REGIONAL GROUNDWATER MONITORING REPORT
CENTRAL AND WEST COAST BASINS
LOS ANGELES COUNTY, CALIFORNIA
WATER YEAR 2000-2001

Water Replenishment District of
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FEBRUARY 2002

EXECUTIVE SUMMARY

"To provide a sufficient supply of high quality groundwater through progressive, cost effective, and environmentally sensitive basin management."

Since 1959, the Water Replenishment District of Southern California (WRD) has operated under the California Water Code to protect and preserve the quantity and quality of the groundwater supplies in the Central and West Coast groundwater basins (CWCB). Nearly 40 percent of the water used by the 4 million people overlying the WRD's 420-square mile service area comes from the underlying groundwater reservoir. As the regional agency responsible for managing and safeguarding this precious resource, WRD's focus is on maximizing the groundwater basins' capacity, preserving them for future use, and ensuring the basins' high water quality.

The extensive collection, analysis, and reporting of critical groundwater data is a major responsibility for the WRD to ensure proper basin management and to properly plan for the future. Our staff of highly skilled hydrogeologists, engineers, planners, and Geographic Information System (GIS) specialists work continually to sample, track, model, forecast, and plan for replenishment and water quality activities. These efforts result in the publication of the District's two main annual reports; the Engineering Survey and Report (issued since 1960) and a Groundwater Monitoring Report (since 1973).

This Regional Groundwater Monitoring Report for Water Year 2001-2002 is the most comprehensive report yet. The WRD's network of specialized monitoring wells continues to grow, DHS Title 22 drinking water analyses for potable wells in the CWCB are comprehensively incorporated, data sharing with the local groundwater pumpers and agencies improves, and greater amounts of data are collected analyzed, and presented to better define the conditions in the CWCB. This report presents the latest information on groundwater replenishment activities, groundwater production, groundwater levels, and an extensive section on groundwater quality, including an analysis and presentation of

data for the latest chemicals of concern, including arsenic, hexavalent chromium, colored water, and total dissolved solids.

In Water Year 2000-2001 water levels and groundwater in storage decreased very slightly. Groundwater production also decreased slightly, less than 2% from the previous water year. The overall quantity and quality of groundwater and replenishment waters in the CWCB remains excellent and is suitable for use now and in the near future. Localized areas of marginal to poor water quality do exist, however, and are being monitored closely by the WRD for potential action. When necessary, treatment plants are constructed by WRD or the pumpers to filter and treat the groundwater before it is served to the public. WRD has constructed eight treatment facilities to date to remove volatile organic contamination and arsenic from the CWCB groundwater.

To help prevent future contamination, the WRD is completing Drinking Water Source Assessments on the majority of drinking water wells in the District to identify water quality threats to the well. The WRD also completed its Robert W. Goldsworthy Desalter facility in Torrance which pumps out brackish groundwater caused by seawater intrusion and converts it into drinking water using microfiltration and reverse osmosis technologies. The WRD is also pursuing conjunctive use projects to store excess water during wet years in the ground for future use by the region in times of drought. All of these projects are consistent with the WRD's efforts to effectively manage the current and future groundwater supply and water quality needs of the CWCB.

The WRD remains committed to its statutory charge to manage the public resource of the basins' storage capacity for the common good. To that end, innovative projects and programs will be implemented to ensure a continued reliable source of high quality groundwater, reduce the reliance on costly imported water, and optimize the region's water resources for the District's 43 constituent cities.

To achieve these objectives, the WRD will continue to reach out and work closely with the 43 WRD cities, private sector groundwater purveyors, and the southern Los Angeles

County area officials. The WRD is optimistic that by working together we can implement these new initiatives to optimize the management of the basins for the benefit of all.

More information can be obtained on the District web site at http:\\www.wrd.org, or by phoning the District at (562) 921-5521. WRD welcomes any comments or suggestions to this Regional Groundwater Monitoring Report.

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SECTION 1
INTRODUCTION

The Water Replenishment District of Southern California (WRD or the District) manages groundwater replenishment and water quality activities of the Central and West Coast Basins (CWCB) in southwestern Los Angeles County (**Figure 1.1**). *Our mission is to maintain a sufficient supply of high quality groundwater in the basins through progressive, cost effective, and environmentally sensitive management*. This mission is being accomplished by meeting WRD goals relating to water quality, water supply, basin management, stakeholder communications, and efficient operations of the organization.

A major aspect to meeting these goals is to have a thorough and current understanding of groundwater conditions in the CWCB, and to predict and prepare for future conditions. This is achieved through groundwater monitoring, modeling, and planning, which provide the necessary information to determine the "health" of the basins. This information in turn provides WRD, the pumpers in the District, other interested stakeholders, and the public with the knowledge necessary for responsible water resources planning and management.

1.1 BACKGROUND OF THE REGIONAL GROUNDWATER MONITORING PROGRAM

Since its formation in 1959, the WRD has been actively involved in groundwater replenishment, water quality monitoring, contaminant prevention, data management, and data publication. Historical overpumping of the CWCB caused overdraft, seawater intrusion and other groundwater management problems related to supply and quality. Adjudication of the basins in the early 1960s set a limit on allowable production to control the overpumping. Along with adjudication, WRD was formed to address issues of groundwater recharge and groundwater quality. The Regional Groundwater Monitoring Program is an important District program to track water levels and water quality in the CWCB to ensure the usability of this groundwater reservoir.

Prior to 1995, WRD relied heavily upon groundwater monitoring data collected, interpreted, and presented by other entities such as the Los Angeles County Department of Public Works (LACDPW), the California Department of Water Resources (DWR), and the private sector for understanding current basin conditions. This included WRD's former basinwide monitoring program, and the ongoing but separate Montebello Forebay recycled water monitoring for regulatory compliance. However, these data have been collected primarily from production wells, which are typically screened across multiple aquifers to maximize water inflow. This results in a mixing of the waters from the perforated aquifers inside of the well casing, causing an averaging of the water qualities and water levels.

In order to obtain more accurate data for specific aquifers from which to infer localized water quality and level conditions, depth-specific (nested) monitoring wells that tap discrete aquifer zones are necessary. **Figure 1.2** illustrates the capabilities of nested monitoring wells to assess individual aquifers compared to typical production wells. Data are generally provided for a water year (WY), which occurs from October 1 to the following September 30. During WY 1994-1995, WRD and the United States Geological Survey (USGS) began a cooperative study to improve the understanding of the geohydrology and geochemistry of the CWCB. This study was the nucleus of the Regional Groundwater Monitoring Program. In addition to compiling existing available data, this study recognized that sampling of production wells did not adequately characterize the layered multiple aquifer systems of the CWCB. The study focuses on new data collection through drilling and construction of nested groundwater monitoring wells and conducting depth-specific water quality sampling. **Figure 1.3** shows the locations of completed WRD nested monitoring wells and planned future well locations. Construction information for the completed wells is presented in **Table 1.1.**

An *Annual Report on the Results of Water Quality Monitoring* (*Annual Report*) was published by WRD from Water Years 1972-1973 through 1994-1995, and was based on a basinwide monitoring program outlined in the *Report on Program of Water Quality*

Monitoring (Bookman-Edmonston Engineering, Inc., January 1973). The latter report recommended a substantial expansion of the then-existing program, particularly the development of a detailed and intensive program of monitoring the quality of groundwaters in the Montebello Forebay. The Regional Groundwater Monitoring Program is designed to serve as an expanded, more representative basinwide monitoring program for the CWCB. This Regional Groundwater Monitoring Report is published in lieu of the previous *Annual Reports*.

1.2 CONCEPTUAL HYDROGEOLOGIC MODEL

The Regional Groundwater Monitoring Program changes the focus of groundwater monitoring efforts in the CWCB from production zones with averaged groundwater level and groundwater quality information, to a layered multiple aquifer system with individual zones of groundwater quality and groundwater levels. WRD views each aquifer as a significant component of the groundwater system and understands the importance of the interrelationships between water-bearing zones. The most accepted hydrogeologic description of the basin and the names of water-bearing aquifers were provided in California Department of Water Resources, *Bulletin No. 104: Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County, Appendix A – Ground Water Geology* (DWR, 1961). WRD generally follows the naming conventions of this report, redefining certain aspects when new data become available.

The locations of idealized geologic cross-sections AA' and BB' through the CWCB are shown on **Figure 1.3**. Cross-sections AA' and BB' are presented on **Figures 1.4 and 1.5**. These cross-sections illustrate a simplified aquifer system of the CWCB. The main potable production aquifers are shown, including the deeper Lynwood, Silverado, and Sunnyside aquifers of the lower Pleistocene San Pedro Formation. Other main shallower aquifers, which locally produce potable water, include the Gage and Gardena aquifers of the Upper Pleistocene Lakewood Formation. Also shown on the geologic sections are the aquitards separating the aquifers. Throughout this report the aquifers shown on the geologic sections are referred to as discrete groundwater zones. Many references are made to the Silverado aquifer producing zone, typically including the Lynwood Aquifer.

1.3 GIS DEVELOPMENT AND IMPLEMENTATION

WRD is using a sophisticated geographic information system (GIS) as a tool for CWCB groundwater management. Much of the GIS was compiled during the WRD/USGS cooperative study. The GIS links spatially related information (e.g., well locations, geologic features, cultural features, contaminated sites) to data on well production, water quality, water levels, and replenishment amounts. WRD uses the industry standard ArcInfo® and ArcView® GIS software for data analysis and preparation of spatially related information (maps and graphics tied to data). WRD utilizes a global positioning system (GPS) to survey the locations of basinwide production wells and nested monitoring wells for use in the GIS database.

WRD is constantly updating the GIS with new data and newly acquired archives of data acquired by Staff or provided by pumpers and other agencies. The GIS is a primary tool for WRD and other water-related agencies to more accurately track current and past use of groundwater, track groundwater quality, and project future water demands, thus allowing improved management use of the basins.

1.4 SCOPE OF REPORT

The purpose of this report is to update information on groundwater conditions in the CWCB for WY 2000-2001, and to discuss the status of the Regional Groundwater Monitoring Program. Section 1 has provided an overview of WRD and the WRD Regional Groundwater Monitoring Program. Section 2 discusses the types, quantities, and water quality of different source waters used by WRD for replenishment at the Montebello Forebay spreading grounds and the seawater intrusion barriers. Section 3 summarizes groundwater production in the CWCB, and evaluates water level, storage change, and groundwater elevation data for WY 2000-2001. Section 4 presents water quality data for the WRD nested monitoring wells and basin-wide production wells. Section 5 summarizes the findings of this report. Section 6 describes future regional groundwater monitoring activities. Section 7 lists the references used in this report.

SECTION 2
GROUNDWATER REPLENISHMENT

Natural groundwater replenishment occurs through the percolation of precipitation and applied waters (such as irrigation), conservation of stormwater in spreading grounds, and underflow from adjacent basins. However, there is insufficient natural replenishment in the CWCB to sustain the groundwater pumping that takes place. Therefore, WRD provides for artificial groundwater replenishment through the purchase of imported, recycled, and In-Lieu water to make up the difference. Artificial replenishment occurs at the spreading grounds, the seawater intrusion barrier injection wells, and through the District's In-Lieu Replenishment Program. This section describes the sources, quantities, and quality of water used for artificial replenishment in the CWCB during WY 2000-2001.

2.1 SOURCES OF REPLENISHMENT WATER

Replenishment water comes from imported, recycled, and local sources. The types used by WRD are described below:

- Imported water: This source comes from the Colorado River or the State Water Project via Metropolitan Water District (MWD) pipelines and aqueducts. WRD purchases this water both for surface recharge at the Montebello Forebay spreading grounds and for injection at the seawater intrusion barriers. For the spreading grounds, the water is replenished without further treatment from the sources as the quality is very good and gets natural treatment as it percolates through the vadose zone soils. For the barrier wells, the water is treated to meet all drinking water standards before injection since it will not be moving through vadose zone soils. Spreading water is available seasonally from MWD if they have excess reserves, whereas a premium price is paid for injection water to maintain deliveries throughout the year and during droughts.
- Recycled water: This resource's relatively low unit cost and good quality coupled with its year-round availability makes it highly desirable as a replenishment source.

However, its use is limited by regulatory agencies. Tertiary-treated recycled water is used for replenishment at the spreading grounds. Tertiary-treated recycled water followed by additional reverse osmosis treatment is used for injection into the West Coast Basin Barrier Project seawater intrusion barriers.

- Make-Up Water: "Make-Up Water" is occasionally delivered to the Montebello Forebay spreading grounds from the San Gabriel Valley Basin. This water, termed the "Lower Area Annual Entitlement", was established in accordance with the judgment in Case No. 722647 of Los Angeles County, City of Long Beach, et al vs. San Gabriel Valley Water Co., et al (Long Beach Judgment). During WY 2000-2001, Make-Up Water was not delivered to the Lower Area.
- Local water: Local water consists of channel flow from local sources (e.g., storm-flow, rising water, incidental surface flows) conserved in the Montebello Forebay spreading grounds by the LACDPW. Precipitation falling on the basin floor and water applied to the ground (such as for irrigation) also percolate into the subsurface and contribute to recharge.
- Subsurface water: Groundwater flows into and out of the CWCB from adjacent groundwater basins (Santa Monica, Hollywood, San Gabriel, Orange County) and the Pacific Ocean. The amounts depend on the hydrogeologic properties of the aquifers and the groundwater gradients at the basin boundaries.

2.2 QUANTITIES OF REPLENISHMENT WATER

Current and historical quantities of water conserved (replenished) in the Montebello Forebay spreading grounds are presented in **Table 2.1**. Current and historical seawater barrier well injection amounts are shown on **Table 2.2**. The calculations required to determine the total quantity of artificial replenishment water necessary for the CWCB prior to each water year are outlined in the District's annual *Engineering Survey and Reports* (ESRs).

At the Montebello Forebay spreading grounds (**Table 2.1**), the following is noted for the quantities of replenishment water for WY 2000-2001:

- Total water conserved in the Rio Hondo (consisting of the Rio Hondo Spreading Grounds and percolation behind the Whittier Narrows Dam) and the San Gabriel System (consisting of the unlined San Gabriel River south of the Whittier Narrows Dam and the San Gabriel River Spreading Grounds) was 109,519 acre-feet (AF). This is less than the long term running average of 127,496 AF (WY 1963/64 through 1999/00).

- The quantity of local water conserved during WY 2000-2001 was 42,290 AF, less than the long-term running average of 50,355 AF, and less than the previous 5-year average of 47,940 AF (WY 1995/96 through 1999/00).

- The quantity of imported water conserved during WY 2000-2001 was 23,541 AF. This is less than the long-term running average of 46,384 AF, but greater than the previous 5-year average of 15,903 AF. Imported water deliveries were halted by MWD on May 1, 2001 due to dry weather conditions. This interruption in service resulted in less water being spread than planned. The deficiency will be made up in WY 2001/02.

- The quantity of recycled water conserved during WY 2000-2001 was 43,778 AF. This is more than the long-term running average of 30,757 AF, about the same as the previous 5-year average of 43,112 AF. WRD attempts to maximize recycled water use within regulatory permit limits, which are 50 percent or 60,000 AF maximum in any one year, and 35 percent or 150,000 AF total over three consecutive years.

- In addition to the water sources shown on **Table 2.1**, the Montebello Forebay received an estimated 9,000 AF of recharge due to infiltration of precipitation falling on the forebay floor, and 27,300 AF of groundwater underflow from San Gabriel Valley. The total replenishment was therefore 145,819 AF, of which 30% was recycled water. The three-year average recycled water use was 42,707 AF, and the three-year average percent recycled water component is 35%.

At the seawater intrusion barriers (**Table 2.2**), the following trends are noted for the quantities of artificial replenishment water for WY 2000-2001:

- At the West Coast Basin Barrier, 20,826 AF was injected, which included 13,988 AF of imported water and 6,838 AF of recycled water (33%). The current limit for recycled water injection is 50% of the total supply. The long-term injection average from WY 1963/64 through 1999/00 is 20,709 AF. The 5-year average (1995/96 through 1999/00) is 17,284 AF.

- At the Dominguez Gap Barrier, 3,923 AF was injected. The long-term average from WY 1971/72 through 1999/00 is 5,948 AF, and the 5-year average (1995/96 through 1999/00) is 5,051 AF. To date, only imported water has been injected at the Dominguez Gap barrier; however, WRD and the City of Los Angeles plan to augment this source with recycled water in the near future.

- At the Alamitos Barrier, both WRD and Orange County Water District (OCWD) provide injection water; WRD for wells on the Los Angeles County side, and OWCD for wells on the Orange County side. During WY 2000-2001 a total of 5,633 AF were injected into the barrier system, 3,710 by WRD and 1,923 by OCWD. The long-term average from WY 1965/66 through 1999/00 is 5,064 AF, and the 5-year average (1995/96 through 1999/00) is 5,599 AF. To date, only imported water has been injected at the Alamitos Barrier; however, WRD plans to augment this source with recycled water in the near future.

Injection amounts at the barrier systems are expected to increase over the next several years to further combat seawater intrusion.

2.3 QUALITY OF REPLENISHMENT WATER

This section discusses water quality data for key parameters in WRD replenishment water and local surface water. Although numerous other constituents are monitored, the reported constituents are the ones found to be most prevalent and at elevated levels in

wells in the CWCB. The data are classified according to their source. The key water quality parameters of this discussion are: Total dissolved solids (TDS), hardness, sulfate, chloride, nitrogen, iron, manganese, trichloroethylene (TCE), and tetrachloroethylene (PCE). Monitoring the concentrations of these constituents is necessary for an understanding of the general chemical nature of the recharge source, and its suitability for replenishing the groundwater basins. A brief description of each parameter follows.

- TDS: TDS is a measure of the total mineralization of water and is indicative of general water quality. In general, the higher the TDS the less desirable a given water supply is for beneficial uses. The California Department of Health Services (DHS) maximum contaminant level (MCL) in drinking water for TDS ranges from 500 milligrams per liter (mg/L), which is the recommended level, to 1,000 mg/L, which is the upper limit allowed.
- Hardness: For most municipal type uses, hardness (a measure of calcium and magnesium) is an important mineral characteristic in water. Excessive hardness is undesirable because it results in increased consumption of cleaning products, scale formation, and other undesirable effects. There is no MCL for hardness, but generally waters are considered soft less than 50 mg/L and very hard greater than 250 mg/L.
- Nitrogen: DHS standards limit nitrate concentrations to 45 mg/L (measured as nitrate), corresponding to 10 mg/L nitrogen. In recycled water most of the nitrogenous material exists in the form of ammonia (with a small portion existing in the form of organic nitrogen). Theoretically, it would be possible for all of the nitrogenous materials in water to be oxidized to the nitrate form. Therefore, the total nitrogen in water recharging the groundwater supply should not exceed 10 mg/L (as nitrogen). This is conservative in that it neglects any nitrogen that may be adsorbed, converted into nitrogen gas, or otherwise removed from the water.
- Sulfate: Sulfate is generally not a water quality concern in the CWCB. DHS has established a State MCL (secondary) for sulfate at 250 mg/L. Sulfate is, however a very useful water quality constituent in the CWCB for use in tracking flow and observing travel times of artificial recharge. Colorado River water, local stormwater, and recycled water used for recharge in CWCB have characteristically high sulfate

concentrations, while native groundwater and State Water Project water have relatively low sulfate concentrations.

- Chloride: Chloride is the characteristic constituent used to identify seawater intrusion. While recharge sources contain moderate concentrations of chloride, these concentrations are well below the State secondary MCL for chloride of 250 mg/L. When the ratio of chloride to other anions such as sulfate and bicarbonate becomes high, there is a strong indication of seawater intrusion or possible industrial brine impact to groundwater.
- Iron: The typically naturally occurring iron content of water is important because small concentrations of iron in water can affect the water's suitability for domestic or industrial purposes. The DHS limits the amount of iron in drinking water to 0.3 mg/L because iron in water stains plumbing fixtures, incrusts well screens, and clogs pipes. Some industrial processes cannot tolerate more than 0.1 mg/L iron.
- Manganese: Manganese, also naturally occurring, is objectionable in water in the same general way as iron. Stains caused by manganese are more unsightly and harder to remove than those caused by iron. The DHS MCL for manganese is 50 micrograms per liter (µg/L).
- TCE: Trichloroethylene is a manmade solvent used primarily to remove grease from metal parts. Because of its potential health effects (central nervous system depression, carcinogen), the MCL for TCE is 5 µg/L.
- PCE: Tetrachloroethylene (also known as perchloroethylene, perc, perclene, and perchlor) is a manmade solvent used heavily in the dry cleaning industry. Like TCE, PCE can depress the central nervous system and is a possible carcinogen. The MCL for PCE in drinking water is also 5 µg/L.

Quality of Imported Water

As stated previously, treated imported water is used at the seawater intrusion barriers. This water is treated to meet all drinking water standards, so its water quality is excellent and suitable for direct injection. Average water quality data for treated imported water are presented in **Table 2.3**. West Basin Municipal Water District is moving forward with plans to eventually have regulatory approval to delivery up to 100% recycled water to the

West Coast Basin Barrier Project.

Untreated imported water ("raw water") is used for recharge at the Montebello Forebay spreading grounds. The average TDS concentration of Colorado River water has decreased over the past five water years, from 682 mg/L to 556 mg/L. The average TDS concentration of State Project Water has also shown a modest decreasing trend, from 320 mg/L to 270 mg/L.

