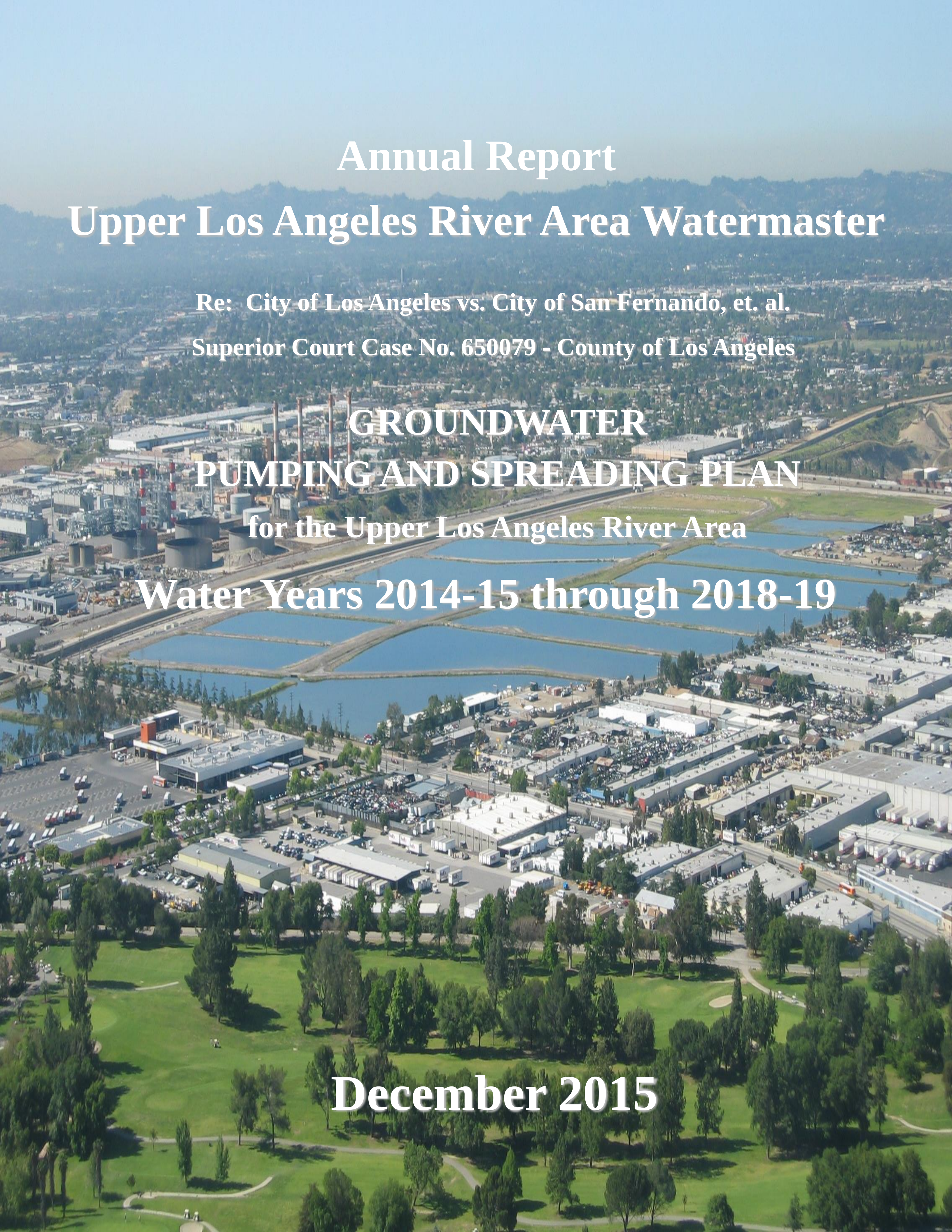


Annual Report

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

Water Years 2014-15 through 2018-19

December 2015

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

Water Years 2014-15 through 2018-19
October 2014 – September 2019

ULARA WATERMASTER
Richard C. Slade, P.G., C.E.G.

GROUNDWATER HYDROLOGY/MODELING CONSULTANT
Hadi Jonny, P.E.

WATERMASTER SUPPORT STAFF

Anthony Hicke, CHG	Assistant Watermaster
Gregory Reed, P.E.	Civil Engineering Associate
Fatema Akhter	Civil Engineering Associate
Mark Ching, P.E, P.G.	Civil Engineering Associate
Chris Repp, P.E.	Civil Engineering Associate

Copies of this report may be downloaded from the
ULARA Watermaster Website (http://ularawatermaster.com).

December 2015

TABLE OF CONTENTS

IX. TABLES

X. FIGURE

XI. PLATES

I. EXECUTIVE SUMMARY

As the Watermaster for the Court-adjudicated Upper Los Angeles River Area (ULARA), I am pleased to submit this Annual Report for the Groundwater Pumping and Spreading Plan for Water Years 2014-15 through 2018-19. Note that this Groundwater Pumping and Spreading Plan is being submitted to the Court later than its anticipated July 2015 filing date. Due to various technical and personnel issues at the Watermaster's office, the report is being provided to the Court in May 2017. However, to avoid confusion with the submittal to the Court of subsequent Annual Pumping and Spreading Plan for Water Years 2015-16 through 2019-20, this current report has been purposely dated December 2015.

Preparation of this Annual Report is in compliance with Section 5.4 of the Policies and Procedures document (as developed by the original ULARA Watermaster), which established the Watermaster's responsibility for management of the four groundwater basins in ULARA (the San Fernando, Verdugo, Sylmar and Eagle Rock basins). Also provided in this Groundwater Pumping and Spreading Plan, as appendices, are the individual pumping and spreading plans submitted by each of the five major pumping Parties (the cities of Burbank, Glendale, Los Angeles and San Fernando, and the Crescenta Valley Water District) for their proposed operations during Water Years 2014-15 through 2018-19. Further, this report discusses the possible changes in recharge, spreading, pumping rates and pumping patterns, especially in relation to the available plans for cleanup of the contaminated groundwater in the eastern portion of the San Fernando Groundwater Basin (SFB).

In this current Water Year which ended September 30, 2015, drought conditions in the State have continued, and have resulted in a historically-low allocation of State Water Project (SWP) supplies by the California Department of Water Resources (DWR). In addition, local stormwater supplies historically used for spreading in the ULARA spreading basins have been adversely impacted. The cities of Los Angeles and San Fernando both continued to experience pumping difficulties in the Sylmar Basin (due to the existence of certain groundwater contaminants), both of these Parties also expect to pump less than their annual entitlements from the SFB. Overall pumping in the SFB will also be less than its long-term average. Further, the cities of Burbank and Glendale are on track to produce more than their adjudicated water rights from SFB, whereas the City of Los Angeles continues to experience considerable challenges with groundwater contamination in this basin and thus will pump less groundwater than its annual entitlement. However, the City of Los Angeles has implemented changes to their system (such as wellhead treatment facilities) that has allowed them to extract more groundwater from the SFB than they have in recent years to offset reduction in SWP deliveries. In addition, work by the City of Los Angeles to construct new and/or replacement water wells in the Sylmar Basin has been accelerated to further increase the supply of local groundwater. In the Verdugo Basin, both the Crescenta Valley Water District, due to local problems with groundwater contamination, and Glendale, due to its limited local pumping capacity, expect to produce less than their adjudicated water rights during Water Year 2014-2015. There are no municipal-supply wells in the Eagle Rock Basin, the smallest of the four separate groundwater basins in ULARA.

Currently, there are five major groundwater cleanup facilities (each with its own water wells and treatment plant) in operation in ULARA. These include: the North Hollywood Operable Unit (NHOU) and the Pollock Wells Treatment Plant, both of which are located in the City of Los Angeles; the Burbank OU (BOU) in Burbank; the Glendale OU (GOU), which contains a North Operable Unit (GNOU) in Glendale and a South Operable Unit (GSOU) in Los Angeles; and the CVWD Glenwood Nitrate Removal Plant in La Crescenta. Glendale operates its grant-funded Weak Base Anion Exchange (WBA) Chromium (VI) Removal facility to remove hexavalent chromium from a portion of the groundwater produced by its OU wells. In addition to the WBA treatment, an existing 100-gpm demonstration facility uses reduction, coagulation and filtration (RCF) technology to remove hexavalent chromium from the groundwater. The City of Los Angeles continues to operate wellhead treatment facilities on a few of its twelve wells at its Tujunga Wellfield in the SFB.

The groundwater model for the SFB, which is updated each year by the Watermaster support group at the Los Angeles Department of Water and Power (LADWP), continues to be used to simulate the combined effects of the projected pumping and spreading operations on groundwater elevations in this basin for the five-year period ending September 30, 2019. As simulated by the model, water levels are projected to increase in some areas of the SFB as a result of the projected future spreading of stormwater and imported MWD water. Some "pumping troughs" or areas of declining water levels are identified as a result of ongoing pumping operations in those areas. Los Angeles has had to reduce its pumping in some of its wellfields in the SFB in response to ongoing water quality concerns regarding the existence of certain contaminants at concentrations that exceed their respective regulatory limits in the groundwater. As a result, LADWP is taking steps to site, design and eventually construct water treatment facilities to treat the contaminated groundwater in an effort to regain the operational capacity of its wellfields over the next several years. In addition, wellhead treatment in the Tujunga wellfield is expected to allow for increased groundwater extraction from the SFB. Also noteworthy are the simulated groundwater elevation contours in the areas near the BOU wells which appear to show some possible effects 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 6,808 AF over the next five years, as simulated by the LADWP model using projections of future pumping and spreading operations provided by the ULARA Parties for the modeling effort.

In closing, I thank each Party for taking the time and making the effort to provide its individual Spreading and Pumping Plan for the next five Water Years, and express my appreciation to each of those Parties for providing information and data that were essential to the preparation of this Annual Pumping and Spreading Plan document for Water Years 2014-15 through 2018-19. Also much appreciated has been the continued assistance of the Watermaster support group at LADWP (including Mr. Hadi Jonny, Ms. Fatema Akhter, and Mr. Greg Reed) in helping with data analyses, modeling and preparation of the figures for this report.

RICHARD C. SLADE
ULARA Watermaster

II. INTRODUCTION

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

Section 5.4 of the Policies and Procedures requires 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) its own Groundwater Pumping and Spreading Plan to the ULARA Watermaster. Each plan is to include the projected groundwater pumping and spreading volumes, recent water quality data for each active water well, and possible modifications planned for key facilities owned/operated by that Party (e.g., constructing or destroying wells, building or modifying treatment plants, etc) for the next five-year period.

The ULARA Watermaster is required to: evaluate the five individual plans in regard to the 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 helping to protect 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 so that it may be provided to the Court in July of each Water Year.

This Annual Report represents the Groundwater Pumping and Spreading Plan for the five Water Year period of 2014-15 through 2018-19 for ULARA, and it has been prepared pursuant to Section 5.4 of the Policies and Procedures document. This Groundwater Pumping and Spreading Plan provides basic information to the Administrative Committee for use in possibly improving basin management, providing protection of the water rights of each Party, and protecting water quality within ULARA.

III. PLANS FOR THE 2014-15 THROUGH 2018-19 WATER YEARS

A. Projected Groundwater Pumping for 2014-15 Water Year

The estimated pumping capacities of the various municipal-supply water wells owned by each of the five Parties within the San Fernando, Sylmar and Verdugo basins are listed on Table 3-1. Because there are no municipal-supply wells in the Eagle Rock Basin, this small basin is not listed on Table 3-1 and is not discussed further herein. Also shown on Table 3-1 are the number of active wells owned by each Party in each basin, the total number of municipal-supply wells owned by all Parties in each basin, and the estimated pumping capacity of each well (as reported by each Party). Clearly, the SFB has the most Parties (3) and the total largest number of currently active municipal-supply water wells (76); the Sylmar Basin has the fewest number of active wells (4). The number of active wells in each basin is subject to change each year due to various problems, such as water level declines, mechanical problems, and impacts from groundwater contamination.

Table 3-1A has been prepared to show the actual and projected volumes of groundwater pumped by the five Parties for Water Year 2014-15 in the San Fernando, Sylmar and Verdugo groundwater basins. Actual values listed on Table 3-1A represent the specific volumes of groundwater pumped by each Party for the period October 2014 through April 2015, as reported to the Watermaster by the respective Party. Projected values shown on Table 3-1A are the groundwater extractions estimated (or projected) by each Party for the remainder of Water Year 2014-15 (i.e., from May 2015 through September 2015) for each of the three ULARA groundwater basins. As seen on Table 3-1A, the five Parties expect to pump a total of approximately 112,622 acre feet (AF) of groundwater during Water Year 2014-15 from the three ULARA groundwater basins. These total groundwater extractions for Water Year 2014-15 by the five Parties are expected to include 104,675 AF from San Fernando Basin, 4,564 AF from Sylmar Basin and 3,383 AF from Verdugo Basin.

The total volume of groundwater expected to be pumped by all Parties during the current Water Year (112,622 AF) is 3,377 AF more than the long-term historical average extractions from the three basins for the 35-year period of 1979-2014. The estimated volume of pumping for the next Water Year (2015-16) is shown on Table 3-1B to be 90,214 AF, which is less than the historical long-term (1979-2014) average of 109,245 AF.

As shown on Table 3-1A, the City of Burbank plans to pump 10,575 AF of groundwater from the SFB in the 2014-2015 Water Year; this volume exceeds its annual pumping entitlement from this basin (including extractions by Valhalla Mortuary). Including approximately 400 AF of pumping by Valhalla Mortuary, extractions by Burbank will be 200 AF less than its five-year average of 10,775 AF, and 4,420 AF higher than its long-term average of 6,155 AF for the period of 1979-2014. Burbank's annual entitlement for the 2014-15 Water Year is 4,288 AF, based on its 20 percent import return credit (as reported in the 2013-14 Annual Watermaster Report). Existing and planned extractions by Burbank are required by its EPA-mandated groundwater clean-up operations by its BOU facilities; the BOU has a total pumping 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 its annual import return credit by electing to purchase as much as 4,200 AF of Physical Solution water from Los Angeles. Burbank may also purchase and import water from the MWD and store it in the SFB, or obtain stored water credits from the cities of Los Angeles and/or Glendale. Since the completion of the Foothill Feeder connection, Burbank can spread MWD water in the Pacoima spreading grounds, and accumulate credit for the spread water. As of April 2015, Burbank has spread 150 AF of MWD water in the Pacoima spreading grounds during Water Year 2014-2015. In December 2014, Burbank and Los Angeles exchanged 7,200 AF of purchased imported water delivered to LADWP for groundwater credits to Burbank. Burbank can also use a portion of its *available* groundwater storage credits, which were 2,729 AF as of October 1, 2014 (Burbank also has an additional 8,952 AF of stored water credits *on reserve*).

CVWD plans to pump 2,200 AF in Water Year 2014-15 from Verdugo Basin; this volume is less than its current full right of 3,294 AF/Y from this basin. This planned pumping by CVWD from Verdugo Basin is 637 AF less than its long-term average pumping of 2,837 AF for the period 1979-2014 and 565 AF less than its five-year average of 2,765 AF (2009-2014).

The City of Glendale resumed significant pumping from the SFB when its Glendale Operable Unit (GOU) began operating in September 2000. In the 2014-15 Water Year, Glendale plans to pump 7,769 AF from the SFB; this volume is 140 AF less than its five-year average of 7,909 AF (2009-2014). Glendale's annual water right is 4,827 AF from SFB, based on its 20 percent import return credit for water delivered to its service area within this basin during the 2013-14 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 9,194 AF as of October 1, 2014 (Glendale also has an additional 31,061 AF of stored water credits *on reserve*).

In the Verdugo Basin, Glendale plans to pump 1,183 AF in Water Year 2014-15; this volume is 1,036 AF less than its 35-year (1979-2014) historical average extractions of 2,219 AF from this basin, and represents a decrease of 618 AF relative to its average pumping during the recent five-year period of 2009-2014 (see Table 3-1B). Glendale has been taking steps to increase its pumping capacity from the Verdugo Basin. Glendale completed the rehabilitation of its Glorietta Wells 3 & 4 in 2013. In 2010-11, Glendale rehabilitated an old, unused well on Foothill Boulevard and connected it to the City's water supply system in mid-2011. Additionally, a new well at the Rockhaven Sanitarium was constructed in mid-2011, but, due to elevated concentrations of nitrate in this portion of Verdugo Basin, this well could not be used immediately. In 2014, GWP and CVWD applied for and were awarded a grant through the Greater Los Angeles IRWM Group, as a joint project to make use of the groundwater from the Rockhaven Well. Groundwater extracted from the well will now be conveyed to CVWD's Nitrate Removal Treatment Facility at Glenwood for nitrate removal and disinfection and will then be used to serve the La Crescenta-Montrose area. The volume of groundwater extracted will be counted against the adjudicated water right of Glendale in the Verdugo Basin; those extractions will be reported to the ULARA Watermaster on a monthly basis. GWP entered into agreement with CVWD for this arrangement, and work on the Rockhaven Well and its ancillary facilities is expected to be completed and in operation by January 2016.

The City of Los Angeles expects to pump 86,331 AF this Water Year from the SFB, a volume that is 1,760 AF less than its long-term (1979-2014) annual average of 88,091 AF from this basin, and 29,616 AF more than its average pumping over the past five years (2009-2014). Los Angeles expects to pump 728 AF of groundwater from the Sylmar Basin; this volume is 1,901 AF less than its 1979-2014 average of 2,629 AF from this basin. As of October 1, 2014, Los Angeles' *available* stored water credits were 122,787 AF in the SFB (Los Angeles also has an additional 414,836 AF of stored water credits *on reserve* in the SFB). In the Sylmar Basin, Los Angeles currently has 9,014 AF of "frozen" water credits, or 10,578 AF of credits using the 5-year calculation method.

For 2014-15, the City of San Fernando plans to pump 3,836 AF from the Sylmar Basin. This volume is 620 AF more than its average pumping for the past five years and 720 AF more than its 34-year long-term average (for 1979 to 2014). San Fernando currently has 404 AF of "frozen" water credits, or 1,394 AF of credits using the 5-year calculation method.

Estimated pumping capacities of the ULARA wellfields are provided in Table 3-1A. Actual and projected amounts of pumping and spreading by the major parties during 2014-2015 are shown in Tables 3-1A, 3-1B, and 5-1A.

B. Constraints on Pumping as of 2014-15

CONSTRAINTS ON PUMPING IN THE SAN FERNANDO BASIN

City of Burbank – The United States Environmental Protection Agency (USEPA) Consent Decree project implemented the BOU treatment facility which became fully operational on January 3, 1996.

As part of the requirement to close the first consent decree, USEPA required Burbank to demonstrate that the BOU would operate at its design capacity. In the summer of 2010, Burbank successfully completed a 60-day performance test at the BOU operating at 9,000 gpm. To ensure the effectiveness of the remedy EPA monitored drawdown and the extent of the cone of depression by conducting a multi-well pumping test for 30 days during the demonstration time frame. EPA used water levels and pumping ratio data monitored during this pumping test to update BOU hydraulic conductivity, transmissivity, and storativity values in the Basin-wide groundwater model.

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 an operational mode for the BOU that allows the BOU wells to be pumped and also permits the blending of this pumped groundwater 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). Effective July 1, 2014, the Maximum Contaminant Level (MCL) for Chromium VI (Cr-VI) in the State of California is 10 µg/L, as recommended by the California Department of Public Health (now under the jurisdiction of the Division of Drinking Water). Since the establishment of this new MCL, the City of Burbank has a goal of accepting a maximum of 7 micrograms per liter (µg/L) of total chromium after blending for distribution within its water system.

Currently, the BOU operations are limited by fluctuations in city-wide water demands and blending requirements to manage chromium concentrations. However, Burbank plans to continue the voluntary shut down of its 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. 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. The GAC treatment plant will remain on an active status, but will not be operated except for water quality testing of its wells, and for emergencies.

The City of Burbank currently contracts with TerranearPMC, for the day-to-day operation of the BOU.

City of Glendale – The Glendale Operable Unit (GOU) began operating in September 2000 but hexavalent chromium [Cr(VI)] was encountered shortly thereafter in the pumped groundwater. However, because the Glendale OU was not designed to treat for chromium, the GOU wells were being pumped and blended in a manner to limit Cr(VI) concentrations to achieve the City's target of 5 μg/L.

The City has been managing a major research effort on identifying viable treatment technologies for the removal of Cr(VI) from its pumped groundwater. In 2010, Glendale constructed the Weak Base Anion (WBA) Chromium Removal facility to remove Cr(VI) from groundwater pumped from GOU Well GS-3 using WBA exchange technology. The City of Glendale also constructed a 100-gpm demonstration-scale facility next to the Glendale Water Treatment Plant; this plant uses reduction, coagulation and filtration (RCF) technology with microfiltration as an enhancement. These facilities have been effective in removing Cr(VI) in the groundwater to concentrations below 5 μg/L. The Hexavalent Chromium Removal Research Project Report was published on February 28, 2013. With the operation of the WBA & RCF facilities and blending with imported MWD water, Glendale continues to meet its goal of 5 μg/L in the water entering the distribution system; lower than State MCL of 10 μg/L for Cr(VI).

City of Los Angeles - All wellfields operated by Los Angeles within the SFB have been impacted to varying degrees by groundwater contamination, primarily from volatile organic compounds (VOCs), such as trichloroethylene (TCE) and perchloroethylene (PCE). Further, increasing concentrations of Cr(VI) have been detected in certain water supply wells, as well as other emerging chemicals. This contamination has greatly impacted the ability of Los Angeles to pump groundwater from the SFB. Contaminant concentrations have exceeded the respective Primary MCLs for the VOCs in a large percentage of the active wells operated by Los Angeles. Whereas Los Angeles' five-year pumping plans reflect continued reductions in its groundwater pumping, this City is responding to the challenges of groundwater contamination by pursuing plans to build new facilities for contaminant removal; when completed, these facilities will help restore Los Angeles' ability to pump and serve potable groundwater to its customers.

Hexavalent chromium contamination also resulted in the cessation of pumping by one of Los Angeles' extraction wells, Aeration Well No. 2, at its 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 and provide wellhead treatment for this extraction well. Honeywell continues to discharge groundwater pumped from Aeration Well No. 2 to the sanitary sewer for plume containment while continuing to develop the treatment process that will return the use of this well for potable water supply.

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. To date, VOC contamination has not been detected in any of its municipal-supply wells in this basin. However, two of its wells have pumped groundwater with nitrate concentrations that have exceeded the Primary MCL for nitrate (as NO_3) of 45 milligrams per liter (mg/L). One of these wells (Well 7A) was placed on inactive status whereas the other well (Well 3) has been on stand-by status while awaiting implementation of a nitrate mitigation plan. Old septic systems and past agricultural practices in the region are the likely causes of these elevated nitrate concentrations in the local groundwater. The City of San Fernando selected a consultant to design a nitrate removal system and a new transmission line. Current projections include the installation of a new Envirogen ion exchange nitrate removal unit. That treatment system is expected to come on-line in 2016.

City of Los Angeles - Los Angeles has been unable to pump its full adjudicated water right from the Sylmar Basin due to elevated concentrations of TCE in at least two wells in its Mission Wellfield and also to the physical deterioration of the infrastructure at this facility. A project to rehabilitate this wellfield is underway by LADWP. Phase 1 of the project provided for the replacement of a water storage tank and related control systems. LADWP has accelerated the implementation of Phase 2 of the project in response to the ongoing drought conditions in California. Phase 2 includes the construction of three new water-supply wells, the permanent and proper destruction of two deteriorated/older water wells, and the construction of additionally-required infrastructure.

A feasibility study of installing wellhead treatment units for the two existing water wells is also underway. Once the project is complete, Los Angeles will be more capable of pumping its annual water right and utilizing its stored water credits from this basin under the 5-year calculation method for Sylmar Basin.

CONSTRAINTS ON PUMPING IN THE VERDUGO BASIN

Crescenta Valley Water District - All of the groundwater rights of CVWD occur in the Verdugo Basin. Groundwater contamination from VOCs has been negligible to date; however, nitrate contamination is widespread and methyl tertiary butyl ether (MTBE), a component of gasoline, has also been detected in a few CVWD-owned wells. Elevated nitrate concentrations are mitigated in the water supply by treating a portion of the pumped groundwater using anion exchange at the existing 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.

From the initial detection of MTBE in 2005, groundwater pumped by the 12 wells in CVWD's service area has encountered concentrations of this contaminant ranging up to approximately 50 µg/L. In August 2006, concentrations of MTBE increased to values above its Primary MCL of 13 µg/L in Well 7, whereupon this well was immediately taken out of service. In November 2006, the prior Watermaster responded by establishing the Verdugo Basin MTBE Task Force; task force members included the CDPH, the LARWQCB, the ULARA Watermaster, Glendale Water and Power, CVWD, and various oil companies and independent gas station owners in Verdugo Basin. The Task Force had historically been meeting at the CVWD office on a bi-monthly basis to coordinate site-remediation activities among the various responsible parties.

In Water Year 2009-10, CVWD received a grant from CDPH under the Drinking Water Treatment and Research Fund for funding the installation of a granulated activated carbon (GAC) water treatment system for removal of MTBE at its Well 5. In February 2011, CVWD performed a pumping test at Well 5 to determine if the MTBE levels would increase after pumping activity. The results of the pumping test were that the MTBE concentrations in the groundwater remained steady at 0.20 µg/L. CVWD was given permission by CDPH to place Well 5 back into service in March 2011 and, in addition, CDPH suspended CVWD's grant for funding the installation of the GAC at Well 5. Since the MTBE levels in Well 5 were below their respective secondary or primary MCLs, grant funding was put on hold until such time that the MTBE might increase once again. In 2011-12, the grant funding was eliminated by the State. If MTBE levels do rise again, CVWD will have to find a new funding source for the treatment. In Water Year 2013-14, the Task Force did not meet. The Task Force will reconvene at any time MTBE concentrations are higher than 1.0 ug/L in any CVWD well.

Declining water levels in the Verdugo Basin have also affected CVWDs ability to extract groundwater. In Water Year 2012-13, CVWD received a Local Groundwater Assistance (LGA) grant from DWR to perform a feasibility study for stormwater recharge within the Verdugo Basin. The study is a cooperative effort with the City of Glendale, the County of Los Angeles, and other local stakeholders to determine if stormwater can be stored and then recharged at Crescenta Valley County Park. The feasibility study started in August 2013 and has been ongoing through WY 13/14. The study may be completed by June 2016.

City of Glendale - The City of Glendale has made only limited use of its current maximum adjudicated right of 3,856 AF/Y from the Verdugo Basin, due to water quality problems, groundwater level declines, and limited extraction capacity in this basin.

In order to increase the use of its water rights, the City completed construction of the Verdugo Park Water Treatment Plant ("VPWTP") in 1996. This facility treats water from the two low-capacity wells, and from a subsurface horizontal infiltration system along Verdugo Canyon.

In 2010-11, the City completed the rehabilitation of its Foothill Well and constructed its new Rockhaven Well in the Montrose area in a further attempt to increase its extraction capacity from the Verdugo Basin. The Foothill Well was connected to the City's water supply system in mid-2011. The Rockhaven Well is expected to be completed and in operation by January 2016, pursuant to the treatment agreement between GWP and CVWD. In 2013, the City completed the rehabilitation of Glorietta Wells 3 & 4.

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	---	2.5	1,122
Erwin	2	---	6.1	2,738
North Hollywood	14	3	55.5	24,910
Pollock	2	---	5.9	2,648
Rinaldi-Toluca	15	---	113.0	50,718
Tujunga	12	---	98.2	44,075
Verdugo	2	---	7.4	3,321
Whitnall	4	---	14.8	6,643
City of Burbank	8	2	24.5	11,000
City of Glendale	10	---	17.0	7,650
TOTAL	76	5	345.0	154,825
SYLMAR BASIN				
City of Los Angeles	2	---	5.0	2,244
City of San Fernando	2	1	8.5	3,800
TOTAL	4	1	13.5	6,044
VERDUGO BASIN				
CVWD	12	---	5.3	2,400
City of Glendale	6	---	5.0	2,240
TOTAL	18	---	10.3	4,640

Note:

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

TABLE 3-1A: HISTORIC AND PROJECTED GROUNDWATER EXTRACTIONS 2014-15

(Acre-feet)

Party/Well Field	2014			2015									Total
	Oct.	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
						SAN FERNANDO BASIN							
City of Los Angeles													
Aeration (NHOU)	91	61	58	96	101	44	85	86	119	123	123	119	1,106
Erwin	0	0	0	0	0	0	0	0	0	0	0	0	-
North Hollywood	2,787	2,508	1,514	615	722	369	974	1,027	1,012	1,046	1,046	1,012	14,632
Pollock	344	110	359	12	24	162	350	363	357	369	369	357	3,176
Rinaldi-Toluca	3,272	2,914	1,391	2,200	1,862	1,371	1,657	1,734	1,607	3,075	3,752	3,631	28,466
Tujunga	4,364	2,020	2,387	2,245	1,770	2,172	3,285	3,401	4,166	4,428	4,428	4,285	38,951
Verdugo	0	0	0	0	0	0	0	0	0	0	0	0	-
Whitnall	0	0	0	0	0	0	0	0	0	0	0	0	-
SUB TOTAL City of Los Angeles:	10,858	7,613	5,709	5,168	4,479	4,118	6,351	6,611	7,261	9,041	9,718	9,404	86,331
City of Burbank[A]	831	725	524	659	828	942	964	1,020	1,020	1,020	1,020	1,020	10,575
City of Glendale[B]	617	381	688	709	621	521	528	741	741	741	741	741	7,769
TOTAL San Fernando Basin:	**12,306**	**8,719**	**6,921**	**6,536**	**5,928**	**5,581**	**7,843**	**8,372**	**9,022**	**10,802**	**11,479**	**11,165**	**104,675**
						SYLMAR BASIN							
City of Los Angeles	0	0	0	0	0	0	0	0	179	185	185	179	728
City of San Fernando	292	218	126	209	199	232	231	466	466	466	466	466	3,836
TOTAL Sylmar Basin:	**292**	**218**	**126**	**209**	**199**	**232**	**231**	**466**	**645**	**651**	**651**	**645**	**4,564**
						VERDUGO BASIN							
Crescenta Valley Water Dist.	209	190	158	176	147	188	177	191	191	191	191	191	2,200
City of Glendale	102	103	105	99	90	93	49	108	108	108	108	108	1,183
TOTAL Verdugo Basin:	**311**	**293**	**263**	**275**	**237**	**281**	**226**	**299**	**299**	**299**	**299**	**299**	**3,383**
ULARA TOTAL:	**12,909**	**9,230**	**7,310**	**7,020**	**6,364**	**6,094**	**8,300**	**9,137**	**9,966**	**11,752**	**12,429**	**12,109**	**112,622**

Notes:

A. Includes BOU and Valhalla.

B. Includes GOU, Forest Lawn, and Grayson Power Plant

C. Shaded Cells denote projected values

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

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

(Acre-feet)

Party/Wellfield	Historic Average Pumping (AF)		Projected Groundwater Pumping (AF)				
SAN FERNANDO BASIN							
City of Los Angeles	1979-2014[A]	2009-2014[B]	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
Aeration (NHOU)	1,199	909	1,106	1,725	1,725	4,923	4,923
Erwin	4,094	723	0	1,000	0	1,000	0
North Hollywood	24,215	11,927	14,632	7,000	13,000	18,620	18,620
Pollock	1,783	2,044	3,176	2,178	2,178	2,178	2,178
Rinaldi-Toluca	25,038	12,579	28,466	19,200	19,200	19,200	19,200
Tujunga	20,235	25,379	38,951	29,700	23,700	23,700	23,700
Verdugo	5,039	1,309	0	1,000	0	1,000	0
Whitnall	6,488	1,845	0	1,000	0	1,000	0
SUBTOTAL City of Los Angeles	88,091	56,715	86,331	62,803	59,803	71,621	68,621
City of Burbank[C]	6,155	10,775	10,575	10,913	10,913	10,913	10,913
City of Glendale[D]	4,199	7,909	7,769	7,720	7,720	7,720	7,720
TOTAL San Fernando Basin:	**98,444**	**75,399**	**104,675**	**81,436**	**78,436**	**90,254**	**87,254**
SYLMAR BASIN							
City of Los Angeles	2,629	1,388	728	1,809	4,170	4,170	4,170
City of San Fernando	3,116	3,216	3,836	2,900	2,900	2,900	2,900
TOTAL Sylmar Basin:	**5,745**	**4,604**	**4,564**	**4,709**	**7,070**	**7,070**	**7,070**
VERDUGO BASIN							
Crescenta Valley Water District	2,837	2,765	2,200	2,400	2,610	2,730	3,090
City of Glendale	2,219	1,801	1,183	1,669	3,856	3,856	3,856
TOTAL Verdugo Basin:	**5,056**	**4,566**	**3,383**	**4,069**	**6,466**	**6,586**	**6,946**
TOTAL ULARA:	109,245	84,569	112,622	90,214	91,972	103,910	101,270

Notes:

A. In prior reports, the longterm-average included only muncipal well field pumping. Herein, the averages include physical solution pumping for burbank, Glendale and CVWD (but not Los Angeles). Historic pumping averages include wells that are no longer in service.

B. 5-year average. Please note that in the historic report dated July 2011, this 5-year average did not include physical solution pumping.

C. Includes BOU, City pumping, and Valhalla. Valhalla pumping not included in projections after 2013-14. Vallhalla is expected to be using recycled water in lieu of puming beginning sometime during the 2013-14 WY.

D. Includes Forest Lawn, GOU, and Grayson Power Plant pumping.

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

IV. GROUNDWATER PUMPING AND TREATMENT FACILITIES

A. Wellfields

As shown on Table 3-1, there are ten municipal-supply wellfields located in the SFB, two in the Sylmar Basin, and two in the Verdugo Basin; there are no municipal-supply wells in the Eagle Rock Basin. Table 3-1, as mentioned previously, also lists the current number of active wells in each basin and the estimated pumping capacity of each wellfield (as reported by each Party). The general locations of wellfields within the SFB are shown on Plate 3.

Table 4-1 has been prepared to summarize the volumes (in AF) of groundwater that have reportedly been pumped and treated in the San Fernando, Sylmar and Verdugo basins by each of the various treatment facilities owned and/or operated by the five Parties in ULARA. The volumes of treated groundwater are listed for the years 1985-86 through 2013-14. As seen on Table 4-1, an approximate total of 488,385 AF of groundwater has been treated during that time period by the eight listed treatment facilities. Table 4-2 lists the volumes (in AF) of groundwater that are projected to be treated at the seven listed (active) treatment facilities for the period 2014-15 through 2018-19. As shown on Table 4-2, the Parties report that an approximate total of 257,894 AF are projected to be treated at their existing treatment facilities between Water Years 2014-15 through 2018-19.

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	Los Angeles North Hollywood OU	Los Angeles Pollock Wells Treatment Plant	Los Angeles Tujunga 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
2009-10	5		10,043	7,300	410	935	2,377	36,623	57,693
2010-11	4		10,394	7,473	592	1,150	3,127	12,200	34,940
2011-12	4		9,993	7,830	447	1,248	2,957	20,648	43,128
2012-13	0		11,387	6,518	488	343	1,629	5,718	26,084
2013-14	1		10,148	7,231	150	968	2,580	38,304	59,382
Total AF	**15,297**	**4,815**	**172,498**	**101,068**	**18,663**	**30,065**	**32,487**	**113,493**	**488,385**

NOTE: Corrections were made herein to totals for the Los Angeles North Hollywood OU for the 2010-11, 2011-12, and 2012-13 water years.

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
2014-15	0	10,175	7,349	175	1,107	3,177	38,951	60,934
2015-16	0	10,913	7,300	250	1,725	2,178	29,700	52,066
2016-17	0	10,913	7,300	300	1,725	2,178	23,700	46,116
2017-18	0	10,913	7,300	350	4,923	2,178	23,700	49,364
2018-19	0	10,913	7,300	400	4,923	2,178	23,700	49,414
TOTAL	**0**	**53,827**	**36,549**	**1,475**	**14,403**	**11,889**	**139,751**	**257,894**

1. Groundwater treatment includes chromium via theWBA Chromium Removal facility and the RCF demonstration project.
2. Treatment plant utilizing GAC wellhead treatment only on Wells #6 and #7 of the twelve extraction wells at Tujunga Wellfield

B. Active Groundwater Pumping and Treatment Facilities

Glendale OU (GOU) – City of Glendale

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

The GOU is comprised of a treatment plant, eight extraction wells (4 in the Glendale North area and 4 in the Glendale South area), a pumping plant, a disinfection facility, and associated piping. The facility is designed to treat groundwater contaminated by TCE and PCE at a total combined rate of approximately 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 eight extraction wells are being pumped and blended in a manner to limit hexavalent chromium concentrations to achieve the City's target of 5 μg/L for this constituent. Glendale has continued to pursue an aggressive research program to identify viable treatment technologies for the removal of hexavalent chromium from its pumped groundwater. These technologies consist of the Weak Base Anion Exchange (WBA) Chromium (VI) Removal facility, and a 100-gpm demonstration scale facility that uses reduction, coagulation and filtration (RCF) technology. The treatment facilities using the two technologies identified in a study by the consulting firm of Malcolm Prinie were constructed and placed into service by April 2010; these facilities have been relatively effective in removing chromium in the groundwater to concentrations below 5 μg/L.

Burbank OU (BOU) – City of Burbank

The remediation of groundwater contamination in the eastern portion of the SFB was also 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 USEPA's Second Consent Decree, Burbank assumed operation of the BOU on March 12, 2001 and will be the long-term primary operator of this facility. Burbank, in cooperation with the USEPA and Lockheed-Martin, continued with design improvements and operational changes to make the facility mechanically more reliable. During the 2013-14 Water Year, a total of 10,148 AF of groundwater was treated at the BOU, a decrease of 1,239 AF from the volume treated in the prior Water Year. As a requirement of the Second Consent Decree from the USEPA, Burbank also reduces the concentrations of nitrate in the groundwater by blending the treated effluent with imported supplies from MWD at its blending facility before delivery to customers in the City of

Burbank. As listed above, the City of Burbank currently contracts with TerranearPMC for the day-to-day operation and maintenance of the BOU.

<u>GAC Treatment Plant - City of Burbank</u>

This facility, which includes the two wells on Lake Street, was operated by the City of Burbank from 1992-2001. These two wells were able to pump water at a combined rate of 2,000 gpm to the liquid-phase GAC plant for removal of certain VOCs. When the plant was in use, the treated water supplemented production from the BOU and was delivered to the Burbank distribution system. Currently, the plant is only used for emergencies or to permit the groundwater to be sampled and tested for its water quality, because of the prior detections of Cr(VI) in the groundwater. As a result, in the 2013-14 Water Year, only 1 AF of pumped groundwater was treated at the GAC. 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 7 µg/L set by the Burbank City Council as a policy for water to be delivered to its distribution system.

<u>North Hollywood OU (NHOU) - City of Los Angeles</u>

The North Hollywood Operable Unit (NHOU) was placed into service in December 1989 and is being operated and maintained under the direction of the USEPA in accordance with the Cooperative Agreement between these two agencies. USEPA provides 90 percent of the funding for the operations and maintenance of the North Hollywood Groundwater Treatment Facility.

The NHOU was designed to achieve a groundwater treatment capacity of up to 2,000 gpm utilizing eight extraction wells and an aeration tower to remove certain VOCs from the pumped groundwater. Vapor-phase granular activated carbon (GAC) vessels are then utilized to remove VOCs from the aeration tower's air emissions.

Newly emerging constituents such as Cr-VI and 1, 4-dioxane, have been detected in the extraction wells in this OU; the NHOU was not designed to treat these constituents. Concentrations of Cr(VI) in excess of 400 ug/L since 2009 have caused the pumping (and plume remediation efforts) by extraction well NHE-2 to cease and the effluent to be diverted to the sanitary sewer. On June 28, 2013 concentrations of Cr(VI) spiked to 171 ug/L in NHE-3, and now exceed the Primary MCL of 10 ug/L for Cr(VI) and 50 ug/L for total chromium.

LADWP continues to work with the USEPA and the PRPs on implementing the 2nd Interim Remedy (2IR). The Record of Decision (ROD) for the NHOU2IR was issued by the USEPA in September 2009. It is expected that this new remedy will include the deepening of several extraction wells, the addition of more extraction wells, and a new treatment facility designed to remove VOCs, Cr(VI), 1, 4 dioxane, and other contaminants of concern. This remedy will continue to focus on the containment and remediation of the highest concentration areas within the plumes; lower concentration areas will still need to be addressed. An amendment to the ROD for the 2IR was approved on January 10, 2014. The key change was the addition of a re-injection option for the 4,923 AFY of treated water that is contemplated as part of the 2IR. However, the LADWP, USEPA, and the PRPs are working on a Cooperative Containment Concept that will more than double the amount of treated water to an anticipated 10,500 AFY and also allow for receiving the treated water into LADWP's drinking water system as the preferred option over the reinjection alternative. If all issues can be agreed upon, design may start as early as August 2015.

Pollock Wells Treatment Plant - City of Los Angeles

The Pollock Wells Treatment Plant was placed into service March 1999 to remove certain VOCs from the groundwater at a combined pumping rate of up to 3,000 gpm; this facility was specifically designed to absorb TCE and PCE. Liquid-phase GAC is used to restore the use of the Pollock wells. Pumping at these wells also helps to reduce the amount of rising groundwater that leaves the San Fernando Basin via the Los Angeles River.

Tujunga Wellfield Demonstration Project – City of Los Angeles

The Tujunga Wells Treatment Plant was placed into service May 2010. New liquid-phase GAC groundwater treatment vessels were installed on two production wells at this wellfield, and have restored the use of 12,000 acre feet per year (AFY) of pumping capacity that had been unavailable due to water quality constraints. The wellhead treatment facilities were placed into service in May 2010.

Glenwood Nitrate Removal Plant – Crescenta Valley Water District

Groundwater pumped from wells operated by CVWD in the Verdugo Basin often contains elevated to excessive concentrations of nitrate. A portion of the pumped groundwater is treated by ion exchange and then blended with untreated water from MWD and/or imported water to reduce nitrate concentrations to values that are below the Primary MCL for nitrate (as NO_3) of 45 mg/L. In the past few years, the ion-exchange plant has been in operation for the majority of each year to help maximize the use of local groundwater. For the 2013-14 Water Year, the ion-exchange plant was in operation for twelve (12) months, but only very minor flows were available for four (4) of those months.

C. Other Issues

1. Future Groundwater Pumping and Treatment Facilities

Verdugo Basin Wells – City of Glendale

Glendale completed the rehabilitation of its Foothill Well and connected this well to the City's water supply system in mid-2011. In 2013, the City completed the rehabilitation of its Glorietta Well Nos. 3 and 4A. The basic purpose of this well rehabilitation work was to increase the local pumping capacity in an effort to help Glendale obtain its full adjudicated water right from Verdugo Basin.

The Rockhaven Well was constructed in 2010-11 in Verdugo Basin for the City, but the new well has been off-line and has been inactive since its construction due to elevated nitrate concentrations. Glendale has been working with CVWD on a project to activate the well. The project will use CVWD's existing Nitrate Treatment Removal Facility to treat the local groundwater to Federal and State water standards. When completed, the project will reduce the dependence of these two Parties on imported MWD water, and provide the additional benefit of reducing the amount of nitrate within the Verdugo Basin. The project is estimated to produce about 480 AF/yr of additional local water. CVWD and Glendale have submitted a 2014 Drought Grant application as part of Proposition 84 for funding for the design and construction of the Rockhaven Well project; grant funding for the project was approved. GWP entered into agreement with CVWD for this arrangement, and the Rockhaven Well is expected to be completed and in operation by January 2016.

Groundwater System Improvement Study – City of Los Angeles

Since 2009, LADWP has been moving forward with a $34 million Groundwater System Improvement Study (GSIS) to fully characterize the groundwater basin as necessary, in order to develop conceptual plans for short- and long-term strategies for remediation, containment, clean-up and removal of the contaminated groundwater. As a part of the GSIS, the LADWP drilled an additional 25 monitoring wells, performed water quality sampling from 94 wells, and completed the raw water quality characterization. This initial phase of the GSIS was completed in early 2015. The conceptual planning of potential remediation facilities for the groundwater cleanup is on-going. A high-level concept plan and cost estimate was developed for the remediation facilities necessary to clean up an estimated 123,000 AF of contaminated groundwater per year. The conceptual cost estimate for facility construction is up to $600 million. LADWP will refine this estimate as the remediation facility projects progress through the final planning and design phases.

2. Other Groundwater Remediation Projects

Many privately-owned, industrial-type properties in the ULARA groundwater basins have been found to have contaminated the soils and/or the groundwater beneath their facilities. Many of these facilities are under Cleanup and Abatement Orders from the LARWQCB; some sites are under the regulatory authority of the State Department of Toxic Substance Control (DTSC). Each known contaminated site typically has soil vapor holes and/or groundwater monitoring wells, and some have extraction wells, treatment facilities, and/or injection wells to help mitigate the spread of contamination. The USEPA has been including Cr(VI) in the quarterly sampling from its monitoring wells in SFB as a step in the eventual containment and cleanup of this contaminant. The RWQCB-Los Angeles has also been evaluating properties and/or facilities in the eastern portion of the SFB for their possible onsite use, storage and/or release of Cr(VI) to the environment over time.

The reader can obtain current information and more details for various contamination and/or cleanup sites within ULARA, which are regulated by the RWCQCB-LA, via that agency's Geotracker website: http://geotracker.waterboards.ca.gov/. The DTSC website, http://www.envirostor.dtsc.ca.gov/public/, also contains information regarding groundwater quality investigations and/or cleanup sites within ULARA.

