2009-10 and the 2010-11 Water Years, as of the printing of this report (May 2010).

a.) Spreading Grounds:

Hansen Spreading Grounds During 2009-10 Water Year the Hansen Spreading Grounds was out of service while major upgrades are made to the facility. These upgrades include deepening and combining the basins to increase storage, and retrofitting the intake facility to improve operations efficiency. Construction was complete by November 2009.

Tujunga Spreading Grounds The full groundwater recharge capacity of the Tujunga Spreading Grounds was restored by December 2009 through the completion of the mitigation action plan to control the methane gas migration from the Sheldon-Arleta Landfill. Plans are underway to improve the Tujunga Spreading Grounds to increase the storage capacity, improve the intake facilities, and add a second intake downstream of the confluence of the Tujunga and Pacoima Wash channels. The project design is currently in design.

Pacoima Spreading Grounds Conceptual plans are underway to improve the Pacoima Spreading Grounds to increase the storage capacity and improve the intake facilities. This project is currently undergoing a feasibility analysis.

Lopez Spreading Grounds Conceptual plans are underway to improve the Lopez Spreading Grounds to increase the storage capacity and improve the intake facilities. This project is currently undergoing a feasibility analysis.

Branford Spreading Basin Conceptual plans are underway to improve the Branford Spreading Basin to increase percolation rates. This project is currently undergoing a feasibility analysis.

Headworks Spreading Grounds The Headworks Spreading Grounds is the site of multi-objective projects to improve water quality and storage, and to provide the community with an opportunity for passive recreation. This project includes a buried 110-million gallon reservoir for potable water storage. The other project component is the proposed wetlands project that is a joint effort between LADWP and the Army Corps of Engineers. This project is currently undergoing a feasibility analysis.

b.) Groundwater Treatment Facilities:

North Hollywood Operable Unit (NHOU). A feasibility study is being developed by the USEPA to improve and upgrade the production capacity of the NHOU well system; to enhance the NHOU capture zone; and to improve the reliability of the NHOU. This plan includes the construction of additional new wells in the NHOU area. The USEPA, the City of Los Angeles, DTSC, and the RWQCB are also investigating the source of various contaminant plumes in the area.

c.) Recycled Water Projects:

Water Recycling Projects in the San Fernando Valley. The LADWP Recycled Water Master Plan is in the development phase and will identify potential projects citywide where recycled water can be delivered to customers for their non-potable uses. The Groundwater Replenishment project in the San Fernando Basin will provide recycled water for conjunctive use and this project is also under development by this master plan, which is anticipated to be completed by early-2011.

In November 2009, LADWP began supplying recycled water to the Van Nuys Golf Course for irrigation uses to meet an expected demand of 185 acre-feet per year (AF/Y); actual delivery of recycled water during the first quarter of 2010 was 10 AF. Distribution facilities are being designed to deliver approximately 500 AF/Y of recycled water to the Hansen Dam Golf Course. It is expected that these facilities will be constructed and in service by October 2012.

Construction of pipelines to supply Valley Presbyterian Hospital and Van Nuys High School with recycled water was completed in February 2010. These pipelines are intended to deliver 44 AF/Y and 30 AF/Y of recycled water, respectively, to these customers for irrigation and industrial uses. Deliveries are scheduled to begin as early as summer 2010.

By 2014, LADWP expects to deliver as much as 19,350 AF of recycled water annually within the City of Los Angeles, which includes an estimated 3,000 AF/Y of delivery within the San Fernando Basin. The water supply goals set fourth by City of Los Angeles Mayor Antonio Villaraigosa provide that by 2019 as much as 560,000 AF of recycled water will be delivered city-wide each year for non-porable reuse and conjunctive use.

APPENDIX A:
2009-2010 Water Quality Sampling Results

SAN FERNANDO AND SYLMAR BASINS WELL FIELDS
NITRATE (AS NO3), PCE, TCE, PERCHLORATE, CHROMIUM, IRON, MANGANESE
1,2-DICHLOROETHENE-CIS, CARBON TETRACHLORIDE, TOTAL COLIFORM
1,1-DCA, 1,1-DCE, 1,4-DIOXANE, BROMIDE, AND MTBE CONCENTRATION
SAMPLES TAKEN BETWEEN 4/1/2009 AND 3/31/2010

WELL NAME	ANALYTE	RESULT	DATE	UNIT
AT002	1,1-Dichloroethane (1,1-DCA)	2.16	8/6/2009	µg/L
AT002	1,1-Dichloroethane (1,1-DCA)	2.1	9/16/2009	µg/L
AT002	1,1-Dichloroethane (1,1-DCA)	2.18	10/7/2009	µg/L
AT002	1,1-Dichloroethane (1,1-DCA)	1.88	11/10/2009	µg/L
AT002	1,1-Dichloroethane (1,1-DCA)	1.88	12/2/2009	µg/L
AT002	1,1-Dichloroethane (1,1-DCA)	1.92	1/27/2010	µg/L
AT002	1,1-Dichloroethane (1,1-DCA)	1.98	2/4/2010	µg/L
AT002	1,1-Dichloroethane (1,1-DCA)	1.99	3/10/2010	µg/L
AT002	1,1-Dichloroethene (1,1-DCE)	10.6	8/6/2009	µg/L
AT002	1,1-Dichloroethene (1,1-DCE)	9.96	9/16/2009	µg/L
AT002	1,1-Dichloroethene (1,1-DCE)	10.3	10/7/2009	µg/L
AT002	1,1-Dichloroethene (1,1-DCE)	8.98	11/10/2009	µg/L
AT002	1,1-Dichloroethene (1,1-DCE)	8.86	12/2/2009	µg/L
AT002	1,1-Dichloroethene (1,1-DCE)	8.84	1/27/2010	µg/L
AT002	1,1-Dichloroethene (1,1-DCE)	9.45	2/4/2010	µg/L
AT002	1,1-Dichloroethene (1,1-DCE)	9.56	3/10/2010	µg/L
AT002	1,2-Dichloroethene-cis	6.03	8/6/2009	µg/L
AT002	1,2-Dichloroethene-cis	5.72	9/16/2009	µg/L
AT002	1,2-Dichloroethene-cis	6.05	10/7/2009	µg/L
AT002	1,2-Dichloroethene-cis	5.58	11/10/2009	µg/L
AT002	1,2-Dichloroethene-cis	5.38	12/2/2009	µg/L
AT002	1,2-Dichloroethene-cis	5.43	1/27/2010	µg/L
AT002	1,2-Dichloroethene-cis	5.56	2/4/2010	µg/L
AT002	1,2-Dichloroethene-cis	5.75	3/10/2010	µg/L
AT002	Carbon tetrachloride	1.29	8/6/2009	µg/L
AT002	Carbon tetrachloride	1.24	9/16/2009	µg/L
AT002	Carbon tetrachloride	1.3	10/7/2009	µg/L
AT002	Carbon tetrachloride	1.18	11/10/2009	µg/L
AT002	Carbon tetrachloride	1.11	12/2/2009	µg/L
AT002	Carbon tetrachloride	1.01	1/27/2010	µg/L
AT002	Carbon tetrachloride	1.09	2/4/2010	µg/L
AT002	Carbon tetrachloride	1.24	3/10/2010	µg/L
AT002	Chromium (Cr) Total, ICP/MS	198	8/6/2009	ug/L
AT002	Chromium (Cr) Total, ICP/MS	201	8/25/2009	ug/L
AT002	Chromium (Cr) Total, ICP/MS	192	9/16/2009	ug/L
AT002	Chromium (Cr) Total, ICP/MS	209	10/7/2009	ug/L
AT002	Chromium (Cr) Total, ICP/MS	194	11/10/2009	ug/L
AT002	Chromium (Cr) Total, ICP/MS	211	12/2/2009	ug/L
AT002	Chromium (Cr) Total, ICP/MS	195	1/27/2010	ug/L
AT002	Chromium (Cr) Total, ICP/MS	216	2/4/2010	ug/L
AT002	Chromium (Cr) Total, ICP/MS	196	3/10/2010	ug/L
AT002	Nitrate (as NO3) ,calculated IC value	42.1	8/6/2009	mg/L
AT002	Nitrate (as NO3) ,calculated IC value	42.8	9/16/2009	mg/L
AT002	Nitrate (as NO3) ,calculated IC value	42.9	10/7/2009	mg/L
AT002	Nitrate (as NO3) ,calculated IC value	39.9	11/10/2009	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
AT002	Nitrate (as NO3) ,calculated IC value	39.6	12/2/2009	mg/L
AT002	Nitrate (as NO3) ,calculated IC value	38.9	1/27/2010	mg/L
AT002	Nitrate (as NO3) ,calculated IC value	38.9	2/4/2010	mg/L
AT002	Nitrate (as NO3) ,calculated IC value	38.9	3/10/2010	mg/L
AT002	Tetrachloroethylene (PCE)	25.8	8/6/2009	µg/L
AT002	Tetrachloroethylene (PCE)	26	9/16/2009	µg/L
AT002	Tetrachloroethylene (PCE)	25.3	10/7/2009	µg/L
AT002	Tetrachloroethylene (PCE)	24.8	11/10/2009	µg/L
AT002	Tetrachloroethylene (PCE)	23.3	12/2/2009	µg/L
AT002	Tetrachloroethylene (PCE)	22.4	1/27/2010	µg/L
AT002	Tetrachloroethylene (PCE)	23.8	2/4/2010	µg/L
AT002	Tetrachloroethylene (PCE)	23.5	3/10/2010	µg/L
AT002	Trichloroethene (TCE)	391	8/6/2009	µg/L
AT002	Trichloroethene (TCE)	406	9/16/2009	µg/L
AT002	Trichloroethene (TCE)	404	10/7/2009	µg/L
AT002	Trichloroethene (TCE)	357	11/10/2009	µg/L
AT002	Trichloroethene (TCE)	361	12/2/2009	µg/L
AT002	Trichloroethene (TCE)	342	1/27/2010	µg/L
AT002	Trichloroethene (TCE)	347	2/4/2010	µg/L
AT002	Trichloroethene (TCE)	356	3/10/2010	µg/L
AT003	1,1-Dichloroethane (1,1-DCA)	0.533	5/12/2009	µg/L
AT003	1,1-Dichloroethane (1,1-DCA)	0.507	6/3/2009	µg/L
AT003	1,1-Dichloroethane (1,1-DCA)	0.582	7/8/2009	µg/L
AT003	1,1-Dichloroethane (1,1-DCA)	0.541	8/6/2009	µg/L
AT003	1,1-Dichloroethane (1,1-DCA)	0.646	9/16/2009	µg/L
AT003	1,1-Dichloroethane (1,1-DCA)	0.647	10/7/2009	µg/L
AT003	1,1-Dichloroethane (1,1-DCA)	0.566	11/10/2009	µg/L
AT003	1,1-Dichloroethane (1,1-DCA)	0.578	12/2/2009	µg/L
AT003	1,1-Dichloroethane (1,1-DCA)	0.711	1/27/2010	µg/L
AT003	1,1-Dichloroethane (1,1-DCA)	0.704	2/4/2010	µg/L
AT003	1,1-Dichloroethane (1,1-DCA)	0.83	3/10/2010	µg/L
AT003	1,1-Dichloroethene (1,1-DCE)	3.11	5/12/2009	µg/L
AT003	1,1-Dichloroethene (1,1-DCE)	3.03	6/3/2009	µg/L
AT003	1,1-Dichloroethene (1,1-DCE)	3.64	7/8/2009	µg/L
AT003	1,1-Dichloroethene (1,1-DCE)	3.22	8/6/2009	µg/L
AT003	1,1-Dichloroethene (1,1-DCE)	4.24	9/16/2009	µg/L
AT003	1,1-Dichloroethene (1,1-DCE)	4.13	10/7/2009	µg/L
AT003	1,1-Dichloroethene (1,1-DCE)	3.41	11/10/2009	µg/L
AT003	1,1-Dichloroethene (1,1-DCE)	3.4	12/2/2009	µg/L
AT003	1,1-Dichloroethene (1,1-DCE)	3.94	1/27/2010	µg/L
AT003	1,1-Dichloroethene (1,1-DCE)	3.88	2/4/2010	µg/L
AT003	1,1-Dichloroethene (1,1-DCE)	4.31	3/10/2010	µg/L
AT003	1,2-Dichloroethene-cis	2.33	5/12/2009	µg/L
AT003	1,2-Dichloroethene-cis	2.15	6/3/2009	µg/L
AT003	1,2-Dichloroethene-cis	2.37	7/8/2009	µg/L
AT003	1,2-Dichloroethene-cis	2.33	8/6/2009	µg/L
AT003	1,2-Dichloroethene-cis	2.64	9/16/2009	µg/L
AT003	1,2-Dichloroethene-cis	2.63	10/7/2009	µg/L
AT003	1,2-Dichloroethene-cis	2.47	11/10/2009	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
AT003	1,2-Dichloroethene-cis	2.38	12/2/2009	µg/L
AT003	1,2-Dichloroethene-cis	2.87	1/27/2010	µg/L
AT003	1,2-Dichloroethene-cis	2.9	2/4/2010	µg/L
AT003	1,2-Dichloroethene-cis	3.37	3/10/2010	µg/L
AT003	Chromium (Cr) Total, ICP/MS	12.7	5/12/2009	ug/L
AT003	Chromium (Cr) Total, ICP/MS	14	6/3/2009	ug/L
AT003	Chromium (Cr) Total, ICP/MS	14.2	7/8/2009	ug/L
AT003	Chromium (Cr) Total, ICP/MS	13.3	8/6/2009	ug/L
AT003	Chromium (Cr) Total, ICP/MS	12.7	9/16/2009	ug/L
AT003	Chromium (Cr) Total, ICP/MS	14.4	10/7/2009	ug/L
AT003	Chromium (Cr) Total, ICP/MS	13	11/10/2009	ug/L
AT003	Chromium (Cr) Total, ICP/MS	12.7	12/2/2009	ug/L
AT003	Chromium (Cr) Total, ICP/MS	12.2	1/27/2010	ug/L
AT003	Chromium (Cr) Total, ICP/MS	12.5	2/4/2010	ug/L
AT003	Chromium (Cr) Total, ICP/MS	11.9	3/10/2010	ug/L
AT003	Nitrate (as NO3) ,calculated IC value	36.1	5/12/2009	mg/L
AT003	Nitrate (as NO3) ,calculated IC value	36.1	6/3/2009	mg/L
AT003	Nitrate (as NO3) ,calculated IC value	37.3	7/8/2009	mg/L
AT003	Nitrate (as NO3) ,calculated IC value	37.4	8/6/2009	mg/L
AT003	Nitrate (as NO3) ,calculated IC value	38.2	9/16/2009	mg/L
AT003	Nitrate (as NO3) ,calculated IC value	39.2	10/7/2009	mg/L
AT003	Nitrate (as NO3) ,calculated IC value	36.9	11/10/2009	mg/L
AT003	Nitrate (as NO3) ,calculated IC value	36.7	12/2/2009	mg/L
AT003	Nitrate (as NO3) ,calculated IC value	37.3	1/27/2010	mg/L
AT003	Nitrate (as NO3) ,calculated IC value	37.6	2/4/2010	mg/L
AT003	Nitrate (as NO3) ,calculated IC value	37.3	3/10/2010	mg/L
AT003	Tetrachloroethylene (PCE)	6.88	5/12/2009	µg/L
AT003	Tetrachloroethylene (PCE)	7.08	6/3/2009	µg/L
AT003	Tetrachloroethylene (PCE)	7.56	7/8/2009	µg/L
AT003	Tetrachloroethylene (PCE)	6.81	8/6/2009	µg/L
AT003	Tetrachloroethylene (PCE)	8.13	9/16/2009	µg/L
AT003	Tetrachloroethylene (PCE)	8.07	10/7/2009	µg/L
AT003	Tetrachloroethylene (PCE)	7.9	11/10/2009	µg/L
AT003	Tetrachloroethylene (PCE)	7.87	12/2/2009	µg/L
AT003	Tetrachloroethylene (PCE)	8.49	1/27/2010	µg/L
AT003	Tetrachloroethylene (PCE)	8.61	2/4/2010	µg/L
AT003	Tetrachloroethylene (PCE)	8.99	3/10/2010	µg/L
AT003	Trichloroethene (TCE)	37.2	5/12/2009	µg/L
AT003	Trichloroethene (TCE)	36.7	6/3/2009	µg/L
AT003	Trichloroethene (TCE)	44.1	7/8/2009	µg/L
AT003	Trichloroethene (TCE)	43.1	8/6/2009	µg/L
AT003	Trichloroethene (TCE)	58.3	9/16/2009	µg/L
AT003	Trichloroethene (TCE)	58.1	10/7/2009	µg/L
AT003	Trichloroethene (TCE)	56.1	11/10/2009	µg/L
AT003	Trichloroethene (TCE)	53.7	12/2/2009	µg/L
AT003	Trichloroethene (TCE)	59.5	1/27/2010	µg/L
AT003	Trichloroethene (TCE)	59.8	2/4/2010	µg/L
AT003	Trichloroethene (TCE)	64.9	3/10/2010	µg/L
AT006	1,1-Dichloroethane (1,1-DCA)	0.574	5/12/2009	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
AT006	1,1-Dichloroethane (1,1-DCA)	0.567	6/3/2009	µg/L
AT006	1,1-Dichloroethane (1,1-DCA)	0.583	7/8/2009	µg/L
AT006	1,1-Dichloroethane (1,1-DCA)	0.55	8/6/2009	µg/L
AT006	1,1-Dichloroethane (1,1-DCA)	0.682	9/16/2009	µg/L
AT006	1,1-Dichloroethane (1,1-DCA)	0.671	10/8/2009	µg/L
AT006	1,1-Dichloroethane (1,1-DCA)	0.562	11/10/2009	µg/L
AT006	1,1-Dichloroethane (1,1-DCA)	0.607	12/2/2009	µg/L
AT006	1,1-Dichloroethane (1,1-DCA)	0.638	2/4/2010	µg/L
AT006	1,1-Dichloroethane (1,1-DCA)	0.645	3/10/2010	µg/L
AT006	1,2-Dichloroethene-cis	1.26	5/12/2009	µg/L
AT006	1,2-Dichloroethene-cis	1.22	6/3/2009	µg/L
AT006	1,2-Dichloroethene-cis	1.25	7/8/2009	µg/L
AT006	1,2-Dichloroethene-cis	1.27	8/6/2009	µg/L
AT006	1,2-Dichloroethene-cis	1.56	9/16/2009	µg/L
AT006	1,2-Dichloroethene-cis	1.43	10/8/2009	µg/L
AT006	1,2-Dichloroethene-cis	1.3	11/10/2009	µg/L
AT006	1,2-Dichloroethene-cis	1.35	12/2/2009	µg/L
AT006	1,2-Dichloroethene-cis	1.42	2/4/2010	µg/L
AT006	1,2-Dichloroethene-cis	1.4	3/10/2010	µg/L
AT006	Chromium (Cr) Total, ICP/MS	2.8	5/12/2009	ug/L
AT006	Chromium (Cr) Total, ICP/MS	2.7	6/3/2009	ug/L
AT006	Chromium (Cr) Total, ICP/MS	3.3	7/8/2009	ug/L
AT006	Chromium (Cr) Total, ICP/MS	3.1	8/6/2009	ug/L
AT006	Chromium (Cr) Total, ICP/MS	4.9	8/25/2009	ug/L
AT006	Chromium (Cr) Total, ICP/MS	3	9/16/2009	ug/L
AT006	Chromium (Cr) Total, ICP/MS	3.3	10/7/2009	ug/L
AT006	Chromium (Cr) Total, ICP/MS	3.4	11/10/2009	ug/L
AT006	Chromium (Cr) Total, ICP/MS	3.3	12/2/2009	ug/L
AT006	Chromium (Cr) Total, ICP/MS	3.3	2/4/2010	ug/L
AT006	Chromium (Cr) Total, ICP/MS	2.9	3/10/2010	ug/L
AT006	Nitrate (as NO3) ,calculated IC value	22.5	5/12/2009	mg/L
AT006	Nitrate (as NO3) ,calculated IC value	22.3	6/3/2009	mg/L
AT006	Nitrate (as NO3) ,calculated IC value	23.3	7/8/2009	mg/L
AT006	Nitrate (as NO3) ,calculated IC value	23.5	8/6/2009	mg/L
AT006	Nitrate (as NO3) ,calculated IC value	23.5	9/16/2009	mg/L
AT006	Nitrate (as NO3) ,calculated IC value	23.2	10/7/2009	mg/L
AT006	Nitrate (as NO3) ,calculated IC value	22.8	11/10/2009	mg/L
AT006	Nitrate (as NO3) ,calculated IC value	22.5	12/2/2009	mg/L
AT006	Nitrate (as NO3) ,calculated IC value	22	2/4/2010	mg/L
AT006	Nitrate (as NO3) ,calculated IC value	21.3	3/10/2010	mg/L
AT006	Tetrachloroethylene (PCE)	7.91	5/12/2009	µg/L
AT006	Tetrachloroethylene (PCE)	8.52	6/3/2009	µg/L
AT006	Tetrachloroethylene (PCE)	9.12	7/8/2009	µg/L
AT006	Tetrachloroethylene (PCE)	8.75	8/6/2009	µg/L
AT006	Tetrachloroethylene (PCE)	10.6	9/16/2009	µg/L
AT006	Tetrachloroethylene (PCE)	10.5	10/8/2009	µg/L
AT006	Tetrachloroethylene (PCE)	10.2	11/10/2009	µg/L
AT006	Tetrachloroethylene (PCE)	10.3	12/2/2009	µg/L
AT006	Tetrachloroethylene (PCE)	10.4	2/4/2010	µg/L
AT006	Tetrachloroethylene (PCE)	10.2	3/10/2010	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
AT006	Trichloroethene (TCE)	9.74	5/12/2009	µg/L
AT006	Trichloroethene (TCE)	9.28	6/3/2009	µg/L
AT006	Trichloroethene (TCE)	10.2	7/8/2009	µg/L
AT006	Trichloroethene (TCE)	9.18	8/6/2009	µg/L
AT006	Trichloroethene (TCE)	10.5	9/16/2009	µg/L
AT006	Trichloroethene (TCE)	10.2	10/8/2009	µg/L
AT006	Trichloroethene (TCE)	9.46	11/10/2009	µg/L
AT006	Trichloroethene (TCE)	9.46	12/2/2009	µg/L
AT006	Trichloroethene (TCE)	10.3	2/4/2010	µg/L
AT006	Trichloroethene (TCE)	10.4	3/10/2010	µg/L
AT007	1,1-Dichloroethene (1,1-DCE)	0.515	5/12/2009	µg/L
AT007	1,1-Dichloroethene (1,1-DCE)	0.99	6/3/2009	µg/L
AT007	1,1-Dichloroethene (1,1-DCE)	1.43	7/8/2009	µg/L
AT007	1,1-Dichloroethene (1,1-DCE)	0.852	8/6/2009	µg/L
AT007	1,1-Dichloroethene (1,1-DCE)	1.4	9/16/2009	µg/L
AT007	1,1-Dichloroethene (1,1-DCE)	1.19	10/7/2009	µg/L
AT007	1,1-Dichloroethene (1,1-DCE)	1.03	11/10/2009	µg/L
AT007	1,1-Dichloroethene (1,1-DCE)	1.15	12/2/2009	µg/L
AT007	1,1-Dichloroethene (1,1-DCE)	0.943	1/27/2010	µg/L
AT007	1,1-Dichloroethene (1,1-DCE)	1.04	2/4/2010	µg/L
AT007	1,1-Dichloroethene (1,1-DCE)	1.34	3/10/2010	µg/L
AT007	Carbon tetrachloride	0.532	5/12/2009	µg/L
AT007	Carbon tetrachloride	0.653	6/3/2009	µg/L
AT007	Carbon tetrachloride	0.783	7/8/2009	µg/L
AT007	Carbon tetrachloride	0.584	8/6/2009	µg/L
AT007	Carbon tetrachloride	0.682	9/16/2009	µg/L
AT007	Carbon tetrachloride	0.617	10/7/2009	µg/L
AT007	Carbon tetrachloride	0.567	11/10/2009	µg/L
AT007	Carbon tetrachloride	0.577	12/2/2009	µg/L
AT007	Carbon tetrachloride	0.659	3/10/2010	µg/L
AT007	Chromium (Cr) Total, ICP/MS	1.2	5/12/2009	ug/L
AT007	Chromium (Cr) Total, ICP/MS	1.4	6/3/2009	ug/L
AT007	Chromium (Cr) Total, ICP/MS	1.8	7/8/2009	ug/L
AT007	Chromium (Cr) Total, ICP/MS	1.6	8/6/2009	ug/L
AT007	Chromium (Cr) Total, ICP/MS	1.5	8/25/2009	ug/L
AT007	Chromium (Cr) Total, ICP/MS	1.6	9/16/2009	ug/L
AT007	Chromium (Cr) Total, ICP/MS	1.7	10/7/2009	ug/L
AT007	Chromium (Cr) Total, ICP/MS	1.9	11/10/2009	ug/L
AT007	Chromium (Cr) Total, ICP/MS	1.7	12/2/2009	ug/L
AT007	Chromium (Cr) Total, ICP/MS	1.4	1/27/2010	ug/L
AT007	Chromium (Cr) Total, ICP/MS	1.2	2/4/2010	ug/L
AT007	Chromium (Cr) Total, ICP/MS	1.3	3/10/2010	ug/L
AT007	Nitrate (as NO3) ,calculated IC value	42.7	5/12/2009	mg/L
AT007	Nitrate (as NO3) ,calculated IC value	37.7	6/3/2009	mg/L
AT007	Nitrate (as NO3) ,calculated IC value	45.2	7/8/2009	mg/L
AT007	Nitrate (as NO3) ,calculated IC value	45.2	8/6/2009	mg/L
AT007	Nitrate (as NO3) ,calculated IC value	43.1	9/16/2009	mg/L
AT007	Nitrate (as NO3) ,calculated IC value	39.3	10/7/2009	mg/L
AT007	Nitrate (as NO3) ,calculated IC value	36.3	11/10/2009	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
AT007	Nitrate (as NO3) ,calculated IC value	36.7	12/2/2009	mg/L
AT007	Nitrate (as NO3) ,calculated IC value	30.5	1/27/2010	mg/L
AT007	Nitrate (as NO3) ,calculated IC value	30.9	2/4/2010	mg/L
AT007	Nitrate (as NO3) ,calculated IC value	32.9	3/10/2010	mg/L
AT007	Tetrachloroethylene (PCE)	3.48	5/12/2009	µg/L
AT007	Tetrachloroethylene (PCE)	4.83	6/3/2009	µg/L
AT007	Tetrachloroethylene (PCE)	6.09	7/8/2009	µg/L
AT007	Tetrachloroethylene (PCE)	4.5	8/6/2009	µg/L
AT007	Tetrachloroethylene (PCE)	5.87	9/16/2009	µg/L
AT007	Tetrachloroethylene (PCE)	5.29	10/7/2009	µg/L
AT007	Tetrachloroethylene (PCE)	5.43	11/10/2009	µg/L
AT007	Tetrachloroethylene (PCE)	5.32	12/2/2009	µg/L
AT007	Tetrachloroethylene (PCE)	4.58	1/27/2010	µg/L
AT007	Tetrachloroethylene (PCE)	4.93	2/4/2010	µg/L
AT007	Tetrachloroethylene (PCE)	5.51	3/10/2010	µg/L
AT007	Trichloroethene (TCE)	30.8	5/12/2009	µg/L
AT007	Trichloroethene (TCE)	51.6	6/3/2009	µg/L
AT007	Trichloroethene (TCE)	75.4	7/8/2009	µg/L
AT007	Trichloroethene (TCE)	48.9	8/6/2009	µg/L
AT007	Trichloroethene (TCE)	75	9/16/2009	µg/L
AT007	Trichloroethene (TCE)	58.4	10/7/2009	µg/L
AT007	Trichloroethene (TCE)	57.4	11/10/2009	µg/L
AT007	Trichloroethene (TCE)	58.6	12/2/2009	µg/L
AT007	Trichloroethene (TCE)	39.5	1/27/2010	µg/L
AT007	Trichloroethene (TCE)	42.3	2/4/2010	µg/L
AT007	Trichloroethene (TCE)	55.3	3/10/2010	µg/L
AT008	1,1-Dichloroethane (1,1-DCA)	0.543	1/27/2010	µg/L
AT008	1,1-Dichloroethane (1,1-DCA)	0.585	2/4/2010	µg/L
AT008	1,1-Dichloroethane (1,1-DCA)	0.662	3/10/2010	µg/L
AT008	1,1-Dichloroethene (1,1-DCE)	2.34	5/12/2009	µg/L
AT008	1,1-Dichloroethene (1,1-DCE)	2.22	6/3/2009	µg/L
AT008	1,1-Dichloroethene (1,1-DCE)	2.58	7/8/2009	µg/L
AT008	1,1-Dichloroethene (1,1-DCE)	2.5	8/6/2009	µg/L
AT008	1,1-Dichloroethene (1,1-DCE)	3.59	9/16/2009	µg/L
AT008	1,1-Dichloroethene (1,1-DCE)	3.01	10/7/2009	µg/L
AT008	1,1-Dichloroethene (1,1-DCE)	2.76	11/10/2009	µg/L
AT008	1,1-Dichloroethene (1,1-DCE)	3.27	12/2/2009	µg/L
AT008	1,1-Dichloroethene (1,1-DCE)	2.82	1/27/2010	µg/L
AT008	1,1-Dichloroethene (1,1-DCE)	2.95	2/4/2010	µg/L
AT008	1,1-Dichloroethene (1,1-DCE)	3.2	3/10/2010	µg/L
AT008	Carbon tetrachloride	3.92	5/12/2009	µg/L
AT008	Carbon tetrachloride	3.64	6/3/2009	µg/L
AT008	Carbon tetrachloride	4.14	7/8/2009	µg/L
AT008	Carbon tetrachloride	4.05	8/6/2009	µg/L
AT008	Carbon tetrachloride	6.38	9/16/2009	µg/L
AT008	Carbon tetrachloride	4.86	10/7/2009	µg/L
AT008	Carbon tetrachloride	4.56	11/10/2009	µg/L
AT008	Carbon tetrachloride	5.52	12/2/2009	µg/L
AT008	Carbon tetrachloride	3.93	1/27/2010	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
AT008	Carbon tetrachloride	4.19	2/4/2010	µg/L
AT008	Carbon tetrachloride	5.21	3/10/2010	µg/L
AT008	Chromium (Cr) Total, ICP/MS	1.1	7/8/2009	ug/L
AT008	Chromium (Cr) Total, ICP/MS	1.1	8/6/2009	ug/L
AT008	Chromium (Cr) Total, ICP/MS	1.1	8/25/2009	ug/L
AT008	Chromium (Cr) Total, ICP/MS	1.2	10/7/2009	ug/L
AT008	Chromium (Cr) Total, ICP/MS	1.2	11/10/2009	ug/L
AT008	Chromium (Cr) Total, ICP/MS	1.1	1/27/2010	ug/L
AT008	Chromium (Cr) Total, ICP/MS	1.2	2/4/2010	ug/L
AT008	Nitrate (as NO3) ,calculated IC value	31.9	5/12/2009	mg/L
AT008	Nitrate (as NO3) ,calculated IC value	31.4	6/3/2009	mg/L
AT008	Nitrate (as NO3) ,calculated IC value	32	7/8/2009	mg/L
AT008	Nitrate (as NO3) ,calculated IC value	33.1	8/6/2009	mg/L
AT008	Nitrate (as NO3) ,calculated IC value	36.1	9/16/2009	mg/L
AT008	Nitrate (as NO3) ,calculated IC value	34.6	10/7/2009	mg/L
AT008	Nitrate (as NO3) ,calculated IC value	33.7	11/10/2009	mg/L
AT008	Nitrate (as NO3) ,calculated IC value	33.6	12/2/2009	mg/L
AT008	Nitrate (as NO3) ,calculated IC value	32.5	1/27/2010	mg/L
AT008	Nitrate (as NO3) ,calculated IC value	32.4	2/4/2010	mg/L
AT008	Nitrate (as NO3) ,calculated IC value	32.4	3/10/2010	mg/L
AT008	Tetrachloroethylene (PCE)	7.85	5/12/2009	µg/L
AT008	Tetrachloroethylene (PCE)	8.31	6/3/2009	µg/L
AT008	Tetrachloroethylene (PCE)	9.73	7/8/2009	µg/L
AT008	Tetrachloroethylene (PCE)	8.51	8/6/2009	µg/L
AT008	Tetrachloroethylene (PCE)	8.76	9/16/2009	µg/L
AT008	Tetrachloroethylene (PCE)	10.1	10/7/2009	µg/L
AT008	Tetrachloroethylene (PCE)	9.66	11/10/2009	µg/L
AT008	Tetrachloroethylene (PCE)	10.4	12/2/2009	µg/L
AT008	Tetrachloroethylene (PCE)	9.87	1/27/2010	µg/L
AT008	Tetrachloroethylene (PCE)	9.8	2/4/2010	µg/L
AT008	Tetrachloroethylene (PCE)	10.7	3/10/2010	µg/L
AT008	Trichloroethene (TCE)	31.4	5/12/2009	µg/L
AT008	Trichloroethene (TCE)	28.9	6/3/2009	µg/L
AT008	Trichloroethene (TCE)	31.9	7/8/2009	µg/L
AT008	Trichloroethene (TCE)	29.9	8/6/2009	µg/L
AT008	Trichloroethene (TCE)	30.4	9/16/2009	µg/L
AT008	Trichloroethene (TCE)	37.3	10/7/2009	µg/L
AT008	Trichloroethene (TCE)	36.6	11/10/2009	µg/L
AT008	Trichloroethene (TCE)	34.3	12/2/2009	µg/L
AT008	Trichloroethene (TCE)	34.6	1/27/2010	µg/L
AT008	Trichloroethene (TCE)	35.4	2/4/2010	µg/L
AT008	Trichloroethene (TCE)	41.2	3/10/2010	µg/L
ER006	Bromide ,Ion-Chromatography	0.187	8/11/2009	mg/L
ER006	Chromium (Cr) Total, ICP/MS	3.1	10/20/2009	ug/L
ER006	Nitrate (as NO3) ,calculated IC value	28.4	4/28/2009	mg/L
ER006	Nitrate (as NO3) ,calculated IC value	27.6	5/27/2009	mg/L
ER006	Nitrate (as NO3) ,calculated IC value	27.2	6/24/2009	mg/L
ER006	Nitrate (as NO3) ,calculated IC value	27.4	7/22/2009	mg/L
ER006	Nitrate (as NO3) ,calculated IC value	27.4	8/11/2009	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
ER006	Nitrate (as NO3) ,calculated IC value	27.5	9/15/2009	mg/L
ER006	Nitrate (as NO3) ,calculated IC value	28.4	10/20/2009	mg/L
ER006	Nitrate (as NO3) ,calculated IC value	27.5	12/29/2009	mg/L
ER006	Nitrate (as NO3) ,calculated IC value	25.3	1/26/2010	mg/L
ER006	Nitrate (as NO3) ,calculated IC value	25.4	2/23/2010	mg/L
ER006	Nitrate (as NO3) ,calculated IC value	24.3	3/23/2010	mg/L
ER006	Tetrachloroethylene (PCE)	2.74	4/28/2009	µg/L
ER006	Tetrachloroethylene (PCE)	2.8	5/27/2009	µg/L
ER006	Tetrachloroethylene (PCE)	2.62	6/24/2009	µg/L
ER006	Tetrachloroethylene (PCE)	2.29	7/22/2009	µg/L
ER006	Tetrachloroethylene (PCE)	2.26	8/11/2009	µg/L
ER006	Tetrachloroethylene (PCE)	2.24	9/15/2009	µg/L
ER006	Tetrachloroethylene (PCE)	2.04	10/20/2009	µg/L
ER006	Tetrachloroethylene (PCE)	2.04	11/26/2009	µg/L
ER006	Tetrachloroethylene (PCE)	2.01	12/29/2009	µg/L
ER006	Tetrachloroethylene (PCE)	1.42	1/26/2010	µg/L
ER006	Tetrachloroethylene (PCE)	0.933	2/23/2010	µg/L
ER006	Tetrachloroethylene (PCE)	0.717	3/23/2010	µg/L
ER006	Trichloroethene (TCE)	10.4	4/28/2009	µg/L
ER006	Trichloroethene (TCE)	9.17	5/27/2009	µg/L
ER006	Trichloroethene (TCE)	8.66	6/24/2009	µg/L
ER006	Trichloroethene (TCE)	8.31	7/22/2009	µg/L
ER006	Trichloroethene (TCE)	8.08	8/11/2009	µg/L
ER006	Trichloroethene (TCE)	8.46	9/15/2009	µg/L
ER006	Trichloroethene (TCE)	7.6	10/20/2009	µg/L
ER006	Trichloroethene (TCE)	7.83	11/26/2009	µg/L
ER006	Trichloroethene (TCE)	7.26	12/29/2009	µg/L
ER006	Trichloroethene (TCE)	7.72	1/26/2010	µg/L
ER006	Trichloroethene (TCE)	7.02	2/23/2010	µg/L
ER006	Trichloroethene (TCE)	5.93	3/23/2010	µg/L
MI006	Chromium (Cr) Total, ICP/MS	2.9	10/20/2009	ug/L
MI006	Nitrate (as NO3) ,calculated IC value	6.78	4/3/2009	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	11.4	5/22/2009	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	11	6/2/2009	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	11.1	7/22/2009	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	11.2	8/4/2009	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	11.6	10/20/2009	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	11.8	11/3/2009	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	12.1	12/16/2009	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	12.2	1/5/2010	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	12.4	2/11/2010	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	12.4	3/5/2010	mg/L
MI006	Trichloroethene (TCE)	0.578	4/3/2009	µg/L
MI006	Trichloroethene (TCE)	0.552	2/11/2010	µg/L
MI007	Chromium (Cr) Total, ICP/MS	3.8	10/20/2009	ug/L
MI007	Coliform Total (CL,MPN) ,MM0-MUG	1.1	4/8/2009	MPN/100ml
MI007	Coliform Total (CL,MPN) ,MM0-MUG	1.1	4/9/2009	MPN/100ml
MI007	Coliform Total (CL,MPN) ,MM0-MUG	3.6	10/22/2009	MPN/100ml