The average hardness of Colorado River water has decreased over the last five water years, from 322 mg/L to 283 mg/L. The average hardness of State Project Water has also shown a decreasing trend, from 173 mg/L to 136 mg/L.

The average nitrogen concentration of Colorado River water has decreased compared to the previous water year, from 0.23 mg/L to 0.18 mg/L. The average nitrogen concentration of State Project Water has increased compared to the previous water year, from 0.20 mg/L to 0.39 mg/L. Recently and historically, both Colorado River and State Project Water nitrogen concentrations have been far below the MCL.

The average iron and manganese concentrations of Colorado River Water has remained non-detectable while State Project Water has increased slightly from non-detectable to 0.06 and 0.0015 mg/L respectively. Both Colorado River and State Project Water iron and manganese concentrations have historically been below the MCL.

According to the Metropolitan Water District, TCE and PCE have not been detected in Colorado River Water or State Project Water over the last five water years.

Quality of Recycled Water

As outlined previously, recycled water from the West Basin Municipal Water District (West Basin MWD) wastewater reclamation plant (WRP) undergoes advanced treatment using reverse osmosis, then is injected at the West Coast Basin barrier. This water is treated to meet or exceed drinking water standards, so it is of excellent quality and

suitable for direct injection. The DHS limits injection however, to 50 percent of the total injected amount. Average water quality data for this water are presented on **Table 2.3**.

Recycled water from the Whittier Narrows WRP, San Jose Creek East WRP, San Jose Creek West WRP, and Pomona WRP are used at the Montebello Forebay spreading grounds. The water quality from these WRPs is carefully controlled and typically shows little variation over time. **Table 2.3** presents average water quality data from these WRPs. All constituents shown have either decreased slightly or remain stable over the past five water years. Furthermore, neither TCE nor PCE have been detected above MCLs in recycled water from these four WRPs over the last four water years.

Quality of Stormwater

As discussed in Section 3, stormwater infiltrates to some degree throughout the District, but especially in the Montebello Forebay, where it is conserved along with imported and recycled water in the spreading grounds. Occasional stormwater quality analyses have been performed by LACDPW throughout the history of the Montebello Forebay spreading grounds. Average stormwater quality data are presented on **Table 2.3**. The average TDS, hardness, sulfate, chloride, nitrate, TCE, and PCE concentrations of stormwater in the Montebello Forebay are relatively low. Average iron and manganese concentrations of stormwater have periodically exceeded MCLs.

SECTION 3
GROUNDWATER PRODUCTION AND WATER LEVELS

Groundwater production or pumping is the major source of outflow of groundwater from the CWCB. Groundwater currently provides about 34% of the total water used in the basins, whereas imported water provides 62% and recycled water 4%. It is critical to maintain adequate supplies of groundwater in storage to meet this demand and to protect against time of drought when imported water may not be available. Measurements of water levels in the basins are made to check the current supply and are used to determine when artificial replenishment is needed. The remainder of this Section describes WRD's management of groundwater production and water levels in the CWCB.

3.1 GROUNDWATER PRODUCTION IN THE CENTRAL AND WEST COAST BASINS

Prior to the 1960s, groundwater production in the CWCB went relatively unchecked and continued to increase as the population increased. West Coast Basin pumping reached a maximum of 94,100 AF in 1952/53, and Central Basin pumping reached a maximum of 259,400 AF in 1955/56. Pumping exceeded natural recharge resulting in overdraft, declining water levels, loss of groundwater from storage, and seawater intrusion.

In the early 1960s, the State courts limited the amount of pumping that could occur in the CWCB to reduce this overdraft. The West Coast Basin adjudication was finalized in 1961 and capped production at 64,468.25 acre-feet/year (AFY). The Central Basin adjudication was finalized in 1965 and capped production at 271,650 AFY, but set a reduced Allowed Pumping Allocation (APA) of 80% of the adjudication, or 217,367 AFY, that remains in effect today. The total amount that can be pumped from both basins is currently 281,835 AFY.

The adjudicated amounts were set higher than the natural replenishment of the CWCB with WRD being created in 1959 to manage this deficiency through artificial replenishment. A replenishment assessment is placed on pumping to collect the funds necessary to purchase the supplemental replenishment water.

During WY 2000-2001, groundwater production in the CWCB was 248,863 AF, of which 195,022 AF occurred in the Central Basin and 53,841 occurred in the West Coast Basin. This represents a 1% decrease from the previous year, but is still higher than the five-year average of 247,400 AF (WY 1996/97 through 2000/01). **Table 3.1** presents historical groundwater production quantities for the CWCB. **Figure 3.1** illustrates the levels of production throughout the CWCB during the 2000-2001 Water Year.

Under the terms of the Water Replenishment Districts Act, each groundwater producer in the CWCB must submit a report to the District summarizing their production activities (monthly reports for larger producers, quarterly reports for smaller producers). The information in these reports is the basis from which each producer pays the replenishment assessment. WRD then forwards these production data to the DWR, the court-appointed Watermaster, in connection with the adjudication of the CWCB.

With few exceptions, meters installed and maintained by the individual producers measure the groundwater production throughout the basins. Through periodic testing, both WRD and Watermaster verify the accuracy of individual meters and order corrective measures when necessary. The production of the few wells that are not metered is estimated on the basis of electrical energy consumed by individual pump motors, duty of water, or other reasonable means.

Participation in WRD's In-Lieu Replenishment Program, which replaces groundwater pumping with the use of surplus imported water, has become a major factor affecting annual groundwater production. As participation in the program increases, total production decreases accordingly. In Fiscal Year 2000-2001, In-Lieu participation was 21,181 AF, with 18,364 AF in the Central Basin and 2,817 AF in the West Coast Basin.

During the past five years, in-lieu replenishment has averaged 27,340 AFY. In-lieu replenishment peaked during 1993/94, with total groundwater extractions of less than 172,000 AF, and in-lieu replenishment of about 110,000 AF. However, recent trends show In-Lieu participation decreasing, with a FY 2001-2002 participation estimate of 25,000 AF.

During emergency or drought conditions, WRD can also allow an additional 27,000 AF (17,000 AF for Central Basin and 10,000 AF for West Coast Basin) of extractions for a four-month period. This provision has yet to be exercised but offers the potential use of an additional 7.8 percent groundwater for Central Basin and 15 percent groundwater for West Coast Basin pumpers.

3.2 GROUNDWATER LEVELS AND CHANGE IN STORAGE

Groundwater levels in the CWCB are tracked through the collection of water level measurements in production wells and monitoring wells. Automatic datalogging equipment has been installed in selected monitoring wells to collect water levels up to four times per day to capture the daily and seasonal changes in water levels due to near by and regional pumping. WRD staff visit these and other monitoring wells at least four times per year to collect manual readings and to download the dataloggers. Staff also obtain records from other agencies such as the pumpers, the DWR, and the LACDPW, who regularly collect water level data from production wells. These data are input into WRD's database management system for storage and analysis. Contour maps and hydrographs are prepared to illustrate the current and historical groundwater levels in the basins. The change in storage can be determined based on water level changes over the year.

3.2.1 Contour Maps

Groundwater elevation contour maps show the elevation of the water surface (potentiometric surface) in the aquifer system for a given period of time, such as spring or fall. These maps are used to determine groundwater flow directions and hydraulic

gradients, identify areas of recharge and discharge, identify potential pathways for seawater intrusion, and can be used to calculate the changes in storage from one year to the next.

WRD has prepared several contour maps representing the "Deep Aquifer System", which consists of the San Pedro Formation aquifers (Lynwood/400-Foot Gravel, Silverado, and Sunnyside/Lower San Pedro). **Figures 3.2 and 3.3** are groundwater elevation contour maps for Spring and Fall 2001, respectfully. Based on these maps, groundwater levels are highest in the northeastern corner of the Montebello Forebay, where San Gabriel Valley groundwater flows into the Central Basin. Groundwater levels are at their lowest in several areas, including Long Beach near the city's airport and in the West Coast Basin along the Newport-Inglewood uplift.

In addition to the relatively high summer water demands, MWD's seasonal storage program provides some pumpers with an incentive to pump more groundwater from May through September, and less from October through April. **Figure 3.4** illustrates the monthly pumping amount for WY 2000-2001. As shown in the figure, pumping in the West Coast Basin remains relatively constant at about 4,500 AF/month throughout the year. However, in the Central Basin, pumping is generally 20,000 AF/month or higher May through September, and generally 13,000 AF/month or less the rest of the year. The result of this unsteady seasonal pumping causes groundwater levels to vary dramatically from spring to fall, especially in the confined Central Basin aquifers. **Figure 3.5** is a map showing the difference in water levels between Spring and Fall 2001 generally caused by the seasonal pumping. The biggest impact is in the Long Beach area along the Newport-Inglewood Uplift, where fall water levels are over 80 feet lower than spring water levels.

Between Fall 2000 and Fall 2001, the average water levels in CWCB did not change significantly. However, two new pumping depressions are identified: water levels in the Inglewood area between the Inglewood-Newport Uplift and the Charnock Fault have fallen about 30 feet in one year while water levels in the Cerritos/Norwalk/La Mirada area have declined about 20 feet. **Figure 3.6** shows water level changes based on

differences between the Fall 2001 contour map (**Figure 3.3**) and the Fall 2000 contour map presented in last year's Regional Groundwater Monitoring Report. The greatest water level decline was observed in the Inglewood area, where a decline of over 30 feet was observed. The greatest water level rise was observed just west of the Whittier Narrows area, with increases of up to 15 feet.

3.2.2 Hydrographs

Hydrographs show the changes in water levels in a well over time. WRD uses hydrographs to evaluate basin storage, when to purchase replenishment water, drought preparedness, and how the basins and aquifers respond to both seasonal and long-term recharge and discharge events.

Both long-term and annual hydrographs are used. **Figures 3.7 through 3.10** are long-term hydrographs of key wells used in the District's annual Engineering Survey and Report that show water levels dating back to the 1930s and 1940s in the Montebello Forebay, Los Angeles Forebay, Central Basin Pressure Area, and West Coast Basin, respectively. **Figure 3.2** shows the locations of these key wells. The hydrographs illustrate the general history of groundwater conditions in the CWCB: 1) Water levels were steadily declining in the 1940s and 50s due to groundwater overdraft, causing seawater intrusion and significant removal of groundwater from storage; 2) This severe overdraft condition led to the adjudication of the CWCB in the early 1960s, and the formation of WRD to purchase and deliver artificial replenishment water at the spreading grounds, seawater barrier wells, and through in-lieu replenishment; 3) The reduction in pumping and the artificial replenishment caused groundwater levels to rise in both the CWCB (although not to their historic highs) and returned groundwater to storage; and 4) Over the past 5 to 10 years, water levels have remained relatively level or have slightly decreased, although substantial seasonal variations can occur such as in the Long Beach area **(Figure 3.9)**.

Annual hydrographs are also used to obtain a more detailed picture of aquifer-specific water level changes over the water year. The data for these annual hydrographs are

collected from WRD's nested monitoring wells that were installed by the USGS. **Figure 1.3** shows the locations of WRD's nested monitoring wells. **Table 3.2** presents the groundwater elevation measurements collected from nested monitoring wells during Water Year 2000-2001. Figures 3.11 through 3.14 are hydrographs of selected WRD nested monitoring wells showing data for WY 2000-2001. These data demonstrate the elevation differences between individual aquifers at each nested well location. The differences in elevation are caused primarily by the thickness and hydraulic conductivity of aquitards (if any) which separate the aquifers, the amount and aquifer location of pumping, and the proximity to recharge sources. The information from selected monitoring wells is presented below:

Figure 3.11 – Rio Hondo #1: This nested well is located in the Montebello Forebay in the City of Pico Rivera at the southeast corner of the Rio Hondo spreading grounds. It has 6 individual wells (zones) screened in the Gardena, Lynwood, Silverado, and Sunnyside (three different zones) aquifers from depths of 160 feet below ground surface (bgs) to 1,130 feet bgs. In WY 2000-2001, water levels in Zone 4, representing the Silverado Aquifer, varied about 29 feet throughout the year, from an elevation high of 83 feet (mean sea level, msl) in March 2001 to an elevation low of about 54 feet (msl) in September 2001. All 6 zones generally follow the same trend throughout the year, with lows in the fall and highs in the spring. With the exception of Zones 2 and 3 (both in the Sunnyside aquifer) which have nearly identical elevation heads throughout the year, there are several feet of vertical head differences between aquifers. Elevation heads are lowest in Zone 4, the Silverado Aquifer, suggesting that this aquifer is the most heavily pumped in the area. Because it has the lowest head, it should be expected to receive recharge waters from aquifers above and below.

Figure 3.12 - Huntington Park #1: This nested well is located in the Los Angeles Forebay in the City of Huntington Park southeast of the intersection of Slauson Avenue and Alameda Street. It has 5 individual wells (zones) screened in the Gaspur, Exposition, Gage, Jefferson, and Silverado Aquifers, from depths of 134 feet bgs to 910 feet bgs. In WY 2000-2001, water levels in Zone 1, representing the Silverado Aquifer, varied about

15 feet throughout the year, from an elevation high of –21 feet (msl) in March 2001 to an elevation low of about –36 feet (msl) in August and September 2001. Zone 5, representing the Gaspur Aquifer, was dry throughout the year, indicating that the depth to groundwater exceeded 134 feet in that zone. Water levels of the deepest 3 zones generally followed the same trend throughout the year, with lows in the late summer and fall and highs in the spring. Water levels in Zone 4, the Exposition Aquifer, had only relatively minor fluctuations throughout the year, and occur at elevations from 30 to 55 feet higher than the deeper zones, suggesting little interconnectivity with the lower aquifers.

Figure 3.13 - Long Beach #1: This nested well is located in the Central Basin Pressure Area in the City of Long Beach about a half mile south of the intersection of the 605 Freeway and Willow Street. It has 6 individual wells (zones) screened in the Artesia, Gage, Lynwood, Silverado and Sunnyside (2 zones) Aquifers, with depths ranging from 175 feet bgs to 1,450 feet bgs. In WY 2000-2001, water levels in Zone 3, representing the Silverado Aquifer, varied about 68 feet throughout the year, from an elevation high of –27 feet (msl) in April 2001 to an elevation low of about –95 feet (msl) in September 2001. This large variation is due to the seasonal pumping patterns and confined aquifer conditions previously discussed. Water levels of the 6 zones generally followed the same trend throughout the year, with lows in the late summer and fall and highs in the spring. An abrupt lowering of water levels began in late April to early May as the seasonal pumping season began. A similar rebounding effect is expected in October, when pumping is reduced. Elevation heads are lowest in Zone 3, the Silverado Aquifer, suggesting that this aquifer is the most heavily pumped in the area. Because Zone 3 has the lowest head, it should be expected to receive recharge waters from aquifers above and below the Silverado.

Figure 3.14 - Carson #1: This nested well is located in the West Coast Basin in the City of Carson about 1.5 miles northwest of the intersection of the 405 Freeway and Alameda Street. It has 4 individual wells (zones) screened in the Gage, Lynwood, Silverado, and Sunnyside Aquifers from depths of 270 feet bgs to 1,110 feet bgs. In WY 2000-2001,

water levels in Zone 2, representing the Silverado Aquifer, varied about 15 feet throughout the year, from an elevation high of –61 feet (msl) in January and February 2001 to an elevation low of about -76 feet (msl) in August 2001. Water levels in Zones 1 and 2 track very similar throughout the year, as do Zones 3 and 4. A 35 to 50 foot difference in groundwater elevations between Zones 1/2 and Zones 3/4 suggest that a strong aquitard exists between the zones.

3.2.3 Change In Storage

Groundwater enters and leaves the CWCB. It enters through natural and artificial replenishment, and leaves primarily through pumping. If the amount entering the basin equals the amount leaving, then water levels remain relatively unchanged and the basin is at steady state. When the amount of groundwater entering exceeds the amount leaving, water levels rise and there is an increase in the amount of groundwater in storage. Conversely, when groundwater leaving the basins exceeds the amount of entering, water levels drop and the amount in storage is reduced.

The change in groundwater storage over the course of a water year can be determined by calculating water level changes and multiplying those values by the aquifer's storage coefficients. As discussed in Section 3.2.1, groundwater levels between Fall 2000 and Fall 2001 did not change significantly. Although water levels rose and fell up to 30 feet in localized areas, the average change over the entire CWCB was a drop of only about two feet.

To determine the change in storage from Fall 2000 to Fall 2001, WRD used its GIS to multiply the change in water levels (**Figure 3.6**) by the storage coefficient values determined by the USGS in creating their regional computer model. The storage coefficient values for model layer 3 were used, which represent the confined Silverado and Lynwood aquifers, the most pumped aquifers in the basins. Because these aquifers are fully saturated and confined, storage coefficients are generally small (averaging about 0.0005). Based on the calculation, approximately 700 AF of water was lost from storage from the Silverado/Lynwood aquifers during WY 2000 to 2001. Larger amounts of

storage change will occur in the unconfined, shallower aquifers. These numbers will be presented in WRD's annual Engineering Survey and Report in 2002.

SECTION 4
GROUNDWATER QUALITY

This section discusses the vertical and horizontal distribution of several key water quality parameters based on data from WRD's monitoring wells for Water Year 2000-2001 and purveyor's production wells for Water Years 1998-2001. WRD collected biannual groundwater samples from WRD nested monitoring wells in Fall 2000 and Spring 2001. Groundwater samples are submitted to a DHS certified laboratory for analytical testing for general water quality parameters, known or suspected contaminants, and special interest constituents. Water quality data for production wells were provided by the DHS based on results submitted over the past three years by purveyors for their Title 22 compliance. **Figures 4.1 through 4.28** are maps which present water quality data for key parameters and special interest constituents in the WRD nested monitoring wells and production wells in the CWCB. The figures present the maximum values for data where more than one result is available for the water year. **Table 1.1** presents well construction information for WRD wells. **Table 4.1** categorizes groundwater at the WRD wells into major mineral water quality groups. **Table 4.2** lists the water quality analytical results for the wells in the Central Basin during WY 2000-2001. **Table 4.3** lists the water quality analytical results for the wells in the West Coast Basin during WY 2000-2001.

4.1 MAJOR MINERAL CHARACTERISTICS OF GROUNDWATER IN THE CENTRAL AND WEST COAST BASINS

Major minerals data from general mineral analyses were used to characterize groundwater from discrete vertical zones of each WRD well with respect to source of recharge water (**Table 4.1**). Research by the USGS has provided three distinct groupings of groundwater compositions. Group A groundwater is typically calcium bicarbonate or calcium bicarbonate/sulfate dominant. Group B groundwater has a typically calcium-sodium bicarbonate or sodium bicarbonate character. Group C has a sodium chloride character. A few of the WRD wells yield groundwater samples which do not fall into one of the three major groups and are grouped separately.

Groundwater from Group A, likely represents recently recharged water with a significant percentage of imported water. Groundwater from Group B represents older native groundwater replenished by natural local recharge. Groundwater from Group C represents groundwater impacted by seawater intrusion or connate saline brines. **Table 4.1** lists the groundwater group for each WRD nested monitoring well sampled during WY 2000-2001. Comparison of groundwater groups with well locations indicates that, in general, Group A groundwater is found at and immediately down-gradient from the Montebello Forebay spreading grounds in all but the deepest zones. Group B groundwater is found farther down the flowpath of the Central Basin and inland of the salt water wedge and injected water in the West Coast Basin. Group C water is generally found near the coastlines. Several wells, grouped as "Other" on **Table 4.1**, exhibit a chemical character range different from Group A, B, and C ranges and represent unique waters not characteristic of the dominant flow systems in the basins. The USGS is currently conducting trace element isotope analyses of water from these wells to identify their hydrogeologic source(s).

The major mineral compositions of water from the WRD nested monitoring wells sampled this water year have not changed substantially from previous years where older data are available. It is expected that continued analysis will show gradual changes in major mineral compositions over time, as older native water is extracted from the basins and replaced by younger artificially replenished water.

4.2 TOTAL DISSOLVED SOLIDS (TDS)

As described in Section 2.3, TDS is a measure of the total mineralization of water. It represents the overall mineral content of the water and usually is the first indicator used in assessing the quality of the water. The State DHS has established a recommended secondary standard of 500 mg/L and an upper limit of 1,000 mg/L. It is not considered a health hazard, but can have salty taste.

WRD well data for WY 2000-2001 indicate relatively low TDS concentrations for

groundwater in the deeper producing aquifers of the Central Basin (**Figure 4.1**). TDS concentrations in the Central Basin ranged from 180 mg/L in Lakewood #1 zones 1 and 2, to 2,770 mg/L in Whittier #1 zone 1. In the Central Basin, the Silverado Aquifer zones in 12 out of 17 WRD nested monitoring wells had very low TDS concentrations, below 500 mg/L. The Silverado aquifer zones of all 17 Central Basin wells tested were less than the DHS upper limit for TDS of 1,000 mg/L. Generally, TDS concentrations above 1000 mg/L were limited to localized very deep or very shallow zones of Whittier #1, Inglewood #2, Long Beach #1, Long Beach #2, and Los Angeles #1.

In contrast, West Coast Basin nested monitoring well data show generally higher TDS concentrations. TDS in WRD nested monitoring wells in the West Coast Basin ranged from 210 mg/L in Carson #1 zone 1, to 15,000 mg/L in PM-4 Mariner zone 2. Only the most inland nested monitoring wells, Carson #1 and Gardena #1 indicate TDS values below 500 mg/L consistently for all zones below the shallowest. Wilmington #1 and Wilmington #2, located near the Dominguez Gap Seawater Intrusion Barriers have significantly high TDS values, each with elevated TDS in multiple zones, including Silverado aquifer zones, above 1000 mg/L. All zones of the Inglewood #1 and Lomita #1 nested monitoring wells exceed 750 mg/L with one or more zones greater than 1,000 mg/L.