3. Dewatering Operations

Temporary Construction Dewatering

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

Permanent Dewatering Operations

A few facilities along the southern and western portions of the SFB have deep foundations and subterranean parking structures that have been excavated and constructed into areas of shallow (high) groundwater; these facilities require permanent dewatering. The amount of groundwater pumped at each such facility 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 or may be pumping groundwater without reporting the annual volume of production to the Watermaster, as is required by the Judgment. This groundwater was adjudicated and, in the opinion of prior Watermasters, is owned by the City of Los Angeles; the volume produced by each pumper is probably small. Working in cooperation with the Los Angeles County Department of Public Health and Los Angeles County Planning, the former Watermaster and LADWP initiated a process to help begin to 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 (see 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. 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 completed construction of MWD's new Foothill Feeder connection in 2010, 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. Burbank spread 7,000 AF of water in the Pacoima spreading grounds in the 2013-14 Water Year and, through April 2015 in this 2014-15 Water Year, Burbank has spread nearly 150 AF in these spreading grounds.

B. Proposed Spreading Facilities

Rory M. Shaw Wetlands Park

The Rory M. Shaw Wetlands Park, Strathern Wetlands Park Project consists of stormwater capture and treatment facilities within this 46-acre site, which had formerly been used as a gravel borrow pit. The project includes the construction of detention ponds and wetlands to store and treat stormwater runoff that will then be pumped to Sun Valley Park for infiltration. The project has the potential to recharge an average of approximately 590 AF of runoff per year. The project is being designed, and construction is estimated to start in 2017 and be completed by 2020.

C. Actual and Projected Spreading Operations

Table 5-1A shows the recent and projected volumes of native and imported water spread in the San Fernando Basin for the current 2014-15 Water Year. An estimated 3,694 AF of native runoff and imported water are projected to be spread in Water Year 2014-15. This represents a decrease when compared to both the long-term (1968-2014) average of 30,399 AF and the past five-year (2009-2014) average of 35,979 AF.

TABLE 5-1A RECENT AND PROJECTED SPREADING OPERATIONS, WY2014-15

(Acre-feet)

Month	Basin Operator					Total
	LACDPW				LACDPW and LADWP	
	Branford	Hansen	Lopez	Pacoima[A,B]	Tujunga[A]	
Actual						
Oct-14	39	0	0	0	0	39
Nov-14	68	0	0	25	0	93
Dec-14	165	413	0	742	194	1,514
Jan-15	91	148	0	99	0	338
Feb-15	34	99	0	79	0	212
Mar-15	34	75	0	58	40	207
Apr-15	7	39	0	5	26	77
Projected						
May-15	30	254	0	131	33	448
Jun-15	21	169	0	80	20	290
Jul-15	23	149	0	59	11	242
Aug-15	18	109	0	0	1	128
Sep-15	19	87	0	0	0	106
TOTAL	549	1,542	0	1,278	325	3,694
2009-2014 Average	560	9,721	1,092	15,494	9,112	35,979
1968-2014 Average	550	13,387	589	7,435	8,438	30,399

Precipitation on the valley fill area in the SFB is projected to be about 6.75 inches for 2014-15 compared to the long-term average of 17.45 inches per year; the previous five-year average was 13.67 inches per year.

TABLE 5-1B HISTORICAL PRECIPITATION ON THE VALLEY FILL

(Inches per year)

1968-14	2009-14	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15**
17.45	13.67	19.08	24.44	10.81	7.71	6.30	6.75

** Projected

The estimated capacities (in AF/yr) of the five spreading grounds in the northeastern portion of the SFB are shown on Table 5-2. Also listed for each spreading grounds are: the site operator; the type of facility; the approximate total wetted area; and the storage capacity. As shown, the total maximum capacity of these five spreading grounds is currently on the order of 108,000 AF/yr.

TABLE 5-2 ESTIMATED CAPACITIES OF EXISTING SPREADING GROUNDS

Name of Spreading Grounds	Basin Type	Total Wetted Area (ac)	Storage Capacity (AF/Y)
Operated by LACDPW			
Branford	Deep basin	7	2,100
Hansen	Med. Depth basin	107	35,100
Lopez	Shallow basin	12	3,900
Pacoima	Med. Depth basin	107	24,100
Operated by LACDPW and LADWP			
Tujunga	Shallow basin	83	42,800
	TOTAL:	316	108,000

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% of normal. This amount of rainfall provided a well above-average volume of stormwater runoff that became available for capture in upstream reservoirs and diversion into existing spreading grounds. In April 1998, a former 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 had to otherwise be discharged 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, that former Watermaster formed the Tujunga and Hansen Spreading Grounds Task Force which later became the San Fernando Basin Recharge Task Force. The task force included 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 the groundwater supply in the SFB.

LADWP and LACFCD, in cooperation with the City of Los Angeles Bureau of Engineering, Bureau of Sanitation and Bureau of Street Services, continue to partner on, jointly fund, and collaborate on several projects that will enhance the capacity for recharge of native water into the SFB via existing spreading grounds in the eastern portion of this basin. This section describes plans for modifying existing spreading facilities and construction of new facilities to provide expanded opportunities for enhancing the recharge capacity of the SFB.

Projects

- Hansen Spreading Grounds

Hansen Spreading Grounds is a 156-acre parcel, located adjacent to the channel of Tujunga Wash and downstream of Hansen Dam. The total wetted area of the spreading grounds is 107 AF with a maximum intake of 600 cfs. These spreading grounds are owned and operated by

LACFCD. Improvements to deepen and combine the basins as well as to retrofit and automate the intake structure were completed in January 2013. No additional modifications to the spreading basin are currently proposed. LADWP and LACFCD shared the $8.4 million cost for construction of this project, and it is expected that the project will increase average stormwater recharge by 2,100 AFY.

- <u>Sheldon-Arleta Project – Cesar Chavez Recreational Complex Project (Phase I)</u>

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) and released into the subsurface.

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 this gas have been reported at a nearby school. To avoid such occurrences, temporary 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, the Los Angeles Bureau of Sanitation, and the Los Angeles Bureau of Engineering completed the replacement of the existing methane gas collection system at the Sheldon-Arleta Landfill with a new gas collection system. This new system enhances the containment of the methane gas within the landfill, restores the historic spreading flow capacity of 250 cfs at the Tujunga Spreading Grounds, and restores operations at some of the basins closest to the landfill. Construction was completed in 2009 and the three agencies will eventually conduct an evaluation hopefully during the next (substantial) storm season to determine the maximum recharge capacity of the improved facility. It is expected that the project could increase average annual stormwater capture by 3,000 AF, to a total of 5,000 AF, at this spreading grounds.

- <u>Tujunga Spreading Grounds</u>

Tujunga Spreading Grounds is a 188-acre parcel located along the Tujunga Wash Channel at its confluence with the Pacoima Wash Channel. This spreading facility, which is owned by LADWP and operated by LACFCD, has a total wetted area of 83 acres, a maximum intake capacity of 250 cfs, and a storage capacity of 100 AF.

Construction will begin in October 2015 to enhance the facility by relocating and automating the current intake structure on Tujunga Wash, installing a second automated intake to receive flows from the Pacoima Wash, and reconfiguring the existing spreading basins. Other enhancements include recreational walking trails, native habitat, and educational facilities. LADWP is fully funding the $27.2 million project to the LACFCD for design and construction. It is expected that this project will increase stormwater capture by 8,000 AFY.

- Pacoima Spreading Grounds

The 169-acre Pacoima Spreading Grounds surrounds old Pacoima Wash Channel downstream of Pacoima Dam and Reservoir. This spreading facility, which is owned and operated by LACFCD, has a total wetted area of 107 AF, a maximum intake capacity of 600 cfs, and a storage capacity of 530 AF.

LADWP and LACFCD are currently working cooperatively to improve stormwater capture at this facility by upgrading and automating the intake structure and revitalizing the recharge basins. Final designs are scheduled to be completed by end of 2015, to be followed by construction in 2016 through 2019. LADWP will provide up to $15 million for design and construction of the $30 million project. This project is expected to increase average stormwater capture by 10,500 AFY.

- Lopez Spreading Grounds

Lopez Spreading Grounds, owned and operated by the LACFCD, are located downstream of Pacoima Dam. The facility has a total wetted area of 12 AF, a maximum intake of 25 cfs, and storage capacity of 24 AF.

LADWP and LACFCD are currently working cooperatively to improve stormwater capture by upgrading and automating the intake facility and revitalizing the recharge basins. Final designs are scheduled to be completed by end of 2015, and are to be followed by construction from 2016 through 2018. LADWP is funding one-half of the $4 million project and the completed project is expected to increase average stormwater capture by 500 AFY.

- Branford Spreading Grounds

Branford Spreading Grounds, owned and operated by LACFCD, are located immediately adjacent to Tujunga Spreading Grounds, along Pacoima Diversion Channel. Most of the water tributary to the Branford Spreading Grounds is urban runoff from Branford Street Channel. The total wetted area of the facility is 7 acres, and it has with a maximum intake of 1,540 cfs and a storage capacity of 137 AF. Average annual recharge for the facility is approximately 550 AF based on LACFCD historical record.

The Branford Spreading Basin Upgrade Project proposes to install a pump station at Branford spreading grounds, construct a pipeline bridge across the Tujunga Wash Channel, and also construct a discharge outlet into Tujunga Spreading Grounds to facilitate transfer of stormwater from the one basin into the other. These changes will improve groundwater recharge, flood protection, and water quality. Final designs are scheduled to be completed by the end of 2015, and are to be followed by construction from 2016 through 2018. LADWP will provide up to $2 million for design and construction of the $4 million project. This project is expected to increase average stormwater capture by 650 AFY.

- 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 completed a major seismic retrofit of this dam in January 2012 and this effort has also restored its storage capacity for flood control and water conservation. Specifically, the structural improvements to Big Tujunga Dam increased its storage capacity from 1,500 AF to 6,000 AF. This project, which was partially funded by the City of Los Angeles, greatly enhances LACDPW’s ability to retain and manage stormwater for flood protection, water conservation, and environmental restoration.

VI. GROUNDWATER INVESTIGATION PROGRAMS

There are numerous ongoing groundwater quality investigations in ULARA, particularly in the SFB. The reader can obtain current information and more details for the sites mentioned below, which are regulated by the RWCQCB-LA, via that agency's Geotracker website: http://geotracker.waterboards.ca.gov/.

The DTSC website, http://www.envirostor.dtsc.ca.gov/public/, also contains information regarding groundwater quality investigations and/or cleanup sites within ULARA.

Below are brief descriptions of particular groundwater quality investigations for contaminated and/or potentially contaminated sites within ULARA. Note that the discussion below does not provide an exhaustive list of these sites within ULARA. Any omission of a site from the list below does not imply that the omitted site is not important or not of concern to the Watermaster or to the Parties to the ULARA Adjudication.

Pacoima Area Groundwater Investigation

A significant VOC contaminant plume exists in the groundwater near the intersection of San Fernando Road and the Simi Valley Freeway (118 Freeway) in the Pacoima area of the SFB. This area lies 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 areas.

The reportedly suspected sources include the Chase chemical (formerly Holchem) and the Black & Decker (formerly Price-Pfister) sites, which are under the jurisdiction of DTSC and LARWQCB, respectively.

Chromium Investigations

The LARWQCB, funded in part with a grant from the USEPA, reviewed a large number of sites for potential hexavalent chromium contamination in the SFB and published its original findings in December 2002. Based on this LARWQCB review, 255 suspected hexavalent chromium sites were identified and inspected. As a result of those inspections, the LARWQCB recommended closure (i.e., no further action) for 150 of those sites and the further assessment of the remaining 105 sites. In addition, the LARWQCB issued Cleanup and Abatement Orders to several sites, including, among others, B.F. Goodrich (formerly Menasco Aerospace Division), PRC-Desoto (formerly Courtauld), Drilube, Honeywell (formerly Allied Signal), Lockheed (2), ITT, and Excello Plating; it 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 municipal-supply water wells associated with groundwater treatment plants, because those plants were not designed to remove this contaminant (or any other newly-emerging contaminants). Shutdowns of those municipal-supply wells may possibly 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 by the Parties within the SFB.

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 of 0.02 ppb was adopted in July 2011. In August 2013 CDPH proposed a Primary MCL for hexavalent chromium of 10 ppb, and this MCL was adopted on May 28, 2014.

Tujunga Discovery Project

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

USEPA's contractor performed soil vapor sampling and limited soil sampling along several miles of transects upgradient of LADWP's Tujunga wellfield. The site-specific soil vapor results indicate low levels of PCE at most of the investigated sites. In early-2010, sediment sampling was conducted in the adjacent Branford spreading grounds to determine whether sediments in this basin might be a source of VOC contamination. Numerous borings were drilled and a large number of soil samples were analyzed for various analytes, including VOCs; however, TCE was not detected in any of these soils samples. Further, sample results showed the presence of acetone and 2-butanone in certain samples, but these may be related to laboratory contamination.

The next stage of the investigation will involve the construction of several new groundwater monitoring wells in the capture zone of the Tujunga wellfield. The locations of these new monitoring wells were prioritized based on data gaps in the existing wellfield. LADWP completed the construction of four new monitoring wells near the Tujunga wellfield between April 2012 and June 2013, and two other monitoring wells were to be constructed in late-2013. USEPA also constructed a monitoring well (TJ-MW-09) in 2013. Construction of these monitoring wells was completed in 2014.

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 2014-15 through 2018-19 Pumping and Spreading Plans" submitted by each Party pursuant to the provisions established in the revised February 1998 Policies and Procedures report. A copy of the Pumping and Spreading Plan of each Party is included in the appendix 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, 2019.

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 beneath ground surface. 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, including the City of Los

Angeles, the City of Burbank, the City of Glendale, and other individual pumpers. Both tables show projected values for the five-year period, from Fall 2014 to Fall 2019, as well as any actual values that have been reported for the first half of the 2014-15 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 2014 through 2019 include the actual amounts reported for the first half of this current Water Year. The spreading estimates reflect temporary shutdowns during construction of the Tujunga spreading grounds (TSG). Construction to enhance the spreading capacity at TSG is planned to occur from 2017 through 2018. 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) were estimated by the current ULARA Watermaster to be approximately 250 acre-feet per year. The amounts of subsurface inflows from the Verdugo Basin were determined in the 1962 Report of Referee. These values were used as constants in the model throughout the five-year study period.

The volumes for all groundwater extractions shown on Table 7-1B and used as model inputs were obtained from the "Groundwater 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 derived from the actual data from Water Year of 2013-14, and these values set the initial conditions for model analysis for the next five-year period. These initial conditions reflect the increased in simulated groundwater elevations observed in most areas of the SFB resulting from decreased pumping by the wellfields operated by the City of Los Angeles.

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.

Table 7-1
MODEL INPUT
San Fernando Basin Recharge & Extractions
2014-2019

Table 7-1A

Projected San Fernando Basin Recharge 2014-19

	SAN FERNANDO BASIN RECHARGE (AF/Y)																		
	RAINFALL (IN/Y)		PERCOLATION			H&M (A)	SPREADING GROUNDS								SUBSURFACE INFLOW				
										PACOIMA									
WATER YEAR	VALLEY	HILL & MTN	VALLEY FILL	RETURN WATER	SUB TOTAL	HILL & MTN	BRANFORD	HANSEN (B) (NATIVE)	LOPEZ	PACOIMA (NATIVE)	PACOIMA (C) (MWD)	PACOIMA (TOTAL)	TUJUNGA (D)	SUB - TOTAL	PACOIMA NOTCH (E)	SYLMAR NOTCH (E)	VERDUGO BASIN	SUB - TOTAL	TOTAL RECHARGE
2014-15	6.75	9.78	4,328	50,098	54,426	1,542	550	1,542	0	1,277	150	1,427	325	3,844	117	133	70	320	60,132
2015-16	17.45	21.53	12,296	50,992	63,288	3,725	540	13,900	540	6,564	7,550	14,114	5,100	34,194	117	133	70	320	101,527
2016-17	17.45	21.53	12,296	50,992	63,288	3,725	540	13,900	540	6,564	7,450	14,014	0	28,994	117	133	70	320	96,327
2017-18	17.45	21.53	12,296	50,992	63,288	3,725	540	13,900	540	6,564	7,350	13,914	0	28,894	117	133	70	320	96,227
2018-19	17.45	21.53	12,296	50,992	63,288	3,725	540	13,900	540	6,564	7,350	13,914	5,100	33,994	117	133	70	320	101,327

Table 7-1B

Projected San Fernando Basin Extraction 2013-18

	SAN FERNANDO BASIN EXTRACTIONS (AF/Y)																			
	LADWP											BURBANK			GLENDALE			OTHERS		
WATER YEAR	AE	ER	HW	NH (WEST)	NH (EAST)	PL	RT	TJ	VD	WH	TOTAL LADWP (F)	BURBANK PSD	LOCKHEED	NON-BURBANK (VMP)	CITY OF GLENDALE	OU-NORTH	OU-SOUTH	TOTAL NON-LADWP	TOTAL NON-GLENDALE (F. LAWN)	TOTAL EXTRACTION
2014-15	-1,107	0	0	-14,633	0	-3,177	-28,465	-38,951	0	0	-86,333	0	-10,175	-400	-20	-5,049	-2,720	-915	-400	-106,012
2015-16	-1,725	-1,000	0	-7,000	0	-2,178	-19,200	-29,700	-1,000	-1,000	-62,803	0	-10,913	0	-20	-5,018	-2,702	-915	-400	-82,771
2016-17	-1,725	0	0	-13,000	0	-2,178	-19,200	-23,700	0	0	-59,803	0	-10,913	0	-20	-5,018	-2,702	-915	-400	-79,771
2017-18	-4,923	-1,000	0	-13,000	-5,620	-2,178	-19,200	-23,700	-1,000	-1,000	-71,621	0	-10,913	0	-20	-5,018	-2,702	-915	-400	-91,589
2018-19	-4,923	0	0	-13,000	-5,620	-2,178	-19,200	-23,700	0	0	-68,621	0	-10,913	0	-20	-5,018	-2,702	-915	-400	-88,589

NOTES:

(A) Hill & Mountain runoff

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

(C) Burbank projected to spread between 7,000 to 7,725 AF of imported water (MWD) at Pacoima Spreading Grounds on a yearly basis.

(D) Tujunga Spreading Grounds will be taken out of service during the water years of 2017-18 for modifications to increase storage capacity

(E) The values were estimated on the updated Safe Yield for the Sylmar Basin by Mr. Richard Slade, the Watermaster of Upper Los Angeles River Area.

(F) The values shown for Los Angeles on this extraction plan are estimates only. The estimated groundwtaer 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.

C. <u>Simulated Groundwater Elevations and Flow Directions</u>

After running the model for five separate but successive stress periods (Water Years 2014 through 2019), each lasting 365 days, MODFLOW generated various numerical data, including 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 create the following figures and plates:

- The simulated groundwater (water table) contour results for Model Layer 1 for Fall 2019 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 2014 to Fall 2019 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 2019 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 2014-dated work published by the USEPA), superimposed onto the Layer 1 simulated horizontal groundwater flow direction for the year 2019.

D. <u>Evaluation of Model Results</u>

Plate 1: Simulated Groundwater Contour Model Layer 1 – Fall 2019

- 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 BOU. 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 10,913AF/Y from its BOU for the period from Fall 2014 to Fall 2019. The radius of pumping influence is shown to extend as far as 3,600 feet in the downgradient (southeasterly) direction from the BOU wells. The upgradient radius of influence is usually larger than the down-gradient radius of influence.
  Plate 1 illustrates the more subtle pumping influence of the GOU wells, and the Pollock Treatment Plant Wells.

Plate 2: Simulated Groundwater Contour Model Layer 2 – Fall 2019

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

Plate 3: Change in Groundwater Elevation Model Layer 1 – Fall 2014 to Fall 2019

In general, the model simulation showed a decrease in groundwater elevations in most areas of the basin, particularly in areas near the wellfields. This decrease in simulated water levels would result mostly from the difference between the increase in groundwater extractions in the groundwater basins and the relatively low volumes of groundwater recharge that were simulated during the first year of model simulation.

The estimated total groundwater extraction during the first year of simulation exceeds total recharge volume by about 48,880 AF, cumulatively. A more detailed review of Plate 3 is as follows:

- The area in the vicinity of TSG shows an increase in simulated groundwater elevations of about 12 feet, as a result of resumed spreading activities at TSG in 2019 and reduced groundwater extractions by the nearby Tujunga wellfield.

- The area in the vicinity of HSG shows an increase in simulated groundwater elevations of about 32 feet.

- The increase in simulated groundwater levels from 2014 to 2019 in the vicinity of PSG is due to the proposed spreading of imported water by Burbank (7,350 AF/Y), in addition to the normal recharge of native surface water by LACDPW.

- The simulated groundwater elevations within the cone of depressions created by the Rinaldi-Toluca and North Hollywood West wellfields were shown by the model to decrease by about 8 and 12 ft, respectively. This simulated reduction in water levels in areas near these wellfields would result from the proposed pumping anticipated by the City of Los Angeles.

- Groundwater elevations near the Erwin, Whitnall and Verdugo wellfields were simulated to decrease by 12 to 20 ft.

- The simulated groundwater elevations near the Burbank OU showed an expected decrease by about 20 ft and the groundwater elevation near the Glendale North OU was projected to decrease by 2 ft from 2014 to 2019.

Plate 4: Change in Groundwater Elevation Model Layer 2 – Fall 2014 to Fall 2019

- Similar to Model Layer 1, Plate 4 illustrates much of the same decreases in simulated groundwater elevations in Model Layer 2 which would also result from the increased pumping during the first year of the model scenario as well as the decreased recharge activity at the spreading basins.

- The model simulated a decrease in the groundwater elevations by 2 to 12 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 decrease by 12 to 22 ft.

Plate 5: Simulated Groundwater Flow Direction Model Layer 1 – Fall 2019

- 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.

- Groundwater 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 south of the 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 2019

- 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 2019

- Plates 7 through 10 depict the most recent TCE, PCE, NO_3, and Cr contaminant plumes available from the work of USEPA (as of 2014), and these plumes are superimposed onto the horizontal direction of groundwater movement in Layer 1 for Fall 2019. 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 in a southwesterly direction toward the Los Angeles River Narrows area and toward the Glendale OU.

- Pumping by the Burbank OU (10,913 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.

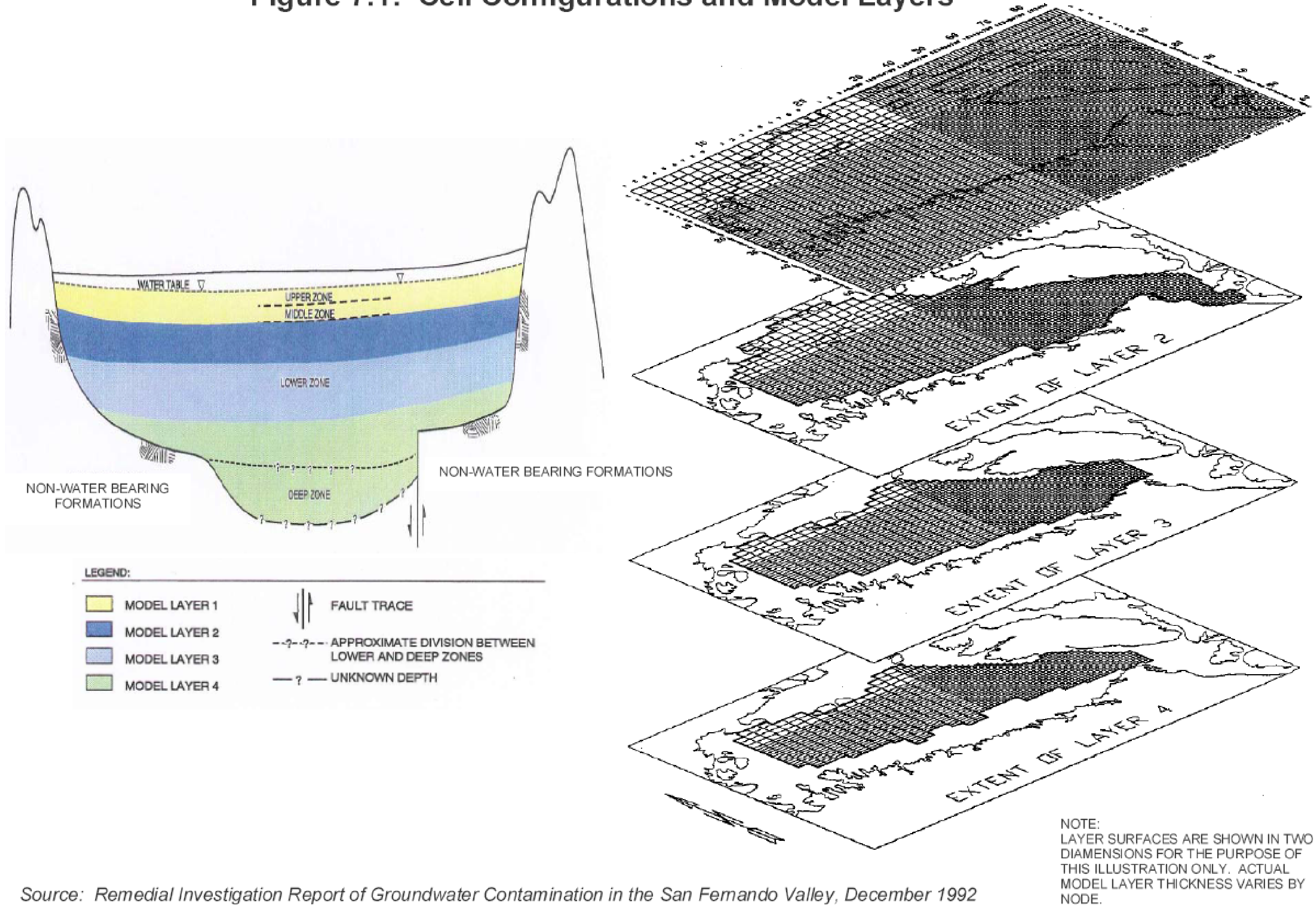
- Wells in the Glendale NOU and SOU capture a portion of the plume(s) that is (are) not captured by the Burbank OU wells. Glendale OU wells also capture the plume up gradient and within the radius of influence of these wells.

- 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 Layer 2.

- Plate 9 (NO_3 Contamination) indicates that Layer 1 extractions by the NHOU, 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, and Pollock Wells may be impacted by the chromium plume(s).

Figure 7.1: Cell Configurations and Model Layers



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

VIII. WATERMASTER EVALUATION AND RECOMMENDATIONS

The Parties to the Judgment continue to explore ways to increase groundwater recharge in the ULARA Basins. In an effort to increase stormwater recharge in SFB, the City and County of Los Angeles initiated and continue to fund an ambitious and very important program to increase the recharge capacity in several of the local spreading grounds; the City of Los Angeles also continues to investigate additional alternatives to increase water conservation. This Watermaster commends the City and County of Los Angeles for these vital efforts. The City of Burbank has continued spreading imported water in the basins to increase basin recharge, and CVWD is working toward implementing a stormwater capture program to increase recharge in the Verdugo Basin. Further, Burbank, Glendale and Los Angeles continue to expand their recycled water programs to offset groundwater and imported water use.

VOC contamination continues in conjunction with newly-discovered contaminants (such as 1,4 dioxane) in some areas continue to be the most serious challenge to water quality and to the ability of the Parties to pump their water rights (without treatment) from the SFB. The various contaminant plumes are large and continue to migrate, despite years of groundwater remediation 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 extraction wells. It is encouraging to see USEPA's proposed 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 additional contaminant mass and control contaminant migration in the nearby plume(s). The BOU has 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 hexavalent chromium in several production wells in the eastern portion of the SFB. Currently, none of the existing water treatment plants are capable of removing this contaminant. 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 effective, efficient and timely 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 its Chromium (VI) Removal Demonstration Facilities.

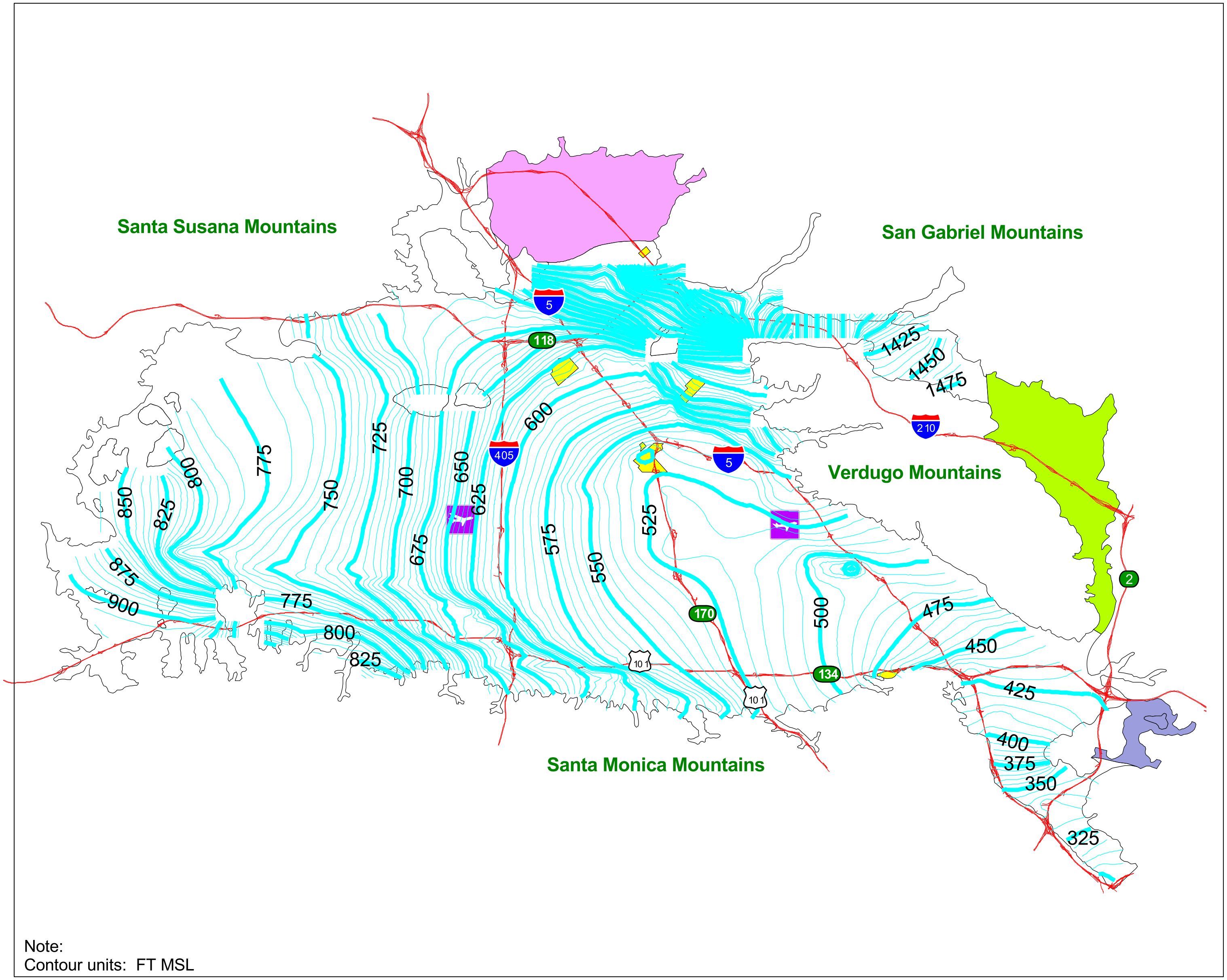
Due to the geologic conditions in Verdugo Basin and the presence of local bedrock constrictions, groundwater tends to rise to ground surface near the Verdugo Wash Narrows and eventually leaves this basin as surface outflow. Glendale is currently unable to pump its full right from the Verdugo Basin, but by rehabilitating one of its previously-abandoned wells and constructing 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 its ongoing evaluation of potential stormwater recharge projects in Verdugo Basin.

The Parties should continue to expect to face significant challenges to both the availability and quality of the groundwater in the ULARA groundwater basins during the next five 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 actively pursue the possible spreading of recycled water in existing spreading basins in the northeastern side of the SFB in order to augment groundwater recharge that occurs naturally during the rainy season each year in those existing spreading basins.

PLATES

PLATE 1

Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2014- 2019 Water Years



LEGEND

- Groundwater Contour (FT)
- Spreading Grounds
- Airport

Groundwater Basins

- San Fernando
- Sylmar
- Verdugo
- Eagle Rock

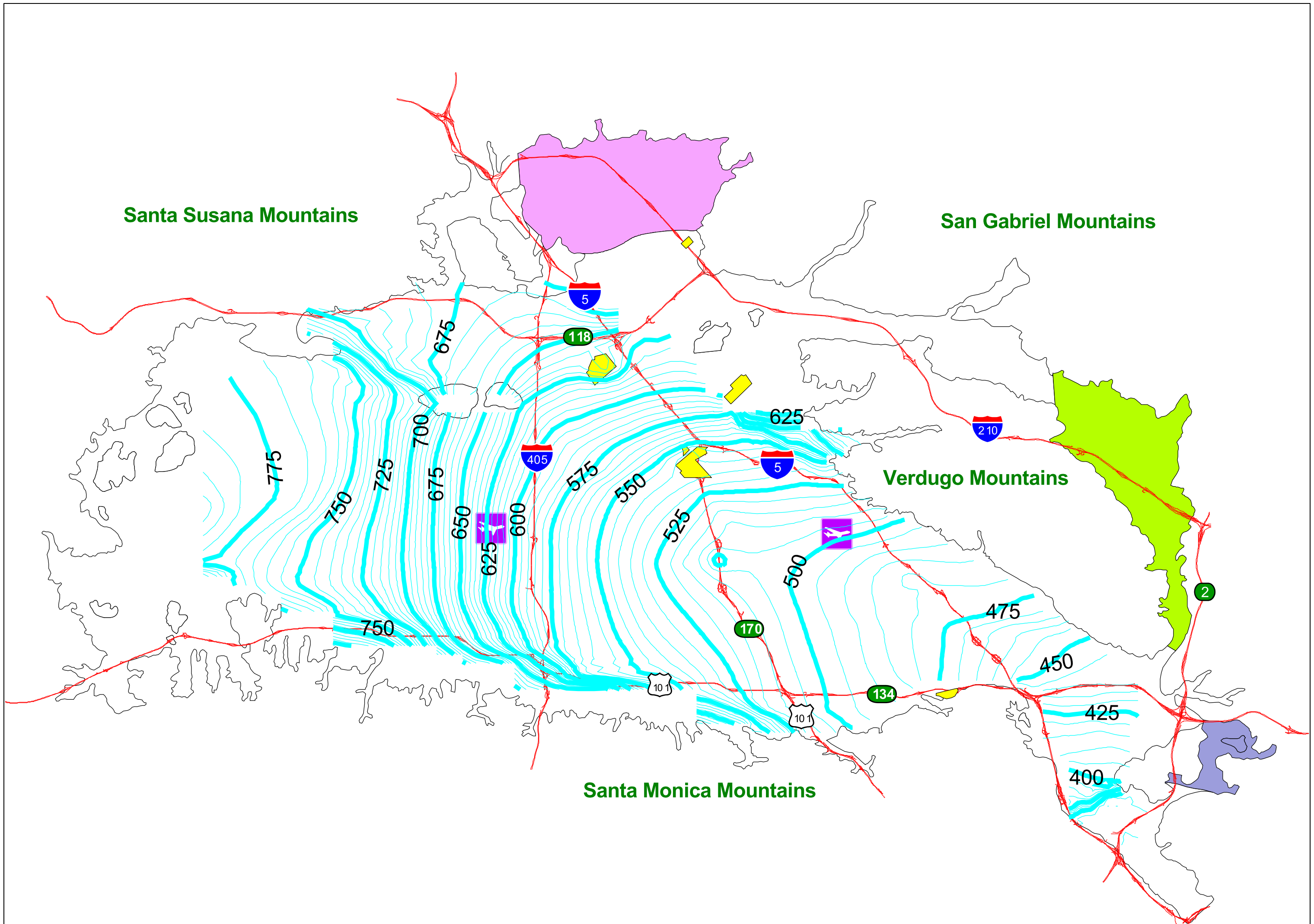
N

2 0 2 Miles

Simulated Groundwater Contours - Model Layer 1
FALL 2019

PLATE 2

Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2014 - 2019 Water Years



LEGEND

Groundwater Contour (FT)
Spreading Grounds
Airport

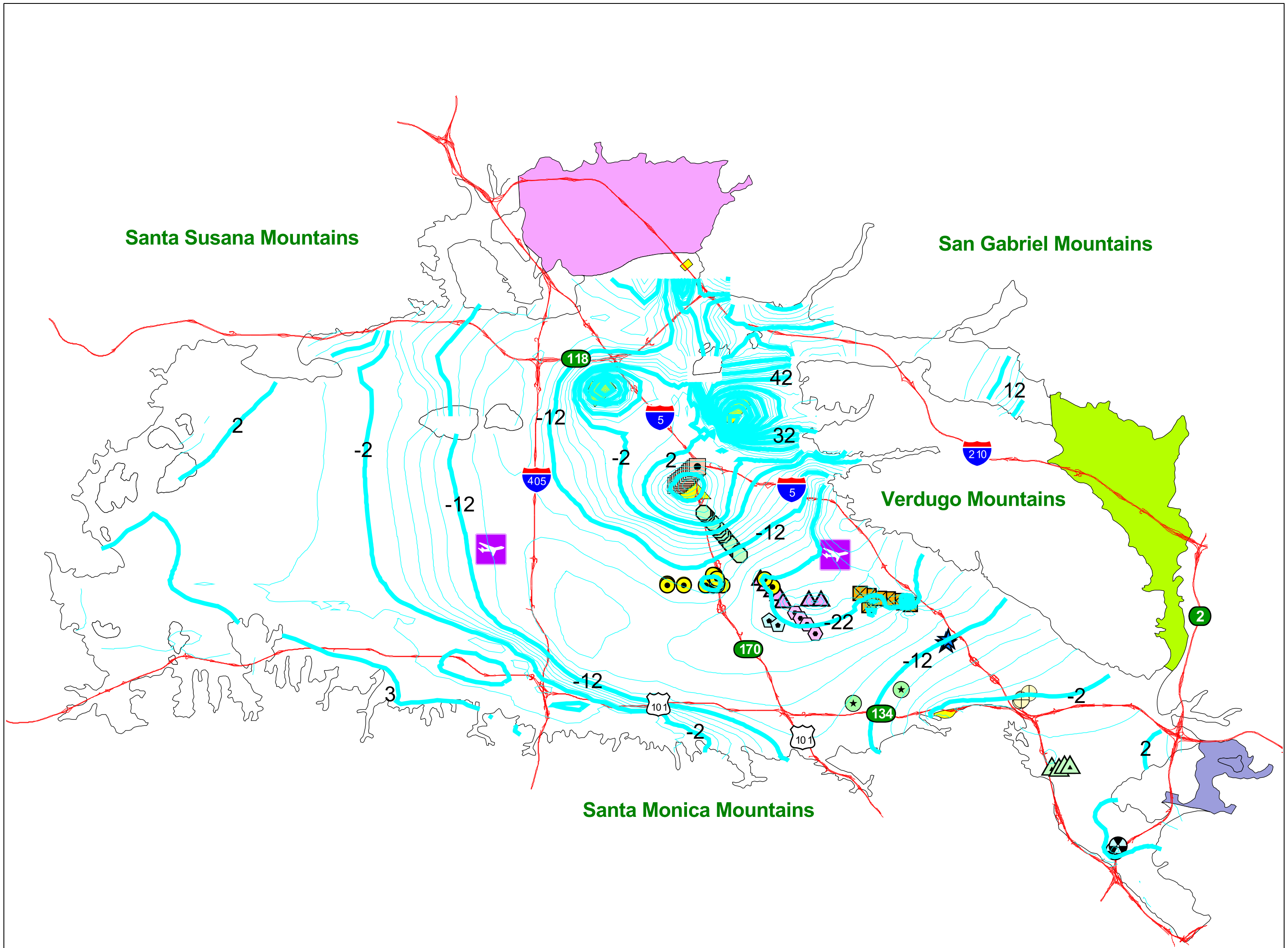
Groundwater Basins
San Fernando
Sylmar
Verdugo
Eagle Rock

Note:
Contour units: FT MSL

N

2 0 2 Miles

Simulated Groundwater Contours - Model Layer 2
FALL 2019



Note:
Contour Units: FT MSL
Possitive Numbers = Water Level Increase
Negative Numbers = Water Level Decrease

PLATE 3

Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2014 - 2019 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

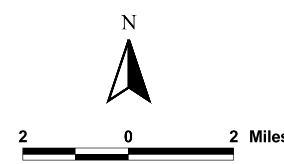
Change in GW Elev. (FT)

Spreading Grounds

Airport

Groundwater Basins

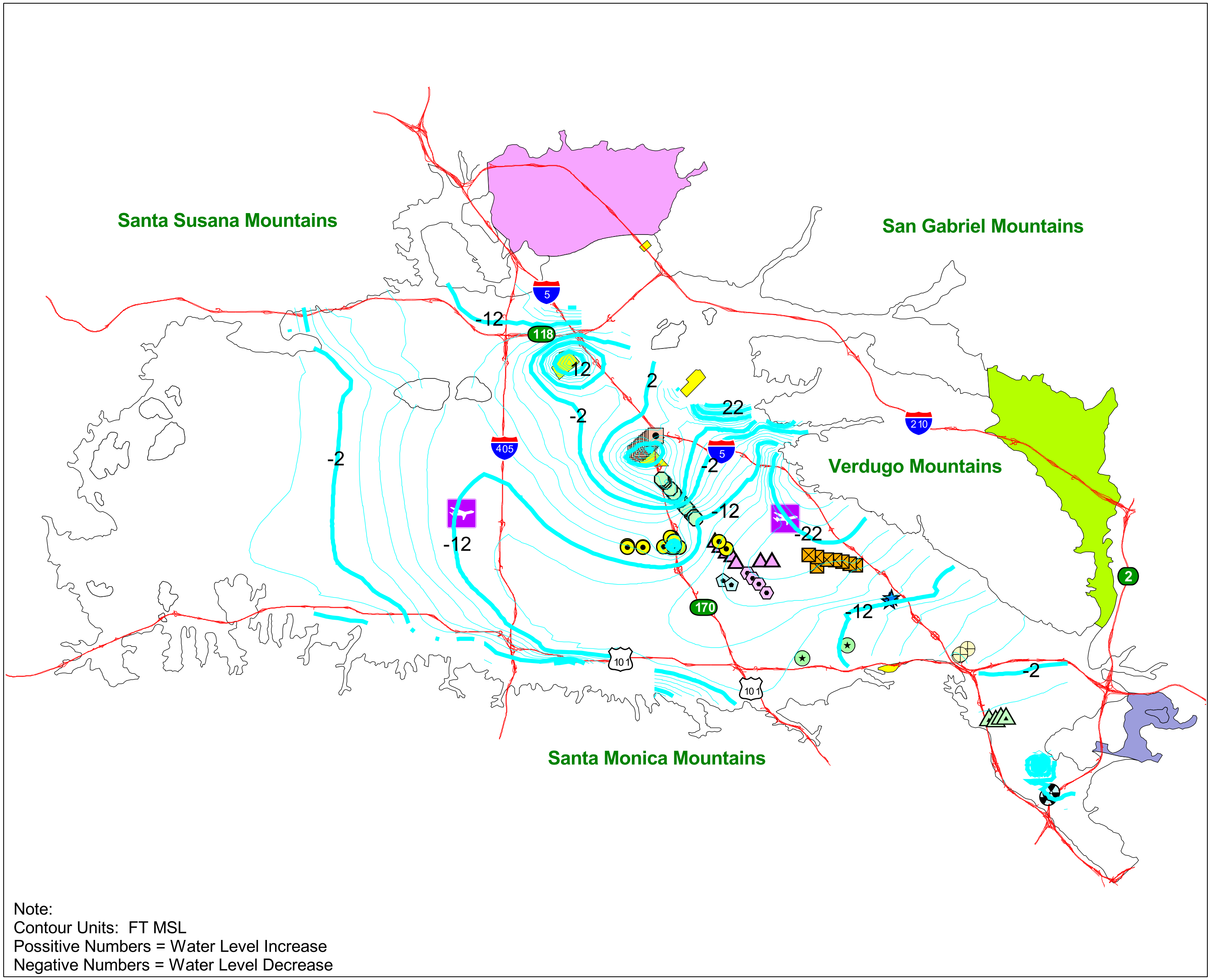
- San Fernando
- Sylmar
- Verdugo
- Eagle Rock



Simulated Change in Groundwater Elevation - Model Layer 1
Fall 2014 - Fall 2019

PLATE 4

Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2014 - 2019 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. (FT)