WELL NAME	ANALYTE	RESULT	DATE	UNIT
MI007	Coliform Total (CL,QT2000) ,MM0-MUG	1	5/22/2009	NUM/100ml
MI007	Coliform Total (CL,QT2000) ,MM0-MUG	10.9	10/20/2009	NUM/100ml
MI007	Nitrate (as NO3) ,calculated IC value	22.2	4/3/2009	mg/L
MI007	Nitrate (as NO3) ,calculated IC value	23.1	5/22/2009	mg/L
MI007	Nitrate (as NO3) ,calculated IC value	22.9	6/2/2009	mg/L
MI007	Nitrate (as NO3) ,calculated IC value	22.9	7/22/2009	mg/L
MI007	Nitrate (as NO3) ,calculated IC value	22.7	8/4/2009	mg/L
MI007	Nitrate (as NO3) ,calculated IC value	24.5	10/20/2009	mg/L
MI007	Nitrate (as NO3) ,calculated IC value	24.1	11/3/2009	mg/L
MI007	Nitrate (as NO3) ,calculated IC value	24.4	12/16/2009	mg/L
MI007	Nitrate (as NO3) ,calculated IC value	24.3	1/5/2010	mg/L
MI007	Nitrate (as NO3) ,calculated IC value	24.3	2/11/2010	mg/L
MI007	Nitrate (as NO3) ,calculated IC value	24.3	3/5/2010	mg/L
MI007	Trichloroethene (TCE)	5.1	4/6/2009	µg/L
MI007	Trichloroethene (TCE)	5.03	4/15/2009	µg/L
MI007	Trichloroethene (TCE)	5.5	5/22/2009	µg/L
MI007	Trichloroethene (TCE)	5.27	6/2/2009	µg/L
MI007	Trichloroethene (TCE)	5.21	7/22/2009	µg/L
MI007	Trichloroethene (TCE)	5.6	8/4/2009	µg/L
MI007	Trichloroethene (TCE)	6.39	9/1/2009	µg/L
MI007	Trichloroethene (TCE)	7.16	10/20/2009	µg/L
MI007	Trichloroethene (TCE)	6.88	11/3/2009	µg/L
MI007	Trichloroethene (TCE)	7.78	12/16/2009	µg/L
MI007	Trichloroethene (TCE)	8.09	1/5/2010	µg/L
MI007	Trichloroethene (TCE)	8.84	2/11/2010	µg/L
MI007	Trichloroethene (TCE)	9.01	3/5/2010	µg/L
NH004	Bromide ,Ion-Chromatography	0.278	12/9/2009	mg/L
NH004	Nitrate (as NO3) ,calculated IC value	8.33	4/3/2009	mg/L
NH004	Nitrate (as NO3) ,calculated IC value	8.73	5/7/2009	mg/L
NH004	Nitrate (as NO3) ,calculated IC value	8.82	6/11/2009	mg/L
NH004	Nitrate (as NO3) ,calculated IC value	8.06	7/23/2009	mg/L
NH004	Nitrate (as NO3) ,calculated IC value	9.08	8/26/2009	mg/L
NH004	Nitrate (as NO3) ,calculated IC value	8.95	9/15/2009	mg/L
NH004	Nitrate (as NO3) ,calculated IC value	8.68	10/27/2009	mg/L
NH004	Nitrate (as NO3) ,calculated IC value	8.82	11/24/2009	mg/L
NH004	Nitrate (as NO3) ,calculated IC value	9.08	12/9/2009	mg/L
NH004	Nitrate (as NO3) ,calculated IC value	9.13	1/25/2010	mg/L
NH004	Nitrate (as NO3) ,calculated IC value	9.04	2/18/2010	mg/L
NH004	Nitrate (as NO3) ,calculated IC value	9.08	3/11/2010	mg/L
NH007	Chromium (Cr) Total, ICP/MS	2.2	10/27/2009	ug/L
NH007	Nitrate (as NO3) ,calculated IC value	12.4	4/3/2009	mg/L
NH007	Nitrate (as NO3) ,calculated IC value	13.5	5/7/2009	mg/L
NH007	Nitrate (as NO3) ,calculated IC value	13.5	6/11/2009	mg/L
NH007	Nitrate (as NO3) ,calculated IC value	11.2	7/23/2009	mg/L
NH007	Nitrate (as NO3) ,calculated IC value	14.4	8/26/2009	mg/L
NH007	Nitrate (as NO3) ,calculated IC value	13.9	9/15/2009	mg/L
NH007	Nitrate (as NO3) ,calculated IC value	11.7	10/27/2009	mg/L
NH007	Nitrate (as NO3) ,calculated IC value	11.6	11/24/2009	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
NH007	Nitrate (as NO3) ,calculated IC value	22.2	12/29/2009	mg/L
NH007	Nitrate (as NO3) ,calculated IC value	14.5	1/25/2010	mg/L
NH007	Nitrate (as NO3) ,calculated IC value	14.2	2/18/2010	mg/L
NH007	Nitrate (as NO3) ,calculated IC value	14.4	3/11/2010	mg/L
NH007	Tetrachloroethylene (PCE)	0.627	4/3/2009	µg/L
NH007	Tetrachloroethylene (PCE)	0.756	7/23/2009	µg/L
NH007	Tetrachloroethylene (PCE)	0.525	8/26/2009	µg/L
NH007	Tetrachloroethylene (PCE)	0.525	9/15/2009	µg/L
NH007	Tetrachloroethylene (PCE)	1.03	10/27/2009	µg/L
NH007	Tetrachloroethylene (PCE)	1.14	11/24/2009	µg/L
NH007	Tetrachloroethylene (PCE)	0.521	1/25/2010	µg/L
NH007	Tetrachloroethylene (PCE)	0.531	2/18/2010	µg/L
NH007	Tetrachloroethylene (PCE)	0.523	3/11/2010	µg/L
NH022	1,1-Dichloroethene (1,1-DCE)	2.54	4/16/2009	µg/L
NH022	1,1-Dichloroethene (1,1-DCE)	2.51	5/7/2009	µg/L
NH022	1,1-Dichloroethene (1,1-DCE)	2.62	6/11/2009	µg/L
NH022	1,1-Dichloroethene (1,1-DCE)	3.05	7/23/2009	µg/L
NH022	1,1-Dichloroethene (1,1-DCE)	0.627	9/24/2009	µg/L
NH022	1,1-Dichloroethene (1,1-DCE)	0.545	2/18/2010	µg/L
NH022	1,1-Dichloroethene (1,1-DCE)	0.723	3/11/2010	µg/L
NH022	Chromium (Cr) Total, ICP/MS	1.3	10/27/2009	ug/L
NH022	Coliform Total (CL,MPN) ,MM0-MUG	5.1	10/29/2009	MPN/100ml
NH022	Coliform Total (CL,QT2000) ,MM0-MUG	1	9/24/2009	NUM/100ml
NH022	Coliform Total (CL,QT2000) ,MM0-MUG	7.5	10/27/2009	NUM/100ml
NH022	Coliform Total (CL,QT2000) ,MM0-MUG	1	1/26/2010	NUM/100ml
NH022	Nitrate (as NO3) ,calculated IC value	23.6	4/16/2009	mg/L
NH022	Nitrate (as NO3) ,calculated IC value	25.3	5/7/2009	mg/L
NH022	Nitrate (as NO3) ,calculated IC value	26	6/11/2009	mg/L
NH022	Nitrate (as NO3) ,calculated IC value	24.4	7/23/2009	mg/L
NH022	Nitrate (as NO3) ,calculated IC value	23.3	9/24/2009	mg/L
NH022	Nitrate (as NO3) ,calculated IC value	19.9	10/27/2009	mg/L
NH022	Nitrate (as NO3) ,calculated IC value	19.3	11/19/2009	mg/L
NH022	Nitrate (as NO3) ,calculated IC value	29.1	12/23/2009	mg/L
NH022	Nitrate (as NO3) ,calculated IC value	16.6	1/26/2010	mg/L
NH022	Nitrate (as NO3) ,calculated IC value	18.5	2/18/2010	mg/L
NH022	Nitrate (as NO3) ,calculated IC value	21.3	3/11/2010	mg/L
NH022	Tetrachloroethylene (PCE)	0.687	4/16/2009	µg/L
NH022	Tetrachloroethylene (PCE)	1.02	5/7/2009	µg/L
NH022	Tetrachloroethylene (PCE)	1.31	6/11/2009	µg/L
NH022	Tetrachloroethylene (PCE)	0.977	7/23/2009	µg/L
NH022	Trichloroethene (TCE)	3.79	4/16/2009	µg/L
NH022	Trichloroethene (TCE)	4.72	5/7/2009	µg/L
NH022	Trichloroethene (TCE)	5.29	6/11/2009	µg/L
NH022	Trichloroethene (TCE)	5.12	7/23/2009	µg/L
NH022	Trichloroethene (TCE)	1.16	9/24/2009	µg/L
NH022	Trichloroethene (TCE)	0.971	2/18/2010	µg/L
NH022	Trichloroethene (TCE)	1.2	3/11/2010	µg/L
NH023	Iron (Fe) ,AA Furnace	74.6	4/16/2009	ug/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
NH023	Iron (Fe) ,AA Furnace	41.4	5/21/2009	ug/L
NH023	Nitrate (as NO3) ,calculated IC value	21.4	4/16/2009	mg/L
NH023	Nitrate (as NO3) ,calculated IC value	30	5/21/2009	mg/L
NH023	Nitrate (as NO3) ,calculated IC value	43.4	6/25/2009	mg/L
NH023	Nitrate (as NO3) ,calculated IC value	33.9	9/24/2009	mg/L
NH023	Nitrate (as NO3) ,calculated IC value	46.5	12/23/2009	mg/L
NH023	Nitrate (as NO3) ,calculated IC value	38.2	1/26/2010	mg/L
NH023	Nitrate (as NO3) ,calculated IC value	43.1	2/23/2010	mg/L
NH023	Nitrate (as NO3) ,calculated IC value	29.1	3/16/2010	mg/L
NH023	Tetrachloroethylene (PCE)	1.17	4/16/2009	µg/L
NH023	Tetrachloroethylene (PCE)	2.99	5/21/2009	µg/L
NH023	Tetrachloroethylene (PCE)	5.98	6/25/2009	µg/L
NH023	Tetrachloroethylene (PCE)	6.02	7/14/2009	µg/L
NH023	Tetrachloroethylene (PCE)	3.77	9/24/2009	µg/L
NH023	Tetrachloroethylene (PCE)	5.65	12/23/2009	µg/L
NH023	Tetrachloroethylene (PCE)	3.7	1/26/2010	µg/L
NH023	Tetrachloroethylene (PCE)	4.96	2/23/2010	µg/L
NH023	Tetrachloroethylene (PCE)	1.6	3/16/2010	µg/L
NH023	Trichloroethene (TCE)	21.3	4/16/2009	µg/L
NH023	Trichloroethene (TCE)	29.1	5/21/2009	µg/L
NH023	Trichloroethene (TCE)	25.2	6/25/2009	µg/L
NH023	Trichloroethene (TCE)	25.7	7/14/2009	µg/L
NH023	Trichloroethene (TCE)	22.2	9/24/2009	µg/L
NH023	Trichloroethene (TCE)	15.4	12/23/2009	µg/L
NH023	Trichloroethene (TCE)	14.1	1/26/2010	µg/L
NH023	Trichloroethene (TCE)	17.4	2/23/2010	µg/L
NH023	Trichloroethene (TCE)	15.5	3/16/2010	µg/L
NH025	Chromium (Cr) Total, ICP/MS	1.4	10/27/2009	ug/L
NH025	Nitrate (as NO3) ,calculated IC value	17.8	4/16/2009	mg/L
NH025	Nitrate (as NO3) ,calculated IC value	18.4	5/7/2009	mg/L
NH025	Nitrate (as NO3) ,calculated IC value	18.3	6/11/2009	mg/L
NH025	Nitrate (as NO3) ,calculated IC value	9.52	7/23/2009	mg/L
NH025	Nitrate (as NO3) ,calculated IC value	17.3	8/26/2009	mg/L
NH025	Nitrate (as NO3) ,calculated IC value	18.3	9/15/2009	mg/L
NH025	Nitrate (as NO3) ,calculated IC value	17.8	10/27/2009	mg/L
NH025	Nitrate (as NO3) ,calculated IC value	17.6	11/24/2009	mg/L
NH025	Nitrate (as NO3) ,calculated IC value	17.3	12/23/2009	mg/L
NH025	Nitrate (as NO3) ,calculated IC value	17.2	1/12/2010	mg/L
NH025	Nitrate (as NO3) ,calculated IC value	16.8	2/18/2010	mg/L
NH025	Nitrate (as NO3) ,calculated IC value	17	3/11/2010	mg/L
NH026	1,1-Dichloroethene (1,1-DCE)	0.552	7/23/2009	µg/L
NH026	Nitrate (as NO3) ,calculated IC value	30.3	6/11/2009	mg/L
NH026	Nitrate (as NO3) ,calculated IC value	29.5	7/23/2009	mg/L
NH026	Nitrate (as NO3) ,calculated IC value	30.5	9/24/2009	mg/L
NH026	Nitrate (as NO3) ,calculated IC value	18	10/27/2009	mg/L
NH026	Nitrate (as NO3) ,calculated IC value	14.8	11/24/2009	mg/L
NH026	Nitrate (as NO3) ,calculated IC value	32.9	12/23/2009	mg/L
NH026	Nitrate (as NO3) ,calculated IC value	26.2	1/26/2010	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
NH026	Nitrate (as NO3) ,calculated IC value	29.1	2/23/2010	mg/L
NH026	Nitrate (as NO3) ,calculated IC value	26.6	3/16/2010	mg/L
NH026	Tetrachloroethylene (PCE)	2.6	6/11/2009	µg/L
NH026	Tetrachloroethylene (PCE)	4.87	7/23/2009	µg/L
NH026	Tetrachloroethylene (PCE)	1.74	9/24/2009	µg/L
NH026	Trichloroethene (TCE)	15.6	6/11/2009	µg/L
NH026	Trichloroethene (TCE)	15.1	7/23/2009	µg/L
NH026	Trichloroethene (TCE)	5.07	9/24/2009	µg/L
NH026	Trichloroethene (TCE)	0.892	10/27/2009	µg/L
NH026	Trichloroethene (TCE)	0.782	12/23/2009	µg/L
NH032	Nitrate (as NO3) ,calculated IC value	4.47	4/16/2009	mg/L
NH032	Nitrate (as NO3) ,calculated IC value	4.92	5/7/2009	mg/L
NH032	Nitrate (as NO3) ,calculated IC value	4.87	6/11/2009	mg/L
NH032	Nitrate (as NO3) ,calculated IC value	2.3	7/23/2009	mg/L
NH032	Nitrate (as NO3) ,calculated IC value	1.46	8/27/2009	mg/L
NH032	Nitrate (as NO3) ,calculated IC value	1.33	9/25/2009	mg/L
NH032	Nitrate (as NO3) ,calculated IC value	1.09	10/27/2009	mg/L
NH032	Nitrate (as NO3) ,calculated IC value	0.886	11/24/2009	mg/L
NH032	Nitrate (as NO3) ,calculated IC value	0.824	12/29/2009	mg/L
NH032	Nitrate (as NO3) ,calculated IC value	4.42	1/25/2010	mg/L
NH032	Nitrate (as NO3) ,calculated IC value	4.61	2/18/2010	mg/L
NH032	Nitrate (as NO3) ,calculated IC value	4.78	3/11/2010	mg/L
NH033	Coliform Total (CL,MPN) ,MM0-MUG	12	5/26/2009	MPN/100ml
NH033	Coliform Total (CL,MPN) ,MM0-MUG	5.1	7/16/2009	MPN/100ml
NH033	Coliform Total (CL,MPN) ,MM0-MUG	23	9/29/2009	MPN/100ml
NH033	Coliform Total (CL,QT2000) ,MM0-MUG	2	4/16/2009	NUM/100ml
NH033	Coliform Total (CL,QT2000) ,MM0-MUG	121.1	5/21/2009	NUM/100ml
NH033	Coliform Total (CL,QT2000) ,MM0-MUG	28.1	7/14/2009	NUM/100ml
NH033	Coliform Total (CL,QT2000) ,MM0-MUG	56.5	8/27/2009	NUM/100ml
NH033	Coliform Total (CL,QT2000) ,MM0-MUG	5.2	9/25/2009	NUM/100ml
NH033	Coliform Total (CL,QT2000) ,MM0-MUG	4.1	10/27/2009	NUM/100ml
NH033	Nitrate (as NO3) ,calculated IC value	3.23	4/16/2009	mg/L
NH033	Nitrate (as NO3) ,calculated IC value	3.9	5/21/2009	mg/L
NH033	Nitrate (as NO3) ,calculated IC value	3.54	6/25/2009	mg/L
NH033	Nitrate (as NO3) ,calculated IC value	3.68	7/14/2009	mg/L
NH033	Nitrate (as NO3) ,calculated IC value	3.19	8/27/2009	mg/L
NH033	Nitrate (as NO3) ,calculated IC value	3.19	9/25/2009	mg/L
NH033	Nitrate (as NO3) ,calculated IC value	3.01	10/27/2009	mg/L
NH034	1,1-Dichloroethene (1,1-DCE)	0.991	12/23/2009	µg/L
NH034	1,1-Dichloroethene (1,1-DCE)	1.16	1/25/2010	µg/L
NH034	1,1-Dichloroethene (1,1-DCE)	1.1	2/18/2010	µg/L
NH034	1,1-Dichloroethene (1,1-DCE)	1.3	3/11/2010	µg/L
NH034	Bromide ,Ion-Chromatography	0.195	11/12/2009	mg/L
NH034	Chromium (Cr) Total, ICP/MS	3.7	10/27/2009	ug/L
NH034	Coliform Total (CL,QT2000) ,MM0-MUG	2	10/27/2009	NUM/100ml
NH034	Coliform Total (CL,QT2000) ,MM0-MUG	1	11/12/2009	NUM/100ml
NH034	Nitrate (as NO3) ,calculated IC value	11.3	10/27/2009	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
NH034	Nitrate (as NO3) ,calculated IC value	11.1	11/12/2009	mg/L
NH034	Nitrate (as NO3) ,calculated IC value	19.9	12/23/2009	mg/L
NH034	Nitrate (as NO3) ,calculated IC value	20.4	1/25/2010	mg/L
NH034	Nitrate (as NO3) ,calculated IC value	19.8	2/18/2010	mg/L
NH034	Nitrate (as NO3) ,calculated IC value	20.7	3/11/2010	mg/L
NH034	Tetrachloroethylene (PCE)	1.64	12/23/2009	µg/L
NH034	Tetrachloroethylene (PCE)	2.08	1/25/2010	µg/L
NH034	Tetrachloroethylene (PCE)	1.94	2/18/2010	µg/L
NH034	Tetrachloroethylene (PCE)	2.27	3/11/2010	µg/L
NH034	Trichloroethene (TCE)	2.47	12/23/2009	µg/L
NH034	Trichloroethene (TCE)	3.02	1/25/2010	µg/L
NH034	Trichloroethene (TCE)	3.12	2/18/2010	µg/L
NH034	Trichloroethene (TCE)	3.49	3/11/2010	µg/L
NH036	1,1-Dichloroethene (1,1-DCE)	1.44	9/24/2009	µg/L
NH036	1,1-Dichloroethene (1,1-DCE)	1.62	10/27/2009	µg/L
NH036	1,1-Dichloroethene (1,1-DCE)	1.48	11/24/2009	µg/L
NH036	1,1-Dichloroethene (1,1-DCE)	2.85	12/23/2009	µg/L
NH036	1,1-Dichloroethene (1,1-DCE)	3.64	1/25/2010	µg/L
NH036	1,1-Dichloroethene (1,1-DCE)	3.19	2/18/2010	µg/L
NH036	1,1-Dichloroethene (1,1-DCE)	4.33	3/11/2010	µg/L
NH036	1,2-Dichloroethene-cis	0.559	3/11/2010	µg/L
NH036	Chromium (Cr) Total, ICP/MS	4.2	10/27/2009	ug/L
NH036	Coliform Total (CL,QT2000) ,MM0-MUG	4.1	9/24/2009	NUM/100ml
NH036	Nitrate (as NO3) ,calculated IC value	18.8	9/24/2009	mg/L
NH036	Nitrate (as NO3) ,calculated IC value	19.6	10/27/2009	mg/L
NH036	Nitrate (as NO3) ,calculated IC value	19.7	11/24/2009	mg/L
NH036	Nitrate (as NO3) ,calculated IC value	23.4	12/23/2009	mg/L
NH036	Nitrate (as NO3) ,calculated IC value	24.9	1/25/2010	mg/L
NH036	Nitrate (as NO3) ,calculated IC value	22.4	2/18/2010	mg/L
NH036	Nitrate (as NO3) ,calculated IC value	24.6	3/11/2010	mg/L
NH036	Tetrachloroethylene (PCE)	0.718	9/24/2009	µg/L
NH036	Tetrachloroethylene (PCE)	0.923	10/27/2009	µg/L
NH036	Tetrachloroethylene (PCE)	1.28	11/24/2009	µg/L
NH036	Tetrachloroethylene (PCE)	2.22	12/23/2009	µg/L
NH036	Tetrachloroethylene (PCE)	2.78	1/25/2010	µg/L
NH036	Tetrachloroethylene (PCE)	2.23	2/18/2010	µg/L
NH036	Tetrachloroethylene (PCE)	2.84	3/11/2010	µg/L
NH036	Trichloroethene (TCE)	2.39	9/24/2009	µg/L
NH036	Trichloroethene (TCE)	2.8	10/27/2009	µg/L
NH036	Trichloroethene (TCE)	3.69	11/24/2009	µg/L
NH036	Trichloroethene (TCE)	6.99	12/23/2009	µg/L
NH036	Trichloroethene (TCE)	8.74	1/25/2010	µg/L
NH036	Trichloroethene (TCE)	8.32	2/18/2010	µg/L
NH036	Trichloroethene (TCE)	10.1	3/11/2010	µg/L
NH037	1,1-Dichloroethene (1,1-DCE)	1.22	4/16/2009	µg/L
NH037	1,1-Dichloroethene (1,1-DCE)	1.23	5/21/2009	µg/L
NH037	1,1-Dichloroethene (1,1-DCE)	1.44	6/25/2009	µg/L
NH037	1,1-Dichloroethene (1,1-DCE)	1.34	7/14/2009	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
NH037	1,1-Dichloroethene (1,1-DCE)	0.686	12/23/2009	µg/L
NH037	1,2-Dichloroethene-cis	0.702	12/23/2009	µg/L
NH037	1,2-Dichloroethene-cis	1.02	2/23/2010	µg/L
NH037	Chromium (Cr) Total, ICP/MS	4.2	10/27/2009	ug/L
NH037	Nitrate (as NO3) ,calculated IC value	15.3	4/16/2009	mg/L
NH037	Nitrate (as NO3) ,calculated IC value	19.6	5/21/2009	mg/L
NH037	Nitrate (as NO3) ,calculated IC value	18.4	6/25/2009	mg/L
NH037	Nitrate (as NO3) ,calculated IC value	18.4	7/14/2009	mg/L
NH037	Nitrate (as NO3) ,calculated IC value	6.16	8/27/2009	mg/L
NH037	Nitrate (as NO3) ,calculated IC value	8.73	9/24/2009	mg/L
NH037	Nitrate (as NO3) ,calculated IC value	10.7	10/27/2009	mg/L
NH037	Nitrate (as NO3) ,calculated IC value	10.5	11/24/2009	mg/L
NH037	Nitrate (as NO3) ,calculated IC value	13	12/23/2009	mg/L
NH037	Nitrate (as NO3) ,calculated IC value	11.5	1/26/2010	mg/L
NH037	Nitrate (as NO3) ,calculated IC value	13.2	2/23/2010	mg/L
NH037	Nitrate (as NO3) ,calculated IC value	10.1	3/16/2010	mg/L
NH037	Tetrachloroethylene (PCE)	2.12	4/16/2009	µg/L
NH037	Tetrachloroethylene (PCE)	3.11	5/21/2009	µg/L
NH037	Tetrachloroethylene (PCE)	3.17	6/25/2009	µg/L
NH037	Tetrachloroethylene (PCE)	2.79	7/14/2009	µg/L
NH037	Tetrachloroethylene (PCE)	3.76	12/23/2009	µg/L
NH037	Tetrachloroethylene (PCE)	4.04	2/23/2010	µg/L
NH037	Trichloroethene (TCE)	2.9	4/16/2009	µg/L
NH037	Trichloroethene (TCE)	3.88	5/21/2009	µg/L
NH037	Trichloroethene (TCE)	3.69	6/25/2009	µg/L
NH037	Trichloroethene (TCE)	3.31	7/14/2009	µg/L
NH037	Trichloroethene (TCE)	3.77	12/23/2009	µg/L
NH037	Trichloroethene (TCE)	0.835	1/26/2010	µg/L
NH037	Trichloroethene (TCE)	4.12	2/23/2010	µg/L
NH043A	Bromide ,Ion-Chromatography	0.269	9/9/2009	mg/L
NH043A	Nitrate (as NO3) ,calculated IC value	8.73	4/16/2009	mg/L
NH043A	Nitrate (as NO3) ,calculated IC value	18.4	5/21/2009	mg/L
NH043A	Nitrate (as NO3) ,calculated IC value	15.9	6/25/2009	mg/L
NH043A	Nitrate (as NO3) ,calculated IC value	16.4	7/14/2009	mg/L
NH043A	Nitrate (as NO3) ,calculated IC value	11.9	8/27/2009	mg/L
NH043A	Nitrate (as NO3) ,calculated IC value	11.3	9/9/2009	mg/L
NH043A	Nitrate (as NO3) ,calculated IC value	10	10/27/2009	mg/L
NH043A	Nitrate (as NO3) ,calculated IC value	9.75	11/24/2009	mg/L
NH043A	Nitrate (as NO3) ,calculated IC value	12.5	12/23/2009	mg/L
NH043A	Nitrate (as NO3) ,calculated IC value	24.9	1/25/2010	mg/L
NH043A	Nitrate (as NO3) ,calculated IC value	24.6	2/18/2010	mg/L
NH043A	Nitrate (as NO3) ,calculated IC value	9.35	3/16/2010	mg/L
NH043A	Tetrachloroethylene (PCE)	5.21	5/21/2009	µg/L
NH043A	Tetrachloroethylene (PCE)	4.01	6/25/2009	µg/L
NH043A	Tetrachloroethylene (PCE)	4.92	7/14/2009	µg/L
NH043A	Tetrachloroethylene (PCE)	1.21	8/27/2009	µg/L
NH043A	Tetrachloroethylene (PCE)	0.875	9/9/2009	µg/L
NH043A	Tetrachloroethylene (PCE)	2.61	1/25/2010	µg/L
NH043A	Tetrachloroethylene (PCE)	3.38	2/18/2010	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
NH043A	Trichloroethene (TCE)	1.18	4/16/2009	µg/L
NH043A	Trichloroethene (TCE)	18	5/21/2009	µg/L
NH043A	Trichloroethene (TCE)	11.2	6/25/2009	µg/L
NH043A	Trichloroethene (TCE)	12	7/14/2009	µg/L
NH043A	Trichloroethene (TCE)	3.19	8/27/2009	µg/L
NH043A	Trichloroethene (TCE)	2.44	9/9/2009	µg/L
NH043A	Trichloroethene (TCE)	1.28	12/23/2009	µg/L
NH043A	Trichloroethene (TCE)	8.45	1/25/2010	µg/L
NH043A	Trichloroethene (TCE)	13.1	2/18/2010	µg/L
NH044	Nitrate (as NO3) ,calculated IC value	5.63	4/16/2009	mg/L
NH044	Nitrate (as NO3) ,calculated IC value	6.33	5/21/2009	mg/L
NH044	Nitrate (as NO3) ,calculated IC value	3.99	6/25/2009	mg/L
NH044	Nitrate (as NO3) ,calculated IC value	6.38	7/14/2009	mg/L
NH044	Nitrate (as NO3) ,calculated IC value	2.79	8/27/2009	mg/L
NH044	Nitrate (as NO3) ,calculated IC value	3.01	9/24/2009	mg/L
NH044	Nitrate (as NO3) ,calculated IC value	3.02	10/27/2009	mg/L
NH044	Nitrate (as NO3) ,calculated IC value	3.09	11/24/2009	mg/L
NH044	Nitrate (as NO3) ,calculated IC value	3.03	12/23/2009	mg/L
NH044	Tetrachloroethylene (PCE)	0.516	4/16/2009	µg/L
NH044	Trichloroethene (TCE)	2.77	4/16/2009	µg/L
NH044	Trichloroethene (TCE)	3.71	5/21/2009	µg/L
NH044	Trichloroethene (TCE)	0.903	6/25/2009	µg/L
NH044	Trichloroethene (TCE)	2.94	7/14/2009	µg/L
NH044	Trichloroethene (TCE)	0.644	9/24/2009	µg/L
NH044	Trichloroethene (TCE)	1.04	10/27/2009	µg/L
NH044	Trichloroethene (TCE)	0.565	12/23/2009	µg/L
NH045	Chromium (Cr) Total, ICP/MS	2.7	10/27/2009	ug/L
NH045	Nitrate (as NO3) ,calculated IC value	11.5	4/3/2009	mg/L
NH045	Nitrate (as NO3) ,calculated IC value	12	5/7/2009	mg/L
NH045	Nitrate (as NO3) ,calculated IC value	12.4	6/11/2009	mg/L
NH045	Nitrate (as NO3) ,calculated IC value	12.9	7/14/2009	mg/L
NH045	Nitrate (as NO3) ,calculated IC value	5.63	8/27/2009	mg/L
NH045	Nitrate (as NO3) ,calculated IC value	5.4	10/27/2009	mg/L
NH045	Nitrate (as NO3) ,calculated IC value	6.11	11/24/2009	mg/L
NH045	Nitrate (as NO3) ,calculated IC value	8.77	12/23/2009	mg/L
NH045	Nitrate (as NO3) ,calculated IC value	6.42	1/26/2010	mg/L
NH045	Nitrate (as NO3) ,calculated IC value	11.8	2/23/2010	mg/L
NH045	Nitrate (as NO3) ,calculated IC value	12	3/11/2010	mg/L
NH045	Tetrachloroethylene (PCE)	0.578	4/3/2009	µg/L
NH045	Tetrachloroethylene (PCE)	0.602	5/7/2009	µg/L
NH045	Tetrachloroethylene (PCE)	0.683	6/11/2009	µg/L
NH045	Tetrachloroethylene (PCE)	0.664	7/14/2009	µg/L
NH045	Tetrachloroethylene (PCE)	0.693	12/23/2009	µg/L
NH045	Tetrachloroethylene (PCE)	0.968	3/3/2010	µg/L
NH045	Tetrachloroethylene (PCE)	1.02	3/11/2010	µg/L
NH045	Trichloroethene (TCE)	3.15	4/3/2009	µg/L
NH045	Trichloroethene (TCE)	3.49	5/7/2009	µg/L
NH045	Trichloroethene (TCE)	3.32	6/11/2009	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
NH045	Trichloroethene (TCE)	3.16	7/14/2009	µg/L
NH045	Trichloroethene (TCE)	4.67	12/23/2009	µg/L
NH045	Trichloroethene (TCE)	7.8	3/3/2010	µg/L
NH045	Trichloroethene (TCE)	8.37	3/11/2010	µg/L
PL004	1,1-Dichloroethene (1,1-DCE)	1.25	9/23/2009	µg/L
PL004	1,1-Dichloroethene (1,1-DCE)	1.64	10/6/2009	µg/L
PL004	1,1-Dichloroethene (1,1-DCE)	2.1	11/18/2009	µg/L
PL004	1,1-Dichloroethene (1,1-DCE)	2.64	12/18/2009	µg/L
PL004	1,1-Dichloroethene (1,1-DCE)	2.67	1/5/2010	µg/L
PL004	1,1-Dichloroethene (1,1-DCE)	2.65	2/11/2010	µg/L
PL004	Chromium (Cr) Total, ICP/MS	1.9	10/21/2009	ug/L
PL004	Chromium (Cr) Total, ICP/MS	2.1	11/18/2009	ug/L
PL004	Chromium (Cr) Total, ICP/MS	2.1	12/9/2009	ug/L
PL004	Chromium (Cr) Total, ICP/MS	2	1/13/2010	ug/L
PL004	Chromium (Cr) Total, ICP/MS	1.7	2/10/2010	ug/L
PL004	Nitrate (as NO3) ,calculated IC value	34.4	9/23/2009	mg/L
PL004	Nitrate (as NO3) ,calculated IC value	33.6	10/6/2009	mg/L
PL004	Nitrate (as NO3) ,calculated IC value	30.7	11/18/2009	mg/L
PL004	Nitrate (as NO3) ,calculated IC value	29.5	12/18/2009	mg/L
PL004	Nitrate (as NO3) ,calculated IC value	28.8	1/5/2010	mg/L
PL004	Nitrate (as NO3) ,calculated IC value	27.3	2/11/2010	mg/L
PL004	Tetrachloroethylene (PCE)	2.77	9/23/2009	µg/L
PL004	Tetrachloroethylene (PCE)	3.32	10/6/2009	µg/L
PL004	Tetrachloroethylene (PCE)	3.75	11/18/2009	µg/L
PL004	Tetrachloroethylene (PCE)	3.74	12/18/2009	µg/L
PL004	Tetrachloroethylene (PCE)	3.72	1/5/2010	µg/L
PL004	Tetrachloroethylene (PCE)	3.76	2/11/2010	µg/L
PL004	Trichloroethene (TCE)	4.31	9/23/2009	µg/L
PL004	Trichloroethene (TCE)	4.64	10/6/2009	µg/L
PL004	Trichloroethene (TCE)	4.73	11/18/2009	µg/L
PL004	Trichloroethene (TCE)	4.74	12/18/2009	µg/L
PL004	Trichloroethene (TCE)	4.74	1/5/2010	µg/L
PL004	Trichloroethene (TCE)	4.83	2/11/2010	µg/L
PL006	1,1-Dichloroethane (1,1-DCA)	0.593	2/11/2010	µg/L
PL006	1,1-Dichloroethene (1,1-DCE)	2.38	9/16/2009	µg/L
PL006	1,1-Dichloroethene (1,1-DCE)	4.74	10/6/2009	µg/L
PL006	1,1-Dichloroethene (1,1-DCE)	6.83	11/18/2009	µg/L
PL006	1,1-Dichloroethene (1,1-DCE)	10	12/18/2009	µg/L
PL006	1,1-Dichloroethene (1,1-DCE)	10.1	1/5/2010	µg/L
PL006	1,1-Dichloroethene (1,1-DCE)	12.9	2/11/2010	µg/L
PL006	1,2-Dichloroethene-cis	0.586	12/18/2009	µg/L
PL006	1,2-Dichloroethene-cis	0.576	1/5/2010	µg/L
PL006	1,2-Dichloroethene-cis	0.611	2/11/2010	µg/L
PL006	Chromium (Cr) Total, ICP/MS	2.3	9/16/2009	ug/L
PL006	Chromium (Cr) Total, ICP/MS	2.7	10/7/2009	ug/L