Figure 4.2 presents WYs 1998-2001 DHS water quality data for TDS in production wells across the CWCB. In the Central basin, TDS is generally below 500 mg/L over most of the basin except a localized area along the San Gabriel River around and partially down the flow path from the San Gabriel River Spreading Grounds where many wells have TDS concentrations between 500 and 750 mg/L. A few wells in this area exceed 1,000 mg/L TDS. Several production wells in the southernmost portion of the Central Basin indicate TDS less than 250 mg/L.

Data from West Coast Basin wells indicate that most wells in production have TDS concentrations below 750 mg/L. Several production wells in the Hawthorne/Torrance areas, close to the coast, have elevated TDS concentrations above 1,000 mg/L.

4.3 IRON

Iron and manganese in general are not harmful for ingestion. They are essential nutrients. However, secondary standards of 0.3 mg/L for iron and 0.05 mg/L for manganese were established for aesthetic purposes. If completely oxidized, they are relatively insoluble in groundwater as Fe^{+3} and Mn^{+4}. However, under anaerobic conditions, they exist in the reduced forms of Fe^{+2} and Mn^{+2} which are more soluble in water. Upon exposure to air they will then oxidize slowly and form undesirable precipitates that discolor the water. Iron and manganese can discolor water and stain plumbing fixtures and clothes. Iron will also impart a metallic taste to the water.

Dissolved iron in groundwater has historically been a water quality problem in portions of the CWCB. An abundant source of iron is present in the minerals making up the aquifers of the basins. The presence of dissolved iron, that is, iron dissolving from the minerals into the groundwater is controlled by a variety of geochemical factors discussed at the end of this section. In the Central Basin iron in nested monitoring wells (**Figure 4.3**) ranged from less than the detection limit (numerous wells) to 0.59 mg/L (Whittier #1 zone 1), and indicated only a few local zones where iron exceeds the MCL. Only three wells in the Central Basin had detectable iron concentrations in the Silverado zones. These include Los Angeles #1, Huntington Park #1, Pico #1, and Whittier #1. Only the Silverado zone in Pico #1 exceeded the MCL. Iron was detected in zones above and/or below the Silverado Aquifer in four of the seventeen Central Basin nested wells sampled.

In the West Coast Basin elevated iron occurs locally. Iron concentrations ranged from less than the detection limit (numerous wells) to 0.52 mg/L (PM-3 Madrid zone 4). Two wells in the West Coast Basin had iron concentrations in the Silverado zones exceeding the MCL. These two wells, Inglewood #1 and Chandler #3, are at the northern and southern margins of the basin. Other wells in the central western portion of the basin had iron below the detection limit. Iron was not detected in the Silverado zones of wells in the eastern and southern areas of the basin.

Figure 4.4 presents WYs 1998-2001 DHS water quality data for iron in production wells across the CWCB. The data show elevated iron concentrations in many production wells throughout the CWCB and many purveyors must treat groundwater to remove the iron. There does not appear to be a distinct pattern to the occurrence of elevated iron. Production wells exhibiting high iron concentrations appear in and around many with non-detectable iron.

Data from DHS for the West Coast Basin show several production wells in the northwestern portion of the basin have iron concentrations exceeding the MCL. In the southern portion of the basin, iron concentrations were either non-detectable or below the MCL.

Although a definitive source cannot be identified for the various elevated iron concentrations described above, some general geochemical relationships for dissolved iron in groundwater may apply to the iron distribution patterns. First, dissolved iron tends to form under reducing groundwater conditions. Groundwater having a pH value between 6 and 8 (as is the case for all the WRD wells) can be sufficiently reducing to retain as much as 50 mg/L of dissolved ferrous iron at equilibrium, when bicarbonate activity does not exceed 61 mg/L (Hem, 1992). Second, iron is a common component of many igneous rocks and is found in trace amounts in virtually all sediments and sedimentary rocks—therefore, abundant natural sources of dissolved iron are present throughout the CWCB and in particular geochemical conditions the natural iron will dissolve into the groundwater. Third, water may dissolve any subsurface iron casing, piping, etc. (the main materials of older production wells and pumps, and distribution systems)-thus, production wells themselves may contribute iron to water supplies.

4.4 MANGANESE

Manganese concentrations in the WRD nested monitoring wells exhibit widespread vertical and horizontal variations across the CWCB. Like iron, manganese is a naturally occurring element in groundwater and aquifer materials. In the Central Basin

(**Figure 4.5**), manganese ranged from below the detection limit (numerous wells) to 1,200 µg/L (Pico #2 zone 6). In the southern portion of the basin, elevated manganese typically occurs in shallower aquifers above the Silverado producing zones. In the northern portion of the Central basin, manganese is present in shallow zones, the Silverado Aquifer, and the deeper zones.

In the West Coast Basin, manganese concentrations in nested monitoring wells ranged from below the detection limit (numerous wells) up to 1,200 µg/L (PM-4 Mariner zone 2). In the southern portion of the West Coast, like iron, elevated manganese concentrations were limited to aquifer zones above the Silverado. In the western portion of the West Coast Basin, manganese concentrations typically exceed the MCL in most zones with only a few of the deepest aquifer zones below the MCL.

Figure 4.6 presents WYs 1998-2001 DHS water quality data for manganese in production wells across the CWCB. The data show a large number of wells having elevated manganese concentrations with approximately one-third exceeding the MCL. The production wells with elevated manganese tend to be widespread but there does appear to be an area around and for about 5 miles down the flow path from the Montebello Forebay spreading grounds where manganese is below the MCL. In the West Coast Basin, production wells with high concentrations of manganese tended to be limited to the westernmost wells.

4.5 NITRATE

Nitrate concentrations in groundwater are a concern because its presence indicates that some contamination occurred from the degradation of organic matter. Native groundwater typically does not contain nitrate, it is usually introduced into groundwater from historic agricultural practices such as fertilizing crops and leaching of animal wastes, as well as the presence of nitrate in recycled water used for recharge. Typically, organic nitrogen and ammonia are the initial byproducts from the decomposition of human or animal wastes. The organic nitrogen and ammonia, as they become oxidized, are converted to nitrite, and then nitrate ions, in the ground. A portion of the nitrites and

nitrates are converted to nitrogen gas and hence returned to the atmosphere. Nitrate itself is not harmful. However, it can be converted to nitrite in infants, which leads to methemoglobinemia, a condition in which hemoglobin in the blood cannot transport oxygen throughout the body. The DHS has a standard of 10 mg/L as N for nitrate, 1 mg/L as N for nitrite, and 10 mg/L as N for the total of nitrite and nitrate.

Figure 4.7 presents WY 2000-2001 nitrate (as nitrogen) water quality data for nested monitoring wells in the CWCB. In the Central Basin, nitrate (as nitrogen) concentrations ranged from below the detection limit (numerous wells) to 11.4 mg/L (Los Angeles #1 zone 5). Nested monitoring wells in the vicinity of the Montebello Forebay spreading grounds indicate concentrations of nitrate slightly above detection but below the MCL. Rio Hondo #1 and Pico #2 show detectable concentrations of nitrate from the shallowest down to Zones 3 and 1 respectively. These two wells are near the down-gradient end of the Rio Hondo and San Gabriel spreading grounds. South Gate #1 and Downey #1 show detectable concentrations in the middle zones, which are directly down the flow path from the spreading grounds, however Silverado and deeper zones of nested wells more distant from the spreading grounds have no detectable concentrations of nitrate. The detectable but relatively low concentrations of nitrate at and near the spreading grounds may be due to the local water and/or recycled water component of recharge at the spreading grounds. Nitrate is also observed in shallow zones at Huntington Park #1, Commerce #1, Pico #1, and Whittier #1. These shallow occurrences of nitrate, away from the spreading grounds, are likely attributed to local surface recharge from former agricultural activities prior to the extensive land development beginning in the 1950s.

In the West Coast Basin nested monitoring wells, nitrate concentrations ranged from below the detection limit (numerous wells) to 40 mg/L (Chandler #3 zone 2). Concentrations exceeding the nitrate MCL included the shallowest zones of Inglewood #1, Gardena #1, Lomita #1, and Chandler #3, and a detection below the MCL in the shallowest zone at Hawthorne #1. These shallow occurrences and other shallow zone occurrences of nitrate where deeper zones are below detection levels are also likely attributable to local surface recharge from former agricultural activities prior to the

extensive land development beginning in the 1950s.

Figure 4.8 presents WYs 1998-2001 DHS water quality data for nitrate in production wells across the CWCB. The data show only one production well, located in the Los Angeles Forebay exceeded the nitrate MCL in the CWCB during the past data period. Detectable concentrations below the MCL were generally concentrated around and down the groundwater flow path of the San Gabriel River and Rio Hondo Spreading Grounds of the Montebello Forebay and several scattered detections in the northwestern portion of the Central Basin. Several production wells in the West Coast Basin show detectable nitrate, however all wells were below the MCL.

4.6 HARDNESS

Figure 4.9 presents WY 2000-2001 water quality data for total hardness in WRD nested monitoring wells in the CWCB. As described in Section 2, there is no MCL established for total hardness; rather, hardness is undesirable due to scaling and other qualities. In the Central Basin total hardness ranged from 7.19 (Long Beach 1 zone 2) to 1,100 mg/L (Whittier #1 zone 1), while in the West Coast Basin, hardness ranged from 16.8 mg/L (Wilmington #2 zone 1) to 5,430 mg/L (PM-4 Mariner zone 2). In general, the deeper aquifers in the southern portion of the Central Basin and locally in the West Coast Basin show low total hardness, zones characterized as having older native groundwater. Most other zones in both basins have moderate to high hardness.

Figure 4.10 presents WYs 1998-2001 DHS water quality data for total hardness in production wells in the CWCB. Groundwater in the West Coast Basin has moderate hardness. Production wells in the southern and western portions of the Central Basin show groundwater with low to moderate hardness. In the northern portion of the Central Basin, production wells show groundwater with generally moderate to high hardness.

4.7 SULFATE

Figure 4.11 presents WY 2000-2001 water quality data for sulfate in WRD nested monitoring wells in the CWCB. In the Central Basin sulfate ranged from below the

detection limit (numerous wells) to 1,340 mg/L (Whittier #1 zone 1), while in the West Coast Basin sulfate ranged from below the detection limit (numerous wells) to 678 mg/L (PM-4 Mariner zone 2). The data indicate generally lowest sulfate concentrations in most of the deeper zones of the West Coast Basin and southern portion of the Central Basin. Again, areas characterized as having older native groundwater. The uppermost one or two zones in many of these wells typically show elevated sulfate concentrations, likely due to local surface recharge. In the northeast portion of the Central Basin, higher sulfate concentrations are observed in most zones primarily due to the relatively high sulfate in Colorado River water imported for artificial recharge. Only two nested monitoring wells indicated the Silverado Aquifer is impacted by sulfate greater than the MCL. These include the Whittier #1 well, in an area of generally poor water quality, and PM-4 Mariner, which is impacted by the saline plume in the West Coast Basin.

Figure 4.12 presents WYs 1998-2001 DHS water quality data for sulfate in production wells in the CWCB. The production well data indicate patterns of sulfate concentrations similar to the deeper zones of WRD nested monitoring wells. Sulfate is generally low in the West Coast Basin and southern portion of the Central Basin, and somewhat higher in the northeastern portion of the Central Basin.

4.8 CHLORIDE

Figure 4.13 presents WY 2000-2001 water quality data for chloride in WRD nested monitoring wells in the CWCB. In the Central Basin, chloride concentrations ranged from 5.12 mg/L (Downey #1 zone 1) to 889 mg/L (Long Beach #1 zone 5). The Silverado aquifer zones of the Central Basin nested monitoring wells have low to very low chloride concentrations, all below the MCL of 250 mg/L. In the West Coast Basin, chloride ranged from 15.8 (Gardena #1 zone 1) to 5740 mg/L (PM-4 Mariner zone 2). Chloride concentrations exceed the MCL in the Silverado aquifer zones in six of the eleven West Coast Basin nested wells, primarily due to seawater intrusion (Wilmington #1 and #2, and PM-4 Mariner), or yet to be identified sources (Chandler #3, Lomita #1, and Inglewood #1).

Figure 4.14 presents WYs 1998-2001 DHS water quality data for chloride in production wells in the CWCB. No Central Basin production wells had chloride levels above the MCL. In the southern portion of the Central Basin, chloride concentrations in production wells were generally below 50 mg/L, while in the northeastern portion of the Central Basin, concentrations in most wells were slightly higher, between 50 and 100 mg/L. In the West Coast Basin, available DHS data indicate only the westernmost production wells, near the saline plume, tested high for chloride above the MCL.

4.9 TRICHLOROETHYLENE (TCE)

This is a commonly used solvent for metal cleaning and dry cleaning of fabrics. It is classified as a probable human carcinogen. Its presence in groundwater most likely originated from improper disposal practices. The MCL for TCE is 5 µg/L. If it is found in water, it can be easily treated either by packed tower aeration or granular activated carbon.

TCE was detected in five WRD nested monitoring wells in the Central Basin and three in the West Coast Basin (**Figure 4.15**). In the Central Basin, TCE concentrations ranged from below the detection limit (numerous wells) to 16 µg/L (Los Angeles #1 zone 2) Only one well in the Silverado Aquifer, South Gate #1, had TCE detected and it was below the MCL. Three other wells, Huntington Park #1 zones 3 and 4, Commerce #1 Zone 5, and Downey #1 zones 5 and 6, had detections of TCE in zones above the Silverado Aquifer. The detection in Huntington Park #1 Zone 3 was above the MCL.

In the West Coast Basin, TCE concentrations ranged from below the detection limit (numerous wells) to 51 µg/L (Inglewood #1 zone 5). In the shallowest zones of Inglewood #1 and Hawthorne #1, high TCE concentrations above the MCL were detected. In the shallowest zone at PM-3 Madrid, TCE was detected below the MCL. TCE was not detected in the deeper Silverado zones of any nested monitoring wells in the West Coast Basin.

Figure 4.16 presents WYs 1998-2001 DHS water quality data for TCE in production

wells across the CWCB. The data show that over the past three years TCE has been detected in forty-six production wells in the Central Basin. Eight detections were above the MCL. All of those testing above the MCL were in or near the Montebello and Los Angeles Forebay areas. In the West Coast Basin TCE was detected in one production well, above the MCL, sampled during WY 1998-2001.

4.10 TETRACHLOROETHYLENE (PCE)

Tetrachloroethylene, also known as perchloroethylene, is a solvent used in dry cleaning, textile processes, and metal degreasing. It is also used in the manufacture of fluorocarbons and as a septic tank cleaner. Through improper disposal practices, it has contaminated many groundwater basins. It can cause liver problems and also cancer. The MCL for PCE is 5 µg/L. Like TCE, PCE is easily treated with packed tower aeration or granular activated carbon.

During WY 2000-2001 PCE (**Figure 4.17**) was detected in six nested wells in the Central Basin and one well in the West Coast Basin. In the Central Basin, PCE ranged from below the detection limit (numerous wells) to 12 µg/L (Pico #2 zone 3), all from nested wells within or near the Montebello forebay. At well Pico #2 PCE was detected at 2-4 times the MCL, below the Silverado Aquifer, in the Sunnyside Aquifer. Elsewhere, South Gate #1 shows PCE detected above the MCL in and below the Silverado Aquifer. At Huntington Park #1, PCE was detected below the MCL in zone 3, above the Silverado Aquifer. At Los Angeles #1 PCE was detected below the MCL in two zones, the shallowest zone as well as zone 2, which is below the Silverado aquifer.

In the West Coast Basin PCE concentrations were below the detection limit in all nested monitoring wells except Inglewood #1. The shallowest zone at Inglewood #1 had 19 µg/L of PCE. The deepest zone at Inglewood #1 also indicated PCE exceeding the MCL.

Figure 4.18 presents Wys 1998-2001 DHS water quality data for PCE in production wells across the CWCB. In the Central Basin, PCE was detected in 64 production wells.

Nine of the 64 wells exceeded the MCL for PCE. Production wells with PCE are primarily located in or near the Los Angeles and Montebello Forebays and extend out into the western portion of the Central Basin. PCE was not detected in any production wells tested in the West Coast Basin during 1998-2001.

4.11 SPECIAL INTEREST CONSTITUENTS

At the recommendation of the WRD Pumpers' Task Force, several additional water quality constituents have been studied by WRD to address emerging water quality issues related to hazardous waste contamination, recycled water use in the CWCB, and proposed revisions to water quality regulations. Current special interest constituents include arsenic, hexavalent chromium, MTBE, total organic carbon (TOC), and apparent color. The studies in some cases have included focused sampling of WRD nested monitoring wells and evaluation of DHS Title 22 Program data for the special interest constituents. The following subsections present the data collected for these constituents.

4.11.1 Arsenic

EPA announced on October 31, 2001 that they will keep the arsenic standard at 10 μg/L, as they had originally announced on January 21, 2001. Three expert panel reviews were completed on the health effects of arsenic, costs for compliance, and benefits associated with varying degrees of treatment, and were considered before EPA's announcement. The current standard is 50 μg/L. Because costs for small systems will be significant, EPA has indicated that they will provide assistance in funding and training and also research to find new treatment technologies that will reduce the cost for compliance. Date for compliance for all water systems is January 2006.

New state legislation (SB 463 Perata, chaptered October 9, 2001) requires the State Department of Health Services to adopt a new arsenic MCL by June 30, 2004 and the Office of Environmental Health Hazard Assessment (OEHHA) to establish a new Public Health Goal (PHG) by December 31, 2002. Also, new language concerning the health effects of ingesting water with arsenic will be required in consumer confidence reports after July 1, 2003.

Arsenic is an element that occurs naturally in the earth's crust. Accordingly, there are natural sources of exposure. These include weathering of rocks and erosion, depositing arsenic in water bodies, and uptake of the metal by animals and plants. Consumption of food and water are the major sources of arsenic exposure for the majority of U.S. citizens. Over ninety percent of arsenic is used as wood preservative against dry rot, fungi, molds, termites, and other pests as chromate copper arsenate. People may also be exposed from other uses of arsenic in industrial applications, such as semiconductor manufacturing, petroleum refining, animal feed additives and herbicides.

The Safe Drinking Water Act, as amended in 1996, requires the United States Environmental Protection Agency (EPA) to revise the existing drinking water standard for arsenic. The new standard will protect against possible adverse health effects from exposure to this constituent and will reflect the statutory evaluation of whether the costs are justified by the benefits. Arsenic is carcinogenic and also causes other health effects such as high blood pressure and diabetes.

Figure 4.19 presents WY 2000-2001 arsenic water quality data for WRD nested monitoring wells. Arsenic concentrations greater than the pending MCL in the Central Basin were found at six wells, the Willowbrook #1, Pico #2, Long Beach #2, Lakewood #1, Long Beach #1, and Cerritos #1 wells. Arsenic concentrations exceeding the pending MCL in the Silverado aquifer zones was found only at Cerritos #1 along the eastern District boundary. Overall the distribution of arsenic appears similar to the distribution of iron and manganese in the Central Basin with generally lower concentrations near the Forebays and higher concentrations down the flowpaths away from the Montebello Forebay spreading basins.

In the West Coast Basin no zones in the Silverado Aquifer had arsenic concentrations above the pending MCL. Only the deepest zone in Gardena #1, below the Silverado Aquifer, had a concentration of arsenic above the pending MCL of 10 µg/L.

Figure 4.20 presents WYs 1998-2001 DHS water quality data for arsenic in production wells across the CWCB. Production wells in the southeastern portion of the Central Basin indicate up to eleven production wells with arsenic concentrations above the pending MCL. Many other production wells at various locations in the Central Basin have arsenic between 5 and 10 µg/L. Arsenic was not detected in any West Coast Basin production wells from 1998 through 2001.

4.11.2 Chromium

Chromium is a metal used in the manufacture of stainless steel, metal plating operations, and other applications. It has the potential to contaminate groundwater from spills and leaking tanks. It comes in two basic forms: chromium 3 (trivalent) and chromium 6 (hexavalent). Chromium 3 is a basic nutrient that is quite commonly taken by adults in doses of 50 to 200 µg per day. Chromium 6 is a known carcinogen when inhaled. This is based on occupational exposures in chromium plating and other related industries.

Currently the MCL for total (all forms of) chromium is 50 µg/L. In February 1999, OEHHA established a Public Health Goal for total chromium at 2.5 µg/L, based on a health protective level for chromium 6 at 0.2 µg/L and estimating that 7 percent of total chromium in drinking water is chromium 6. In November 2001, OEHHA announced that it rescinded this PHG. At their request earlier this year, a scientific panel convened by the University of California, known as the Chromate Toxicity Review Committee, reviewed the study that OEHHA originally used as a basis for their PHG and concluded in September 2001 that the data were flawed and should not be used for health risk assessments. At the request of both DHS and OEHHA, the National Toxicity Program of the National Institute of Environmental Health Sciences will perform a long-term health effects study on rodents to evaluate the potential carcinogenicity of ingested chromium 6. It is expected to be completed in 2005. DHS has added chromium 6 to its list of unregulated chemicals requiring monitoring in production wells.