Spreading Grounds

Airport

Groundwater Basins

- San Fernando
- Sylmar
- Verdugo
- Eagle Rock

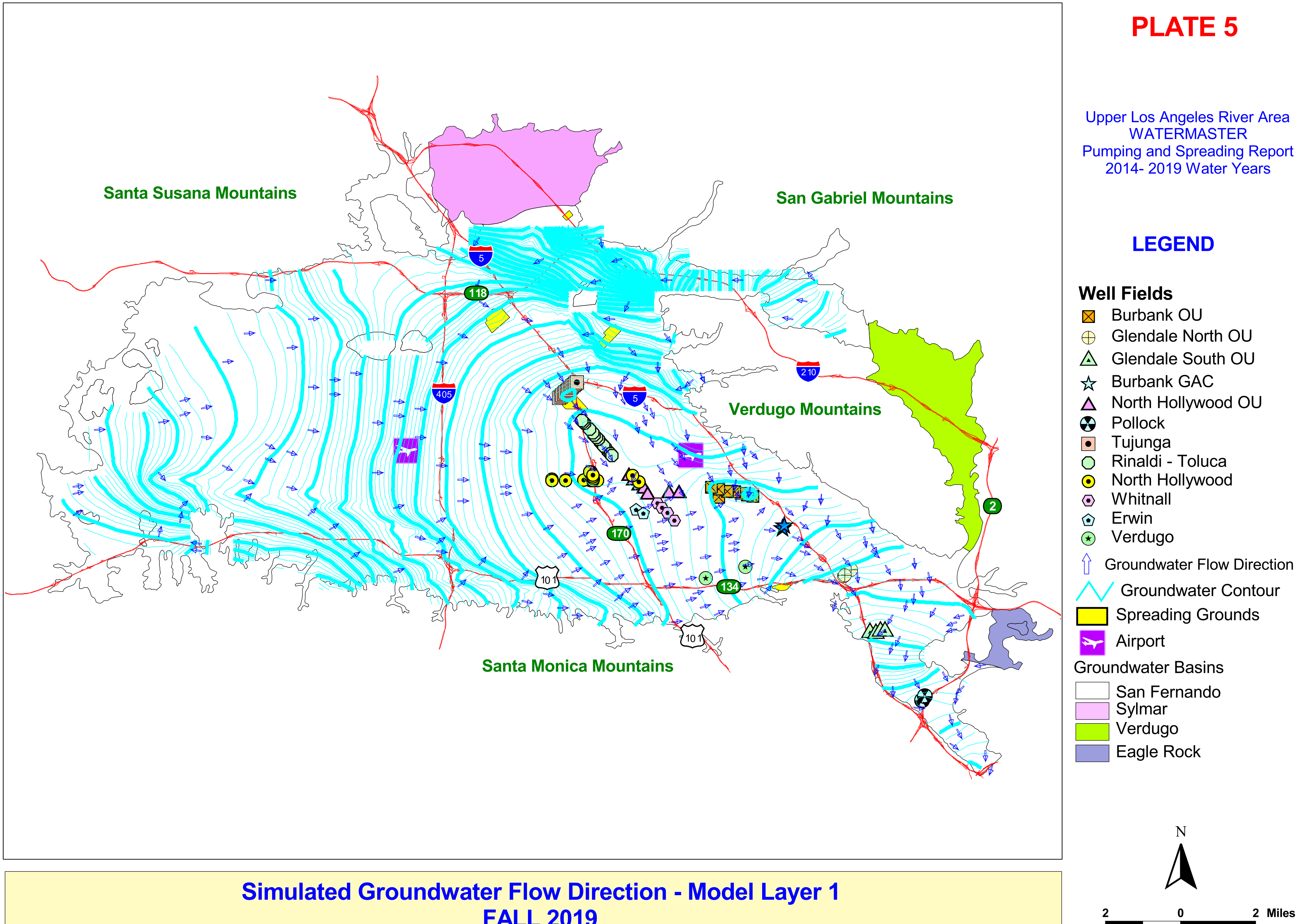
N

2 0 2 Miles

Simulated Change in Groundwater Elevation - Model Layer 2
Fall 2014 - Fall 2019

PLATE 5

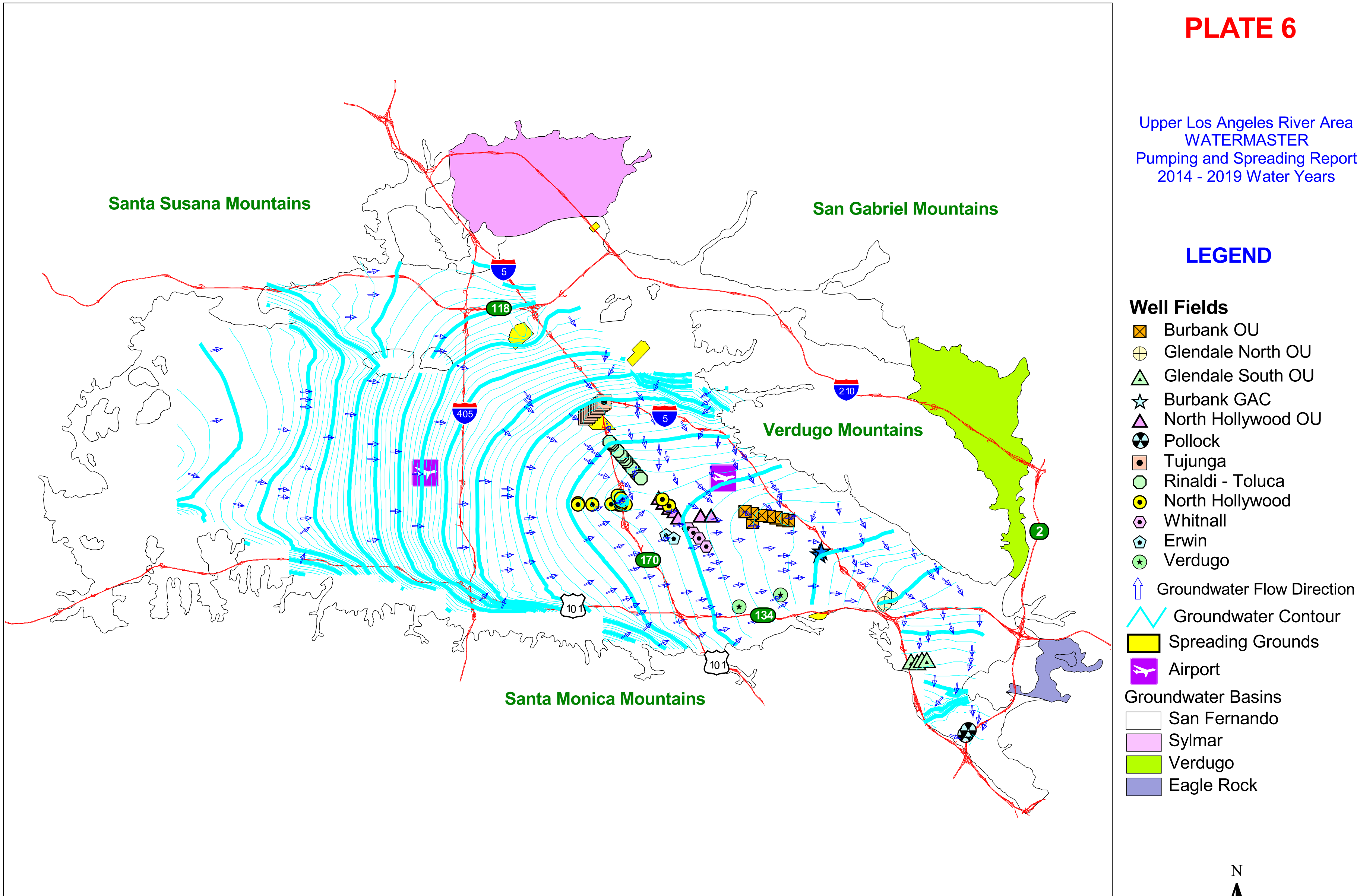
Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2014- 2019 Water Years



Simulated Groundwater Flow Direction - Model Layer 1
FALL 2019

PLATE 6

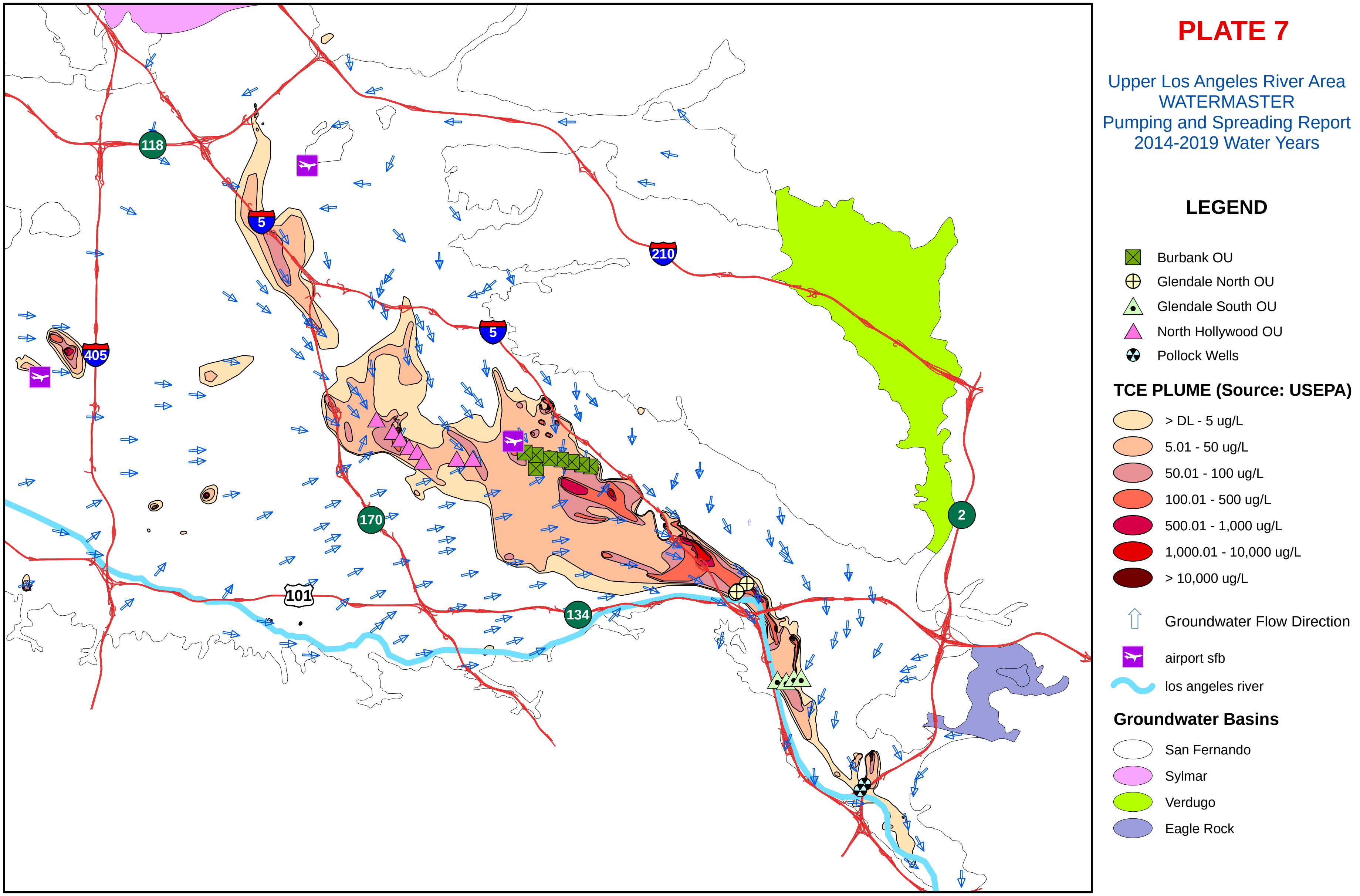
Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2014 - 2019 Water Years



Simulated Groundwater Flow Direction - Model Layer 2
FALL 2019

PLATE 7

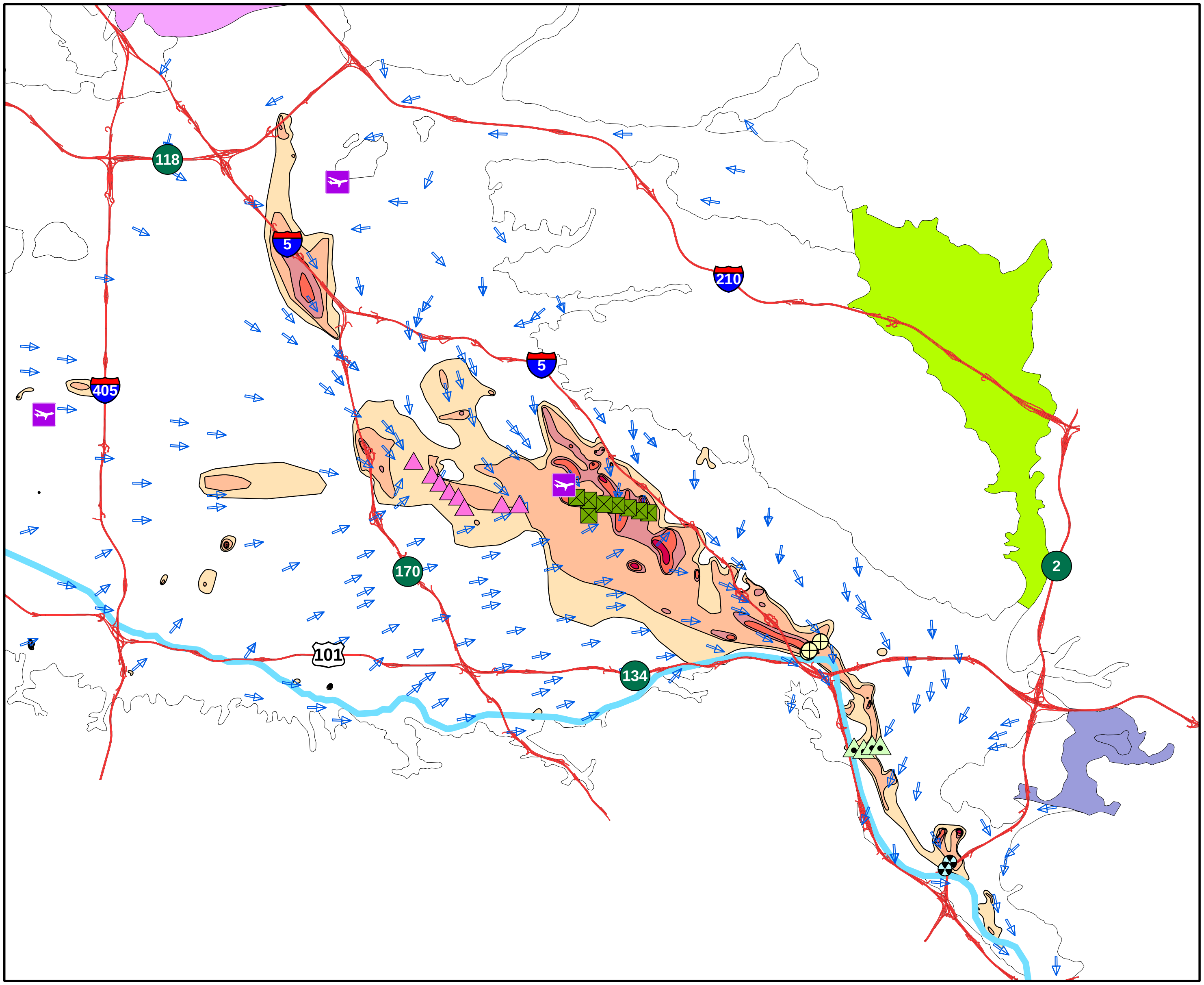
Upper Los Angeles River Area WATERMASTER
Pumping and Spreading Report
2014-2019 Water Years



2014 TCE Contamination and 2019 Simulated Groundwater Flow Direction
Model Layer 1

PLATE 8

Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2014-2019 Water Years



LEGEND

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

PCE PLUME (Source: USEPA)

- > DL - 5 ug/L
- 5.01 - 50 ug/L
- 50.01 - 100 ug/L
- 100.01 - 500 ug/L
- 500.01 - 1,000 ug/L
- > 1,000 ug/L

- Groundwater Flow Direction
- airport sfb
- los angeles river

Groundwater Basins

- San Fernando
- Sylmar
- Verdugo
- Eagle Rock

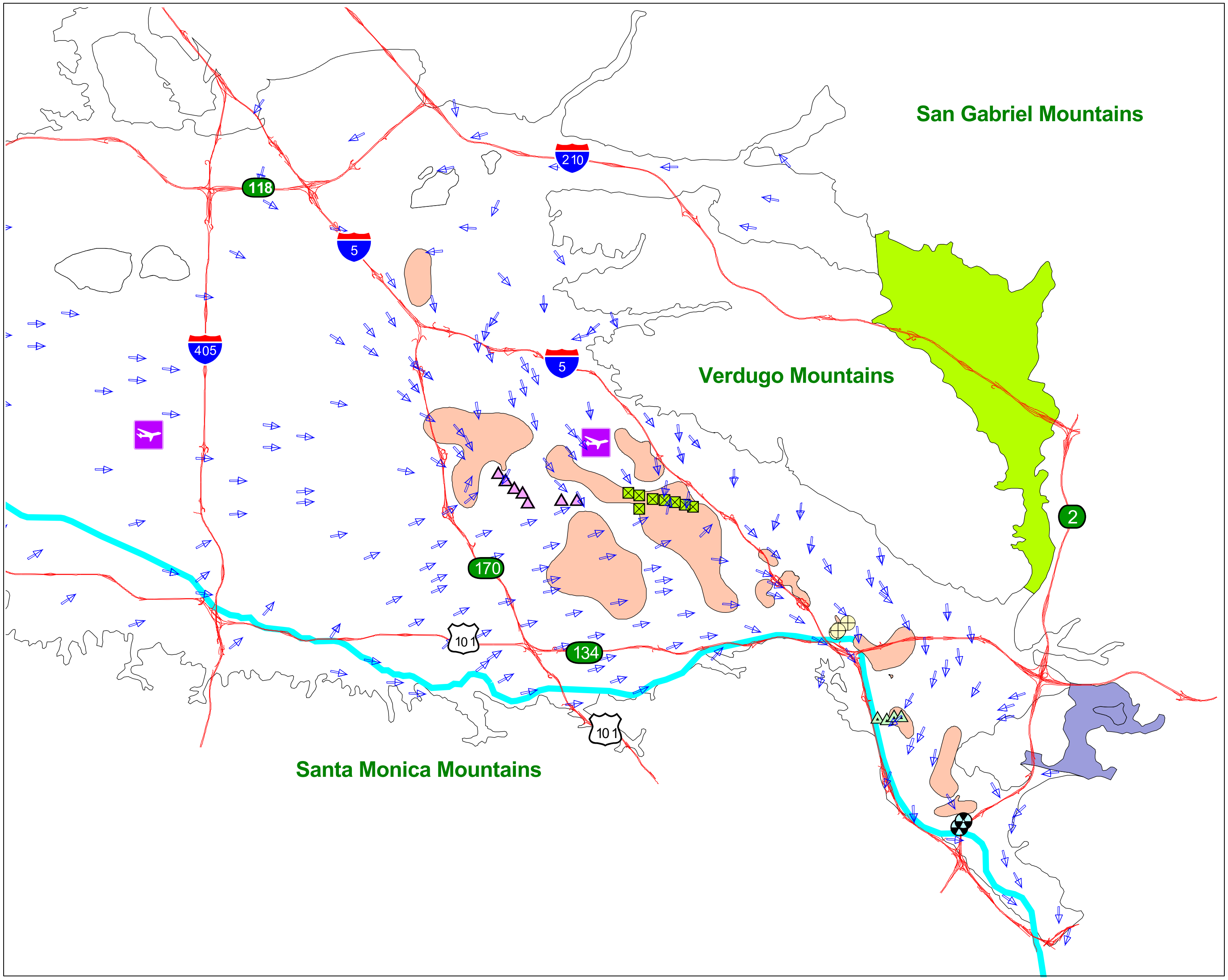
N

1 0 1 2 Miles

2014 PCE Contamination and 2019 Simulated Groundwater Flow Direction
Model Layer 1

PLATE 9

Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2014 - 2019 Water Years



LEGEND

Burbank OU
Glendale North OU
Glendale South OU
North Hollywood OU
Pollock Wells
NO3 Plume - Conc. >45 mg/L (Source: USEPA)
Groundwater Flow Direction
Los Angeles River
Airport

Groundwater Basins
San Fernando
Verdugo
Eagle Rock

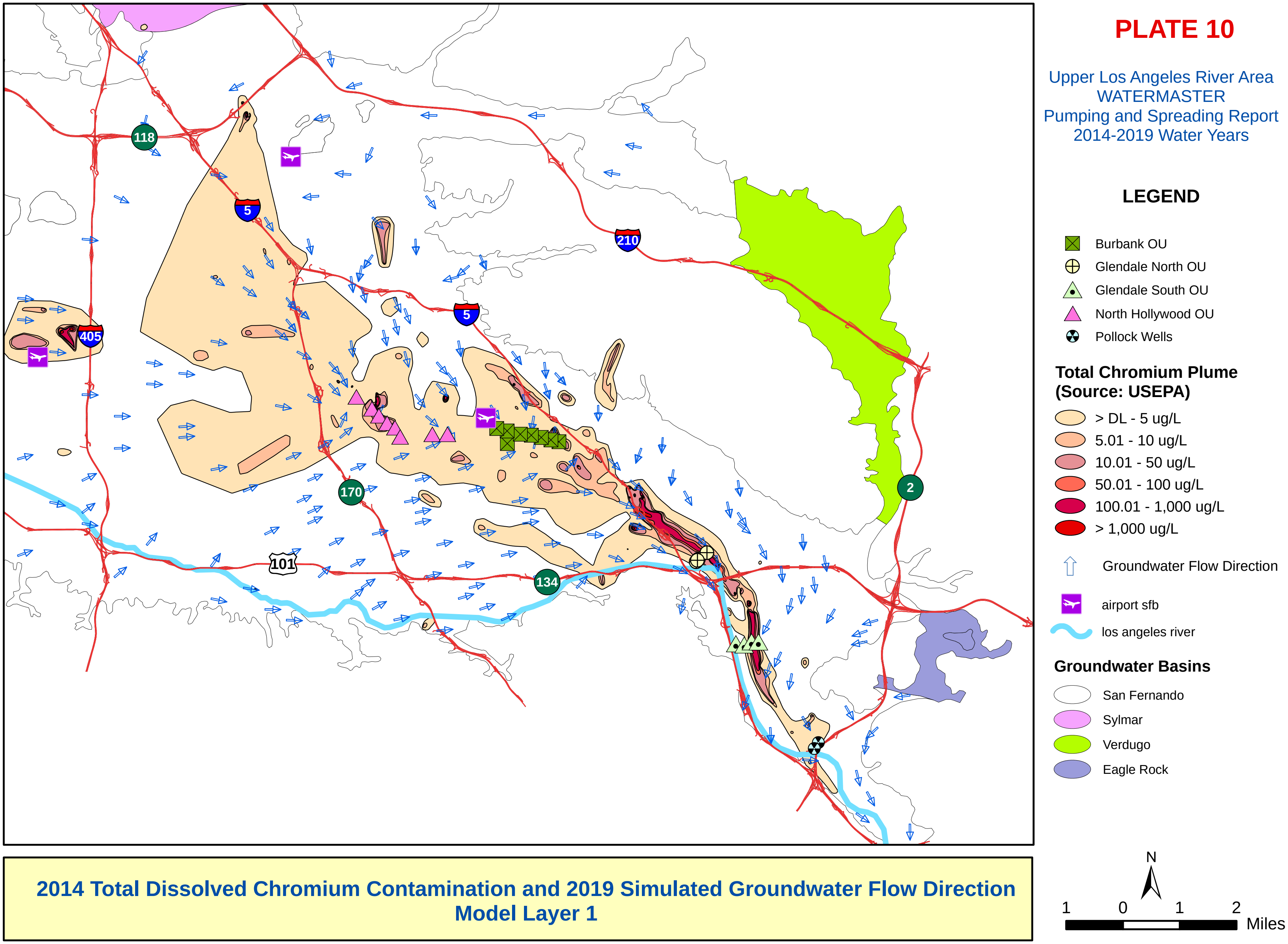
N

1 0 1 2 Miles

2010 Nitrate (as NO3) Contamination and 2019 Simulated Groundwater Flow Direction
Model Layer 1

PLATE 10

Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2014-2019 Water Years



2014 Total Dissolved Chromium Contamination and 2019 Simulated Groundwater Flow Direction Model Layer 1

APPENDIX A

CITY OF LOS ANGELES

PUMPING AND SPREADING PLAN

2014-15 through 2018-19 Water Years

July 27, 2015

Mr. Richard C. Slade, ULARA Watermaster
Richard C. Slade & Associates, LLC
14501 Burbank Blvd, Suite 300
Sherman Oaks, California 91401

Dear Mr. Slade:

Subject: Upper Los Angeles River Area (ULARA) Groundwater Pumping and Spreading Report, Water Year 2014-2015

Enclosed is the annual report of groundwater pumping and spreading by the City of Los Angeles (Los Angeles) in ULARA, covering the Water Year from October 1, 2013 through September 30, 2014.

The full report of activities by Los Angeles provided with this letter is in a format that is consistent with your annual report. Presenting the information in this format should facilitate your process for compiling the full annual report of activities by all parties in ULARA.

If you have any questions about this report, please contact Mr. Gregory R. Reed, Manager of Water Rights and Groundwater Management, at (213) 367-2117.

Sincerely,

David R. Pettijohn
Director of Water Resources

CR:CL:yrg
Enclosures
c: Anthony Hicke, ULARA Watermaster Office
Julie C. Riley
Gregory R. Reed

111 N. Hope Street, Los Angeles, California 90012-2607 *Mailing address:* Box 51111, Los Angeles, CA 90051-5700
Telephone: (213) 367-4211 www.LADWP.com

CITY OF LOS ANGELES
GROUNDWATER PUMPING AND SPREADING PLAN
IN THE UPPER LOS ANGELES RIVER AREA
FOR WATER YEARS 2014-2019

JULY 2015

Prepared by:
Water Rights & Groundwater Management Group
WATER RESOURCES 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 2015 report presents the five-year Groundwater Pumping and Spreading Plan for the Water Years 2014–2019 for the City of Los Angeles.

Section 1: Facilities Description

Groundwater conditions in ULARA are influenced by facilities owned or operated by the Los Angeles Department of Water and Power (LADWP).

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 Flood Control District (LACFCD) operates the Tujunga, Branford, Hansen, Lopez, and Pacoima spreading grounds. LACFCD and LADWP maintain the Tujunga Spreading Grounds cooperatively. LADWP owns Tujunga Spreading Grounds, and LACFCD owns the Branford, Hansen, Lopez and Pacoima spreading grounds. Estimated capacities for the spreading grounds are shown in Table 1-1 and their locations are shown in Figure 1-1.

TABLE 1-1
ESTIMATED CAPACITIES EXPERIENCED AT SPREADING GROUNDS

Spreading Ground	Type	Total wetted area [acre]	Max Recharge Capacity Experienced [acre-feet]
Operated by LACFCD			
Branford	Deep basin	7	2,100
Hansen	Med. Depth basin	107	35,100
Lopez	Shallow basin	12	3,900
Pacoima	Med. Depth basin	107	24,100
(Jointly Maintained by LADWP & LACFCD)			
Tujunga	Shallow basin	83	42,800
		TOTAL:	108,000

b.) Extraction Wells: LADWP has nine well fields in the San Fernando Basin, and one in the Sylmar Basin. The rated capacities of the nine well fields are shown in Table 1-2. The rated capacities are approximate, as operating capacities vary depending on the water levels. Actual groundwater pumping will vary due to 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	2.5	1,122
Crystal Springs [A]	---	---	---	---	---
Erwin	2	---	2	6.1	2,738
Headworks	---	---	---	---	---
North Hollywood	14	---	14	55.5	24,910
Pollock	2	---	2	5.9	2,648
Rinaldi-Toluca	15	---	15	113.0	50,718
Tujunga	12	---	12	98.2	44,075
Verdugo	2	---	2	7.4	3,321
Whitnall	4	---	4	14.8	6,643
Sylmar Basin					
Mission	2	---	2	5	2,244
TOTAL	60	---	60	308.4	138,419

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

c.) Groundwater Remediation Facilities: LADWP operates three groundwater remediation facilities. Treated effluent produced by these facilities is conveyed to the water distribution system and delivered to LADWP customers for potable supply as a beneficial end use.

North Hollywood Groundwater Treatment Facility: The North Hollywood Operable Unit (NHOU) was placed into service December 1989 and is being operated and maintained by LADWP under the direction of the United States Environmental

Protection Agency (USEPA) in accordance with the Cooperative Agreement between these two agencies. USEPA provides 90 percent of the funding for the operations and maintenance of the North Hollywood Groundwater Treatment Facility.

The NHOU was designed to achieve a groundwater treatment capacity of up to 2,000 gallons per minute (gpm) utilizing eight shallow extraction wells and an aeration tower to remove volatile organic compounds (VOC) from the extracted groundwater. Vapor-phase granular activated carbon (GAC) vessels are then utilized to remove VOCs from the aeration tower air emissions.

Pollock Wells Treatment Plant: The Pollock Wells Treatment Plant was placed into service March 1999 to remove VOCs from the groundwater at a rate of up to 3,000 gpm. This facility was designed to remove trichloroethylene (TCE) and perchloroethylene (PCE) from groundwater produced by two extraction wells. Liquid-phase GAC vessels restored the use of Pollock Wells, which also reduces the potential of rising groundwater discharge from the San Fernando Basin into the Los Angeles River.

Temporary Tujunga Wells Treatment Study Project: The Temporary Tujunga Wells Treatment Study Project was placed into service May 2010 to remove VOCs from the groundwater with a remediation capacity of approximately 8,000 gpm. Liquid-phase GAC vessels designed to remove VOCs from groundwater were installed at two wells at the Tujunga Well Field, and have restored more than 20,000 acre feet per year (AFY) of pumping capacity that was unavailable due to water quality constraints.

Section 2: Annual Pumping and Spreading Projections

a.) Pumping Projections for Water Years 2014-2019: The City of Los Angeles has the following six sources of water supply:

1) Los Angeles Aqueduct supply imported from the Owens Valley/Mono Basin areas,
2) Local groundwater supply from the Central, San Fernando, and Sylmar Basins,
3) Metropolitan Water District of Southern California (MWD) supply imported from the Sacramento Bay Delta via the State Water Project (SWP) and the Colorado River Aqueduct,
4) Recycled water,
5) Stormwater, and
6) Conservation.

LADWP's use of groundwater from the San Fernando Basin fluctuates from year to year depending on the availability of the imported water sources, which can vary as a result of hydrologic conditions and operational constraints. Use of the San Fernando Basin groundwater supply is largely constrained by the impacts of groundwater contamination, including most significantly VOCs, hexavalent chromium (Cr-VI), and other emerging chemicals. VOCs that have escaped the containment area of the NHOU have affected nearby groundwater supply wells. To a lesser degree, VOCs have impaired LADWPs use of groundwater in Sylmar Basin and Central Basin.

The San Fernando, Sylmar, and Central Basins provide the City's local groundwater supply. The City of Los Angeles has the following average annual water rights, in acre feet (AF), which comprise approximately 18% of the City's supply:

San Fernando Basin:	87,000 AF
Sylmar Basin:	3,570 AF
Central Basin:	16,546 AF

Table 2-1 shows the amount of groundwater extractions that are expected, during the 2014-15 Water Year, from the San Fernando and Sylmar Basins. Projected 2015 to 2019 groundwater extractions are provided in Table 2-2. These projections are based upon water demand forecasts and availability of Los Angeles Aqueduct flows, and are subject to yearly adjustments.

TABLE 2-1
ACTUAL AND PROJECTED PUMPING
BY THE CITY OF LOS ANGELES FOR WY 2014-2015
(in acre-feet)

San Fernando Basin		Actual Extraction							Projected Extraction*				
	TOTAL	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
AERATION	1,107	91	61	58	96	101	44	85	86	119	123	123	119
ERWIN	0	0	0	0	0	0	0	0	0	0	0	0	0
HEADWORKS	0	0	0	0	0	0	0	0	0	0	0	0	0
NORTH HOLLYWOOD	14,633	2,787	2,508	1,514	615	722	369	974	1,027	1,012	1,046	1,046	1,012
POLLOCK	3,177	344	110	359	12	24	162	350	363	357	369	369	357
RINALDI-TOLUCA	28,465	3,272	2,914	1,391	2,200	1,862	1,371	1,657	1,734	1,607	3,075	3,752	3,631
TUJUNGA	38,951	4,364	2,020	2,387	2,245	1,770	2,172	3,285	3,401	4,166	4,428	4,428	4,285
VERDUGO	0	0	0	0	0	0	0	0	0	0	0	0	0
WHITNALL	0	0	0	0	0	0	0	0	0	0	0	0	0
SAN FERNANDO BASIN TOTAL:	86,333	10,859	7,613	5,709	5,168	4,480	4,118	6,351	6,612	7,261	9,041	9,718	9,404
Sylmar Basin													
MISSION	728	0	0	0	0	0	0	0	0	179	185	185	179
ULARA TOTAL:	87,061	10,859	7,613	5,709	5,168	4,480	4,118	6,351	6,612	7,440	9,226	9,903	9,583

*Increased production in the San Fernando Basin due to low allocation from the State Water Project may increase the risk of experiencing high concentrations of contaminates at wellheads, which may curtail pumping.

Current dry year conditions which have continued to persist since 2012 resulted in Gov. Brown's declaration of a statewide drought state of emergency on January 17, 2014. With diminished snow pack and surface water resources, California Department of Water Resources (DWR) has responded by reducing water allocations to the LADWP. Metropolitan Water District of Southern California has enacted it's Water Supply Allocation Plan effective July 1, 2015, reducing imported water supplies to member agencies. In response, LADWP has significantly reduced its deliveries from the SWP by adjusting its groundwater pumping forecast to increase the use of local groundwater from the San Fernando Basin. Additionally, construction of replacement supply wells in the Sylmar Basin has been accelerated to further increase the supply of local groundwater. LADWP recognizes that levels of pumping will likely be constrained due to increasing concentrations of contaminants at each operating wellhead. Water quality conditions will be closely monitored and pumping will be curtailed as necessary to ensure that all regulatory standards continue to be met.

TABLE 2-2
PROJECTED PUMPING IN THE SAN FERNANDO BASIN
BY THE CITY OF LOS ANGELES FOR 2014-2019
(in acre-feet)

WELL FIELD	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
AERATION	1,107	1,725	1,725	4,923	4,923
ERWIN	0	1,000	0	1,000	0
HEADWORKS	0	0	0	0	0
NO HOLLYWOOD	14,633	7,000	13,000	18,620	18,620
POLLOCK	3,177	2,178	2,178	2,178	2,178
RINALDI-TOLUCA	28,465	19,200	19,200	19,200	19,200
TUJUNGA	38,951	29,700	23,700	23,700	23,700
VERDUGO	0	1,000	0	1,000	0
WHITNAL	0	1,000	0	1,000	0
TOTAL ACRE-FEET	**86,333**	**62,803**	**59,803**	**71,621**	**68,621**

***Note*: Groundwater production for San Fernando Basin may increase with additional remediation of contaminated wells or blending with external water sources as allowed by state regulatory agencies.**

MISSION WELLFIELD (Sylmar)	728	1,809	4,170	4,170	4,170

b.) <u>Spreading Projections for the 2014-15 Water Year</u>: Native groundwater recharge from captured storm runoff occurs primarily as a result of runoff diversion from adjacent storm channels into engineered spreading grounds. Spreading grounds are primarily operated by Los Angeles County Flood Control District (LACFCD). Table 2-3 represents the anticipated spreading volumes for Water Year 2014-15.

TABLE 2-3
ACTUAL AND PROJECTED SPREADING
IN ULARA SPREADING GROUNDS FOR WY 2014-15
(in acre-feet)

Operated by:							
	LACDPW				**LADWP**	**LACDPW and LADWP**	
Month	**Branford**	**Hansen**	**Lopez**	**Pacoima**	**Headworks (A)**	**Tujunga**	**Monthly Total**
Actual							
Oct-14	39	0	0	0	0	0	39
Nov-14	68	0	0	25	0	0	93
Dec-14	165	413	0	742	0	194	1,514
Jan-15	91	148	0	99	0	0	338
Feb-15	34	99	0	79	0	0	212
Mar-15	34	75	0	58	0	40	207
Apr-15	7	39	0	5	0	26	77
Projected							
May-15	30	254	0	131	0	33	447
Jun-15	21	169	0	80	0	20	290
Jul-15	23	149	0	59	0	11	242
Aug-15	18	109	0	0	0	1	129
Sep-15	19	87	0	0	0	0	106
Total	**550**	**1,542**	**0**	**1,277**	**0**	**325**	**3,694**

(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 (CCR). 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 organic compounds

Each well, whether on active or standby status, is monitored every three years for all types 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 monitoring of organic compounds is performed for each well where such compounds have been detected. A complete list of the parameters that must be tested for is contained in Title 22 of the CCR.

Appendix A provides the concentrations of various compounds detected in LADWP's groundwater wells in the San Fernando and Sylmar Basins during the period of April 2014 through March 2015. This report includes concentrations detected for nitrate, TCE, PCE, perchlorate, total chromium, iron, manganese, 1,2-dichloroethene-cis, carbon tetrachloride, total coliform, 1,1-DCA, 1,1-DCE, 1,4-dioxane, bromide, and MTBE.

Section 4: Groundwater Treatment Facilities Operations Summary

North Hollywood Operable Unit (NHOU): Table 4-1 provides the volume of groundwater extracted by each North Hollywood extraction well and treated through the aeration tower for VOC removal. This table also provides the concentrations of TCE and PCE detected in the raw groundwater from each wellhead before treatment. Water quality measurements from the treated effluent show that VOCs were effectively removed by the treatment process. Current operations include the use of four of the seven extraction wells.

Emerging contaminants have also impacted operational reliability of the NHOU. North Hollywood Extraction Well Nos. 2 and 3 (NHE-2, NHE-3) have been shut down due to elevated concentrations of Cr-VI, which the NHOU was not designed to remove. In 2007, NHE-2 was shut down in response to Cr-VI concentrations exceeding 400 micrograms per liter (ug/L). In order to contain the plume, the responsible party, Honeywell International, Inc. began operating NHE-2 in 2008 and discharging the untreated effluent into the sanitary sewer. The concentrations of Cr-VI in NHE-3 exceeded the maximum contaminant level of 50 ug/L in October 2012 (52 ug/L) and March 2013 (163 ug/L). In response, NHE-3 was removed from operation. Honeywell is working towards operating NHE-3 with effluent to be discharged into the sanitary sewer and this operation is tentatively scheduled to start by Fall 2015.

Replacement of the effluent pipeline and emission control unit reduced the number and duration of shutdowns. These plant shutdowns were caused by various equipment failures, repairs to the aeration tower blower, equipment malfunctions, maintenance and construction in the distribution system and outages resulting from power bumps and spikes in the power distribution system.

NHE-5 is shut down because the well cannot produce enough water.

TABLE 4-1
GROUNDWATER TREATMENT FROM THE NORTH HOLLYWOOD OPERABLE UNIT (AERATION) WELLS
(in acre-feet)

	Groundwater Treatment from Aeration Wells								TCE/PCE (µg/L)	
Mon-Yr	**No. 2***	**No. 3****	**No. 4**	**No. 5**	**No. 6**	**No. 7**	**No. 8**	**Total**	**Influent**	**Effluent**
Apr-14	--	0	12.21	0.02	39.97	46.9	49.79	**148.89**	ns	ns
May-14	--	0	8.61	0	25.62	28.51	30.03	**92.77**	26.4/5.68	ND/ND
Jun-14	--	0.02	16.76	0	55.67	58.52	64.19	**195.16**	25.3/5.72	ND/ND
Jul-14	--	0.07	0	0	20.41	20.91	20.84	**62.23**	25.5/6.05	ND/ND
Aug-14	--	0	0	0	40.38	39.33	41.35	**121.06**	30.5/7.26	ND/ND
Sep-14	--	0	0	0	49.08	42.54	46.83	**138.45**	29.0/6.64	ND/ND
Oct-14	--	0	0	0	34.15	23.14	34.15	**91.44**	31.9/7.38	ND/ND
Nov-14	--	0	0	0	30.33	0	30.33	**60.67**	43.4/6.24	ND/ND
Dec-14	--	0	0.02	0	20.51	14.97	22.71	**58.21**	29.9/7.27	ND/ND
Jan-15	--	0	0	0	32.16	32.16	32.16	**96.48**	33.5/7.28	ND/ND
Feb-15	--	0	1.24	0	33.33	33.33	33.33	**101.23**	35.0/6.89	ND/ND
Mar-15	--	0	0	0	14.72	14.72	14.72	**44.17**	ns	ns
Total								**1,210.76**		

Note:
* Honeywell Inc. has been operating Aeration Well No. 2 (NHE-2) since 9/16/08, per Los Angeles Regional Water Quality Control Board clean-up and abatement order R4-2003-0037. Effluent from NHE-2 is currently being diverted to the sanitary sewer, and therefore does not enter the NHOU and extraction volumes cannot be verified.
** Well No.3 was shut down in March 2013 due to elevated CR-VI concentrations.
ND: Not Detected
ns: Not Sampled

Pollock Wells Treatment Plant (PWTP): Table 4-2 provides the volume of groundwater extracted by each well and treated through the liquid-phase GAC vessels for VOC removal. This table also provides the concentrations of TCE and PCE detected in the raw groundwater from the influent line before treatment. Water quality measurements from the treated effluent show that VOCs were effectively removed by the treatment process.

The Pollock Wells Treatment Plant was shut down from January to March 2015 to replace the spent granular activated carbon (GAC). PWTP has been operating reliably since that change out. The type of GAC was changed from coal based to coconut based, which allows for a longer GAC lifespan. Initial results are showing one month of increased lifespan using the coconut based GAC. PWTP was shut down for two months in 2014 to accommodate operational changes in the distribution system.

TABLE 4-2
GROUNDWATER TREATMENT FROM POLLOCK WELLS
(in acre-feet)

	Treatment from Pollock Wells			TCE/PCE (µg/L)	
Mon-Yr	**No. 4**	**No. 6**	**Total**	**Influent**	**Effluent**
Apr-14	0	0	**0**	ns	ns
May-14	104.2	0	**104.2**	2.17/1.56	ns
Jun-14	174.1	156.4	**330.5**	4.14/4.45	ns
Jul-14	175.7	179.8	**355.4**	4.79/5.89	ns
Aug-14	172.3	167.5	**339.8**	4.94/6.16	ND/ND
Sep-14	169.1	87.6	**256.7**	ns	ND/ND
Oct-14	174.8	169.0	**343.9**	6.08/7.05	ND/ND
Nov-14	55.9	54.1	**110.0**	ns	ND/ND
Dec-14	182.8	176.7	**359.4**	7.38/7.73	0.84/ND
Jan-15	5.9	5.7	**11.6**	ns	ns
Feb-15	23.9	0	**23.9**	ns	ns
Mar-15	99.8	62.4	**162.2**	6.27/6.58	ND/ND
Total			**2,397.6**		

Note:
ND: Not Detected
ns: Not Sampled

Temporary Tujunga Wells Treatment Study Project (TTW): Table 4-3 provides the volume of groundwater extracted by each well and treated through the liquid-phase GAC vessels for VOC removal. This table also provides the concentrations of TCE and PCE detected in the raw groundwater from each wellhead before treatment. Water quality measurements from the treated effluent show that VOCs were effectively removed by the treatment process.

The TTW has been operating reliably since October 2012 when the GAC was changed out and other maintenance activities performed. A total of approximately 11,000 AF of groundwater was treated by TTW during the recent water year.

TABLE 4-3

GROUNDWATER TREATMENT FROM TUJUNGA WELLS

(in acre-feet)

Mon-Yr	Tujunga Well No. 6			Tujunga Well No. 7			Treatment Totals
	Treatment (AF)	TCE / PCE (µg/L)		Treatment (AF)	TCE / PCE (µg/L)		
		Influent	Effluent		Influent	Effluent	
Apr-14	602.1	15.2/17.6	ND/ND	531.5	22/23	ND/ND	**1,133.7**
May-14	490.1	13.2/15.9	ND/ND	422.0	23.1/25.8	ND/ND	**912.1**
Jun-14	664.7	11.2/12.7	ND/ND	606.4	22.1/22.1	ND/ND	**1,271.0**
Jul-14	191.4	14.6/17.2	ND/ND	189.7	19.4/19.6	ND/ND	**381.1**
Aug-14	523.5	17.1/20.7	ND/ND	519.5	12.9/11.5	ND/ND	**1,042.9**
Sep-14	534.4	22.4/29.2	ND/ND	518.4	24.6/27.9	ns	**1,052.8**
Oct-14	412.1	24/31.5	ND/ND	479.7	26.7/33.8	ND/ND	**891.8**
Nov-14	393.1	21.5/29	ND/ND	457.1	26.6/34.8	ND/ND	**850.1**
Dec-14	412.1	16/22	ND/ND	479.7	15/18	ND/ND	**891.8**
Jan-15	412.1	21.2/29.9	ND/ND	479.7	20.6/21.6	ND/ND	**891.8**
Feb-15	372.2	17.9/24.3	ND/ND	433.3	20/21.1	ND/ND	**805.5**
Mar-15	412.1	19.5/25.5	ND/ND	479.7	23/24	ND/ND	**891.8**
Total							**11,016.5**

Note:
ND: Not Detected
ns: Not Sampled

Section 5: Proposed Facility Modifications

LADWP and LACFCD, in cooperation with the City of Los Angeles Bureau of Engineering, Bureau of Sanitation and Bureau of Street Services, continue to partner on, jointly fund, and collaborate on several projects that will enhance the capacity for recharge of native water into the groundwater basin via existing spreading grounds in the eastern portion of the San Fernando Basin. This section describes plans for modifying existing spreading facilities and construction of new facilities to provide expanded opportunities for enhancing the recharge capacity of the San Fernando Groundwater Basin.

a.) Spreading Grounds:

Branford Spreading Basin: Branford Spreading Basin is located immediately adjacent to Tujunga Spreading Grounds, along Pacoima Diversion Channel. Most of the water tributary to the Branford Spreading Basin is urban runoff from Branford Street Channel. The total wetted area of the spreading ground is 7 acres with a maximum intake of 1,540 cfs and storage capacity of 137 AF. This spreading basin is owned and operated by LACFCD. Average annual recharge for the facility is approximately 550 AF based on LACFCD historical record.