PL006	Chromium (Cr) Total, ICP/MS	2.3	11/18/2009	ug/L
PL006	Chromium (Cr) Total, ICP/MS	2.4	12/9/2009	ug/L
PL006	Chromium (Cr) Total, ICP/MS	2.2	1/13/2010	ug/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
PL006	Chromium (Cr) Total, ICP/MS	2	2/10/2010	ug/L
PL006	Nitrate (as NO3) ,calculated IC value	38.8	9/16/2009	mg/L
PL006	Nitrate (as NO3) ,calculated IC value	38.9	10/6/2009	mg/L
PL006	Nitrate (as NO3) ,calculated IC value	36.6	11/18/2009	mg/L
PL006	Nitrate (as NO3) ,calculated IC value	36.8	12/18/2009	mg/L
PL006	Nitrate (as NO3) ,calculated IC value	36.5	1/5/2010	mg/L
PL006	Nitrate (as NO3) ,calculated IC value	36.5	2/11/2010	mg/L
PL006	Tetrachloroethylene (PCE)	7.06	9/16/2009	µg/L
PL006	Tetrachloroethylene (PCE)	10	10/6/2009	µg/L
PL006	Tetrachloroethylene (PCE)	12.8	11/18/2009	µg/L
PL006	Tetrachloroethylene (PCE)	13.5	12/18/2009	µg/L
PL006	Tetrachloroethylene (PCE)	13.3	1/5/2010	µg/L
PL006	Tetrachloroethylene (PCE)	15.2	2/11/2010	µg/L
PL006	Trichloroethene (TCE)	9.53	9/16/2009	µg/L
PL006	Trichloroethene (TCE)	10.9	10/6/2009	µg/L
PL006	Trichloroethene (TCE)	12.4	11/18/2009	µg/L
PL006	Trichloroethene (TCE)	13.5	12/18/2009	µg/L
PL006	Trichloroethene (TCE)	13.6	1/5/2010	µg/L
PL006	Trichloroethene (TCE)	15.6	2/11/2010	µg/L
RT001	1,2-Dichloroethene-cis	0.52	6/16/2009	µg/L
RT001	1,2-Dichloroethene-cis	0.663	7/7/2009	µg/L
RT001	1,2-Dichloroethene-cis	1.08	8/5/2009	µg/L
RT001	1,2-Dichloroethene-cis	0.693	9/9/2009	µg/L
RT001	Bromide ,Ion-Chromatography	0.125	9/9/2009	mg/L
RT001	Chromium (Cr) Total, ICP/MS	1.7	10/8/2009	ug/L
RT001	Nitrate (as NO3) ,calculated IC value	9.83	4/8/2009	mg/L
RT001	Nitrate (as NO3) ,calculated IC value	12.3	5/19/2009	mg/L
RT001	Nitrate (as NO3) ,calculated IC value	17.8	6/16/2009	mg/L
RT001	Nitrate (as NO3) ,calculated IC value	19.4	7/7/2009	mg/L
RT001	Nitrate (as NO3) ,calculated IC value	23.4	8/5/2009	mg/L
RT001	Nitrate (as NO3) ,calculated IC value	18	9/9/2009	mg/L
RT001	Nitrate (as NO3) ,calculated IC value	10.7	10/8/2009	mg/L
RT001	Nitrate (as NO3) ,calculated IC value	10.6	11/4/2009	mg/L
RT001	Nitrate (as NO3) ,calculated IC value	10.1	12/10/2009	mg/L
RT001	Nitrate (as NO3) ,calculated IC value	10.2	1/7/2010	mg/L
RT001	Nitrate (as NO3) ,calculated IC value	9.97	2/2/2010	mg/L
RT001	Nitrate (as NO3) ,calculated IC value	12.5	3/3/2010	mg/L
RT001	Tetrachloroethylene (PCE)	0.791	5/19/2009	µg/L
RT001	Tetrachloroethylene (PCE)	2.92	6/16/2009	µg/L
RT001	Tetrachloroethylene (PCE)	3.4	7/7/2009	µg/L
RT001	Tetrachloroethylene (PCE)	4.66	8/5/2009	µg/L
RT001	Tetrachloroethylene (PCE)	3.13	9/9/2009	µg/L
RT001	Tetrachloroethylene (PCE)	0.938	3/3/2010	µg/L
RT001	Trichloroethene (TCE)	3.54	5/19/2009	µg/L
RT001	Trichloroethene (TCE)	18.4	6/16/2009	µg/L
RT001	Trichloroethene (TCE)	26	7/7/2009	µg/L
RT001	Trichloroethene (TCE)	41.2	8/5/2009	µg/L
RT001	Trichloroethene (TCE)	27.8	9/9/2009	µg/L
RT001	Trichloroethene (TCE)	2.59	10/8/2009	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
RT001	Trichloroethene (TCE)	1.82	11/4/2009	µg/L
RT001	Trichloroethene (TCE)	1.14	12/10/2009	µg/L
RT001	Trichloroethene (TCE)	0.81	1/7/2010	µg/L
RT001	Trichloroethene (TCE)	0.716	2/2/2010	µg/L
RT001	Trichloroethene (TCE)	3.59	3/3/2010	µg/L
RT002	Chromium (Cr) Total, ICP/MS	2.1	10/29/2009	ug/L
RT002	Coliform Total (CL,QT2000) ,MM0-MUG	2	10/29/2009	NUM/100ml
RT002	Nitrate (as NO3) ,calculated IC value	11.8	10/29/2009	mg/L
RT004	1,2-Dichloroethene-cis	0.627	5/20/2009	µg/L
RT004	1,2-Dichloroethene-cis	0.611	6/17/2009	µg/L
RT004	1,2-Dichloroethene-cis	0.613	7/9/2009	µg/L
RT004	1,2-Dichloroethene-cis	0.668	8/13/2009	µg/L
RT004	1,2-Dichloroethene-cis	0.752	9/22/2009	µg/L
RT004	1,2-Dichloroethene-cis	0.729	10/13/2009	µg/L
RT004	1,2-Dichloroethene-cis	0.675	11/30/2009	µg/L
RT004	1,2-Dichloroethene-cis	0.619	12/17/2009	µg/L
RT004	Chromium (Cr) Total, ICP/MS	2.4	10/13/2009	ug/L
RT004	Nitrate (as NO3) ,calculated IC value	19.9	4/15/2009	mg/L
RT004	Nitrate (as NO3) ,calculated IC value	21.1	5/20/2009	mg/L
RT004	Nitrate (as NO3) ,calculated IC value	20.8	6/17/2009	mg/L
RT004	Nitrate (as NO3) ,calculated IC value	21.3	7/9/2009	mg/L
RT004	Nitrate (as NO3) ,calculated IC value	21.9	8/13/2009	mg/L
RT004	Nitrate (as NO3) ,calculated IC value	22.7	9/22/2009	mg/L
RT004	Nitrate (as NO3) ,calculated IC value	22.6	10/13/2009	mg/L
RT004	Nitrate (as NO3) ,calculated IC value	22	11/30/2009	mg/L
RT004	Nitrate (as NO3) ,calculated IC value	21.9	12/17/2009	mg/L
RT004	Tetrachloroethylene (PCE)	1.47	4/15/2009	µg/L
RT004	Tetrachloroethylene (PCE)	1.76	5/20/2009	µg/L
RT004	Tetrachloroethylene (PCE)	1.91	6/17/2009	µg/L
RT004	Tetrachloroethylene (PCE)	1.94	7/9/2009	µg/L
RT004	Tetrachloroethylene (PCE)	1.87	8/13/2009	µg/L
RT004	Tetrachloroethylene (PCE)	2.18	9/22/2009	µg/L
RT004	Tetrachloroethylene (PCE)	2.11	10/13/2009	µg/L
RT004	Tetrachloroethylene (PCE)	2.14	11/30/2009	µg/L
RT004	Tetrachloroethylene (PCE)	2.02	12/17/2009	µg/L
RT004	Trichloroethene (TCE)	3.86	4/15/2009	µg/L
RT004	Trichloroethene (TCE)	3.42	5/20/2009	µg/L
RT004	Trichloroethene (TCE)	3.76	6/17/2009	µg/L
RT004	Trichloroethene (TCE)	3.93	7/9/2009	µg/L
RT004	Trichloroethene (TCE)	4.14	8/13/2009	µg/L
RT004	Trichloroethene (TCE)	4.73	9/22/2009	µg/L
RT004	Trichloroethene (TCE)	4.71	10/13/2009	µg/L
RT004	Trichloroethene (TCE)	4.46	11/30/2009	µg/L
RT004	Trichloroethene (TCE)	4.22	12/17/2009	µg/L
RT005	Chromium (Cr) Total, ICP/MS	3.1	10/13/2009	ug/L
RT005	Nitrate (as NO3) ,calculated IC value	20.6	4/15/2009	mg/L
RT005	Nitrate (as NO3) ,calculated IC value	15	5/20/2009	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
RT005	Nitrate (as NO3) ,calculated IC value	20.7	6/17/2009	mg/L
RT005	Nitrate (as NO3) ,calculated IC value	21.4	7/9/2009	mg/L
RT005	Nitrate (as NO3) ,calculated IC value	21.6	8/13/2009	mg/L
RT005	Nitrate (as NO3) ,calculated IC value	21.4	9/22/2009	mg/L
RT005	Nitrate (as NO3) ,calculated IC value	21.8	10/13/2009	mg/L
RT005	Nitrate (as NO3) ,calculated IC value	20.5	11/30/2009	mg/L
RT005	Nitrate (as NO3) ,calculated IC value	20.4	12/17/2009	mg/L
RT005	Nitrate (as NO3) ,calculated IC value	21.4	1/12/2010	mg/L
RT005	Nitrate (as NO3) ,calculated IC value	21.6	2/3/2010	mg/L
RT005	Nitrate (as NO3) ,calculated IC value	22.2	3/9/2010	mg/L
RT005	Tetrachloroethylene (PCE)	0.682	1/12/2010	µg/L
RT005	Tetrachloroethylene (PCE)	0.888	2/3/2010	µg/L
RT005	Tetrachloroethylene (PCE)	1.08	3/9/2010	µg/L
RT005	Trichloroethene (TCE)	0.577	4/15/2009	µg/L
RT005	Trichloroethene (TCE)	0.551	5/20/2009	µg/L
RT005	Trichloroethene (TCE)	0.676	1/12/2010	µg/L
RT005	Trichloroethene (TCE)	1.12	2/3/2010	µg/L
RT005	Trichloroethene (TCE)	1.67	3/9/2010	µg/L
RT006	Chromium (Cr) Total, ICP/MS	2.4	10/15/2009	ug/L
RT006	Nitrate (as NO3) ,calculated IC value	13.6	4/15/2009	mg/L
RT006	Nitrate (as NO3) ,calculated IC value	13.7	5/20/2009	mg/L
RT006	Nitrate (as NO3) ,calculated IC value	13.3	6/17/2009	mg/L
RT006	Nitrate (as NO3) ,calculated IC value	13.6	7/9/2009	mg/L
RT006	Nitrate (as NO3) ,calculated IC value	13.9	8/13/2009	mg/L
RT006	Nitrate (as NO3) ,calculated IC value	14.1	9/22/2009	mg/L
RT006	Nitrate (as NO3) ,calculated IC value	15.3	10/15/2009	mg/L
RT006	Nitrate (as NO3) ,calculated IC value	12.8	11/30/2009	mg/L
RT006	Nitrate (as NO3) ,calculated IC value	13	12/17/2009	mg/L
RT006	Nitrate (as NO3) ,calculated IC value	13.4	1/12/2010	mg/L
RT006	Nitrate (as NO3) ,calculated IC value	13.8	2/3/2010	mg/L
RT006	Nitrate (as NO3) ,calculated IC value	14.2	3/9/2010	mg/L
RT007	Nitrate (as NO3) ,calculated IC value	16.7	4/15/2009	mg/L
RT007	Nitrate (as NO3) ,calculated IC value	18.8	5/20/2009	mg/L
RT007	Nitrate (as NO3) ,calculated IC value	14.7	6/17/2009	mg/L
RT007	Nitrate (as NO3) ,calculated IC value	15.3	7/9/2009	mg/L
RT007	Nitrate (as NO3) ,calculated IC value	13.8	8/13/2009	mg/L
RT007	Nitrate (as NO3) ,calculated IC value	17.3	11/30/2009	mg/L
RT007	Nitrate (as NO3) ,calculated IC value	15.7	12/17/2009	mg/L
RT007	Nitrate (as NO3) ,calculated IC value	15.2	1/12/2010	mg/L
RT007	Nitrate (as NO3) ,calculated IC value	16.2	2/3/2010	mg/L
RT007	Nitrate (as NO3) ,calculated IC value	15.8	3/9/2010	mg/L
RT007	Perchlorate	4.78	4/15/2009	µg/L
RT007	Perchlorate	4.95	5/20/2009	µg/L
RT007	Perchlorate	4.52	6/17/2009	µg/L
RT007	Perchlorate	4.21	7/9/2009	µg/L
RT007	Perchlorate	4.84	11/30/2009	µg/L
RT007	Perchlorate	4.04	3/9/2010	µg/L
RT007	Trichloroethene (TCE)	1.07	4/15/2009	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
RT007	Trichloroethene (TCE)	1.52	5/20/2009	µg/L
RT007	Trichloroethene (TCE)	1.05	6/17/2009	µg/L
RT007	Trichloroethene (TCE)	1.18	7/9/2009	µg/L
RT007	Trichloroethene (TCE)	0.556	8/13/2009	µg/L
RT007	Trichloroethene (TCE)	1.51	11/30/2009	µg/L
RT007	Trichloroethene (TCE)	1.11	12/17/2009	µg/L
RT007	Trichloroethene (TCE)	1.02	1/12/2010	µg/L
RT007	Trichloroethene (TCE)	1.44	2/3/2010	µg/L
RT007	Trichloroethene (TCE)	1.08	3/9/2010	µg/L
RT008	Chromium (Cr) Total, ICP/MS	2.6	10/15/2009	ug/L
RT008	Nitrate (as NO3) ,calculated IC value	15	4/15/2009	mg/L
RT008	Nitrate (as NO3) ,calculated IC value	17.9	5/20/2009	mg/L
RT008	Nitrate (as NO3) ,calculated IC value	14.2	6/17/2009	mg/L
RT008	Nitrate (as NO3) ,calculated IC value	14.9	7/9/2009	mg/L
RT008	Nitrate (as NO3) ,calculated IC value	12	8/13/2009	mg/L
RT008	Nitrate (as NO3) ,calculated IC value	17.6	9/22/2009	mg/L
RT008	Nitrate (as NO3) ,calculated IC value	17.9	10/15/2009	mg/L
RT008	Nitrate (as NO3) ,calculated IC value	17.2	11/30/2009	mg/L
RT008	Nitrate (as NO3) ,calculated IC value	12.2	12/17/2009	mg/L
RT008	Nitrate (as NO3) ,calculated IC value	12	1/12/2010	mg/L
RT008	Nitrate (as NO3) ,calculated IC value	11.9	2/3/2010	mg/L
RT008	Nitrate (as NO3) ,calculated IC value	12.1	3/9/2010	mg/L
RT008	Perchlorate	4.03	4/15/2009	µg/L
RT008	Perchlorate	4.64	5/20/2009	µg/L
RT008	Perchlorate	4.43	6/17/2009	µg/L
RT008	Perchlorate	4.08	9/22/2009	µg/L
RT008	Trichloroethene (TCE)	1.01	4/15/2009	µg/L
RT008	Trichloroethene (TCE)	1.3	5/20/2009	µg/L
RT008	Trichloroethene (TCE)	0.979	6/17/2009	µg/L
RT008	Trichloroethene (TCE)	0.95	7/9/2009	µg/L
RT008	Trichloroethene (TCE)	0.942	9/22/2009	µg/L
RT008	Trichloroethene (TCE)	0.974	10/15/2009	µg/L
RT008	Trichloroethene (TCE)	0.964	11/30/2009	µg/L
RT008	Trichloroethene (TCE)	0.514	1/12/2010	µg/L
RT008	Trichloroethene (TCE)	0.545	2/3/2010	µg/L
RT008	Trichloroethene (TCE)	0.599	3/9/2010	µg/L
RT009	Chromium (Cr) Total, ICP/MS	1.4	10/15/2009	ug/L
RT009	Coliform Total (CL,QT2000) ,MM0-MUG	1	5/20/2009	NUM/100ml
RT009	Nitrate (as NO3) ,calculated IC value	10.1	4/15/2009	mg/L
RT009	Nitrate (as NO3) ,calculated IC value	14.4	5/20/2009	mg/L
RT009	Nitrate (as NO3) ,calculated IC value	9.83	6/17/2009	mg/L
RT009	Nitrate (as NO3) ,calculated IC value	10.1	7/9/2009	mg/L
RT009	Nitrate (as NO3) ,calculated IC value	9.7	8/13/2009	mg/L
RT009	Nitrate (as NO3) ,calculated IC value	15.9	9/22/2009	mg/L
RT009	Nitrate (as NO3) ,calculated IC value	10.4	10/15/2009	mg/L
RT009	Nitrate (as NO3) ,calculated IC value	10.4	3/9/2010	mg/L
RT009	Trichloroethene (TCE)	0.501	5/20/2009	µg/L
RT009	Trichloroethene (TCE)	0.649	9/22/2009	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
RT009	Trichloroethene (TCE)	0.5	10/15/2009	µg/L
RT009	Trichloroethene (TCE)	0.632	3/9/2010	µg/L
RT010	1,2-Dichloroethene-cis	0.599	5/19/2009	µg/L
RT010	1,2-Dichloroethene-cis	0.718	6/16/2009	µg/L
RT010	1,2-Dichloroethene-cis	0.656	7/7/2009	µg/L
RT010	1,2-Dichloroethene-cis	0.887	8/5/2009	µg/L
RT010	1,2-Dichloroethene-cis	0.614	9/17/2009	µg/L
RT010	Chromium (Cr) Total, ICP/MS	1.1	10/8/2009	ug/L
RT010	Nitrate (as NO3) ,calculated IC value	13.5	4/8/2009	mg/L
RT010	Nitrate (as NO3) ,calculated IC value	23.8	5/19/2009	mg/L
RT010	Nitrate (as NO3) ,calculated IC value	27.5	6/16/2009	mg/L
RT010	Nitrate (as NO3) ,calculated IC value	26.4	7/7/2009	mg/L
RT010	Nitrate (as NO3) ,calculated IC value	35.8	8/5/2009	mg/L
RT010	Nitrate (as NO3) ,calculated IC value	34.2	9/17/2009	mg/L
RT010	Nitrate (as NO3) ,calculated IC value	29.5	10/8/2009	mg/L
RT010	Nitrate (as NO3) ,calculated IC value	20.2	11/5/2009	mg/L
RT010	Nitrate (as NO3) ,calculated IC value	21.8	12/10/2009	mg/L
RT010	Nitrate (as NO3) ,calculated IC value	18.7	1/7/2010	mg/L
RT010	Nitrate (as NO3) ,calculated IC value	16.2	2/2/2010	mg/L
RT010	Nitrate (as NO3) ,calculated IC value	27	3/4/2010	mg/L
RT010	Tetrachloroethylene (PCE)	2.31	5/19/2009	µg/L
RT010	Tetrachloroethylene (PCE)	3.05	6/16/2009	µg/L
RT010	Tetrachloroethylene (PCE)	2.72	7/7/2009	µg/L
RT010	Tetrachloroethylene (PCE)	3.66	8/5/2009	µg/L
RT010	Tetrachloroethylene (PCE)	2.97	9/17/2009	µg/L
RT010	Tetrachloroethylene (PCE)	2.03	10/8/2009	µg/L
RT010	Tetrachloroethylene (PCE)	0.962	11/5/2009	µg/L
RT010	Tetrachloroethylene (PCE)	1.47	12/10/2009	µg/L
RT010	Tetrachloroethylene (PCE)	0.995	1/7/2010	µg/L
RT010	Tetrachloroethylene (PCE)	0.565	2/2/2010	µg/L
RT010	Tetrachloroethylene (PCE)	2.02	3/4/2010	µg/L
RT010	Trichloroethene (TCE)	2.74	4/8/2009	µg/L
RT010	Trichloroethene (TCE)	31.2	5/19/2009	µg/L
RT010	Trichloroethene (TCE)	36.3	6/16/2009	µg/L
RT010	Trichloroethene (TCE)	34.5	7/7/2009	µg/L
RT010	Trichloroethene (TCE)	48.7	8/5/2009	µg/L
RT010	Trichloroethene (TCE)	43.1	9/17/2009	µg/L
RT010	Trichloroethene (TCE)	30.3	10/8/2009	µg/L
RT010	Trichloroethene (TCE)	12.5	11/5/2009	µg/L
RT010	Trichloroethene (TCE)	18.4	12/10/2009	µg/L
RT010	Trichloroethene (TCE)	13.3	1/7/2010	µg/L
RT010	Trichloroethene (TCE)	7.83	2/2/2010	µg/L
RT010	Trichloroethene (TCE)	29.6	3/4/2010	µg/L
RT011	1,2-Dichloroethene-cis	1.07	8/5/2009	µg/L
RT011	1,2-Dichloroethene-cis	0.808	9/9/2009	µg/L
RT011	Bromide ,Ion-Chromatography	0.115	9/9/2009	mg/L
RT011	Chromium (Cr) Total, ICP/MS	1.8	10/8/2009	ug/L
RT011	Nitrate (as NO3) ,calculated IC value	7.75	4/8/2009	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
RT011	Nitrate (as NO3) ,calculated IC value	7.8	5/19/2009	mg/L
RT011	Nitrate (as NO3) ,calculated IC value	11.8	6/16/2009	mg/L
RT011	Nitrate (as NO3) ,calculated IC value	13.2	7/7/2009	mg/L
RT011	Nitrate (as NO3) ,calculated IC value	22.8	8/5/2009	mg/L
RT011	Nitrate (as NO3) ,calculated IC value	19.3	9/9/2009	mg/L
RT011	Nitrate (as NO3) ,calculated IC value	9.52	10/8/2009	mg/L
RT011	Nitrate (as NO3) ,calculated IC value	9.21	11/4/2009	mg/L
RT011	Nitrate (as NO3) ,calculated IC value	8.77	12/10/2009	mg/L
RT011	Nitrate (as NO3) ,calculated IC value	8.55	1/7/2010	mg/L
RT011	Nitrate (as NO3) ,calculated IC value	8.55	2/2/2010	mg/L
RT011	Nitrate (as NO3) ,calculated IC value	9.75	3/3/2010	mg/L
RT011	Tetrachloroethylene (PCE)	1.58	6/16/2009	µg/L
RT011	Tetrachloroethylene (PCE)	1.94	7/7/2009	µg/L
RT011	Tetrachloroethylene (PCE)	4.6	8/5/2009	µg/L
RT011	Tetrachloroethylene (PCE)	3.75	9/9/2009	µg/L
RT011	Tetrachloroethylene (PCE)	0.794	3/3/2010	µg/L
RT011	Trichloroethene (TCE)	1.65	5/19/2009	µg/L
RT011	Trichloroethene (TCE)	11.8	6/16/2009	µg/L
RT011	Trichloroethene (TCE)	15.5	7/7/2009	µg/L
RT011	Trichloroethene (TCE)	49.9	8/5/2009	µg/L
RT011	Trichloroethene (TCE)	40.5	9/9/2009	µg/L
RT011	Trichloroethene (TCE)	1.17	10/8/2009	µg/L
RT011	Trichloroethene (TCE)	0.52	11/4/2009	µg/L
RT011	Trichloroethene (TCE)	4.4	3/3/2010	µg/L
RT012	Chromium (Cr) Total, ICP/MS	2.5	10/8/2009	ug/L
RT012	Nitrate (as NO3) ,calculated IC value	7.4	4/8/2009	mg/L
RT012	Nitrate (as NO3) ,calculated IC value	7.27	5/19/2009	mg/L
RT012	Nitrate (as NO3) ,calculated IC value	7.84	6/16/2009	mg/L
RT012	Nitrate (as NO3) ,calculated IC value	8.02	7/7/2009	mg/L
RT012	Nitrate (as NO3) ,calculated IC value	13.4	8/5/2009	mg/L
RT012	Nitrate (as NO3) ,calculated IC value	15.3	9/17/2009	mg/L
RT012	Nitrate (as NO3) ,calculated IC value	8.64	10/8/2009	mg/L
RT012	Nitrate (as NO3) ,calculated IC value	8.59	11/5/2009	mg/L
RT012	Nitrate (as NO3) ,calculated IC value	8.28	12/10/2009	mg/L
RT012	Nitrate (as NO3) ,calculated IC value	8.11	1/7/2010	mg/L
RT012	Nitrate (as NO3) ,calculated IC value	8.24	2/2/2010	mg/L
RT012	Nitrate (as NO3) ,calculated IC value	8.02	3/4/2010	mg/L
RT012	Tetrachloroethylene (PCE)	0.827	8/5/2009	µg/L
RT012	Tetrachloroethylene (PCE)	1.2	9/17/2009	µg/L
RT012	Trichloroethene (TCE)	1.38	6/16/2009	µg/L
RT012	Trichloroethene (TCE)	1.42	7/7/2009	µg/L
RT012	Trichloroethene (TCE)	13.7	8/5/2009	µg/L
RT012	Trichloroethene (TCE)	18	9/17/2009	µg/L
RT013	1,2-Dichloroethene-cis	0.817	8/5/2009	µg/L
RT013	1,2-Dichloroethene-cis	0.661	9/17/2009	µg/L
RT013	Chromium (Cr) Total, ICP/MS	2	10/8/2009	ug/L
RT013	Nitrate (as NO3) ,calculated IC value	7.13	4/8/2009	mg/L
RT013	Nitrate (as NO3) ,calculated IC value	6.73	5/19/2009	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
RT013	Nitrate (as NO3) ,calculated IC value	7.13	6/16/2009	mg/L
RT013	Nitrate (as NO3) ,calculated IC value	7.84	7/7/2009	mg/L
RT013	Nitrate (as NO3) ,calculated IC value	21.1	8/5/2009	mg/L
RT013	Nitrate (as NO3) ,calculated IC value	18.1	9/17/2009	mg/L
RT013	Nitrate (as NO3) ,calculated IC value	8.11	10/8/2009	mg/L
RT013	Nitrate (as NO3) ,calculated IC value	7.93	11/5/2009	mg/L
RT013	Nitrate (as NO3) ,calculated IC value	7.75	12/10/2009	mg/L
RT013	Nitrate (as NO3) ,calculated IC value	7.58	1/7/2010	mg/L
RT013	Nitrate (as NO3) ,calculated IC value	7.58	2/2/2010	mg/L
RT013	Nitrate (as NO3) ,calculated IC value	7.27	3/4/2010	mg/L
RT013	Tetrachloroethylene (PCE)	3.39	8/5/2009	µg/L
RT013	Tetrachloroethylene (PCE)	3.46	9/17/2009	µg/L
RT013	Trichloroethene (TCE)	1.72	6/16/2009	µg/L
RT013	Trichloroethene (TCE)	3.01	7/7/2009	µg/L
RT013	Trichloroethene (TCE)	42	8/5/2009	µg/L
RT013	Trichloroethene (TCE)	32.6	9/17/2009	µg/L
RT013	Trichloroethene (TCE)	2.55	10/8/2009	µg/L
RT013	Trichloroethene (TCE)	0.958	11/5/2009	µg/L
RT013	Trichloroethene (TCE)	0.674	12/10/2009	µg/L
RT013	Trichloroethene (TCE)	0.526	1/7/2010	µg/L
RT014	1,2-Dichloroethene-cis	0.686	6/16/2009	µg/L
RT014	1,2-Dichloroethene-cis	0.916	7/7/2009	µg/L
RT014	1,2-Dichloroethene-cis	1.01	8/5/2009	µg/L
RT014	1,2-Dichloroethene-cis	0.796	9/17/2009	µg/L
RT014	Chromium (Cr) Total, ICP/MS	1.7	10/8/2009	ug/L
RT014	Nitrate (as NO3) ,calculated IC value	9.44	4/8/2009	mg/L
RT014	Nitrate (as NO3) ,calculated IC value	11.6	5/19/2009	mg/L
RT014	Nitrate (as NO3) ,calculated IC value	13.7	6/16/2009	mg/L
RT014	Nitrate (as NO3) ,calculated IC value	15.4	7/7/2009	mg/L
RT014	Nitrate (as NO3) ,calculated IC value	16.3	8/5/2009	mg/L
RT014	Nitrate (as NO3) ,calculated IC value	14.3	9/17/2009	mg/L
RT014	Nitrate (as NO3) ,calculated IC value	11.4	10/8/2009	mg/L
RT014	Nitrate (as NO3) ,calculated IC value	10.7	11/4/2009	mg/L
RT014	Nitrate (as NO3) ,calculated IC value	9.83	12/10/2009	mg/L
RT014	Nitrate (as NO3) ,calculated IC value	10.3	1/7/2010	mg/L
RT014	Nitrate (as NO3) ,calculated IC value	9.7	2/2/2010	mg/L
RT014	Nitrate (as NO3) ,calculated IC value	11.7	3/3/2010	mg/L
RT014	Tetrachloroethylene (PCE)	0.934	5/19/2009	µg/L
RT014	Tetrachloroethylene (PCE)	2.31	6/16/2009	µg/L
RT014	Tetrachloroethylene (PCE)	3.12	7/7/2009	µg/L
RT014	Tetrachloroethylene (PCE)	3.24	8/5/2009	µg/L
RT014	Tetrachloroethylene (PCE)	2.73	9/17/2009	µg/L
RT014	Tetrachloroethylene (PCE)	1.16	10/8/2009	µg/L
RT014	Tetrachloroethylene (PCE)	0.787	11/4/2009	µg/L
RT014	Tetrachloroethylene (PCE)	0.884	3/3/2010	µg/L
RT014	Trichloroethene (TCE)	1.52	4/8/2009	µg/L
RT014	Trichloroethene (TCE)	10.8	5/19/2009	µg/L
RT014	Trichloroethene (TCE)	25	6/16/2009	µg/L
RT014	Trichloroethene (TCE)	35.5	7/7/2009	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
RT014	Trichloroethene (TCE)	35.4	8/5/2009	µg/L
RT014	Trichloroethene (TCE)	30.2	9/17/2009	µg/L
RT014	Trichloroethene (TCE)	11.7	10/8/2009	µg/L
RT014	Trichloroethene (TCE)	7.53	11/4/2009	µg/L
RT014	Trichloroethene (TCE)	3.37	12/10/2009	µg/L
RT014	Trichloroethene (TCE)	2	1/7/2010	µg/L
RT014	Trichloroethene (TCE)	1.39	2/2/2010	µg/L
RT014	Trichloroethene (TCE)	8.06	3/3/2010	µg/L
RT015	1,2-Dichloroethene-cis	0.858	6/16/2009	µg/L
RT015	1,2-Dichloroethene-cis	1.33	7/7/2009	µg/L
RT015	1,2-Dichloroethene-cis	1.59	8/5/2009	µg/L
RT015	Chromium (Cr) Total, ICP/MS	2.7	10/8/2009	ug/L
RT015	Nitrate (as NO3) ,calculated IC value	7.18	4/8/2009	mg/L
RT015	Nitrate (as NO3) ,calculated IC value	6.69	5/19/2009	mg/L
RT015	Nitrate (as NO3) ,calculated IC value	12.2	6/16/2009	mg/L
RT015	Nitrate (as NO3) ,calculated IC value	15.1	7/7/2009	mg/L
RT015	Nitrate (as NO3) ,calculated IC value	16.4	8/5/2009	mg/L
RT015	Nitrate (as NO3) ,calculated IC value	7	9/17/2009	mg/L
RT015	Nitrate (as NO3) ,calculated IC value	6.96	10/8/2009	mg/L
RT015	Nitrate (as NO3) ,calculated IC value	6.96	11/4/2009	mg/L
RT015	Nitrate (as NO3) ,calculated IC value	7.09	12/10/2009	mg/L
RT015	Nitrate (as NO3) ,calculated IC value	6.91	1/7/2010	mg/L
RT015	Nitrate (as NO3) ,calculated IC value	7.62	2/2/2010	mg/L
RT015	Nitrate (as NO3) ,calculated IC value	7.4	3/3/2010	mg/L
RT015	Tetrachloroethylene (PCE)	2.31	6/16/2009	µg/L
RT015	Tetrachloroethylene (PCE)	3.75	7/7/2009	µg/L
RT015	Tetrachloroethylene (PCE)	3.72	8/5/2009	µg/L
RT015	Trichloroethene (TCE)	16.3	6/16/2009	µg/L
RT015	Trichloroethene (TCE)	30.3	7/7/2009	µg/L
RT015	Trichloroethene (TCE)	33.8	8/5/2009	µg/L
RT015	Trichloroethene (TCE)	0.897	9/17/2009	µg/L
RT015	Trichloroethene (TCE)	0.597	10/8/2009	µg/L
TJ001	Bromide ,Ion-Chromatography	0.081	6/9/2009	mg/L
TJ001	Chromium (Cr) Total, ICP/MS	2.2	10/22/2009	ug/L
TJ001	Nitrate (as NO3) ,calculated IC value	16.3	4/22/2009	mg/L
TJ001	Nitrate (as NO3) ,calculated IC value	16.8	5/26/2009	mg/L
TJ001	Nitrate (as NO3) ,calculated IC value	17.6	6/9/2009	mg/L
TJ001	Nitrate (as NO3) ,calculated IC value	18.5	7/16/2009	mg/L
TJ001	Nitrate (as NO3) ,calculated IC value	18.9	8/19/2009	mg/L
TJ001	Nitrate (as NO3) ,calculated IC value	18.6	9/15/2009	mg/L
TJ001	Nitrate (as NO3) ,calculated IC value	16.8	10/22/2009	mg/L
TJ002	1,1-Dichloroethene (1,1-DCE)	1.32	6/9/2009	µg/L
TJ002	1,1-Dichloroethene (1,1-DCE)	1.7	7/16/2009	µg/L
TJ002	Chromium (Cr) Total, ICP/MS	1.8	10/22/2009	ug/L
TJ002	Nitrate (as NO3) ,calculated IC value	18.9	4/22/2009	mg/L
TJ002	Nitrate (as NO3) ,calculated IC value	19.6	6/9/2009	mg/L
TJ002	Nitrate (as NO3) ,calculated IC value	20.6	7/16/2009	mg/L
TJ002	Nitrate (as NO3) ,calculated IC value	14	8/19/2009	mg/L
TJ002	Nitrate (as NO3) ,calculated IC value	12.6	9/28/2009	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
TJ002	Nitrate (as NO3) ,calculated IC value	14.7	10/22/2009	mg/L
TJ002	Tetrachloroethylene (PCE)	5.88	6/9/2009	µg/L
TJ002	Tetrachloroethylene (PCE)	7.44	7/16/2009	µg/L