Senate Bill (SB) 351 by Ortiz was chaptered on October 9, 2001, and requires DHS to adopt a chromium 6 standard by January 1, 2004. OEHHA will develop a new chromium

6 PHG by Spring 2003.

Figure 4.21 presents total chromium water quality data for WRD nested monitoring wells. In the Central Basin, only the uppermost zone in the Los Angeles #1 nested well exceeded the MCL of 50 µg/L for total chromium. Total chromium was detected below the MCL, from 5 to 50 µg/L at Huntington Park #1 zone 3, Commerce #1 zone 6, and at La Mirada #1 zone 3. Trace levels of total chromium were detected in one or more zones of numerous other Central Basin nested wells. Total chromium was not detected above the MCL in the West Coast Basin. At shallowest zone of Gardena #1 the total chromium concentration was 6.7 µg/L. As in the Central Basin, trace levels of total chromium were detected in one or more zones of numerous other nested wells in the West Coast Basin.

Figure 4.22 presents 1998-2001 DHS water quality data for total chromium in production wells across the CWCB. Only two production wells in the South Gate area of the Central Basin exceeded the MCL for total chromium. Four other production wells, all in the northwest corner of the Central Basin, had total chromium detected below the MCL. In the majority of other production wells sampled in the Central Basin, total chromium was not detected. Total chromium was not detected in any production wells in the West Coast Basin.

Figure 4.23 presents hexavalent chromium water quality data for WRD nested monitoring wells. In the CWCB, most WRD nested monitoring wells were sampled twice for hexavalent chromium since early 1998. Most zones of nested monitoring wells of the CWCB tested below the Preliminary Health Goal of 0.2 µg/L. However, in one area, the northern portion of the Central Basin, hexavalent chromium was detected from 0.2 to 30 µg/L in many zones. All of the detected concentrations were below the current MCL for total chromium. In the Los Angeles #1, Huntington Park #1, Commerce #1, Downey #1, Pico #1, and Whittier #1 wells; hexavalent chromium was detected in zones above the Silverado Aquifer. In Los Angeles #1, South Gate #1, Downey #1, Rio Hondo #1, and Pico #2, hexavalent chromium was detected in zones within and/or below the Silverado Aquifer. In the West Coast Basin, hexavalent chromium was detected below

the MCL in the deepest zone of Long Beach #3, and the shallowest zones of Inglewood #1, Gardena #1, and Chandler #3.

As new wells are added to the WRD nested monitoring well network, samples will be collected for hexavalent chromium analysis to update these special study results. WRD will report these updates in subsequent regional groundwater monitoring reports.

Figure 4.24 presents WYs 1998-2001 DHS water quality data for hexavalent chromium in production wells across the CWCB. Hexavalent chromium has been reported in a limited number of production wells in the Central Basin and none in the West Coast Basin. Most of those reported for Central Basin are located in the northern portion of the basin and range from non-detected to 4.9 µg/L. Two wells in the southern portion of Central Basin were sampled and hexavalent chromium was not detected. DHS has ordered California water purveyors to begin hexavalent chromium testing in active drinking water production wells, this data will also be reported in future regional groundwater monitoring reports.

Comparison of the distribution and concentrations of total and hexavalent chromium suggests that at lower concentrations, below 5 or perhaps 10 µg/L, chromium can be either trivalent or hexavalent. However, when the total chromium concentration is greater than 10 µg/L, most if not all is in the hexavalent form.

4.11.3 Methyl Tert-Butyl Ether (MTBE)

Methyl tertiary butyl ether (MTBE) is a synthetic chemical added to gasoline to improve air quality as part of the federal Clean Air Act. Limited quantities have been used in gasoline in California since the 1970s. In 1992, oil companies began using it extensively in California to meet reformulated gas requirements of the State Air Resources Board. Its use enables gasoline to burn more completely. However, MTBE has been detected in groundwater and surface water sources throughout California from leaking underground storage tanks and pipelines and spills and also from emissions of marine engines into lakes and reservoir. Animal tests have shown it to be carcinogenic. Effective May 17,

2000, a primary MCL of 13 µg/L was established by DHS. A secondary standard of 5 µg/L was established in response to taste and odor concerns. An executive order by Governor Davis bans the use of MTBE by 2003, which would significantly reduce, if not virtually eliminate new discharges. The most likely substitute for MTBE is ethanol. The production and distribution of ethanol, however, is problematic. There may not be an adequate supply, and it cannot be delivered by pipeline. The state is evaluating alternatives, including continued pursuit of a waiver for oxygenates from the USEPA.

Figure 4.25 presents WY 2000-2001 MTBE water quality data for WRD nested monitoring wells. MTBE was not detected in any of the WRD nested monitoring wells sampled. **Figure 4.26** presents WYs 1998-2001 DHS water quality data for MTBE in production wells across the CWCB. MTBE was not detected in any of the production wells reported.

4.11.4 Total Organic Carbon

Total organic carbon is the broadest measure of all organic molecules in water. TOC can be naturally occurring, wastewater-derived, or a combination of both (NRC, 1998). While there is no MCL established for TOC, regulators are generally concerned with wastewater derived TOC as a measurable component of recycled water. Typically, wastewater that has been subjected to effective secondary treatment contains 5 to 15 mg/L of TOC. Advanced treatment can effectively lower the TOC concentration to less than 1mg/L. It is likely that much of the TOC measured in groundwater samples in both nested monitoring wells and production wells in the CWCB is naturally occurring in the aquifer systems and was derived from organic material and decaying vegetation deposited with the aquifer sediments as the basins were filling.

Figure 4.27 presents WY 2000-2001 (TOC) water quality data for WRD nested monitoring wells. In the Central Basin, TOC was detected in multiple zones of 16 out of 17 nested monitoring wells. Only La Mirada had no detectable TOC. In approximately half of the zones where TOC is detected, the concentration is below 1 mg/L. In most other zones where TOC is present, the concentration is between 1 and 5 mg/L. Only

three wells in the Central Basin have zones with TOC greater than 5 mg/L including 3 of the 4 deepest zones at Santa Fe Springs #1, the deepest zone at Long Beach #2, and the deepest two zones at Inglewood #2. None of these three wells with TOC greater than 5 mg/L are near a source of artificial recharge using recycled water. Therefore, the elevated concentrations are likely to be naturally occurring organic carbon, and not wastewater related organic carbon. In the West Coast Basin, TOC greater than 1 mg/L is present in one or more zones at 10 of the 11 nested monitoring wells and greater 5 mg/L in 4 out of 11.

Figure 4.28 presents limited WYs 1998-2001 DHS water quality data for total organic carbon in production wells across the CWCB. During the 3-year period only nine wells were tested for TOC. Seven out of the nine wells had TOC ranging from 1 to 5 mg/L. Six out of the nine wells were located in the southern portion of the Central Basin or the northeastern portion of the West Coast basin, areas far away from artificial recharge influences, and have the same TOC concentration ranges as the three wells in the Montebello Forebay.

4.11.5 Apparent Color

Apparent color in groundwater (colored groundwater) is not toxic or harmful, however an MCL of 15 apparent color units (ACUs) has been established as an aesthetic standard. Colored groundwater results from colloidal organic particles suspended in the water and impart colors ranging from pale yellow to a dark tea brown. There is an observed relationship between apparent color and TOC, especially in the higher ranges of concentrations. Colored groundwater can be effectively treated and served, however it is relatively expensive.

Figure 4.29 presents WY 2000-2001 apparent color water quality data for WRD nested monitoring wells in the CWCB. Apparent color is present above the MCL in the deepest zones of 15 nested monitoring wells. Two other wells have apparent color above the MCL in intermediate zones. Apparent color does not exceed the MCL in the uppermost zone in any nested monitoring well tested. This relationship of higher color and depth,

along with the relationship with TOC, is probably due to increased content of natural organic matter in the deeper sediments of the basins.

Figure 4.30 presents WYs 1998-2001 DHS water quality data for apparent color in production wells across the CWCB. These data indicate that colored groundwater is not a widespread problem in the basins. Most production wells tested below the MCL. Locally, in the Cerritos, Long Beach, Inglewood, and South Gate/Commerce areas, several wells did test above the MCL for apparent color and the purveyors in those areas do have treatment systems operating to remove color from the groundwater

SECTION 5
SUMMARY OF FINDINGS

This Annual Groundwater Monitoring Report was prepared by WRD to report on the groundwater conditions in the CWCB during the WY 2000-2001. A summary of findings is presented below.

- Artificial replenishment activities combined with natural replenishment and controlled pumping have ensured a sustainable, reliable supply of groundwater in the CWCB. Artificial replenishment water sources used by WRD include imported water from the Metropolitan Water District of Southern California, recycled water from the County Sanitation Districts of Los Angeles County, recycled water with advanced treatment from West Basin MWD, and In-Lieu replenishment water.
- At the Montebello Forebay, 23,451 AF of imported water was purchased for replenishment during WY 2000-2001. A total of 43,778 AF of recycled water was purchased for spreading in the Montebello Forebay. A total of 23,544 AF of imported water was purchased for injection to the seawater barriers. A total of 6,838 AF of recycled water was purchased for injection into the West Coast Basin Barrier Project. In-Lieu replenishment water totaled 21,181 AF for Fiscal Year 2000-2001. Total artificial replenishment was 161,082 AF for WY 2000-2001.
- Groundwater production in the CWCB was 248,863 AF for Water Year 2000-2001. This amount is less than the adjudicated amount of 281,835 AF, partly due to the success of WRD's In-Lieu Replenishment Program, which provides incentives to pumpers for not pumping in areas that are difficult to recharge by other means.
- Groundwater levels were continually monitored in the CWCB over the water year. The WRD nested monitoring wells show clear, significant differences in groundwater elevations between the various aquifers screened. The head differences in the WRD nested monitoring wells reflect both hydrogeologic and pumping conditions in the CWCB. Vertical head differences between 1 and 110 feet occur between zones above and within the producing zones. The greatest head differences tend to occur in the

pumping holes of the Central and West Coast Basin Pressure Areas, while the smallest differences occur in the Montebello Forebay recharge area, and the Torrance area which has thick, merged aquifers.

- Basinwide hydrographs and groundwater elevations measured in nested monitoring wells and key production wells indicate a slight decline in water levels in the CWCB during WY 2000-2001. On average, water levels dropped about two feet during WY 2000-2001. The change in groundwater storage for the CWCB was calculated at a loss in storage of approximately 700 AF from the Silverado Aquifer.
- The water quality associated with key constituents in untreated imported water used at the Montebello Forebay spreading grounds remains good. Average TDS, hardness, iron and manganese concentrations in both Colorado River and State Project Water remain below their respective MCLs. Meanwhile, TCE and PCE have not been detected in either water source.
- The water quality associated with key constituents in recycled water used at the Montebello Forebay spreading grounds also remains excellent and is carefully monitored and controlled to show little variation over time.
- Stormwater samples are occasionally collected and analyzed for a few water quality parameters. Samples collected between 1998 and 2000 show that average stormwater TDS concentrations and hardness are lower than most other sources of replenishment water.
- Based on the data obtained from the WRD nested monitoring wells during WY 2000-2001, the water quality associated with key constituents in groundwater differs both vertically between aquifers and horizontally (areally) across the CWCB.
- TDS concentrations for WRD wells located in the Central Basin are relatively low, while TDS concentrations for WRD wells located in the West Coast Basin are elevated in portions of the basin, primarily the Torrance and Dominguez Gap areas. The elevated TDS concentrations may be caused by seawater intrusion or connate brines, or possibly oil field brines. During this reporting period, concentrations in the Central Basin ranged from 180 mg/L to 2,770 mg/L, and in the West Coast Basin 210 mg/L to 15,000 mg/L. The District is conducting further studies with the USGS to identify the sources of high TDS.

- Iron concentrations continue to be a problem in portions of the CWCB. During this reporting period, concentrations in the Central Basin ranged from ND to 0.59 mg/L, and in the West Coast Basin not detected (ND) to 0.52 mg/L The MCL for iron is 0.3 mg/L. Sources of the localized high iron concentrations have yet to be identified.
- Similar to the iron concentrations, manganese concentrations exceed the MCL (50 µg/L) in a large number of nested monitoring wells and production wells across the CWCB. During this reporting period, concentrations in the Central Basin ranged from ND to 1,200 µg/L, and similarly in the West Coast Basin, also from ND to 1,200 µg/L. Similar to iron, sources of the localized high manganese concentrations have yet to be identified.
- Nitrate (as nitrogen) concentrations in WRD nested monitoring wells in the Central Basin ranged from ND to 11.4 mg/L, and in the West Coast Basin ND to 40 mg/L. Concentrations approaching or exceeding the 10 mg/L MCL tend to be limited to the uppermost zone at a particular nested well, and likely due to localized infiltration and leaching rather than artificial recharge activities. No concentrations above the MCL were observed in the Silverado Aquifer. DHS data indicated no CWCB production wells tested for nitrate above the MCL from 1998-2001.
- TCE was not detected in the Silverado Aquifer in the WRD wells sampled, with the exception of South Gate #1. During this reporting period, concentrations in nested monitoring wells in the Central Basin ranged from ND to 51 µg/L, and in the West Coast Basin from ND to 16 µg/L. DHS data indicate that TCE was detected in 46 production wells in the Central Basin from 1998-2001. Eight out of the 46 detections exceed the MCL for TCE. In the West Coast Basin, TCE was detected below the MCL in one production well.
- PCE was detected in four WRD nested monitoring wells in the Central Basin and one well in the West Coast Basin. PCE was not detected in the Silverado Aquifer in the WRD wells sampled, with the exception of South Gate #1 and Downey #1. During this reporting period, concentrations in the Central Basin ranged from ND to 12 µg/L, and in the West Coast Basin from ND to 19 µg/L. DHS data indicate that PCE was detected in 64 production wells in the Central Basin from 1998-2001. Nine out of the 64 detections exceeded the MCL for PCE. PCE was not detected in any West Coast

Basin production wells.

- EPA has adopted a new arsenic standard for drinking water, decreasing the former MCL of 50 µg/L to a pending MCL of 10 µg/L. Enforcement of the pending MCL is scheduled to begin in 2006. WRD nested monitoring wells indicated arsenic concentrations in the southeast portion of the Central Basin exceed the pending MCL. During 1998-2001, eleven production wells, all in the southern portion of the Central Basin, had arsenic concentrations exceeding the pending MCL of 10 µg/L.
- Chromium, including hexavalent chromium, has been detected above the MCL in groundwater samples from a WRD nested monitoring well and several production wells in and near the Montebello and Los Angeles Forebay areas. Additional monitoring wells and production wells had detectable chromium below the MCL. Some of the detections are in the deep aquifers including the Silverado and Sunnyside aquifers. Limited DHS data for hexavalent chromium in groundwater from production wells were reasonably consistent with more comprehensive data for nested monitoring wells. DHS has ordered purveyors to test for hexavalent chromium. Where chromium concentrations are greater than approximately 10 µg/L, most of the chromium appears to be the hexavalent type. WRD is currently conducting an investigation to identify potential sources of hexavalent chromium in the South Gate/Commerce/Bell Gardens area of the Central Basin.
- MTBE has not been detected in any of WRDs nested monitoring wells and was not reported by DHS to have been detected in any production wells in the CWCB.
- Total organic carbon and apparent color are being monitored and studied in relation to the potential groundwater production from deeper portions of the CWCB than have typically been utilized in the past.
- As represented by these data, groundwater in the CWCB is of generally good quality and is suitable for continued use by the pumpers in the District, the stakeholders, and the public. Localized areas of marginal to poor water quality may require treatment prior to being used for a potable source. WRD is completing DHS-required Drinking Water Source Assessments for the majority of potable groundwater production wells in the District to determine the vulnerability of the wells to contamination.

SECTION 6
FUTURE ACTIVITIES

WRD will continue to update and augment its Regional Groundwater Monitoring Program to best serve the needs of the District, the pumpers and the public. Some of the activities planned under this program for the WY 2001/2002 are listed below.

- Because recycled water is a relatively low-cost, replenishment water source, WRD will continue to maximize recycled water use at the Montebello Forebay spreading grounds without exceeding regulatory limits. WRD is attempting to increase its recycled use at the spreading grounds while maintaining the 35% 3-year average blend.
- WRD will continue to maximize recycled water use at the West Coast Basin barrier, and intends to use recycled water at the Dominguez Gap and Alamitos barriers in the near future.
- WRD will continue to monitor the quality of all replenishment water sources to ensure the CWCB are being recharged with high-quality water.
- Total injection quantities at all three seawater intrusion barriers are expected to increase over the next several years as additional barrier wells are constructed to further combat seawater intrusion. WRD will work with the pumpers over the next year to find solutions to reduce the injection water demands and/or high costs. Basin management alternatives will be explored to help find these solutions.
- WRD will install five additional nested monitoring wells in key areas throughout the CWCB in the upcoming year to continue refining the regional understanding of groundwater occurrence, movement, and quality. Water levels will be recorded using automatic dataloggers to monitor groundwater elevation differences throughout the year.
- WRD will continue to sample groundwater from nested monitoring wells, and analyze the samples for general water quality constituents. In addition, we will continue to focus on constituents of interest to WRD and the pumpers such as TCE,

PCE, arsenic, hexavalent chromium, MTBE, and apparent color.

- WRD will continue to use the data generated by this Regional Groundwater Monitoring Program along with WRD's advanced GIS capabilities to address current and upcoming issues related to water quality and groundwater replenishment in the Central and West Coast Basins.

SECTION 7
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TABLES

TABLE 1.1
CONSTRUCTION INFORMATION FOR WRD NESTED MONITORING WELLS

Well Name	Zone	WRD ID Number	Depth of Well (feet)	Top of Perforation	Bottom of Perforation	Aquifer Designation
Carson #1	1	100030	1010	990	1010	Sunnyside
	2	100031	760	740	760	Silverado
	3	100032	480	460	480	Lynwood
	4	100033	270	250	270	Gage
Cerritos #1	1	100870	1215	1155	1175	Sunnyside
	2	100871	1020	1000	1020	Sunnyside
	3	100872	630	610	630	Silverado
	4	100873	290	270	290	Hollydale
	5	100874	200	180	200	Gage
	6	100875	135	125	135	Artesia
Chandler #3b	1	100082	363	341	363	Gage/Lynwood/Silverado
Chandler #3a	2	100083	192	165	192	Gage/Lynwood/Silverado
Commerce #1	1	100881	1390	1330	1390	Pico Formation
	2	100882	960	940	960	Sunnyside
	3	100883	780	760	780	Sunnyside
	4	100884	590	570	590	Silverado
	5	100885	345	325	345	Hollydale
	6	100886	225	205	225	Exposition/Gage
Downey #1	1	100010	1190	1170	1190	Sunnyside
	2	100011	960	940	960	Silverado
	3	100012	600	580	600	Silverado
	4	100013	390	370	390	Hollydale/Jefferson
	5	100014	270	250	270	Exposition
	6	100015	110	90	110	Gaspur
Gardena #1	1	100020	990	970	990	Sunnyside
	2	100021	465	445	465	Silverado
	3	100022	365	345	365	Lynwood
	4	100023	140	120	140	Gage
Hawthorne #1	1	100887	990	910	950	Pico Formation
	2	100888	730	710	730	Lower San Pedro/Sunnyside
	3	100889	540	520	540	Lower San Pedro/Sunnyside
	4	100890	420	400	420	Silverado
	5	100891	260	240	260	Lynwood
	6	100892	130	110	130	Gage
Huntington Park #1	1	100005	910	890	910	Silverado
	2	100006	710	690	710	Jefferson
	3	100007	440	420	440	Gage
	4	100008	295	275	295	Exposition
	5	100009	134	114	134	Gaspur
Inglewood #1	1	100091	1400	1380	1400	Pico Formation
	2	100092	Abandoned Well			
	3	100093	450	430	450	Silverado
	4	100094	300	280	300	Lynwood
	5	100095	170	150	170	Gage
Inglewood #2	1	100824	860	800	840	Pico Formation
	2	100825	470	450	470	Pico Formation
	3	100826	350	330	350	Silverado
	4	100827	245	225	245	Lynwood
Lakewood #1	1	100024	1009	989	1009	Sunnyside
	2	100025	660	640	660	Silverado
	3	100026	470	450	470	Lynwood
	4	100027	300	280	300	Hollydale
	5	100028	160	140	160	Artesia
	6	100029	90	70	90	semi-perched