The Branford Spreading Basin Upgrade Project proposes to install a pump station at Branford spreading basin, a pipeline bridge across the Tujunga Wash Channel, and discharge outlet into Tujunga Spreading Grounds to facilitate transfer of stormwater from the one basin into the other. These changes will improve groundwater recharge, flood protection, and water quality. Final designs are scheduled to be completed by the end of 2015, and are to be followed by construction from 2016 through 2018. LADWP will provide up to $2 million for design and construction of the $4 million project. This project is expected to increase average stormwater capture by 650 AFY.

Lopez Spreading Grounds: Lopez Spreading Grounds is located downstream of Pacoima Dam. This spreading ground has a total wetted area of 12 AF with a maximum intake of 25 cfs and storage capacity of 24 AF. The spreading ground is owned and operated by the LACFCD.

LADWP and LACFCD are currently working cooperatively to improve stormwater capture by upgrading and automating the intake facility and revitalizing the recharge basins. Final designs are scheduled to be completed by end of 2015, to be followed by construction in 2016 through 2018. LADWP is funding half of the $4 million project and expects to increase average stormwater capture by 500 AFY.

Pacoima Spreading Grounds: The 169-acre Pacoima Spreading Grounds is located on both sides of the old Pacoima Wash Channel downstream of Pacoima Dam and Reservoir. This spreading ground is owned and operated by LACFCD and has a total wetted area of 107 AF with a maximum intake capacity of 600 cfs and storage capacity of 530 AF.

LADWP and LACFCD are currently working cooperatively to improve stormwater capture at this facility by upgrading and automating the intake structure and revitalizing the recharge basins. Final designs are scheduled to be completed by end of 2015, to be followed by construction in 2016 through 2019. LADWP will provide up to $15 million for design and construction of the $30 million project. This project is expected to increase average stormwater capture by 10,500 AFY.

Tujunga Spreading Grounds: Tujunga Spreading Grounds is a 188-acre parcel located along the Tujunga Wash Channel at its confluence with the Pacoima Wash Channel. This spreading ground is owned by LADWP and operated by LACFCD and has a total wetted area of 83 acres with a maximum intake capacity of 250 cfs and a storage capacity of 100 AF.

Construction will begin in October 2015 to enhance the facility by relocating and automating the current intake structure on Tujunga Wash, installing a second automated intake to receive flows from the Pacoima Wash, and reconfiguring the existing spreading basins. Other enhancements include recreational walking trails, native habitat, and educational facilities. LADWP is fully funding the $27.2 million project to the LACFCD for design and construction. It is expected that this project will increase stormwater capture by 8,000 AFY.

b.) Groundwater Remediation Facilities:

North Hollywood Operable Unit (NHOU):

Newly emerging constituents have been detected in the operable unit extraction wells, such as Cr-VI and 1, 4-dioxane, for which the NHOU was not designed to treat. Concentrations of Cr-VI in excess of 400 ug/L since 2009 have forced remediation of extraction well NHE-2 to cease and the effluent to be diverted to the sanitary sewer. On June 28, 2013 concentrations of Cr-VI spiked to 171 ug/L in NHE-3 and now exceed the maximum contaminant level (MCL) of 10 ug/L for Cr-VI and 50 ug/L for total chromium.

LADWP continues to work with the USEPA and the PRPs on implementing the 2nd Interim Remedy (2IR). The Record of Decision (ROD) for the NHOU2IR was issued in September 2009. It is expected that this new remedy will include the deepening of several extraction wells, the addition of more extraction wells, and a new treatment facility designed to remove VOCs, Cr-VI, 1, 4 dioxane and other contaminants of concern. This remedy will continue to focus on the containment and remediation of the highest concentration areas of the plumes. Lower concentration areas will still need to be addressed. An amendment to the ROD for the 2IR was approved on January 10, 2014. The key change was the addition of a re-injection option for the 4,923 AFY of treated water that is contemplated as part of the 2IR. However, the LADWP, USEPA, and the PRPs are working on a Cooperative Containment Concept that will more than double the amount of treated water to an anticipated 10,500 AFY and allow for receiving the treated water into LADWP's drinking water system as the preferred option over the reinjection alternative. If all issues can be agreed upon, design will start as early as August 2015.

Groundwater System Improvement Study (GSIS): Since 2009, the Los Angeles Department of Water and Power (LADWP) has been moving forward with a $34 million Groundwater System Improvement Study (GSIS) to fully characterize the groundwater basin as necessary to develop conceptual plans for short- and long-term strategies for remediation, containment, clean-up and removal of the contaminated groundwater. As a part of the GSIS, the LADWP drilled an additional 25 monitoring wells, performed water quality sampling from 94 wells, and completed the raw water quality characterization. This phase of the study was completed in early 2015. The conceptual planning of potential remediation facilities for the groundwater cleanup is on-going. A high-level concept plan and cost estimate was developed for the remediation facilities necessary to clean-up 123,000 acre-feet of contaminated groundwater per year. The conceptual estimate for facility construction is up to $600 million. LADWP will refine this estimate as the remediation facility projects progress through the final planning and design phases.

c.) Recycled Water Projects:

Water Recycling Projects in the San Fernando Valley:

LADWP's Recycled Water Master Planning (RWMP) documents are a series of reports that identify opportunities to offset potable demands in the City of Los Angeles through non-potable reuse projects and the groundwater replenishment (GWR) project. The RWMP is comprised of the following reports:

- Groundwater Replenishment Master Planning Report
- Groundwater Replenishment Treatment Pilot Study
- Non-Potable Reuse Master Planning Report
- Terminal Island Water Reclamation Plant Supplement, and Non-Potable
- Terminal Reuse Concepts Report
- Long-Term Concepts Report

LADWP's most recent Urban Water Management Plan (UWMP 2010) established a goal of increasing recycled water use within the City of Los Angeles to 59,000 AFY by the year 2035. Of this 59,000 AFY, LADWP expects to deliver as much as 29,000 AF of recycled water annually for non-potable reuse within the City of Los Angeles, which includes 5,000 AFY to customers within the San Fernando Basin originating from the Donald C. Tillman (DCT) and Los Angeles-Glendale (LAG) water reclamation plants. A total of 3,500 AFY of recycled water is provided for irrigation and 1,500 AFY for industrial cooling.

The GWR Project will provide up to 30,000 AFY of purified recycled water to replenish the San Fernando Groundwater Basin to maintain the reliability of the City's water supply and reduce the need for imported water. The water utilized for GWR will consist of tertiary-treated recycled water from DCT that will go through additional stages of microfiltration, reverse osmosis, and advanced oxidation resulting in purity close to distilled water before being spread for replenishment.

For the period of October 1, 2013 to September 30, 2014, LADWP delivered 4,701 AF of recycled water to customers in ULARA. LADWP constructed 430 feet of pipeline to serve Ed P Reyes River Greenway located near the Arroyo Seco Confluence of the LA River, adjacent to Elysian Park. The greenway came online August 2014 and yields up to 5 AFY.

Distribution facilities have been designed to deliver approximately 200 AFY and 500 AFY of recycled water to Woodley Park and to the Hansen Dam Golf Course, respectively. Woodley Park began irrigating with recycled water in 2012, and Hansen Golf Course began irrigating with recycled water in February 2015.

LADWP signed a Memorandum of Understanding with the City of Los Angeles Department of Recreation and Parks (RAP) to provide capital funds and design assistance to retrofit Elysian Park with recycled water. LADWP and RAP also partnered to install a new irrigation system at the Los Feliz Golf Course. The golf course is now supplied by recycled water from LAG. This project will offset potable demand and yield up to 20 AFY.

The recycled water line originating from the City of Burbank has been extended through Los Angeles to serve Woodbury University. Staff is working with Los Angeles County Department of Public Health and the university to complete on-site retrofit requirements. This project has an expected yield of 32 AFY.

The City of Glendale's recycled water mainline has been tapped and LADWP expects to have Chevy Chase Park and Bette Davis Park utilizing recycled water during the next ULARA reporting period. Bond Park came online in May 2014, with an expected yield of 10 AFY.

LADWP also expects to connect the following customers to recycled water during the next ULARA reporting period: Delano Park, Woodley Park East, Woodbury University, Fulton Middle School, and Branford Park. It is expected that deliveries of approximately 70 AFY of recycled water to these customers will initiate by fiscal year 2014-2015.

APPENDIX A:
Water Quality Sampling Results,
April 2014 through March 2015

SAN FERNANDO AND SYLMAR BASINS WELL FIELDS
1,1-DCA, 1,1-DCE, 1,2-DICHLOROETHENE-CIS, 1,4-DIOXANE, BROMIDE,
CARBON TETRACHLORIDE, TOTAL CHROMIUM, IRON, MANGANESE, MTBE, NITRATE (AS NO3),
PCE, PERCHLORATE, TCE, AND TOTAL COLIFORM CONCENTRATION
SAMPLES TAKEN BETWEEN 4/1/2013 AND 3/31/2014