TJ002	Trichloroethene (TCE)	0.851	4/22/2009	µg/L
TJ002	Trichloroethene (TCE)	7.95	6/9/2009	µg/L
TJ002	Trichloroethene (TCE)	10.5	7/16/2009	µg/L
TJ003	1,1-Dichloroethene (1,1-DCE)	1.03	4/22/2009	µg/L
TJ003	1,1-Dichloroethene (1,1-DCE)	0.937	5/26/2009	µg/L
TJ003	1,1-Dichloroethene (1,1-DCE)	0.907	6/10/2009	µg/L
TJ003	1,1-Dichloroethene (1,1-DCE)	1.29	7/16/2009	µg/L
TJ003	1,1-Dichloroethene (1,1-DCE)	2.77	8/19/2009	µg/L
TJ003	1,1-Dichloroethene (1,1-DCE)	3.22	9/15/2009	µg/L
TJ003	1,1-Dichloroethene (1,1-DCE)	0.733	10/22/2009	µg/L
TJ003	Chromium (Cr) Total, ICP/MS	1.6	10/22/2009	ug/L
TJ003	Nitrate (as NO3) ,calculated IC value	20.7	4/22/2009	mg/L
TJ003	Nitrate (as NO3) ,calculated IC value	18.9	5/26/2009	mg/L
TJ003	Nitrate (as NO3) ,calculated IC value	19	6/10/2009	mg/L
TJ003	Nitrate (as NO3) ,calculated IC value	20	7/16/2009	mg/L
TJ003	Nitrate (as NO3) ,calculated IC value	26.8	8/19/2009	mg/L
TJ003	Nitrate (as NO3) ,calculated IC value	26.4	9/15/2009	mg/L
TJ003	Nitrate (as NO3) ,calculated IC value	22.2	10/22/2009	mg/L
TJ003	Tetrachloroethylene (PCE)	3.94	4/22/2009	µg/L
TJ003	Tetrachloroethylene (PCE)	4.43	5/26/2009	µg/L
TJ003	Tetrachloroethylene (PCE)	4.68	6/10/2009	µg/L
TJ003	Tetrachloroethylene (PCE)	5.65	7/16/2009	µg/L
TJ003	Tetrachloroethylene (PCE)	12.8	8/19/2009	µg/L
TJ003	Tetrachloroethylene (PCE)	13.4	9/15/2009	µg/L
TJ003	Tetrachloroethylene (PCE)	2.25	10/22/2009	µg/L
TJ003	Trichloroethene (TCE)	5.88	4/22/2009	µg/L
TJ003	Trichloroethene (TCE)	5.82	5/26/2009	µg/L
TJ003	Trichloroethene (TCE)	5.64	6/10/2009	µg/L
TJ003	Trichloroethene (TCE)	7.09	7/16/2009	µg/L
TJ003	Trichloroethene (TCE)	17.2	8/19/2009	µg/L
TJ003	Trichloroethene (TCE)	18.9	9/15/2009	µg/L
TJ003	Trichloroethene (TCE)	4.76	10/22/2009	µg/L
TJ004	1,1-Dichloroethene (1,1-DCE)	1.23	4/22/2009	µg/L
TJ004	1,1-Dichloroethene (1,1-DCE)	1.33	5/26/2009	µg/L
TJ004	1,1-Dichloroethene (1,1-DCE)	1.32	6/10/2009	µg/L
TJ004	1,1-Dichloroethene (1,1-DCE)	1.46	7/16/2009	µg/L
TJ004	1,1-Dichloroethene (1,1-DCE)	1.88	8/19/2009	µg/L
TJ004	1,1-Dichloroethene (1,1-DCE)	2.55	9/28/2009	µg/L
TJ004	1,1-Dichloroethene (1,1-DCE)	3.7	10/22/2009	µg/L
TJ004	Carbon tetrachloride	0.513	10/22/2009	µg/L
TJ004	Chromium (Cr) Total, ICP/MS	1.7	10/22/2009	ug/L
TJ004	Coliform Total (CL,QT2000) ,MM0-MUG	1	7/16/2009	NUM/100ml
TJ004	Nitrate (as NO3) ,calculated IC value	20.3	4/22/2009	mg/L
TJ004	Nitrate (as NO3) ,calculated IC value	19.8	5/26/2009	mg/L
TJ004	Nitrate (as NO3) ,calculated IC value	10.7	6/10/2009	mg/L
TJ004	Nitrate (as NO3) ,calculated IC value	20.2	7/16/2009	mg/L
TJ004	Nitrate (as NO3) ,calculated IC value	22.8	8/19/2009	mg/L
TJ004	Nitrate (as NO3) ,calculated IC value	25.5	9/28/2009	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
TJ004	Nitrate (as NO3) ,calculated IC value	32.9	10/22/2009	mg/L
TJ004	Tetrachloroethylene (PCE)	4.56	4/22/2009	µg/L
TJ004	Tetrachloroethylene (PCE)	7	5/26/2009	µg/L
TJ004	Tetrachloroethylene (PCE)	6.64	6/10/2009	µg/L
TJ004	Tetrachloroethylene (PCE)	6.4	7/16/2009	µg/L
TJ004	Tetrachloroethylene (PCE)	4.9	8/19/2009	µg/L
TJ004	Tetrachloroethylene (PCE)	4.59	9/28/2009	µg/L
TJ004	Tetrachloroethylene (PCE)	6.12	10/22/2009	µg/L
TJ004	Trichloroethene (TCE)	6.45	4/22/2009	µg/L
TJ004	Trichloroethene (TCE)	8.4	5/26/2009	µg/L
TJ004	Trichloroethene (TCE)	7.18	6/10/2009	µg/L
TJ004	Trichloroethene (TCE)	8.02	7/16/2009	µg/L
TJ004	Trichloroethene (TCE)	7.48	8/19/2009	µg/L
TJ004	Trichloroethene (TCE)	9.87	9/28/2009	µg/L
TJ004	Trichloroethene (TCE)	18.4	10/22/2009	µg/L
TJ005	1,1-Dichloroethene (1,1-DCE)	2.52	4/22/2009	µg/L
TJ005	1,1-Dichloroethene (1,1-DCE)	2.48	5/26/2009	µg/L
TJ005	1,1-Dichloroethene (1,1-DCE)	2.17	6/10/2009	µg/L
TJ005	1,1-Dichloroethene (1,1-DCE)	1.58	7/16/2009	µg/L
TJ005	1,1-Dichloroethene (1,1-DCE)	1.56	8/19/2009	µg/L
TJ005	1,1-Dichloroethene (1,1-DCE)	4.01	9/28/2009	µg/L
TJ005	1,1-Dichloroethene (1,1-DCE)	6.99	10/22/2009	µg/L
TJ005	Carbon tetrachloride	0.629	9/28/2009	µg/L
TJ005	Carbon tetrachloride	1	10/22/2009	µg/L
TJ005	Chromium (Cr) Total, ICP/MS	2	10/22/2009	ug/L
TJ005	Nitrate (as NO3) ,calculated IC value	20.2	4/22/2009	mg/L
TJ005	Nitrate (as NO3) ,calculated IC value	20.2	5/26/2009	mg/L
TJ005	Nitrate (as NO3) ,calculated IC value	18.6	6/10/2009	mg/L
TJ005	Nitrate (as NO3) ,calculated IC value	17.2	7/16/2009	mg/L
TJ005	Nitrate (as NO3) ,calculated IC value	19	8/19/2009	mg/L
TJ005	Nitrate (as NO3) ,calculated IC value	26.1	9/28/2009	mg/L
TJ005	Nitrate (as NO3) ,calculated IC value	37.3	10/22/2009	mg/L
TJ005	Tetrachloroethylene (PCE)	8.67	4/22/2009	µg/L
TJ005	Tetrachloroethylene (PCE)	10.4	5/26/2009	µg/L
TJ005	Tetrachloroethylene (PCE)	9.16	6/10/2009	µg/L
TJ005	Tetrachloroethylene (PCE)	7.02	7/16/2009	µg/L
TJ005	Tetrachloroethylene (PCE)	2.12	8/19/2009	µg/L
TJ005	Tetrachloroethylene (PCE)	4.38	9/28/2009	µg/L
TJ005	Tetrachloroethylene (PCE)	7.72	10/22/2009	µg/L
TJ005	Trichloroethene (TCE)	10.6	4/22/2009	µg/L
TJ005	Trichloroethene (TCE)	12	5/26/2009	µg/L
TJ005	Trichloroethene (TCE)	9.63	6/10/2009	µg/L
TJ005	Trichloroethene (TCE)	7.84	7/16/2009	µg/L
TJ005	Trichloroethene (TCE)	4.82	8/19/2009	µg/L
TJ005	Trichloroethene (TCE)	13.5	9/28/2009	µg/L
TJ005	Trichloroethene (TCE)	23.7	10/22/2009	µg/L
TJ006	1,1-Dichloroethene (1,1-DCE)	1	4/22/2009	µg/L
TJ006	1,1-Dichloroethene (1,1-DCE)	2.82	3/5/2010	µg/L
TJ006	Nitrate (as NO3) ,calculated IC value	26.4	4/22/2009	mg/L
TJ006	Nitrate (as NO3) ,calculated IC value	23.7	5/12/2009	mg/L
TJ006	Nitrate (as NO3) ,calculated IC value	31.4	3/5/2010	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
TJ006	Tetrachloroethylene (PCE)	3.49	4/22/2009	µg/L
TJ006	Tetrachloroethylene (PCE)	2.17	5/12/2009	µg/L
TJ006	Tetrachloroethylene (PCE)	13.6	3/5/2010	µg/L
TJ006	Trichloroethene (TCE)	4.11	4/22/2009	µg/L
TJ006	Trichloroethene (TCE)	2.59	5/12/2009	µg/L
TJ006	Trichloroethene (TCE)	16.5	3/5/2010	µg/L
TJ007	1,1-Dichloroethene (1,1-DCE)	4.53	3/5/2010	µg/L
TJ007	Nitrate (as NO3) ,calculated IC value	23.2	4/22/2009	mg/L
TJ007	Nitrate (as NO3) ,calculated IC value	21.6	5/12/2009	mg/L
TJ007	Nitrate (as NO3) ,calculated IC value	41	3/5/2010	mg/L
TJ007	Tetrachloroethylene (PCE)	1.54	4/22/2009	µg/L
TJ007	Tetrachloroethylene (PCE)	1.18	5/12/2009	µg/L
TJ007	Tetrachloroethylene (PCE)	15.9	3/5/2010	µg/L
TJ007	Trichloroethene (TCE)	2.1	4/22/2009	µg/L
TJ007	Trichloroethene (TCE)	1.56	5/12/2009	µg/L
TJ007	Trichloroethene (TCE)	18	3/5/2010	µg/L
TJ008	1,1-Dichloroethene (1,1-DCE)	3.27	9/28/2009	µg/L
TJ008	1,1-Dichloroethene (1,1-DCE)	14.7	10/22/2009	µg/L
TJ008	Bromide ,Ion-Chromatography	0.09	6/9/2009	mg/L
TJ008	Carbon tetrachloride	1.25	10/22/2009	µg/L
TJ008	Chromium (Cr) Total, ICP/MS	2.2	10/22/2009	ug/L
TJ008	Nitrate (as NO3) ,calculated IC value	26.9	4/22/2009	mg/L
TJ008	Nitrate (as NO3) ,calculated IC value	23.7	5/12/2009	mg/L
TJ008	Nitrate (as NO3) ,calculated IC value	19.5	6/9/2009	mg/L
TJ008	Nitrate (as NO3) ,calculated IC value	16.7	7/16/2009	mg/L
TJ008	Nitrate (as NO3) ,calculated IC value	15.8	8/19/2009	mg/L
TJ008	Nitrate (as NO3) ,calculated IC value	21.5	9/28/2009	mg/L
TJ008	Nitrate (as NO3) ,calculated IC value	36.9	10/22/2009	mg/L
TJ008	Tetrachloroethylene (PCE)	0.767	4/22/2009	µg/L
TJ008	Tetrachloroethylene (PCE)	0.545	5/12/2009	µg/L
TJ008	Tetrachloroethylene (PCE)	2.24	9/28/2009	µg/L
TJ008	Tetrachloroethylene (PCE)	11.4	10/22/2009	µg/L
TJ008	Trichloroethene (TCE)	1.18	4/22/2009	µg/L
TJ008	Trichloroethene (TCE)	0.773	5/12/2009	µg/L
TJ008	Trichloroethene (TCE)	0.562	6/9/2009	µg/L
TJ008	Trichloroethene (TCE)	6.18	9/28/2009	µg/L
TJ008	Trichloroethene (TCE)	28.8	10/22/2009	µg/L
TJ009	1,1-Dichloroethene (1,1-DCE)	2.5	9/29/2009	µg/L
TJ009	1,1-Dichloroethene (1,1-DCE)	6.86	10/22/2009	µg/L
TJ009	Bromide ,Ion-Chromatography	0.097	6/9/2009	mg/L
TJ009	Carbon tetrachloride	0.557	10/22/2009	µg/L
TJ009	Chromium (Cr) Total, ICP/MS	1.2	10/22/2009	ug/L
TJ009	Nitrate (as NO3) ,calculated IC value	21.7	4/23/2009	mg/L
TJ009	Nitrate (as NO3) ,calculated IC value	17.5	5/26/2009	mg/L
TJ009	Nitrate (as NO3) ,calculated IC value	17.6	6/9/2009	mg/L
TJ009	Nitrate (as NO3) ,calculated IC value	15.7	7/21/2009	mg/L
TJ009	Nitrate (as NO3) ,calculated IC value	15.7	8/20/2009	mg/L
TJ009	Nitrate (as NO3) ,calculated IC value	24.3	9/29/2009	mg/L
TJ009	Nitrate (as NO3) ,calculated IC value	39.9	10/22/2009	mg/L
TJ009	Tetrachloroethylene (PCE)	0.523	4/23/2009	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
TJ009	Tetrachloroethylene (PCE)	0.575	6/9/2009	µg/L
TJ009	Tetrachloroethylene (PCE)	1.55	9/29/2009	µg/L
TJ009	Tetrachloroethylene (PCE)	4.72	10/22/2009	µg/L
TJ009	Trichloroethene (TCE)	0.811	4/23/2009	µg/L
TJ009	Trichloroethene (TCE)	0.555	5/26/2009	µg/L
TJ009	Trichloroethene (TCE)	0.689	6/9/2009	µg/L
TJ009	Trichloroethene (TCE)	5.08	9/29/2009	µg/L
TJ009	Trichloroethene (TCE)	16.1	10/22/2009	µg/L
TJ010	1,1-Dichloroethene (1,1-DCE)	1.01	9/29/2009	µg/L
TJ010	1,1-Dichloroethene (1,1-DCE)	2.56	10/22/2009	µg/L
TJ010	Bromide ,Ion-Chromatography	0.166	10/22/2009	mg/L
TJ010	Nitrate (as NO3) ,calculated IC value	22.2	4/23/2009	mg/L
TJ010	Nitrate (as NO3) ,calculated IC value	18.6	5/26/2009	mg/L
TJ010	Nitrate (as NO3) ,calculated IC value	18.8	6/9/2009	mg/L
TJ010	Nitrate (as NO3) ,calculated IC value	15.4	7/21/2009	mg/L
TJ010	Nitrate (as NO3) ,calculated IC value	24.7	9/29/2009	mg/L
TJ010	Nitrate (as NO3) ,calculated IC value	44.7	10/22/2009	mg/L
TJ010	Tetrachloroethylene (PCE)	0.596	9/29/2009	µg/L
TJ010	Tetrachloroethylene (PCE)	1.55	10/22/2009	µg/L
TJ010	Trichloroethene (TCE)	1.06	4/23/2009	µg/L
TJ010	Trichloroethene (TCE)	0.65	6/9/2009	µg/L
TJ010	Trichloroethene (TCE)	2.59	9/29/2009	µg/L
TJ010	Trichloroethene (TCE)	7.06	10/22/2009	µg/L
TJ011	1,1-Dichloroethene (1,1-DCE)	0.555	9/29/2009	µg/L
TJ011	1,1-Dichloroethene (1,1-DCE)	0.902	10/22/2009	µg/L
TJ011	Chromium (Cr) Total, ICP/MS	1.1	10/22/2009	ug/L
TJ011	Nitrate (as NO3) ,calculated IC value	24	4/23/2009	mg/L
TJ011	Nitrate (as NO3) ,calculated IC value	18.4	5/26/2009	mg/L
TJ011	Nitrate (as NO3) ,calculated IC value	14.6	6/10/2009	mg/L
TJ011	Nitrate (as NO3) ,calculated IC value	15.7	7/21/2009	mg/L
TJ011	Nitrate (as NO3) ,calculated IC value	27.1	8/20/2009	mg/L
TJ011	Nitrate (as NO3) ,calculated IC value	36.6	9/29/2009	mg/L
TJ011	Nitrate (as NO3) ,calculated IC value	47	10/22/2009	mg/L
TJ011	Tetrachloroethylene (PCE)	0.605	4/23/2009	µg/L
TJ011	Tetrachloroethylene (PCE)	0.523	6/10/2009	µg/L
TJ011	Tetrachloroethylene (PCE)	0.73	9/29/2009	µg/L
TJ011	Tetrachloroethylene (PCE)	1.3	10/22/2009	µg/L
TJ011	Trichloroethene (TCE)	4.06	4/23/2009	µg/L
TJ011	Trichloroethene (TCE)	1.21	5/26/2009	µg/L
TJ011	Trichloroethene (TCE)	1.7	6/10/2009	µg/L
TJ011	Trichloroethene (TCE)	1.2	7/21/2009	µg/L
TJ011	Trichloroethene (TCE)	4.52	8/20/2009	µg/L
TJ011	Trichloroethene (TCE)	5.79	9/29/2009	µg/L
TJ011	Trichloroethene (TCE)	9.68	10/22/2009	µg/L
TJ012	1,1-Dichloroethene (1,1-DCE)	0.53	5/26/2009	µg/L
TJ012	1,1-Dichloroethene (1,1-DCE)	0.58	7/16/2009	µg/L
TJ012	Bromide ,Ion-Chromatography	0.126	8/11/2009	mg/L
TJ012	Nitrate (as NO3) ,calculated IC value	19.5	4/23/2009	mg/L
TJ012	Nitrate (as NO3) ,calculated IC value	15.9	5/26/2009	mg/L
TJ012	Nitrate (as NO3) ,calculated IC value	14.6	6/10/2009	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
TJ012	Nitrate (as NO3) ,calculated IC value	17.5	7/16/2009	mg/L
TJ012	Nitrate (as NO3) ,calculated IC value	18	8/11/2009	mg/L
TJ012	Tetrachloroethylene (PCE)	0.703	4/23/2009	µg/L
TJ012	Tetrachloroethylene (PCE)	1.26	5/26/2009	µg/L
TJ012	Tetrachloroethylene (PCE)	0.531	6/10/2009	µg/L
TJ012	Tetrachloroethylene (PCE)	1.37	7/16/2009	µg/L
TJ012	Tetrachloroethylene (PCE)	1.19	8/11/2009	µg/L
TJ012	Trichloroethene (TCE)	3.35	4/23/2009	µg/L
TJ012	Trichloroethene (TCE)	6.82	5/26/2009	µg/L
TJ012	Trichloroethene (TCE)	1.8	6/10/2009	µg/L
TJ012	Trichloroethene (TCE)	7.06	7/16/2009	µg/L
TJ012	Trichloroethene (TCE)	6.05	8/11/2009	µg/L
VE011	Carbon tetrachloride	1.3	4/28/2009	µg/L
VE011	Carbon tetrachloride	1.33	6/30/2009	µg/L
VE011	Carbon tetrachloride	1.15	7/28/2009	µg/L
VE011	Carbon tetrachloride	1.3	8/20/2009	µg/L
VE011	Carbon tetrachloride	1.38	8/27/2009	µg/L
VE011	Carbon tetrachloride	1.29	8/27/2009	µg/L
VE011	Carbon tetrachloride	1.42	9/25/2009	µg/L
VE011	Carbon tetrachloride	1.25	11/26/2009	µg/L
VE011	Carbon tetrachloride	0.618	12/29/2009	µg/L
VE011	Nitrate (as NO3) ,calculated IC value	21.6	4/28/2009	mg/L
VE011	Nitrate (as NO3) ,calculated IC value	24.2	5/27/2009	mg/L
VE011	Nitrate (as NO3) ,calculated IC value	22.9	6/30/2009	mg/L
VE011	Nitrate (as NO3) ,calculated IC value	22.2	7/28/2009	mg/L
VE011	Nitrate (as NO3) ,calculated IC value	22.9	8/20/2009	mg/L
VE011	Nitrate (as NO3) ,calculated IC value	23.2	9/25/2009	mg/L
VE011	Nitrate (as NO3) ,calculated IC value	14.5	12/29/2009	mg/L
VE011	Nitrate (as NO3) ,calculated IC value	12.1	1/28/2010	mg/L
VE011	Nitrate (as NO3) ,calculated IC value	11.1	2/25/2010	mg/L
VE011	Nitrate (as NO3) ,calculated IC value	10.7	3/26/2010	mg/L
VE011	Tetrachloroethylene (PCE)	0.68	4/28/2009	µg/L
VE011	Tetrachloroethylene (PCE)	0.838	6/30/2009	µg/L
VE011	Tetrachloroethylene (PCE)	0.716	7/28/2009	µg/L
VE011	Tetrachloroethylene (PCE)	0.846	8/20/2009	µg/L
VE011	Tetrachloroethylene (PCE)	0.77	8/27/2009	µg/L
VE011	Tetrachloroethylene (PCE)	0.751	8/27/2009	µg/L
VE011	Tetrachloroethylene (PCE)	0.852	9/25/2009	µg/L
VE011	Tetrachloroethylene (PCE)	0.955	11/26/2009	µg/L
VE011	Trichloroethene (TCE)	8.69	4/28/2009	µg/L
VE011	Trichloroethene (TCE)	1.73	5/27/2009	µg/L
VE011	Trichloroethene (TCE)	9.3	6/30/2009	µg/L
VE011	Trichloroethene (TCE)	8.32	7/28/2009	µg/L
VE011	Trichloroethene (TCE)	8.97	8/20/2009	µg/L
VE011	Trichloroethene (TCE)	9.35	8/27/2009	µg/L
VE011	Trichloroethene (TCE)	8.91	8/27/2009	µg/L
VE011	Trichloroethene (TCE)	9.74	9/25/2009	µg/L
VE011	Trichloroethene (TCE)	9.91	11/26/2009	µg/L
VE011	Trichloroethene (TCE)	4.59	12/29/2009	µg/L
VE011	Trichloroethene (TCE)	2.99	1/28/2010	µg/L
VE011	Trichloroethene (TCE)	2.79	2/25/2010	µg/L
VE011	Trichloroethene (TCE)	2.66	3/26/2010	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
VE024	Bromide ,Ion-Chromatography	0.597	12/9/2009	mg/L
VE024	Chromium (Cr) Total, ICP/MS	1.2	10/29/2009	ug/L
VE024	Nitrate (as NO3) ,calculated IC value	7.22	4/28/2009	mg/L
VE024	Nitrate (as NO3) ,calculated IC value	7	5/27/2009	mg/L
VE024	Nitrate (as NO3) ,calculated IC value	7.62	6/30/2009	mg/L
VE024	Nitrate (as NO3) ,calculated IC value	7.71	7/22/2009	mg/L
VE024	Nitrate (as NO3) ,calculated IC value	8.02	8/18/2009	mg/L
VE024	Nitrate (as NO3) ,calculated IC value	7.89	9/25/2009	mg/L
VE024	Nitrate (as NO3) ,calculated IC value	7.84	10/29/2009	mg/L
VE024	Nitrate (as NO3) ,calculated IC value	7.66	12/9/2009	mg/L
WH004	1,2-Dichloroethene-cis	0.587	4/28/2009	µg/L
WH004	1,2-Dichloroethene-cis	0.609	5/5/2009	µg/L
WH004	1,2-Dichloroethene-cis	0.575	6/24/2009	µg/L
WH004	Bromide ,Ion-Chromatography	0.101	5/5/2009	mg/L
WH004	Chromium (Cr) Total, ICP/MS	2.2	10/20/2009	ug/L
WH004	Nitrate (as NO3) ,calculated IC value	12.8	4/28/2009	mg/L
WH004	Nitrate (as NO3) ,calculated IC value	12.8	5/5/2009	mg/L
WH004	Nitrate (as NO3) ,calculated IC value	12.6	6/24/2009	mg/L
WH004	Nitrate (as NO3) ,calculated IC value	12.7	7/28/2009	mg/L
WH004	Nitrate (as NO3) ,calculated IC value	12.7	8/18/2009	mg/L
WH004	Nitrate (as NO3) ,calculated IC value	12.7	9/24/2009	mg/L
WH004	Nitrate (as NO3) ,calculated IC value	12.5	10/20/2009	mg/L
WH004	Nitrate (as NO3) ,calculated IC value	12.4	12/29/2009	mg/L
WH004	Nitrate (as NO3) ,calculated IC value	10.4	1/28/2010	mg/L
WH004	Nitrate (as NO3) ,calculated IC value	10.5	2/25/2010	mg/L
WH004	Nitrate (as NO3) ,calculated IC value	10.2	3/23/2010	mg/L
WH004	Tetrachloroethylene (PCE)	3.96	4/28/2009	µg/L
WH004	Tetrachloroethylene (PCE)	4.04	5/5/2009	µg/L
WH004	Tetrachloroethylene (PCE)	3.62	6/24/2009	µg/L
WH004	Tetrachloroethylene (PCE)	2.89	7/28/2009	µg/L
WH004	Tetrachloroethylene (PCE)	2.77	8/18/2009	µg/L
WH004	Tetrachloroethylene (PCE)	2.76	9/24/2009	µg/L
WH004	Tetrachloroethylene (PCE)	2.42	10/20/2009	µg/L
WH004	Tetrachloroethylene (PCE)	2.74	11/26/2009	µg/L
WH004	Tetrachloroethylene (PCE)	2.56	12/29/2009	µg/L
WH004	Tetrachloroethylene (PCE)	2.17	1/28/2010	µg/L
WH004	Tetrachloroethylene (PCE)	2.42	2/25/2010	µg/L
WH004	Tetrachloroethylene (PCE)	2.51	3/23/2010	µg/L
WH004	Trichloroethene (TCE)	2.89	4/28/2009	µg/L
WH004	Trichloroethene (TCE)	3.05	5/5/2009	µg/L
WH004	Trichloroethene (TCE)	3.63	6/24/2009	µg/L
WH004	Trichloroethene (TCE)	4.02	7/28/2009	µg/L
WH004	Trichloroethene (TCE)	4.26	8/18/2009	µg/L
WH004	Trichloroethene (TCE)	5.33	9/24/2009	µg/L
WH004	Trichloroethene (TCE)	4.8	10/20/2009	µg/L
WH004	Trichloroethene (TCE)	5.16	11/26/2009	µg/L
WH004	Trichloroethene (TCE)	4.9	12/29/2009	µg/L
WH004	Trichloroethene (TCE)	3.32	1/28/2010	µg/L
WH004	Trichloroethene (TCE)	2.58	2/25/2010	µg/L
WH004	Trichloroethene (TCE)	2.1	3/23/2010	µg/L
WH005	1,2-Dichloroethene-cis	0.837	4/28/2009	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
WH005	1,2-Dichloroethene-cis	0.795	5/27/2009	µg/L
WH005	1,2-Dichloroethene-cis	0.725	6/24/2009	µg/L
WH005	1,2-Dichloroethene-cis	0.672	7/28/2009	µg/L
WH005	1,2-Dichloroethene-cis	0.612	8/18/2009	µg/L
WH005	1,2-Dichloroethene-cis	0.603	9/24/2009	µg/L
WH005	Chromium (Cr) Total, ICP/MS	2.3	10/20/2009	ug/L
WH005	Nitrate (as NO3) ,calculated IC value	17	4/28/2009	mg/L
WH005	Nitrate (as NO3) ,calculated IC value	16.8	5/27/2009	mg/L
WH005	Nitrate (as NO3) ,calculated IC value	16.7	6/24/2009	mg/L
WH005	Nitrate (as NO3) ,calculated IC value	16.3	7/28/2009	mg/L
WH005	Nitrate (as NO3) ,calculated IC value	16	8/18/2009	mg/L
WH005	Nitrate (as NO3) ,calculated IC value	15.9	9/24/2009	mg/L
WH005	Nitrate (as NO3) ,calculated IC value	15.7	10/20/2009	mg/L
WH005	Nitrate (as NO3) ,calculated IC value	13.2	12/29/2009	mg/L
WH005	Nitrate (as NO3) ,calculated IC value	11.5	1/28/2010	mg/L
WH005	Nitrate (as NO3) ,calculated IC value	10.8	2/25/2010	mg/L
WH005	Nitrate (as NO3) ,calculated IC value	10.5	3/23/2010	mg/L
WH005	Tetrachloroethylene (PCE)	3.14	4/28/2009	µg/L
WH005	Tetrachloroethylene (PCE)	3.48	5/27/2009	µg/L
WH005	Tetrachloroethylene (PCE)	3.28	6/24/2009	µg/L
WH005	Tetrachloroethylene (PCE)	2.88	7/28/2009	µg/L
WH005	Tetrachloroethylene (PCE)	2.71	8/18/2009	µg/L
WH005	Tetrachloroethylene (PCE)	3.07	9/24/2009	µg/L
WH005	Tetrachloroethylene (PCE)	2.72	10/20/2009	µg/L
WH005	Tetrachloroethylene (PCE)	3.18	11/26/2009	µg/L
WH005	Tetrachloroethylene (PCE)	1.5	12/29/2009	µg/L
WH005	Tetrachloroethylene (PCE)	0.785	1/28/2010	µg/L
WH005	Tetrachloroethylene (PCE)	0.699	2/25/2010	µg/L
WH005	Tetrachloroethylene (PCE)	0.721	3/23/2010	µg/L
WH005	Trichloroethene (TCE)	4.82	4/28/2009	µg/L
WH005	Trichloroethene (TCE)	5.11	5/27/2009	µg/L
WH005	Trichloroethene (TCE)	5.15	6/24/2009	µg/L
WH005	Trichloroethene (TCE)	5.4	7/28/2009	µg/L
WH005	Trichloroethene (TCE)	5.24	8/18/2009	µg/L
WH005	Trichloroethene (TCE)	6.7	9/24/2009	µg/L
WH005	Trichloroethene (TCE)	5.87	10/20/2009	µg/L
WH005	Trichloroethene (TCE)	6.33	11/26/2009	µg/L
WH005	Trichloroethene (TCE)	4.38	12/29/2009	µg/L
WH005	Trichloroethene (TCE)	4.45	1/28/2010	µg/L
WH005	Trichloroethene (TCE)	4.03	2/25/2010	µg/L
WH005	Trichloroethene (TCE)	4.22	3/23/2010	µg/L
WH006A	Bromide ,Ion-Chromatography	0.356	9/9/2009	mg/L
WH006A	Chromium (Cr) Total, ICP/MS	1.8	10/20/2009	ug/L
WH006A	Nitrate (as NO3) ,calculated IC value	6.29	4/28/2009	mg/L
WH006A	Nitrate (as NO3) ,calculated IC value	6.38	5/27/2009	mg/L
WH006A	Nitrate (as NO3) ,calculated IC value	6.02	6/24/2009	mg/L
WH006A	Nitrate (as NO3) ,calculated IC value	6.91	7/22/2009	mg/L
WH006A	Nitrate (as NO3) ,calculated IC value	5.76	8/18/2009	mg/L
WH006A	Nitrate (as NO3) ,calculated IC value	6.02	9/9/2009	mg/L
WH006A	Nitrate (as NO3) ,calculated IC value	5.89	10/20/2009	mg/L
WH006A	Nitrate (as NO3) ,calculated IC value	6.38	12/29/2009	mg/L
WH006A	Nitrate (as NO3) ,calculated IC value	2.25	1/28/2010	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
WH006A	Nitrate (as NO3) ,calculated IC value	2.39	2/25/2010	mg/L
WH006A	Nitrate (as NO3) ,calculated IC value	2.41	3/23/2010	mg/L
WH006A	Tetrachloroethylene (PCE)	0.996	4/28/2009	µg/L
WH006A	Tetrachloroethylene (PCE)	1.09	5/27/2009	µg/L
WH006A	Tetrachloroethylene (PCE)	1.01	6/24/2009	µg/L
WH006A	Tetrachloroethylene (PCE)	0.902	7/22/2009	µg/L
WH006A	Tetrachloroethylene (PCE)	0.721	8/18/2009	µg/L
WH006A	Tetrachloroethylene (PCE)	0.855	9/9/2009	µg/L
WH006A	Tetrachloroethylene (PCE)	0.755	10/20/2009	µg/L
WH006A	Tetrachloroethylene (PCE)	0.905	11/26/2009	µg/L
WH006A	Tetrachloroethylene (PCE)	0.973	12/29/2009	µg/L
WH006A	Trichloroethene (TCE)	1.59	4/28/2009	µg/L
WH006A	Trichloroethene (TCE)	1.7	5/27/2009	µg/L
WH006A	Trichloroethene (TCE)	1.66	6/24/2009	µg/L
WH006A	Trichloroethene (TCE)	1.62	7/22/2009	µg/L
WH006A	Trichloroethene (TCE)	1.34	8/18/2009	µg/L
WH006A	Trichloroethene (TCE)	1.66	9/9/2009	µg/L
WH006A	Trichloroethene (TCE)	1.46	10/20/2009	µg/L
WH006A	Trichloroethene (TCE)	1.71	11/26/2009	µg/L
WH006A	Trichloroethene (TCE)	1.79	12/29/2009	µg/L
WH007	Chromium (Cr) Total, ICP/MS	1.6	10/20/2009	ug/L
WH007	Coliform Total (CL,QT2000) ,MM0-MUG	4.1	9/24/2009	NUM/100ml
WH007	Nitrate (as NO3) ,calculated IC value	8.24	4/28/2009	mg/L
WH007	Nitrate (as NO3) ,calculated IC value	7.89	5/27/2009	mg/L
WH007	Nitrate (as NO3) ,calculated IC value	7.35	6/24/2009	mg/L
WH007	Nitrate (as NO3) ,calculated IC value	6.02	7/22/2009	mg/L
WH007	Nitrate (as NO3) ,calculated IC value	6.64	8/18/2009	mg/L
WH007	Nitrate (as NO3) ,calculated IC value	7	9/24/2009	mg/L
WH007	Nitrate (as NO3) ,calculated IC value	6.6	10/20/2009	mg/L
WH007	Tetrachloroethylene (PCE)	1.07	4/28/2009	µg/L
WH007	Tetrachloroethylene (PCE)	1.03	5/27/2009	µg/L
WH007	Tetrachloroethylene (PCE)	0.901	6/24/2009	µg/L
WH007	Tetrachloroethylene (PCE)	0.772	7/22/2009	µg/L
WH007	Tetrachloroethylene (PCE)	0.662	8/18/2009	µg/L
WH007	Tetrachloroethylene (PCE)	0.858	9/24/2009	µg/L
WH007	Tetrachloroethylene (PCE)	0.726	10/20/2009	µg/L
WH007	Tetrachloroethylene (PCE)	0.734	11/26/2009	µg/L
WH007	Trichloroethene (TCE)	3.21	4/28/2009	µg/L
WH007	Trichloroethene (TCE)	3.26	5/27/2009	µg/L
WH007	Trichloroethene (TCE)	2.84	6/24/2009	µg/L
WH007	Trichloroethene (TCE)	2.6	7/22/2009	µg/L
WH007	Trichloroethene (TCE)	2.39	8/18/2009	µg/L
WH007	Trichloroethene (TCE)	3	9/24/2009	µg/L
WH007	Trichloroethene (TCE)	2.42	10/20/2009	µg/L
WH007	Trichloroethene (TCE)	2.4	11/26/2009	µg/L