TABLE 1.1
CONSTRUCTION INFORMATION FOR WRD NESTED MONITORING WELLS

Well Name	Zone	WRD ID Number	Depth of Well (feet)	Top of Perforation	Bottom of Perforation	Aquifer Designation
La Mirada #1	1	100876	1150	1130	1150	Sunnyside
	2	100877	985	965	985	Silverado
	3	100878	710	690	710	Lynwood
	4	100879	490	470	490	Jefferson
	5	100880	245	225	245	Gage
Lomita #1	1	100818	1340	1240	1260	Lower San Pedro
	2	100819	720	700	720	Silverado
	3	100820	570	550	570	Silverado
	4	100821	420	400	420	Silverado
	5	100822	240	220	240	Gage
	6	100823	120	100	120	Gage
Long Beach #1	1	100920	1470	1430	1450	Sunnyside
	2	100921	1250	1230	1250	Sunnyside
	3	100922	990	970	990	Silverado
	4	100923	619	599	619	Lynwood
	5	100924	420	400	420	Gage
	6	100925	175	155	175	Artesia
Long Beach #2	1	101740	1090	970	990	Pico Formation
	2	101741	740	720	740	Sunnyside
	3	101742	470	450	470	Silverado
	4	101743	300	280	300	Lynwood
	5	101744	180	160	180	Gage
	6	101745	115	95	115	Gaspur
Long Beach #3	1	101751	1390	1350	1390	Lower San Pedro
	2	101752	1017	997	1017	Silverado
	3	101753	690	670	690	Silverado
	4	101754	550	530	550	Silverado
	5	101755	430	410	430	Lynwood
Long Beach #4	1	101759	1380	1200	1220	Pico Formation
	2	101760	820	800	820	Lower San Pedro
Los Angeles #1	1	100926	1370	1350	1370	Pico Formation
	2	100927	1100	1080	1100	Sunnyside
	3	100928	940	920	940	Silverado
	4	100929	660	640	660	Lynwood
	5	100930	370	350	370	Gage
Montebello #1	1	101770	980	900	960	Pico Formation
	2	101771	710	690	710	Sunnyside
	3	101772	520	500	520	Silverado
	4	101773	390	370	390	Lynwood
	5	101774	230	210	230	Gage
	6	101775	110	90	110	Exposition
Pico #1	1	100001	900	860	900	Pico Formation
	2	100002	480	460	480	Silverado
	3	100003	400	380	400	Silverado
	4	100004	190	170	190	Jefferson
Pico #2	1	100085	1200	1180	1200	Sunnyside
	2	100086	850	830	850	Sunnyside
	3	100087	580	560	580	Sunnyside
	4	100088	340	320	340	Silverado
	5	100089	255	235	255	Lynwood
	6	100090	120	100	120	Gaspur
PM-1 Columbia	1	100042	600	555	595	Lower San Pedro
	2	100043	505	460	500	Silverado
	3	100044	285	240	280	Lynwood
	4	100045	205	160	200	Gage

TABLE 1.1

CONSTRUCTION INFORMATION FOR WRD NESTED MONITORING WELLS

Well Name	Zone	WRD ID Number	Depth of Well (feet)	Top of Perforation	Bottom of Perforation	Aquifer Designation
PM-3 Madrid	1	100034	685	640	680	Lower San Pedro
	2	100035	525	480	520	Silverado
	3	100036	285	240	280	Lynwood
	4	100037	190	145	185	Gage
PM-4 Mariner	1	100038	715	670	710	Lower San Pedro
	2	100039	545	500	540	Silverado
	3	100040	385	340	380	Lynwood
	4	100041	245	200	240	Gage
Rio Hondo #1	1	100064	1150	1110	1130	Sunnyside
	2	100065	930	910	930	Sunnyside
	3	100066	730	710	730	Sunnyside
	4	100067	450	430	450	Silverado
	5	100068	300	280	300	Lynwood
	6	100069	160	140	160	Gardena
Santa Fe Springs #1	1	100096	1410	1290	1310	Pico Formation
	2	100097	845	825	845	Sunnyside
	3	100098	560	540	560	Sunnyside
	4	100099	285	265	285	Silverado
	5	100100	Abandoned Well			
South Gate #1	1	100893	1460	1440	1460	Sunnyside
	2	100894	1340	1320	1340	Sunnyside
	3	100895	930	910	930	Sunnyside
	4	100896	585	565	585	Lynwood/Silverado
	5	100897	250	220	240	Exposition
Whittier #1	1	101735	1298	1180	1200	Pico Formation
	2	101736	940	920	940	Sunnyside
	3	101737	620	600	620	Silverado
	4	101738	470	450	470	Jefferson
	5	101739	220	200	220	Gage
Willowbrook #1	1	100016	905	885	905	Pico Formation
	2	100017	520	500	520	Silverado
	3	100018	380	360	380	Lynwood
	4	100019	220	200	220	Gage
Wilmington #1	1	100070	1040	915	935	Lower San Pedro
	2	100071	800	780	800	Silverado
	3	100072	570	550	570	Silverado
	4	100073	245	225	245	Lynwood
	5	100074	140	120	140	Gage
Wilmington #2	1	100075	1030	950	970	Lower San Pedro
	2	100076	775	755	775	Silverado
	3	100077	560	540	560	Silverado
	4	100078	410	390	410	Lynwood
	5	100079	140	120	140	Gage

TABLE 2.1
SUMMARY OF SPREADING OPERATIONS AT MONTEBELLO FOREBAY

(Acre-feet)

Water Year	Rio Hondo (includes Spreading Grounds & Whittier Narrows Reservoir)				San Gabriel (includes unlined river and Spreading Grounds)				Total Recharge			
	Imported	Recycled	Local	Total	Imported	Recycled	Local	Total	Imported	Recycled	Local	Total
1963/64	44,366	4,758	6,013	55,137	40,150	4,145	3,979	48,274	84,516	8,903	9,992	103,411
1964/65	64,344	2,501	8,616	75,461	69,995	4,867	4,481	79,343	134,339	7,368	13,097	154,804
1965/66	62,067	9,984	31,317	103,368	32,125	3,129	14,433	49,687	94,192	13,113	45,750	153,055
1966/67	46,322	14,117	37,428	97,867	20,813	2,106	22,392	45,311	67,135	16,223	59,820	143,178
1967/68	65,925	16,299	27,885	110,109	12,402	1,975	11,875	26,252	78,327	18,274	39,760	136,361
1968/69	13,018	6,105	69,055	88,178	4,895	7,772	50,106	62,773	17,913	13,877	119,161	150,951
1969/70	25,474	13,475	24,669	63,618	35,164	3,683	28,247	67,094	60,638	17,158	52,916	130,712
1970/71	41,913	11,112	24,384	77,409	21,211	8,367	21,735	51,313	63,124	19,479	46,119	128,722
1971/72	15,413	12,584	10,962	38,959	14,077	4,959	6,218	25,254	29,490	17,543	17,180	64,213
1972/73	47,712	12,238	33,061	93,011	32,823	9,767	12,016	54,606	80,535	22,005	45,077	147,617
1973/74	40,593	9,574	18,421	68,588	34,271	10,516	8,544	53,331	74,864	20,090	26,965	121,919
1974/75	29,173	11,359	16,542	57,075	32,974	8,084	10,360	51,418	62,147	19,443	26,902	108,493
1975/76	14,783	8,371	10,503	33,657	19,611	10,297	7,763	37,671	34,394	18,668	18,266	71,328
1976/77	11,349	3,195	7,753	22,297	2,548	15,707	5,165	23,420	13,897	18,902	12,918	45,717
1977/78	19,112	7,424	53,086	79,622	11,249	9,938	74,967	96,154	30,361	17,362	128,053	175,776
1978/79	27,486	6,233	36,659	70,377	15,143	14,367	17,250	46,760	42,629	20,600	53,909	117,137
1979/80	11,229	8,082	54,416	73,726	6,602	14,549	39,753	60,904	17,831	22,631	94,169	134,630
1980/81	43,040	9,177	38,363	90,581	13,823	16,283	8,860	38,966	56,863	25,460	47,223	129,547
1981/82	19,299	9,667	37,730	66,696	11,239	19,143	8,283	38,665	30,538	28,810	46,013	105,361
1982/83	3,203	7,512	89,153	99,868	5,975	9,419	36,893	52,287	9,178	16,931	126,046	152,155
1983/84	18,815	9,647	38,395	66,857	912	17,371	18,667	36,950	19,727	27,018	57,062	103,807
1984/85	33,364	7,848	23,614	64,826	3,879	12,930	10,620	27,429	37,243	20,778	34,234	92,255
1985/86	8,128	9,234	51,913	69,275	10,927	16,806	13,045	40,778	19,055	26,040	64,958	110,053
1986/87	-	12,234			64,575	87,921			64,575	100,155	16,700	181,431
1987/88	16,105	12,560	22,508	51,173	6,529	24,678	22,125	53,332	22,634	37,238	44,633	104,505
1988/89	-	26,568			63,216	25,981			63,216	52,548	24,200	139,964
1989/90	7,079	25,629			72,196	24,560			79,275	50,188	26,400	155,864
1990/91	33,320	20,927			34,215	33,045			67,536	53,972	18,300	139,808
1991/92	28,695	19,156			58,381	28,679			87,077	47,835	71,000	205,911
1992/93	4,306	18,526			26,596	32,041			30,902	50,567	107,700	189,169
1993/94	7,599	26,654			25,893	27,361			33,492	54,015	36,800	124,307
1994/95	3,827	16,397			25,227	22,861			29,054	39,258	92,100	160,411
1995/96	12,304	24,154	41,514	77,972	3,899	26,502	13,709	44,110	16,203	50,656	55,223	122,082
1996/97	12,652	17,899	33,658	64,209	4,732	28,085	17,715	50,532	17,384	45,984	51,373	114,741
1997/98	889	14,984	52,958	68,831	-	19,594	32,580	52,174	889	34,578	85,538	121,005
1998/99	-	23,102	14,840	37,942	-	18,099	11,990	30,089	-	41,201	26,830	68,031
1999/00	43,441	16,093	5,700	65,234	1,596	27,049	15,036	43,681	45,037	43,142	20,736	108,915
2000/01									23,451	43,778	42,290	109,519

Notes:

1) These amounts may differ from those shown in WRD's Annual Engineering Survey and Report. The ESR reflects only water that WRD purchased for replenishment. However, some of this water may percolate or evaporate in San Gabriel Valley before it reaches the spreading grounds. Other entities such as LACDPW or the Main San Gabriel Basin Watermaster may also purchase replenishment water that is spread and accounted for in the above table. Reclaimed water is also provided by the Pomona treatment plant and is not paid for by WRD. This table reflects water which was actually conserved in the spreading grounds as reported by LACDPW. The Rio Hondo System includes the Rio Hondo spreading grounds and water conserved behind the Whittier Narrows Reservoir.

2) Data from shaded areas were not available from LACDPW detailing the relative amounts of water spread in the Rio Hondo and San Gabriel River Spreading Grounds, only total central basin recharge volumes could be reported (Source: Annual Reports on Results of Water Quality Monitoring). Corresponding local water rechage volumes were calculated by subtracting corresponding imported and reclaimed water from the total volume.

TABLE 2.2
HISTORICAL QUANTITIES OF ARTIFICIAL REPLENISHMENT
WATER AT SEAWATER INTRUSION BARRIERS

(Acre-feet)

WATER YEAR	WEST COAST BASIN BARRIER			DOMINGUEZ GAP BARRIER	ALAMITOS BARRIER (a)			TOTAL
	Imported	Recycled	Total		WRD	OCWD	Total	
1952/53	1,140		1,140					1,140
1953/54	3,290		3,290					3,290
1954/55	2,740		2,740					2,740
1955/56	2,840		2,840					2,840
1956/57	3,590		3,590					3,590
1957/58	4,330		4,330					4,330
1958/59	3,700		3,700					3,700
1959/60	3,800		3,800					3,800
1960/61	4,480		4,480					4,480
1961/62	4,510		4,510					4,510
1962/63	4,200		4,200					4,200
1963/64	10,450		10,450					10,450
1964/65	33,020		33,020		2,760	200	2,960	35,980
1965/66	44,390		44,390		3,370	350	3,720	48,110
1966/67	43,060		43,060		3,390	490	3,880	46,940
1967/68	39,580		39,580		4,210	740	4,950	44,530
1968/69	36,420		36,420		4,310	950	5,260	41,680
1969/70	29,460		29,460		3,760	720	4,480	33,940
1970/71	29,870		29,870	2,200	3,310	820	4,130	36,200
1971/72	26,490		26,490	9,550	4,060	930	4,990	41,030
1972/73	28,150		28,150	8,470	4,300	880	5,180	41,800
1973/74	27,540		27,540	7,830	6,140	1,150	7,290	42,660
1974/75	26,430		26,430	5,160	4,440	720	5,160	36,750
1975/76	35,220		35,220	4,940	4,090	570	4,660	44,820
1976/77	34,260		34,260	9,280	4,890	880	5,770	49,310
1977/78	29,640		29,640	5,740	4,020	830	4,850	40,230
1978/79	23,720		23,720	5,660	4,220	900	5,120	34,500
1979/80	28,630		28,630	4,470	3,560	580	4,140	37,240
1980/81	26,350		26,350	3,550	3,940	530	4,470	34,370
1981/82	24,640		24,640	4,720	4,540	390	4,930	34,290
1982/83	33,950		33,950	6,020	3,270	1,940	5,210	45,180
1983/84	28,000		28,000	7,640	2,440	1,400	3,840	39,480
1984/85	25,210		25,210	7,470	3,400	1,450	4,850	37,530
1985/86	20,260		20,260	6,160	3,410	1,860	5,270	31,690
1986/87	26,030		26,030	6,230	4,170	2,750	6,920	39,180
1987/88	24,270		24,270	7,050	3,990	2,170	6,160	37,480
1988/89	22,740		22,740	5,220	3,900	1,680	5,580	33,540
1989/90	20,279		20,279	5,736	4,110	2,000	6,110	32,125
1990/91	16,039		16,039	7,756	4,096	1,818	5,914	29,709
1991/92	22,180		22,180	6,894	4,172	1,553	5,725	34,799
1992/93	21,516		21,516	4,910	3,350	1,567	4,917	31,343
1993/94	15,482		15,482	5,524	2,794	1,309	4,103	25,109
1994/95	14,237	1,480	15,717	4,989	2,883	889	3,772	24,478
1995/96	12,426	4,170	16,596	5,107	3,760	2,010	5,770	27,473
1996/97	11,372	6,241	17,613	5,886	3,854	1,751	5,605	29,103
1997/98	8,173	8,306	16,479	3,771	3,677	1,503	5,180	25,430
1998/99	10,125	6,973	17,098	4,483	4,012	1,689	5,701	27,282
1999/00	11,172	7,460	18,632	6,010	4,028	1,709	5,737	30,379
2000/01	13,988	6,838	20,826	3,923	3,710	1,923	5,633	30,382

(a) Alamitos Barrier Water is purchased by WRD on the Los Angeles County side of the barriers, and by Orange County Water District on the Orange County side.

TABLE 2.3
WATER QUALITY OF REPLENISHMENT WATER, WATER YEAR 2000-2001

Constituent	Units	Treated Colorado River/State Project Water[a] 2000-2001[d]	Untreated Colorado River Water[b] 2000-2001[d]	Untreated State Project Water[b] 2000-2001[d]	West Basin MWD WRP[c] 2000[e]	Whittier Narrows WRP[b] 1999-2000[f]	San Jose Creek East WRP[b] 1999-2000[f]	San Jose Creek West WRP[b] 1999-2000[f]	Pomona WRP[b] 1999-2000[f]	Stormwater[g] 1998-2000[g]
Total Dissolved Solids (TDS)	mg/L	402	556	270	107	542	581	550	539	365
Hardness	mg/L	188	283	117	50	196	220	217	213	183
Sulfate	mg/L	124	219	44	3.9	97	106	82.2	67	86
Chloride	mg/L	74	68	68	23	96	129	105	128	59
Nitrogen (Nitrate as N)	mg/L	1.70	0.18	0.39	0.7	6.53	2.44	3.66	2.08	2
Iron	mg/L	ND	ND	0.06	ND	<0.05	0.1	<0.10	<0.06	0.451
Manganese	ug/L	ND	ND	0.0015	ND	10	40	8	<10	141
Trichloroethylene (TCE)	ug/L	ND	ND	ND	<0.3	<0.3	<0.4	<0.3	<0.3	NA
Tetrachloroethylene (PCE)	ug/L	ND	ND	ND	<0.3	<0.3	<0.9	<0.4	<0.4	NA

Notes:

a = Used at the seawater intrusion barriers

b = Used at the Montebello Forebay spreading grounds

c = Used at the West Coast Basin Barrier

d = Average concentration data from Metropolitan Water District of Southern California (MWD), for fiscal year 2000-2001 (Jul-Jun)

e = Average concentration data from West Basin Municipal Water District (West Basin MWD), for calendar year 2000

f = Average concentration data from County Sanitation Districts of Los Angeles County (CSDLAC), for water year 1999-2000 (Oct-Sep)

g = Average concentration data from LACDPW, for samples collected from San Gabriel River late 1998-2000

Sources of data:
MWD draft data for fiscal year 2000-2001
Montebello Forebay Groundwater Recharge annual report (CSDLAC, 2000)
West Basin Water Recycling Facility Annual Report (West Basin MWD, 2000)
Los Angeles County Stormwater Monitoring Reports (LACDPW Web Site)

TABLE 3.1
HISTORICAL AMOUNTS OF GROUNDWATER PRODUCTION
(Acre-feet)

WATER YEAR	CENTRAL BASIN	WEST COAST BASIN	TOTAL
1960/61	292,500	61,900	354,400
1961/62	275,800	59,100	334,900
1962/63	225,400	59,100	284,500
1963/64	219,100	61,300	280,400
1964/65	211,600	59,800	271,400
1965/66	222,800	60,800	283,600
1966/67	206,700	62,300	269,000
1967/68	220,100	61,600	281,700
1968/69	213,800	61,600	275,400
1969/70	222,200	62,600	284,800
1970/71	211,600	60,900	272,500
1971/72	216,100	64,800	280,900
1972/73	205,600	60,300	265,900
1973/74	211,300	55,000	266,300
1974/75	213,100	56,700	269,800
1975/76	215,300	59,400	274,700
1976/77	211,500	59,800	271,300
1977/78	196,600	58,300	254,900
1978/79	207,000	58,000	265,000
1979/80	209,500	57,100	266,600
1980/81	211,915	57,711	269,626
1981/82	202,587	61,874	264,461
1982/83	194,548	57,542	252,090
1983/84	196,660	51,930	248,590
1984/85	193,085	52,746	245,831
1985/86	195,889	52,762	248,650
1986/87	196,587	48,026	244,613
1987/88	194,561	43,833	238,394
1988/89	200,105	44,162	244,267
1989/90	197,811	47,904	245,715
1990/91	186,977	53,075	240,052
1991/92	196,382	55,964	252,346
1992/93	150,386	40,058	190,444
1993/94	156,930	41,768	198,697
1994/95	181,164	41,396	222,560
1995/96	182,067	52,759	234,826
1996/97	187,452	52,581	240,033
1997/98	188,988	51,841	240,829
1998/99	204,418	51,331	255,749
1999/00	197,946	53,579	251,525
2000/01	195,022	53,841	248,863

TABLE 3.2
GROUNDWATER ELEVATIONS, WATER YEAR 2000-2001

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6
Carson #1					Reference Point Elevation: 24.16	
Depth of Well	990-1010	740-760	460-480	250-270		
Aquifer Name	Sunnyside	Silverado	Lynwood	Gage		
1/3/2001	-65.56	-64.08	-25.72	-23.4		
4/2/2001	-76.72	-74.21	-26.03	-23.39		
4/3/2001	-76.74	-74.22	-26.07	-23.42		
4/19/2001	-77.04	-74.44	-26.29	-23.6		
6/26/2001	-76.07	-73.54	-26.29	-23.82		
9/27/2001	-75.2	-73.66	-27.19	-24.58		
Cerritos #1						Reference Point Elevation: 40.72
Depth of Well	1155-1175	1000-1020	610-630	270-290	180-200	125-135
Aquifer Name	Sunnyside	Sunnyside	Silverado	Holydale	Gage	Artesia
10/6/2000	-48.32	-49.3	-52.02	8.44	14.66	14.65
12/27/2000	-32.48	-30.16	-36.68	12.07	17.39	17.4
3/26/2001	-19.63	-18.69	-26.29	16.65	21.09	21.11
4/16/2001	-21.66	-21.1	-30.61	15.55	20.58	20.62
6/27/2001	-42.44	-47.09	-50.81	10.56	16.1	16.12
9/25/2001	-47.57	-51.28	-53.29	8.72	14.72	14.76
Commerce #1						Reference Point Elevation: 170.09
Depth of Well	1330-1390	940-960	760-780	570-590	325-345	205-225
Aquifer Name	Pico	Sunnyside	Sunnyside	Silverado	Holydale	Exposition/Gage
11/24/2000	60.73	64.56	61.46	39.14	49.1	62.33
12/29/2000	59.24	65.87	62.89	41.05	50.43	62.7
1/30/2001	60.51	67.44	64.56	42.46	51.88	62.98
3/27/2001	61.25	69.63	66.89	45.78	54.51	63.84
7/6/2001	56.12	64.04	59.82	29.25	32.38	61.76
9/24/2001	54.46	58.98	54.55	22.16	27.07	60.35

TABLE 3.2
GROUNDWATER ELEVATIONS, WATER YEAR 2000-2001

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6
Downey #1					Reference Point Elevation: 97.21	
Depth of Well	1170-1190	940-960	580-600	370-390	250-270	90-110
Aquifer Name	Sunnyside	Silverado	Silverado	Holydale/Jefferson	Exposition	Gaspur
1/3/2001	16.8	18.94	25.08	23.38	45.36	48.52
3/27/2001	23.73	24.33	27.84	25.25	45.66	48.5
6/21/2001	14.63	16.13	17.62	16.74	44.21	48.24
9/26/2001	2.7	7.65	13.86	13.25	43.1	47.37
9/28/2001	2.69	7.46	14.1	13.6	43.03	47.41
Gardena #1						Reference Point Elevation: 79.9
Depth of Well	970-990	445-465	345-365	120-140		
Aquifer Name	Sunnyside	Silverado	Lynwood	Gage		
10/19/2000	-52.81	-95.45	-66.47	-16.58		
12/1/2000	-52.68	-92.44	-64.22	-16.62		
3/28/2001	-52.02	-93.35	-70.78	-17.07		
6/28/2001	-55.35	-121.08	-87.26	-16.5		
7/11/2001	-55.81	-120.91	-86.74	-16.55		
9/26/2001	-57.52	-121.55	-86.71	-16.76		
Hawthorne #1						Reference Point Elevation: 86.35
Depth of Well	910-950	710-730	520-540	400-420	240-260	110-130
Aquifer Name	Pico	Lower San Pedro	Lower San Pedro	Silverado	Lynwood	Gage
1/2/2001	-80.19	-20.95	-19.51	-19.25	-14.24	-3.06
4/3/2001	-93.68	-21.7	-20.08	-16.86	-14.47	-2.68
6/28/2001	-103.54	-22	-20.61	-20.24	-14.87	-2.82
9/26/2001	-104.57	-22.28	-20.8	-20.51	-15.02	-2.82