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
AT002	1,1-Dichloroethane (1,1-DCA)	5/30/2013	0.553	µg/L
AT002	1,1-Dichloroethane (1,1-DCA)	9/24/2013	0.556	µg/L
AT002	1,1-Dichloroethane (1,1-DCA)	4/25/2013	0.557	µg/L
AT002	1,1-Dichloroethane (1,1-DCA)	7/18/2013	0.603	µg/L
AT002	1,1-Dichloroethane (1,1-DCA)	2/18/2014	0.612	µg/L
AT002	1,1-Dichloroethane (1,1-DCA)	6/28/2013	0.614	µg/L
AT002	1,1-Dichloroethane (1,1-DCA)	3/6/2014	0.644	µg/L
AT002	1,1-Dichloroethane (1,1-DCA)	12/16/2013	0.645	µg/L
AT002	1,1-Dichloroethane (1,1-DCA)	1/30/2014	0.712	µg/L
AT002	1,1-Dichloroethene (1,1-DCE)	5/30/2013	9.33	µg/L
AT002	1,1-Dichloroethene (1,1-DCE)	4/25/2013	10.3	µg/L
AT002	1,1-Dichloroethene (1,1-DCE)	6/28/2013	10.5	µg/L
AT002	1,1-Dichloroethene (1,1-DCE)	7/18/2013	11	µg/L
AT002	1,1-Dichloroethene (1,1-DCE)	3/6/2014	11.5	µg/L
AT002	1,1-Dichloroethene (1,1-DCE)	2/18/2014	13.2	µg/L
AT002	1,1-Dichloroethene (1,1-DCE)	12/16/2013	13.4	µg/L
AT002	1,1-Dichloroethene (1,1-DCE)	9/24/2013	13.6	µg/L
AT002	1,1-Dichloroethene (1,1-DCE)	1/30/2014	14.4	µg/L
AT002	1,2-Dichloroethene-cis	5/30/2013	2.75	µg/L
AT002	1,2-Dichloroethene-cis	6/28/2013	2.94	µg/L
AT002	1,2-Dichloroethene-cis	9/24/2013	3.02	µg/L
AT002	1,2-Dichloroethene-cis	2/18/2014	3.07	µg/L
AT002	1,2-Dichloroethene-cis	4/25/2013	3.09	µg/L
AT002	1,2-Dichloroethene-cis	7/18/2013	3.13	µg/L
AT002	1,2-Dichloroethene-cis	3/6/2014	3.18	µg/L
AT002	1,2-Dichloroethene-cis	12/16/2013	3.29	µg/L
AT002	1,2-Dichloroethene-cis	1/30/2014	3.66	µg/L
AT002	1,4-Dioxane	2/18/2014	2.58	ug/L
AT002	1,4-Dioxane	12/16/2013	2.61	ug/L
AT002	1,4-Dioxane	9/24/2013	2.72	ug/L
AT002	1,4-Dioxane	1/30/2014	2.84	ug/L
AT002	1,4-Dioxane	6/28/2013	3.01	ug/L
AT002	1,4-Dioxane	4/25/2013	3.23	ug/L
AT002	1,4-Dioxane	3/6/2014	3.29	ug/L
AT002	1,4-Dioxane	6/5/2013	3.36	ug/L
AT002	1,4-Dioxane	7/18/2013	3.38	ug/L
AT002	Bromide ,Ion-Chromatography	9/24/2013	0.221	mg/L
AT002	Carbon tetrachloride	4/25/2013	0.794	µg/L
AT002	Carbon tetrachloride	6/28/2013	0.861	µg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
AT002	Carbon tetrachloride	5/30/2013	0.88	µg/L
AT002	Carbon tetrachloride	3/6/2014	0.959	µg/L
AT002	Carbon tetrachloride	7/18/2013	0.972	µg/L
AT002	Carbon tetrachloride	2/18/2014	1.03	µg/L
AT002	Carbon tetrachloride	12/16/2013	1.05	µg/L
AT002	Carbon tetrachloride	1/30/2014	1.05	µg/L
AT002	Carbon tetrachloride	9/24/2013	1.13	µg/L
AT002	Chromium (Cr) Total, ICP/MS	6/28/2013	40.2	ug/L
AT002	Chromium (Cr) Total, ICP/MS	4/25/2013	40.4	ug/L
AT002	Chromium (Cr) Total, ICP/MS	7/18/2013	41.8	ug/L
AT002	Chromium (Cr) Total, ICP/MS	5/30/2013	43.9	ug/L
AT002	Chromium (Cr) Total, ICP/MS	1/31/2014	54.7	ug/L
AT002	Chromium (Cr) Total, ICP/MS	1/30/2014	55.8	ug/L
AT002	Chromium (Cr) Total, ICP/MS	2/18/2014	59.4	ug/L
AT002	Chromium (Cr) Total, ICP/MS	12/16/2013	59.8	ug/L
AT002	Chromium (Cr) Total, ICP/MS	3/6/2014	62.1	ug/L
AT002	Chromium (Cr+6) ,Diphenylcarbazide col	4/25/2013	40.8	µg/L
AT002	Chromium (Cr+6) ,Diphenylcarbazide col	5/30/2013	42.3	µg/L
AT002	Chromium (Cr+6) ,Diphenylcarbazide col	6/28/2013	42.7	µg/L
AT002	Chromium (Cr+6) ,Diphenylcarbazide col	7/18/2013	44.6	µg/L
AT002	Chromium (Cr+6) ,Diphenylcarbazide col	9/24/2013	50.4	µg/L
AT002	Chromium (Cr+6) ,Diphenylcarbazide col	2/18/2014	61.1	µg/L
AT002	Chromium (Cr+6) ,Diphenylcarbazide col	1/31/2014	63.8	µg/L
AT002	Chromium (Cr+6) ,Diphenylcarbazide col	12/16/2013	64.3	µg/L
AT002	Chromium (Cr+6) ,Diphenylcarbazide col	3/6/2014	66.2	µg/L
AT002	Nitrate (as NO3) ,calculated IC value	4/25/2013	41.4	mg/L
AT002	Nitrate (as NO3) ,calculated IC value	3/6/2014	41.9	mg/L
AT002	Nitrate (as NO3) ,calculated IC value	2/18/2014	42.3	mg/L
AT002	Nitrate (as NO3) ,calculated IC value	12/16/2013	42.5	mg/L
AT002	Nitrate (as NO3) ,calculated IC value	7/18/2013	42.7	mg/L
AT002	Nitrate (as NO3) ,calculated IC value	1/30/2014	42.7	mg/L
AT002	Nitrate (as NO3) ,calculated IC value	5/30/2013	43.1	mg/L
AT002	Nitrate (as NO3) ,calculated IC value	6/28/2013	43.3	mg/L
AT002	Nitrate (as NO3) ,calculated IC value	9/24/2013	44	mg/L
AT002	Tetrachloroethylene (PCE)	3/6/2014	30.7	µg/L
AT002	Tetrachloroethylene (PCE)	4/25/2013	32.8	µg/L
AT002	Tetrachloroethylene (PCE)	7/18/2013	33	µg/L
AT002	Tetrachloroethylene (PCE)	6/28/2013	33.1	µg/L
AT002	Tetrachloroethylene (PCE)	5/30/2013	38.2	µg/L
AT002	Tetrachloroethylene (PCE)	9/24/2013	40.6	µg/L
AT002	Tetrachloroethylene (PCE)	12/16/2013	41.7	µg/L
AT002	Tetrachloroethylene (PCE)	2/18/2014	41.8	µg/L
AT002	Tetrachloroethylene (PCE)	1/30/2014	46.1	µg/L
AT002	Trichloroethene (TCE)	4/25/2013	165	µg/L
AT002	Trichloroethene (TCE)	7/18/2013	196	µg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
AT002	Trichloroethene (TCE)	5/30/2013	197	µg/L
AT002	Trichloroethene (TCE)	3/6/2014	197	µg/L
AT002	Trichloroethene (TCE)	6/28/2013	200	µg/L
AT002	Trichloroethene (TCE)	2/18/2014	204	µg/L
AT002	Trichloroethene (TCE)	12/16/2013	213	µg/L
AT002	Trichloroethene (TCE)	1/30/2014	222	µg/L
AT002	Trichloroethene (TCE)	9/24/2013	225	µg/L
AT003	1,1-Dichloroethane (1,1-DCA)	3/27/2014	2.39	µg/L
AT003	1,1-Dichloroethane (1,1-DCA)	2/18/2014	2.44	µg/L
AT003	1,1-Dichloroethane (1,1-DCA)	6/28/2013	2.76	µg/L
AT003	1,1-Dichloroethene (1,1-DCE)	6/28/2013	7.67	µg/L
AT003	1,1-Dichloroethene (1,1-DCE)	2/18/2014	12.2	µg/L
AT003	1,1-Dichloroethene (1,1-DCE)	3/27/2014	13.2	µg/L
AT003	1,2-Dichloroethene-cis	2/18/2014	5.5	µg/L
AT003	1,2-Dichloroethene-cis	3/27/2014	5.53	µg/L
AT003	1,2-Dichloroethene-cis	6/28/2013	7.46	µg/L
AT003	1,4-Dioxane	2/18/2014	3.28	ug/L
AT003	1,4-Dioxane	3/27/2014	3.78	ug/L
AT003	1,4-Dioxane	6/28/2013	4.87	ug/L
AT003	Bromide ,Ion-Chromatography	2/18/2014	0.219	mg/L
AT003	Carbon tetrachloride	3/27/2014	0.576	µg/L
AT003	Carbon tetrachloride	6/28/2013	0.592	µg/L
AT003	Carbon tetrachloride	2/18/2014	0.607	µg/L
AT003	Chromium (Cr) Total, ICP/MS	3/27/2014	144	ug/L
AT003	Chromium (Cr) Total, ICP/MS	6/28/2013	173	ug/L
AT003	Chromium (Cr+6) ,Diphenylcarbazide col	3/27/2014	132	µg/L
AT003	Chromium (Cr+6) ,Diphenylcarbazide col	2/18/2014	151	µg/L
AT003	Chromium (Cr+6) ,Diphenylcarbazide col	6/28/2013	171	µg/L
AT003	Nitrate (as NO3) ,calculated IC value	3/27/2014	37.6	mg/L
AT003	Nitrate (as NO3) ,calculated IC value	6/28/2013	38.2	mg/L
AT003	Nitrate (as NO3) ,calculated IC value	2/18/2014	38.3	mg/L
AT003	Tetrachloroethylene (PCE)	6/28/2013	12.4	µg/L
AT003	Tetrachloroethylene (PCE)	3/27/2014	16.7	µg/L
AT003	Tetrachloroethylene (PCE)	2/18/2014	18.3	µg/L
AT003	Trichloroethene (TCE)	2/18/2014	121	µg/L
AT003	Trichloroethene (TCE)	3/27/2014	123	µg/L
AT003	Trichloroethene (TCE)	6/28/2013	183	µg/L
AT004	1,2-Dichloroethene-cis	2/18/2014	1.27	µg/L
AT004	1,2-Dichloroethene-cis	6/28/2013	1.32	µg/L
AT004	1,2-Dichloroethene-cis	7/18/2013	1.59	µg/L
AT004	Bromide ,Ion-Chromatography	6/28/2013	0.098	mg/L
AT004	Bromide ,Ion-Chromatography	7/18/2013	0.11	mg/L
AT004	Chromium (Cr) Total, ICP/MS	6/28/2013	4.2	ug/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
AT004	Chromium (Cr) Total, ICP/MS	2/18/2014	4.8	ug/L
AT004	Chromium (Cr) Total, ICP/MS	7/18/2013	5	ug/L
AT004	Chromium (Cr+6) ,Diphenylcarbazide col	6/28/2013	4.42	µg/L
AT004	Chromium (Cr+6) ,Diphenylcarbazide col	2/18/2014	4.84	µg/L
AT004	Chromium (Cr+6) ,Diphenylcarbazide col	7/18/2013	5.06	µg/L
AT004	Nitrate (as NO3) ,calculated IC value	6/28/2013	16.3	mg/L
AT004	Nitrate (as NO3) ,calculated IC value	2/18/2014	17	mg/L
AT004	Nitrate (as NO3) ,calculated IC value	7/18/2013	19	mg/L
AT004	Tetrachloroethylene (PCE)	6/28/2013	1.67	µg/L
AT004	Tetrachloroethylene (PCE)	2/18/2014	2.04	µg/L
AT004	Tetrachloroethylene (PCE)	7/18/2013	2.25	µg/L
AT004	Trichloroethene (TCE)	6/28/2013	8.61	µg/L
AT004	Trichloroethene (TCE)	2/18/2014	10.5	µg/L
AT004	Trichloroethene (TCE)	7/18/2013	10.8	µg/L
AT006	Bromide ,Ion-Chromatography	2/18/2014	0.077	mg/L
AT006	Chromium (Cr+6) ,Diphenylcarbazide col	2/18/2014	3.16	µg/L
AT006	Nitrate (as NO3) ,calculated IC value	2/18/2014	10.5	mg/L
AT006	Tetrachloroethylene (PCE)	2/18/2014	1.98	µg/L
AT006	Trichloroethene (TCE)	2/18/2014	4.17	µg/L
AT007	1,1-Dichloroethane (1,1-DCA)	6/28/2013	0.569	µg/L
AT007	1,1-Dichloroethane (1,1-DCA)	7/18/2013	0.902	µg/L
AT007	1,1-Dichloroethane (1,1-DCA)	2/18/2014	0.951	µg/L
AT007	1,1-Dichloroethene (1,1-DCE)	2/18/2014	0.602	µg/L
AT007	1,1-Dichloroethene (1,1-DCE)	6/28/2013	0.74	µg/L
AT007	1,1-Dichloroethene (1,1-DCE)	7/18/2013	0.841	µg/L
AT007	1,2-Dichloroethene-cis	6/28/2013	0.508	µg/L
AT007	1,2-Dichloroethene-cis	2/18/2014	0.581	µg/L
AT007	1,2-Dichloroethene-cis	7/18/2013	0.697	µg/L
AT007	1,4-Dioxane	7/18/2013	1.18	ug/L
AT007	Bromide ,Ion-Chromatography	2/18/2014	0.169	mg/L
AT007	Chromium (Cr) Total, ICP/MS	6/28/2013	1	ug/L
AT007	Chromium (Cr) Total, ICP/MS	7/18/2013	1.1	ug/L
AT007	Chromium (Cr+6) ,Diphenylcarbazide col	2/18/2014	0.99	µg/L
AT007	Chromium (Cr+6) ,Diphenylcarbazide col	6/28/2013	1.02	µg/L
AT007	Chromium (Cr+6) ,Diphenylcarbazide col	7/18/2013	1.02	µg/L
AT007	Nitrate (as NO3) ,calculated IC value	2/18/2014	28.9	mg/L
AT007	Nitrate (as NO3) ,calculated IC value	7/18/2013	29.8	mg/L
AT007	Nitrate (as NO3) ,calculated IC value	7/2/2013	31.1	mg/L
AT007	Tetrachloroethylene (PCE)	6/28/2013	6.66	µg/L
AT007	Tetrachloroethylene (PCE)	2/18/2014	7.13	µg/L
AT007	Tetrachloroethylene (PCE)	7/18/2013	7.56	µg/L
AT007	Trichloroethene (TCE)	2/18/2014	4.1	µg/L
AT007	Trichloroethene (TCE)	6/28/2013	5.03	µg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
AT007	Trichloroethene (TCE)	7/18/2013	5.71	µg/L
AT008	1,1-Dichloroethene (1,1-DCE)	6/28/2013	0.879	µg/L
AT008	1,1-Dichloroethene (1,1-DCE)	7/18/2013	1.78	µg/L
AT008	1,1-Dichloroethene (1,1-DCE)	2/18/2014	2.02	µg/L
AT008	1,4-Dioxane	2/18/2014	1.37	ug/L
AT008	1,4-Dioxane	6/28/2013	1.53	ug/L
AT008	1,4-Dioxane	7/18/2013	1.71	ug/L
AT008	Bromide ,Ion-Chromatography	2/18/2014	0.205	mg/L
AT008	Carbon tetrachloride	6/28/2013	1.03	µg/L
AT008	Carbon tetrachloride	2/18/2014	1.61	µg/L
AT008	Carbon tetrachloride	7/18/2013	2.15	µg/L
AT008	Chromium (Cr) Total, ICP/MS	7/18/2013	1	ug/L
AT008	Chromium (Cr+6) ,Diphenylcarbazide col	6/28/2013	0.87	µg/L
AT008	Chromium (Cr+6) ,Diphenylcarbazide col	2/18/2014	0.91	µg/L
AT008	Chromium (Cr+6) ,Diphenylcarbazide col	7/18/2013	0.94	µg/L
AT008	Nitrate (as NO3) ,calculated IC value	7/18/2013	28.4	mg/L
AT008	Nitrate (as NO3) ,calculated IC value	6/28/2013	29.6	mg/L
AT008	Nitrate (as NO3) ,calculated IC value	2/18/2014	31.5	mg/L
AT008	Tetrachloroethylene (PCE)	6/28/2013	3.87	µg/L
AT008	Tetrachloroethylene (PCE)	7/18/2013	5.59	µg/L
AT008	Tetrachloroethylene (PCE)	2/18/2014	7.13	µg/L
AT008	Trichloroethene (TCE)	6/28/2013	42.4	µg/L
AT008	Trichloroethene (TCE)	7/18/2013	67.5	µg/L
AT008	Trichloroethene (TCE)	2/18/2014	76.3	µg/L
ER006	Nitrate (as NO3) ,calculated IC value	12/30/2013	29.5	mg/L
ER006	Nitrate (as NO3) ,calculated IC value	1/28/2014	31.8	mg/L
ER006	Nitrate (as NO3) ,calculated IC value	11/27/2013	34.2	mg/L
ER006	Nitrate (as NO3) ,calculated IC value	6/27/2013	34.5	mg/L
ER006	Nitrate (as NO3) ,calculated IC value	10/31/2013	36.1	mg/L
ER006	Nitrate (as NO3) ,calculated IC value	7/16/2013	36.3	mg/L
ER006	Nitrate (as NO3) ,calculated IC value	3/27/2014	36.9	mg/L
ER006	Nitrate (as NO3) ,calculated IC value	2/25/2014	37.3	mg/L
ER006	Nitrate (as NO3) ,calculated IC value	9/17/2013	39.5	mg/L
ER006	Nitrate (as NO3) ,calculated IC value	8/27/2013	40.1	mg/L
ER006	Tetrachloroethylene (PCE)	2/25/2014	0.884	µg/L
ER006	Tetrachloroethylene (PCE)	6/27/2013	1.03	µg/L
ER006	Tetrachloroethylene (PCE)	3/27/2014	1.05	µg/L
ER006	Tetrachloroethylene (PCE)	10/31/2013	1.06	µg/L
ER006	Tetrachloroethylene (PCE)	7/16/2013	1.07	µg/L
ER006	Tetrachloroethylene (PCE)	8/27/2013	1.19	µg/L
ER006	Tetrachloroethylene (PCE)	11/27/2013	1.25	µg/L
ER006	Tetrachloroethylene (PCE)	1/28/2014	1.36	µg/L
ER006	Tetrachloroethylene (PCE)	12/30/2013	1.38	µg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
ER006	Tetrachloroethylene (PCE)	9/17/2013	1.58	µg/L
ER006	Trichloroethene (TCE)	2/25/2014	14.6	µg/L
ER006	Trichloroethene (TCE)	3/27/2014	15.2	µg/L
ER006	Trichloroethene (TCE)	8/27/2013	16.2	µg/L
ER006	Trichloroethene (TCE)	9/17/2013	18.1	µg/L
ER006	Trichloroethene (TCE)	10/31/2013	18.3	µg/L
ER006	Trichloroethene (TCE)	7/16/2013	18.7	µg/L
ER006	Trichloroethene (TCE)	6/27/2013	19.3	µg/L
ER006	Trichloroethene (TCE)	11/27/2013	23.5	µg/L
ER006	Trichloroethene (TCE)	1/28/2014	27.7	µg/L
ER006	Trichloroethene (TCE)	12/30/2013	28.6	µg/L
ER010	Bromide ,Ion-Chromatography	2/18/2014	0.171	mg/L
ER010	Coliform Total (CL,QT2000) ,MM0-MUG	2/18/2014	4.1	NUM/100ml
ER010	Nitrate (as NO3) ,calculated IC value	3/27/2014	10.3	mg/L
ER010	Nitrate (as NO3) ,calculated IC value	2/18/2014	12	mg/L
ER010	Nitrate (as NO3) ,calculated IC value	1/28/2014	12.7	mg/L
ER010	Nitrate (as NO3) ,calculated IC value	12/30/2013	21.3	mg/L
ER010	Nitrate (as NO3) ,calculated IC value	6/27/2013	24.7	mg/L
ER010	Nitrate (as NO3) ,calculated IC value	7/16/2013	36.8	mg/L
ER010	Nitrate (as NO3) ,calculated IC value	12/4/2013	39.6	mg/L
ER010	Nitrate (as NO3) ,calculated IC value	8/27/2013	45.2	mg/L
ER010	Nitrate (as NO3) ,calculated IC value	9/17/2013	54	mg/L
ER010	Nitrate (as NO3) ,calculated IC value	10/31/2013	58	mg/L
ER010	Tetrachloroethylene (PCE)	6/27/2013	0.661	µg/L
ER010	Tetrachloroethylene (PCE)	12/30/2013	0.686	µg/L
ER010	Tetrachloroethylene (PCE)	7/16/2013	1.03	µg/L
ER010	Tetrachloroethylene (PCE)	11/27/2013	1.43	µg/L
ER010	Tetrachloroethylene (PCE)	8/27/2013	1.53	µg/L
ER010	Tetrachloroethylene (PCE)	10/31/2013	1.64	µg/L
ER010	Tetrachloroethylene (PCE)	9/17/2013	1.96	µg/L
ER010	Trichloroethene (TCE)	12/30/2013	0.51	µg/L
ER010	Trichloroethene (TCE)	9/17/2013	0.64	µg/L
ER010	Trichloroethene (TCE)	10/31/2013	0.66	µg/L
ER010	Trichloroethene (TCE)	11/27/2013	0.695	µg/L
ER010	Trichloroethene (TCE)	2/18/2014	0.745	µg/L
ER010	Trichloroethene (TCE)	8/27/2013	0.758	µg/L
ER010	Trichloroethene (TCE)	6/27/2013	0.914	µg/L
ER010	Trichloroethene (TCE)	7/16/2013	0.916	µg/L
MH003A	Bromide ,Ion-Chromatography	10/10/2013	0.222	mg/L
MH003A	Nitrate (as NO3) ,calculated IC value	10/10/2013	30.2	mg/L
MH005	Nitrate (as NO3) ,calculated IC value	12/8/2013	8.15	mg/L
MH005	Nitrate (as NO3) ,calculated IC value	11/22/2013	8.28	mg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
MH005	Nitrate (as NO3) ,calculated IC value	4/15/2013	9.52	mg/L
MH006A	Nitrate (as NO3) ,calculated IC value	3/14/2014	13.9	mg/L
MH006A	Nitrate (as NO3) ,calculated IC value	12/8/2013	15	mg/L
MH006A	Nitrate (as NO3) ,calculated IC value	11/22/2013	15.2	mg/L
MH006A	Nitrate (as NO3) ,calculated IC value	4/15/2013	16.1	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	4/29/2013	16.4	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	7/29/2013	16.4	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	4/10/2013	16.7	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	4/17/2013	16.7	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	5/8/2013	16.7	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	6/11/2013	16.7	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	4/3/2013	16.8	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	1/29/2014	16.8	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	4/24/2013	16.9	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	5/22/2013	16.9	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	5/29/2013	16.9	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	6/5/2013	16.9	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	5/15/2013	17	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	2/27/2014	17	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	1/9/2014	17.1	mg/L
MI006	Nitrate (as NO3) ,calculated IC value	3/25/2014	19.6	mg/L
MI007	Nitrate (as NO3) ,calculated IC value	2/27/2014	26.2	mg/L
MI007	Nitrate (as NO3) ,calculated IC value	1/29/2014	26.8	mg/L
MI007	Nitrate (as NO3) ,calculated IC value	4/29/2013	27.4	mg/L
MI007	Nitrate (as NO3) ,calculated IC value	6/11/2013	27.5	mg/L
MI007	Nitrate (as NO3) ,calculated IC value	5/23/2013	27.6	mg/L
MI007	Nitrate (as NO3) ,calculated IC value	7/29/2013	27.6	mg/L
MI007	Nitrate (as NO3) ,calculated IC value	3/25/2014	29.3	mg/L
NH004	Nitrate (as NO3) ,calculated IC value	5/28/2013	10.5	mg/L
NH004	Nitrate (as NO3) ,calculated IC value	6/6/2013	11.1	mg/L
NH004	Nitrate (as NO3) ,calculated IC value	7/11/2013	11.4	mg/L
NH004	Nitrate (as NO3) ,calculated IC value	8/8/2013	11.6	mg/L
NH004	Nitrate (as NO3) ,calculated IC value	9/10/2013	11.8	mg/L
NH004	Nitrate (as NO3) ,calculated IC value	8/28/2013	12.2	mg/L
NH004	Tetrachloroethylene (PCE)	6/6/2013	0.522	µg/L
NH004	Tetrachloroethylene (PCE)	8/8/2013	0.58	µg/L
NH004	Tetrachloroethylene (PCE)	8/28/2013	0.596	µg/L
NH004	Tetrachloroethylene (PCE)	5/28/2013	0.665	µg/L
NH004	Tetrachloroethylene (PCE)	9/10/2013	0.677	µg/L
NH022	1,1-Dichloroethene (1,1-DCE)	2/20/2014	0.519	µg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
NH022	1,1-Dichloroethene (1,1-DCE)	9/17/2013	1.37	µg/L
NH022	1,1-Dichloroethene (1,1-DCE)	8/28/2013	1.38	µg/L
NH022	1,1-Dichloroethene (1,1-DCE)	7/11/2013	1.46	µg/L
NH022	1,1-Dichloroethene (1,1-DCE)	6/6/2013	1.72	µg/L
NH022	1,1-Dichloroethene (1,1-DCE)	5/23/2013	2.02	µg/L
NH022	Coliform Total (CL,QT2000) ,MM0-MUG	7/11/2013	2	NUM/100ml
NH022	Nitrate (as NO3) ,calculated IC value	2/20/2014	20.2	mg/L
NH022	Nitrate (as NO3) ,calculated IC value	3/25/2014	20.8	mg/L
NH022	Nitrate (as NO3) ,calculated IC value	7/11/2013	23.7	mg/L
NH022	Nitrate (as NO3) ,calculated IC value	5/23/2013	23.8	mg/L
NH022	Nitrate (as NO3) ,calculated IC value	6/6/2013	24.4	mg/L
NH022	Nitrate (as NO3) ,calculated IC value	8/28/2013	24.5	mg/L
NH022	Nitrate (as NO3) ,calculated IC value	9/17/2013	25	mg/L
NH022	Trichloroethene (TCE)	8/28/2013	1.53	µg/L
NH022	Trichloroethene (TCE)	9/17/2013	1.66	µg/L
NH022	Trichloroethene (TCE)	7/11/2013	1.88	µg/L
NH022	Trichloroethene (TCE)	6/6/2013	2.36	µg/L
NH022	Trichloroethene (TCE)	5/23/2013	2.99	µg/L
NH023	1,1-Dichloroethene (1,1-DCE)	2/20/2014	0.529	µg/L
NH023	1,1-Dichloroethene (1,1-DCE)	6/11/2013	0.536	µg/L
NH023	1,1-Dichloroethene (1,1-DCE)	8/27/2013	0.55	µg/L
NH023	1,1-Dichloroethene (1,1-DCE)	9/17/2013	0.564	µg/L
NH023	1,1-Dichloroethene (1,1-DCE)	7/25/2013	0.637	µg/L
NH023	1,2-Dichloroethene-cis	6/11/2013	0.525	µg/L
NH023	1,2-Dichloroethene-cis	2/20/2014	0.558	µg/L
NH023	1,2-Dichloroethene-cis	8/27/2013	0.69	µg/L
NH023	1,2-Dichloroethene-cis	7/25/2013	0.7	µg/L
NH023	1,2-Dichloroethene-cis	9/17/2013	0.725	µg/L
NH023	1,4-Dioxane	2/20/2014	3.67	ug/L
NH023	1,4-Dioxane	7/25/2013	7.26	ug/L
NH023	Nitrate (as NO3) ,calculated IC value	3/25/2014	21	mg/L
NH023	Nitrate (as NO3) ,calculated IC value	5/23/2013	26.5	mg/L
NH023	Nitrate (as NO3) ,calculated IC value	2/20/2014	28.7	mg/L
NH023	Nitrate (as NO3) ,calculated IC value	7/25/2013	33.4	mg/L
NH023	Nitrate (as NO3) ,calculated IC value	6/11/2013	35	mg/L
NH023	Nitrate (as NO3) ,calculated IC value	8/27/2013	35.1	mg/L
NH023	Nitrate (as NO3) ,calculated IC value	9/17/2013	36.5	mg/L
NH023	Tetrachloroethylene (PCE)	3/25/2014	1.76	µg/L
NH023	Tetrachloroethylene (PCE)	2/20/2014	5.52	µg/L
NH023	Tetrachloroethylene (PCE)	5/23/2013	5.98	µg/L
NH023	Tetrachloroethylene (PCE)	7/25/2013	6.24	µg/L
NH023	Tetrachloroethylene (PCE)	8/27/2013	6.36	µg/L
NH023	Tetrachloroethylene (PCE)	9/17/2013	7.36	µg/L
NH023	Tetrachloroethylene (PCE)	6/11/2013	8.76	µg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
NH023	Trichloroethene (TCE)	5/23/2013	12.8	µg/L
NH023	Trichloroethene (TCE)	3/25/2014	13	µg/L
NH023	Trichloroethene (TCE)	6/11/2013	17.3	µg/L
NH023	Trichloroethene (TCE)	7/25/2013	20.2	µg/L
NH023	Trichloroethene (TCE)	8/27/2013	23	µg/L
NH023	Trichloroethene (TCE)	2/20/2014	24.8	µg/L
NH023	Trichloroethene (TCE)	9/17/2013	26.5	µg/L
NH025	1,1-Dichloroethene (1,1-DCE)	3/25/2014	0.609	µg/L
NH025	1,1-Dichloroethene (1,1-DCE)	2/20/2014	0.621	µg/L
NH025	Nitrate (as NO3) ,calculated IC value	2/20/2014	19	mg/L
NH025	Nitrate (as NO3) ,calculated IC value	3/25/2014	19.5	mg/L
NH033	Bromide ,Ion-Chromatography	6/18/2013	0.345	mg/L
NH033	Coliform Total (CL,QT2000) ,MM0-MUG	8/28/2013	1	NUM/100ml
NH033	Nitrate (as NO3) ,calculated IC value	2/20/2014	4.04	mg/L
NH033	Nitrate (as NO3) ,calculated IC value	3/25/2014	4.08	mg/L
NH033	Nitrate (as NO3) ,calculated IC value	7/11/2013	4.4	mg/L
NH033	Nitrate (as NO3) ,calculated IC value	5/28/2013	4.47	mg/L
NH033	Nitrate (as NO3) ,calculated IC value	6/18/2013	4.56	mg/L
NH033	Nitrate (as NO3) ,calculated IC value	8/8/2013	4.7	mg/L
NH033	Nitrate (as NO3) ,calculated IC value	9/10/2013	4.7	mg/L
NH033	Nitrate (as NO3) ,calculated IC value	8/28/2013	4.96	mg/L
NH034	1,1-Dichloroethene (1,1-DCE)	2/20/2014	0.82	µg/L
NH034	1,1-Dichloroethene (1,1-DCE)	3/25/2014	1.32	µg/L
NH034	Bromide ,Ion-Chromatography	1/21/2014	0.215	mg/L
NH034	Coliform Total (CL,QT2000) ,MM0-MUG	12/11/2013	2	NUM/100ml
NH034	Nitrate (as NO3) ,calculated IC value	12/11/2013	6.87	mg/L
NH034	Nitrate (as NO3) ,calculated IC value	1/21/2014	13.7	mg/L
NH034	Nitrate (as NO3) ,calculated IC value	2/20/2014	23.5	mg/L
NH034	Nitrate (as NO3) ,calculated IC value	3/25/2014	23.5	mg/L
NH034	Tetrachloroethylene (PCE)	3/25/2014	0.896	µg/L
NH034	Tetrachloroethylene (PCE)	2/20/2014	1.07	µg/L
NH034	Trichloroethene (TCE)	1/21/2014	0.975	µg/L
NH034	Trichloroethene (TCE)	2/20/2014	2.12	µg/L
NH034	Trichloroethene (TCE)	3/25/2014	2.7	µg/L
NH036	1,1-Dichloroethene (1,1-DCE)	6/11/2013	1.21	µg/L
NH036	1,1-Dichloroethene (1,1-DCE)	7/11/2013	1.29	µg/L
NH036	1,1-Dichloroethene (1,1-DCE)	9/10/2013	1.39	µg/L
NH036	1,1-Dichloroethene (1,1-DCE)	8/27/2013	1.65	µg/L
NH036	1,1-Dichloroethene (1,1-DCE)	10/10/2013	2.17	µg/L
NH036	1,1-Dichloroethene (1,1-DCE)	2/20/2014	2.33	µg/L
NH036	Bromide ,Ion-Chromatography	9/24/2013	0.226	mg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
NH036	Nitrate (as NO3) ,calculated IC value	5/23/2013	16.5	mg/L
NH036	Nitrate (as NO3) ,calculated IC value	2/20/2014	23	mg/L
NH036	Nitrate (as NO3) ,calculated IC value	6/11/2013	23.6	mg/L
NH036	Nitrate (as NO3) ,calculated IC value	7/11/2013	24.6	mg/L
NH036	Nitrate (as NO3) ,calculated IC value	9/10/2013	25.6	mg/L
NH036	Nitrate (as NO3) ,calculated IC value	10/10/2013	25.6	mg/L
NH036	Nitrate (as NO3) ,calculated IC value	8/27/2013	26.2	mg/L
NH036	Nitrate (as NO3) ,calculated IC value	9/24/2013	26.2	mg/L
NH036	Tetrachloroethylene (PCE)	7/11/2013	0.513	µg/L
NH036	Tetrachloroethylene (PCE)	8/27/2013	0.745	µg/L
NH036	Tetrachloroethylene (PCE)	10/10/2013	0.762	µg/L
NH036	Tetrachloroethylene (PCE)	9/10/2013	0.823	µg/L
NH036	Tetrachloroethylene (PCE)	2/20/2014	1.09	µg/L
NH036	Trichloroethene (TCE)	5/23/2013	0.846	µg/L
NH036	Trichloroethene (TCE)	6/11/2013	2.49	µg/L
NH036	Trichloroethene (TCE)	7/11/2013	2.57	µg/L
NH036	Trichloroethene (TCE)	9/10/2013	3.11	µg/L
NH036	Trichloroethene (TCE)	8/27/2013	3.13	µg/L
NH036	Trichloroethene (TCE)	10/10/2013	3.63	µg/L
NH036	Trichloroethene (TCE)	2/20/2014	4.04	µg/L
NH037	1,1-Dichloroethene (1,1-DCE)	9/10/2013	0.518	µg/L
NH037	1,1-Dichloroethene (1,1-DCE)	7/11/2013	0.606	µg/L
NH037	1,1-Dichloroethene (1,1-DCE)	6/6/2013	0.624	µg/L
NH037	1,1-Dichloroethene (1,1-DCE)	8/27/2013	0.707	µg/L
NH037	1,1-Dichloroethene (1,1-DCE)	10/10/2013	0.789	µg/L
NH037	1,1-Dichloroethene (1,1-DCE)	3/25/2014	0.993	µg/L
NH037	1,2-Dichloroethene-cis	3/25/2014	0.543	µg/L
NH037	1,2-Dichloroethene-cis	8/27/2013	0.577	µg/L
NH037	1,2-Dichloroethene-cis	10/10/2013	0.609	µg/L
NH037	1,2-Dichloroethene-cis	9/10/2013	0.633	µg/L
NH037	Bromide ,Ion-Chromatography	12/11/2013	0.202	mg/L
NH037	Nitrate (as NO3) ,calculated IC value	2/25/2014	6.33	mg/L
NH037	Nitrate (as NO3) ,calculated IC value	12/11/2013	7.71	mg/L
NH037	Nitrate (as NO3) ,calculated IC value	5/23/2013	8.99	mg/L
NH037	Nitrate (as NO3) ,calculated IC value	3/25/2014	22.2	mg/L
NH037	Nitrate (as NO3) ,calculated IC value	6/6/2013	22.8	mg/L
NH037	Nitrate (as NO3) ,calculated IC value	7/11/2013	23.3	mg/L
NH037	Nitrate (as NO3) ,calculated IC value	9/10/2013	23.5	mg/L
NH037	Nitrate (as NO3) ,calculated IC value	8/27/2013	24	mg/L
NH037	Nitrate (as NO3) ,calculated IC value	10/10/2013	24.4	mg/L
NH037	Tetrachloroethylene (PCE)	6/6/2013	1.48	µg/L
NH037	Tetrachloroethylene (PCE)	7/11/2013	2.04	µg/L
NH037	Tetrachloroethylene (PCE)	8/27/2013	3.03	µg/L
NH037	Tetrachloroethylene (PCE)	9/10/2013	3.2	µg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
NH037	Tetrachloroethylene (PCE)	3/25/2014	3.39	µg/L
NH037	Tetrachloroethylene (PCE)	10/10/2013	3.56	µg/L
NH037	Trichloroethene (TCE)	6/6/2013	1.84	µg/L
NH037	Trichloroethene (TCE)	7/11/2013	2.16	µg/L
NH037	Trichloroethene (TCE)	8/27/2013	2.79	µg/L
NH037	Trichloroethene (TCE)	9/10/2013	3.01	µg/L
NH037	Trichloroethene (TCE)	10/10/2013	3.65	µg/L
NH037	Trichloroethene (TCE)	3/25/2014	4.2	µg/L
NH043A	1,1-Dichloroethene (1,1-DCE)	9/10/2013	0.581	µg/L
NH043A	1,1-Dichloroethene (1,1-DCE)	10/10/2013	0.796	µg/L
NH043A	1,1-Dichloroethene (1,1-DCE)	6/11/2013	0.811	µg/L
NH043A	1,1-Dichloroethene (1,1-DCE)	8/27/2013	0.89	µg/L
NH043A	Nitrate (as NO3) ,calculated IC value	3/25/2014	13.4	mg/L
NH043A	Nitrate (as NO3) ,calculated IC value	5/23/2013	15.8	mg/L
NH043A	Nitrate (as NO3) ,calculated IC value	2/25/2014	17.9	mg/L
NH043A	Nitrate (as NO3) ,calculated IC value	12/11/2013	19.2	mg/L
NH043A	Nitrate (as NO3) ,calculated IC value	6/11/2013	26.8	mg/L
NH043A	Nitrate (as NO3) ,calculated IC value	9/10/2013	29.6	mg/L
NH043A	Nitrate (as NO3) ,calculated IC value	8/27/2013	31.9	mg/L
NH043A	Nitrate (as NO3) ,calculated IC value	10/10/2013	33.4	mg/L
NH043A	Tetrachloroethylene (PCE)	12/11/2013	0.527	µg/L
NH043A	Tetrachloroethylene (PCE)	5/23/2013	0.652	µg/L
NH043A	Tetrachloroethylene (PCE)	6/11/2013	2.46	µg/L
NH043A	Tetrachloroethylene (PCE)	9/10/2013	3.83	µg/L
NH043A	Tetrachloroethylene (PCE)	10/10/2013	4.12	µg/L
NH043A	Tetrachloroethylene (PCE)	8/27/2013	5.38	µg/L
NH043A	Trichloroethene (TCE)	2/25/2014	0.58	µg/L
NH043A	Trichloroethene (TCE)	12/11/2013	1.14	µg/L
NH043A	Trichloroethene (TCE)	5/23/2013	1.32	µg/L
NH043A	Trichloroethene (TCE)	6/11/2013	5.34	µg/L
NH043A	Trichloroethene (TCE)	10/10/2013	11.2	µg/L
NH043A	Trichloroethene (TCE)	9/10/2013	11.7	µg/L
NH043A	Trichloroethene (TCE)	8/27/2013	14.1	µg/L
NH044	Coliform Total (CL,QT2000) ,MM0-MUG	2/25/2014	4.1	NUM/100ml
NH044	Nitrate (as NO3) ,calculated IC value	2/25/2014	4.83	mg/L
NH044	Nitrate (as NO3) ,calculated IC value	12/11/2013	8.51	mg/L
NH044	Nitrate (as NO3) ,calculated IC value	5/23/2013	9.04	mg/L
NH044	Nitrate (as NO3) ,calculated IC value	6/6/2013	12.9	mg/L
NH044	Nitrate (as NO3) ,calculated IC value	7/11/2013	13.6	mg/L
NH044	Nitrate (as NO3) ,calculated IC value	10/10/2013	13.7	mg/L
NH044	Nitrate (as NO3) ,calculated IC value	8/28/2013	13.8	mg/L
NH044	Tetrachloroethylene (PCE)	5/23/2013	0.506	µg/L
NH044	Tetrachloroethylene (PCE)	6/6/2013	0.705	µg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
NH044	Tetrachloroethylene (PCE)	7/11/2013	1.12	µg/L
NH044	Tetrachloroethylene (PCE)	8/28/2013	1.13	µg/L
NH044	Tetrachloroethylene (PCE)	10/10/2013	1.18	µg/L
NH044	Trichloroethene (TCE)	12/11/2013	0.94	µg/L
NH044	Trichloroethene (TCE)	5/23/2013	1	µg/L
NH044	Trichloroethene (TCE)	6/6/2013	2.25	µg/L
NH044	Trichloroethene (TCE)	7/11/2013	3.37	µg/L
NH044	Trichloroethene (TCE)	8/28/2013	4.3	µg/L
NH044	Trichloroethene (TCE)	10/10/2013	4.83	µg/L
NH045	Bromide ,Ion-Chromatography	9/10/2013	0.248	mg/L
NH045	Nitrate (as NO3) ,calculated IC value	2/25/2014	5.67	mg/L
NH045	Nitrate (as NO3) ,calculated IC value	3/25/2014	7.66	mg/L
NH045	Nitrate (as NO3) ,calculated IC value	12/11/2013	7.84	mg/L
NH045	Nitrate (as NO3) ,calculated IC value	5/23/2013	8.15	mg/L
NH045	Nitrate (as NO3) ,calculated IC value	9/10/2013	13	mg/L
NH045	Nitrate (as NO3) ,calculated IC value	7/25/2013	13.3	mg/L
NH045	Nitrate (as NO3) ,calculated IC value	10/10/2013	13.4	mg/L
NH045	Nitrate (as NO3) ,calculated IC value	6/6/2013	13.5	mg/L
NH045	Nitrate (as NO3) ,calculated IC value	8/28/2013	13.6	mg/L
NH045	Tetrachloroethylene (PCE)	6/6/2013	0.535	µg/L
NH045	Tetrachloroethylene (PCE)	7/25/2013	0.94	µg/L
NH045	Tetrachloroethylene (PCE)	8/28/2013	1.21	µg/L
NH045	Tetrachloroethylene (PCE)	10/10/2013	1.43	µg/L
NH045	Tetrachloroethylene (PCE)	9/10/2013	1.48	µg/L
NH045	Trichloroethene (TCE)	6/6/2013	1.08	µg/L
NH045	Trichloroethene (TCE)	7/25/2013	1.69	µg/L
NH045	Trichloroethene (TCE)	8/28/2013	2.32	µg/L
NH045	Trichloroethene (TCE)	9/10/2013	3.01	µg/L
NH045	Trichloroethene (TCE)	10/10/2013	3.06	µg/L
PL004	Chromium (Cr) Total, ICP/MS	2/24/2014	1.9	ug/L
PL004	Chromium (Cr) Total, ICP/MS	12/31/2013	2	ug/L
PL004	Chromium (Cr) Total, ICP/MS	1/17/2014	2	ug/L
PL004	Chromium (Cr+6) ,Diphenylcarbazide col	2/24/2014	1.94	µg/L
PL004	Chromium (Cr+6) ,Diphenylcarbazide col	12/31/2013	1.97	µg/L
PL004	Chromium (Cr+6) ,Diphenylcarbazide col	1/17/2014	1.97	µg/L
PL004	Nitrate (as NO3) ,calculated IC value	2/24/2014	34.9	mg/L
PL004	Nitrate (as NO3) ,calculated IC value	1/17/2014	35.4	mg/L
PL004	Nitrate (as NO3) ,calculated IC value	12/31/2013	35.8	mg/L
PL004	Nitrate (as NO3) ,calculated IC value	11/25/2013	36.7	mg/L
PL004	Perchlorate	1/17/2014	2.25	µg/L
PL004	Perchlorate	12/31/2013	2.35	µg/L
PL004	Perchlorate	11/22/2013	2.49	µg/L
PL004	Perchlorate	2/24/2014	2.86	µg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
PL004	Tetrachloroethylene (PCE)	11/22/2013	1.66	µg/L
PL004	Tetrachloroethylene (PCE)	2/24/2014	1.88	µg/L
PL004	Tetrachloroethylene (PCE)	12/31/2013	1.92	µg/L
PL004	Tetrachloroethylene (PCE)	1/17/2014	2.03	µg/L
PL004	Trichloroethene (TCE)	11/22/2013	2.21	µg/L
PL004	Trichloroethene (TCE)	2/24/2014	2.4	µg/L
PL004	Trichloroethene (TCE)	1/17/2014	2.67	µg/L
PL004	Trichloroethene (TCE)	12/31/2013	2.69	µg/L
PL006	1,1-Dichloroethene (1,1-DCE)	1/17/2014	0.793	µg/L
PL006	1,1-Dichloroethene (1,1-DCE)	2/24/2014	1.8	µg/L
PL006	Bromide ,Ion-Chromatography	11/19/2013	0.342	mg/L
PL006	Chromium (Cr) Total, ICP/MS	1/17/2014	2.1	ug/L
PL006	Chromium (Cr) Total, ICP/MS	2/24/2014	2.1	ug/L
PL006	Chromium (Cr) Total, ICP/MS	2/27/2014	2.2	ug/L
PL006	Chromium (Cr) Total, ICP/MS	12/31/2013	2.3	ug/L
PL006	Chromium (Cr+6) ,Diphenylcarbazide col	2/27/2014	2.08	µg/L
PL006	Chromium (Cr+6) ,Diphenylcarbazide col	1/17/2014	2.2	µg/L
PL006	Chromium (Cr+6) ,Diphenylcarbazide col	12/31/2013	2.37	µg/L
PL006	Chromium (Cr+6) ,Diphenylcarbazide col	11/19/2013	2.39	µg/L
PL006	Nitrate (as NO3) ,calculated IC value	2/24/2014	37.7	mg/L
PL006	Nitrate (as NO3) ,calculated IC value	1/17/2014	38	mg/L
PL006	Nitrate (as NO3) ,calculated IC value	12/31/2013	38.8	mg/L
PL006	Nitrate (as NO3) ,calculated IC value	11/19/2013	41.7	mg/L
PL006	Perchlorate	1/17/2014	2.32	µg/L
PL006	Perchlorate	12/31/2013	2.38	µg/L
PL006	Perchlorate	2/24/2014	2.68	µg/L
PL006	Perchlorate	11/19/2013	3.03	µg/L
PL006	Tetrachloroethylene (PCE)	11/19/2013	3.88	µg/L
PL006	Tetrachloroethylene (PCE)	12/31/2013	5.18	µg/L
PL006	Tetrachloroethylene (PCE)	1/17/2014	7.02	µg/L
PL006	Tetrachloroethylene (PCE)	2/24/2014	7.78	µg/L
PL006	Trichloroethene (TCE)	11/19/2013	5.63	µg/L
PL006	Trichloroethene (TCE)	12/31/2013	5.81	µg/L
PL006	Trichloroethene (TCE)	2/24/2014	6.2	µg/L
PL006	Trichloroethene (TCE)	1/17/2014	6.28	µg/L
RT001	Nitrate (as NO3) ,calculated IC value	5/28/2013	10.1	mg/L
RT001	Nitrate (as NO3) ,calculated IC value	2/12/2014	13.6	mg/L
RT001	Nitrate (as NO3) ,calculated IC value	1/14/2014	13.9	mg/L
RT001	Nitrate (as NO3) ,calculated IC value	3/18/2014	16.2	mg/L
RT001	Nitrate (as NO3) ,calculated IC value	6/25/2013	16.3	mg/L
RT001	Nitrate (as NO3) ,calculated IC value	7/23/2013	17	mg/L
RT001	Nitrate (as NO3) ,calculated IC value	8/22/2013	17.6	mg/L
RT001	Nitrate (as NO3) ,calculated IC value	10/17/2013	17.6	mg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
RT001	Nitrate (as NO3) ,calculated IC value	9/19/2013	17.7	mg/L
RT001	Nitrate (as NO3) ,calculated IC value	12/10/2013	19.5	mg/L
RT001	Nitrate (as NO3) ,calculated IC value	11/21/2013	22.4	mg/L
RT001	Tetrachloroethylene (PCE)	2/12/2014	1.07	µg/L
RT001	Tetrachloroethylene (PCE)	6/25/2013	1.11	µg/L
RT001	Tetrachloroethylene (PCE)	7/23/2013	1.16	µg/L
RT001	Tetrachloroethylene (PCE)	1/14/2014	1.3	µg/L
RT001	Tetrachloroethylene (PCE)	8/22/2013	1.38	µg/L
RT001	Tetrachloroethylene (PCE)	3/18/2014	1.44	µg/L
RT001	Tetrachloroethylene (PCE)	9/19/2013	1.47	µg/L
RT001	Tetrachloroethylene (PCE)	10/17/2013	1.63	µg/L
RT001	Tetrachloroethylene (PCE)	12/10/2013	2.22	µg/L
RT001	Tetrachloroethylene (PCE)	11/21/2013	2.56	µg/L
RT001	Trichloroethene (TCE)	5/28/2013	4.56	µg/L
RT001	Trichloroethene (TCE)	2/12/2014	11	µg/L
RT001	Trichloroethene (TCE)	1/14/2014	13	µg/L
RT001	Trichloroethene (TCE)	3/18/2014	14.1	µg/L
RT001	Trichloroethene (TCE)	6/25/2013	19.2	µg/L
RT001	Trichloroethene (TCE)	9/19/2013	20.7	µg/L
RT001	Trichloroethene (TCE)	7/23/2013	21.1	µg/L
RT001	Trichloroethene (TCE)	12/10/2013	21.3	µg/L
RT001	Trichloroethene (TCE)	8/22/2013	21.9	µg/L
RT001	Trichloroethene (TCE)	10/17/2013	23.6	µg/L
RT001	Trichloroethene (TCE)	11/21/2013	24.5	µg/L
RT002	Nitrate (as NO3) ,calculated IC value	5/30/2013	14.8	mg/L
RT002	Nitrate (as NO3) ,calculated IC value	2/12/2014	17.5	mg/L
RT002	Nitrate (as NO3) ,calculated IC value	3/18/2014	17.7	mg/L
RT002	Nitrate (as NO3) ,calculated IC value	6/25/2013	19.3	mg/L
RT002	Nitrate (as NO3) ,calculated IC value	7/23/2013	21.8	mg/L
RT002	Nitrate (as NO3) ,calculated IC value	11/25/2013	22.6	mg/L
RT002	Nitrate (as NO3) ,calculated IC value	8/26/2013	25	mg/L
RT002	Nitrate (as NO3) ,calculated IC value	9/19/2013	28.9	mg/L
RT002	Nitrate (as NO3) ,calculated IC value	10/24/2013	31.4	mg/L
RT002	Perchlorate	7/23/2013	2.14	µg/L
RT002	Perchlorate	5/30/2013	4.45	µg/L
RT002	Perchlorate	2/12/2014	4.73	µg/L
RT002	Trichloroethene (TCE)	5/30/2013	0.646	µg/L
RT002	Trichloroethene (TCE)	6/25/2013	0.813	µg/L
RT002	Trichloroethene (TCE)	7/23/2013	0.941	µg/L
RT002	Trichloroethene (TCE)	9/19/2013	0.992	µg/L
RT002	Trichloroethene (TCE)	3/18/2014	1	µg/L
RT002	Trichloroethene (TCE)	2/12/2014	1.04	µg/L
RT002	Trichloroethene (TCE)	8/26/2013	1.15	µg/L
RT002	Trichloroethene (TCE)	11/25/2013	1.23	µg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
RT002	Trichloroethene (TCE)	10/24/2013	1.38	µg/L
RT003	Nitrate (as NO3) ,calculated IC value	5/30/2013	14.8	mg/L
RT003	Nitrate (as NO3) ,calculated IC value	2/13/2014	15.6	mg/L
RT003	Nitrate (as NO3) ,calculated IC value	12/12/2013	16.2	mg/L
RT003	Nitrate (as NO3) ,calculated IC value	6/27/2013	17.1	mg/L
RT003	Nitrate (as NO3) ,calculated IC value	11/25/2013	17.1	mg/L
RT003	Nitrate (as NO3) ,calculated IC value	3/20/2014	17.4	mg/L
RT003	Nitrate (as NO3) ,calculated IC value	7/25/2013	19.1	mg/L
RT003	Nitrate (as NO3) ,calculated IC value	10/28/2013	20.4	mg/L
RT003	Nitrate (as NO3) ,calculated IC value	8/26/2013	21.5	mg/L
RT003	Nitrate (as NO3) ,calculated IC value	9/20/2013	22.2	mg/L
RT003	Perchlorate	8/26/2013	2.34	µg/L
RT003	Perchlorate	7/25/2013	3.58	µg/L
RT003	Perchlorate	3/20/2014	4.85	µg/L
RT003	Perchlorate	6/27/2013	5.6	µg/L
RT003	Perchlorate	10/28/2013	6.53	µg/L
RT003	Perchlorate	5/30/2013	7.02	µg/L
RT003	Perchlorate	2/13/2014	7.15	µg/L
RT003	Perchlorate	11/25/2013	7.34	µg/L
RT003	Perchlorate	12/12/2013	7.76	µg/L
RT003	Trichloroethene (TCE)	9/20/2013	0.665	µg/L
RT003	Trichloroethene (TCE)	6/27/2013	0.781	µg/L
RT003	Trichloroethene (TCE)	8/26/2013	0.797	µg/L
RT003	Trichloroethene (TCE)	7/25/2013	0.802	µg/L
RT003	Trichloroethene (TCE)	5/30/2013	0.862	µg/L
RT003	Trichloroethene (TCE)	3/20/2014	1.09	µg/L
RT003	Trichloroethene (TCE)	10/28/2013	1.13	µg/L
RT003	Trichloroethene (TCE)	2/13/2014	1.14	µg/L
RT003	Trichloroethene (TCE)	11/25/2013	1.15	µg/L
RT003	Trichloroethene (TCE)	12/12/2013	1.23	µg/L
RT004	Nitrate (as NO3) ,calculated IC value	5/30/2013	14.9	mg/L
RT004	Nitrate (as NO3) ,calculated IC value	12/12/2013	16.5	mg/L
RT004	Nitrate (as NO3) ,calculated IC value	11/25/2013	16.8	mg/L
RT004	Nitrate (as NO3) ,calculated IC value	6/27/2013	17.7	mg/L
RT004	Nitrate (as NO3) ,calculated IC value	10/28/2013	17.8	mg/L
RT004	Nitrate (as NO3) ,calculated IC value	2/13/2014	17.9	mg/L
RT004	Nitrate (as NO3) ,calculated IC value	3/20/2014	18.9	mg/L
RT004	Nitrate (as NO3) ,calculated IC value	7/25/2013	19.4	mg/L
RT004	Nitrate (as NO3) ,calculated IC value	9/20/2013	20.7	mg/L
RT004	Nitrate (as NO3) ,calculated IC value	8/26/2013	21.2	mg/L
RT004	Perchlorate	3/20/2014	3.35	µg/L
RT004	Perchlorate	6/27/2013	4.34	µg/L
RT004	Perchlorate	2/13/2014	4.49	µg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
RT004	Perchlorate	5/30/2013	6.08	µg/L
RT004	Perchlorate	12/12/2013	7.02	µg/L
RT004	Perchlorate	11/25/2013	7.16	µg/L
RT004	Perchlorate	10/28/2013	8.11	µg/L
RT004	Trichloroethene (TCE)	6/27/2013	0.554	µg/L
RT004	Trichloroethene (TCE)	2/13/2014	0.646	µg/L
RT004	Trichloroethene (TCE)	3/20/2014	0.689	µg/L
RT004	Trichloroethene (TCE)	5/30/2013	0.731	µg/L
RT004	Trichloroethene (TCE)	11/25/2013	0.928	µg/L
RT004	Trichloroethene (TCE)	12/12/2013	1.12	µg/L
RT004	Trichloroethene (TCE)	10/28/2013	1.27	µg/L
RT005	1,2-Dichloroethene-cis	8/26/2013	0.503	µg/L
RT005	Coliform Total (CL,QT2000) ,MM0-MUG	6/27/2013	2	NUM/100ml
RT005	Nitrate (as NO3) ,calculated IC value	11/25/2013	15.3	mg/L
RT005	Nitrate (as NO3) ,calculated IC value	10/28/2013	16.7	mg/L
RT005	Nitrate (as NO3) ,calculated IC value	12/12/2013	18.3	mg/L
RT005	Nitrate (as NO3) ,calculated IC value	2/13/2014	19.8	mg/L
RT005	Nitrate (as NO3) ,calculated IC value	3/20/2014	21.5	mg/L
RT005	Nitrate (as NO3) ,calculated IC value	6/27/2013	26.6	mg/L
RT005	Nitrate (as NO3) ,calculated IC value	9/20/2013	27.9	mg/L
RT005	Nitrate (as NO3) ,calculated IC value	7/25/2013	28.6	mg/L
RT005	Nitrate (as NO3) ,calculated IC value	8/26/2013	29.1	mg/L
RT005	Perchlorate	6/27/2013	2.41	µg/L
RT005	Tetrachloroethylene (PCE)	12/12/2013	0.746	µg/L
RT005	Tetrachloroethylene (PCE)	2/13/2014	0.81	µg/L
RT005	Tetrachloroethylene (PCE)	3/20/2014	0.846	µg/L
RT005	Tetrachloroethylene (PCE)	6/27/2013	0.992	µg/L
RT005	Tetrachloroethylene (PCE)	9/20/2013	1.14	µg/L
RT005	Tetrachloroethylene (PCE)	7/25/2013	1.28	µg/L
RT005	Tetrachloroethylene (PCE)	8/26/2013	1.52	µg/L
RT005	Trichloroethene (TCE)	12/12/2013	0.508	µg/L
RT005	Trichloroethene (TCE)	9/20/2013	0.512	µg/L
RT005	Trichloroethene (TCE)	11/25/2013	0.98	µg/L
RT005	Trichloroethene (TCE)	10/28/2013	1.36	µg/L
RT006	Nitrate (as NO3) ,calculated IC value	5/30/2013	13.9	mg/L
RT006	Nitrate (as NO3) ,calculated IC value	11/25/2013	14.6	mg/L
RT006	Nitrate (as NO3) ,calculated IC value	6/27/2013	14.7	mg/L
RT006	Nitrate (as NO3) ,calculated IC value	7/25/2013	14.9	mg/L
RT006	Nitrate (as NO3) ,calculated IC value	12/12/2013	15.4	mg/L
RT006	Nitrate (as NO3) ,calculated IC value	8/20/2013	15.5	mg/L
RT006	Nitrate (as NO3) ,calculated IC value	10/28/2013	15.9	mg/L
RT006	Nitrate (as NO3) ,calculated IC value	3/20/2014	16.2	mg/L
RT006	Nitrate (as NO3) ,calculated IC value	2/13/2014	16.3	mg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
RT006	Nitrate (as NO3) ,calculated IC value	9/20/2013	23.8	mg/L
RT006	Perchlorate	11/25/2013	2.08	µg/L
RT007	Nitrate (as NO3) ,calculated IC value	12/12/2013	15.1	mg/L
RT007	Nitrate (as NO3) ,calculated IC value	11/26/2013	15.2	mg/L
RT007	Nitrate (as NO3) ,calculated IC value	5/30/2013	15.5	mg/L
RT007	Nitrate (as NO3) ,calculated IC value	10/28/2013	15.6	mg/L
RT007	Nitrate (as NO3) ,calculated IC value	2/13/2014	16	mg/L
RT007	Nitrate (as NO3) ,calculated IC value	7/25/2013	16.7	mg/L
RT007	Nitrate (as NO3) ,calculated IC value	3/20/2014	17.4	mg/L
RT007	Nitrate (as NO3) ,calculated IC value	6/27/2013	18	mg/L
RT007	Nitrate (as NO3) ,calculated IC value	9/20/2013	18.5	mg/L
RT007	Nitrate (as NO3) ,calculated IC value	8/26/2013	18.8	mg/L
RT007	Perchlorate	6/27/2013	2.01	µg/L
RT007	Perchlorate	7/25/2013	2.41	µg/L
RT007	Perchlorate	2/13/2014	3	µg/L
RT007	Perchlorate	12/12/2013	3.2	µg/L
RT007	Perchlorate	11/26/2013	3.51	µg/L
RT007	Perchlorate	10/28/2013	3.58	µg/L
RT007	Perchlorate	5/30/2013	3.84	µg/L
RT007	Trichloroethene (TCE)	7/25/2013	0.518	µg/L
RT007	Trichloroethene (TCE)	6/27/2013	0.526	µg/L
RT007	Trichloroethene (TCE)	3/20/2014	0.556	µg/L
RT007	Trichloroethene (TCE)	9/20/2013	0.58	µg/L
RT007	Trichloroethene (TCE)	8/26/2013	0.589	µg/L
RT007	Trichloroethene (TCE)	2/13/2014	0.867	µg/L
RT007	Trichloroethene (TCE)	5/30/2013	1.15	µg/L
RT007	Trichloroethene (TCE)	12/12/2013	1.33	µg/L
RT007	Trichloroethene (TCE)	10/28/2013	1.49	µg/L
RT007	Trichloroethene (TCE)	11/26/2013	1.49	µg/L
RT008	Bromide ,Ion-Chromatography	8/20/2013	0.083	mg/L
RT008	Nitrate (as NO3) ,calculated IC value	5/30/2013	12.1	mg/L
RT008	Nitrate (as NO3) ,calculated IC value	3/20/2014	12.7	mg/L
RT008	Nitrate (as NO3) ,calculated IC value	6/27/2013	13	mg/L
RT008	Nitrate (as NO3) ,calculated IC value	2/13/2014	13.8	mg/L
RT008	Nitrate (as NO3) ,calculated IC value	7/25/2013	14.7	mg/L
RT008	Nitrate (as NO3) ,calculated IC value	11/26/2013	15	mg/L
RT008	Nitrate (as NO3) ,calculated IC value	12/12/2013	15.1	mg/L
RT008	Nitrate (as NO3) ,calculated IC value	8/20/2013	15.4	mg/L
RT008	Nitrate (as NO3) ,calculated IC value	10/28/2013	15.4	mg/L
RT008	Nitrate (as NO3) ,calculated IC value	9/20/2013	15.8	mg/L
RT008	Perchlorate	11/26/2013	2.63	µg/L
RT008	Perchlorate	10/28/2013	2.75	µg/L
RT008	Perchlorate	12/12/2013	2.91	µg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
RT008	Trichloroethene (TCE)	7/25/2013	0.57	µg/L
RT008	Trichloroethene (TCE)	3/20/2014	0.577	µg/L
RT008	Trichloroethene (TCE)	2/13/2014	0.607	µg/L
RT008	Trichloroethene (TCE)	11/26/2013	1.06	µg/L
RT008	Trichloroethene (TCE)	12/12/2013	1.2	µg/L
RT008	Trichloroethene (TCE)	10/28/2013	1.21	µg/L
RT009	Nitrate (as NO3) ,calculated IC value	5/30/2013	10	mg/L
RT009	Nitrate (as NO3) ,calculated IC value	2/13/2014	10.1	mg/L
RT009	Nitrate (as NO3) ,calculated IC value	3/20/2014	10.1	mg/L
RT009	Nitrate (as NO3) ,calculated IC value	9/20/2013	10.4	mg/L
RT009	Nitrate (as NO3) ,calculated IC value	6/27/2013	10.5	mg/L
RT009	Nitrate (as NO3) ,calculated IC value	7/25/2013	10.5	mg/L
RT009	Nitrate (as NO3) ,calculated IC value	8/20/2013	10.9	mg/L
RT009	Nitrate (as NO3) ,calculated IC value	12/12/2013	16.4	mg/L
RT009	Nitrate (as NO3) ,calculated IC value	11/26/2013	17	mg/L
RT009	Nitrate (as NO3) ,calculated IC value	10/28/2013	17.3	mg/L
RT009	Trichloroethene (TCE)	2/13/2014	0.502	µg/L
RT009	Trichloroethene (TCE)	6/27/2013	0.514	µg/L
RT009	Trichloroethene (TCE)	7/25/2013	0.524	µg/L
RT009	Trichloroethene (TCE)	8/20/2013	0.56	µg/L
RT009	Trichloroethene (TCE)	12/12/2013	0.639	µg/L
RT009	Trichloroethene (TCE)	5/30/2013	0.679	µg/L
RT009	Trichloroethene (TCE)	11/26/2013	0.899	µg/L
RT009	Trichloroethene (TCE)	10/28/2013	1.01	µg/L
RT010	Nitrate (as NO3) ,calculated IC value	5/30/2013	19.2	mg/L
RT010	Nitrate (as NO3) ,calculated IC value	1/14/2014	22.4	mg/L
RT010	Nitrate (as NO3) ,calculated IC value	2/12/2014	24.7	mg/L
RT010	Nitrate (as NO3) ,calculated IC value	11/25/2013	27.1	mg/L
RT010	Nitrate (as NO3) ,calculated IC value	3/18/2014	28	mg/L
RT010	Nitrate (as NO3) ,calculated IC value	6/25/2013	28.7	mg/L
RT010	Nitrate (as NO3) ,calculated IC value	7/23/2013	30.6	mg/L
RT010	Nitrate (as NO3) ,calculated IC value	8/26/2013	31.8	mg/L
RT010	Nitrate (as NO3) ,calculated IC value	9/19/2013	32.9	mg/L
RT010	Nitrate (as NO3) ,calculated IC value	10/24/2013	33.7	mg/L
RT010	Tetrachloroethylene (PCE)	8/26/2013	0.565	µg/L
RT010	Tetrachloroethylene (PCE)	10/24/2013	0.596	µg/L
RT010	Trichloroethene (TCE)	5/30/2013	3.13	µg/L
RT010	Trichloroethene (TCE)	2/12/2014	6.9	µg/L
RT010	Trichloroethene (TCE)	1/14/2014	7.53	µg/L
RT010	Trichloroethene (TCE)	6/25/2013	9.21	µg/L
RT010	Trichloroethene (TCE)	11/25/2013	9.79	µg/L
RT010	Trichloroethene (TCE)	7/23/2013	10.2	µg/L
RT010	Trichloroethene (TCE)	3/18/2014	10.8	µg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
RT010	Trichloroethene (TCE)	9/19/2013	10.9	µg/L
RT010	Trichloroethene (TCE)	8/26/2013	12.1	µg/L
RT010	Trichloroethene (TCE)	10/24/2013	14.8	µg/L
RT011	Bromide ,Ion-Chromatography	2/12/2014	0.0743	mg/L
RT011	Nitrate (as NO3) ,calculated IC value	5/28/2013	11.6	mg/L
RT011	Nitrate (as NO3) ,calculated IC value	1/14/2014	13.6	mg/L
RT011	Nitrate (as NO3) ,calculated IC value	2/12/2014	13.7	mg/L
RT011	Nitrate (as NO3) ,calculated IC value	6/25/2013	14.8	mg/L
RT011	Nitrate (as NO3) ,calculated IC value	3/18/2014	14.9	mg/L
RT011	Nitrate (as NO3) ,calculated IC value	7/23/2013	15.3	mg/L
RT011	Nitrate (as NO3) ,calculated IC value	8/22/2013	16.1	mg/L
RT011	Nitrate (as NO3) ,calculated IC value	12/10/2013	16.2	mg/L
RT011	Nitrate (as NO3) ,calculated IC value	10/17/2013	16.4	mg/L
RT011	Nitrate (as NO3) ,calculated IC value	9/19/2013	16.5	mg/L
RT011	Nitrate (as NO3) ,calculated IC value	11/21/2013	18.9	mg/L
RT011	Tetrachloroethylene (PCE)	2/12/2014	0.555	µg/L
RT011	Tetrachloroethylene (PCE)	1/14/2014	0.569	µg/L
RT011	Tetrachloroethylene (PCE)	3/18/2014	0.664	µg/L
RT011	Tetrachloroethylene (PCE)	8/22/2013	0.702	µg/L
RT011	Tetrachloroethylene (PCE)	9/19/2013	0.776	µg/L
RT011	Tetrachloroethylene (PCE)	10/17/2013	0.965	µg/L
RT011	Tetrachloroethylene (PCE)	12/10/2013	1	µg/L
RT011	Tetrachloroethylene (PCE)	11/21/2013	1.33	µg/L
RT011	Trichloroethene (TCE)	5/28/2013	3.33	µg/L
RT011	Trichloroethene (TCE)	1/14/2014	7.57	µg/L
RT011	Trichloroethene (TCE)	2/12/2014	7.64	µg/L
RT011	Trichloroethene (TCE)	3/18/2014	9.18	µg/L
RT011	Trichloroethene (TCE)	6/25/2013	10.8	µg/L
RT011	Trichloroethene (TCE)	12/10/2013	11.6	µg/L
RT011	Trichloroethene (TCE)	7/23/2013	12.8	µg/L
RT011	Trichloroethene (TCE)	8/22/2013	14.3	µg/L
RT011	Trichloroethene (TCE)	9/19/2013	14.9	µg/L
RT011	Trichloroethene (TCE)	11/21/2013	15.9	µg/L
RT011	Trichloroethene (TCE)	10/17/2013	16.9	µg/L
RT012	Nitrate (as NO3) ,calculated IC value	5/28/2013	11.3	mg/L
RT012	Nitrate (as NO3) ,calculated IC value	2/12/2014	13.5	mg/L
RT012	Nitrate (as NO3) ,calculated IC value	1/14/2014	13.6	mg/L
RT012	Nitrate (as NO3) ,calculated IC value	3/18/2014	14.2	mg/L
RT012	Nitrate (as NO3) ,calculated IC value	6/25/2013	14.8	mg/L
RT012	Nitrate (as NO3) ,calculated IC value	7/23/2013	16	mg/L
RT012	Nitrate (as NO3) ,calculated IC value	12/10/2013	16.6	mg/L
RT012	Nitrate (as NO3) ,calculated IC value	8/26/2013	17.5	mg/L
RT012	Nitrate (as NO3) ,calculated IC value	9/19/2013	18	mg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
RT012	Nitrate (as NO3) ,calculated IC value	11/21/2013	19.2	mg/L
RT012	Nitrate (as NO3) ,calculated IC value	10/24/2013	22.6	mg/L
RT012	Perchlorate	5/28/2013	2.01	µg/L
RT012	Tetrachloroethylene (PCE)	12/10/2013	0.514	µg/L
RT012	Tetrachloroethylene (PCE)	9/19/2013	0.615	µg/L
RT012	Tetrachloroethylene (PCE)	8/26/2013	0.624	µg/L
RT012	Tetrachloroethylene (PCE)	11/21/2013	0.747	µg/L
RT012	Tetrachloroethylene (PCE)	10/24/2013	1.02	µg/L
RT012	Trichloroethene (TCE)	5/28/2013	0.764	µg/L
RT012	Trichloroethene (TCE)	2/12/2014	3.97	µg/L
RT012	Trichloroethene (TCE)	1/14/2014	4.66	µg/L
RT012	Trichloroethene (TCE)	3/18/2014	4.87	µg/L
RT012	Trichloroethene (TCE)	6/25/2013	5.35	µg/L
RT012	Trichloroethene (TCE)	12/10/2013	8.42	µg/L
RT012	Trichloroethene (TCE)	7/23/2013	8.99	µg/L
RT012	Trichloroethene (TCE)	8/26/2013	11.1	µg/L
RT012	Trichloroethene (TCE)	11/21/2013	11.1	µg/L
RT012	Trichloroethene (TCE)	9/19/2013	11.7	µg/L
RT012	Trichloroethene (TCE)	10/24/2013	18.7	µg/L
RT013	Nitrate (as NO3) ,calculated IC value	5/28/2013	11.6	mg/L
RT013	Nitrate (as NO3) ,calculated IC value	2/12/2014	14.1	mg/L
RT013	Nitrate (as NO3) ,calculated IC value	1/14/2014	14.2	mg/L
RT013	Nitrate (as NO3) ,calculated IC value	3/18/2014	14.9	mg/L
RT013	Nitrate (as NO3) ,calculated IC value	6/25/2013	15.3	mg/L
RT013	Nitrate (as NO3) ,calculated IC value	7/23/2013	16.8	mg/L
RT013	Nitrate (as NO3) ,calculated IC value	12/10/2013	17	mg/L
RT013	Nitrate (as NO3) ,calculated IC value	8/26/2013	18.1	mg/L
RT013	Nitrate (as NO3) ,calculated IC value	9/19/2013	19	mg/L
RT013	Nitrate (as NO3) ,calculated IC value	11/21/2013	19.8	mg/L
RT013	Nitrate (as NO3) ,calculated IC value	10/24/2013	20.5	mg/L
RT013	Tetrachloroethylene (PCE)	3/18/2014	0.533	µg/L
RT013	Tetrachloroethylene (PCE)	2/12/2014	0.55	µg/L
RT013	Tetrachloroethylene (PCE)	1/14/2014	0.585	µg/L
RT013	Tetrachloroethylene (PCE)	7/23/2013	0.807	µg/L
RT013	Tetrachloroethylene (PCE)	12/10/2013	1.09	µg/L
RT013	Tetrachloroethylene (PCE)	8/26/2013	1.1	µg/L
RT013	Tetrachloroethylene (PCE)	9/19/2013	1.19	µg/L
RT013	Tetrachloroethylene (PCE)	11/21/2013	1.45	µg/L
RT013	Tetrachloroethylene (PCE)	10/24/2013	1.46	µg/L
RT013	Trichloroethene (TCE)	5/28/2013	1.37	µg/L
RT013	Trichloroethene (TCE)	2/12/2014	6.49	µg/L
RT013	Trichloroethene (TCE)	1/14/2014	7.6	µg/L
RT013	Trichloroethene (TCE)	3/18/2014	7.93	µg/L
RT013	Trichloroethene (TCE)	6/25/2013	8.9	µg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
RT013	Trichloroethene (TCE)	12/10/2013	12.1	µg/L
RT013	Trichloroethene (TCE)	7/23/2013	13	µg/L
RT013	Trichloroethene (TCE)	8/26/2013	16.3	µg/L
RT013	Trichloroethene (TCE)	11/21/2013	16.6	µg/L
RT013	Trichloroethene (TCE)	9/19/2013	17.1	µg/L
RT013	Trichloroethene (TCE)	10/24/2013	21.4	µg/L
RT014	1,2-Dichloroethene-cis	11/21/2013	0.503	µg/L
RT014	Coliform Total (CL,QT2000) ,MM0-MUG	12/10/2013	1	NUM/100ml
RT014	Nitrate (as NO3) ,calculated IC value	5/28/2013	11.2	mg/L
RT014	Nitrate (as NO3) ,calculated IC value	2/12/2014	14.3	mg/L
RT014	Nitrate (as NO3) ,calculated IC value	1/14/2014	14.4	mg/L
RT014	Nitrate (as NO3) ,calculated IC value	3/18/2014	15.5	mg/L
RT014	Nitrate (as NO3) ,calculated IC value	6/25/2013	15.8	mg/L
RT014	Nitrate (as NO3) ,calculated IC value	7/23/2013	16.4	mg/L
RT014	Nitrate (as NO3) ,calculated IC value	8/22/2013	17.3	mg/L
RT014	Nitrate (as NO3) ,calculated IC value	9/19/2013	17.3	mg/L
RT014	Nitrate (as NO3) ,calculated IC value	10/17/2013	17.4	mg/L
RT014	Nitrate (as NO3) ,calculated IC value	12/10/2013	17.6	mg/L
RT014	Nitrate (as NO3) ,calculated IC value	11/21/2013	19.2	mg/L
RT014	Tetrachloroethylene (PCE)	6/25/2013	0.81	µg/L
RT014	Tetrachloroethylene (PCE)	7/23/2013	0.969	µg/L
RT014	Tetrachloroethylene (PCE)	2/12/2014	1.1	µg/L
RT014	Tetrachloroethylene (PCE)	1/14/2014	1.13	µg/L
RT014	Tetrachloroethylene (PCE)	8/22/2013	1.27	µg/L
RT014	Tetrachloroethylene (PCE)	3/18/2014	1.27	µg/L
RT014	Tetrachloroethylene (PCE)	9/19/2013	1.31	µg/L
RT014	Tetrachloroethylene (PCE)	12/10/2013	1.75	µg/L
RT014	Tetrachloroethylene (PCE)	10/17/2013	1.83	µg/L
RT014	Tetrachloroethylene (PCE)	11/21/2013	2.11	µg/L
RT014	Trichloroethene (TCE)	5/28/2013	8.96	µg/L
RT014	Trichloroethene (TCE)	2/12/2014	18.8	µg/L
RT014	Trichloroethene (TCE)	1/14/2014	20.3	µg/L
RT014	Trichloroethene (TCE)	3/18/2014	20.5	µg/L
RT014	Trichloroethene (TCE)	6/25/2013	24.3	µg/L
RT014	Trichloroethene (TCE)	7/23/2013	26.2	µg/L
RT014	Trichloroethene (TCE)	12/10/2013	27.4	µg/L
RT014	Trichloroethene (TCE)	9/19/2013	28.7	µg/L
RT014	Trichloroethene (TCE)	8/22/2013	29.5	µg/L
RT014	Trichloroethene (TCE)	11/21/2013	29.7	µg/L
RT014	Trichloroethene (TCE)	10/17/2013	31.7	µg/L
RT015	Nitrate (as NO3) ,calculated IC value	5/28/2013	9.48	mg/L
RT015	Nitrate (as NO3) ,calculated IC value	1/14/2014	10.1	mg/L
RT015	Nitrate (as NO3) ,calculated IC value	3/18/2014	10.2	mg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
RT015	Nitrate (as NO3) ,calculated IC value	2/12/2014	12.3	mg/L
RT015	Nitrate (as NO3) ,calculated IC value	12/10/2013	14.1	mg/L
RT015	Nitrate (as NO3) ,calculated IC value	11/21/2013	15.9	mg/L
RT015	Nitrate (as NO3) ,calculated IC value	6/25/2013	16.9	mg/L
RT015	Nitrate (as NO3) ,calculated IC value	7/23/2013	17.9	mg/L
RT015	Nitrate (as NO3) ,calculated IC value	9/19/2013	19.9	mg/L
RT015	Nitrate (as NO3) ,calculated IC value	8/22/2013	20.8	mg/L
RT015	Nitrate (as NO3) ,calculated IC value	10/17/2013	20.8	mg/L
RT015	Tetrachloroethylene (PCE)	2/12/2014	0.727	µg/L
RT015	Tetrachloroethylene (PCE)	6/25/2013	0.929	µg/L
RT015	Tetrachloroethylene (PCE)	12/10/2013	1.02	µg/L
RT015	Tetrachloroethylene (PCE)	11/21/2013	1.07	µg/L
RT015	Tetrachloroethylene (PCE)	7/23/2013	1.18	µg/L
RT015	Tetrachloroethylene (PCE)	8/22/2013	1.2	µg/L
RT015	Tetrachloroethylene (PCE)	9/19/2013	1.51	µg/L
RT015	Tetrachloroethylene (PCE)	10/17/2013	2	µg/L
RT015	Trichloroethene (TCE)	5/28/2013	4.74	µg/L
RT015	Trichloroethene (TCE)	3/18/2014	7.67	µg/L
RT015	Trichloroethene (TCE)	1/14/2014	8.91	µg/L
RT015	Trichloroethene (TCE)	2/12/2014	14.6	µg/L
RT015	Trichloroethene (TCE)	12/10/2013	20.9	µg/L
RT015	Trichloroethene (TCE)	11/21/2013	21.5	µg/L
RT015	Trichloroethene (TCE)	6/25/2013	26.1	µg/L
RT015	Trichloroethene (TCE)	8/22/2013	31.7	µg/L
RT015	Trichloroethene (TCE)	7/23/2013	33.8	µg/L
RT015	Trichloroethene (TCE)	9/19/2013	37.9	µg/L
RT015	Trichloroethene (TCE)	10/17/2013	42.6	µg/L
TJ001	Nitrate (as NO3) ,calculated IC value	12/3/2013	19.1	mg/L
TJ001	Nitrate (as NO3) ,calculated IC value	4/4/2013	20.7	mg/L
TJ001	Nitrate (as NO3) ,calculated IC value	8/8/2013	25.2	mg/L
TJ001	Nitrate (as NO3) ,calculated IC value	11/7/2013	25.3	mg/L
TJ001	Nitrate (as NO3) ,calculated IC value	7/10/2013	25.8	mg/L
TJ001	Nitrate (as NO3) ,calculated IC value	9/5/2013	25.8	mg/L
TJ001	Nitrate (as NO3) ,calculated IC value	10/3/2013	25.9	mg/L
TJ001	Nitrate (as NO3) ,calculated IC value	6/18/2013	26	mg/L
TJ001	Nitrate (as NO3) ,calculated IC value	5/21/2013	26.3	mg/L
TJ001	Nitrate (as NO3) ,calculated IC value	2/4/2014	26.3	mg/L
TJ001	Nitrate (as NO3) ,calculated IC value	3/6/2014	26.6	mg/L
TJ001	Nitrate (as NO3) ,calculated IC value	1/9/2014	26.9	mg/L
TJ001	Perchlorate	6/18/2013	2.31	µg/L
TJ001	Perchlorate	4/4/2013	2.41	µg/L
TJ003	Nitrate (as NO3) ,calculated IC value	4/17/2013	19.4	mg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
TJ004	Nitrate (as NO3) ,calculated IC value	5/21/2013	20.1	mg/L
TJ004	Nitrate (as NO3) ,calculated IC value	6/18/2013	20.3	mg/L
TJ004	Nitrate (as NO3) ,calculated IC value	7/10/2013	20.3	mg/L
TJ004	Nitrate (as NO3) ,calculated IC value	4/4/2013	23.3	mg/L
TJ004	Nitrate (as NO3) ,calculated IC value	3/6/2014	25.9	mg/L
TJ004	Tetrachloroethylene (PCE)	6/18/2013	0.64	µg/L
TJ004	Tetrachloroethylene (PCE)	5/21/2013	0.919	µg/L
TJ004	Trichloroethene (TCE)	7/10/2013	0.764	µg/L
TJ004	Trichloroethene (TCE)	6/18/2013	0.814	µg/L
TJ004	Trichloroethene (TCE)	5/21/2013	1.09	µg/L
TJ005	Chromium (Cr) Total, ICP/MS	10/3/2013	1.2	ug/L
TJ005	Chromium (Cr) Total, ICP/MS	1/8/2014	1.9	ug/L
TJ005	Nitrate (as NO3) ,calculated IC value	8/7/2013	19.7	mg/L
TJ005	Nitrate (as NO3) ,calculated IC value	3/5/2014	20	mg/L
TJ005	Nitrate (as NO3) ,calculated IC value	9/4/2013	20.5	mg/L
TJ005	Nitrate (as NO3) ,calculated IC value	10/3/2013	20.6	mg/L
TJ005	Nitrate (as NO3) ,calculated IC value	12/4/2013	21.4	mg/L
TJ005	Nitrate (as NO3) ,calculated IC value	2/5/2014	21.8	mg/L
TJ005	Nitrate (as NO3) ,calculated IC value	1/8/2014	23.5	mg/L
TJ005	Tetrachloroethylene (PCE)	10/3/2013	0.782	µg/L
TJ005	Tetrachloroethylene (PCE)	9/4/2013	1.19	µg/L
TJ005	Tetrachloroethylene (PCE)	8/7/2013	2.26	µg/L
TJ005	Trichloroethene (TCE)	10/3/2013	1.12	µg/L
TJ005	Trichloroethene (TCE)	9/4/2013	1.64	µg/L
TJ005	Trichloroethene (TCE)	8/7/2013	3	µg/L
TJ006	1,1-Dichloroethene (1,1-DCE)	1/8/2014	0.881	µg/L
TJ006	1,1-Dichloroethene (1,1-DCE)	12/4/2013	1.68	µg/L
TJ006	1,1-Dichloroethene (1,1-DCE)	2/5/2014	1.71	µg/L
TJ006	1,1-Dichloroethene (1,1-DCE)	11/6/2013	2.29	µg/L
TJ006	1,1-Dichloroethene (1,1-DCE)	8/7/2013	2.42	µg/L
TJ006	1,1-Dichloroethene (1,1-DCE)	6/5/2013	2.58	µg/L
TJ006	1,1-Dichloroethene (1,1-DCE)	3/5/2014	2.58	µg/L
TJ006	1,1-Dichloroethene (1,1-DCE)	5/8/2013	2.89	µg/L
TJ006	1,1-Dichloroethene (1,1-DCE)	7/3/2013	3.06	µg/L
TJ006	1,1-Dichloroethene (1,1-DCE)	4/3/2013	3.1	µg/L
TJ006	1,1-Dichloroethene (1,1-DCE)	10/9/2013	3.91	µg/L
TJ006	1,1-Dichloroethene (1,1-DCE)	9/4/2013	4.34	µg/L
TJ006	Bromide ,Ion-Chromatography	7/3/2013	0.101	mg/L
TJ006	Chromium (Cr) Total, ICP/MS	10/9/2013	1.2	ug/L
TJ006	Chromium (Cr) Total, ICP/MS	1/8/2014	1.2	ug/L
TJ006	Chromium (Cr) Total, ICP/MS	4/3/2013	1.3	ug/L
TJ006	Nitrate (as NO3) ,calculated IC value	1/8/2014	23	mg/L
TJ006	Nitrate (as NO3) ,calculated IC value	12/4/2013	24.2	mg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
TJ006	Nitrate (as NO3) ,calculated IC value	2/5/2014	24.9	mg/L
TJ006	Nitrate (as NO3) ,calculated IC value	11/6/2013	25.9	mg/L
TJ006	Nitrate (as NO3) ,calculated IC value	8/7/2013	27.2	mg/L
TJ006	Nitrate (as NO3) ,calculated IC value	3/5/2014	27.2	mg/L
TJ006	Nitrate (as NO3) ,calculated IC value	5/8/2013	27.5	mg/L
TJ006	Nitrate (as NO3) ,calculated IC value	4/3/2013	27.8	mg/L
TJ006	Nitrate (as NO3) ,calculated IC value	6/5/2013	28	mg/L
TJ006	Nitrate (as NO3) ,calculated IC value	7/3/2013	28	mg/L
TJ006	Nitrate (as NO3) ,calculated IC value	9/4/2013	29.5	mg/L
TJ006	Nitrate (as NO3) ,calculated IC value	10/9/2013	30.1	mg/L
TJ006	Tetrachloroethylene (PCE)	1/8/2014	5.38	µg/L
TJ006	Tetrachloroethylene (PCE)	12/4/2013	9	µg/L
TJ006	Tetrachloroethylene (PCE)	11/6/2013	10.9	µg/L
TJ006	Tetrachloroethylene (PCE)	2/5/2014	11.3	µg/L
TJ006	Tetrachloroethylene (PCE)	3/5/2014	11.9	µg/L
TJ006	Tetrachloroethylene (PCE)	8/7/2013	14.2	µg/L
TJ006	Tetrachloroethylene (PCE)	6/5/2013	14.6	µg/L
TJ006	Tetrachloroethylene (PCE)	5/8/2013	15	µg/L
TJ006	Tetrachloroethylene (PCE)	7/3/2013	15.3	µg/L
TJ006	Tetrachloroethylene (PCE)	4/3/2013	17	µg/L
TJ006	Tetrachloroethylene (PCE)	9/4/2013	19.7	µg/L
TJ006	Tetrachloroethylene (PCE)	10/9/2013	21	µg/L
TJ006	Trichloroethene (TCE)	1/8/2014	5.77	µg/L
TJ006	Trichloroethene (TCE)	12/4/2013	8.62	µg/L
TJ006	Trichloroethene (TCE)	11/6/2013	10.4	µg/L
TJ006	Trichloroethene (TCE)	2/5/2014	10.8	µg/L
TJ006	Trichloroethene (TCE)	8/7/2013	11.7	µg/L
TJ006	Trichloroethene (TCE)	6/5/2013	11.8	µg/L
TJ006	Trichloroethene (TCE)	3/5/2014	12.3	µg/L
TJ006	Trichloroethene (TCE)	5/8/2013	13.3	µg/L
TJ006	Trichloroethene (TCE)	7/3/2013	13.3	µg/L
TJ006	Trichloroethene (TCE)	10/9/2013	15.3	µg/L
TJ006	Trichloroethene (TCE)	4/3/2013	15.5	µg/L
TJ006	Trichloroethene (TCE)	9/4/2013	16.5	µg/L
TJ007	1,1-Dichloroethene (1,1-DCE)	6/5/2013	3.86	µg/L
TJ007	1,1-Dichloroethene (1,1-DCE)	5/8/2013	4.21	µg/L
TJ007	1,1-Dichloroethene (1,1-DCE)	7/3/2013	4.4	µg/L
TJ007	1,1-Dichloroethene (1,1-DCE)	4/3/2013	4.57	µg/L
TJ007	1,1-Dichloroethene (1,1-DCE)	8/7/2013	5.17	µg/L
TJ007	1,1-Dichloroethene (1,1-DCE)	9/4/2013	5.43	µg/L
TJ007	1,1-Dichloroethene (1,1-DCE)	10/9/2013	5.8	µg/L
TJ007	1,1-Dichloroethene (1,1-DCE)	11/6/2013	6.25	µg/L
TJ007	1,1-Dichloroethene (1,1-DCE)	3/5/2014	6.5	µg/L
TJ007	1,1-Dichloroethene (1,1-DCE)	12/4/2013	7	µg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
TJ007	1,1-Dichloroethene (1,1-DCE)	1/8/2014	7.04	µg/L
TJ007	1,1-Dichloroethene (1,1-DCE)	2/5/2014	7.69	µg/L
TJ007	1,2-Dichloroethene-cis	4/3/2013	0.502	µg/L
TJ007	1,2-Dichloroethene-cis	8/7/2013	0.523	µg/L
TJ007	1,2-Dichloroethene-cis	11/6/2013	0.623	µg/L
TJ007	1,2-Dichloroethene-cis	1/8/2014	0.651	µg/L
TJ007	1,2-Dichloroethene-cis	2/5/2014	0.698	µg/L
TJ007	1,2-Dichloroethene-cis	3/5/2014	0.702	µg/L
TJ007	1,2-Dichloroethene-cis	12/4/2013	0.729	µg/L
TJ007	1,4-Dioxane	10/9/2013	1.06	ug/L
TJ007	1,4-Dioxane	4/3/2013	1.12	ug/L
TJ007	1,4-Dioxane	1/9/2014	1.17	ug/L
TJ007	Carbon tetrachloride	5/8/2013	0.264	µg/L
TJ007	Carbon tetrachloride	7/3/2013	0.266	µg/L
TJ007	Carbon tetrachloride	1/8/2014	0.274	µg/L
TJ007	Carbon tetrachloride	11/6/2013	0.303	µg/L
TJ007	Carbon tetrachloride	8/7/2013	0.305	µg/L
TJ007	Carbon tetrachloride	4/3/2013	0.308	µg/L
TJ007	Carbon tetrachloride	9/4/2013	0.321	µg/L
TJ007	Carbon tetrachloride	10/9/2013	0.333	µg/L
TJ007	Carbon tetrachloride	3/5/2014	0.357	µg/L
TJ007	Carbon tetrachloride	12/4/2013	0.378	µg/L
TJ007	Carbon tetrachloride	2/5/2014	0.462	µg/L
TJ007	Chromium (Cr) Total, ICP/MS	7/3/2013	1.3	ug/L
TJ007	Chromium (Cr) Total, ICP/MS	1/8/2014	1.4	ug/L
TJ007	Chromium (Cr) Total, ICP/MS	4/3/2013	1.6	ug/L
TJ007	Chromium (Cr) Total, ICP/MS	10/9/2013	1.6	ug/L
TJ007	Nitrate (as NO3) ,calculated IC value	1/8/2014	32.3	mg/L
TJ007	Nitrate (as NO3) ,calculated IC value	4/3/2013	33	mg/L
TJ007	Nitrate (as NO3) ,calculated IC value	5/8/2013	33	mg/L
TJ007	Nitrate (as NO3) ,calculated IC value	7/3/2013	33.2	mg/L
TJ007	Nitrate (as NO3) ,calculated IC value	12/4/2013	33.3	mg/L
TJ007	Nitrate (as NO3) ,calculated IC value	6/5/2013	33.4	mg/L
TJ007	Nitrate (as NO3) ,calculated IC value	2/5/2014	33.4	mg/L
TJ007	Nitrate (as NO3) ,calculated IC value	8/7/2013	33.7	mg/L
TJ007	Nitrate (as NO3) ,calculated IC value	11/6/2013	33.8	mg/L
TJ007	Nitrate (as NO3) ,calculated IC value	3/5/2014	34	mg/L
TJ007	Nitrate (as NO3) ,calculated IC value	9/4/2013	34.2	mg/L
TJ007	Nitrate (as NO3) ,calculated IC value	10/9/2013	35.1	mg/L
TJ007	Perchlorate	7/3/2013	2.13	µg/L
TJ007	Perchlorate	8/7/2013	2.25	µg/L
TJ007	Perchlorate	6/5/2013	2.29	µg/L
TJ007	Perchlorate	5/8/2013	2.35	µg/L
TJ007	Perchlorate	4/3/2013	2.46	µg/L
TJ007	Tetrachloroethylene (PCE)	6/5/2013	14.1	µg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
TJ007	Tetrachloroethylene (PCE)	5/8/2013	14.2	µg/L
TJ007	Tetrachloroethylene (PCE)	7/3/2013	14.9	µg/L
TJ007	Tetrachloroethylene (PCE)	4/3/2013	16.1	µg/L
TJ007	Tetrachloroethylene (PCE)	9/4/2013	18.2	µg/L
TJ007	Tetrachloroethylene (PCE)	8/7/2013	19.5	µg/L
TJ007	Tetrachloroethylene (PCE)	10/9/2013	19.5	µg/L
TJ007	Tetrachloroethylene (PCE)	11/6/2013	20.5	µg/L
TJ007	Tetrachloroethylene (PCE)	3/5/2014	21.7	µg/L
TJ007	Tetrachloroethylene (PCE)	12/4/2013	27.6	µg/L
TJ007	Tetrachloroethylene (PCE)	1/8/2014	29.2	µg/L
TJ007	Tetrachloroethylene (PCE)	2/5/2014	32	µg/L
TJ007	Trichloroethene (TCE)	6/5/2013	15.6	µg/L
TJ007	Trichloroethene (TCE)	5/8/2013	17.1	µg/L
TJ007	Trichloroethene (TCE)	7/3/2013	17.3	µg/L
TJ007	Trichloroethene (TCE)	4/3/2013	19.4	µg/L
TJ007	Trichloroethene (TCE)	9/4/2013	19.6	µg/L
TJ007	Trichloroethene (TCE)	8/7/2013	19.8	µg/L
TJ007	Trichloroethene (TCE)	10/9/2013	19.8	µg/L
TJ007	Trichloroethene (TCE)	11/6/2013	20.8	µg/L
TJ007	Trichloroethene (TCE)	3/5/2014	21.9	µg/L
TJ007	Trichloroethene (TCE)	12/4/2013	23.5	µg/L
TJ007	Trichloroethene (TCE)	1/8/2014	24.4	µg/L
TJ007	Trichloroethene (TCE)	2/5/2014	27.1	µg/L
TJ008	1,1-Dichloroethene (1,1-DCE)	6/5/2013	3.07	µg/L
TJ008	1,1-Dichloroethene (1,1-DCE)	5/8/2013	3.23	µg/L
TJ008	1,1-Dichloroethene (1,1-DCE)	7/3/2013	3.35	µg/L
TJ008	1,1-Dichloroethene (1,1-DCE)	8/7/2013	3.4	µg/L
TJ008	1,1-Dichloroethene (1,1-DCE)	4/3/2013	3.42	µg/L
TJ008	1,1-Dichloroethene (1,1-DCE)	10/3/2013	3.61	µg/L
TJ008	1,1-Dichloroethene (1,1-DCE)	9/4/2013	4.01	µg/L
TJ008	1,1-Dichloroethene (1,1-DCE)	11/6/2013	5.25	µg/L
TJ008	1,1-Dichloroethene (1,1-DCE)	3/5/2014	6.73	µg/L
TJ008	1,1-Dichloroethene (1,1-DCE)	1/8/2014	8.01	µg/L
TJ008	1,1-Dichloroethene (1,1-DCE)	2/5/2014	9.11	µg/L
TJ008	1,1-Dichloroethene (1,1-DCE)	12/4/2013	9.23	µg/L
TJ008	1,4-Dioxane	1/8/2014	1.08	ug/L
TJ008	Carbon tetrachloride	4/3/2013	0.266	µg/L
TJ008	Carbon tetrachloride	11/6/2013	0.344	µg/L
TJ008	Carbon tetrachloride	3/5/2014	0.613	µg/L
TJ008	Carbon tetrachloride	1/8/2014	0.776	µg/L
TJ008	Carbon tetrachloride	12/4/2013	0.938	µg/L
TJ008	Carbon tetrachloride	2/5/2014	0.991	µg/L
TJ008	Chromium (Cr) Total, ICP/MS	4/3/2013	1.1	ug/L
TJ008	Chromium (Cr) Total, ICP/MS	1/8/2014	1.7	ug/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
TJ008	Nitrate (as NO3) ,calculated IC value	8/7/2013	31.2	mg/L
TJ008	Nitrate (as NO3) ,calculated IC value	6/5/2013	31.5	mg/L
TJ008	Nitrate (as NO3) ,calculated IC value	5/8/2013	31.8	mg/L
TJ008	Nitrate (as NO3) ,calculated IC value	1/8/2014	31.8	mg/L
TJ008	Nitrate (as NO3) ,calculated IC value	7/3/2013	31.9	mg/L
TJ008	Nitrate (as NO3) ,calculated IC value	12/4/2013	32.2	mg/L
TJ008	Nitrate (as NO3) ,calculated IC value	9/4/2013	32.6	mg/L
TJ008	Nitrate (as NO3) ,calculated IC value	11/6/2013	32.9	mg/L
TJ008	Nitrate (as NO3) ,calculated IC value	4/3/2013	33.1	mg/L
TJ008	Nitrate (as NO3) ,calculated IC value	10/3/2013	34.7	mg/L
TJ008	Nitrate (as NO3) ,calculated IC value	2/5/2014	35.6	mg/L
TJ008	Nitrate (as NO3) ,calculated IC value	3/5/2014	38	mg/L
TJ008	Tetrachloroethylene (PCE)	5/8/2013	1.78	µg/L
TJ008	Tetrachloroethylene (PCE)	4/3/2013	1.88	µg/L
TJ008	Tetrachloroethylene (PCE)	6/5/2013	1.93	µg/L
TJ008	Tetrachloroethylene (PCE)	7/3/2013	2.07	µg/L
TJ008	Tetrachloroethylene (PCE)	8/7/2013	2.61	µg/L
TJ008	Tetrachloroethylene (PCE)	9/4/2013	2.87	µg/L
TJ008	Tetrachloroethylene (PCE)	10/3/2013	2.95	µg/L
TJ008	Tetrachloroethylene (PCE)	11/6/2013	5.32	µg/L
TJ008	Tetrachloroethylene (PCE)	3/5/2014	8.54	µg/L
TJ008	Tetrachloroethylene (PCE)	12/4/2013	9.86	µg/L
TJ008	Tetrachloroethylene (PCE)	1/8/2014	10.8	µg/L
TJ008	Tetrachloroethylene (PCE)	2/5/2014	13.2	µg/L
TJ008	Trichloroethene (TCE)	6/5/2013	7.11	µg/L
TJ008	Trichloroethene (TCE)	5/8/2013	7.71	µg/L
TJ008	Trichloroethene (TCE)	7/3/2013	7.98	µg/L
TJ008	Trichloroethene (TCE)	4/3/2013	8.47	µg/L
TJ008	Trichloroethene (TCE)	8/7/2013	8.69	µg/L
TJ008	Trichloroethene (TCE)	9/4/2013	9.11	µg/L
TJ008	Trichloroethene (TCE)	10/3/2013	9.17	µg/L
TJ008	Trichloroethene (TCE)	11/6/2013	14.8	µg/L
TJ008	Trichloroethene (TCE)	3/5/2014	19	µg/L
TJ008	Trichloroethene (TCE)	1/8/2014	19.6	µg/L
TJ008	Trichloroethene (TCE)	12/4/2013	21.1	µg/L
TJ008	Trichloroethene (TCE)	2/5/2014	22	µg/L
TJ009	1,1-Dichloroethene (1,1-DCE)	11/7/2013	1.39	µg/L
TJ009	1,1-Dichloroethene (1,1-DCE)	6/19/2013	1.54	µg/L
TJ009	1,1-Dichloroethene (1,1-DCE)	12/3/2013	1.67	µg/L
TJ009	1,1-Dichloroethene (1,1-DCE)	5/21/2013	1.71	µg/L
TJ009	1,1-Dichloroethene (1,1-DCE)	7/10/2013	1.92	µg/L
TJ009	1,1-Dichloroethene (1,1-DCE)	8/8/2013	1.96	µg/L
TJ009	1,1-Dichloroethene (1,1-DCE)	2/6/2014	2.13	µg/L
TJ009	1,1-Dichloroethene (1,1-DCE)	4/17/2013	2.3	µg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
TJ009	1,1-Dichloroethene (1,1-DCE)	9/5/2013	2.3	µg/L
TJ009	1,1-Dichloroethene (1,1-DCE)	1/9/2014	2.76	µg/L
TJ009	1,1-Dichloroethene (1,1-DCE)	10/16/2013	2.82	µg/L
TJ009	Nitrate (as NO3) ,calculated IC value	8/8/2013	27.7	mg/L
TJ009	Nitrate (as NO3) ,calculated IC value	6/19/2013	28.3	mg/L
TJ009	Nitrate (as NO3) ,calculated IC value	7/10/2013	28.9	mg/L
TJ009	Nitrate (as NO3) ,calculated IC value	9/5/2013	29.7	mg/L
TJ009	Nitrate (as NO3) ,calculated IC value	12/3/2013	29.7	mg/L
TJ009	Nitrate (as NO3) ,calculated IC value	1/9/2014	29.8	mg/L
TJ009	Nitrate (as NO3) ,calculated IC value	2/6/2014	30.5	mg/L
TJ009	Nitrate (as NO3) ,calculated IC value	5/21/2013	30.6	mg/L
TJ009	Nitrate (as NO3) ,calculated IC value	11/7/2013	31.1	mg/L
TJ009	Nitrate (as NO3) ,calculated IC value	4/17/2013	31.4	mg/L
TJ009	Nitrate (as NO3) ,calculated IC value	10/16/2013	33.3	mg/L
TJ009	Perchlorate	1/9/2014	2.03	µg/L
TJ009	Perchlorate	11/7/2013	2.43	µg/L
TJ009	Tetrachloroethylene (PCE)	6/19/2013	1.02	µg/L
TJ009	Tetrachloroethylene (PCE)	7/10/2013	1.09	µg/L
TJ009	Tetrachloroethylene (PCE)	5/21/2013	1.13	µg/L
TJ009	Tetrachloroethylene (PCE)	8/8/2013	1.14	µg/L
TJ009	Tetrachloroethylene (PCE)	9/5/2013	1.25	µg/L
TJ009	Tetrachloroethylene (PCE)	4/17/2013	1.33	µg/L
TJ009	Tetrachloroethylene (PCE)	10/16/2013	1.66	µg/L
TJ009	Tetrachloroethylene (PCE)	2/6/2014	1.76	µg/L
TJ009	Tetrachloroethylene (PCE)	11/7/2013	2.38	µg/L
TJ009	Tetrachloroethylene (PCE)	12/3/2013	4.1	µg/L
TJ009	Tetrachloroethylene (PCE)	1/9/2014	4.2	µg/L
TJ009	Trichloroethene (TCE)	6/19/2013	5.02	µg/L
TJ009	Trichloroethene (TCE)	8/8/2013	5.71	µg/L
TJ009	Trichloroethene (TCE)	7/10/2013	5.83	µg/L
TJ009	Trichloroethene (TCE)	5/21/2013	5.95	µg/L
TJ009	Trichloroethene (TCE)	9/5/2013	5.98	µg/L
TJ009	Trichloroethene (TCE)	10/16/2013	7.11	µg/L
TJ009	Trichloroethene (TCE)	4/17/2013	7.75	µg/L
TJ009	Trichloroethene (TCE)	2/6/2014	7.87	µg/L
TJ009	Trichloroethene (TCE)	11/7/2013	8.11	µg/L
TJ009	Trichloroethene (TCE)	12/3/2013	8.71	µg/L
TJ009	Trichloroethene (TCE)	1/9/2014	12	µg/L
TJ010	1,1-Dichloroethene (1,1-DCE)	6/19/2013	0.729	µg/L
TJ010	1,1-Dichloroethene (1,1-DCE)	5/21/2013	0.783	µg/L
TJ010	1,1-Dichloroethene (1,1-DCE)	4/17/2013	0.833	µg/L
TJ010	1,1-Dichloroethene (1,1-DCE)	7/10/2013	0.879	µg/L
TJ010	1,1-Dichloroethene (1,1-DCE)	8/8/2013	1.04	µg/L
TJ010	1,1-Dichloroethene (1,1-DCE)	2/6/2014	1.09	µg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
TJ010	1,1-Dichloroethene (1,1-DCE)	11/7/2013	1.33	µg/L
TJ010	1,1-Dichloroethene (1,1-DCE)	9/5/2013	1.36	µg/L
TJ010	1,1-Dichloroethene (1,1-DCE)	3/6/2014	1.37	µg/L
TJ010	1,1-Dichloroethene (1,1-DCE)	1/9/2014	1.43	µg/L
TJ010	1,1-Dichloroethene (1,1-DCE)	12/3/2013	1.52	µg/L
TJ010	1,1-Dichloroethene (1,1-DCE)	10/16/2013	1.63	µg/L
TJ010	Nitrate (as NO3) ,calculated IC value	8/8/2013	27.3	mg/L
TJ010	Nitrate (as NO3) ,calculated IC value	6/19/2013	28.3	mg/L
TJ010	Nitrate (as NO3) ,calculated IC value	7/10/2013	28.8	mg/L
TJ010	Nitrate (as NO3) ,calculated IC value	9/5/2013	29.2	mg/L
TJ010	Nitrate (as NO3) ,calculated IC value	2/6/2014	29.7	mg/L
TJ010	Nitrate (as NO3) ,calculated IC value	5/21/2013	30.5	mg/L
TJ010	Nitrate (as NO3) ,calculated IC value	4/17/2013	30.7	mg/L
TJ010	Nitrate (as NO3) ,calculated IC value	10/16/2013	31.3	mg/L
TJ010	Nitrate (as NO3) ,calculated IC value	11/7/2013	31.3	mg/L
TJ010	Nitrate (as NO3) ,calculated IC value	1/9/2014	32.2	mg/L
TJ010	Nitrate (as NO3) ,calculated IC value	12/3/2013	32.8	mg/L
TJ010	Nitrate (as NO3) ,calculated IC value	3/6/2014	34.9	mg/L
TJ010	Perchlorate	9/5/2013	2.39	µg/L
TJ010	Perchlorate	11/7/2013	2.48	µg/L
TJ010	Perchlorate	10/16/2013	2.65	µg/L
TJ010	Perchlorate	2/6/2014	2.69	µg/L
TJ010	Perchlorate	8/8/2013	2.74	µg/L
TJ010	Perchlorate	7/10/2013	2.75	µg/L
TJ010	Perchlorate	12/3/2013	2.96	µg/L
TJ010	Perchlorate	5/21/2013	3.02	µg/L
TJ010	Perchlorate	1/9/2014	3.29	µg/L
TJ010	Perchlorate	4/17/2013	3.42	µg/L
TJ010	Perchlorate	6/19/2013	3.43	µg/L
TJ010	Perchlorate	3/6/2014	3.65	µg/L
TJ010	Tetrachloroethylene (PCE)	6/19/2013	1.16	µg/L
TJ010	Tetrachloroethylene (PCE)	7/10/2013	1.26	µg/L
TJ010	Tetrachloroethylene (PCE)	8/8/2013	1.28	µg/L
TJ010	Tetrachloroethylene (PCE)	5/21/2013	1.33	µg/L
TJ010	Tetrachloroethylene (PCE)	4/17/2013	1.47	µg/L
TJ010	Tetrachloroethylene (PCE)	9/5/2013	1.49	µg/L
TJ010	Tetrachloroethylene (PCE)	11/7/2013	1.71	µg/L
TJ010	Tetrachloroethylene (PCE)	10/16/2013	1.99	µg/L
TJ010	Tetrachloroethylene (PCE)	2/6/2014	1.99	µg/L
TJ010	Tetrachloroethylene (PCE)	3/6/2014	2.2	µg/L
TJ010	Tetrachloroethylene (PCE)	12/3/2013	2.21	µg/L
TJ010	Tetrachloroethylene (PCE)	1/9/2014	2.46	µg/L
TJ010	Trichloroethene (TCE)	6/19/2013	7.69	µg/L
TJ010	Trichloroethene (TCE)	8/8/2013	8.6	µg/L
TJ010	Trichloroethene (TCE)	7/10/2013	8.69	µg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
TJ010	Trichloroethene (TCE)	5/21/2013	8.79	µg/L
TJ010	Trichloroethene (TCE)	9/5/2013	9.36	µg/L
TJ010	Trichloroethene (TCE)	11/7/2013	10.3	µg/L
TJ010	Trichloroethene (TCE)	4/17/2013	10.8	µg/L
TJ010	Trichloroethene (TCE)	10/16/2013	11.3	µg/L
TJ010	Trichloroethene (TCE)	2/6/2014	11.8	µg/L
TJ010	Trichloroethene (TCE)	12/3/2013	13	µg/L
TJ010	Trichloroethene (TCE)	3/6/2014	15	µg/L
TJ010	Trichloroethene (TCE)	1/9/2014	15.1	µg/L
TJ011	1,1-Dichloroethene (1,1-DCE)	5/17/2013	0.898	µg/L
TJ011	1,1-Dichloroethene (1,1-DCE)	6/18/2013	0.919	µg/L
TJ011	1,1-Dichloroethene (1,1-DCE)	7/11/2013	1.06	µg/L
TJ011	1,1-Dichloroethene (1,1-DCE)	8/21/2013	1.06	µg/L
TJ011	1,1-Dichloroethene (1,1-DCE)	11/7/2013	1.12	µg/L
TJ011	1,1-Dichloroethene (1,1-DCE)	10/16/2013	1.21	µg/L
TJ011	1,1-Dichloroethene (1,1-DCE)	12/3/2013	1.24	µg/L
TJ011	1,1-Dichloroethene (1,1-DCE)	9/5/2013	1.25	µg/L
TJ011	1,1-Dichloroethene (1,1-DCE)	1/9/2014	1.56	µg/L
TJ011	1,4-Dioxane	10/16/2013	1.02	ug/L
TJ011	1,4-Dioxane	1/9/2014	1.07	ug/L
TJ011	1,4-Dioxane	7/11/2013	1.09	ug/L
TJ011	Bromide ,Ion-Chromatography	6/18/2013	0.155	mg/L
TJ011	Nitrate (as NO3) ,calculated IC value	6/18/2013	26.1	mg/L
TJ011	Nitrate (as NO3) ,calculated IC value	7/11/2013	26.1	mg/L
TJ011	Nitrate (as NO3) ,calculated IC value	5/17/2013	26.3	mg/L
TJ011	Nitrate (as NO3) ,calculated IC value	11/7/2013	26.4	mg/L
TJ011	Nitrate (as NO3) ,calculated IC value	1/9/2014	26.5	mg/L
TJ011	Nitrate (as NO3) ,calculated IC value	12/3/2013	26.7	mg/L
TJ011	Nitrate (as NO3) ,calculated IC value	8/21/2013	26.8	mg/L
TJ011	Nitrate (as NO3) ,calculated IC value	9/5/2013	26.9	mg/L
TJ011	Nitrate (as NO3) ,calculated IC value	10/16/2013	27.8	mg/L
TJ011	Perchlorate	10/16/2013	3.91	µg/L
TJ011	Perchlorate	8/21/2013	3.96	µg/L
TJ011	Perchlorate	11/7/2013	3.96	µg/L
TJ011	Perchlorate	9/5/2013	4.04	µg/L
TJ011	Perchlorate	7/11/2013	4.3	µg/L
TJ011	Perchlorate	12/3/2013	4.33	µg/L
TJ011	Perchlorate	6/18/2013	4.51	µg/L
TJ011	Perchlorate	5/17/2013	4.73	µg/L
TJ011	Perchlorate	1/9/2014	4.81	µg/L
TJ011	Tetrachloroethylene (PCE)	6/18/2013	1.8	µg/L
TJ011	Tetrachloroethylene (PCE)	5/17/2013	1.84	µg/L
TJ011	Tetrachloroethylene (PCE)	7/11/2013	1.85	µg/L
TJ011	Tetrachloroethylene (PCE)	8/21/2013	1.98	µg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
TJ011	Tetrachloroethylene (PCE)	11/7/2013	2.04	µg/L
TJ011	Tetrachloroethylene (PCE)	9/5/2013	2.1	µg/L
TJ011	Tetrachloroethylene (PCE)	10/16/2013	2.18	µg/L
TJ011	Tetrachloroethylene (PCE)	12/3/2013	2.48	µg/L
TJ011	Tetrachloroethylene (PCE)	1/9/2014	2.64	µg/L
TJ011	Trichloroethene (TCE)	6/18/2013	12.8	µg/L
TJ011	Trichloroethene (TCE)	7/11/2013	13.5	µg/L
TJ011	Trichloroethene (TCE)	5/17/2013	13.6	µg/L
TJ011	Trichloroethene (TCE)	8/21/2013	13.8	µg/L
TJ011	Trichloroethene (TCE)	11/7/2013	13.8	µg/L
TJ011	Trichloroethene (TCE)	9/5/2013	14.2	µg/L
TJ011	Trichloroethene (TCE)	10/16/2013	15	µg/L
TJ011	Trichloroethene (TCE)	12/3/2013	15.9	µg/L
TJ011	Trichloroethene (TCE)	1/9/2014	17.5	µg/L
TJ012	Bromide ,Ion-Chromatography	7/11/2013	0.098	mg/L
TJ012	Bromide ,Ion-Chromatography	5/15/2013	0.105	mg/L
TJ012	Nitrate (as NO3) ,calculated IC value	2/6/2014	11	mg/L
TJ012	Nitrate (as NO3) ,calculated IC value	7/11/2013	11.1	mg/L
TJ012	Nitrate (as NO3) ,calculated IC value	4/30/2013	11.2	mg/L
TJ012	Nitrate (as NO3) ,calculated IC value	6/18/2013	11.2	mg/L
TJ012	Nitrate (as NO3) ,calculated IC value	11/7/2013	11.3	mg/L
TJ012	Nitrate (as NO3) ,calculated IC value	12/3/2013	11.3	mg/L
TJ012	Nitrate (as NO3) ,calculated IC value	5/15/2013	11.4	mg/L
TJ012	Nitrate (as NO3) ,calculated IC value	8/21/2013	11.7	mg/L
TJ012	Nitrate (as NO3) ,calculated IC value	10/3/2013	11.7	mg/L
TJ012	Nitrate (as NO3) ,calculated IC value	9/5/2013	11.8	mg/L
TJ012	Trichloroethene (TCE)	2/6/2014	0.873	µg/L
TJ012	Trichloroethene (TCE)	11/7/2013	2.09	µg/L
TJ012	Trichloroethene (TCE)	12/3/2013	2.1	µg/L
TJ012	Trichloroethene (TCE)	6/18/2013	2.24	µg/L
TJ012	Trichloroethene (TCE)	10/3/2013	2.35	µg/L
TJ012	Trichloroethene (TCE)	7/11/2013	2.37	µg/L
TJ012	Trichloroethene (TCE)	4/30/2013	2.5	µg/L
TJ012	Trichloroethene (TCE)	5/15/2013	2.51	µg/L
TJ012	Trichloroethene (TCE)	8/21/2013	2.6	µg/L
TJ012	Trichloroethene (TCE)	9/5/2013	2.71	µg/L
VE011	Bromide ,Ion-Chromatography	8/20/2013	0.325	mg/L
VE011	Carbon tetrachloride	8/20/2013	0.255	µg/L
VE011	Carbon tetrachloride	7/17/2013	0.26	µg/L
VE011	Carbon tetrachloride	1/30/2014	0.372	µg/L
VE011	Carbon tetrachloride	2/27/2014	0.377	µg/L
VE011	Carbon tetrachloride	3/27/2014	0.475	µg/L
VE011	Coliform Total (CL,QT2000) ,MM0-MUG	2/27/2014	66.3	NUM/100ml