APPENDIX B:
Projected Pumping by the City of Los Angeles in the San Fernando Basin for 2009-2014

PROJECTED PUMPING BY THE CITY OF LOS ANGELES IN THE SAN FERNANDO BASIN FOR 2009-2014
(IN ACRE-FEET)

WELL FIELD	WATER YEAR				
	2009-10	2010-11	2011-12	2012-13	2013-14
AERATION	1,357	1,380	1,937	1,937	1,937
ERWIN	1,194	1,196	0	0	0
HEADWORKS	0	0	0	0	0
NO HOLLYWOOD	10,612	6,172	4,367	2,967	1,567
POLLOCK	2,634	1,994	2,178	2,178	2,178
RINALDI-TOLUCA	16,935	7,099	6,550	4,451	2,350
TUJUNGA	13,697	23,963	15,674	15,674	15,674
VERDUGO	1,728	2,549	2,687	2,687	2,553
WHITNAL	4,700	4,652	8,607	5,106	1,741
TOTAL ACRE-FEET	52,857	49,005	42,000	35,000	28,000

Note: The value shown on this extraction plan are estimates only, and the estimated groundwater pumping amounts for the above-mentioned wellfields may be increased as treatment faculities are installed or as the blending with external source of water will continue to be allowable.

Sylmar Basin	2,979	1,756	1,500	1,400	1,300

APPENDIX B

CITY OF BURBANK

PUMPING AND SPREADING PLAN

2009-2014 Water Years

GROUNDWATER PUMPING
AND
SPREADING PLAN

FIVE WATER YEARS
OCTOBER 1, 2009 TO SEPTEMBER 30, 2014

Prepared by

BURBANK WATER AND POWER
WATER DIVISION

May 2010

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I. INTRODUCTION

The groundwater rights of the City of Burbank are defined by the JUDGMENT in Superior Court Case No. 650079, entitled "The City of Los Angeles, a Municipal Corporation, Plaintiff, vs. City of San Fernando, et. al., Defendants". The Final Judgment was signed on January 26, 1979.

In 1993, significant revisions were made to the Upper Los Angeles River Area (ULARA) Policies and Procedures with the addition of Section 2.9, Groundwater Quality Management. This addition has been made by the Watermaster and the Administrative Committee to affirm its commitments to participate in the cleanup and limiting the spread of contamination in the San Fernando Valley. This report is in response to Section 2.9.4, Groundwater Pumping and Spreading Plan.

The Groundwater Pumping and Spreading Plan is based on the water year, October 1 to September 30. The Draft Plan for Burbank will be submitted in May to the Watermaster for the current water year.

II. WATER DEMAND

The annual total water demand for the last ten years and the projected annual water demand for the next five years are shown in Table 2.1.

Urgent requests for voluntary conservation began in 2007. With increasing public awareness of water supply issues, and to comply with new State legislation, the plan is for 20 percent reduction in per-capita potable water usage by 2020 (nominally by 2018 in Burbank's budget projections). Local supplies will be used as much as possible in order to reduce the demand on MWD imported supplies. The projected water demand may vary significantly due to weather and/or economic conditions in the Burbank area. A variance of ±5% may be expected. Recycled water use increased when the Magnolia Power Project began operation in September 2005. Major expansion of the recycled system is under way in 2010.

III. WATER SUPPLY

The water supply for the City of Burbank is composed of purchased water from the Metropolitan Water District of Southern California (MWD), locally produced and treated groundwater, and recycled water from the Burbank Water Reclamation Plant.

A. MWD

The amount of treated water purchased from the MWD has been reduced as the result of bringing groundwater treatment and recycled water projects on-line in the mid-1990s. Burbank continues to rely on MWD for more than half of its water. For continued operation of the local groundwater wells, Burbank needs to purchase additional quantities of untreated water for basin replenishment. Allocation of the MWD supply could make the source problematic in a given year.

See Section IV. Historic and projected use of MWD water is shown in Table 3.1.

B. GAC TREATMENT PLANT

Burbank placed a granular activated carbon (GAC) Treatment Plant in service in November 1992. Historic and projected production from this plant is shown in Table 3.2. The plant was used in November and December 2008 to produce 130 acre-feet of non-potable water that was used in the Power Plant Cooling Towers instead of the usual recycled water. Smaller amounts pumped for water quality testing were also used by the power plant, making a total of 148 acre-feet for WY 2008-09.

The GAC Treatment Plant would normally be operated during the summer season from May to October. However, current plans are to keep the plant shut down, except for emergencies, because of hexavalent chromium (Chromium VI) in the well water. The GAC treatment process does not remove chromium, and blending facilities are not available. Total chromium in the plant effluent would exceed the limit of five parts per billion (ppb) set by Burbank City Council policy for water delivered to the distribution system. New Chromium VI regulations will lead to decisions on the future use of the water. The California Department of Public Health has issued a draft PHG, which is now in the two-year review period and receiving much comment. When the plant is operated, shutdowns for carbon change-out can be expected every two months. Mechanical maintenance will be performed when the plant is out of service during the winter season. The GAC Treatment Plant uses the groundwater produced from Well No. 7 and Well No. 15 (Figure 3.1). The plant capacity is 2,000 gpm.

Lockheed Martin has arranged to utilize the capacity of the GAC Treatment Plant, when available, to augment the production of the Burbank Operable Unit (BOU) to reach the required annual average of 9,000 gpm. Lockheed Martin will pay a share of the operation and maintenance cost of the GAC in proportion with the volume of water which is credited toward the 9,000 gpm.

C. EPA CONSENT DECREE

The EPA Consent Decree Project became operational January 3, 1996. The source of water is wells VO-1 through VO-8 (Figure 3.1). The Second Consent Decree was entered on June 22, 1998. The plant capacity is 9,000 gpm. Historic and projected water production from the Burbank Operable Unit (BOU) is shown in Table 3.3.

D. RECYCLED WATER

A master plan for the recycled water system was completed in 2007. The plan lays out a five-year expansion of the system and is expected to convert 1,000 acre-feet per year of potable water demand to recycled water demand. Execution of the plan is well under way with completion expected in 2012. Historic and proposed use of recycled water is shown in Table 3.4.

E. PRODUCTION WELLS

Burbank has eight wells that are part of the BOU collector system, plus another four wells which are mechanically and electrically operable, and two others which have had equipment removed. The eight BOU wells are on “Active” status, while all the others are on "Inactive" status with the California Department of Public Health (DPH). Burbank does not plan to operate the inactive wells unless an emergency develops in the 2008-2009 water year.

Active Wells	Inactive Wells	Inactive-Pulled
VO-1 VO-2 VO-3 VO-4 VO-5 VO-6 VO-7 VO-8	No. 6A No. 7 No. 13A No. 15	No. 11A No. 12

IV. JUDGMENT CONSIDERATIONS

A. PHYSICAL SOLUTION

Burbank has a physical solution right of 4,200 acre-feet per year in addition to its import return water extraction rights and use of stored water credits. Depending on availability of MWD replenishment water, a decision must be made each year on the purchase of physical solution credits. Allocation of MWD water began July 1, 2009, so Burbank will purchase the maximum 4,200 acre-feet of physical solution water for 2008-09 and any subsequent year in which allocation is implemented. Burbank will charge the following physical solution right holders for water used and claim the extractions against Burbank's rights:

Physical Solution Producers	
Valhalla	300 acre-feet
Lockheed Martin	25 acre-feet

Table 3.3 lists the extractions by Lockheed Martin. Table 4.1 lists the extractions by Valhalla.

B. STORED WATER CREDIT

Burbank has a stored water credit of 19,246 acre-feet as of October 1, 2009. Continued BOU operation has drawn down the stored water credits. The objective is to maintain a reserve of 10,000 acre-feet. (See Appendix C.) Some combination of physical solution and spreading water purchases is necessary to avoid depleting the stored water credits.

C. ALLOWANCE FOR PUMPING

The import return water extraction right (20 percent of water delivered the prior year) for the 2009-2010 water year is 4,432 acre-feet. This amount is exclusive of additional extractions allowed due to Burbank's stored water credits, physical solution right or pumping for groundwater clean-up.

Estimated allowable future pumping, based on 23,000 acre-feet of delivered water, will be 4,600 acre-feet per year.

D. SPREADING OPERATIONS AND TRANSFERS OF CREDITS

Burbank has purchased water for basin replenishment since 1989. The water was typically spread at the Pacoima Spreading Grounds by L.A. County Public Works Department with the assistance of the Los Angeles Department of Water and Power (LADWP). Los Angeles Aqueduct water would be spread in exchange for MWD untreated water purchased by Burbank and delivered to Los Angeles. The LADWP water pipelines to the Pacoima Spreading Ground were damaged during the 1994 Northridge earthquake. Replenishment water, beginning in water year 1994-95, was taken "in lieu" through MWD service connection LA-35 at the L.A. Treatment Plant. The historic and projected spreading water is shown in Table 4.2. In lieu replenishment water purchases and transfers of pumping rights, including physical solution purchases, are shown in Table 4.3.

Burbank has completed construction of a new MWD connection at the end of the Foothill Feeder Tunnel. (See Figure 4.1.) The connection is capable of delivering 50 cubic feet per second (cfs) to the Pacoima Wash where the water will flow down to the Pacoima Spreading Grounds. Additionally, the new facilities allow Burbank to direct water to the Lopez Spreading Grounds. These new facilities allow Burbank to spread 6,000 to 8,000 acre-feet per year of purchased untreated replenishment water at the Pacoima Spreading Grounds. MWD completed cleaning of the tunnel, and Burbank received the first water delivery through the new connection on April 26, 2010. Spreading can be done when replenishment water is available.

V. CAPITAL IMPROVEMENTS

A. WELLS

Burbank plans to continue the use of Wells No. 7 and No. 15 for the GAC Treatment Plant when it is operated.

B. GROUNDWATER TREATMENT FACILITIES

EPA Project: The EPA Consent Decree Project became fully operational on January 3, 1996.

In late June 2000, the treatment plant went off-line due to a breakthrough of 1,2,3- trichloropropane (TCP) in the plant effluent. The plant did not return to service until DPH had approved an operation and sampling plan and the carbon was changed out in the liquid phase contactors. Well VO-6 was removed from service at that time because it had high concentrations of 1,2,3-TCP. The overall production of the BOU was also reduced during this period due to general mechanical problems in the BOU, including the vapor phase GAC screens, the wearing of well pumps/motors and the failure of well level sensors. While these problems were being analyzed, Lockheed Martin invoked a "*force majeure*" provision of the Second Consent Decree in October 2001. EPA has ruled against the *force majeure* claim. The results of the Well Field Performance Attainment Study will guide the next step in optimizing the BOU well field to reliably produce 9,000 gpm. Replacement of distribution headers and underdrains in the liquid phase carbon contactors was completed in December of 2003.

On February 23, 2008 fire erupted in the dehumidifier housing of “A” Train at the BOU. EPA directed that “B” Train be shut down until the cause of the fire could be determined. Safety enhancements were made to “B” Train and “B” Train was returned to service on April 11, 2008. Repairs to the fire-damaged “A” Train were completed in June 2008.

Design of modifications to the vapor phase carbon contactors was completed in November 2007 and a notice to proceed with construction was issued in December 2007. Construction was completed on “A” Train in June 2008 and on “B” Train in September 2008. Operation has been highly reliable since then.

The City of Burbank has had responsibility for full operation of the BOU since March 12, 2001. United Water Services was the contract operator of the BOU from March 12, 2001 through November 30, 2005. SWWC Services (formerly Eco Resources) became the contract operator on December 1, 2005.

GAC Treatment Plant: The plant will remain on an active status, but will not be operated except for emergencies.

TABLE 2.1
ACTUAL AND PROJECTED WATER DEMAND

Water Year	Acre-Feet
99-00	26,313
00-01	25,619
01-02	24,937
02-03	23,129
03-04	24,357
04-05	21,790
05-06	24,110
06-07	25,745
07-08	24,653
08-09	22,532
09-10*	21,724
10-11*	22,458
11-12*	22,505
12-13*	22,884
13-14*	22,883

* Projected

NOTES:

(1) Water demand equals the total of MWD, extractions (GAC, Valley/BOU, Valhalla, and cleanup pumpers), and recycled.

(2) The last five year average water demand was 23,766 acre-feet.

TABLE 3.1
ACTUAL AND PROJECTED MWD TREATED WATER DELIVERIES

Water Year	Acre-Feet
99-00	10,471
00-01	12,447
01-02	12,086
02-03	13,158
03-04	13,751
04-05	14,415
05-06	11,879
06-07	13,444
07-08	15,299
08-09	10,202
09-10*	9,345
10-11*	8,843
11-12*	8,794
12-13*	8,744
13-14*	8,695

*Projected

NOTES:

(1) All values shown above are for treated water.

TABLE 3.2
ACTUAL AND PROJECTED LAKE STREET GAC TREATMENT PLANT PRODUCTION

Water Year	Acre-Feet
99-00	1,086
00-01	987
01-02	0
02-03	0
03-04	0
04-05	0
05-06	0
06-07	0
07-08	0
08-09	148
09-10*	0
10-11*	0
11-12*	0
12-13*	0
13-14*	0

*Projected

NOTES:

(1) The Lake Street GAC Treatment Plant has a treatment capacity of 2,000 gpm.

(2) Wells No. 7 and No. 15 supply water for the GAC Treatment Plant. Proposed production rates (if the plant is used) are as follows:

Well No. 7	1,050 gpm
Well No. 15	850 gpm

(3) The GAC Treatment Plant has been shut down since March 2001 because of chromium 6 concerns.

(4) The GAC Plant produced 148 AF of non-potable industrial water sent to the power plant during WY 2008-09.

TABLE 3.3
ACTUAL AND PROJECTED VALLEY/ BOU TREATED GROUNDWATER PRODUCTION

Water Year	Acre-Feet
99-00	11,345
00-01	9,046
01-02	10,402
02-03	9,100
03-04	9,660
04-05	6,399
05-06	10,108
06-07	9,780
07-08	6,817
08-09	9,818
09-10*	9,955
10-11*	11,026
11-12*	11,026
12-13*	11,026
13-14*	11,026

*Projected

NOTES:

(1) Burbank includes BOU extractions in its pumping rights.
(2) Lockheed Martin has a physical solution right of 25 AF/year.
(3) Table 3.3 shows extractions charged to Burbank. Production for municipal use began in January 1996. GAC flushing and treatment bypass were accounted for separately and charged to a 'basin account' (following table), but beginning June 2003, most such losses are charged to Burbank as "non-municipal use" and included above. Non-municipal use is not included in deliveries used to calculate the 20% return water credit.

Water Year	AF	Water Year	AF	Water Year	AF	Water Year	AF
1997-98	478	2000-01	88	2003-04	0	2006-07	0
1998-99	142	2001-02	138	2004-05	0	2007-08	0
1999-2000	107	2002-03	70	2005-06	0	2008-09	0

(4) The City of Burbank is currently using water from the BOU under an Operation Permit, issued in October 2000, from the California Department of Public Health.

TABLE 3.4
ACTUAL AND PROJECTED RECYCLED WATER DELIVERIES

Water Year	Acre-Feet
99-00	2,979
00-01	2,732
01-02	2,087
02-03	488
03-04	549
04-05	681
05-06	1,692
06-07	2,082
07-08	2,192
08-09	2,011
09-10*	2,116
10-11*	2,281
11-12*	2,677
12-13*	3,106
13-14*	3,154

*Projected

NOTES:

1) The source of recycled water is the Burbank Water Reclamation Plant.
2) The Magnolia Power Project began using recycled water in September 2005.
3) MPP downtime and temporary substitution of groundwater for recycled water for operational reasons lowered the amount of recycled water use in 2008-09.

TABLE 4.1
ACTUAL AND PROJECTED EXTRACTIONS OF GROUNDWATER BY VALHALLA

Water Year	Acre- Feet
99-00	432
00-01	407
01-02	362
02-03	383
03-04	397
04-05	295
05-06	431
06-07	431
07-08	337
08-09	346
09-10*	300
10-11*	300
11-12*	0
12-13*	0
13-14*	0

*Projected

NOTES:

(1) Burbank includes extractions by Valhalla in its pumping rights.

(2) Valhalla has physical solution right of 300 AF/year.

(3) Valhalla is expected to be using recycled water instead of groundwater by Water Year 2011-12.

TABLE 4.2
ACTUAL AND PROJECTED BURBANK SPREADING OPERATIONS

WATER YEAR	ACRE-FEET
99-00	0
00-01	0
01-02	0
02-03	0
03-04	0
04-05	0
05-06	0
06-07	0
07-08	0
08-09	0
09-10*	44
10-11*	300
11-12*	300
12-13*	300
13-14*	300

*Projected

NOTES:

1) A new connection to MWD was recently completed that allows spreading at the Pacoima Spreading Grounds (Figure 4.1).
2) If MWD replenishment service is not available, some of the spreading will be replaced by Physical Solution purchases or other transfers of groundwater credits.
3) As long as allocation of the MWD supply is in place, Burbank will not be able to purchase spreading water without incurring penalty rates, which would be the option of last resort.
4) 300 AF per year is by agreement with MWD to turn over water in tunnel. Any more is not guaranteed.

TABLE 4.3
BURBANK PHYSICAL SOLUTION PURCHASES AND OTHER CREDITS

WATER YEAR	ACRE-FEET
99-00	0
00-01	0
01-02	0
02-03	300 (1)
03-04	44 (2)
04-05	0
05-06	0
06-07	8,200 (1) (3)
07-08	4,200
08-09	6,200 (3)
09-10*	6,200 (4)
10-11*	5,900 (4)
11-12*	6,400 (4)
12-13*	6,900 (4)
12-13*	6,400 (4)

*Projected

NOTES:

1) Burbank exercised its physical solution right in water years 2002-03, 2006-07 (4,200 AF), 2007-08, and 2008-09.
2) In WY 2003-04, 44 AF of stored water credit was transferred from Glendale to Burbank to compensate for April 2004 water transfer via system interconnection.
3) A 4,000 AF exchange of untreated MWD water for groundwater credits was arranged with LADWP for WY 2006-07. Another exchange of 2,000 AF took place in WY 2008-09. If MWD replenishment service for spreading water is unavailable in future years, Physical Solution purchases or other such transfers will be used if they are less expensive than purchasing spreading water at the full MWD untreated volumetric rate.
4) As long as MWD allocation is in place, Burbank expects to purchase the maximum physical solution amount. Allocation is in place for FY 2009-10. Future allocation will be decided on a year-to-year basis.
5) Projected amounts have been reduced by 300 AFY minimal spreading deliveries (Table 4.2).

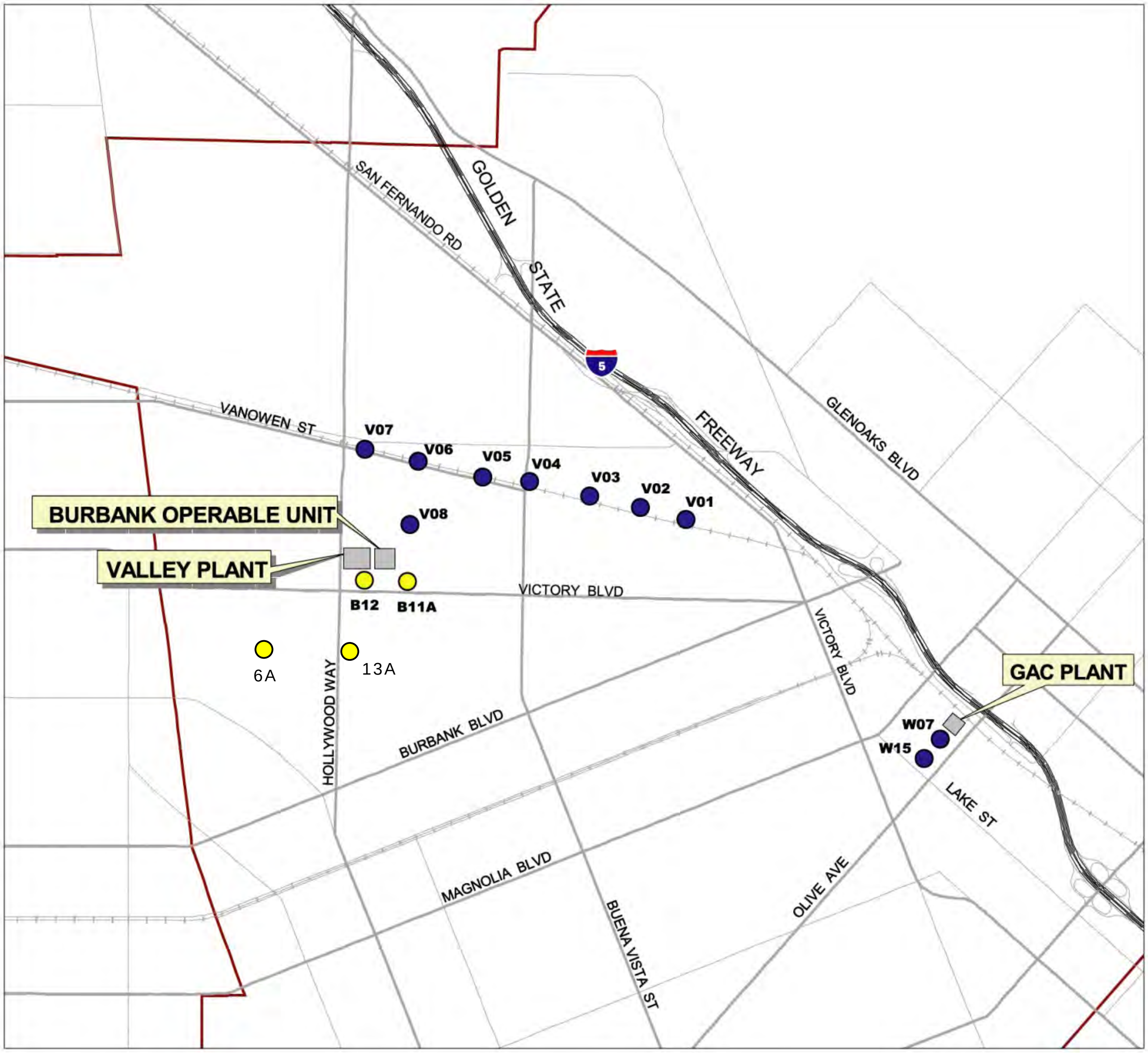


FIGURE 3.1
WELLS AND GROUNDWATER TREATMENT PLANTS

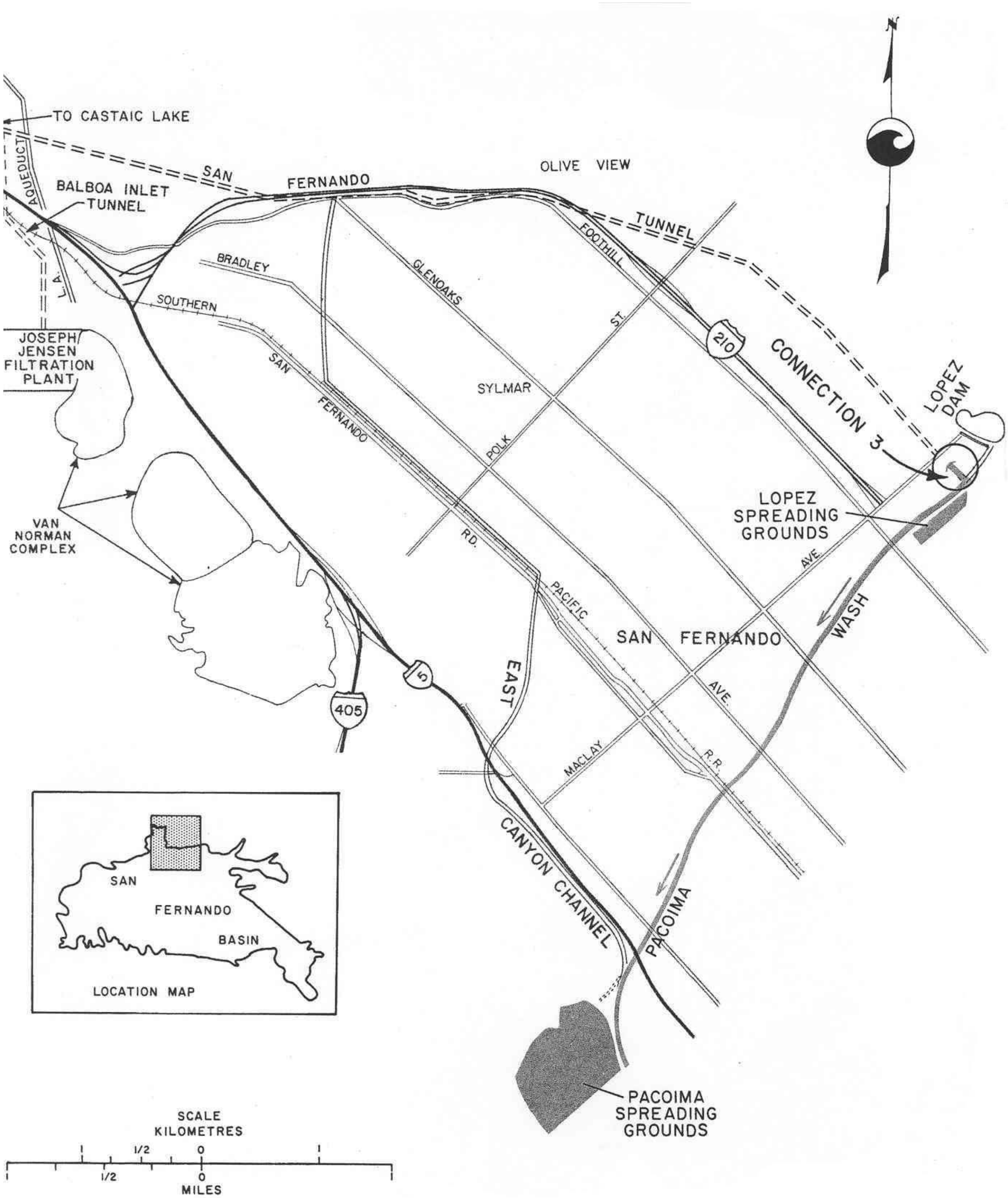


FIGURE 4.1
LOCATION OF PROPOSED MWD UNTREATED WATER CONNECTION

APPENDIX A

WATER QUALITY DATA

The 2009 Annual Water Quality Report is not yet available. Water Quality monitoring and testing of supply sources is not included with this report.