TABLE 3.2
GROUNDWATER ELEVATIONS, WATER YEAR 2000-2001

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6
Huntington Park #1					Reference Point Elevation: 177.08	
Depth of Well	890-910	690-710	420-440	275-295		
Aquifer Name	Silverado	Jefferson	Gage	Exposition		
1/2/2001	-23.4	-25.78	-17.06	17.61		
1/4/2001	-27.45					
3/12/2001	-21.9	-21.2	-15.23	17.65		
3/28/2001	-24.85	-28.52	-15.68	17.34		
6/29/2001	-29.07	-26.45	-18.31	16.27		
7/16/2001	-28.96	-27.89				
9/24/2001	-33.5	-38.81	-31.28	15.9		
Inglewood #1					Reference Point Elevation: 110.56	
Depth of Well	1380-1400		430-450	280-300	150-170	
Aquifer Name	Pico		Silverado	Lynwood	Gage	
1/2/2001	-35.48		-40.26	-51.9	0.01	
1/23/2001	-35.4		-39.55	-5.02	0.21	
4/3/2001	-35.18		-42.7	-5.27	0.53	
6/29/2001	-36.15		-46.13	-5.64	0.23	
9/26/2001	-35.28		-48.16	-5.49	0.41	
Inglewood #2					Reference Point Elevation: 217.33	
Depth of Well	800-840	450-470	330-350	225-245		
Aquifer Name	Pico	Pico	Silverado	Lynwood		
1/2/2001	-23.04	-21.26	-10.92	-5.19		
2/2/2001	-23.18	-21.03	-10.92	-4.94		
4/3/2001	-22.62	-20.35	-10.59	-2.93		
6/29/2001	-22.4	-20.27	-10.54	-4.85		
9/26/2001	-22.21	-19.89	-10.19	-4.5		

TABLE 3.2

GROUNDWATER ELEVATIONS, WATER YEAR 2000-2001

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6
Lakewood #1						Reference Point Elevation: 37.91
Depth of Well	989-1009	640-660	450-470	280-300	140-160	70-90
Aquifer Name	Sunnyside	Silverado	Lynwood	Holydale	Artesia	Semi-Perched
12/28/2000	-51.3	-44.69	-42.52	-19.22	-8.53	12.73
2/28/2001	-51.46	-44.19	-42.22	-18.47	-4.62	14.79
3/29/2001	-50.83	-43.53	-41.86	-16.26	-4.14	15.14
6/28/2001	-82.92	-63.7	-62.12	-24.96	-12.05	13.9
9/25/2001	-98.29	-73.42	-71	-29.04	-14.52	12.71
La Mirada #1						Reference Point Elevation: 75.85
Depth of Well	1130-1150	965-985	690-710	470-490	225-245	
Aquifer Name	Sunnyside	Silverado	Lynwood	Jefferson	Gage	
12/27/2000	-21.09	-23.45	-31.36	-41.48	-27.07	
3/26/2001	-9.68	-12.65	-28.16	-30.27	-18.04	
6/7/2001	-16.85	-19.47	-35.05	-40.81	-25.49	
6/27/2001	-22.31	-23.43	-39.33	-45.45	-29.03	
9/25/2001	-37.07	-37.1	-47.38	-49.01	-32.77	
Lomita #1						Reference Point Elevation: 76.91
Depth of Well	1240-1260	700-720	550-570	400-420	220-240	100-120
Aquifer Name	Lower San Pedro	Silverado	Silverado	Silverado	Gage	Gage
1/2/2001	-36.83	-29.37	-27.89	-29.12	-24.72	-27.6
2/15/2001	-33.38	-27.92	-25.85	-28.37	-24.42	-26.01
4/2/2001	-29.46	-27.18	-25.24	-28.82	-23.83	-26.24
6/28/2001	-31.61	-29.67	-27.77	-29.16	-23.94	-28.07
9/25/2001	-30.89	-29.99	-28.24	-30.12	-24.25	-28.3

TABLE 3.2
GROUNDWATER ELEVATIONS, WATER YEAR 2000-2001

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6
Long Beach #1						Reference Point Elevation: 28.69
Depth of Well	1430-1450	1230-1250	970-990	599-619	400-420	155-175
Aquifer Name	Sunnyside	Sunnyside	Silverado	Lynwood	Gage	Artesia
11/24/2000	-28.6	-29.96	-48.36	-33.32	-29.63	-16.93
12/29/2000	-21.03	-22.31	-44.21	-30.05	-26.74	-14.1
3/26/2001	-11.43	-12.57	-30.21	-21.98	-19.19	-11.05
6/28/2001	-29.79	-33.3	-79.22	-44.09	-41.62	-23.51
9/25/2001	-47.05	-50.29	-90.97	-50.32	-45.77	-26.25
Long Beach #2				Estimated Reference Point Elevation (From USGS Topographic Quadrangle): 42		
Depth of Well	970-990	720-740	450-470	280-300	160-180	95-115
Aquifer Name	Pico	Sunnyside	Silverado	Lynwood	Gage	Gaspur
11/10/2000	-50	-44	-64	-12	-2	0
11/17/2000	-51	-43	-64	-12	-2	0
1/3/2001	-38	-37	-62	-10	0	0
3/29/2001	-24	-31	-48	-9	0	1
6/5/2001	-74	-42	-48	-11	-1	0
6/26/2001	-84	-46	-49	-12	-2	0
9/28/2001	-98.17	-51.76	-48.79	-13.53	-2.77	-0.75
Long Beach #3				Estimated Reference Point Elevation (From USGS Topographic Quadrangle): 25		
Depth of Well	1350-1390	997-1017	670-690	530-550	410-430	
Aquifer Name	Lower San Pedro	Silverado	Silverado	Silverado	Lynwood	
12/28/2000	-49	-65	-65	-60	-13	
1/23/2001	-48	-62	-62	-57	-12	
3/7/2001	-47	-69	-69	-63	-12	
6/26/2001	-49	-74	-74	-74	-13	
9/25/2001	-50	-74	-74	-69	-13	

TABLE 3.2

GROUNDWATER ELEVATIONS, WATER YEAR 2000-2001

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6
Los Angeles #1					Reference Point Elevation: 173.34	
Depth of Well	1350-1370	1080-1100	920-940	640-660	350-370	
Aquifer Name	Pico	Sunnyside	Silverado	Lynwood	Gage	
12/28/2000	-14.98	-20.12	-21.42	-26.22	-20.59	
3/28/2001	-14.01	-18.16	-20.44	-25.29	-20.03	
6/29/2001	-15.96	-21.52	-23.24	-26.68	-20.84	
9/24/2001	-17.63	-23.87	-25.46	-30.22	-22.37	
Pico #1					Reference Point Elevation: 181.06	
Depth of Well	860-900	460-480	380-400	170-190		
Aquifer Name	Pico	Silverado	Silverado	Jefferson		
10/20/2000	141.34	122.84	121.98	126.88		
12/27/2000	143.37	138.82	137.05	137.27		
2/5/2001	144.61	139.48	138.92	137.28		
3/30/2001	149.81	135.07	134.61	142.39		
7/6/2001	146.07	127.28	126.7	134.35		
9/28/2001	136.08	116.09	115.2	121.69		
Pico #2					Reference Point Elevation: 149.6	
Depth of Well	1180-1200	830-850	560-580	320-340	235-255	100-120
Aquifer Name	Sunnyside	Sunnyside	Sunnyside	Silverado	Lynwood	Gaspur
12/29/2000	84.81	86.12	93.79	107.82	107.3	117.94
3/29/2001	91.4	95.19	101.47	115.12	115.78	120.47
4/26/2001	90.32	91.96	100.14	117.65	118.6	124.17
6/27/2001	82.99	85.7	92.98	112.07	113.3	120.68
9/28/2001	69.33	70.2	80.72	99.68	103	114.13

TABLE 3.2
GROUNDWATER ELEVATIONS, WATER YEAR 2000-2001

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6
PM-1 Columbia						Reference Point Elevation: 78.42
Depth of Well	555-595	460-500				
Aquifer Name	Lower San Pedro	Silverado				
1/2/2001	-13.25	-12.16				
4/2/2001	-12.05	-10.53				
6/28/2001	-12	-10.36				
9/26/2001	-12.39	-10.57				
PM-3 Madrid						Reference Point Elevation: 70.68
Depth of Well	640-680	480-520	240-280	145-185		
Aquifer Name	Lower San Pedro	Silverado	Lynwood	Gage		
1/2/2001	-18.76	-14.83	-14.71	-14.65		
4/2/2001	-18.03	-13.85	-13.74	-13.68		
6/28/2001	-18.07	-13.75	-13.61	-13.53		
9/25/2001	-19.42	-14.08	-13.9	-13.82		
PM-4 Mariner						Reference Point Elevation: 97.7
Depth of Well	670-710	500-540	340-380	200-240		
Aquifer Name	Lower San Pedro	Silverado	Lynwood	Gage		
1/2/2001	-11.63	-5.78	-3.39	-3.33		
4/2/2001	-10.64	-4.84	-2.4	-2.32		
6/28/2001	-10.83	-5.12	-2.61	-2.54		
9/25/2001	-11.24	-5.22	-2.85	-2.78		
Rio Hondo #1						Reference Point Elevation: 144.36
Depth of Well	1110-1130	910-930	710-730	430-450	280-300	140-160
Aquifer Name	Sunnyside	Sunnyside	Sunnyside	Silverado	Lynwood	Gardena
3/27/2001	85.86	86.08	85.31	80.13	86.9	89.33
6/27/2001	78.73	76.58	75.84	66.11	79.62	83.79
9/26/2001	67.32	62.69	61.85	56.21	70.45	75.08

TABLE 3.2
GROUNDWATER ELEVATIONS, WATER YEAR 2000-2001

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6
Santa Fe Springs #1					Reference Point Elevation: 168.83	
Depth of Well	1290-1310	825-845	540-560	265-285		
Aquifer Name	Pico	Sunnyside	Sunnyside	Silverado		
12/28/2000	89.52	81.52	58.21	46.32		
1/30/2001				48.01		
3/30/2001	88.21	84.4	63.61	51.9		
6/27/2001		86.33	64.11	52.11		
9/26/2001		82.55	58.42	44.86		
South Gate #1					Reference Point Elevation: 90.96	
Depth of Well	1440-1460	1320-1340	910-930	565-585	220-240	
Aquifer Name	Sunnyside	Sunnyside	Sunnyside	ynwood/Silverado	Exposition	
12/28/2000	1.47	3.17	9.07	6.45	38.48	
3/27/2001	6.78	7.16	12.36	2.47	38.56	
4/16/2001	6.53	6.73	11.76	2.41	38.52	
6/29/2001	-2.57	-1.57	3.76	-6.43	37.61	
9/26/2001	-10.16	-7.59	-1.49	-7.94	36.37	
Whittier #1					Reference Point Elevation: 210	
Depth of Well	1180-1200	920-940	600-620	450-470	200-220	
Aquifer Name	Pico	Sunnyside	Silverado	Jefferson	Gage	
12/28/2000	107	107	101	99	191	
3/30/2001	108	107	102	100	193	
4/13/2001	108.39	107.42		100.44	192.54	
7/6/2001	109	108	103	109	192	
7/12/2001	109	108	103	101	192	
9/26/2001	108.25	108.23	101.97	100.49	191.68	

TABLE 3.2
GROUNDWATER ELEVATIONS, WATER YEAR 2000-2001

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6
Willowbrook #1						Reference Point Elevation: 96.21
Depth of Well	885-905	500-520	360-380	200-220		
Aquifer Name	Pico	Silverado	Lynwood	Gage		
11/3/2000	-32.06	-29.08	-23.22	-23.19		
11/24/2000	-28.12	-27.77	-22.31	-22.07		
12/28/2000	-27.72	-26.87	-21.39	-21.22		
3/28/2001	-23.27	-26.39	-21.09	-20.86		
4/19/2001	-23.12	-26.02	-21.34	-21.08		
6/19/2001	-28.13	-27.64	-22.16	-21.81		
9/28/2001	-39	-30.36	-25.35	-24.94		
Wilmington #1						Reference Point Elevation: 37.96
Depth of Well	915-935	780-800	550-570	225-245	120-140	
Aquifer Name	Lower San Pedro	Silverado	Silverado	Lynwood	Gage	
10/31/2000	-70.41	-70.49	-70.77	-30.16	-26.13	
12/28/2000	-63.95	-64.07	-64.28	-29.76	-26.16	
3/29/2001	-72.32	-72.45	-72.67	-30.63	-26.55	
7/2/2001	-71.3	-71.53	-71.56	-31.18	-27.1	
9/27/2001	-71.97	-72.19	-72.32	-31.98	-27.76	
Wilmington #2						Reference Point Elevation: 29.78
Depth of Well	950-970	755-775	540-560	390-410	120-140	
Aquifer Name	Lower San Pedro	Silverado	Silverado	Lynwood	Gage	
12/28/2000	-47.59	-42.35	-37.48	-36.62	-11.24	
2/21/2001	-47.34	-41.99	-37.18	-36.37	-11.43	
4/2/2001	-51.94	-45.16	-39.49	-38.39	-11.13	
6/28/2001	-51.27	-44.77	-39.21	-38.17	-11.61	
9/25/2001	-53	-46.46	-40.8	-39.68	-12.24	

TABLE 4.1
MAJOR MINERAL WATER QUALITY GROUPS

GROUP A Generally Calcium Bicarbonate or Calcium Bicarbonate/Sulfate Dominant	GROUP B Generally Calcium-Sodium-Bicarbonate or Sodium-Bicarbonate Dominant	GROUP C Generally Sodium-Chloride Dominant	OTHER Generally Different Than Groups A, B, and C
CENTRAL BASIN			
Cerritos #1 Zones 1, 2, 3, 4, 5, 6 Commerce #1 Zones 2,3,4,5,6 Downey #1 Zones 2, 3, 4, 5, 6 Huntington Park #1 Zones 1, 2, 3, 4 Lakewood #1 Zone 6 Long Beach #1 Zones 5,6 Long Beach #2 Zones 4,5,6 Rio Hondo #1 Zones 1, 2, 3, 4, 5, 6, Pico #1 Zones 2, 3, 4 Pico #2 Zones 1, 2, 3, 4, 5, 6 South Gate #1 Zones 1, 2, 3, 4, 5 Whittier #1 Zones 1,2,3,4,5 Willowbrook #1 Zones 2, 3, 4 Los Angeles #1 Zones 1, 2, 3, 4, 5	Downey #1 Zone 1 Inglewood #2 Zones 1,3 Lakewood #1 Zones 1,2, 3, 4, 5 La Mirada #1 Zones 1, 2, 3, 4 Willowbrook #1 Zone 1 Long Beach #1 Zones 1,2,3,4 Long Beach #2 Zones 1,2,3 Santa Fe Springs #1 Zone 3	Inglewood #2 Zone 2	La Mirada #1 Zone 5 Pico #1 Zone 1 Santa Fe Springs #1 Zones 1,2,4
WEST COAST BASIN			
Carson #1 Zones 3, 4 Gardena #1 Zones 2, 3, 4 Hawthorne #1 Zones 5,6 Inglewood #1 Zones 3, 4, 5 PM-3 Madrid Zones 3,4	Carson #1 Zones 1, 2 Hawthorne #1 Zones 1,2,3,4 PM-Madrid Zone 2 Wilmington #2 Zone 3 Long Beach #3 Zones 1, 2, 3	PM-4 Mariner Zones 2,3,4 Wilmington #1 Zones 1, 2, 3, 4, 5 Wilmington #2 Zones 4, 5 Long Beach #3 Zones 4, 5	Gardena #1 Zone 1 Inglewood #1 Zone 1 Lomita #1 Zones 1, 2, 3, 4, 5, 6 PM-3 Madrid Zone 1 PM-4 Mariner Zone 1 Wilmington #2 Zone 1,2