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
VE011	Nitrate (as NO3) ,calculated IC value	5/14/2013	6.07	mg/L
VE011	Nitrate (as NO3) ,calculated IC value	12/30/2013	7.62	mg/L
VE011	Nitrate (as NO3) ,calculated IC value	11/27/2013	7.93	mg/L
VE011	Nitrate (as NO3) ,calculated IC value	10/31/2013	8.51	mg/L
VE011	Nitrate (as NO3) ,calculated IC value	7/17/2013	12	mg/L
VE011	Nitrate (as NO3) ,calculated IC value	1/30/2014	12.3	mg/L
VE011	Nitrate (as NO3) ,calculated IC value	9/26/2013	12.4	mg/L
VE011	Nitrate (as NO3) ,calculated IC value	3/27/2014	12.4	mg/L
VE011	Nitrate (as NO3) ,calculated IC value	8/20/2013	12.6	mg/L
VE011	Nitrate (as NO3) ,calculated IC value	2/27/2014	13.4	mg/L
VE011	Trichloroethene (TCE)	5/14/2013	0.964	µg/L
VE011	Trichloroethene (TCE)	12/30/2013	1.07	µg/L
VE011	Trichloroethene (TCE)	10/31/2013	1.08	µg/L
VE011	Trichloroethene (TCE)	11/27/2013	1.12	µg/L
VE011	Trichloroethene (TCE)	6/28/2013	1.43	µg/L
VE011	Trichloroethene (TCE)	7/17/2013	1.79	µg/L
VE011	Trichloroethene (TCE)	9/26/2013	1.96	µg/L
VE011	Trichloroethene (TCE)	8/20/2013	2.06	µg/L
VE011	Trichloroethene (TCE)	1/30/2014	3.29	µg/L
VE011	Trichloroethene (TCE)	2/27/2014	3.34	µg/L
VE011	Trichloroethene (TCE)	3/27/2014	3.41	µg/L
VE024	Bromide ,Ion-Chromatography	1/21/2014	0.731	mg/L
VE024	Nitrate (as NO3) ,calculated IC value	1/21/2014	4.61	mg/L
VE024	Nitrate (as NO3) ,calculated IC value	2/25/2014	4.92	mg/L
VE024	Nitrate (as NO3) ,calculated IC value	3/27/2014	4.96	mg/L
WH004	Coliform Total (CL,QT2000) ,MM0-MUG	4/18/2013	1	NUM/100ml
WH004	Nitrate (as NO3) ,calculated IC value	5/14/2013	8.02	mg/L
WH004	Nitrate (as NO3) ,calculated IC value	1/28/2014	8.59	mg/L
WH004	Nitrate (as NO3) ,calculated IC value	12/30/2013	8.77	mg/L
WH004	Nitrate (as NO3) ,calculated IC value	3/27/2014	8.86	mg/L
WH004	Nitrate (as NO3) ,calculated IC value	2/25/2014	8.95	mg/L
WH004	Nitrate (as NO3) ,calculated IC value	11/27/2013	9.21	mg/L
WH004	Nitrate (as NO3) ,calculated IC value	10/31/2013	9.92	mg/L
WH004	Nitrate (as NO3) ,calculated IC value	7/16/2013	10.5	mg/L
WH004	Nitrate (as NO3) ,calculated IC value	9/26/2013	10.9	mg/L
WH004	Nitrate (as NO3) ,calculated IC value	8/27/2013	11.1	mg/L
WH004	Tetrachloroethylene (PCE)	9/26/2013	1.94	µg/L
WH004	Tetrachloroethylene (PCE)	10/31/2013	1.94	µg/L
WH004	Tetrachloroethylene (PCE)	5/14/2013	2.1	µg/L
WH004	Tetrachloroethylene (PCE)	4/18/2013	2.11	µg/L
WH004	Tetrachloroethylene (PCE)	11/27/2013	2.11	µg/L
WH004	Tetrachloroethylene (PCE)	8/27/2013	2.15	µg/L
WH004	Tetrachloroethylene (PCE)	7/16/2013	2.19	µg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
WH004	Tetrachloroethylene (PCE)	2/25/2014	2.2	µg/L
WH004	Tetrachloroethylene (PCE)	12/30/2013	2.38	µg/L
WH004	Tetrachloroethylene (PCE)	6/28/2013	2.56	µg/L
WH004	Tetrachloroethylene (PCE)	1/28/2014	2.56	µg/L
WH004	Tetrachloroethylene (PCE)	3/27/2014	2.59	µg/L
WH004	Trichloroethene (TCE)	5/14/2013	0.927	µg/L
WH004	Trichloroethene (TCE)	4/18/2013	0.953	µg/L
WH004	Trichloroethene (TCE)	1/28/2014	1.57	µg/L
WH004	Trichloroethene (TCE)	12/30/2013	1.77	µg/L
WH004	Trichloroethene (TCE)	2/25/2014	1.86	µg/L
WH004	Trichloroethene (TCE)	3/27/2014	1.96	µg/L
WH004	Trichloroethene (TCE)	11/27/2013	2.04	µg/L
WH004	Trichloroethene (TCE)	6/28/2013	2.9	µg/L
WH004	Trichloroethene (TCE)	10/31/2013	3.01	µg/L
WH004	Trichloroethene (TCE)	7/16/2013	3.2	µg/L
WH004	Trichloroethene (TCE)	8/27/2013	4.26	µg/L
WH004	Trichloroethene (TCE)	9/26/2013	4.54	µg/L
WH005	Nitrate (as NO3) ,calculated IC value	3/27/2014	9.83	mg/L
WH005	Nitrate (as NO3) ,calculated IC value	1/28/2014	9.88	mg/L
WH005	Nitrate (as NO3) ,calculated IC value	2/25/2014	10	mg/L
WH005	Nitrate (as NO3) ,calculated IC value	12/30/2013	10.3	mg/L
WH005	Nitrate (as NO3) ,calculated IC value	5/14/2013	10.4	mg/L
WH005	Nitrate (as NO3) ,calculated IC value	11/27/2013	10.9	mg/L
WH005	Nitrate (as NO3) ,calculated IC value	10/31/2013	11.8	mg/L
WH005	Nitrate (as NO3) ,calculated IC value	7/16/2013	13.9	mg/L
WH005	Nitrate (as NO3) ,calculated IC value	9/26/2013	14.6	mg/L
WH005	Nitrate (as NO3) ,calculated IC value	8/27/2013	14.8	mg/L
WH005	Tetrachloroethylene (PCE)	2/25/2014	1.26	µg/L
WH005	Tetrachloroethylene (PCE)	3/27/2014	1.39	µg/L
WH005	Tetrachloroethylene (PCE)	1/28/2014	1.51	µg/L
WH005	Tetrachloroethylene (PCE)	12/30/2013	1.54	µg/L
WH005	Tetrachloroethylene (PCE)	10/31/2013	1.71	µg/L
WH005	Tetrachloroethylene (PCE)	11/27/2013	1.73	µg/L
WH005	Tetrachloroethylene (PCE)	5/14/2013	1.88	µg/L
WH005	Tetrachloroethylene (PCE)	4/18/2013	1.97	µg/L
WH005	Tetrachloroethylene (PCE)	7/16/2013	2.18	µg/L
WH005	Tetrachloroethylene (PCE)	6/28/2013	2.24	µg/L
WH005	Tetrachloroethylene (PCE)	9/26/2013	2.25	µg/L
WH005	Tetrachloroethylene (PCE)	8/27/2013	2.39	µg/L
WH005	Trichloroethene (TCE)	5/14/2013	1.21	µg/L
WH005	Trichloroethene (TCE)	4/18/2013	1.38	µg/L
WH005	Trichloroethene (TCE)	2/25/2014	2.35	µg/L
WH005	Trichloroethene (TCE)	3/27/2014	2.35	µg/L
WH005	Trichloroethene (TCE)	1/28/2014	2.87	µg/L

LOCCODE	ANALYTE	COLDATE	TestResult	RUNIT
WH005	Trichloroethene (TCE)	12/30/2013	3.34	µg/L
WH005	Trichloroethene (TCE)	6/28/2013	3.82	µg/L
WH005	Trichloroethene (TCE)	7/16/2013	3.91	µg/L
WH005	Trichloroethene (TCE)	11/27/2013	3.99	µg/L
WH005	Trichloroethene (TCE)	10/31/2013	4.43	µg/L
WH005	Trichloroethene (TCE)	9/26/2013	4.61	µg/L
WH005	Trichloroethene (TCE)	8/27/2013	4.8	µg/L
WH007	Nitrate (as NO3) ,calculated IC value	10/31/2013	2.65	mg/L
WH007	Nitrate (as NO3) ,calculated IC value	12/30/2013	2.66	mg/L
WH007	Nitrate (as NO3) ,calculated IC value	11/27/2013	2.68	mg/L
WH007	Nitrate (as NO3) ,calculated IC value	1/28/2014	2.68	mg/L
WH007	Nitrate (as NO3) ,calculated IC value	3/27/2014	2.69	mg/L
WH007	Nitrate (as NO3) ,calculated IC value	2/27/2014	2.72	mg/L
WH007	Nitrate (as NO3) ,calculated IC value	9/26/2013	2.78	mg/L
WH007	Nitrate (as NO3) ,calculated IC value	5/14/2013	2.84	mg/L
WH007	Nitrate (as NO3) ,calculated IC value	7/16/2013	8.06	mg/L
WH007	Nitrate (as NO3) ,calculated IC value	8/27/2013	9.83	mg/L
WH007	Tetrachloroethylene (PCE)	7/16/2013	1.59	µg/L
WH007	Tetrachloroethylene (PCE)	6/28/2013	1.6	µg/L
WH007	Trichloroethene (TCE)	8/27/2013	0.74	µg/L
WH007	Trichloroethene (TCE)	7/16/2013	2.79	µg/L
WH007	Trichloroethene (TCE)	6/28/2013	2.84	µg/L

APPENDIX B

CITY OF BURBANK

PUMPING AND SPREADING PLAN

2014-15 through 2018-19 Water Years

GROUNDWATER PUMPING

AND

SPREADING PLAN

FIVE WATER YEARS

OCTOBER 1, 2014 TO SEPTEMBER 30, 2019

WATER DIVISION

164 W. MAGNOLIA BOULEVARD

MAY 2015

Table of Contents

List of Tables

List of Figures

List of Appendices

SECTION 1: 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 (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 was made by the Watermaster and the Administrative Committee to affirm its commitments to participate in the cleanup of the ground water and limit the spread of contamination in the San Fernando basin. The 1998 revision of the Policies and Procedures now includes Section 5.0, Watermaster Management of Groundwater Quality. This report is in response to Section 5.4, Groundwater Pumping and Spreading Plan for the Upper Los Angeles River Area.