APPENDIX B

WATER TREATMENT FACILITIES

LAKE STREET GAC TREATMENT PLANT

320 North Lake Street
Burbank CA   91502

OPERATOR:

City of Burbank
Burbank Water and Power, Water Division

Albert Lopez, Water Production/ Operations Superintendent

QUANTITY TREATED (10/1/08 through 9/30/09):

148 acre-feet for non-potable power plant use

WATER QUALITY:

Contaminant VOC'S: TCE, PCE, 1,2-DCE, 1,2-DCA

DISPOSITION:

Burbank Water System
Potable Water

EPA CONSENT DECREE PROJECT – BURBANK OPERABLE UNIT

2030 North Hollywood Way
Burbank CA 91505

OPERATOR:

City of Burbank
Burbank Water and Power, Water Division

Albert Lopez, Water Production/ Operations Superintendent

QUANTITY TREATED (10/1/08 through 9/30/09):

9,818 acre-feet

WATER QUALITY:

Contaminants: VOCs, Nitrate, Chromium, 1,2,3-TCP

DISPOSITION:

(1) Test Water- Waste

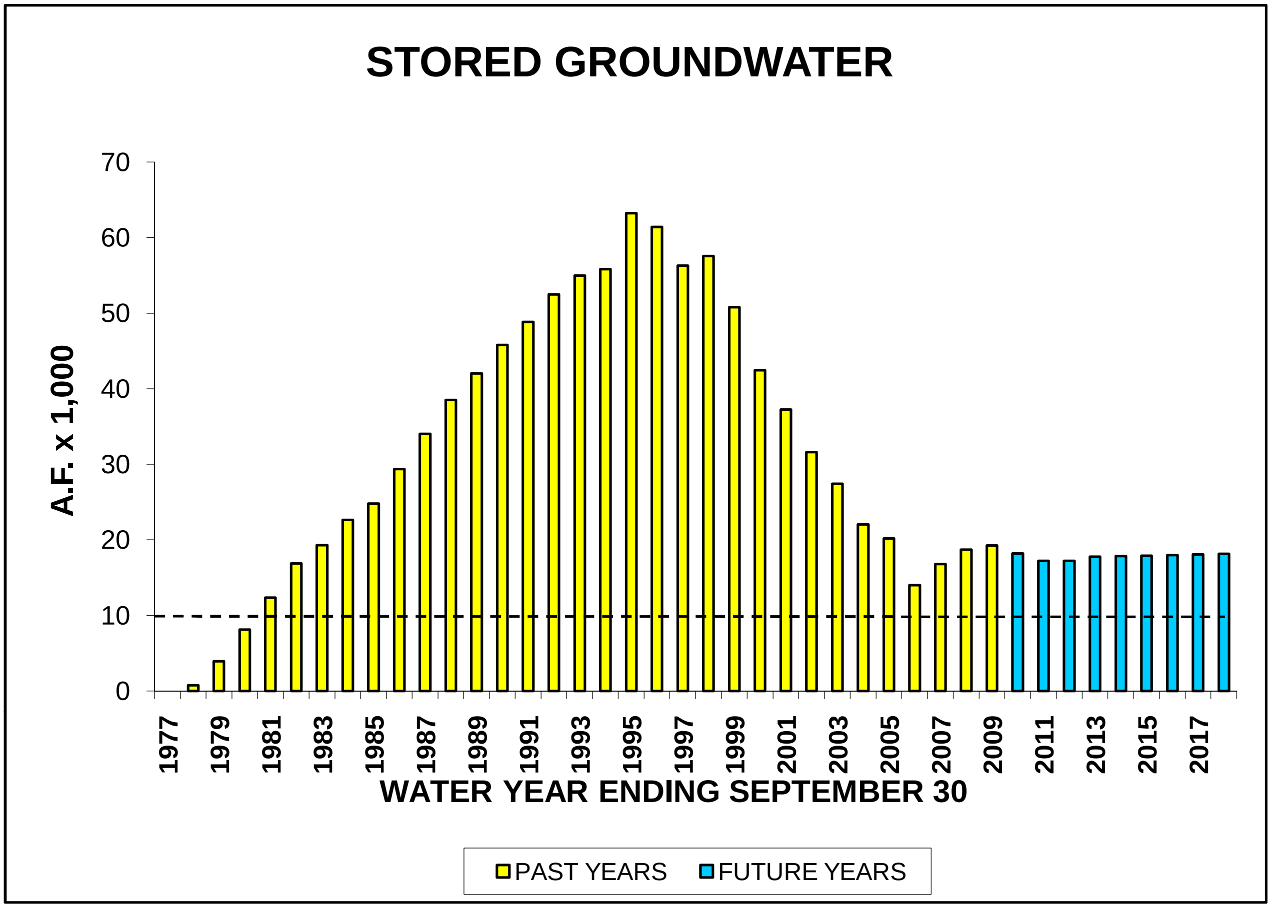
(2) Operation Water (backwash, etc.) - Waste

(3) Burbank Water System-
Potable water after blending

APPENDIX C

STORED GROUNDWATER

BURBANK WATER AND POWER
WATER DIVISION
WY 2008/09



NOTES:

- 10,000 AF RECOMMENDED AS BASIN BALANCE. THIS EQUATES TO ABOUT ONE YEAR OF DOMESTIC SYSTEM PRODUCTION IF REPLENISHMENT NOT AVAILABLE FROM MWD.
- DRAW DOWN STORED WATER BY PRODUCTION EXCEEDING THE RETURN FLOW CREDIT (~4,600 AF) PLUS SPREAD WATER OR PHYSICAL SOLUTION CREDITS.
- GROUNDWATER PRODUCTION EQUALS EPA (10,700 AF) AND VALHALLA (300 AF).
- WY 2006/07 CREDITS ARE 4000 AF PURCHASED FROM LA IN EXCHANGE FOR MWD WATER AND 4200 AF PURCHASED UNDER PHYSICAL SOLUTION
- WY 2007/08 CREDITS ARE 4200 AF PURCHASED UNDER PHYSICAL SOLUTION
- WY 2008/09 HAS 4200 AF PHYSICAL SOLUTION AND 2000 AF LA EXCHANGE
- WY 2009/10 ASSUMES 4200 AF PHYSICAL SOLUTION AND 2000 AF LA EXCHANGE
- SPREADING WATER OR GROUNDWATER CREDIT PURCHASES TO BE CONTINUED TO MAINTAIN BASIN BALANCE.

CITY OF BURBANK WATER AND POWER
WATER DIVISION

BURBANK'S STORED GROUNDWATER

WATER YEAR	DELIVERED WATER AF	RETURN FLOW CREDIT AF	SPREAD WATER AF	OTHER CREDITS AF	PUMPED GROUNDWATER AF	STORED WATER CREDIT AF
1976-77	22,743	4,549				
1977-78	22,513	4,503			3,767	(1) 782
1978-79	24,234	4,847			1,358	(2) 3,947
1979-80	24,184	4,837			677	8,117
1980-81	25,202	5,040			595	12,359
1981-82	22,120	4,424			523	16,876
1982-83	22,118	4,424			2,002	19,298
1983-84	24,927	4,985			1,063	22,659
1984-85	23,641	4,728			2,863	24,781
1985-86	23,180	4,636			123	29,386
1986-87	23,649	4,730			0	34,022
1987-88	23,712	4,742			253	38,498
1988-89	23,863	4,773			1,213	42,027
1989-90	23,053	4,611	378		1,401	45,777
1990-91	20,270	4,054	504		2,032	48,860
1991-92	20,930	4,186	503		938	52,479
1992-93	21,839	4,368	500		(3) 2,184	54,981
1993-94	24,566	4,913	0		(3) 3,539	55,810
1994-95	22,541	4,508	0	5,380	2,888	63,215
1995-96	23,124	4,625	0	2,000	8,308	61,415
1996-97	24,888	4,977	0	1,500	11,243	56,297
1997-98	22,447	4,489	0	0	3,731	57,543
1998-99	22,671	4,534	0	2,000	13,262	50,770
1999-2000	26,312	5,262	0	0	12,862	42,442
2000-01	25,619	5,124	0	0	10,440	37,264
2001-02	24,937	4,987	0	0	10,764	31,624
2002-03	23,108	4,622	0	300	9,483	27,428
2003-04	24,235	4,847	0	44	10,057	22,037
2004-05	21,749	4,350	0	0	6,694	20,190
2005-06	24,084	4,817	0	0	10,543	13,999
2006-07	25,288	5,058	0	8,200	10,220	16,796
2007-08	24,277	4,855	0	4,200	7,161	18,704
2008-09	22,160	4,432	0	6,200	10,319	19,246
2009-10	21,754	4,351	44	6,200	11,553	18,185
2010-11	22,598	4,520	300	5,900	11,334	17,228
2011-12	22,835	4,567	300	6,400	11,034	17,240
2012-13	22,860	4,572	300	6,900	11,034	17,793
2013-14	22,859	4,572	300	6,400	11,034	17,851
2014-15	22,912	4,582	300	6,400	11,034	17,907
2015-16	22,967	4,593	300	6,400	11,034	17,974
2016-17	23,070	4,614	300	6,400	11,034	18,051
2017-18	23,253	4,651	300	6,400	11,034	18,148

NOTES:
(1) STORED WATER AS OF OCTOBER 1, 1978
(2) STORED WATER AS OF OCTOBER 1, 1979
(3) EXCLUDES 150 A.F. OF PUMPING FOR TESTING.
OTHER CREDITS INCLUDE PHYSICAL SOLUTION PURCHASES, IN-LIEU STORAGE,
AND OTHER TRANSFERS OF GROUNDWATER CREDITS
COLUMNS (1) THROUGH (6) - FROM ULARA WATERMASTER REPORTS
COLUMN (2) = 20% OF COL. (1)
PUMPED GROUNDWATER INCLUDES CITY, VALHALLA, LOCKHEED, DISNEY, MENASCO, HOME DEPOT
BEGINNING 2007-08, 1% IS DEDUCTED FROM THE STORED WATER AT THE END OF EACH YEAR.
SHADED AREAS OF TABLE ARE PROJECTED VALUES .

APPENDIX C

CITY OF GLENDALE

PUMPING AND SPREADING PLAN

2009-2014 Water Years

City of
Glendale
Water & Power
Your Trusted Community Utility

ENGINEERING

April 29, 2010

Mr. Richard C. Slade
ULARA Watermaster
Upper Los Angeles River Area
P.O. Box 111, Room 1450
Los Angeles, CA 90051-0100

Subject: **Annual Pumping & Spreading Plan for City of Glendale**

Dear Mr. Slade,

Enclosed please find the annual Pumping and Spreading Plan for the City of Glendale for the Water Years 2009-2014. Glendale, as you know, does not have any spreading facilities. If you have any questions, please contact Mr. Leo Chan of my staff at (818) 548-3905.

Very truly yours,

Pat Hayes, P.E.
Principal Civil Engineer

PAH:lc
Enclosures

cc: Gregory R. Reed (LADWP)
Peter Kavounas (GWP)
Raja Takidin (GWP)
Leo Chan (GWP)

CITY OF GLENDALE *WATER & POWER*
141 North Glendale Ave., Level 4 • Glendale, CA 91206-4496
Tel: 818•548•4876 Fax: 818•240•4754

CITY OF GLENDALE

GROUNDWATER PUMPING AND SPREADING PLAN

WATER YEARS 2009-2014

Prepared By

GLENDALE *WATER & POWER*

APRIL 2010

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Introduction

This report discusses current water supplies to Glendale, future water demands, and projections in local water resource available to meet demands and to reduce Glendale dependency on imported water. This information is needed by a wide group of individuals and organizations including Glendale's City Manager and Council Members, regulatory agencies and others interested in Glendale's water resource future.

Executive Summary

Glendale receives its groundwater supply from San Fernando Basin and Verdugo Basin. Table 1 illustrates the actual and projected pumping activities in the two basins between 2009 and 2014. Glendale currently does not have any spreading facility.

TABLE 1
ACTUAL & PROJECTED PUMPING ACTIVITIES IN WATER YEAR 2009 – 2014
(Acre Feet per Year)

Source	2009	2010	2011	2012	2013	2014
San Fernando Basin						
Glendale OU	*7,300*	*7,300*	*7,300*	*7,300*	*7,300*	*7,300*
Forest Lawn Memorial Park	*400*	*400*	*400*	*400*	*400*	*400*
Grayson Power Plant	*5*	*20*	*20*	*20*	*20*	*20*
SF BASIN TOTAL	7,705	7,720	7,720	7,720	7,720	7,720
Verdugo Basin	2,600	2,941	3,807	3,856	3,856	3,856

Existing Water Sources and Supplies

The City of Glendale ("City") currently has four sources of water available to meet demands: groundwater from the San Fernando Basin and Verdugo Basin, imported water from the Metropolitan Water District ("Metropolitan") and recycled water from the Los Angeles/Glendale Water Reclamation Plant ("LAGWRP"). Each of these sources is described below. The entry points into the City water system for the various supplies are shown in Figure 1. Over the past forty (40) years, there have been changes in the mix of supplies used to meet water demands in the City. In the future, minor changes are projected in water supplies. These changes and sources are discussed below.

1. San Fernando Basin

The City's water right to San Fernando Basin supplies is defined by the judgment entitled "The City of Los Angeles vs. the City of San Fernando, et al." (1979) hereinafter referred to as the "Judgment"). The Judgment consists of a return flow credit, which is a type of water right based on the assumption that a percentage of water used in the City is returned to the groundwater basin. The City has a right to accumulate its return flow credits annually if its water rights are not used. In the water year of 2009-10, the City has a storage credit of 54,496 acre feet ("AF") within the basin. In addition, the Judgment contains rights for physical solution water. This is a right to produce water in excess of return flow credit and the accumulated credits, subject to a payment obligation to the City of Los Angeles based primarily on the cost of Metropolitan alternative supplies. This option to produce physical solution water in excess of the return flow credit and the accumulated credits is a significant factor in relation to the water production at the Glendale Water Treatment Plant ("GWTP"). The GWTP is part of a U.S. Environmental Protection Agency (EPA) Superfund clean-up project in Glendale. The project consists of a 5,000 gallon per minute (gpm) facility and eight wells that supply the plant. Further discussion regarding the GWTP can be found in the Section: *Past Water Use and Trend* on page 10 in this report. The various San Fernando Basin supplies are:

Return Flow Credit – Glendale is entitled to a return flow credit of twenty (20.0) percent of all City-delivered water, including recycled water, in the San Fernando Basin and its tributary hill and mountain area. A location map is shown in Figure 2 *(Source: 2007-08 Water Year ULARA Watermaster Report)*. This credit ranges from about 5,000 acre feet per year (AFY) to 5,400 AFY depending on actual water use. This is the City's primary water right in the San Fernando Basin.

Physical Solution Water – The City has an agreement to extract water over and above the return flow credit and accumulated credits, and it is chargeable against the rights of the City of Los Angeles upon payment of specified charges generally tied to Metropolitan's water rates. The City's physical solution right is 5,500 AFY.

Pumping for Groundwater Cleanup – Section 2.5 of the Upper Los Angeles River Area's ("ULARA") Policies and Procedures, dated July, 1993, provides for the extraction of basin water for SUPERFUND activities, subject to payment of specified charges similar to physical solution water. This right became a significant factor with the completion of the GWTP in 2000.

Carry-over extractions – In addition to current extractions of return flow water and stored water, Glendale may, in any one year, extract from the San Fernando Basin an amount not to exceed 10 percent of its last annual credit for import return water, subject to an obligation to replace such over-extraction by reduced extraction during the next water year. This provides important year-to-year flexibility in meeting water demands.

San Fernando Basin production has been limited in the past and was eventually eliminated for a time because of volatile organic compounds ("VOC") contamination of the groundwater. The entire San Fernando Valley is part of a U. S. Environmental Protection Agency ("EPA") Superfund cleanup program. Over the past ten years, many water treatment plants had been constructed in the San Fernando Valley to remove VOC from the groundwater. EPA had focused on the construction of cleanup facilities in the City. The GWTP and eight extraction wells have been constructed to pump, treat and deliver water to the City via its Grandview Pumping Station. Significant production from the basin and delivery to the City started in January 2002.

The cleanup facilities consist of seven shallow extraction wells and one deep well; the 5,000 gpm Glendale Water Treatment Plant to remove the VOC; piping to convey the untreated water from the wells to the water treatment plant; a system to convey water from the treatment plant to the City's potable distribution system; a facility to blend the treated groundwater with water from Metropolitan, and a disinfection facility. A general layout of these facilities is shown in Figure 3.

In 2000, major agreements were signed between City of Glendale and Glendale Respondents Group (GRG), which represents forty-plus industries identified by the EPA as potentially responsible for the groundwater contamination, and the EPA. GRG retained CDM Consulting Engineers, Inc. to design, construct and operate the water treatment facilities required by the agreements. The State Department of Public Health ("DPH") issued a permit for the City to operate the facilities in July 2000. The City started taking small quantities of water from this facility on July 23, 2001. The delivery of the water was initially limited because of the City's concern with taking water with higher chromium 6 levels than in the current water supply, even though such water met all water quality standards. In January 2002, the Glendale City Council authorized the City to start delivering 5,000 gpm from the treatment facility into the City's potable water system with a target to minimize the concentration of chromium 6 in the water. This source is expected to provide about 7,300 AFY to the City, which will meet about twenty-two percent (22%) of projected near-term water demands. There is additional groundwater production of 400 AFY by Forest Lawn Memorial Park for irrigation purposes, and about 20 AFY for use on the cooling tower and jet engine at the Glendale Grayson Power Plant, for a total of approximately 7,720 AFY.

As noted above, the City can pump and treat more groundwater in times of imported water shortages based on accumulated pumping credits. The City, as of October 1, 2009, has 54,496 AF in accumulated pumping credits in the San Fernando Basin. In order to achieve 7,720 AF of San Fernando Basin production per year, Glendale must utilize its return flow credit of 5,500 AF per year and 2,220 AF per year of its accumulated pumping credits. Additional usage of accumulated groundwater credits could be used to meet unexpected demands or in cases of emergency. The usage of additional amounts of accumulated groundwater pumping credits was not considered in the supply-demand analysis of this Water Supply Evaluation, but rather would be in addition to the amounts of available water supplies detailed in that analysis. That these additional amounts of groundwater were not included in the supply-demand analysis further ensures that there are sufficient supplies to meet Plan demands.

2. Verdugo Basin

Historically, groundwater supplies from the Verdugo Basin contributed a small portion to the City's water supplies via five wells and an underground water infiltration system. The Judgment gave Glendale the right to extract 3,856 AFY from the Verdugo Basin. Crescenta Valley Water District also has water rights and is the only other entity allowed to extract water from the Verdugo Basin.

Use of these supplies has been limited in the past due to water quality problems, groundwater levels, and limited extraction capacity. In order to increase the use of these supplies, the City completed construction of the Verdugo Park Water Treatment Plant ("VPWTP") in 1996. This facility has a capacity of 1,150 gpm and treats water from the two low capacity wells, referred to as Verdugo Wells A & B, and from the water supplies in the Verdugo Pickup System, a subsurface horizontal infiltration system. Actual flows from these sources range between 300-400 gpm. The three existing wells referred to as Glorietta Wells 3, 4 and 6 and VPWTP produce about 2,600 AFY and account for about eight percent (8%) of Glendale's total water supply. This alone will not fully utilize the City's entire water rights to the Verdugo Basin supplies. The City is currently rehabilitating an existing well site and drilling a new production well in the Montrose area of the Basin to increase its extraction capacity so that it can utilize its full adjudicated water right from the Verdugo Basin, to the extent possible given the basin's hydrology. This is further discussed in detail later in this report. The location of the VPWTP and existing wells are shown on Figure 1.

3. Metropolitan Water District of Southern California

The City relies on Metropolitan water supply to meet a majority of its current water supply requirements. For the five fiscal years ended June 30, 2007, water deliveries from Metropolitan averaged 7,534 million gallons per day (approximately 23,643 acre feet per year), which constituted between sixty to seventy percent (60%-70%) of the City's total water supply. The City expects to continue reliance on Metropolitan sales of water to meet most of its future water supply requirements.

The following information regarding Metropolitan has been obtained from Metropolitan and sources that the City believes to be reliable, but the City takes no responsibility for the accuracy or completeness hereof. Additional information about Metropolitan may be obtained on Metropolitan's website at *www.mwdh2o.com*. No information contained on such website is incorporated herein by reference.

3.1. History and Background

The Metropolitan Water District of Southern California is a public agency organized in 1928 by a vote of the electorates of thirteen (13) southern California cities which included the City of Glendale, under authority of the Metropolitan Water District Act (California Statutes 1927, Chapter 429, as reenacted in 1969 as Chapter 209, as amended, herein referred to as the "Metropolitan Act"). The Metropolitan Act authorizes Metropolitan to levy property taxes within its service area; establish water rates; impose charges for water standby and service availability; incur general obligation bonded indebtedness and issue revenue bonds, notes and short-term revenue certificates; execute contracts; and exercise the power of eminent domain for the purpose of acquiring property. In addition, Metropolitan's Board of Directors ("Metropolitan's Board") is authorized to establish terms and conditions under which additional areas may be annexed to Metropolitan's service area.

Metropolitan's primary purpose is to provide a supplemental supply of water for domestic and municipal uses at wholesale rates to its member public agencies. The City is one of the 26 Metropolitan member public agencies. If additional water is available, such water may be sold for other beneficial uses. Metropolitan serves its member agencies as a water wholesaler and has no retail customers.

Metropolitan's charges for water sales and availability are fixed by Metropolitan's Board and are not subject to regulation by the California Public Utilities Commission or any other state or federal agency. Metropolitan imports water from two principal sources: northern California via the Edmund G. Brown California Aqueduct (the "California Aqueduct") of the State Water Project owned by the State of California and the Colorado River via the Colorado River Aqueduct owned by Metropolitan. Water deliveries through the Colorado River Aqueduct began in the early 1940's. This imported water supplemented the local water supplies of the original 13 southern California member cities. In 1972, to meet growing water demands in its service area, Metropolitan started receiving additional water supplies from the California

Aqueduct. Metropolitan owns and operates the Colorado River Aqueduct and has a long-term contract for water from the State Water Project.

The locations of the California Aqueduct and Colorado River Aqueduct are shown in Figure 4. Metropolitan's service area also includes the southern California coastal plain. It extends about 200 miles along the Pacific Ocean from the City of Oxnard on the north to the international boundary with Mexico border on the south, and it reaches seventy (70) miles inland from the coast. Metropolitan is currently composed of twenty-six (26) member agencies, including fourteen (14) cities, eleven (11) municipal water districts, and one (1) county water authority. Glendale is one of the eleven municipal water districts served by Metropolitan.

3.2. State Water Project

One of Metropolitan's two major sources of water is the State Water Project, which is owned by the State and operated by the State Department of Water Resources ("DWR"). The State Water Project transports water from San Francisco Bay/Sacramento-San Joaquin River Delta ("Bay-Delta") south via the California Aqueduct to Metropolitan. The total length of the California Aqueduct is approximately 444 miles. Metropolitan has a long-term contract (the "State Water Contract") with the DWR. Water received from the State Water Project by Metropolitan from 2001 through 2006 varied from a low of 1,126,981 acre feet in calendar year 2001 to a high of 1,801,000 acre feet in 2004. Recent court decisions restrict deliveries from the State Water Project beginning in 2008, as described below. Record dry conditions in Metropolitan's service area in 2006-2007, below average rainfall in the northern Sierra watershed for the State Water Project and a multi-year drought in the Colorado River Basin have further affected water deliveries by Metropolitan. Metropolitan participates in groundwater banking programs, including the Arvin-Edison Water Storage Program and the Semitropic Water Storage Program.

3.3. Colorado River Aqueduct

Metropolitan has a legal entitlement to receive water from the Colorado River under a permanent service contract with the Secretary of the Interior. Water from the Colorado River or its tributaries is also available to other users in California, as well as users in the states of Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming, resulting in both competition and the need for cooperation among these holders of Colorado River entitlements. The Colorado River Aqueduct, which is owned and operated by Metropolitan, transports water from the Colorado River approximately 242 miles to its terminus at Lake Mathews in Riverside County.

Historically, Metropolitan had been able to take full advantage of the availability of surplus water and apportioned but unused water. However, other users increased their use of water from the Colorado River beginning in 1998. Although use of water is expected to fluctuate annually, this trend is projected to continue in the future. In addition, a severe drought in the Colorado River Basin has reduced water supplies.

Metropolitan has taken steps to augment its share of Colorado River water through agreements with other agencies that have rights to use such water. Under a 1988 water conservation agreement between Metropolitan and the Imperial Irrigation District ("IID"), IID has constructed and is operating a number of conservation projects that are currently conserving approximately 100,000 AFY. In 2007, the conserved water increased the amount of water available to Metropolitan by 85,000 acre feet.

With Arizona's and Nevada's increasing use of their respective apportionments and the uncertainty of continued surpluses on the Colorado River, in 1997 the Colorado River Board of California, in consultation with Metropolitan, IID, Palo Verde Irrigation District, the Coachella Valley Water District, DWR and the San Diego County Water Authority, embarked on the development of a plan for reducing California's use of Colorado River water to its basic apportionment of 4.4 million acre feet when use of that basic apportionment is necessary.

3.4. Future Water Supply Reliability

Metropolitan faces a number of challenges in providing a reliable and high quality water supply for southern California. These include, among others: (1) the growing population within the service area; (2) the increased competition for low-cost water supplies; (3) variable weather conditions; and (4) increased environmental regulations for clean and safe drinking water. These challenges increased in 2007, with court decisions that restrict deliveries from the State Water Project beginning in 2008, as described above. In response to these challenges, Metropolitan and its member agencies have implemented the following actions:

- The 1994 Bay-Delta Accord, signed by federal and State agencies as well as urban agricultural and environmental water interests, improves near-term State Water Project reliability and lays the foundation for the process to develop comprehensive long-term solutions to the problems in the Bay-Delta system.
- An agreement known as the "Monterey Agreement," which restructured the State Water Contract, providing Metropolitan with significant water management and financial benefits, including up to 220,000 acre feet of additional storage.
- Groundwater Storage Programs within Metropolitan's service area, which provide additional storage of imported water in the southern California groundwater basins for regional benefit. These programs allow Metropolitan to store imported water during wet years to provide dry year supplies. Programs approved to date provide nearly 422,000 acre feet of groundwater storage that is expected to yield a dry-year supply of approximately 115,263 acre feet for each of three consecutive years.
- Water Transfer and Storage Agreements, executed for the Central Valley provide additional storage of imported water in groundwater basins and the transfer of available water for delivery through the California Aqueduct. These programs provide Metropolitan with a total storage capacity of over 900,000 acre feet and dry-year supply yield of over 300,000 acre feet per year.
- Financial Incentive Programs, which result in increased local investments in conservation, reclamation, and groundwater projects throughout the service area for increased drought protection and reduced costs for Metropolitan's treatment and conveyance facilities. From the programs' inception through June 2007, over $450 million in incentives have been provided for the production and conservation of 2.3 million acre feet of water. To increase conservation efforts locally, Metropolitan increased its conservation subsidy from $154 to $195 per acre-foot for certain programs.
- Diamond Valley Lake, an 810,000 acre-foot surface reservoir completed in March 2000, provides the region with at least 400,000 acre feet of drought storage, with the remaining storage held for emergency protection.
- An IRP, which was initially developed in 1996 by Metropolitan, its member agencies, subagencies, and groundwater basin managers to (1) ensure a reliable and high quality

water supply over the next twenty-five (25) years; (2) coordinate the planning activities among southern California's water providers; (3) avoid redundant investments; and (4) provide a flexible and balanced planning framework.

Metropolitan reports that it will make additional resource and infrastructure improvements similar to those identified in its IRP in order to maintain reliability and high water quality as demands grow. Metropolitan's current practices of diversifying water supplies and securing supply reserves allow Metropolitan and its member agencies to adjust to changes in demands and supplies and maintain a high degree of reliability. Metropolitan's diversified storage capacity, divided among reservoirs, conjunctive use and other groundwater storage programs within Metropolitan's service area and by delivery through the State Water Project or Colorado River Aqueduct, has increased to 3.6 million acre feet of storage capacity.

Approximately 674,000 acre feet of stored water is emergency storage that is reserved for use in the event of supply interruptions from earthquakes or similar emergencies, as well as extended drought. Stored water is drawn down when needed to meet demands for water and refilled when supplies of imported water in excess of demands are available. Historically excess supplies to replenish storage have been available in about seven of every ten years. However, Metropolitan's ability to replenish water storage is likely to be limited by Bay-Delta pumping restrictions under the ruling in *NRDC v. Kempthorne*. As of July 30, 2007, Metropolitan had 2.59 million acre feet of water in storage.

3.5. Drought and Resources Management Plans

Possible causes of water supply deficits are droughts, failures of major water transmission facilities and other adverse events. Metropolitan's current approach to managing water shortages has evolved from its experiences during the droughts of 1976-77 and 1987-92 into the Water Surplus and Drought Management Plan ("WSDM Plan").

The WSDM Plan, which was adopted by Metropolitan's Board in April 1999, establishes broad resource management strategies to meet full service demands over the ten years from 1999-2008 and provides principles for imported supply allocation if the need should arise. The WSDM Plan splits resource actions into two major categories: surplus actions and shortage actions. The WSDM Plan considers the region to be in surplus only after Metropolitan has met all demands for water, including replenishment deliveries. The surplus actions store surplus water, first inside then outside the region. The shortage actions of the WSDM Plan are split into three subcategories: shortage, severe shortage and extreme shortage. The WSDM Plan provides that under shortage conditions, Metropolitan will make withdrawals from storage based on location and ability to access, interrupt groundwater replenishment deliveries and cut agricultural water deliveries. Under severe shortage conditions, Metropolitan will call for extraordinary drought conservation, which may include reductions in municipal and industrial water use and mandatory water allocations or rationing.

Metropolitan's current measures to address potential water supply shortages and interruptions include calling for extraordinary conservation, cutting groundwater replenishment and agricultural water deliveries, maximizing groundwater production, acquiring additional supplies and drawing from dry-year storage. In August 2007, Metropolitan launched a significant water conservation outreach and public education effort for voluntary water conservation, promotion of water-saving rebates and incentives and education of the public about the uncertainties of future water supplies. Metropolitan suspended groundwater replenishment deliveries on May 1, 2007, and had notified member agencies that it will cut deliveries under its Interim Agricultural Water Program by thirty percent (30%) on January 1, 2008. In addition, Metropolitan was pursuing water transfers, including negotiations for the purchase of 200,000 acre feet of previously-stored State Water Project supplies in the San Bernardino groundwater basin and negotiations with water agencies in the Sacramento and San Joaquin Valleys for transfers in 2008. Metropolitan called for additional voluntary fallowing in Metropolitan's agricultural land management program within the Palo Verde Irrigation District and is working with the State of Arizona to withdraw water previously stored in its groundwater basin.

Metropolitan staff, working with member agency staff, prepared a water allocation plan based on the principles contained in the WSDM Plan. The allocation plan was to provide a formula for equitable distribution of available supplies in case of extreme water shortages within Metropolitan's service area. Metropolitan's member agencies and retail water suppliers in Metropolitan's service area also may implement water conservation and allocation programs.

3.6. Metropolitan's Services to Glendale

Glendale receives Metropolitan water through three (3) service connections as shown on Figure 1. The service connection number and capacity are summarized in Table 2 below. In total, Metropolitan has a total delivery capacity of seventy-eight (78) cubic feet-per-second (cfs). During hot summer days, it is common for Glendale to utilize the full capacity of the facilities. Any significant increase in demands on Metropolitan could require another service connection.

TABLE 2
METROPOLITAN CONNECTIONS AND CAPACITY

Service Connection Number	Capacity (cfs)
G-1	48
G-2	10
G-3	20

Over the years, Metropolitan has provided high level of reliability in meeting Glendale's supplemental water supply needs. It is believed that the reliability of water supply to the City will continue in the future as a result of the many water resource programs under way and the proposed future programs now being considered based on Metropolitan's WSDM and IRP . This source will always be a major factor in meeting the water needs of the City. The City closely follows the planning activities at Metropolitan to assure that it has adequate supplies to meet the needs of its member agencies.

4. Recycled Water

The City of Glendale has been delivering recycled water from the LAGWRP since the late 1970's. This is a twenty (20) million gallon-per-day (MGD) facility owned by the Cities of Los Angeles and Glendale. Based on a 1970 contract between the Cities of Los Angeles and Glendale, Glendale is entitled to fifty percent (50%) of any effluent produced at the plant, which is more than sufficient to for all recycled water use within City of Glendale. Treated wastewater that is not used in either the Glendale or Los Angeles system is discharged to the Los Angeles River and eventually reaches the ocean.