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Cerritos #1 Zone 1 11/6/00	Cerritos #1 Zone 1 6/27/01	Cerritos #1 Zone 2 11/6/00	Cerritos #1 Zone 2 6/27/01	Cerritos #1 Zone 3 11/6/00	Cerritos #1 Zone 3 6/27/01	Cerritos #1 Zone 4 11/6/00	Cerritos #1 Zone 4 6/27/01	Cerritos #1 Zone 5 11/6/00	Cerritos #1 Zone 5 6/27/01	Cerritos #1 Zone 6 11/6/00	Cerritos #1 Zone 6 6/27/01
General Mineral															
Total Dissolved Solid (TDS)	mg/l	500	p	290	280	280	260	320	290	290	260	274	270	270	260
Cation Sum	meq/l			4.76	4.99	4.39	4.78	5.06	5.49	4.77	5.01	4.58	4.74	4.73	4.87
Anion Sum	meq/l			4.58	4.73	4.31	4.38	4.99	5.15	4.58	4.62	4.4	4.47	4.46	4.53
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	26	27	30	32	44	45	**69**	**75**	**105**	**110**	**125**	**130**
Turbidity	NTU	5	s	0.1	0.05	0.35	0.25	0.1	ND	0.3	0.2	0.2	0.15	0.3	0.15
Alkalinity	mg/l			157	165	154	156	163	167	174	175	174	178	184	187
Boron	mg/L			0.076	0.085	0.06	0.065	0.073	0.085	0.074	0.086	0.076	0.085	0.067	0.075
Bicarbonate as HCO3,calcula	mg/l			191	200	187	190	198	203	212	213	212	217	224	228
Calcium, Total, ICAP	mg/l			35	36	35	35	41	44	44	46	39	41	47	48
Carbonate as CO3, Calculate	mg/l			1.97	2.06	1.53	1.96	1.62	1.66	1.38	1.38	1.38	1.12	1.16	1.18
Hardness (Total, as CaCO3)	mg/l			107	109	110	109	124	132	151	156	135	141	156	158
Chloride	mg/l	500	s	14.2	14	12.4	13	18.1	19	11.6	12	10.2	10	9.55	9.6
Fluoride	mg/l	2	p	0.26	0.29	0.36	0.39	0.38	0.38	0.54	0.57	0.5	0.5	0.33	0.34
Hydroxide as OH, Calculated	mg/l			0.03	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01
Langelier Index - 25 degree	None			0.58	0.61	0.47	0.58	0.56	0.61	0.53	0.55	0.47	0.4	0.48	0.49
Magnesium, Total, ICAP	mg/l			4.7	4.6	5.5	5.3	5.3	5.5	10	10	9.2	9.3	9.3	9.2
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			2.3	2.7	2.2	2.8	1.9	2.3	2	2.4	2	2.2	2.1	2.5
Sodium, Total, ICAP	mg/l			59	63	49	58	58	64	39	42	42	43	36	38
Sulfate	mg/l	500	s	49.1	49	41.2	42	57.5	60	35.8	36	29	29	23.5	24
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CAL	mg/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			ND	ND	ND	ND	0.7	0.54	ND	0.62	0.7	0.52	ND	0.58
Carbon Dioxide	mg/l			2.41	2.52	2.97	2.4	3.15	3.22	4.24	4.26	4.24	5.46	5.64	5.74
General Physical															
Apparent Color	ACU	15	s	3	5	ND	3	3	3	3	3	ND	3	ND	3
Lab pH	Units			8.2	8.2	8.1	8.2	8.1	8.1	8	8	8	7.9	7.9	7.9
Odor	TON	3	s	1	2	3	2	2	1	2	2	2	3	2	2
pH of CaCO3 saturation(25C	Units			7.62	7.588	7.629	7.622	7.536	7.494	7.475	7.454	7.528	7.496	7.423	7.406
pH of CaCO3 saturation(60C	Units			7.2	7.1	7.2	7.2	7.1	7	7	7	7.1	7.1	7	7
Specific Conductance	umho/	1600	s	460	430	420	392	490	456	440	407	425	392	420	401
Metals															
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	16	15	12	11	22	22	6.2	6.5	11	12	40	40
Barium, Total, ICAP/MS	ug/l	1000	p	48	46	99	95	105	100	58	58	69	67	94	87
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Hexavalent (Cr V	mg/l				ND		ND		ND		ND		ND		ND
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds															
Trichloroethylene (TCE)	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform (Trichloromethar	ug/l	100		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-Isopropyl Ether	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freo	ug/l	150		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Commerce #1 Zone 2 10/26/00	Commerce #1 Zone 2 6/25/01	Commerce #1 Zone 3 10/26/00	Commerce #1 Zone 3 6/25/01	Commerce #1 Zone 4 10/26/00	Commerce #1 Zone 4 6/25/01	Commerce #1 Zone 5 10/26/00	Commerce #1 Zone 5 6/25/01	Commerce #1 Zone 6 10/26/00	Commerce #1 Zone 6 6/25/01
General Mineral													
Total Dissolved Solid (TDS)	mg/l	500	p	**720**	**700**	500	**520**	500	**620**	**620**	**730**	380	380
Cation Sum	meq/l			12.8	11.2	8.57	9.21	8.4	10.3	10.4	12.1	6.21	6.44
Anion Sum	meq/l			13.1	11.9	8.56	8.59	8.35	10.3	9.93	12.7	5.76	6.48
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	36	27	**82**	**83**	**89**	**96**	50	33	2.5	ND
Turbidity	NTU	5	s	**6.5**	4.3	0.25	0.3	0.5	1	2.4	1.9	2.2	1.9
Alkalinity	mg/l			298	297	209	213	197	205	206	207	168	175
Boron	mg/L			0.51	0.48	0.23	0.24	0.25	0.29	0.17	0.25	0.13	0.13
Bicarbonate as HCO3,calcula	mg/l			363	362	254	259	240	250	251	252	204	213
Calcium, Total, ICAP	mg/l			55	57	60	64	48	50	90	85	56	59
Carbonate as CO3, Calculate	mg/l			1.87	1.48	1.31	1.34	1.24	1.29	1.03	0.821	1.33	0.694
Hardness (Total, as CaCO3)	mg/l			240	245	232	246	198	207	332	315	210	221
Chloride	mg/l	500	s	252	212	109	107	122	186	119	213	56.9	59
Fluoride	mg/l	2	p	0.36	0.37	0.37	0.38	0.42	0.43	0.34	0.39	0.47	0.5
Hydroxide as OH, Calculated	mg/l			0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.009	0.02	0.009
Langelier Index - 25 degree	None			0.76	0.67	0.64	0.67	0.52	0.55	0.71	0.59	0.61	0.35
Magnesium, Total, ICAP	mg/l			25	25	20	21	19	20	26	25	17	18
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	3.4	ND	6.4
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			6.5	6.4	3.8	4.2	3.6	4	2.9	3.6	2	2.1
Sodium, Total, ICAP	mg/l			180	140	88	96	100	140	85	130	45	45
Sulfate	mg/l	500	s	2.57	ND	61.6	62	45.4	46	117	110	36.8	40
Surfactants	mg/l	0.5	s	ND	0.071	ND	0.06	0.061	0.076	0.06	0.06	0.055	0.06
Total Nitrate, Nitrite-N, CAL	mg/l			ND	ND	ND	ND	ND	ND	ND	3.7	ND	6.4
Total Organic Carbon	mg/l			3.5	3.6	1.2	1.21	0.9	1.01	0.5	0.97	ND	0.61
Carbon Dioxide	mg/l			9.14	11.5	6.4	6.52	6.04	6.29	7.96	10.1	4.08	8.5
General Physical													
Apparent Color	ACU	15	s	15	15	3	5	ND	5	3	3	ND	ND
Lab pH	Units			7.9	7.8	7.9	7.9	7.9	7.9	7.8	7.7	8	7.7
Odor	TON	3	s	1	**4**	1	2	1	2	2	2	1	1
pH of CaCO3 saturation(25C	Units			7.145	7.13	7.262	7.226	7.384	7.348	7.091	7.114	7.387	7.346
pH of CaCO3 saturation(60C	Units			6.7	6.7	6.8	6.8	6.9	6.9	6.6	6.7	6.9	6.9
Specific Conductance	umho/	1600	s	1300	1130	840	821	840	969	990	1140	630	554
Metals													
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	1.1	1.6	1.3	1.5	1.3	1.7	1.6	2.2	1.3	1.2
Barium, Total, ICAP/MS	ug/l	1000	p	84	76	74	79	210	210	71	91	55	51
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	3.1	ND	10	9.1
Chromium, Hexavalent (Cr V	mg/l				ND		ND		ND		1.2		9.3
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	2.8	ND	ND	ND
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	5.2	ND	ND
Volatile Organic Compounds													
Trichloroethylene (TCE)	ug/l	5		ND	ND	ND	ND	ND	ND	1.5	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5		ND	ND	ND	ND	ND	ND	3.6	1.1	ND	ND
1,1-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform (Trichloromethar	ug/l	100		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-Isopropyl Ether	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freo	ug/l	150		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Downey #1 Zone 1 11/8/00	Downey #1 Zone 1 6/21/01	Downey #1 Zone 2 11/8/00	Downey #1 Zone 2 6/21/01	Downey #1 Zone 3 11/9/00	Downey #1 Zone 3 6/21/01	Downey #1 Zone 4 11/9/00	Downey #1 Zone 4 6/21/01	Downey #1 Zone 5 11/9/00	Downey #1 Zone 5 6/21/01	Downey #1 Zone 6 11/9/00	Downey #1 Zone 6 6/21/01
General Mineral															
Total Dissolved Solid (TDS)	mg/l	500	p	210	210	360	360	500	490	**560**	**550**	480	420	**840**	**830**
Cation Sum	meq/l			3.78	3.84	6.21	6.25	8.36	8.46	9.11	9.28	8.42	7.54	14	14.1
Anion Sum	meq/l			3.49	3.6	5.81	5.88	8.1	8.19	9.03	9.2	8	7.14	13.6	13.8
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	2.2	ND	ND	ND	ND	ND	5.6	ND	**135**	**130**	**68**	**69**
Turbidity	NTU	5	s	0.1	0.2	0.7	0.3	0.5	ND	0.3	0.15	**5.2**	2.2	**6.7**	0.6
Alkalinity	mg/l			150	154	165	167	163	168	192	200	224	217	275	287
Boron	mg/L			0.054	ND	0.064	ND	0.08	0.059	0.19	0.18	0.09	0.072	0.23	0.21
Bicarbonate as HCO3,calcula	mg/l			183	187	201	203	198	205	234	244	273	264	335	350
Calcium, Total, ICAP	mg/l			43	43	80	79	110	110	105	100	110	94	160	160
Carbonate as CO3, Calculate	mg/l			1.19	0.965	1.04	0.832	1.02	0.668	0.762	0.631	0.889	0.86	0.688	0.719
Hardness (Total, as CaCO3)	mg/l			131	131	249	247	353	353	328	332	353	309	523	527
Chloride	mg/l	500	s	5.12	5.3	27.6	28	66.5	67	75.2	76	47.9	38	96.5	96
Fluoride	mg/l	2	p	0.35	0.33	0.33	0.3	0.34	0.34	0.41	0.41	0.36	0.37	0.28	0.3
Hydroxide as OH, Calculated	mg/l			0.02	0.01	0.01	0.01	0.01	0.009	0.009	0.007	0.009	0.009	0.005	0.005
Langelier Index - 25 degree	None			0.45	0.36	0.66	0.56	0.79	0.61	0.62	0.54	0.73	0.65	0.78	0.8
Magnesium, Total, ICAP	mg/l			5.7	5.8	12	12	19	19	19	20	19	18	30	31
Nitrate-N by IC	mg/l	10	p	ND	ND	1.64	1.8	2.79	3	2.44	2.5	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			2.8	3.1	3.5	3.7	3.2	3.5	4.3	4.5	3.9	3.9	5.6	5.6
Sodium, Total, ICAP	mg/l			25	26	26	28	28	30	56	58	29	29	77	79
Sulfate	mg/l	500	s	15.8	17	76.5	77	132	130	138	137	103	82	257	256
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	0.056	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CAL	mg/l			ND	ND	1.64	1.8	2.79	3	2.44	2.5	ND	ND	ND	ND
Total Organic Carbon	mg/l			ND	ND	0.6	ND	0.6	0.67	ND	0.77	0.6	ND	0.8	0.91
Carbon Dioxide	mg/l			3.66	4.71	5.06	6.43	4.99	8.18	9.34	12.3	10.9	10.5	21.2	22.1
General Physical															
Apparent Color	ACU	15	s	3	ND	ND	ND	ND	3	ND	ND	ND	3	ND	ND
Lab pH	Units			8	7.9	7.9	7.8	7.9	7.7	7.7	7.6	7.7	7.7	7.5	7.5
Odor	TON	3	s	1	2	1	2	1	2	1	2	1	2	3	1
pH of CaCO3 saturation(25C	Units			7.549	7.54	7.239	7.24	7.107	7.092	7.076	7.058	6.967	7.05	6.716	6.697
pH of CaCO3 saturation(60C	Units			7.1	7.1	6.8	6.8	6.7	6.6	6.6	6.6	6.5	6.6	6.3	6.3
Specific Conductance	umho/	1600	s	295	315	505	519	690	673	825	813	730	648	1180	1190
Metals															
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	3.5	3.3	3	3	3.4	3.3	2.3	2.2	5.2	5.1	3	ND
Barium, Total, ICAP/MS	ug/l	1000	p	96	93	155	160	150	150	96	88	285	230	65	56
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	3.1	3	ND	2	ND	1.3	ND	ND	ND	ND	ND	ND
Chromium, Hexavalent (Cr V	mg/l			3	3.1	2	1.8	1.2	1.2	0.5	0.2	ND	ND	ND	ND
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.2
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds															
Trichloroethylene (TCE)	ug/l	5		ND		ND	ND	ND	ND	ND	ND	0.7	0.6	4.8	**5.6**
Tetrachloroethylene (PCE)	ug/l	5		ND		ND	ND	0.6	0.5	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6		ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6		ND		ND	ND	ND	ND	ND	ND	ND	ND	**10**	**14**
Chloroform (Trichloromethar	ug/l	100		ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	5		ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5		ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5		ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-Isopropyl Ether	ug/l			ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freo	ug/l	150		ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1		ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700		ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750		ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10		ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	0.6