The annual Groundwater Pumping and Spreading Plan is based on the water year, October 1 to September 30, and it includes projections for five years beginning with the current water year. This Plan for Burbank will be submitted to the Watermaster in May 2015. The Watermaster will evaluate the impact of pumping and spreading by all the parties, and the ULARA Pumping and Spreading Plan compiled by the Watermaster will be released in July 2015.

Burbank's Plan was prepared by the Water Engineering and Planning Section of City of Burbank Water and Power. Questions may be addressed to Bob Doxsee, Civil Engineering Associate, at (818) 238-3500 or by e-mail to bdoxsee@burbankca.gov.

SECTION 2: 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.

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 was for 20 percent reduction in per-capita potable water usage by 2020. That target was actually reached in Fiscal Year 2009/10, with some help from the weather. In the more recent dry years, it is not surprising that water demands were higher. Then, with continuing drought, emergency regulation in 2015 called for an immediate 25 percent reduction compared to 2013 levels. Local supplies will be used as much as possible in order to reduce the demand on imported supplies from the Metropolitan Water District of Southern California (MWD). 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. A major expansion of the recycled system was completed in 2013, and demand on the potable water system will be offset by recycled water as additional site conversions are completed.

SECTION 3: WATER SUPPLY

The water supply for the City of Burbank is composed of purchased water from MWD, locally produced and treated groundwater, and recycled water from the Burbank Water Reclamation Plant. A discussion about each of the sources of supply is included below, and historic and projected use of each water source is shown in Table 3.

3.1 MWD

Burbank continues to directly rely on MWD for up to 70% of its water supply. Burbank purchases from MWD treated water for direct delivery to its distribution system and untreated water for basin replenishment. The City must purchase and spread water within the basin or purchase Physical Solution credits from the Los Angeles Department of Water and Power (LADWP) to operate its local groundwater wells. The economics determine which of these two options or what percentage of each Burbank will exercise in a given water year.

3.2 GAC Treatment Plant

Historically, the GAC Treatment Plant was normally operated during the summer season from May to October. The California Department of Public Health (CDPH) issued a draft Maximum Contaminant Level (MCL) for Chromium VI of 10 micrograms per liter in late 2013, and the MCL was adopted as final on July 1, 2014. Total chromium in the plant effluent is expected to exceed the new MCL and the GAC treatment process does not remove chromium, and facilities for blending are not available. Current plans are to keep the plant shut down, except for emergencies and water quality testing.

The GAC Treatment Plant treats the groundwater produced from Well No. 7 and Well No. 15 (Figure 3.1). The plant has a treatment capacity of 2,000 gallons per minute (gpm). In Water Year (WY) 2013/14, pumping for water quality testing resulted in 1 acre-foot (AF) being produced and delivered to the Magnolia Power Project cooling towers for industrial cooling.

3.3 EPA Consent Decree Project

The EPA Consent Decree Project (also known as Burbank Operable Unit or BOU) became operational January 3, 1996. The source of groundwater for treatment at the BOU is Wells VO-1 through VO-8 (Figure 3.1) and the treatment plant has a capacity of 9,000 gpm. The Second Consent Decree was entered on June 22, 1998.

3.4 Recycled Water

A master plan for expansion of the recycled water system was completed in 2007 and updated in 2010. The plan detailed an expansion of the distribution system which is expected to ultimately deliver an additional 1,000 acre-feet per year (AFY) of recycled water. 625 AFY of this total will directly offset potable water deliveries. The remaining 375 AFY will offset groundwater pumped from the well at Valhalla Memorial Park (Valhalla). The distribution main construction is complete, and site conversions are in progress.

3.5 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). (See Table 1.) Except for water quality testing at Wells 7 and 15, Burbank does not plan to operate the inactive wells in WY 2013/14 unless an emergency develops. Well No. 7 produces 1,050 gpm and Well No. 15 produces 850 gpm to supply the GAC treatment plant.

TABLE 1

BWP’S WELL STATUS

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

SECTION 4: GROUNDWATER CREDITS

The Judgment includes a number of procedures related to groundwater pumping that Burbank and the other defendants must follow. In order to pump groundwater, rights to groundwater must be established and in the San Fernando Basin, those rights are accounted for as groundwater credits. Rights and procedures related to establishing, counting and maintaining groundwater credits are discussed in the following paragraphs. Historic and projected future groundwater credits are shown in Table 4.

4.1 Import Return Water

Under the Judgment, Burbank is entitled to extract 20 percent of water it delivered (potable and recycled) in the prior water year. This is known as import return water. The import return water credited for WY 2014/15 (based on water delivered in WY 2013/14) is 4,288 AF.

Estimated import return water credit for the next water year, based on 19,280 AF of delivered water, will be 3,856 AF.

4.2 Physical Solution

Burbank has a Physical Solution right to 4,200 AFY in addition to its import return water extraction rights. This is a right to purchase up to 4,200 AFY of groundwater credits from the City of Los Angeles. The price paid to the City of Los Angeles for this groundwater is set by formula in the Judgment.

Depending on the price of MWD untreated imported water and Physical Solution water from the City of Los Angeles, a decision will be made each year regarding which to purchase. MWD untreated water is currently less expensive than Physical Solution water. Therefore, Burbank will not purchase Physical Solution water from the City of Los Angeles in WY 2014/15. The current plan reflects the spreading of imported water instead of the purchase of Physical Solution credits.

In the Judgment, Valhalla and Lockheed Martin have the right under the Physical Solution to pump up to 300 AFY and 25 AFY, respectively. Burbank will charge the Physical Solution right holders for groundwater they extracted and claim the extractions against Burbank's rights.

4.3 Stored Water Credit

Burbank has a stored water credit of 11,603 AF as of October 1, 2014. Burbank’s objective is to maintain a reserve of 10,000 AF of stored water credits. (See Appendix B.) Therefore, some combination of Physical Solution and/or spreading of imported water is necessary to avoid depleting the stored water credits.

4.4 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). Beginning in WY 1994/95, Burbank exchanged with LADWP purchased imported water taken through MWD service connection LA-35 at the LADWP Treatment Plant for groundwater credits.

In 2010 Burbank completed a new service connection to MWD at the end of the Foothill Feeder. (See Figure 4.1.) The connection is capable of delivering 50 cubic feet per second (cfs) of untreated imported water to the Pacoima Wash, where the water is conveyed down to the Pacoima Spreading Grounds. Additionally, this service connection allows Burbank to direct water to the Lopez Spreading Grounds via the Lopez Ditch. These facilities allow Burbank to spread the 6,000 to 8,000 AFY of untreated water at the Pacoima Spreading Grounds that is needed to avoid depleting its stored groundwater credits.

Burbank received the first water delivery through the new connection on April 26, 2010. By agreement with MWD, Burbank will spread a minimum of 150 AF twice a year to maintain water quality at the end of the Foothill Feeder. After the MWD allocation ended, MWD water was available for a limited time at the lower replenishment rate, so Burbank spread as much water as possible in WY 2010/11. A total of 11,187 AF of imported water was delivered and spread at the Pacoima spreading grounds. The replenishment rate was not available after September 2011, but Burbank still spread 1,371 AF in WY 2011/12, 6,700 AF in WY 2012/13, and 7,000 AF in WY 2013/14.

Because of the severe drought, instead of spreading imported water in WY 2014/15, Burbank and Los Angeles again agreed to exchange purchased imported water delivered to LADWP for groundwater credits. In December 2014, 7,200 AF of credits were added to Burbank's account by this exchange. Also in December 2014, 150.2 AF were spread at Pacoima as the water in the Foothill Feeder was turned over to maintain water quality. For the remaining four water years covered by this plan, Burbank plans to purchase about 7,500 AF per year of Physical Solution credits, untreated imported water, or a combination of the two. (See Table 4.)

SECTION 5: CAPITAL IMPROVEMENTS

5.1 Wells

Burbank plans to continue the use of Wells No. 7 and No. 15 for the GAC Treatment Plant when it is operated. Wells V-01 through V-08 will continue to be operated to supply water to the BOU. No capital improvements are planned for any wells.

5.2 Groundwater Treatment Facilities

EPA Project: The EPA Consent Decree Project became fully operational on January 3, 1996. Burbank assumed responsibility for operation and maintenance of the BOU on March 12, 2001. Initially, the facility had difficulty in sustaining operation at the designed treatment rate of 9,000 gpm. Burbank, Lockheed-Martin, and the USEPA cooperated in efforts to determine the cause(s) of the reduced production. Over the past few years, several process enhancements and repairs were made to the liquid-phase GAC vessels and to the vapor-phase GAC vessels.

As part of the requirement to close the First Consent Decree, USEPA required Burbank to demonstrate that the BOU would operate at its design capacity. In the fall of 2010, Burbank successfully completed the performance test of the BOU by operating the facility at 9,000 gpm for 60-days.

The City of Burbank currently contracts with TerranearPMC for the day-to-day operation and maintenance of the BOU.

GAC Treatment Plant: The plant will remain on an active status, but will not be operated except for well water quality tests and for emergencies. No capital improvement projects are planned for the GAC Treatment Plant.

TABLE 2

ACTUAL AND PROJECTED WATER DEMAND

Water Year	Acre-Feet
2004/05	21,790
2005/06	24,110
2006/07	25,745
2007/08	24,653
2008/09	22,532
2009/10	20,852
2010/11	19,735
2011/12	20,938
2012/13	20,937
2013/14	21,874
2014/15*	19,705
2015/16*	19,838
2016/17*	20,024
2017/18*	20,060
2018/19*	20,075

* Projected

NOTES:

1) Water demand equals the total of MWD, extractions (GAC, Valley/BOU, Valhalla, and cleanup pumpers), and recycled.
2) The five-year average water demand was 20,867 AFY for WY 2009/10 through 2013/14.

TABLE 3

GROUNDWATER EXTRACTIONS, MWD TREATED WATER, AND RECYCLED WATER

Water Year	MWD	GAC	BOU	Recycled	Valhalla	Total
2004/05	14,415	0	6,399	681	295	21,790
2005/06	11,879	0	10,108	1,692	431	24,110
2006/07	13,444	0	9,780	2,082	431	25,737
2007/08	15,299	0	6,817	2,192	337	24,645
2008/09	10,202	148	9,818	2,011	346	22,525
2009/10	8,401	5	10,043	2,080	317	20,846
2010/11	7,376	4	10,394	1,568	387	19,729
2011/12	8,602	4	9,993	2,000	338	20,937
2012/13	7,507	0	11,387	1,608	435	20,937
2013/14	8,901	1	10,148	2,407	417	21,874
2014/15*	6,713	0	10,175	2,417	400	19,705
2015/16*	6,023	0	10,913	2,902	0	19,838
2016/17*	6,176	0	10,913	2,935	0	20,024
2017/18*	6,184	0	10,913	2,963	0	20,060
2018/19*	6,184	0	10,913	2,978	0	20,075

*Projected

Notes:

1. The projected amounts are from the budget, and they do not reflect emergency conservation ordered (so far) between June 1, 2015 and February 28, 2016, so potable water use may be less. Use of BOU will be maximized, with MWD used for required blending and to meet total demand.
2. MWD amounts are treated water. (Untreated MWD purchases are in Table 4.)
3. GAC was used only for nonpotable use in the Magnolia Power Plant.
4. BOU includes small amounts of non-municipal use which is not included in the import return calculation.
5. Groundwater extractions need to be balanced over time by groundwater credits (Table 4.)
6. Valhalla is expected to be using recycled water instead of groundwater by WY 2015/16.
7. Groundwater extractions by small cleanup pumpers are not included in this table. They were about 6 to 8 AFY from 2004/05 through 2010/11, but have dropped to zero since then.

TABLE 4

GROUNDWATER CREDITS

Water Year	Physical Solution	Import Return	Spreading Operations	Other	Total
2004/05	0	4,350	0	0	4,350
2005/06	0	4,817	0	0	4,817
2006/07	4,200	5,058	0	4,000 (2)	13,258
2007/08	4,200	4,855	0	0	9,055
2008/09	4,200	4,432	0	2,000 (3)	10,632
2009/10	0	4,103	34	0	4,137
2010/11	0	3,864	11,187	0	15,051
2011/12	0	4,117	1,371	0	5,488
2012/13	0	4,096	6,703	0	10,799
2013/14	0	4,288	7,000	0	11,288
2014/15*	0	3,856	150	7,225 (4,5)	11,231
2015/16*	0	3,963	7,550	50 (4)	11,563
2016/17*	0	4,000	7,450	200 (4)	11,650
2017/18*	0	4,007	7,350	300 (4)	11,657
2018/19*	0	4,010	7,350	300 (4)	11,660

*Projected

Notes:

1. 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.
2. A 4,000 AF exchange of untreated MWD water for groundwater credits was arranged with LADWP for WY 2006/07.
3. A 2,000 AF exchange of untreated MWD water for groundwater credits was arranged with LADWP for WY 2008/09.
4. Beginning WY 2014/15, groundwater credits are expected from LADWP in exchange for recycled water delivered from Burbank to the LADWP system.
5. A 7,200 AF exchange of untreated MWD water for groundwater credits was arranged with LADWP in December 2014 for WY 2014/15.

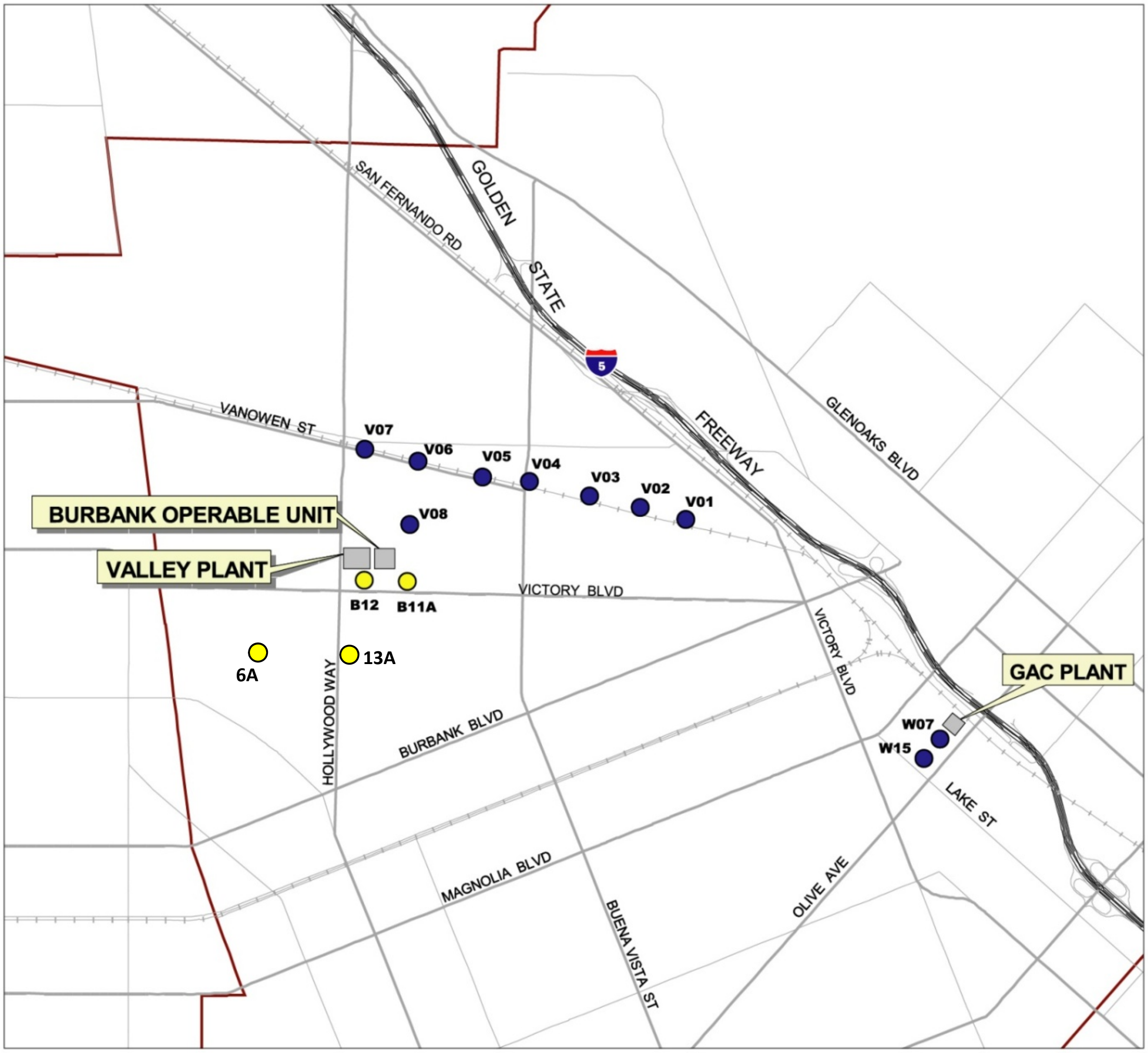


FIGURE 3.1

WELLS AND GROUNDWATER TREATMENT PLANTS

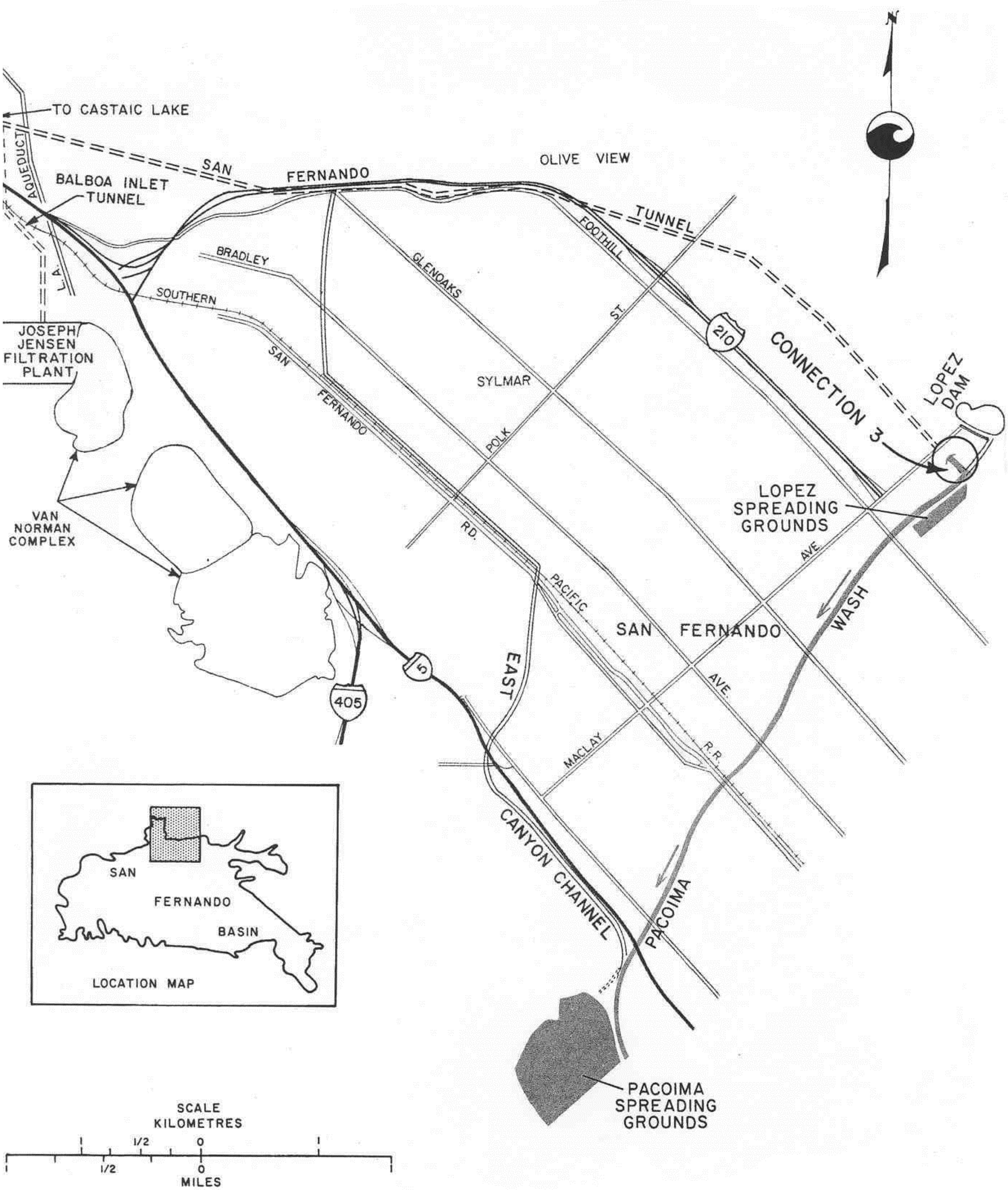


FIGURE 4.1

LOCATION OF MWD UNTREATED WATER CONNECTION

Appendix A

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 (10/1/13 through 9/30/14):

1 AF for non-potable power plant use

WATER QUALITY:

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

DISPOSITION:

Magnolia Power Project
Non-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 (10/1/13 through 9/30/14):

10,148 AF

WATER QUALITY:

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

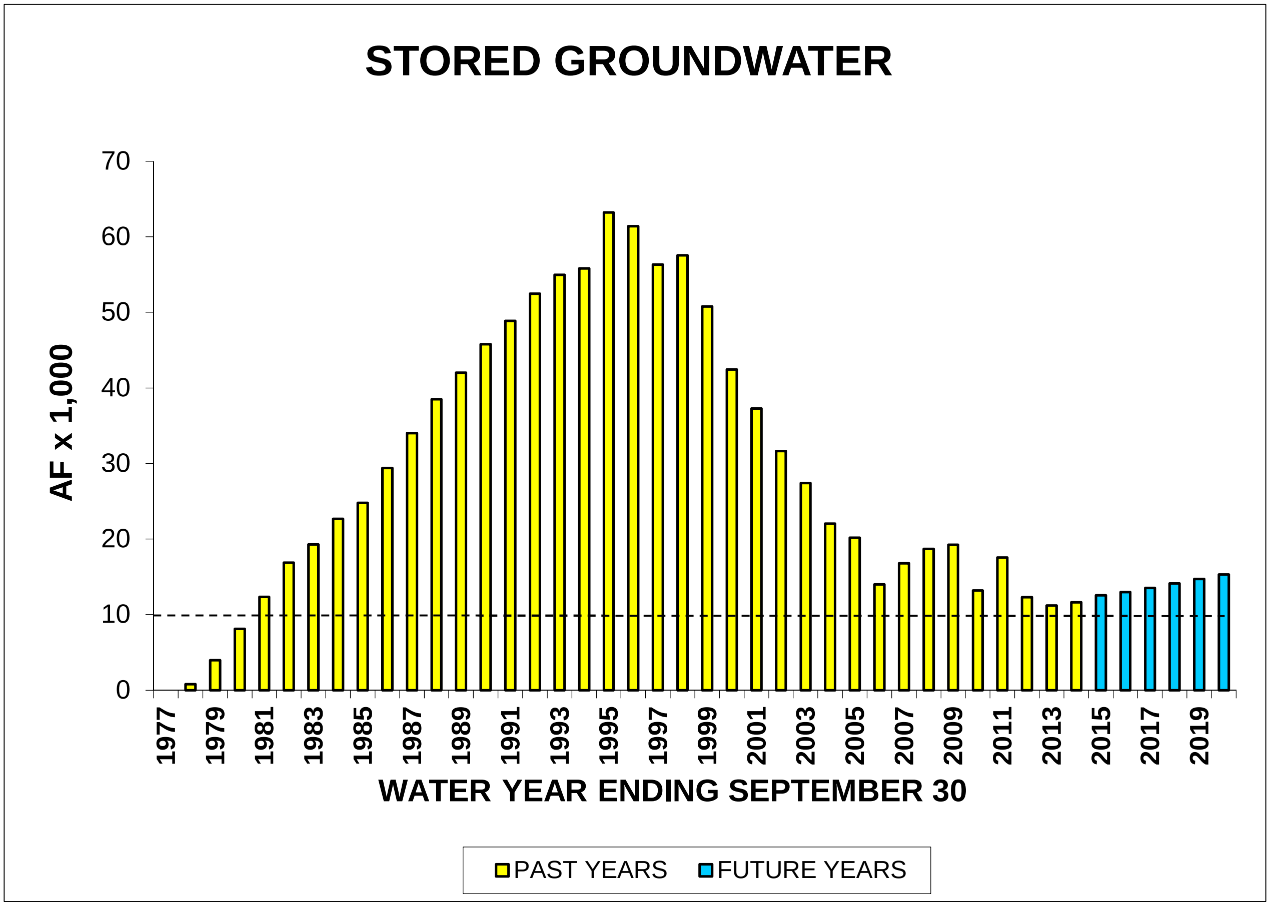
DISPOSITION:

1) Test Water- Waste
2) Operation Water (backwash, etc.) - Waste
3) Burbank Water System-(Potable water after blending)

Appendix B

Stored Groundwater

BURBANK WATER AND POWER
WATER DIVISION
WY 2013/14



NOTES:

- 10,000 AF RECOMMENDED AS BASIN BALANCE. THIS EQUATES TO ABOUT ONE YEAR OF DOMESTIC SYSTEM PRODUCTION IF REPLENISHMENT NOT AVAILABLE FROM MWD.
- STORED WATER IS REDUCED WHEN PRODUCTION EXCEEDS THE RETURN FLOW CREDIT (~4,200 AF) PLUS SPREAD WATER OR PHYSICAL SOLUTION CREDITS.
- 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	20,513	4,103	34	0	10,371	13,208
2010/11	19,322	3,864	11,187	0	10,791	17,530
2011/12	20,584	4,117	1,371	0	10,336	12,305
2012/13	20,480	4,096	6,703	0	11,822	11,190
2013/14	21,442	4,288	7,000	0	10,566	11,603
2014/15	19,280	3,856	7,350	25	10,575	12,564
2015/16	19,813	3,963	7,550	50	10,913	12,976
2016/17	19,999	4,000	7,450	200	10,913	13,539
2017/18	20,035	4,007	7,350	300	10,913	14,133
2018/19	20,050	4,010	7,350	300	10,913	14,728
2019/20	20,060	4,012	7,350	300	10,913	15,321

NOTES:
(1) STORED WATER AS OF OCTOBER 1, 1978
(2) STORED WATER AS OF OCTOBER 1, 1979
(3) EXCLUDES 150 AF 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

2014-15 through 2018-19 Water Years

glendale california

Glendale Water & Power
Water Engineering

141 North Glendale Ave., Level 4
Glendale, CA 91206-4496
Tel: (818) 548-2062 Fax: (818) 240-4754

May 29, 2015

Mr. Richard Slade
ULARA Watermaster
12750 Ventura Blvd., Suite 202
Studio City, CA 91604

Subject: **Annual Pumping & Spreading Plan for Water Years 2014-2018 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 2013-2018. Glendale, as you know, does not have any spreading facilities.

If you have any question or need further information, please do not hesitate to contact my staff, Mr. Leo Chan at (818) 548-3905 or via email at lchan@glendaleca.gov.

Respectfully yours,

Raja Takidin
Senior Civil Engineer

RT/lc

Enclosed

cc: Anthony Hicke, Assistant Watermaster
Michael De Ghetto, Assistant General Manager – Water

File: Cover Letter WaterMaster WY 2014-2018

CITY OF GLENDALE

GROUNDWATER PUMPING AND SPREADING PLAN

WATER YEARS 2014-2018

Prepared By

GLENDALE *WATER & POWER*

May 2015

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Introduction

This report discusses water supplies to the City of Glendale for Water Year 2014-15 and projections in local water resources available to meet future water demands and to reduce Glendale dependency on imported water. This information is used by the ULARA Watermaster and a wide group of individuals and organizations including Glendale's City Manager and Council Members, regulatory agencies and others interested in the future conditions of Glendale's water resources.

Executive Summary

Glendale receives its groundwater supply from San Fernando Groundwater Basin and Verdugo Groundwater Basin. Table 1 illustrates the actual (in bold letters) and projected pumping activities in the two basins between 2014-15 and 2018-19. Glendale currently does not have any spreading facility.

TABLE 1
ACTUAL & PROJECTED PUMPING ACTIVITIES IN WATER YEAR 2014-15 - 2018-19
(Acre Feet per Year)

Source	2014-15*	2015-16	2016-17	2017-18	2018-19
San Fernando Basin					
Glendale OU	***7,349***	*7,300*	*7,300*	*7,300*	*7,300*
Forest Lawn Memorial Park	***400***	*400*	*400*	*400*	*400*
Grayson Power Plant	**20**	20	20	20	20
SF Basin Total	**7,769**	7,720	7,720	7,720	7,720
Verdugo Basin	**1,183**	1,669	3,856	3,856	3,856

** First half of the year was based on actual production data.*

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.

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 2013-14, the City has a storage credit of 43,289 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 5,250[(1)] 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 8 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: 2012-13 Water Year ULARA Watermaster Report)*. This credit ranges from about 4,500 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.

Footnote 1. State Water Resources Control Board – Division of Drinking Water (DDW) approved to increase the overall treatment plant capacity from the original 5,000 gpm to 5,250 gpm in October 2008.

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. Since the early 1990s, 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 Plant. 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 5,250 gpm Glendale Water Treatment Plant to remove the VOC; piping to convey the untreated groundwater from the wells to the water treatment plant; a system to convey treated 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 Water Resources Control Board – Division of Drinking Water ("DDW") (formally known as the California Department of Public Health) 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 hexavalent chromium ("Cr(VI)") 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 Cr(VI) in the water. This source is expected to provide about 7,300 AFY to the City, which will meet about twenty-six percent (26%) 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 steam and gas combustion turbines 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, 2013, has 43,289 AF in accumulated pumping credits in the San Fernando Basin. In order to achieve 7,720 AF of San Fernando Basin productions per year, Glendale must utilize its return flow credit of 5,500 AF per year and 2,220 AF of its accumulated pumping credits. Additional stored groundwater credit of 14,160 AF could be used to meet unexpected demands or in cases of emergency. The usage of the additional amounts of stored 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 (CVWD) also has water rights of 3,294 AFY and is the only other entity allowed to extract water from the Verdugo Basin.

Use of the Verdugo Basin 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 1995. VPWTP treats water pumped from 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. The water is then pumped into the City's distribution system. The plant was originally designed to treat 1150 gpm, however, at VPWTP startup in July of 1995 the flow was 550 gpm and over the years, the production of VPWTP has slowly declined. Due to the low production, the Verdugo Wells and the VPWTP were temporarily turned off on September 17, 2013.

In 2011, the City completed the rehabilitation of the Foothill Well and the drilling of the Rockhaven Well in the Montrose area to increase its extraction capacity from the Verdugo Basin. The Rockhaven Well is currently inactive.

The development of the Rockhaven Well and rehabilitation of the Verdugo Wells will be further discussed in the Section – Future Goals.

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 past five water years ended September 30, 2014, water deliveries from Metropolitan averaged 16.0 million gallons per day (approximately 17,925 acre feet per year), which constituted seventy-four percent (67%) 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 eleven (11) 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. The total area served is nearly 5,200 square miles. The service area includes portions of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. 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 fourteen member agency cities 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 (SWP) 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. The State Water Contract, under a 100 percent allocation, provides Metropolitan 1,911,500 acre feet of water per year. Drought conditions in fiscal year 2013/14 resulted in a reduced supply of 885,415 acre feet of available water through the SWP System.

Due to the low precipitation during the second half of the fiscal year, the final SWP allocation for 2013 was at 35 percent. Continued record-dry conditions resulted in a 2014 SWP allocation of 5 percent as of June 30, 2014. *(Source: MWDSC Annual Report 2014)*

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, severe droughts in the Colorado River Basin have reduced water supplies.

During Fiscal Year 2013-14, no surplus was available to Metropolitan, and California was limited to its basic appointment of 4.4 million AF. Metropolitan conveyed 1,117,578 AF in its Colorado River Aqueduct during the fiscal year. *(Source: MWDSC Annual Report 2014)*

3.4. 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 Integrated Water Resources Plan (IRP) and the Water Shortage and Drought Management Plan (WSDM). 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.

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.

As of September 30, 2014, Glendale has a total of fifty-two (52) recycled water users. These include a landfill, two golf courses, two memorial parks, six schools, seven 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 water year 2013-2014, no new account was added to the recycled water system. 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.

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	4,500 - 5,400	7,769	7,736
Verdugo Basin	3,856	946	3,097
Recycled Water	10,000	1,827	2,167

Past Water Use and Trends

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 City of Los Angeles vs. City of San Fernando 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 was allowed to accumulate the groundwater storage credits that could be used in the future. Glendale's storage account balance was 43,290 AF as of October 1, 2013.

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 was able to better utilize its rights to the San Fernando Basin water supplies accumulated for many years started in 2000. 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 – Glendale Operable Unit (GOU) is the last in a series of EPA-required cleanup facilities for VOC and is now complete.

The GOU is comprised of a treatment plant (the GWTP), eight (8) groundwater extraction wells, a pumping plant, a disinfection facility, and associated piping. The facility was 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. In December 2000, the City started operating the GOU. But due to the Cr(VI) issue, only a small quantity was initially pumped and delivered. Full operation started on January 6, 2002.

The wells were being pumped and blended in a manner to limit Cr(VI) concentrations to achieve the City's target of 5 µg/L. The City has been managing a major research effort on identifying viable treatment technologies for the removal of Cr(VI) from its pumped groundwater. In 2010, the City constructed the Weak Base Anion (WBA) Chromium Removal facility to remove Cr(VI) from groundwater produced by GOU Well GS-3 using WBA exchange technology. The City also constructed a 100-gpm demonstration scale facility next to the Glendale Water Treatment Plant; this plant uses reduction, coagulation and filtration (RCF) technology with microfiltration as an enhancement. These facilities have been effective in removing Cr(VI) in the groundwater to concentration below 5 µg/L. The Hexavalent Chromium Removal Research Project Report was published on February 28, 2013. The new State MCL of 10 µg/L for Cr(VI) became effective on July 1, 2014. With the operation of the WBA & RCF facilities and blending with Metropolitan imported water, Glendale continues to meet the goal of 5 µg/L entering the distribution system.

In the Verdugo Basin, Glendale currently has six (6) active production wells and a pick-up system (infiltration galleries), along with the VPWTP. In 2013, the City completed the rehabilitation of the Glorietta Wells 3 & 4. The four active wells referred to as Glorietta Wells 3, 4 & 6 and Foothill Well produce about 1,393 AFY in Water Year 2013-14 and account for about five percent (5%) of Glendale's total potable water supply. The declined water levels have significantly reduced supplies for this source, and accordingly, the City has reduced its projections of supply from this source as well. Due to the low production from the Verdugo Wells A & B, the two wells and the VPWTP were temporarily shut down since September 17, 2013 pending well performance evaluation and rehabilitation. The location of the VPWTP and existing wells are shown on Figure 1.

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 2014, GWP and Glendale Public Works completed the design of recycled water pipeline extension project to the Public Works service yard and constructed with LADWP a pipeline that provides recycled water for the Bette Davis Park. The two new facilities were estimated to increase the recycled water use by 10 AF per year.

<u>Glendale's Ability To Meet Demands</u>

Over the past two years, there has been a sizeable increase in the development of multi-family mix-use buildings in the City. Reliability of water supplies is a key goal in the operation of Glendale's water distribution system to serve the current and forthcoming water demand. In Water Year 2013-14 Glendale imported approximately 71 percent of its potable water supply from Metropolitan. Consequently, the reliability of Metropolitan water supplies to meet Glendale water needs becomes exceptionally crucial. Glendale continues to maximize local groundwater production and work closely with Metropolitan on imported water delivery to meet the needs of our citizens.

Future Goals

The City has been expanding the use of its local water supplies with the operation of GWTP, increase groundwater extraction of Verdugo Basin, and the use of recycled water. To maintain the reliability of the GWTP water supply, the City has continued to pursue an aggressive research program to identify viable treatment technologies for the removal of Cr(VI) from the pumped groundwater. Two chromium research studies – the RCF Enhancement Study and AquaNano Resin Study funded by the MWD Foundational Actions Funding Program and the California Prop 50, respectively, will be conducted in the fall of year 2014 through spring 2015.

The City will also be working with the DDW and the GRG to construct a full-scale chromium treatment facility at the GWTP in dealing with the Cr(VI) at the GN-3 Well and the ninth GOU well in the City of Los Angeles. Both facilities are expected to be in full service in February 2016.

The City's Water Department (GWP) has been actively trying to increase groundwater production in the Verdugo Basin. In April 2011, GWP completed the installation of the new Rockhaven Well. However, due to nitrate in the groundwater, the Rockhaven Well was not able to be put in service. In 2014, GWP and CVWD applied and was granted a grant through the Greater Los Angeles IRWM Group, as a joint project to construct and develop the Rockhaven Well. Groundwater extracted from the well will be conveyed to CVWD's Nitrate Removal Treatment Facility at Glenwood for nitrate removal and disinfection and serve the La Crescenta-Montrose area . The extracted volume will be accounted as part of the adjudicated water right of Glendale and will be reported to the ULARA Watermaster on a monthly basis. GWP entered into agreement With CVWD for the construction and operation of Rockhaven Well which is expected to be completed and in operation by January 2016.

Due to the declining water level of the Verdugo Basin resulted from the current drought and the conditions of the existing wells, the groundwater productions were gradually reducing from these wells. In 2013, GWP completed the rehabilitation of Glorietta Wells 3 & 4. Currently, GWP has scheduled the rehabilitation of Glorietta Well 6 and Verdugo Wells A & B in the fiscal year 2015-16.

As California entered the third consecutive dry-year in 2013, GWP has shifted its focus to the expansion and improvement of the recycled water system. In 2014, GWP and Glendale Public Works initiated the recycled water pipeline extension project to the Public Works service yard and had worked with LADWP to provide recycled water for the Bette Davis Park. The two new facilities are expected to be served 10 acre feet per year ("AFY") of recycled water. GWP is currently working with City of Pasadena to supply a projected volume of 3,100 AFY of recycled water to Pasadena via the existing Glenoaks 1666 Tank. For the next several years, GWP is planning for at least four major capital improvement projects to extend the recycled water supply to (1) several Glendale Unified School District facilities, (2) Camino San Rafael & Chevy Oaks, (3) the Chevy Chase Golf Course, and (4) the Glendale T Project. The total estimated recycled water usage from these improvements are 340 AFY. The City continues 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 water year 2013-2014, the City imported 71% of the total water used from the Metropolitan, which was 1% higher than projected, to compensate the reduction of local water supply during the well rehabilitation of the GOU wells. Given the current drought conditions and three planned well rehabilitations in the Verdugo Basin plus two well rehabilitations in the San Fernando Basin, it is the goal of the City's Water Department to maintain the City's water purchase from Metropolitan to less than seventy percent (70%) of the total water use in water year 2015-16.