Currently, Glendale has forty eight (48) recycled water users. These include a landfill, two (2) golf courses, two (2) memorial parks, six schools, ten (10) recreation parks, and other irrigation areas. Also, three (3) high-rise buildings, Glendale Police Headquarter, the Disney Complex on Flower Street, and the new buildings at Glendale Community College are dual-plumbed to use recycled water for sanitary flushing purposes when facilities are in place to provide the water (Figure 6). In 2009, three (3) new users (Monterey Community Garden, Glendale Narrows Riverwalk Project, and railroad irrigation along San Fernando Road) were added to the recycled water system. In the next five years, eleven (11) more new recycled water users are expected to be added for irrigation and/or dual-plumbing, some of which have already been completed. Figure 7 provides a general idea of the scope of the expansion program. The amount of potable water purchased from Metropolitan is expected to have a corresponding reduction.

In the 1990's Glendale Water Department began to require all new high-rise buildings (4-story or higher) to install dual-plumbing system within the Glendale Downtown area. Recycled water customers are solely responsible for funding and installing the connectors from the recycled water pipeline in the public streets to the customer's property, and for all on-site facilities to distribute recycled water to the ultimate use. The main recycled water distribution pipelines and existing recycled water facilities are shown in more detail in Figure 5.

5. Summary of Local Supplies

The current use of local groundwater resources available to the City is substantially less than its rights because of water quality and extraction problems. A general summary of the City's rights to local water resources compared to the amount currently being used is shown on Table 3.

TABLE 3
LOCAL WATER PROJECTS AND USE (AFY)

Potential Source	Right	Current Use	Future Use
San Fernando Basin	5,000 - 5,400	7,100 AFY	7,300
Verdugo Basin	3,856	2,600 AFY	3,856
Recycled Water	10,000	1,800 AFY	2,740

Note : Glendale Physical Solution Water Right and Use is not included

Past Water Use and Trends

In the past, the water quality problems in the San Fernando Basin and groundwater levels in the Verdugo Basin have impacted the ability of Glendale to produce water from these Basins. Glendale has only recently been able to better utilize its rights to the San Fernando Basin water supplies accumulated for many years. The EPA has designated several locations in the San Fernando Basin as Superfund sites and required construction of cleanup treatment facilities by the industry group responsible for the contamination. The Glendale cleanup project is the last in a series of EPA-required cleanup facilities and is now complete. The project consists of eight (8) production wells and a water treatment facility.

The GWTP was built to treat VOC. In December 2000, Glendale started operating the treatment plant. But because of the chromium 6 issue, only a small quantity was initially pumped and delivered. Full operation started on January 6, 2002. In October 2006 a study by Malcolm Pirnie was presented to an expert panel that identified two promising technologies: weak-base anion exchange; and reduction-coagulation-filtration. Treatment facilities using the two technologies were constructed and placed in services for further study in March and April 2010.

Glendale currently has five (5) active production wells and a pick-up system (infiltration galleries) in the Verdugo Basin, along with the VPWTP. The lower water levels have reduced supplies for this source, and accordingly, the City has reduced its projections of supply from this source as well.

Historically, the City used groundwater to meet a varying portion of its water demand. In the 1940s and 1950s essentially all of the City's water needs were obtained from the San Fernando and the Verdugo Basins with limited supplies from Metropolitan. In the 1960's, production from the San Fernando Basin reached a peak of about 17,000 AFY. The Grandview well water collection system in the San Fernando Basin and the Grandview Pumping Plant originally pumped a peak capacity of about 24,000 gpm (34.6 MGD) from San Fernando Basin directly into Glendale's potable water system.

In the mid-1970s, Glendale limited production from the San Fernando Basin to about 12,000 AFY as part of a court decree arising from a Water Rights lawsuit by the City of Los Angeles. In 1975, the California Supreme Court issued the Judgment in <u>City of Los Angeles vs. City of San Fernando</u> which further limited Glendale's production right. The current right is about 5,500 AFY based on a Return Flow Credit right from water use in Glendale, with certain additional rights as described above.

Other limitations to groundwater use occurred in the late 1970s, when production from the Verdugo pick-up system in the Verdugo Basin was discontinued because of water quality problems.

In late 1979, Assembly Bill 1803 required that all water agencies using groundwater must conduct tests for the presence of certain industrial solvents. The tests indicated that VOC such as trichlorethylene and perchloroethylene were present in the San Fernando Basin groundwater supplies in concentrations exceeding State Department of Health Services' maximum contaminant levels. Both chemicals were used extensively in the past as degreasers in manufacturing industries.

At that time, the presence and hazards to the water supplies were identified. As a result, Glendale had to further limit its use of San Fernando Basin supplies. From 1980 to 1992, Glendale reduced production; and from 1992 to 2000, Glendale totally suspended production from the basin because of the presence of VOC. During the twenty year period of reduced production, Glendale continued to accumulate the groundwater storage credits that could be used in the future. Glendale's storage account balance was 54,496 AF as of October 1, 2009.

Glendale's Ability To Meet Demands

Reliability of water supplies is a key goal in the operation of Glendale's water distribution system. Glendale is currently importing approximately seventy percent of its water supply from Metropolitan. Consequently, the reliability of Metropolitan water supplies to meet Glendale water needs as well as the needs of its other twenty-five member agencies becomes exceptionally crucial. For Glendale, Metropolitan is the supplier of "last resort" in meeting the needs of our citizens.

Future Goals

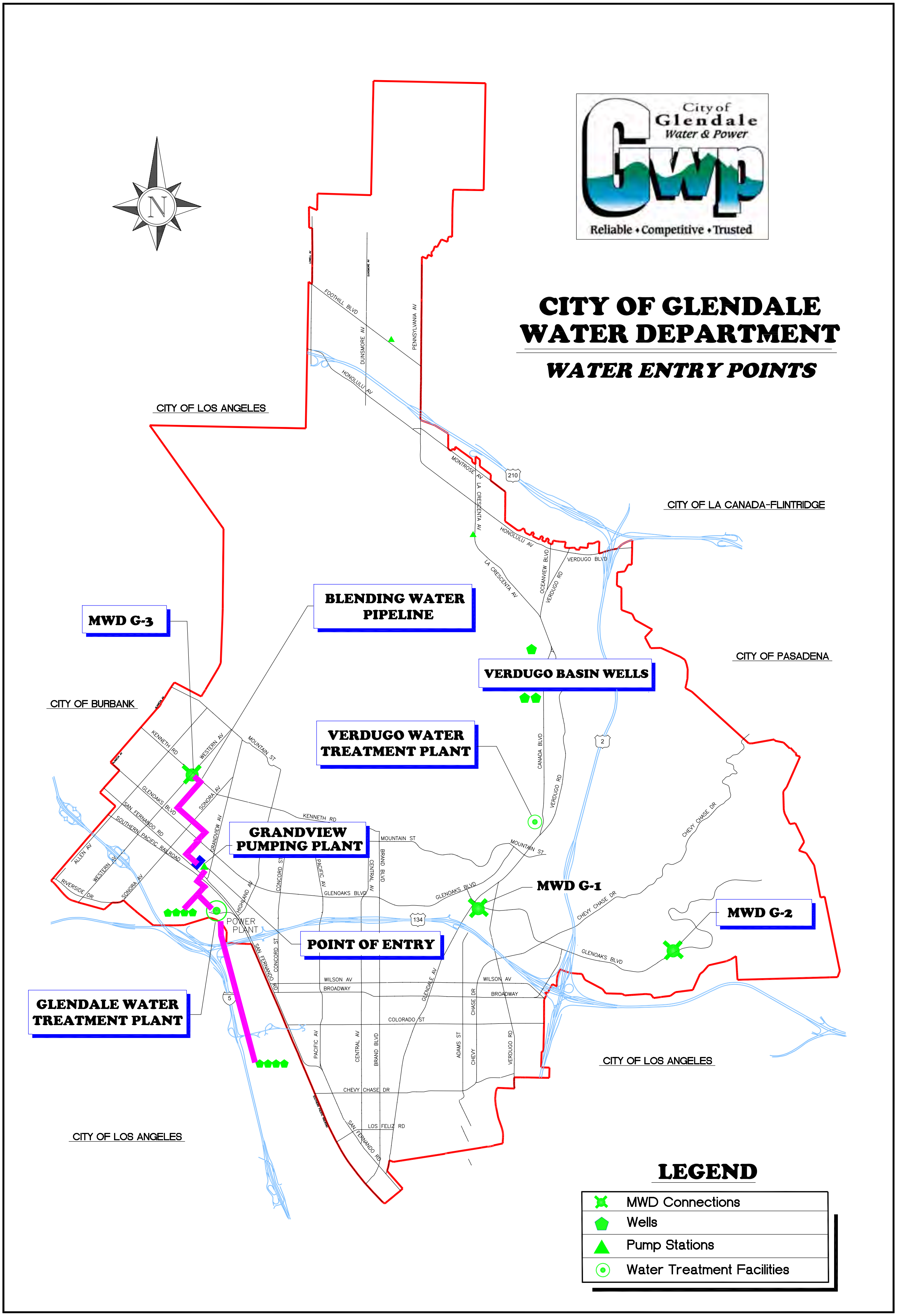
The City has been expanding the use of its local water supplies with operation of the GWTP and increase groundwater extraction of Verdugo Basin. However, because of the chromium 6 related issues, the reliability of the GWTP water supply cannot be guaranteed into the future until a chromium-removal treatment is put into operation. Glendale worked with the Cities of Los Angeles and Burbank, with the help of EPA and American Water Works Research Foundation, to develop a new treatment technology for chromium 6. In October 2006 a study by Malcolm Pirnie was presented to an expert panel that identified two promising technologies: weak-base anion exchange (WBA) and reduction-coagulation-filtration (RCF). Funding from EPA, California Prop 50, and local industry allowed for the construction of the facilities. The WBA project provides wellhead treatment and was placed into operation in March 2010. The RCF facility is adjacent to the GWTP and was placed into operation April 2010. The two projects will gather cost and performance data which will be useful in the development of future regulations.

The City's Water Department has immediate plans to increase groundwater production in the Verdugo Basin by rehabilitating an existing well and constructing one new well within the basin. The Foothill Well Rehabilitation Project is expected to complete by December 2010 and the new Rockhaven Well is currently under design and is expected to be in service in early 2012 The City also encourages the recycled water use by adding new users and expanding the marketing efforts in the City and to neighboring agencies. The City is committed to aggressively advocate the use of recycled water for irrigation & toilet flushing, which will help increased the conservation of potable water and reduced the dependency on imported supplies.

In 2009, the City has achieved the goal of previous year to import only sixty-five percent (65%) of the total water used from the Metropolitan. It is the goal of the City's Water Department to maintain the City's water purchase from Metropolitan at sixty-five percent (65%) or less of the total water use in the next five years.

FIGURES

FIGURE 1



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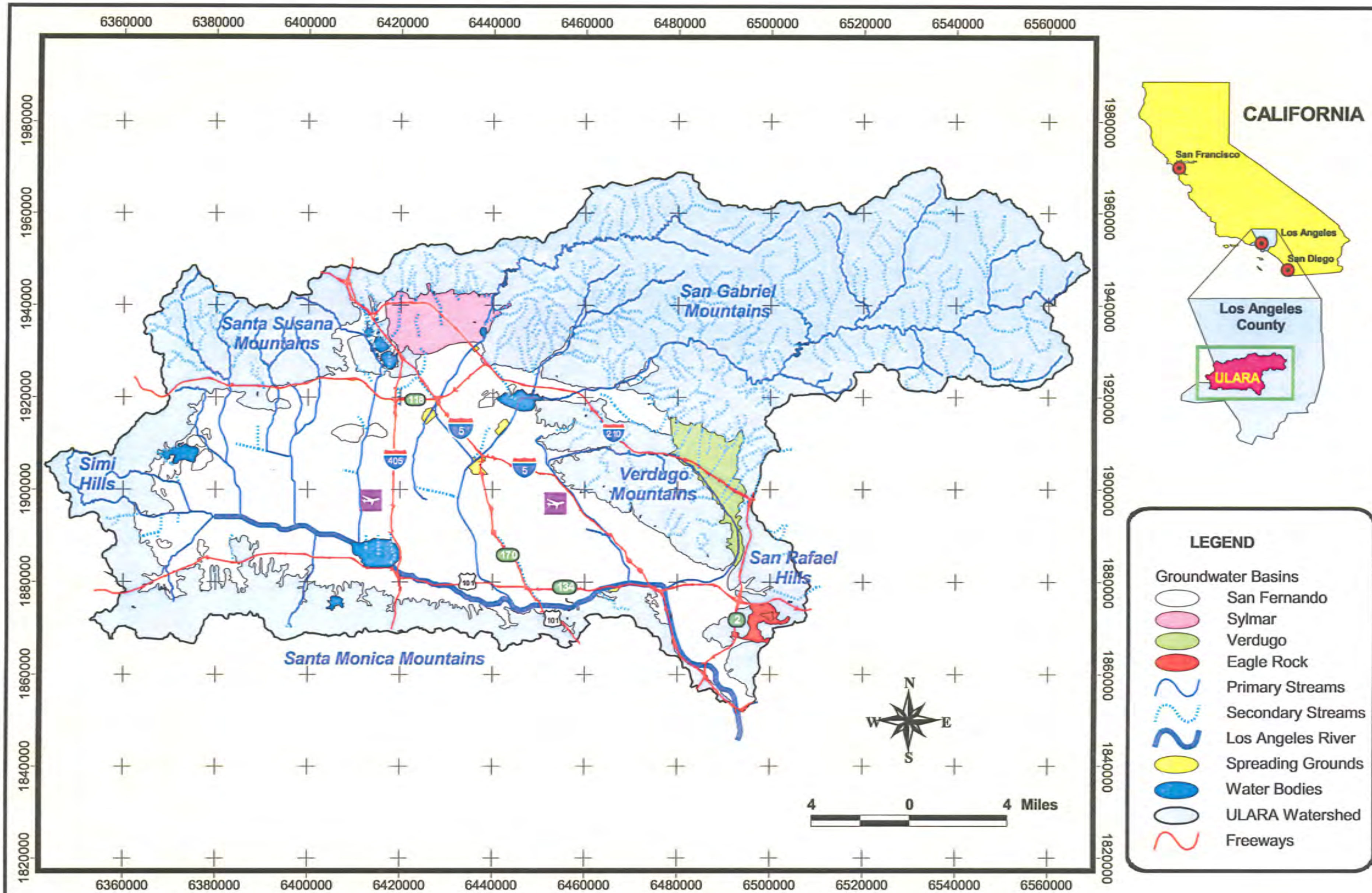
GWP
Reliable • Competitive • Trusted
CITY OF GLENDALE
WATER DEPARTMENT
WATER ENTRY POINTS
N
CITY OF LOS ANGELES
CITY OF LA CANADA-FLINTRIDGE
CITY OF PASADENA
CITY OF BURBANK
BLENDING WATER PIPELINE
MWD G-3
VERDUGO BASIN WELLS
VERDUGO WATER TREATMENT PLANT
GRANDVIEW PUMPING PLANT
MWD G-1
MWD G-2
POINT OF ENTRY
POWER PLANT
GLENDALE WATER TREATMENT PLANT
CITY OF LOS ANGELES
CITY OF LOS ANGELES
LEGEND
MWD Connections
Wells
Pump Stations
Water Treatment Facilities

FIGURE 2



2007-08 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: Vicinity and Location Map	PLATE 1

FIGURE 3

GLENDALE WATER TREATMENT PLANT
SYSTEM LAYOUT

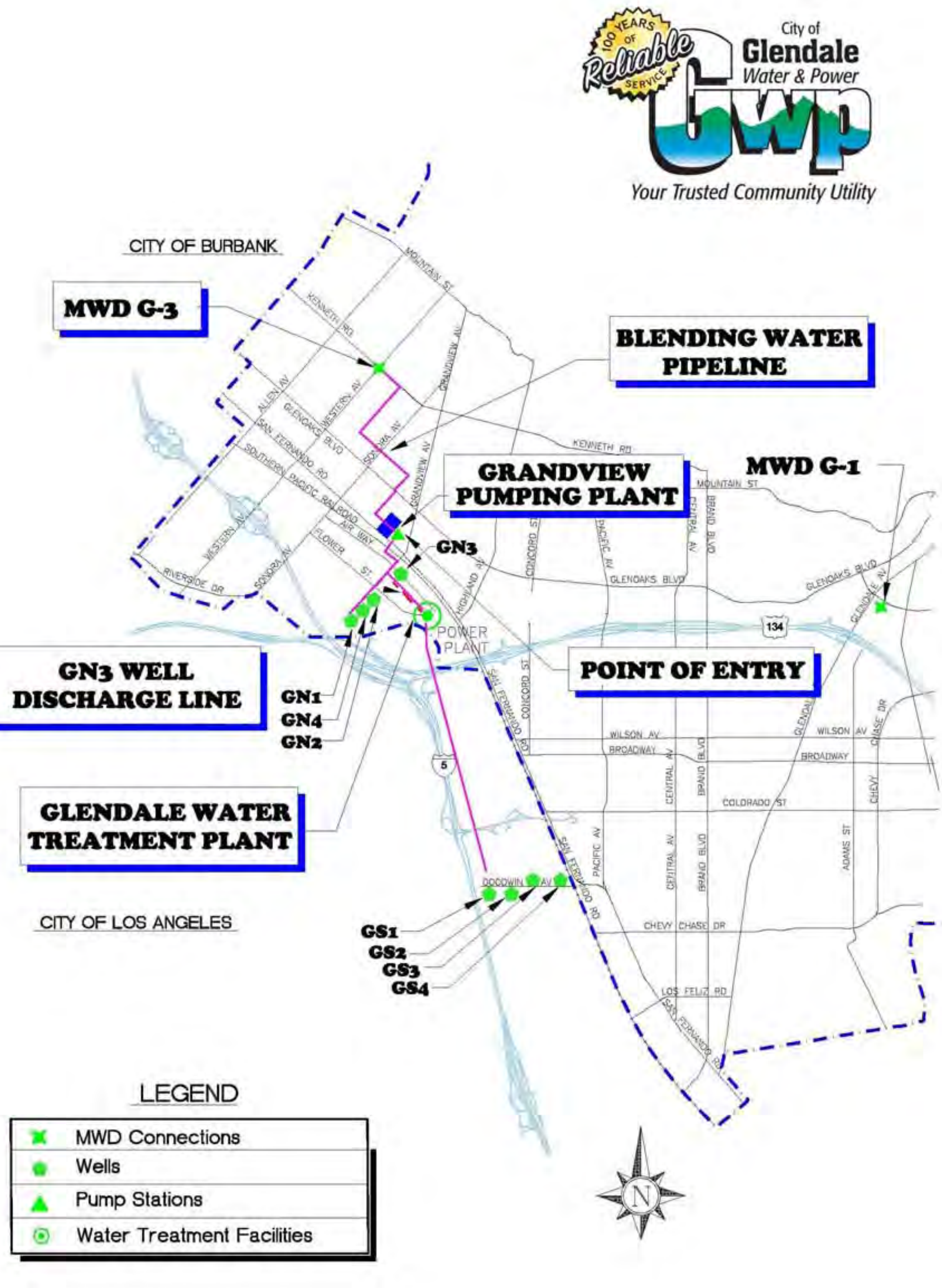
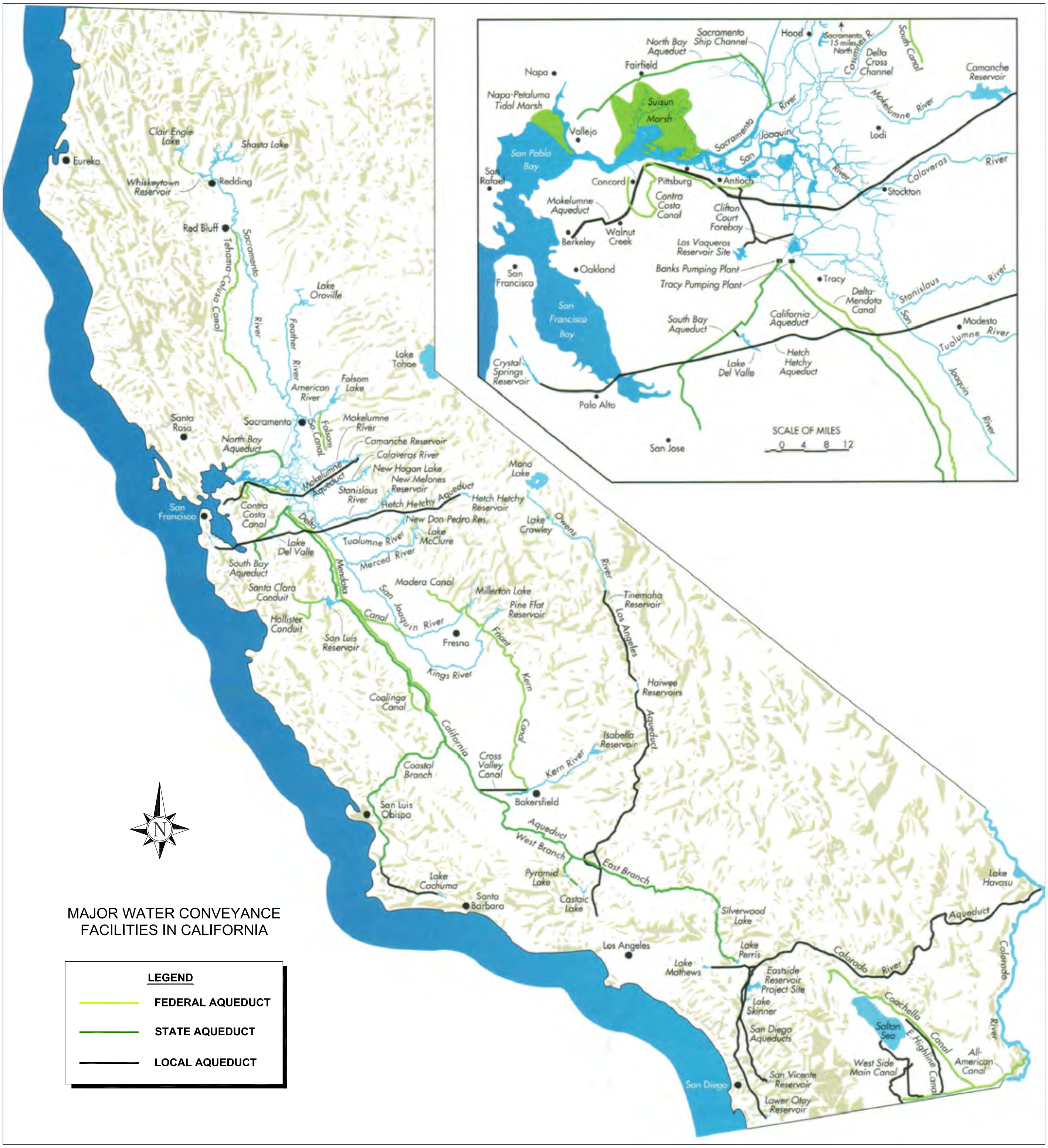
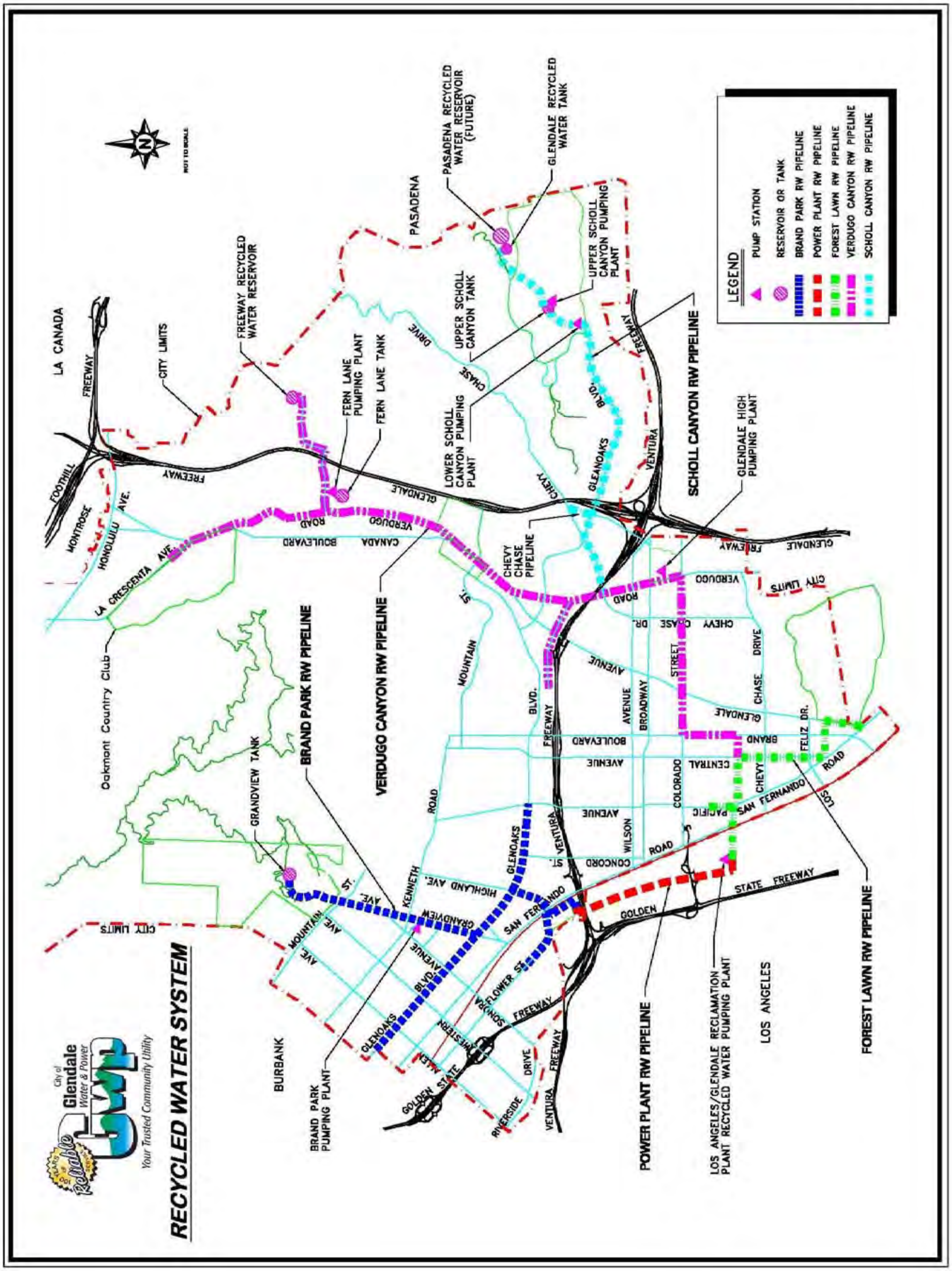


FIGURE 4



Clair Engle Lake
Shasta Lake
Eureka
Whiskeytown Reservoir
Redding
Red Bluff
Tehama-Colusa Canal
Sacramento River
Lake Oroville
Feather River
Lake Tahoe
Folsom Lake
American River
Santa Rosa
Sacramento
Folsom So. Canal
Mokelumne River
North Bay Aqueduct
Camanche Reservoir
Calaveras River
Mokelumne Aqueduct
New Hogan Lake
New Melones Reservoir
Stanislaus River
Hetch Hetchy Aqueduct
Hetch Hetchy Reservoir
Mono Lake
San Francisco
Contra Costa Canal
Delta
New Don Pedro Res.
Lake McClure
Lake Crowley
Owens River
Lake Del Valle
Tuolumne River
Merced River
South Bay Aqueduct
Mendota
Madera Canal
Millerton Lake
Santa Clara Conduit
Pine Flat Reservoir
Tinemaha Reservoir
Hollister Conduit
San Joaquin River
Canal
San Luis Reservoir
Fresno
Friant
Kern
Canal
Los Angeles
Kings River
Haiwee Reservoirs
Aqueduct
Coalinga Canal
California
Isabella Reservoir
Coastal Branch
Cross Valley Canal
Kern River
Bakersfield
San Luis Obispo
Aqueduct
West Branch
East Branch
Pyramid Lake
Lake Cachuma
Castaic Lake
Santa Barbara
Lake Havasu
Silverwood Lake
Aqueduct
Los Angeles
Lake Perris
Colorado River
Colorado River
Lake Mathews
Eastside Reservoir Project Site
Lake Skinner
Coachella Canal
San Diego Aqueducts
Salton Sea
E. Highline Canal
West Side Main Canal
All-American Canal
San Vicente Reservoir
San Diego
Lower Otay Reservoir
N
Sacramento Ship Channel
Hood
Sacramento 15 miles North
South Canal
North Bay Aqueduct
Cosumnes R.
Delta Cross Channel
Camanche Reservoir
Fairfield
Napa
Napa-Petaluma Tidal Marsh
Suisun Marsh
Mokelumne River
Vallejo
Sacramento
Joaquin
Lodi
San Pablo Bay
San
River
San Rafael
Concord
Pittsburg
Antioch
Calaveras River
Stockton
Mokelumne Aqueduct
Contra Costa Canal
Clifton Court Forebay
Walnut Creek
Berkeley
Los Vaqueros Reservoir Site
San Francisco
Oakland
Banks Pumping Plant
Tracy Pumping Plant
Tracy
Stanislaus River
San Francisco Bay
Delta-Mendota Canal
South Bay Aqueduct
California Aqueduct
Modesto
Tuolumne River
San
Hetch Hetchy Aqueduct
Lake Del Valle
Crystal Springs Reservoir
Joaquin River
Palo Alto
SCALE OF MILES
0 4 8 12
San Jose
MAJOR WATER CONVEYANCE FACILITIES IN CALIFORNIA
LEGEND
FEDERAL AQUEDUCT
STATE AQUEDUCT
LOCAL AQUEDUCT

FIGURE 5



RECYCLED WATER SYSTEM
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LEGEND
PUMP STATION
RESERVOIR OR TANK
BRAND PARK RW PIPELINE
POWER PLANT RW PIPELINE
FOREST LAWN RW PIPELINE
VERDUGO CANYON RW PIPELINE
SCHOLL CANYON RW PIPELINE
NOT TO SCALE
LA CANADA
PASADENA
BURBANK
LOS ANGELES
CITY LIMITS
FREEWAY RECYCLED WATER RESERVOIR
FERN LANE PUMPING PLANT
FERN LANE TANK
UPPER SCHOLL CANYON TANK
LOWER SCHOLL CANYON PUMPING PLANT
UPPER SCHOLL CANYON PUMPING PLANT
PASADENA RECYCLED WATER RESERVOIR (FUTURE)
GLENDALE RECYCLED WATER TANK
SCHOLL CANYON RW PIPELINE
GLENDALE HIGH PUMPING PLANT
CHEVY CHASE PIPELINE
VERDUGO CANYON RW PIPELINE
BRAND PARK RW PIPELINE
Oakmont Country Club
GRANDVIEW TANK
BRAND PARK PUMPING PLANT
POWER PLANT RW PIPELINE
LOS ANGELES/GLENDALE RECLAMATION PLANT RECYCLED WATER PUMPING PLANT
FOREST LAWN RW PIPELINE

FIGURE 6

CITY OF GLENDALE
Recycled Water Account Information

NO.	PROJECT NAME	ADDRESS	NO. OF METER	DELIVERY DATE	TYPE OF USE
		FOREST LAWN PROJECT (A - 1)			
1	1600 S Brand Boulevard	1600 S Brand Boulevard	1	1995	Irrigation
2	Forest Lawn Memorial Park	1712 S Glendale Avenue	1	1992	Irrigation
2	Forest Lawn Memorial Park	3690 San Fernando Road	1	1992	Irrigation
3	Silver Crest Homes (323 W. Garfield Avenue)	316 W Windsor Road	1	2000	Irrigation
4	Cerritos Elementary School	120 E Cerritos Avenue	1	6&11-2006	Irrigation
4	Cerritos Elementary School	1715 S Glendale Avenue	1	6&11-2006	Irrigation
5	Cerritos School Park	3690 San Fernando Road	1	2007	Irrigation
6	Edison Elementary & Pacific Park	501 Riverdale Drive	1	Mar-07	Irrigation
		POWER PLANT PROJECT (A - 2)			
7	CalTrans - 943 W. Doran Street	943 W Doran Street	1	1978	Irrigation
8	Grayson Power Plant	800 Air Way	1	1978	Cooling Towers
9	Public Works	non metered	0		Irrigation
		BRAND PARK PROJECT (A - 3)			
10	Glenoaks Median (9 meters)	2008 W Glenoaks Boulevard	1	1996	Irrigation
10	Glenoaks Median (9 meters)	1830 W Glenoaks Boulevard (at Irving)	1	1996	Irrigation
10	Glenoaks Median (9 meters)	1108 W Glenoaks Boulevard	1	1996	Irrigation
10	Glenoaks Median (9 meters)	978 W Glenoaks Boulevard	1	1996	Irrigation
10	Glenoaks Median (9 meters)	720 W Glenoaks Boulevard	1	1996	Irrigation
10	Glenoaks Median (9 meters)	618 W Glenoaks Boulevard	1	1996	Irrigation
10	Glenoaks Median (9 meters)	532 W Glenoaks Boulevard	1	1996	Irrigation
10	Glenoaks Median (9 meters)	1628 W Glenoaks Boulevard	1	1996	Irrigation
10	Glenoaks Median (9 meters)	1400 W Glenoaks Boulevard	1	1996	Irrigation
11	Brand Park	1700 W Mountain Street	1	1997	Irrigation
12	Pelanconi Park	905 Cleveland Road	2	1996	Irrigation
13	Grandview Memorial Park	1341 Glenwood Road	2	2001	Irrigation
14	Disney Complex (Dual Plumbed-Future)	1101 Flower Street	1	2007	Irrigation
14	Disney Complex (Dual Plumbed-Future)	1201 Flower Street	1	2007	Irrigation
15	San Fernando Landscape Project	5775 San Fernando Road	1	Jan-09	Irrigation
16	Glendale Narrows Riverwalk Project	900 Flower Street	1	Oct-09	Irrigation
17	Fairmont Street Extension Project	907 Flower Street	1	Mar-10	Irrigation
		VERDUGO SCHOLL PROJECT (B)			
18	Colorado Blvd - Parkway Irrigation	1401 E Colorado Street	1	1997	Irrigation
18	Colorado Blvd - Parkway Irrigation	1311 E Colorado Street	1	1997	Irrigation
18	Colorado Blvd - Parkway Irrigation	815 E Colorado Street	1	1997	Irrigation
19	CalTrans	1970 E Glenoaks Blvd (E/S,W/S I2)	2	1995	Irrigation
19	Caltrans	406 N Verdugo Rd (at Chevy Chase Dr)	1	1995	Irrigation
19	Caltrans	709 Howard Street (at Monterey Road)	1	1995	Irrigation
19	Caltrans	2000 E Chevy Chase Drive (at Harvey)	1	1995	Irrigation
20	741 S. Brand Median	741 S Brand Boulevard (Median)	1	1995	Irrigation
21	Montecito Park	2978 N Verdugo Road (at Sparr)	1	1995	Irrigation
22	N. Verdugo Rd Median/La Cresenta Ave	3220 N Verdugo Road/Median/ La Crescenta Avenue *OPP	1	1996	Irrigation
23	Verdugo Rd/Canada (North Median)	3021 N Verdugo/Canada Median	1	1996	Irrigation
24	Verdugo Rd/Canada South Overpass	Verdugo/Canada (South) Overpass	1	1995	Irrigation
25	Parque Vaquero	1285 N Verdugo Road	1	1998	Irrigation
26	701 N. Glendale Ave - Median @ Monterey Rd	701 N Glendale Avenue (Median)	1	1995	Irrigation
27	Civic Auditorium	1401 N Verdugo Road	1	1996	Irrigation
28	Sports Complex	2200 Fern Lane	1	1998	Irrigation
29	Adult Recreation Center	201 E Colorado Street	1	1995	Irrigation
30	Glenoaks Park	2531 E Glenoaks Boulevard	1	1995	Irrigation
31	Scholl Canyon Park	2849 E Glenoaks Boulevard	1	1996	Irrigation
32	Scholl Canyon Ballfield	3200 E Glenoaks Boulevard	1	1997	Irrigation
33	Glendale High School	1440 E Broadway	1	1995	Irrigation