FIGURES

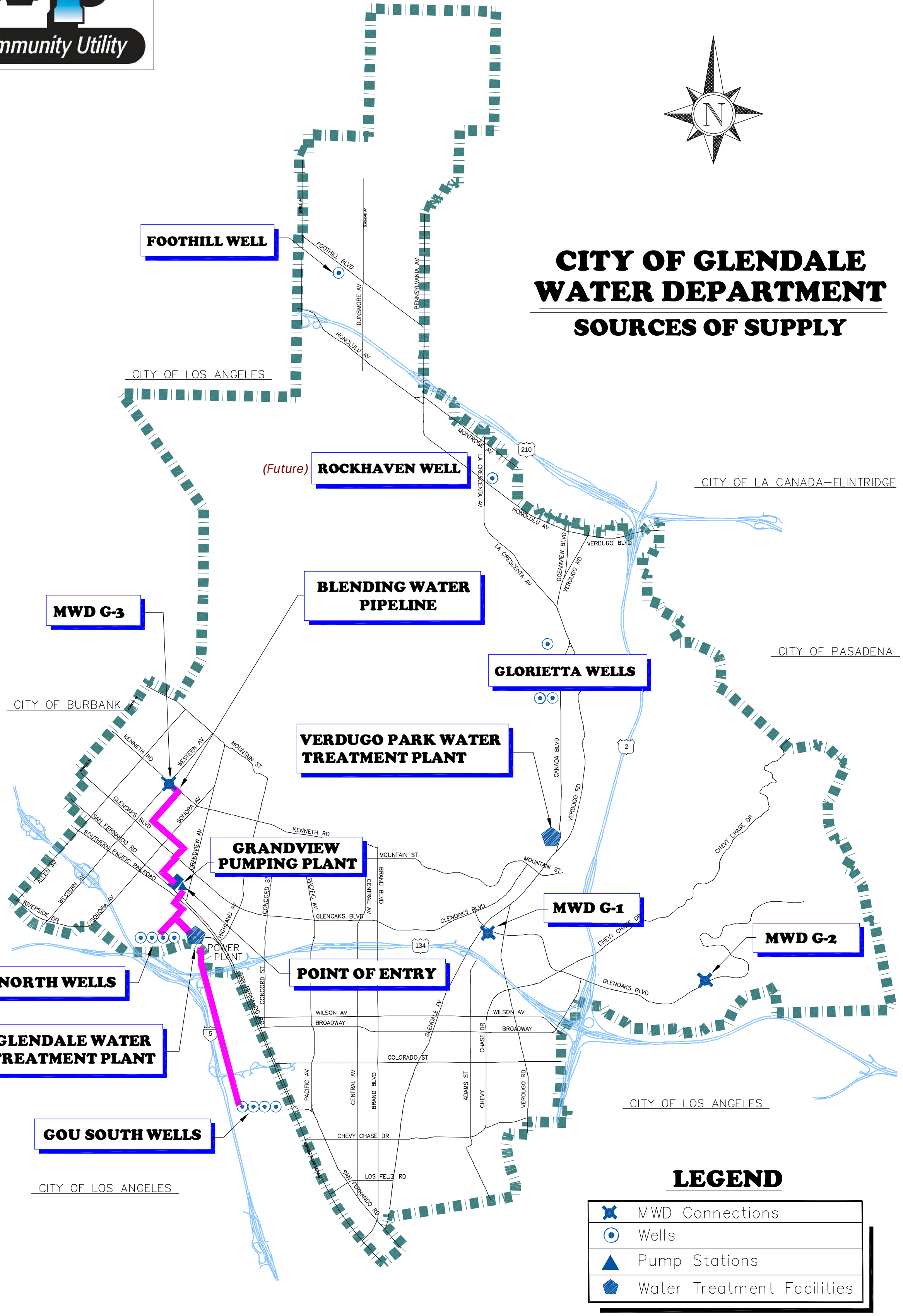
City of Glendale Water & Power

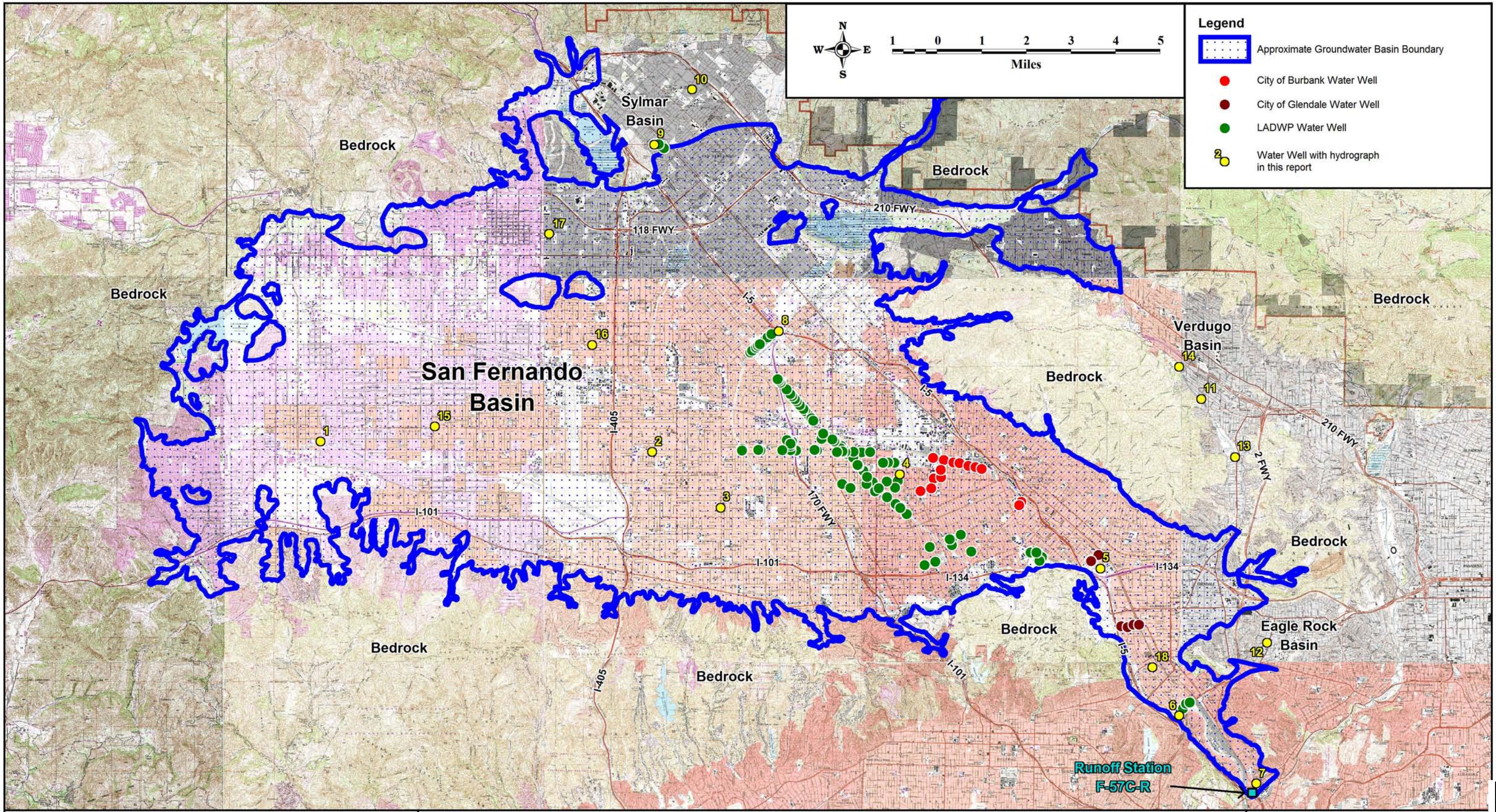
Your Trusted Community Utility

FIGURE 1

CITY OF GLENDALE WATER DEPARTMENT

SOURCES OF SUPPLY





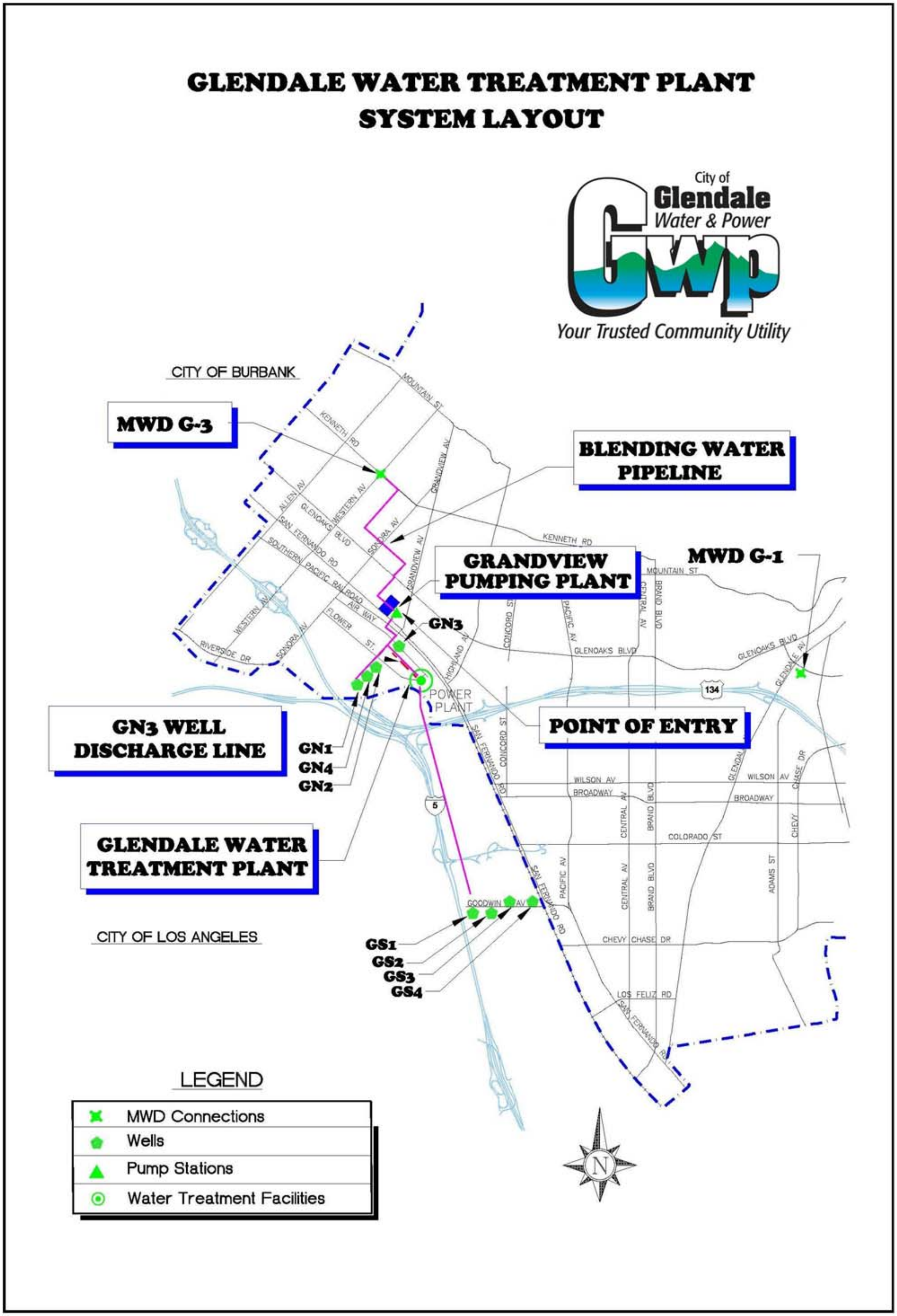
2012-2013 Water Year
ULARA Wastermaster Report

Upper Los Angeles River Area:
San Fernando Groundwater Basin

PLATE 1A

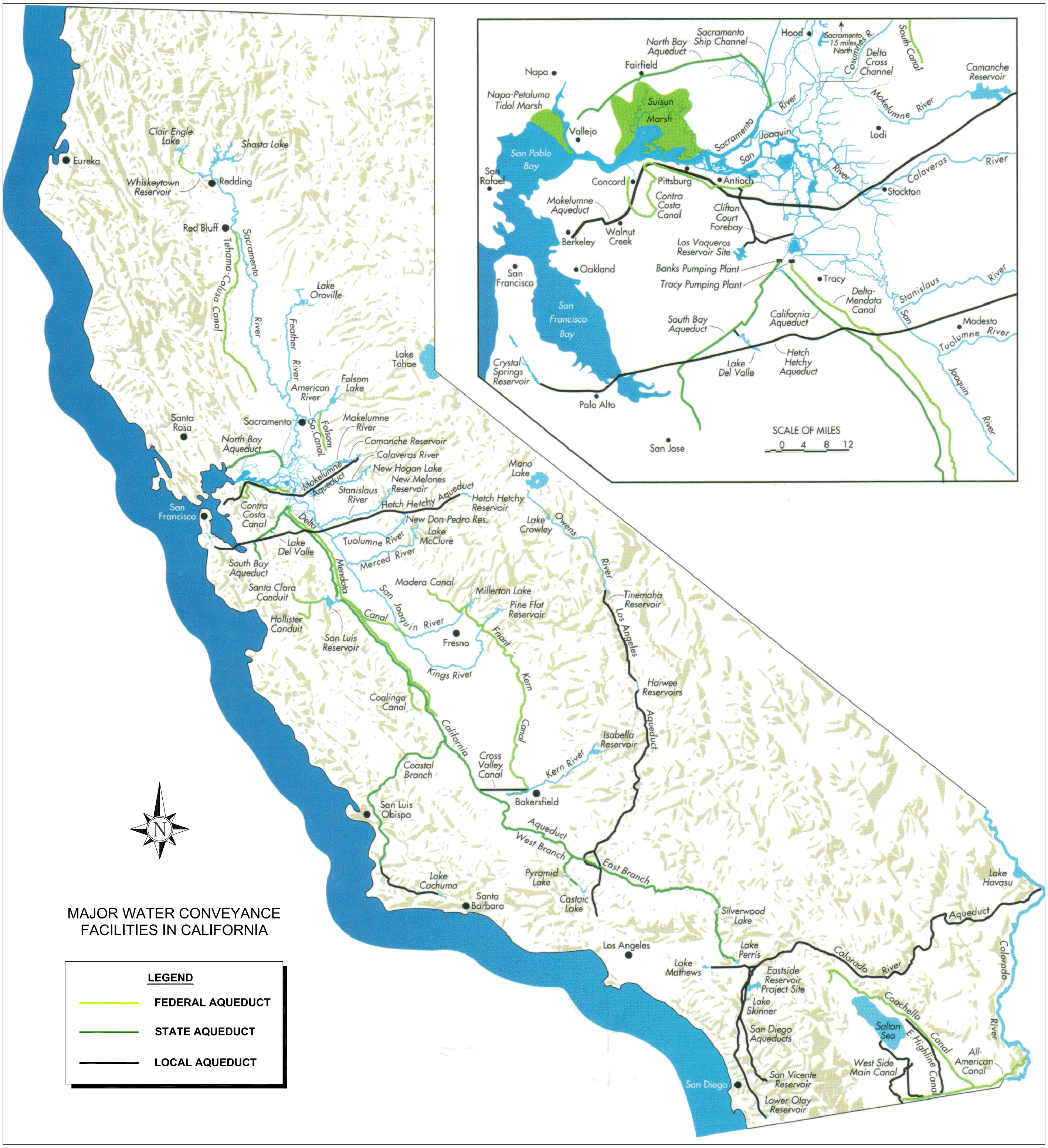
FIGURE 2

FIGURE 3



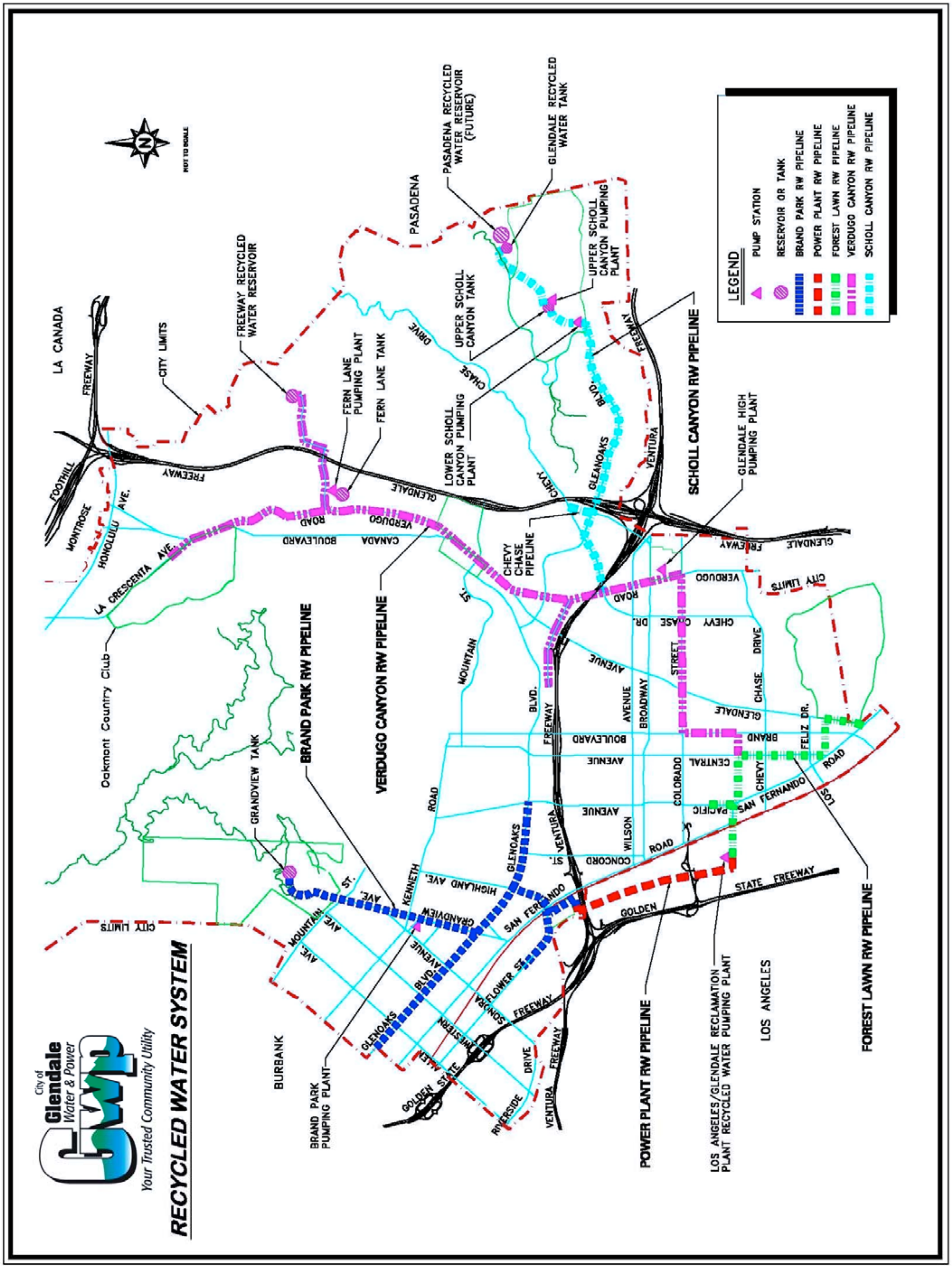
GLENDALE WATER TREATMENT PLANT
SYSTEM LAYOUT
City of Glendale Water & Power
Your Trusted Community Utility
CITY OF BURBANK
MWD G-3
BLENDING WATER PIPELINE
GRANDVIEW PUMPING PLANT
MWD G-1
GN3
POWER PLANT
POINT OF ENTRY
GN3 WELL DISCHARGE LINE
GN1
GN4
GN2
GLENDALE WATER TREATMENT PLANT
CITY OF LOS ANGELES
GS1
GS2
GS3
GS4
MOUNTAIN ST
KENNETH RD
GRANDVIEW AV
WESTERN AV
ALLEN AV
GLENOAKS BLVD
SONORA AV
SAN FERNANDO RD
SOUTHERN PACIFIC RAILROAD
AIR WAY
FLOWER ST
RIVERSIDE DR
HIGHLAND AV
CONCORD ST
PACIFIC AV
CENTRAL AV
BRAND BLVD
GLENDALE AV
134
5
WILSON AV
BROADWAY
COLORADO ST
CHASE DR
CHEVY
ADAMS ST
GOODWIN AV
CHEVY CHASE DR
LOS FELIZ RD
N
LEGEND
MWD Connections
Wells
Pump Stations
Water Treatment Facilities

FIGURE 4



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

FIGURE 5



City of Glendale Water & Power
GWP
Your Trusted Community Utility
RECYCLED WATER SYSTEM
NOT TO SCALE
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
BRAND PARK RW PIPELINE
VERDUGO CANYON RW PIPELINE
SCHOLL CANYON RW PIPELINE
POWER PLANT RW PIPELINE
FOREST LAWN RW PIPELINE
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
CHEVY CHASE PIPELINE
GLENDALE HIGH PUMPING PLANT
Oakmont Country Club
GRANDVIEW TANK
BRAND PARK PUMPING PLANT
LOS ANGELES/GLENDALE RECLAMATION PLANT RECYCLED WATER PUMPING PLANT

FIGURE 6

CITY OF GLENDALE

Recycled Water Account Information

NO.	PROJECT NAME	ADDRESS	ACCOUNT NUMBER	NO. OF METER	DELIVERY DATE	TYPE OF USE
		FOREST LAWN PROJECT (A - 1)				
1	City of Glendale	1600 S Brand Boulevard	20241950-00	1	1995	Irrigation
2	Forest Lawn Memorial Park	1712 S Glendale Avenue	31192010-00	1	1992	Irrigation
2	Forest Lawn Memorial Park	3690 San Fernando Road	50009222-00	1	1992	Irrigation
3	Silver Crest Homes	316 W Windsor Road	50001202-00	1	2000	Irrigation
4	Cerritos Elementary School	120 E Cerritos Avenue	50006840-00	1	2006	Irrigation
4	Cerritos Elementary School	1715 S Glendale Avenue	50008277-00	1	2006	Irrigation
5	Cerritos School Park	3690 San Fernando Road	50008056-00	1	2007	Irrigation
6	Edison Elementary & Pacific Park	501 Riverdale Drive	50005134-00	1	Mar 2007	Irrigation
		POWER PLANT PROJECT (A - 2)				
7	CalTrans	943 W Doran Street	22516764-00	1	1978	Irrigation
8	Grayson Power Plant	800 Air Way	50005630-00	1	1978	Cooling Towers
9	Public Works	non metered	no account #	0		Irrigation
10	Glendale Water & Power - UOC	800 Air Way	50012227-00	1	2010	
		BRAND PARK PROJECT (A - 3)				
11	Glenoaks Median (9 meters)	2008 W Glenoaks Boulevard	12356670-00	1	1996	Irrigation
11	Glenoaks Median (9 meters)	1830 W Glenoaks Boulevard (at Irving)	12382290-00	1	1996	Irrigation
11	Glenoaks Median (9 meters)	1108 W Glenoaks Boulevard	12513010-00	1	1996	Irrigation
11	Glenoaks Median (9 meters)	978 W Glenoaks Boulevard	12520700-00	1	1996	Irrigation
11	Glenoaks Median (9 meters)	720 W Glenoaks Boulevard	12576220-00	1	1996	Irrigation
11	Glenoaks Median (9 meters)	618 W Glenoaks Boulevard	12581960-00	1	1996	Irrigation
11	Glenoaks Median (9 meters)	532 W Glenoaks Boulevard	12583040-00	1	1996	Irrigation
11	Glenoaks Median (9 meters)	1628 W Glenoaks Boulevard	22453700-00	1	1996	Irrigation
11	Glenoaks Median (9 meters)	1400 W Glenoaks Boulevard	22482860-00	1	1996	Irrigation
12	Brand Park	1700 W Mountain Street	31091775-00	1	1997	Irrigation
13	Pelanconi Park	905 Cleveland Road	31092075-00	2	1996	Irrigation
14	Grandview Memorial Park	1341 Glenwood Road	32191200-02	2	2001	Irrigation
15	Disney Complex (Dual Plumbed-Future)	1101 Flower Street	50006720-00	1	2007	Irrigation
15	Disney Complex (Dual Plumbed-Future)	1201 Flower Street	50006722-00	1	2007	Irrigation
16	San Fernando Landscape Project	5775 San Fernando Road	50009365-00	1	Jan 2009	Irrigation
17	Fairmont Street Extension Project	907 Flower Street	50012000-00	1	Mar 2010	Irrigation
18	Walt Disney Co.	900 Grand Central Ave	50018286-00	1	Sep 2012	Irrigation
18	Walt Disney Co.	1200 Grand Central Ave	50018254-00	1	Aug 2012	Irrigation
19	Power Plant	630 Kellogg Ave	33091005-00	1	May 2007	Irrigation
20	Glendale Narrow Riverwalk	900 Flower St.	50010892-00	1	Feb 2013	Irrigation
		VERDUGO SCHOLL PROJECT (B)				
21	Colorado Blvd - Parkway Irrigation	815 E Colorado Street	31492805-00	1	1997	Irrigation
21	Colorado Blvd - Parkway Irrigation	1311 E Colorado Street	10512470-00	1	1997	Irrigation
21	Colorado Blvd - Parkway Irrigation	1401 E Colorado Street	10511248-00	1	1997	Irrigation
22	CalTrans	1970 E Glenoaks Blvd (E/S,W/S I2)	10661215-00	2	1995	Irrigation
22	Caltrans	406 N Verdugo Rd (at Chevy Chase Dr)	10915398-00	1	1995	Irrigation
22	Caltrans	709 Howard Street (at Monterey Road)	11621385-00	1	1995	Irrigation
22	Caltrans	2000 E Chevy Chase Drive (at Harvey)	20613615-00	1	1995	Irrigation
23	741 S. Brand Median	741 S Brand Boulevard (Median)	10228900-00	1	1995	Irrigation
24	Montecito Park	2978 N Verdugo Road (at Sparr)	21026940-01	1	1995	Irrigation
25	N. Verdugo Rd Median/La Cresenta Ave	3220 N Verdugo Road/Median/ La Crescenta Avenue *OPP	21130300-00	1	1996	Irrigation
26	Verdugo Rd/Canada (North Median)	3021 N Verdugo/Canada Median	21452650-00	1	1996	Irrigation
27	Verdugo Rd/Canada South Overpass	Verdugo/Canada (South) Overpass	21615900-01	1	1995	Irrigation
28	Parque Vaquero	1285 N Verdugo Road	21680110-00	1	1998	Irrigation

CITY OF GLENDALE

Recycled Water Account Information

NO.	PROJECT NAME	ADDRESS	ACCOUNT NUMBER	NO. OF METER	DELIVERY DATE	TYPE OF USE
29	701 N. Glendale Ave - Median @ Monterey Rd	701 N Glendale Avenue (Median)	21688594-00	1	1995	Irrigation
30	Civic Auditorium	1401 N Verdugo Road	31091125-00	1	1996	Irrigation
31	Sports Complex	2200 Fern Lane	31091370-00	1	1998	Irrigation
32	Adult Recreation Center	201 E Colorado Street	31092175-00	1	1995	Irrigation
33	Glenoaks Park	2531 E Glenoaks Boulevard	31092325-00	1	1995	Irrigation
34	Scholl Canyon Park	2849 E Glenoaks Boulevard	31092375-00	1	1996	Irrigation
35	Scholl Canyon Ballfield	3200 E Glenoaks Boulevard	31092600-00	1	1997	Irrigation
36	Glendale High School	1440 E Broadway	31691142-00	1	1995	Irrigation
37	Wilson Junior High School	1220 Monterey Road	31692740-00	1	1995	Irrigation
38	Glendale Adventist Hospital	1520 E Chevy Chase Drive	31791090-00	1	1997	Irrigation / Cooling Towers
39	Glenoaks Elementary School	2015 E Glenoaks Boulevard	31791182-00	1	1998	Irrigation
40	Glendale Community College	1500 N Verdugo Road	31891780-00	2	1996 & 2004	Irrigation / Toilet Flushing
41	Oakmont Country Club	3100 Country Club Drive	31893000-00	1	1996	Irrigation
42	Central Library	222 E Harvard Street	32093752-00	2	1995	Irrigation
43	Armory	220 E Colorado Street	32290830-00	1	1996	Irrigation
44	Scholl Canyon Golf Course	3800 E Glenoaks Boulevard	33093165-01	1	1998	Irrigation
45	Scholl Canyon Landfill (PW)	3798 E Glenoaks Boulevard	33093180-01	2	1996	Irrigation/ Soil Compaction/ Dust Control
46	Scholl Canyon Landfill (LACSD)	2847 E Glenoaks Boulevard	50008944-00	1	1997	Irrigation/ Soil Compaction/ Dust Control
47	Public Works (Scholl Canyon)	3798 E Glenoaks Boulevard	50008945-00	1	1996	Irrigation
47	Public Works (Scholl Canyon)	3798 E Glenoaks Boulevard	50009170-00	1	1996	Irrigation
48	Fern Lane (Freeway Tank + Median)	1926 Fern Lane	50005823-00	1	1997	Irrigation
49	Glendale Retirement Home	1551 E Chevy Chase Drive	50008949-00	1	Jul-09	Irrigation
50	Americana at Brand LLC	233 S Brand Boulevard	50009495-00	1	Apr-09	Irrigation
51	Monterey Community Garden	870 Monterey Road	50010690-00	1	Aug-09	Irrigation
52	City of Glendale - CCBG	827 Monterery Road	50012392-00	1	Jan-11	Irrigation

FIGURE 7

CITY OF GLENDALE

FUTURE RECYCLED WATER USERS

***As of* September 30, 2014**

	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)*	Completed	NO	5	*Irrigation*
7	Americana Orange Extension (Nordstorm) **(PROPOSED for 2012)**	Design	NO	5	*Irrigation*
8	Los Feliz Mixed-Used **(Proposed for 2012)**	Design	NO	5	*Irrigation*
9	Glendale Triangle (3900 San Fernando Road) **(Proposed for 2012)**	Planning	NO	5	*Irrigation*
10	Glendale Tropico South Project (3901 San Fernando Road)	Design	NO	5	*Irrigation*
11	Tropico Apartments (435 W. Los Feliz)	Design	NO	5	*Irrigation*
12	625-629 Pacific	Design	NO	5	*Irrigation*
13	Link Project (3901-3915 San Fernando Rd)	Design	NO	5	*Irrigation*
14	525 W. Elk	Design	NO	5	*Irrigation*
15	124 E. Colorado St & 203 W. Elk Ave	Design	NO	5	*Irrigation*
	POWER PLANT PROJECT				
	VERDUGO SCHOLL PROJECT				
16	John Marshall School*	Completed	NO	5	*Irrigation*
17	Fremont Elementary School*	Planning Stage	NO	5	*Irrigation*
18	Polygon Homes Housing Tracks (Camino San Rafael)*	Planning Stage	NO	85	*Irrigation*
19	Chevy Oaks Homes*	Planning Stage	NO	25	*Irrigation*
20	Chevy Chase Country Club*	Planning Stage	NO	100	*Irrigation*
21	Building - 111 N. Brand*	Planning Stage	NO	5	*Irrigation*
22	Building - 295 E. Garfield*	Planning Stage	NO	10	*Irrigation*
23	Building - 800 N. Brand (Nestle)	Planning Stage	NO	10	*Cooling Towers*
24	Caltrans Fwy 210	Planning Stage	NO	20	*Irrigation*
25	Residential Building -720 S. Maryland	Design Stage	NO	5	*Irrigation*
26	3-Story Multi Use - 415 E. Broadway	Construction	NO	5	*Irrigation*
27	Doran Garden (Mixed Use) 331 W. Doran **(Completed in March 2012)**	Construction	NO	5	*Irrigation*
28	Building - 400 N Brand*	Completed	NO	10	*Flushing Toilets*
29	Building - 450 N Brand*	Completed	NO	10	*Flushing Toilets*
30	Police Building - Isabel Street*	Completed	NO	5	*Flushing Toilets*
31	Building - 611 N Brand*	Completed	NO	10	*Flushing Toilets*
32	Building - 207 Goode Ave*	Completed	NO	10	*Flushing Toilets*
33	Fire Station No. 21*	Completed	NO	10	*Irrigation*
34	Mayor's Bicentennial Park	Planning Stage	NO	5	*Irrigation*
35	Carr Park	Planning Stage	NO	5	*Irrigation*
36	Glorietta Pump Station	2002	NO	5	*Irrigation*
37	Monterey Road Median - WJH	2002	NO	1	*Irrigation*
38	Deukmejian Wilderness Park	Planning Stage	NO	200	*Irrigation*
39	Crescenta Valley Park	Planning Stage	NO	20	*Irrigation*
40	Lutheran School of the Foothills	Planning Stage	NO	5	*Irrigation*
41	Saint James the Less School	Planning Stage	NO	5	*Irrigation*
42	Dunsmore Park/Elementary	Planning Stage	NO	25	*Irrigation*
43	Hillside Irrigation (Camino San Rafael)	Planning Stage	NO	20	*Irrigation*
44	Montrose Community Park	Planning Stage	NO	15	*Irrigation*
45	Verdugo Hills Hospital	Planning Stage	NO	30	*Irrigation*
46	222 Glendale Ave (Orange Grove)	Planning Stage	NO	5	*Irrigation*
47	Cedar Mini Park*	Completed	NO	5	*Irrigation*
48	Sleepy Hollow HOA	Planning Stage	NO	5	*Irrigation*
49	Verdugo Woodlands Elementary School	Planning Stage	NO	5	*Irrigation*
50	Maryland Mini Park **(Cancelled)**	Design Stage	NO	5	*Irrigation*
51	Habitat for Humanity - 711 N. Kenwood*	Completed	NO	5	*Irrigation*

CITY OF GLENDALE

FUTURE RECYCLED WATER USERS

***As of* September 30, 2014**

	FUTURE RECYCLED WATER USERS	Anticipated	User	Quantity	Type of
	PROJECT	***Delivery Date***		***AFY***	***Use***
52	Habitat for Humanity - 625 Geneva Street* **(To be completed in 2014 FUTURE)**	Construction	NO	5	*Irrigation*
53	Multi-Family - 220 E. Broadway **(2011 for future connection)**	Completed	NO	5	*Irrigation*
54	North Central Apartments (500 & 600 block of N Central Ave)	Design Stage	NO	5	*Irrigation*
55	4201 Pennsylvania	Design Stage	NO	5	*Irrigation*
56	500 N. Central Avenue	Design Stage	NO	5	*Irrigation*
57	125 N. Cetnral & 318 W. Wilson	Design Stage	NO	5	*Irrigation*
58	Colorado Paseo	Final Design	NO	5	*Irrigation*
	BRAND PARK PROJECT				
59	Homestead Studio Suites (1377 W. Glenoaks Blvd)	Completed	NO	5	*Irrigation*
60	Toll Jr High*	Design	NO	10	*Irrigation*
61	Hoover High School*	Design	NO	21	*Irrigation*
62	Keppel High School*	Design	NO	10	*Irrigation*
63	Disney Campus*	Planning Stage	NO	80	*Irrigation / Flushing Toilets*
64	Dreamworks - Flower Street **(Backflow Issue-Not Connected)**	Completed	NO	20	*Irrigation*
65	Disney Child Care Center (1500 Flower Street)*	Completed	NO	10	*Irrigation*
66	Disney Landscape - 1401 Flower Street*	Completed	NO	10	*Irrigation*
67	Grandview Condos	Design Stage	NO	5	*Irrigation*
68	Griffith Manor Park* **(2011 for future connection)**	Completed	NO	5	*Irrigation*
69	Caltrans I-5	Planning Stage	NO	30	*Irrigation*
70	Public Works - Street Sweeping/Yard **(to be completed in 2014)**	Design Stage	NO	20	*Street Sweeping*
71	GWP-UOC - Airway	Design Stage	NO	10	*Irrigation / Flushing Toilets*
72	Disney GCAT	Design Stage	NO	10	*Irrigation / Flushing Toilets*
73	Public Storage (5500 San Fernando Rd)	Design Stage	NO	5	*Irrigation*
	TOTAL			***1083***	
	** RW main service not yet available.*				
	*** Pasadena and Los Angeles Demand not included*				

APPENDIX D

CITY OF SAN FERNANDO

PUMPING AND SPREADING PLAN

2014-15 through 2018-19 Water Years

CITY OF SAN FERNANDO

GROUNDWATER PUMPING AND SPREADING PLAN

OCTOBER 1, 2014 TO SEPTEMBER 30, 2019

2014-2015 Water Year

Prepared by:

Public Works Department

Water Division

117 Macneil Street

San Fernando, California 91340

May 2015

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 ± 10 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: 2125 GPM

2. ***Well 4A***
   Location: 12900 Dronfield Avenue, Sylmar
   Capacity: 375 GPM

3. ***Well 3***
   Location: 13003 Borden Avenue, Sylmar
   Capacity: 1200 GPM

   This well shown 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: 900 GPM

   This well was placed on "inactive status" with the Department of Public Health Services and has been physically disconnected from the water system. Plans are to activate this well in 2015 and install a new Envirogen ion exchange nitrate removal unit to be located at our lower reservoir site.

C. Quantity (Acre-Feet) of Water Pumped From Each Well (2013-2014)

1.	Well 2A	2,969.89
2.	Well 3	.64
3.	Well 4A	381.70
4.	Well 7A	0
	Total	3,352.23

D. Wells Groundwater Level Data

1.	Well 2A	1078.5 Taken 4/13 (Transducer out of service)
2.	Well 3	1095.2 Taken 12/14
3.	Well 4A	1082.1 Taken 12/14
4.	Well 7A	1088.3 Taken 11/14

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 6,810 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 3,405 acre-feet per year.

A stipulation approved by the Court May 01, 2013 allows for a temporary increase in the safe yield of the Basin to 7,140 AF/Y beginning October 1, 2012. Therefore, San Fernando and Los Angeles are now allowed to each pump approximately 3,570 acre-feet per year, for the next five years (2011-12 through 2016-17)

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 2011-12 through 2015-16 water years the City of San Fernando has a "frozen" water credit of 404 acre feet.

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

(Acre – Feet)

FY	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
DEMAND											
WELLS	3,473	3,143	3,082	3,202	3,279	3,352	2,736	2,900	2,900	2,900	2,900
MWD	0	51	18	106	82	9	100	0	0	0	0
TOTAL	3,473	3,194	3,100	3,308	3,361	3,361	2,836	2,900	2,900	2,900	2,900
ACTUAL							**PROJECTED**				

APPENDIX A

WATER QUALITY DATA

SEE ATTACHED WATER QUALITY REPORT, 2014

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

2014-15 through 2018-19 Water Years

CRESCENTA VALLEY WATER DISTRICT

GROUNDWATER PUMPING & SPREADING PLAN

FOR

WATER YEARS

OCTOBER 1, 2014 TO SEPTEMBER 30, 2019

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

Prepared for:
ULARA Watermaster's Office

May 2015

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.

This report as prepared by CVWD is in response to Section 5.4, Groundwater Pumping and Spreading Plan. This report refers to groundwater pumping only since there is no groundwater spreading performed by CVWD.

The Groundwater Pumping Plan is based on the water years October 1, 2013 to September 30, 2019.

II. WATER DEMAND

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

Water demands between WY 2009/10 and WY 2013/14 were affected by a number of factors including variable annual rainfall, natural and man-made disaster events such as fire and power outages, a three-year statewide drought, the unstable economy, and water conservation efforts within the Crescenta Valley.

Additionally, demands in the CVWD's service area vary due to seasonal conditions, which can be attributed to the residential character of the District and the large percentage of water consumption for outdoor landscaping.

CVWD anticipated an overall annual decrease in water demand of approximately 1% to 2% per year over the next five (5) years in response to the increased need for water conservation and the continuing drought.

In WY 2013/14, CVWD saw a slight decrease of -0.08% in water demand as compared to WY 2012/13.

Statewide Drought and Water Conservation:

In January 2014, the Governor declared a statewide drought and future regulations may be imposed over the next year. In WY 2012/14 & 2013/14, CVWD remained in a volunteer water conservation program.

The forecast for WY 2014/15 is that CVWD will increase their water conservation efforts in accordance with the State and Metropolitan Water District of Southern California (MWD) conservation mandates.

III. WATER SUPPLY

A. Existing Water Supply Overview:

The water supply for CVWD is composed of locally produced and treated groundwater, and imported water from MWD purchased on a wholesale basis from Foothill Municipal Water District (FMWD). In WY 2013/14, CVWD had an overall ratio of 49% local groundwater and 51% imported water from FMWD.

In WY 2013/14, CVWD saw a decrease in groundwater production as compared to WY 2012/13. CVWD's wells produced 2,256 ac-ft, which is 1,038 ac-ft under adjudicated right of 3,294 AFY.

In general, the well levels in the Verdugo Basin have decreased over the last year, as shown in the decreased amount of groundwater production, which is attributed to less than average rainfall for three (3) consecutive years and well rehabilitation projects at Wells 5, 8, 9, and 11.

CVWD is planning in WY 2013/14 to perform well rehabilitation on Wells 7 and 14 to obtain better well efficiency and to potentially increase groundwater production.

B. PRODUCTION WELLS

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

In WY 2013/14, CVWD observed a decrease in the water levels in its groundwater wells over the year due to sustained below average rainfall received in the Crescenta Valley. In addition, the overall well capacity for WY 2013/14 was 2.17 MGD, which was less than WY 2012/13 at 3.15 MGD, an overall decrease of 31% in capacity. This is largely due to declining water levels and Wells 5, 8, 9, 11 & 12 being out of service at various times throughout the year for rehabilitation and bacteriological issues.

B.1 Nitrate (NO_3) in Production Wells

CVWD’s groundwater wells produce water which typically contains nitrate (as NO_3) levels above the 45 mg/L maximum contaminant level (MCL) as set by the EPA and California Department of Public Health (CDPH).

B.1.1 Glenwood

The Glenwood Nitrate Removal Treatment Plant is an ion-exchange process used to treat and remove nitrates from CVWD’s well water. Untreated water and water treated at the Glenwood Plant are blended to produce water with a nitrate level less than the MCL.

In WY 2013/14, the ion-exchange plant was in operation for twelve (12) months, with very minor flows for several months during the summer and was used to maximize the use of local groundwater.

B.1.2 Mills

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

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

In 2004, CVWD detected low levels of MTBE in Well 5 during routine sampling. In 2006, Well 7 was taken out of service because of MTBE above the 13 ug/L MCL. In 2008, Well 5 was taken out of service when the MTBE level reached 14 ppb, which is above the MCL of 13 ppb. MTBE levels have decreased below the MCL and Wells 5 & 7 have been back in service since 2010.

B.2.1 MTBE Levels

In WY 2013/14, the MTBE levels in CVWD's wells was between Non-Detect (ND) and 0.29 ug/L.

B.2.2 Verdugo Basin MTBE Task Force

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

In WY 2013/14, the Task Force did not meet. The Task Force will reconvene at any time MTBE levels are higher than 1.0 ug/L.

B.2.3 Groundwater Recharge - Rainfall

CVWD has observed swings in the amount of rainfall in the Verdugo Basin over the past five (5) years as shown in the table below. In WY 2013/14, the rainfall was 9.07 inches, which was 61% below the annual average of 23.3 inches.

CVWD Annual Rainfall Total	
Water Year	**Total Rainfall (In)**
13-14	**9.07**
12-13	**12.25**
11-12	**14.10**
10-11	**32.31**
09-10	**27.68**

The forecast for WY 2014/15 is another dry year for rainfall and CVWD is planning for increased water conservation measures to be imposed within the next year.

C. WELL REPLACEMENT PROGRAM

The District's active wells range in age from 12 to 82 years and are mostly beyond their useful life. CVWD has included in its 10-year CIP program a project to install a new water production well within the next 5 – 10 years to replace its aging well system.

C.1 Rockhaven Well Project

CVWD has been working with Glendale Water and Power (GWP) on a project to activate the Rockhaven Well located at 2740 Hermosa Ave. The Rockhaven Well project will be a joint project between CVWD and GWP to activate a groundwater well which was constructed by GWP and has not been put into service due to water quality (nitrate) issues. The project will use CVWD's existing Nitrate Treatment Removal Facility to treat the local groundwater to Federal and State water standards.

The project will provide for the immediate use of potable water from a local known water source, reduce CVWD and GWP dependence on MWD, and provide the additional benefit of reducing the amount of nitrates within the Verdugo Basin. The project is estimated to produce about 480 ac-ft per year of additional local water. The historic and projected GWP (Rockhaven) Water production is shown in Table 3.5.

CVWD and GWP received a 2014 Drought Grant application as part of Proposition 84 for funding for the design and construction of the Rockhaven Well project. If grant funding is approved, the Rockhaven Well project is planned to be completed by September 2015.

D. WELL REHABILITATION PROGRAM

CVWD continues performing well rehabilitation on its existing wells to maintain well capacity and extend the life of the wells. In WY 2012/13, CVWD performed well rehabilitation on Wells 1 and 12. In WY 2013/14, CVWD is performed well rehabilitation on Wells 5, 8, 9, &11. CVWD has plans to continue rehabilitating wells with Wells 7 & 14 scheduled for rehabilitation in WY 2014/15.

E. GLENWOOD NITRATE REMOVAL PLANT

The Glenwood ion-exchange nitrate removal plant was placed into operation in 1990. CVWD replaced the ion-exchange resin in WY 2010/11 during its annual maintenance shut-down.

During WY 2013/14, the plant was in operation during twelve (12) months of the year to maximize the use of groundwater production and this trend will continue in WY 2014/15 unless there are maintenance issues requiring the plant to discontinue operation. The historic and projected production from the Glenwood Plant is shown in Table 3.2.

F. PICKENS GRAVITY TUNNEL PRODUCTION

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

G. FMWD/MWD – IMPORTED WATER

In WY 2013/14, the amount of imported water purchased from MWD via FMWD increased from previous years because of an overall decrease in groundwater production. Proportionally, the ratio of groundwater to import water in WY 2013/14 was 49/51, which shows a significant decrease in ground water production from previous years.

In WY 2014/15, CVWD anticipates a decrease in the amount of imported water received from FMWD. Water demand has stayed relatively the same. However, the production from CVWD's wells should increase since there are fewer planned well rehabilitations this year.

Historic and projected use of FMWD/MWD water shown in Table 3.4 reflects the additional water from the Rockhaven Well project.

H. 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.

In WY 2013/14, CVWD used 0.02 MG of water from the Glendale/CVWD interconnection (GCI) in November and December of 2013. This was used for emergency water supply due to a brief imported water shutdown.

I. CITY OF LOS ANGELES INTERCONNECTION

In 2006, 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 during an emergency to FMWD and its sub-agencies in case of a local disaster or when MWD's Weymouth plant is out of service.

CVWD anticipates construction of the project to be completed in WY 2014/15.

J. STORMWATER RECHARGE FEASILIBLITY STUDY

CVWD's Verdugo Basin Groundwater Recharge, Storage, and Conjunctive Use Feasibility Study was completed in 2005 and recommended methods of stormwater recharge and storage within the basin. In WY 2012/13, CVWD received a Local Groundwater Assistance (LGA) grant from the Department of Water Resources (DWR) to perform a feasibility study for stormwater recharge within the Verdugo Basin.

The study is a cooperative effort with the City of Glendale, the County of Los Angeles, and other local stakeholders to determine if stormwater can be stored at Crescenta Valley County Park. The feasibility study started in August 2013 and has been ongoing through WY 13/14. The study should be completed by June 2016.

IV. JUDGEMENT CONSIDERATIONS

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

- WY 1978/79 to WY 1991/92 - CVWD pumped 1,700 to 2,900 ac-ft/yr.
- WY 1993/94 to WY 2000/01 - CVWD pumped over its adjudicated right, up to 500 ac-ft/yr, which was allowed by the Watermaster's office.
- WY 2001/02 to WY 2003/04 - CVWD pumped below its adjudication due to declining basin production.
- WY 2004/05 - CVWD increased its water production because of higher than normal rainfall and was able to pump over the adjudication by 16 ac-ft.
- WY 2005/06 - CVWD pumped over the adjudication by 59 ac-ft. CVWD and the City of Glendale agreed upon compensation for the amount of water pumped over the adjudication for WY 2004/05 & WY 2005/06.
- WY 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 Glendale agreed upon compensation for the amount of water pumped based on the WY 2005/06 agreement.
- WY 2007/08 - CVWD adjusted its pumping schedule to maintain well production within the adjudication, and was 15 ac-ft below, since Well 7 was out of service for high MTBE levels.
- WY 2008/09 – CVWD pumped below its adjudication by 330 ac-ft, due to Well 5 being out of service for high MTBE levels and Well 9 being out of service due to bacteriological problems.

IV. JUDGEMENT CONSIDERATIONS (Cont.)

- WY 2009/10 - CVWD pumped below its adjudication by 640 ac-ft, which was due to Well 5 being out of service for high MTBE levels, Well 9 being out of service due to bacteriological problems, and Well 11 being out of service due to pump failure.
- WY 2010/11 - CVWD pumped below its adjudication by 368 ac-ft, which was due to Well 5 being out of service for high MTBE levels for three (3) months and decrease in water demand.
- WY 2011/12 - CVWD pumped below its adjudication by 195 ac-ft, this increase in production over previous years was due mainly to an increase in well efficiency from rehabilitation.
- WY 2012/13 - CVWD pumped below its adjudication by 368 ac-ft due to Well 1 and 12 being out of service for rehabilitation, declining well levels, and declining water demands.
- WY 2013/14 - CVWD pumped below its adjudication by 1,038 ac-ft due to Well 5, Well 8, Well 9, Well 11 and 12 being out of service for rehabilitation, recurring bacteriological problems, and declining water levels.

TABLE 2.1

HISTORIC AND PROJECTED
WATER DEMAND
(Acre-Feet)

2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
4,405	4,363	4,633	4,607	4603	4,175	4,085	4,220	4,335	4,440
ACTUAL					PROJECTED				

TABLE 3.1

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

2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
2,651	2,926	3,099	2,926	2,256	2,200	2,400	2,610	2,730	3,090
ACTUAL					PROJECTED				

TABLE 3.2

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

2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
410	592	447	488	150	175	250	300	350	400
ACTUAL					PROJECTED				

NOTES:

(1) The Glenwood Treatment Plant has a capacity of 2.1 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)

2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
56	57	59	61	59	60	60	60	60	60
ACTUAL					PROJECTED				

TABLE 3.4

HISTORIC AND PROJECTED
FMWD/MWD TREATED WATER PRODUCTION
(Acre-Feet)

2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
1,754	1,437	1,534	1,682	2,348	1,935	1,160	1,070	1,110	930
ACTUAL					PROJECTED				

TABLE 3.5

HISTORIC AND PROJECTED
GWP (Rockhaven) WELL WATER PRODUCTION
(Acre-Feet)

2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
0	0	0	0	0	35	525	540	500	420
ACTUAL					PROJECTED				

NOTES:

(1) GWP (Rockhaven) Well Production to be included in GWP's adjudicated right.

g:\engineering\ulara\annual pump spread plan\wy 14-15\cvwd groundwater pumping plan 2014-2019.docx

APPENDIX F

ANNUAL MUNICIPAL EXTRACTIONS IN ULARA

1979-2014

ANNUAL MUNICIPAL EXTRACTIONS IN ULARA
1979-80 through 2013-14
(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
2013-14	10,150	7,241	79,768	97,159	668	3,352	4,020	2,246	1,393	3,639	104,818
2012-13	11,387	7,176	52,751	71,314	1,673	3,284	4,957	2,917	1,670	4,587	80,858
2011-12	9,997	7,876	49,273	67,146	1,093	3,202	4,295	3,090	1,982	5,072	76,513
2010-11	10,398	7,476	43,951	61,825	964	3,082	4,046	2,927	1,826	4,753	70,624
2009-10	10,048	7,935	59,958	77,941	2,544	3,143	5,687	2,645	2,135	4,780	88,408
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	5,717	3,813	73,484	83,013	2,629	3,116	5,745	2,837	2,219	5,057	93,815

*Includes municipal pumping only for years Prior to 2010. After 2010, includes physical solution pumping in the cities of Burbank and Glendale.