CITY OF GLENDALE

Recycled Water Account Information

NO.	PROJECT NAME	ADDRESS	NO. OF METER	DELIVERY DATE	TYPE OF USE
34	Wilson Junior High School	1220 Monterey Road	1	1995	Irrigation
35	Glendale Adventist Hospital	1520 E Chevy Chase Drive	1	1997	Irrigation / Cooling Towers
36	Glenoaks Elementary School	2015 E Glenoaks Boulevard	1	1998	Irrigation
37	Glendale Community College	1500 N Verdugo Road	2	1996 & 2004	Irrigation / Toilet Flushing
38	Oakmont Country Club	3100 Country Club Drive	1	1996	Irrigation
39	Central Library	222 E Harvard Street	2	1995	Irrigation
40	Armory	220 E Colorado Street	1	1996	Irrigation
41	Scholl Canyon Golf Course	3800 E Glenoaks Boulevard	1	1998	Irrigation
42	Scholl Canyon Landfill (PW)	3798 E Glenoaks Boulevard	2	1996	Irrigation/ Soil Compaction/ Dust Control
43	Scholl Canyon Landfill (LACSD)	2847 E Glenoaks Boulevard	1	1997	Irrigation/ Soil Compaction/ Dust Control
44	Public Works (Scholl Canyon)	3798 E Glenoaks Boulevard	1	1996	Irrigation
44	Public Works (Scholl Canyon)	3798 E Glenoaks Boulevard	1	1996	Irrigation
45	Americana	233 S Brand Boulevard	1	Apr-09	Irrigation
46	Fern Lane (Freeway Tank + Median)	1926 Fern Lane	1	1997	Irrigation
47	Glendale Retirement Home	1551 E Chevy Chase Drive	1	40003	Irrigation
48	Monterey Community Garden	870 Monterey Road	1	Aug-09	Irrigation

FIGURE 7

CITY OF GLENDALE

FUTURE RECYCLED WATER USERS

As of April 2010

	FUTURE RECYCLED WATER USERS	*Anticipated*	*User*	*Quantity*	*Type of*
	PROJECT	***Delivery Date***		***AFY***	***Use***
	FOREST LAWN PROJECT				
1	Building - 1255 S. Central Ave (Verdugo Job Center)*	Completed	NO	5	*Irrigation*
2	Glendale Plaza - 655 N Central Avenue*	Completed	NO	10	*Flushing Toilets*
3	Building - 610 N. Central*	Completed	NO	6	*Flushing Toilets*
4	Glendale Memorial Hospital (1420 S. Central Ave.)	Planning	NO	15	*Irrigation & Cooling Towers*
5	328 Mira Loma Ave (44 residential units)	Construction	NO	10	*Irrigation*
6	Vassar Villas (San Fernando Rd & Glendale Ave)	Construction	NO	5	*Irrigation*
7	Pacific Park Pool	Design	NO	5	*Irrigation*
	POWER PLANT PROJECT				
	VERDUGO SCHOLL PROJECT				
8	John Marshall School*	Completed	NO	5	*Irrigation*
9	Fremont Elementary School*	Planning Stage	NO	5	*Irrigation*
10	Polygon Homes Housing Tracks (Camino San Rafael)*	Planning Stage	NO	85	*Irrigation*
11	Chevy Oaks Homes*	Planning Stage	NO	25	*Irrigation*
12	Chevy Chase Country Club*	Planning Stage	NO	100	*Irrigation*
13	Building - 111 N. Brand*	Planning Stage	NO	5	*Irrigation*
14	Building - 295 E. Garfield*	Planning Stage	NO	10	*Irrigation*
15	Building - 800 N. Brand (Nestle)	Planning Stage	NO	10	*Cooling Towers*
16	Caltrans Fwy 210	Planning Stage	NO	20	*Irrigation*
17	Residential Building -720 S. Maryland	Design Stage	NO	5	*Irrigation*
18	3-Story Multi Use - 415 E. Broadway	Construction	NO	5	*Irrigation*
19	Doran Garden (Mixed Use) 331 W. Doran	Planning Stage	NO	5	*Irrigation*
20	Building - 400 N Brand	Completed	NO	10	*Flushing Toilets*
21	Building - 450 N Brand	Completed	NO	10	*Flushing Toilets*
22	Police Building - Isabel Street	Completed	NO	5	*Flushing Toilets*
23	Building - 611 N Brand	Completed	NO	10	*Flushing Toilets*
24	Building - 207 Goode Ave	Completed	NO	10	*Flushing Toilets*
25	Fire Station No. 21*	Completed	NO	10	*Irrigation*
26	Mayor's Bicentennial Park	Planning Stage	NO	5	*Irrigation*
27	Carr Park	Planning Stage	NO	5	*Irrigation*
28	Glorietta Pump Station	2002	NO	5	*Irrigation*
29	Monterey Road Median - WJH	2002	NO	1	*Irrigation*
30	Deukmejian Wilderness Park	Completed	NO	200	*Irrigation*
31	Crescenta Valley Park	Planning Stage	No	20	*Irrigation*
32	Lutheran School of the Foothills	Planning Stage	NO	5	*Irrigation*
33	Saint James the Less School	Planning Stage	NO	5	*Irrigation*
34	Dunsmore Park/Elementary	Planning Stage	NO	25	*Irrigation*
35	Hillside Irrigation (Camino San Rafael)	Planning Stage	NO	20	*Irrigation*
36	Montrose Community Park	Planning Stage	NO	15	*Irrigation*
37	Verudugo Hills Hospital	Planning Stage	NO	30	*Irrigation*
38	222 Glendale Ave (Orange Grove)	Planning Stage	NO	5	*Irrigation*
39	Cedar Mini Park*	Completed	NO	5	*Irrigation*
40	Sleepy Hollow HOA	Planning Stage	NO	5	*Irrigation*
41	Verdugo Woodlands Elementary School	Planning Stage	NO	5	*Irrigation*
42	Maryland Mini Park	Planning Stage	NO	5	*Irrigation*

CITY OF GLENDALE

FUTURE RECYCLED WATER USERS

As of April 2010

	FUTURE RECYCLED WATER USERS	*Anticipated*	*User*	*Quantity*	*Type of*
	PROJECT	***Delivery Date***		***AFY***	***Use***
	BRAND PARK PROJECT				
43	Homestead Studio Suites (1377 W. Glenoaks Blvd)	Completed	NO	5	*Irrigation*
44	Toll Jr High*	Design	NO	10	*Irrigation*
45	Hoover High School*	Design	NO	21	*Irrigation*
46	Keppel High School*	Design	NO	10	*Irrigation*
47	Disney Campus*	Planning Stage	NO	80	*Irrigation / Flushing Toilets*
48	Dreamworks (Flower Street)	Construction	NO	20	*Irrigation*
49	Disney Child Care Center (1500 Flower Street)	Design Stage	NO	10	*Irrigation*
50	Disney Landscape (1401 Flower Street)	Completed	NO	10	*Irrigiation*
51	Grandview Condos	Design Stage	NO	5	*Irrigation*
52	Fairmont Freeway Extension	Construction	NO	10	*Irrigation*
53	Glendale Narrow Riverwalk Project (Fairmont Project)	Design Stage	NO	10	*Irrigation*
54	Griffith Manor Park	Design Stage	NO	5	*Irrigation*
55	Caltrans I-5	Planning Stage	NO	30	*Irrigation*
56	Public Works - Street Sweeping	Design Stage	NO	20	*Street Sweeping*
57	GWP-UOC - Airway	Design Stage	NO	10	*Irrigation / Flushing Toilets*
	TOTAL			***1008***	

** RW main service not yet available.*

*** Pasadena and Los Angeles Demand not included*

APPENDIX D

CITY OF SAN FERNANDO

PUMPING AND SPREADING PLAN

2009-2014 Water Years

CITY OF SAN FERNANDO

GROUNDWATER PUMPING AND SPREADING PLAN

OCTOBER 1, 2009 TO SEPTEMBER 30, 2014

2008-2009 Water Year

Prepared by:

Public Works Department

Water Division

117 Macneil Street

San Fernando, California 91340

May 2010

TABLE OF CONTENTS

I. INTRODUCTION

The ground water rights of the City of San Fernando were defined by the JUDGMENT in Superior Court Case No. 650079, entitled "The City of Los Angeles, a Municipal Corporation, Plaintiff, vs. City of San Fernando, et. al., Defendants." The Final Judgment was signed on January 26, 1979.

On August 26, 1983, the Watermaster reported to the court pursuant to Section 10.2 of the Judgment that the Sylmar Basin was in condition of overdraft. On October 1, 1984, San Fernando and Los Angeles were assigned equal rights to pump the safe yield of the Basin (6,210 acre-feet) thus, San Fernando and Los Angeles were each allowed to pump approximately 3,105 acre-feet per year. Thereafter, on October 1, 1996, the safe yield of the Basin was determined to be 6,510 acre-feet per year. A stipulation approved by the Court, on December 13, 2006, allows for a temporary increase in the safe yield of the Basin to 6,810 AF/Y beginning October 1, 2006. Therefore, San Fernando and Los Angeles are now allowed to each pump approximately 3,405 acre-feet per year.

In 1993, significant revisions were made to the Upper Los Angeles River Area (ULARA) Policies and Procedures with the addition of Section 2.9, Groundwater Quality Management. This addition has been made by the Watermaster and the Administrative Committee to affirm its commitments to participate in the cleanup and limiting the spread of contamination in the San Fernando Valley. This report is in response to Section 2.9.4, Groundwater Pumping and Spreading Plan.

The Groundwater Pumping and Spreading Plan is based on the water year, October 1 to September 30. The Draft Plan for San Fernando will be submitted in May to the Watermaster for the current water year.

II. WATER DEMAND

The annual total water demand for the last five years and the projected annual water demand for the next five years are shown on Table 2.1.

Water demand during the early 1990's was affected by drought conditions in the Southern California region. However, the City of San Fernando has imposed voluntary conservation since 1977.

Projected water demands for the next five years is expected to slightly decrease or remain the same due to conservation efforts. The projected water demand may vary significantly due to weather conditions, economic conditions and/or social conditions in the San Fernando area. A variance of ± 5 percent can be expected.

III. WATER SUPPLY

The water supply for the City of San Fernando is composed of locally produced and treated groundwater. Supplemental water is purchased from the Metropolitan Water District of Southern California (MWD). In case of emergency, there is an existing 6-inch water connection to the City of Los Angeles (DWP) water system at 12900 Dronfield Avenue, in Sylmar.

A. MWD: Treated water is purchased from the MWD to supplement ground water supplies. Historic and projected use of MWD water is shown in Table 2.1.

B. Production Wells: The City of San Fernando owns and operates three (3) wells that are on "active status" with the Department of Health Services as indicated below:

1. ***Well 2A***
Location: 14060 Sayre Street, Sylmar
Capacity: 2100 GPM

2. ***Well 4A***
Location: 12900 Dronfield Avenue, Sylmar
Capacity: 400 GPM

3. ***Well 3***
Location: 13003 Borden Avenue, Sylmar
Capacity: 1100 GPM

This well is on "stand-by status" with the Department of Public Health Services and quarterly samples are collected by waste pumping.

4. ***Well 7A***
Location: 13180 Dronfield Avenue, Sylmar
Capacity: 800 GPM

This well was placed on "inactive status" with the Department of Public Health Services and has been physically disconnected from the water system.

C. Quantity (Acre-Feet) of Water Pumped From Each Well (2008-2009)

1.	Well 2A	2,215.22
2.	Well 3	1,001.25
3.	Well 4A	256.35
4.	Well 7A	000.00
	Total	3,472.82

D. Wells Groundwater Level Data

1.	Well 2A	1118.5 Taken 07/09
2.	Well 3	1061.9 Taken 07/09
3.	Well 4A	1020.1 Taken 07/09
4.	Well 7A	1060.7 Taken 07/09

E. Well Locations

Well 2A - 14060 Sayre Street, Sylmar

Well 3 - 13003 Borden Street, Sylmar

Well 4A - 12900 Dronfield Avenue, Sylmar

Well 7A 13180 Dronfield Avenue, Sylmar

IV JUDGMENT CONSIDERATIONS

A. Native and Imported Return Water

The safe yield of the Sylmar Basin was 6,510 acre-feet and the cities of San Fernando and Los Angeles have equal rights to pump from this basin. After subtracting the overlaying pumping rights of two private parties, San Fernando and Los Angeles were each allowed to pump approximately 3,255 acre-feet per year.

A stipulation approved by the Court December 13, 2006 allows for a temporary increase in the safe yield of the Basin to 6,810 AF/Y beginning October 1, 2006. Therefore, San Fernando and Los Angeles are now allowed to each pump approximately 3,405 acre-feet per year.

B. Stored Water Credit

San Fernando and Los Angeles each have the right to store water in the Sylmar Basin and the right to extract equivalent amounts.

As of September 30, 2009 the City of San Fernando has a stored water credit of 915.17 acre-feet accumulated during previous years through the 08-09 water year.

TABLE 2.1
FIVE-YEAR HISTORIC AND PROJECTED WATER DEMAND
PUMPED AND IMPORTED WATER
CITY OF SAN FERNANDO

(Acre – Feet)

FY	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
DEMAND											
WELLS	3,454	3,143	2,856	2,894	3,669	3,473	2,876	2,876	2,876	2,876	2,876
MWD	508	499	802	901	0	0	629	629	629	629	629
TOTAL	3,962	3,642	3,658	3,795	3,669	3,473	3,505	3,505	3,505	3,505	3,505
			ACTUAL						**PROJECTED**		

APPENDIX A

WATER QUALITY DATA

SEE ATTACHED WATER QUALITY REPORT, 2009

CITY OF SAN FERNANDO

- WELL NO. 3
- WELL NO. 4A
- WELL NO. 2A
- WELL NO. 7A

APPENDIX B

POLICIES AND PROCEDURES

(By ULARA)

WATERMASTER SERVICE

UPPER LOS ANGELES RIVER AREA

POLICIES AND PROCEDURES

February 1998

APPENDIX E

CRESCENTA VALLEY WATER DISTRICT

PUMPING AND SPREADING PLAN

2009-2014 Water Years

CRESCENTA VALLEY WATER DISTRICT

GROUNDWATER PUMPING & SPREADING PLAN

FOR

WATER YEARS

OCTOBER 1, 2009 TO SEPTEMBER 30, 2014

Prepared by:
David S. Gould, P.E.
District Engineer

Prepared for:
ULARA Watermaster's Office

May 2010

I. INTRODUCTION

The ground water rights of the Crescenta Valley Water District (CVWD) were defined by the JUDGEMENT in Superior Court Case No. 650079, entitled "The City of Los Angeles, a Municipal Corporation, Plaintiff, vs. City of San Fernando, et. al., Defendants". The Final Judgment was signed on January 26, 1979.

In 1993 and in February 1998, significant revisions were made to the Upper Los Angeles River Area (ULARA) Policies and Procedures with the addition of sections for Groundwater Quality Management and various new reports and appendices. This addition has been made by the Watermaster and the Administrative Committee to affirm their commitment to participate in the clean-up, and limiting the spread of contamination in the San Fernando Valley.

This report as prepared by CVWD is in response to Section 5.4, Groundwater Pumping and Spreading Plan. Since no groundwater spreading has been performed by CVWD at this time, only plans/projections for groundwater pumping and treatment are discussed in this report. CVWD's Verdugo Basin Groundwater Recharge, Storage and Conjunctive Use Feasibility Study, which was completed in 2005 has recommended methods of stormwater recharge and storage within the basin and this issue will be investigated more in the coming years by CVWD and the City of Glendale.

The Groundwater Pumping Plan is based on the water year, October 1, 2009 to September 30, 2014.

II. WATER DEMAND

The annual total water demand for the last five years and the projected annual water demand for the next five (5) years are shown in Table 2.1.

Water demands during the last five years (2004/05 – 2008/09) were affected by the amount of annual rainfall within the Crescenta Valley. CVWD has observed major swings in the amount of rainfall in the Verdugo Basin in the past five (5) years. In 2004/05, CVWD saw a near record amount of rainfall and just two years later (2006/07) recorded a dry year of less than 8 inches of rainfall. In 2008/09, the rainfall amount was 15.2 inches, which was 36% below the annual average of 23.7 inches.

Water demand in the CVWD service area seems to vary significantly due to weather conditions, which can be attributed to the residential character of the District and the large percentage of water consumption for outdoor landscaping. However, with the State declaring a drought and Metropolitan Water District (MWD) imposing penalty charges for over-usage, CVWD anticipates an overall annual decrease in water demand of approximately 3% to 5% per year over the next five (5) years due to its water conservation effort.

In 2008/09, CVWD's Board of Directors approved a mandatory water conservation program utilizing a water conservation alert system. This alert system called for rationing on outdoor landscape and usage to two (2) days a week during the summer months in response to MWD's 20% reduction of water allocation plan.

In 2008/09, CVWD saw a 9.2% decrease in water demand compared to 2007/08, which is attributed to public awareness on water conservation and water rationing.

Water conservation incentives in the form of rebates for turf replacement, ultra-low flush toilets, and high efficiency clothes washers are provided along with continuous water conservation information which is posted on CVWD's website for CVWD's customers.

In 2008/09, CVWD observed a decrease in groundwater production as compared to 2007/08. CVWD's wells produced 2,964 ac-ft, which was 330 ac-ft under the adjudicated rights of 3,294 AFY. This was primarily due to Well 5 being out of service for one year due to high levels of MTBE, and Well 9 being out of service due to bacteriological problems. Well 9 should be back in service within the coming year. CVWD received a grant from the California Department of Public Health to build an MTBE treatment system.

III. WATER SUPPLY

The water supply for the CVWD is composed of locally produced and treated groundwater, water from the Metropolitan Water District of Southern California (MWD) purchased on a wholesale basis from FMWD, and a water supply interconnection with the City of Glendale.

A. PRODUCTION WELLS

CVWD has twelve (12) active wells that are currently in operation. Historic and projected production from these wells is shown in Table 3.1.

In 2008/09, CVWD observed the water levels and water production in its groundwater wells decrease, which is due to the low rainfall amount received in the Crescenta Valley and a decrease in the maximum capacity of the wells from 3.94 MGD in 2007/08 to 3.11 MGD in 2008/09 or 21.1% overall decrease in capacity.

A.1 Nitrate in Wells

CVWD wells produce water which typically contains nitrate concentrations above the 45 mg/L maximum contaminant level (MCL) set by the EPA and CDPH. The Glenwood Nitrate Removal Plant ion-exchange process is used to treat a portion of the produced water. Untreated water and water treated at the Glenwood Plant are blended to produce water with less than the nitrate MCL. In 2008/09, the ion-exchange plant was in operation for the majority of the year to maximize the use of local groundwater.

Water production at the Mills Plant is blended with FMWD water to decrease the nitrate levels below the MCL.

A.2 Methyl tertiary-butyl ether (MTBE) in Wells

In 2004, CVWD detected low levels of MTBE in Well 5 during routine sampling. In September 2006, Well #7 was taken out of service because of the discovery of methyl tertiary-butyl ether (MTBE) above the 13 ug/L MCL.

A.2.1 MTBE Levels

In March 2008, a pump test was performed to determine if the decreased MTBE levels in Well 7 were due to a lack of pumping activity or if the MTBE plume had decreased.

The results of the pump tested showed that the MTBE levels in Well 7 remained constant at 2.0 ug/L and that plume could have moved away from Well 7, but MTBE levels in other nearby wells had not increased.

In April 2008, CVWD requested from CPDH to place Well 7 back into service since the MTBE levels had declined to less than 0.50 ug/L and groundwater was needed to replace Well 9, which had been taken out of service for pump repairs. CVWD also continued monitoring MTBE levels at Well 7 and the Mills Forebay to ensure that if levels began to rise, Well 7 could be shut down.

In July 2008, CVWD observed that the MTBE level in Well 5 was beginning to rise and in early September 2008, Well 5 was taken out of service when the MTBE level reached 14 ppb, which is above the MCL of 13 ppb.

In 2008/09, the MTBE level in Well 5 continued to increase from 18 ug/L in October 2008 to 57 ug/L in September 2009 and currently Well 5 is still out of service.

A.2.2 Verdugo Basin MTBE Task Force

In October 2006, CVWD requested the Watermaster's office to create the Verdugo Basin MTBE Task Force and CVWD has been working with RWQCB, CDPH, stakeholders, and RP's on remediation and clean up of the MTBE.

In 2008/09, the Task Force met seven (7) times throughout the year and progress was made on clean-up of three (3) of the nine (9) sites that required remediation. Two (2) sites reached agreement to join together to receive funding from the comingled plume site fund and remediation on these sites should commence over the next year. One (1) site is still waiting on funding from the State's Underground Storage Tank fund and there has been no progress. The remaining three (3) sites had no work done towards clean-up and still need to be further investigated.

A.2.3 GAC Treatment System

In April 2008, CVWD re-applied to the CDPH for grant funding under the Drinking Water Treatment and Research Fund for installation of a new granulated activated carbon (GAC) water treatment system for removal of MTBE at the Mills Plant. The application was revised in August 2008 to move the location of the GAC treatment plant to the Well 5 site since the MTBE levels had risen above the MCL. The application was approved in September 2009 and CVWD is awaiting a letter of commitment from CDPH in the next few months. The goal is for Well 5 to be back in service by the end of 2010.

B. WELL REPLACEMENT PROGRAM

The District's active wells range in age from eight (8) to seventy-six (76) years and are mostly beyond their useful life. The District started in 2000 with a well replacement program with the goal of replacing existing groundwater production capacity with new, modern wells over the next ten (10) years.

CVWD does not have any plans in the next two (2) years to install new water production wells. In the meantime, CVWD will be working with the City of Glendale on their groundwater replacement program by providing comments on site-locating of new wells, technical assistance on construction, and infrastructure details.

C. WELL REHABILTATION PROGRAM

CVWD will continue performing well rehabilitation on its existing wells. In 2008/09, CVWD performed well rehabilitation on Well 9. In 2009/10, CVWD is planning to perform well rehabilitation on Wells 10 & 11.

CVWD planned to place Well #2 back into service. Well #2 has been out of service since 1976 due to the high nitrate level. However, the cost for installation of a small ion-exchange system at Well #2 was cost prohibitive and CVWD decided to put the project on hold until funding is available.

D. GLENWOOD NITRATE REMOVAL PLANT

The Glenwood ion-exchange nitrate removal plant began operation in January 1990. The plant was out of operation for extended periods in 1992–93 and again in 1997 when repairs were necessary.

During 2008/09, the plant was in operation during the entire year to maximize the use of groundwater production. This trend will probably continue in 2009/10, even though well levels are decreasing. The historic and projected production from the Glenwood Plant is shown in Table 3.2.

E. PICKENS GRAVITY TUNNEL PRODUCTION

A small portion of the total for CVWD demand is supplied by the Pickens Gravity Tunnel. Historic and projected production from Pickens Tunnel is shown in Table 3.3.

F. FMWD/MWD – IMPORTED WATER

In 2008/09, the amount of treated water purchased from MWD via FMWD was less than previous years due to decreased water demands in response to CVWD's water conservation effort.

In 2009/10, CVWD anticipates additional decreases in the amount of imported water received from FMWD due to CVWD’s water conservation efforts to meet MWD’s allocation for a 10% water shortage. Historic and projected use of FMWD water is shown in Table 3.4.

G. CITY OF GLENDALE INTERCONNECTION

In 2004, CVWD completed the installation of a new water supply interconnection with the City of Glendale. This connection allowed CVWD to increase its water supply capacity by 5.0 cfs or 3.2 mgd. An agreement between the City of Glendale, FMWD and CVWD was signed in 2004, where CVWD will pay FMWD for the water and the City of Glendale for the maintenance and operation of bringing the water to CVWD.

CVWD did not use Glendale/CVWD interconnect (GCI) in 2008/09. CVWD anticipates a major outage in 2010 when FMWD does major upgrades to its Alta Canada pipeline.

H. CITY OF LOS ANGELES INTERCONNECTION

In 2005, CVWD received a Proposition 50, Water Security Grant from CDPH to install an emergency water supply connection with the City of Los Angeles. The new connection will provide 2.2 cfs or 1.44 mgd. In addition, the new interconnection and associated facilities will allow CVWD to provide water in low demands to FMWD and its sub-agencies in case of a local disaster or when MWD's Weymouth plant is out of service. Grant funding has been put on hold by the State of California. CVWD will resume the project once grant funding is available.

IV. JUDGEMENT CONSIDERATIONS

The allowable adjudicated rights of CVWD from the Verdugo Basin are 3,294 acre-feet per year.

- 1978–79 to 1991/92 - CVWD pumped 1,700 to 2,900 ac-ft/yr from the Verdugo Basin (below the adjudication).
- 1993/94 to 2000/01 - CVWD pumped over its adjudicated right up to 500 ac-ft/yr, which was allowed by the Watermaster's office.
- 2001-02 to 03/04 - CVWD pumped below its adjudication since basin production was declining.
- 2004/05 - CVWD increase in water production due to higher than normal rainfall and was able to pump over the adjudication by 16 ac-ft.
- 2005/06 - CVWD pumped over the adjudication by 59 ac-ft. CVWD and the City of Glendale came to a mutual agreement on compensation for the amount of water pumped over the adjudication for 2004/05 & 2005/06.
- 2006/07 - CVWD planned to maintain well production within the adjudication, however due to operator error, CVWD pumped over the adjudication by 11 ac-ft. CVWD and the City of Glendale are finalizing this issue based on the 05/06 mutual agreement on compensation.
- 2007/08 - CVWD adjusted its pumping schedule to maintain well production within the adjudication, however, CVWD was 15 ac-ft below which was due to Well 5 being out of service for high MTBE levels.
- 2008/09 - CVWD adjusted its pumping schedule to maintain well production within the adjudication, however CVWD was 330 ac-ft below which was due to Well 5 being out of service for high MTBE levels and Well 9 being out of service due to bacteriological problems.

TABLE 2.1
HISTORIC AND PROJECTED WATER DEMAND
(Acre-Feet)

2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
5,230	5,432	5,599	5,344	4,852	4,522	4,740	4,778	4,819	4,909
ACTUAL					PROJECTED				

TABLE 3.1
HISTORIC AND PROJECTED COMBINED WELL AND TUNNEL GROUNDWATER PRODUCTION
(Acre-Feet)

2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
3,310	3,353	3,305	3,281	2,965	2,705	3,190	3,294	3,294	3,294
ACTUAL					PROJECTED				

TABLE 3.2
HISTORIC AND PROJECTED GLENWOOD NITRATE REMOVAL PLANT PRODUCTION BEFORE BLENDING
(Acre-Feet)

2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
782	997	664	660	459	490	500	500	500	500
ACTUAL					PROJECTED				

NOTES:

(1) The Glenwood Treatment Plant has a capacity of 2.7 MGD of blended water.

(2) The Glenwood Treatment Plant began operation January 1990.

TABLE 3.3
HISTORIC AND PROJECTED PICKENS TUNNEL WATER PRODUCTION
(Acre-Feet)

2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
64	70	69	64	60	65	65	65	65	65
ACTUAL					PROJECTED				

TABLE 3.4
HISTORIC AND PROJECTED USE OF MWD TREATED WATER
(Acre-Feet)

2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
1,909	2,080	2,294	2,063	1,888	1,871	1,550	1,480	1,525	1,615
ACTUAL					PROJECTED				

NOTES:

(1) All values shown above are for treated water.

APPENDIX F

ANNUAL MUNICIPAL EXTRACTIONS IN ULARA

1979-2009

ANNUAL MUNICIPAL EXTRACTIONS IN ULARA
1979-80 through 2008-09
(acre-feet)

Water	San Fernando Basin*				Sylmar Basin			Verdugo Basin			ULARA
Year	Burbank	Glendale	Los Angeles	TOTAL	Los Angeles	San Fernando	TOTAL	CVWD	Glendale	TOTAL	TOTAL
2008-09	9,966	7,151	52,896	70,013	868	3,473	4,341	2,957	2,087	5,043	79,397
2007-08	6,817	7,411	50,009	64,237	2,997	3,670	6,667	3,270	2,687	5,957	76,861
2006-07	9,780	7,622	76,251	93,653	3,919	2,894	6,813	3,294	2,568	5,862	106,328
2005-06	10,108	7,374	38,042	55,523	2,175	2,857	5,032	3,354	2,390	5,744	66,299
2004-05	6,399	7,792	49,085	63,276	1,110	3,143	4,253	3,310	2,358	5,668	73,197
2003-04	9,660	7,282	68,626	85,568	3,033	3,454	6,487	2,568	2,117	4,685	96,740
2002-03	9,170	8,507	73,676	91,353	3,549	3,357	6,906	2,836	1,613	4,449	102,708
2001-02	10,540	6,838	66,823	84,201	1,240	3,766	5,005	3,266	2,129	5,396	94,602
2000-01	12,547	6,886	65,409	84,843	2,606	3,696	6,301	3,422	2,227	5,649	96,793
1999-00	12,547	1,023	98,016	111,586	2,634	3,807	6,441	3,699	2,727	6,426	124,453
1998-99	10,729	31	123,207	133,966	4,536	3,528	8,064	3,797	2,627	6,424	148,455
1997-98	3,964	28	85,292	89,284	3,642	3,308	6,950	3,747	2,820	6,567	102,802
1996-97	11,171	20	89,935	101,126	2,482	3,259	5,741	3,672	2,674	6,346	113,213
1995-96	8,067	26	72,286	80,379	2,766	2,985	5,752	3,705	2,133	5,838	91,969
1994-95	3,052	53	55,478	58,583	2,311	3,421	5,732	3,708	1,633	5,341	69,656
1993-94	2,773	115	60,480	63,368	2,052	3,398	5,451	3,634	1,402	5,037	73,855
1992-93	1,354	91	34,973	36,419	1,369	2,145	3,514	2,557	990	3,547	43,480
1991-92	39	489	75,684	76,213	3,292	2,826	6,118	2,631	633	3,264	85,596
1990-91	1,278	2,755	67,032	71,065	3,281	2,266	5,546	2,615	1,230	3,845	80,456
1989-90	16	1,500	79,949	81,465	2,626	2,763	5,389	2,903	1,329	4,232	91,086
1988-89	29	1,315	126,630	127,974	3,259	2,199	5,459	2,285	2,064	4,349	137,781
1987-88	30	1,020	104,419	105,470	3,133	777	3,911	2,268	2,096	4,364	113,745
1986-87	29	5,758	85,845	91,632	3,113	3,026	6,139	2,255	2,619	4,874	102,645
1985-86	123	5,819	80,963	86,904	3,075	3,166	6,241	2,075	3,418	5,493	98,639
1984-85	2,863	3,086	95,641	101,591	3,130	3,102	6,232	1,997	3,837	5,834	113,657
1983-84	1,063	1,708	112,840	115,611	3,106	3,907	7,013	2,009	3,551	5,560	128,184
1982-83	2,187	1,028	65,178	68,394	3,048	3,133	6,181	1,759	3,427	5,187	79,761
1981-82	523	952	83,207	84,682	3,486	3,290	6,775	1,876	3,732	5,607	97,065
1980-81	595	1,129	91,067	92,791	4,117	3,380	7,497	2,140	2,122	4,262	104,550
1979-80	677	934	57,304	58,915	3,111	2,991	6,102	1,873	1,434	3,307	68,325
Average	4,937	3,191	76,208	84,336	2,836	3,100	5,935	2,849	2,289	5,139	95,410

*Includes municipal pumping only. Does not include any physical solution pumping in the cities of Burbank, Glendale, or Los Angeles.

PG 5/26/2010