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Huntington Park #1 Zone 1 10/25/00	Huntington Park #1 Zone 1 6/20/01	Huntington Park #1 Zone 2 10/25/00	Huntington Park #1 Zone 2 6/20/01	Huntington Park #1 Zone 3 10/25/00	Huntington Park #1 Zone 3 6/20/01	Huntington Park #1 Zone 4 10/25/00	Huntington Park #1 Zone 4 6/20/01
General Mineral											
Total Dissolved Solid (TDS)	mg/l	500	p	390	370	390	370	**520**	500	**740**	**680**
Cation Sum	meq/l			5.89	6.12	5.98	6.03	7.9	8.5	11.4	11.1
Anion Sum	meq/l			5.83	5.78	6.25	6.01	7.95	8.43	11.5	11.4
Iron, Total, ICAP	mg/l	0.3	s	0.24	0.25	ND	ND	ND	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	48	45	3.9	5.2	ND	ND	ND	ND
Turbidity	NTU	5	s	1.1	1.4	0.5	0.7	0.05	0.3	0.1	0.25
Alkalinity	mg/l			177	177	187	183	198	209	267	260
Boron	mg/L			0.14	0.13	0.14	0.13	0.16	0.16	0.17	0.16
Bicarbonate as HCO3,calcula	mg/l			215	216	227	223	241	255	325	317
Calcium, Total, ICAP	mg/l			60	60	61	61	83	88	130	120
Carbonate as CO3, Calculate	mg/l			1.4	0.704	1.86	0.914	1.24	0.831	1.06	0.82
Hardness (Total, as CaCO3)	mg/l			207	207	210	210	285	306	444	423
Chloride	mg/l	500	s	19.8	20	15.5	21	46.2	50	62.3	63
Fluoride	mg/l	2	p	0.51	0.52	0.44	0.45	0.38	0.38	0.38	0.39
Hydroxide as OH, Calculated	mg/l			0.02	0.009	0.02	0.01	0.01	0.009	0.009	0.007
Langelier Index - 25 degree	None			0.67	0.37	0.8	0.49	0.76	0.61	0.88	0.73
Magnesium, Total, ICAP	mg/l			14	14	14	14	19	21	29	30
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	1.98	2.4	4.04	4.6
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			3.2	3.8	3.2	3.6	3.7	4.3	4.4	4.7
Sodium, Total, ICAP	mg/l			38	43	39	40	48	52	56	58
Sulfate	mg/l	500	s	81.6	79	98.5	83	121	127	197	197
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	0.3	0.484	0.063	ND
Total Nitrate, Nitrite-N, CAL	mg/l			ND	ND	ND	ND	1.98	2.4	4.04	4.6
Total Organic Carbon	mg/l			0.5	ND	ND	0.65	1.7	2.7	ND	ND
Carbon Dioxide	mg/l			4.3	8.62	3.61	7.07	6.07	10.2	13	15.9
General Physical											
Apparent Color	ACU	15	s	3	5	ND	3	ND	3	ND	ND
Lab pH	Units			8	7.7	8.1	7.8	7.9	7.7	7.7	7.6
Odor	TON	3	s	1	1	1	1	1	1	1	1
pH of CaCO3 saturation(25C	Units			7.334	7.332	7.304	7.311	7.144	7.094	6.819	6.865
pH of CaCO3 saturation(60C	Units			6.9	6.9	6.9	6.9	6.7	6.6	6.4	6.4
Specific Conductance	umho/	1600	s	545	509	555	529	730	745	990	947
Metals											
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	1	1.2	1.2	1.2	ND	1.2	ND	1.3
Barium, Total, ICAP/MS	ug/l	1000	p	57	59	70	69	72	80	110	110
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	7.6	13	2.8	2.5
Chromium, Hexavalent (Cr V	mg/l			ND	ND	0.52	0.7	6.9	14.1	1.9	2.3
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	11	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	5.8
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	8.8	ND	25	ND	15	ND	6.8	ND
Volatile Organic Compounds											
Trichloroethylene (TCE)	ug/l	5		ND	ND	ND	ND	**6.2**	**8.3**	ND	0.8
Tetrachloroethylene (PCE)	ug/l	5		ND	ND	ND	ND	ND	0.7	ND	ND
1,1-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND
Chloroform (Trichlorometha	ug/l	100		ND	ND	ND	ND	0.5	0.9	ND	ND
1,1-Dichloroethane	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5		ND	ND	ND	ND	ND	**0.6**	ND	ND
Carbon Tetrachloride	ug/l	0.5		ND	ND	ND	ND	**2.3**	**4.4**	ND	ND
Di-Isopropyl Ether	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freo	ug/l	150		ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1		ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700		ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750		ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10		ND	ND	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Inglewood #2 Zone 1 11/23/99	Inglewood #2 Zone 2 9/28/00	Inglewood #2 Zone 3 9/28/00
General Mineral						
Total Dissolved Solid (TDS)	mg/l	500	p	**1460**	**1590**	290
Cation Sum	meq/l			27.7	25.8	4.96
Anion Sum	meq/l			30.2	23.2	4.87
Iron, Total, ICAP	mg/l	0.3	s	**0.55**	**0.53**	ND
Manganese, Total, ICAP/MS	ug/l	50	s	42	**58**	**55**
Turbidity	NTU	5	s	0.85	**24**	0.2
Alkalinity	mg/l			1450	269	215
Boron	mg/L				3.2	0.18
Bicarbonate as HCO3,calcula	mg/l			1770	327	262
Calcium, Total, ICAP	mg/l			17.7	12	29
Carbonate as CO3, Calculate	mg/l			9.14	2.13	1.35
Hardness (Total, as CaCO3)	mg/l			116	68.2	118
Chloride	mg/l	500	s	36.6	450	19.8
Fluoride	mg/l	2	p	0.58	0.34	0.26
Hydroxide as OH, Calculated	mg/l			0.014	0.02	0.01
Langelier Index - 25 degree	None			0.95	0.15	0.34
Magnesium, Total, ICAP	mg/l			17.5	9.3	11
Nitrate-N by IC	mg/l	10	p	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND
Potassium, Total, ICAP	mg/l			22.9	19	6.6
Sodium, Total, ICAP	mg/l			570	550	56
Sulfate	mg/l	500	s	4.86	246	ND
Surfactants	mg/l	0.5	s	ND	ND	ND
Total Nitrate, Nitrite-N, CAL	mg/l			ND	ND	ND
Total Organic Carbon	mg/l			34.5	20	1.1
Carbon Dioxide	mg/l			44.6	6.54	6.6
General Physical						
Apparent Color	ACU	15	s	**300**	**200**	10
Lab pH	Units			7.9	8	7.9
Odor	TON	3	s	**8**	**17**	**4**
pH of CaCO3 saturation(25C	Units			6.949	7.851	7.564
pH of CaCO3 saturation(60C	Units			6.5	7.4	7.1
Specific Conductance	umho/	1600	s	**2630**	**2410**	480
Metals						
Aluminum, Total, ICAP/MS	ug/l	200	s	37	145	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	3.5	1.9	1.6
Barium, Total, ICAP/MS	ug/l	1000	p	43	22	13
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	7.7	3.1	2.1
Chromium, Hexavalent (Cr V	mg/l			ND	ND	ND
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND
Lead, Total, ICAP/MS	ug/l			0.94	ND	ND
Mercury	ug/l	2	p	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	6	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	59	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	27	ND	ND
Volatile Organic Compounds						
Trichloroethylene (TCE)	ug/l	5		ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5		ND	ND	ND
1,1-Dichloroethylene	ug/l	6		ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6		ND	ND	ND
Chloroform (Trichlorometha	ug/l	100		ND	ND	ND
1,1-Dichloroethane	ug/l	5		ND	ND	ND
1,2-Dichloroethane	ug/l	0.5		ND	ND	ND
Carbon Tetrachloride	ug/l	0.5		ND	ND	ND
Di-Isopropyl Ether	ug/l			ND	ND	ND
Fluorotrichloromethane-Freo	ug/l	150		ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND
Benzene	ug/l	1		ND	ND	ND
Ethyl benzene	ug/l	700		ND	ND	ND
m,p-Xylenes	ug/l	1750		ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10		ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	La Mirada #1 Zone 1 10/18/00	La Mirada #1 Zone 1 6/7/01	La Mirada #1 Zone 2 10/18/00	La Mirada #1 Zone 2 6/7/01	La Mirada #1 Zone 3 10/18/00	La Mirada #1 Zone 3 6/7/01	La Mirada #1 Zone 4 10/18/00	La Mirada #1 Zone 4 6/7/01	La Mirada #1 Zone 5 10/18/00	La Mirada #1 Zone 5 6/7/01
General Mineral													
Total Dissolved Solid (TDS)	mg/l	500	p	370	390	260	270	340	340	410	410	**540**	500
Cation Sum	meq/l			5.92	5.92	4.42	4.29	5.68	5.65	6.86	7.05	8.79	8.84
Anion Sum	meq/l			5.82	5.87	4.28	4.18	5.43	5.44	6.47	6.81	8.44	8.62
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	11	12	8.5	7.9	ND	19	**72**	**74**	44	48
Turbidity	NTU	5	s	0.1	0.2	0.1	ND	ND	0.2	0.35	0.4	0.15	0.1
Alkalinity	mg/l			159	156	142	138	184	185	191	198	194	197
Boron	mg/L			0.14	0.14	0.085	0.095	0.14	0.14	0.11	0.13	0.14	0.14
Bicarbonate as HCO3,calcula	mg/l			193	189	172	167	224	225	232	241	236	240
Calcium, Total, ICAP	mg/l			16	16	9.8	10	22	24	44	47	64	66
Carbonate as CO3, Calculate	mg/l			1.99	2.45	1.77	2.73	1.83	2.32	1.51	1.24	1.53	0.984
Hardness (Total, as CaCO3)	mg/l			53.9	53.9	31.5	32	84.5	89.9	172	179	246	255
Chloride	mg/l	500	s	24.9	26	14.6	14	16.2	16	29	29	82.8	86
Fluoride	mg/l	2	p	0.8	0.76	0.6	0.55	0.75	0.72	0.55	0.53	0.46	0.43
Hydroxide as OH, Calculated	mg/l			0.03	0.03	0.03	0.04	0.02	0.03	0.02	0.01	0.02	0.01
Langelier Index - 25 degree	None			0.24	0.34	-0.009	0.18	0.35	0.49	0.56	0.51	0.73	0.55
Magnesium, Total, ICAP	mg/l			3.4	3.4	1.7	1.7	7.2	7.3	15	15	21	22
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	2.42	2.6
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			2.3	2.2	1.9	1.7	2.8	2.5	3.1	2.9	3.2	3.1
Sodium, Total, ICAP	mg/l			110	110	86	83	90	87	77	78	87	84
Sulfate	mg/l	500	s	90.9	95	47.8	48	60.3	60	86.4	96	97.2	98
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	0.058	0.05
Total Nitrate, Nitrite-N, CAL	mg/l			ND	ND	ND	ND	ND	ND	ND	ND	2.42	2.6
Total Organic Carbon	mg/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Dioxide	mg/l			2.44	1.89	2.17	1.33	3.56	2.84	4.64	6.07	4.72	7.61
General Physical													
Apparent Color	ACU	15	s	3	3	ND	ND	3	5	ND	3	ND	ND
Lab pH	Units			8.2	8.3	8.2	8.4	8.1	8.2	8	7.9	8	7.8
Odor	TON	3	s	1	1	1	1	1	1	1	1	1	1
pH of CaCO3 saturation(25C	Units			7.955	7.964	8.218	8.222	7.752	7.713	7.436	7.391	7.266	7.245
pH of CaCO3 saturation(60C	Units			7.5	7.5	7.8	7.8	7.3	7.3	7	6.9	6.8	6.8
Specific Conductance	umho/	1600	s	570	553	405	396	510	504	620	633	805	743
Metals													
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	6.3	7.6	9.7	9.5	4.5	8.6	5.7	5.1	1.7	2.8
Barium, Total, ICAP/MS	ug/l	1000	p	52	54	19	22	105	37	45	43	51	54
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	8.9	ND	ND	ND	ND	ND
Chromium, Hexavalent (Cr V	mg/l				ND		ND		ND		ND		0.4
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND	1.6	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	7
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	14	ND	ND	ND	ND	ND
Volatile Organic Compounds													
Trichloroethylene (TCE)	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform (Trichloromethar	ug/l	100		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-Isopropyl Ether	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freo	ug/l	150		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Lakewood #1 Zone 1 10/17/00	Lakewood #1 Zone 1 5/31/01	Lakewood #1 Zone 2 10/17/00	Lakewood #1 Zone 2 5/31/01	Lakewood #1 Zone 3 10/17/00	Lakewood #1 Zone 3 5/31/01	Lakewood #1 Zone 4 10/17/00	Lakewood #1 Zone 4 5/31/01	Lakewood #1 Zone 5 10/17/00	Lakewood #1 Zone 5 5/31/01	Lakewood #1 Zone 6 10/17/00	Lakewood #1 Zone 6 5/31/01
General Mineral															
Total Dissolved Solid (TDS)	mg/l	500	p	180	190	180	192	210	236	290	270	250	254	**720**	**610**
Cation Sum	meq/l			2.75	2.75	3.27	3.36	3.75	3.8	4.91	4.76	4.2	4.22	10.1	9.64
Anion Sum	meq/l			2.74	2.77	3.18	3.26	3.64	3.68	4.89	4.56	4.14	4.09	10.1	9.75
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	ND	ND	ND	ND	0.1	ND	0.11	0.1	0.16	0.12
Manganese, Total, ICAP/MS	ug/l	50	s	3.5	3.5	18	17	26	25	**160**	**130**	**55**	**53**	**410**	**380**
Turbidity	NTU	5	s	ND	0.5	0.3	0.8	3.8	**8.1**	2.1	1.9	0.3	0.45	2.6	1.6
Alkalinity	mg/l			93	95	134	138	153	156	157	172	178	175	195	202
Boron	mg/L			0.056	0.056	ND	ND	0.058	0.061	0.065	0.069	0.078	0.081	0.088	0.094
Bicarbonate as HCO3,calcula	mg/l			112	115	163	167	186	189	191	209	217	213	238	246
Calcium, Total, ICAP	mg/l			11	10	34	33	41	40	59	55	49	48	140	130
Carbonate as CO3, Calculate	mg/l			3.65	2.98	1.68	2.17	1.92	2.45	0.986	2.15	0.561	2.19	0.616	1.6
Hardness (Total, as CaCO3)	mg/l			28.9	26.4	100	97.6	121	119	177	164	157	155	403	378
Chloride	mg/l	500	s	19.2	19	6.22	6.1	8.62	8.2	48.2	28	9.23	9.5	185	168
Fluoride	mg/l	2	p	0.48	0.46	0.26	0.26	0.31	0.31	0.27	0.25	0.59	0.5	0.18	0.18
Hydroxide as OH, Calculated	mg/l			0.09	0.07	0.03	0.03	0.03	0.03	0.01	0.03	0.007	0.03	0.007	0.02
Langelier Index - 25 degree	None			0.35	0.22	0.5	0.6	0.64	0.73	0.51	0.82	0.18	0.76	0.68	1.1
Magnesium, Total, ICAP	mg/l			0.34	0.34	3.7	3.7	4.6	4.7	7.1	6.6	8.4	8.6	13	13
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			ND	ND	2	2.2	2.3	2.4	2.9	2.9	2.4	2.5	4.3	4.3
Sodium, Total, ICAP	mg/l			50	51	28	31	29	31	30	32	23	24	44	45
Sulfate	mg/l	500	s	15.1	15	15	15	15.3	15	18.1	15	13.9	14	44.6	46
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	0.169	0.05	ND	ND	0.275	0.212
Total Nitrate, Nitrite-N, CAL	mg/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			0.8	0.6	ND	ND	ND	ND	0.8	ND	1	ND	1.4	0.7
Carbon Dioxide	mg/l			0.447	0.578	2.06	1.67	2.35	1.89	4.81	2.64	10.9	2.69	12	4.92
General Physical															
Apparent Color	ACU	15	s	15	15	5	5	ND	15	5	10	ND	ND	3	10
Lab pH	Units			8.7	8.6	8.2	8.3	8.2	8.3	7.9	8.2	7.6	8.2	7.6	8
Odor	TON	3	s	2	1	2	1	1	1	3	2	1	1	1	2
pH of CaCO3 saturation(25C	Units			8.354	8.384	7.701	7.704	7.563	7.566	7.393	7.384	7.418	7.435	6.922	6.94
pH of CaCO3 saturation(60C	Units			7.9	7.9	7.3	7.3	7.1	7.1	6.9	6.9	7	7	6.5	6.5
Specific Conductance	umho/	1600	s	285	269	310	288	350	318	490	406	395	360	990	936
Metals															
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	10	13	1.7	2.1	1.1	1.4	9.6	15	3.4	4.3	16	15
Barium, Total, ICAP/MS	ug/l	1000	p	16	15	21	19	31	28	125	120	115	100	430	370
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Hexavalent (Cr V	mg/l				ND		ND		ND		ND		ND		ND
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds															
Trichloroethylene (TCE)	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform (Trichloromethar	ug/l	100		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-Isopropyl Ether	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freo	ug/l	150		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Long Beach #1 Zone 1 10/11/00	Long Beach #1 Zone 1 5/30/01	Long Beach #1 Zone 2 10/11/00	Long Beach #1 Zone 2 5/30/01	Long Beach #1 Zone 3 10/11/00	Long Beach #1 Zone 3 5/30/01	Long Beach #1 Zone 4 10/11/00	Long Beach #1 Zone 4 5/30/01	Long Beach #1 Zone 5 10/11/00	Long Beach #1 Zone 5 5/30/01	Long Beach #1 Zone 6 10/11/00	Long Beach #1 Zone 6 5/30/01
General Mineral															
Total Dissolved Solid (TDS)	mg/l	500	p	220	272	230	270	200	222	240	242	**2290**	**2230**	**690**	**730**
Cation Sum	meq/l			3.7	3.48	3.45	3.58	2.96	2.99	3.92	3.75	33.6	32.4	11.2	12
Anion Sum	meq/l			3.64	3.64	3.71	3.55	3.12	3.01	3.71	3.7	35	32.1	11.1	12
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	3.2	3.2	ND	ND	6.6	5.5	27	18	**410**	**400**	**250**	**280**
Turbidity	NTU	5	s	0.1	0.55	0.1	0.3	0.6	2	4.6	**7.5**	0.6	1.4	0.25	2.1
Alkalinity	mg/l			160	159	163	156	126	121	137	147	134	129	198	204
Boron	mg/L			0.17	0.17	0.19	0.18	0.077	0.083	0.074	0.11	ND	ND	0.078	0.084
Bicarbonate as HCO3,calcula	mg/l			192	190	196	186	152	146	167	178	163	157	241	248
Calcium, Total, ICAP	mg/l			2.3	2.3	2.7	2.7	4.8	4.6	11	9.2	310	290	130	140
Carbonate as CO3, Calculate	mg/l			7.87	9.81	6.38	9.6	3.93	4.76	1.37	2.91	0.668	0.81	1.24	2.03
Hardness (Total, as CaCO3)	mg/l			-6.7	ND	7.32	7.19	13.2	12.7	32.8	27.1	955	893	407	440
Chloride	mg/l	500	s	14.3	15	14.9	14	11.5	11	11.5	13	**889**	**806**	118	130
Fluoride	mg/l	2	p	0.66	0.64	0.64	0.63	0.71	0.6	0.38	0.42	0.17	0.14	0.33	0.29
Hydroxide as OH, Calculated	mg/l			0.1	0.1	0.09	0.1	0.07	0.09	0.02	0.04	0.01	0.01	0.01	0.02
Langelier Index - 25 degree	None			0	0.095	-0.02	0.16	0.018	0.082	-0.08	0.17	1.1	1.1	0.95	1.2
Magnesium, Total, ICAP	mg/l			0.22	0.19	0.14	0.11	0.29	0.29	1.3	1	44	41	20	22
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			ND	ND	ND	ND	ND	ND	1.7	1.5	6.4	6.1	3.2	3.3
Sodium, Total, ICAP	mg/l			82	77	76	79	62	63	74	73	330	330	69	71
Sulfate	mg/l	500	s	ND	ND	ND	ND	11.3	12	29.9	18	348	325	180	205
Surfactants	mg/l	0.5	s	ND	ND	ND	0.06	ND	ND	ND	ND	0.061	0.058	0.072	0.058
Total Nitrate, Nitrite-N, CAL	mg/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			3.3	4.7	4.4	4.87	1.8	1.78	0.6	2.24	1.1	0.93	0.9	0.68
Carbon Dioxide	mg/l			0.609	0.478	0.782	0.468	0.764	0.583	2.65	1.42	5.17	3.95	6.07	3.94
General Physical															
Apparent Color	ACU	15	s	**90**	**80**	**100**	**100**	**35**	**40**	10	**80**	ND	ND	ND	ND
Lab pH	Units			8.8	8.9	8.7	8.9	8.6	8.7	8.1	8.4	7.8	7.9	7.9	8.1
Odor	TON	3	s	2	1	2	1	1	1	1	1	3	1	2	1
pH of CaCO3 saturation(25C	Units			8.8	8.805	8.721	8.744	8.582	8.618	8.181	8.231	6.741	6.787	6.949	6.904
pH of CaCO3 saturation(60C	Units			8.4	8.4	8.3	8.3	8.1	8.2	7.7	7.8	6.3	6.3	6.5	6.5
Specific Conductance	umho/	1600	s	350	308	340	315	290	282	365	334	**3480**	**2980**	1060	1060
Metals															
Aluminum, Total, ICAP/MS	ug/l	200	s	44	39	26	28	39	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	3.2	3.2	2.7	3.2	8.2	10
Barium, Total, ICAP/MS	ug/l	1000	p	ND	2.1	2.3	2.2	ND	ND	3.7	4	255	200	245	270
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	2.6	2.5	1.6	ND	ND	ND	ND	ND	1.3	ND	ND
Chromium, Hexavalent (Cr V	mg/l			ND	ND	ND	ND	0.95	ND	ND	ND	ND	ND	ND	ND
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	2.5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l			ND	0.55	ND	0.79	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	8.7	5.5	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	6.6	ND	5.1	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds															
Trichloroethylene (TCE)	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform (Trichloromethar	ug/l	100		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-Isopropyl Ether	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freo	ug/l	150		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Long Beach #2 Zone 1 10/19/00	Long Beach #2 Zone 1 6/5/01	Long Beach #2 Zone 2 5/3/01	Long Beach #2 Zone 3 10/19/00	Long Beach #2 Zone 3 6/5/01	Long Beach #2 Zone 4 10/19/00	Long Beach #2 Zone 4 6/5/01	Long Beach #2 Zone 5 10/19/00	Long Beach #2 Zone 5 6/5/01	Long Beach #2 Zone 6 10/19/00	Long Beach #2 Zone 6 6/5/01
General Mineral														
Total Dissolved Solid (TDS)	mg/l	500	p	440	440	290	260	250	310	310	**920**	**960**	**1300**	**1310**
Cation Sum	meq/l			7.06	7.52	4.62	4.01	3.98	4.88	5.08	14.3	14.9	20	20.7
Anion Sum	meq/l			6.74	6.93	4.67	3.69	3.95	4.51	4.6	14.1	14.7	20.1	20.6
Iron, Total, ICAP	mg/l	0.3	s	0.25	0.17	ND	ND	ND	ND	ND	0.12	0.12	0.18	0.17
Manganese, Total, ICAP/MS	ug/l	50	s	20	17	17	9.2	11	30	35	**165**	**150**	**370**	**330**
Turbidity	NTU	5	s	0.9	1.2	0.8	0.5	0.3	**6.8**	2.4	0.4	0.9	1.8	1.1
Alkalinity	mg/l			304	317	202	130	140	141	147	290	292	305	308
Boron	mg/L			0.53	0.55	0.19	0.13	0.13	0.087	0.098	0.24	0.24	0.33	0.33
Bicarbonate as HCO3,calcula	mg/l			369	384	245	158	170	171	179	353	355	371	375
Calcium, Total, ICAP	mg/l			6.8	7	14	13	14	35	39	160	170	220	230
Carbonate as CO3, Calculate	mg/l			3.8	6.27	2.52	1.63	2.78	1.4	1.84	1.82	2.31	1.92	1.54
Hardness (Total, as CaCO3)	mg/l			23.1	24.1	41.5	37.8	40.7	105	117	490	519	689	722
Chloride	mg/l	500	s	20.2	20	20	21.4	22	28.1	26.9	102	107	165	170
Fluoride	mg/l	2	p	0.65	0.57	0.38	0.55	0.48	0.35	0.31	0.19	0.16	0.31	0.28
Hydroxide as OH, Calculated	mg/l			0.03	0.04	0.03	0.03	0.04	0.02	0.03	0.01	0.02	0.01	0.01
Langelier Index - 25 degree	None			0.15	0.38	0.29	0.068	0.33	0.43	0.6	1.2	1.3	1.4	1.3
Magnesium, Total, ICAP	mg/l			1.5	1.6	1.6	1.3	1.4	4.3	4.8	22	23	34	36
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			2.8	3.1	2.1	1.5	1.5	3.2	3.4	4.7	4.8	6.2	6.4
Sodium, Total, ICAP	mg/l			150	160	86	74	72	62	61	100	100	140	140
Sulfate	mg/l	500	s	2.74	ND	2.1	21.8	24.1	42.2	42.7	259	281	447	460
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	0.06	0.06	0.101	0.084	0.109	0.091
Total Nitrate, Nitrite-N, CAL	mg/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			18.8	13.8	4.61	1.4	1.32	1.1	1.14	1.4	0.92	1.5	1.07
Carbon Dioxide	mg/l			4.66	3.06	3.09	1.99	1.35	2.72	2.26	8.89	7.1	9.34	11.9
General Physical														
Apparent Color	ACU	15	s	**600**	**300**	**50**	**20**	**20**	10	10	3	3	3	5
Lab pH	Units			8.2	8.4	8.2	8.2	8.4	8.1	8.2	7.9	8	7.9	7.8
Odor	TON	3	s	2	**8**	2	1	2	2	3	1	2	**4**	**4**
pH of CaCO3 saturation(25C	Units			8.045	8.016	7.91	8.132	8.068	7.668	7.601	6.693	6.664	6.533	6.509
pH of CaCO3 saturation(60C	Units			7.6	7.6	7.5	7.7	7.6	7.2	7.2	6.2	6.2	6.1	6.1
Specific Conductance	umho/	1600	s	630	628	417	380	353	450	437	1290	1300	1590	**1660**
Metals														
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	2.5	1.8	1.5	ND	1.3	3.4	4.7	5.6	4.5	10	6.6
Barium, Total, ICAP/MS	ug/l	1000	p	8.8	7.8	7.2	5.1	5.5	15	17	86	87	110	100
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	3.3	1.7	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Hexavalent (Cr V	mg/l			ND	ND	ND	ND	0.1	ND	ND	ND	ND	ND	ND
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	5.2	2.2	ND	ND	ND	ND	ND	ND	ND	ND	2.3
Lead, Total, ICAP/MS	ug/l			0.54	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	6.3	6.9	8.4
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	12	14	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds														
Trichloroethylene (TCE)	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform (Trichloromethar	ug/l	100		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-Isopropyl Ether	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freo	ug/l	150		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Los Angeles #1 Zone 1 11/28/00	Los Angeles #1 Zone 1 5/16/01	Los Angeles #1 Zone 2 11/28/00	Los Angeles #1 Zone 2 5/17/01	Los Angeles #1 Zone 3 11/28/00	Los Angeles #1 Zone 3 5/17/01	Los Angeles #1 Zone 4 11/29/00	Los Angeles #1 Zone 4 5/17/01	Los Angeles #1 Zone 5 11/29/00	Los Angeles #1 Zone 5 5/17/01
General Mineral													
Total Dissolved Solid (TDS)	mg/l	500	p	350	350	370	380	400	380	410	**610**	**650**	**660**
Cation Sum	meq/l			6.22	5.84	6.69	6.49	6.75	6.37	6.74	9.29	10.7	9.6
Anion Sum	meq/l			5.56	5.63	6.03	6.02	6.14	6	6.54	9.63	10.6	10.7
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	ND	ND	ND	0.21	ND	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	49	46	47	ND	26	45	44	20	ND	8.2
Turbidity	NTU	5	s	2.1	0.25	**8.6**	2.9	**21**	2.7	**5.3**	1.4	0.5	0.3
Alkalinity	mg/l			173	181	181	185	184	189	191	223	227	231
Boron	mg/L				0.14		0.19		0.14		0.15		0.18
Bicarbonate as HCO3,calcula	mg/l			211	220	221	224	224	229	233	271	277	281
Calcium, Total, ICAP	mg/l			58	54	61	50	59	58	68	82	110	99
Carbonate as CO3, Calculate	mg/l			1.09	2.27	0.572	3.66	0.58	3.74	0.955	2.79	0.717	1.83
Hardness (Total, as CaCO3)	mg/l			198	184	214	186	209	202	231	308	394	350
Chloride	mg/l	500	s	21.4	21	21.8	20.9	22.5	20.5	25.5	69.8	84.7	84.5
Fluoride	mg/l	2	p	0.29	0.38	0.47	0.46	0.39	0.39	0.44	0.42	0.43	0.4
Hydroxide as OH, Calculated	mg/l			0.01	0.03	0.007	0.04	0.007	0.04	0.01	0.03	0.007	0.02
Langelier Index - 25 degree	None			0.54	0.83	0.28	1	0.28	1.1	0.55	1.1	0.64	1
Magnesium, Total, ICAP	mg/l			13	12	15	15	15	14	15	25	29	25
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	5.68	**11.4**	**11.1**
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			4.5	4.4	3.8	2.4	ND	3.8	4.1	3.5	4.8	4.6
Sodium, Total, ICAP	mg/l			49	47	53	62	59	51	46	70	63	57
Sulfate	mg/l	500	s	71.2	67	85.1	81.9	86.8	77.9	94.7	133	138	136
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	0.054	ND	0.078
Total Nitrate, Nitrite-N, CAL	mg/l			ND	ND	ND	ND	ND	ND	ND	5.68	11.4	11.1
Total Organic Carbon	mg/l			ND	0.77	ND	0.59	ND	0.62	ND	ND	0.52	0.73
Carbon Dioxide	mg/l			5.31	2.78	11.1	1.78	11.3	1.82	7.39	3.42	13.9	5.62
General Physical													
Apparent Color	ACU	15	s	3	5	3	3	ND	3	3	3	3	10
Lab pH	Units			7.9	8.2	7.6	8.4	7.6	8.4	7.8	8.2	7.6	8
Odor	TON	3	s	2	2	1	1	1	1	2	3	1	2
pH of CaCO3 saturation(25C	Units			7.357	7.37	7.315	7.396	7.324	7.322	7.245	7.098	6.961	7.001
pH of CaCO3 saturation(60C	Units			6.9	6.9	6.9	7	6.9	6.9	6.8	6.7	6.5	6.6
Specific Conductance	umho/	1600	s	540	502	585	542	600	545	625	871	1040	954
Metals													
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	3.2	ND	ND	2.4	1.3	3.4
Barium, Total, ICAP/MS	ug/l	1000	p	28	26	49	140	50	45	76	51	150	110
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	3.8	ND	ND	ND	ND	**265**	**280**
Chromium, Hexavalent (Cr V	mg/l			ND	ND	ND	ND	0.3	0.3	0.4	3.8	260	316
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	8.9	ND	ND	ND	ND	ND
Volatile Organic Compounds													
Trichloroethylene (TCE)	ug/l	5		ND	ND	ND	**16**	ND		ND	ND	**15**	**14**
Tetrachloroethylene (PCE)	ug/l	5		ND	ND	ND	0.6	ND		ND	ND	0.6	0.6
1,1-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND		ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND		ND	ND	ND	ND
Chloroform (Trichloromethar	ug/l	100		ND	ND	ND	ND	ND		ND	ND	ND	ND
1,1-Dichloroethane	ug/l	5		ND	ND	ND	ND	ND		ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5		ND	ND	ND	**0.7**	ND		ND	ND	**0.6**	0.5
Carbon Tetrachloride	ug/l	0.5		ND	ND	ND	ND	ND		ND	ND	ND	ND
Di-Isopropyl Ether	ug/l			ND	ND	ND	ND	ND		ND	ND	ND	ND
Fluorotrichloromethane-Freo	ug/l	150		ND	ND	ND	ND	ND		ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND		ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND		ND	ND	ND	ND
Benzene	ug/l	1		ND	ND	ND	ND	ND		ND	ND	ND	ND
Ethyl benzene	ug/l	700		ND	ND	ND	ND	ND		ND	ND	ND	ND
m,p-Xylenes	ug/l	1750		ND	ND	ND	ND	ND		ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND	ND		ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10		ND	ND	ND	ND	ND		ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Pico #1 Zone 2 11/16/00	Pico #1 Zone 2 7/10/01	Pico #1 Zone 3 11/16/00	Pico #1 Zone 3 7/10/01	Pico #1 Zone 4 11/16/00	Pico #1 Zone 4 7/10/01
General Mineral									
Total Dissolved Solid (TDS)	mg/l	500	p	300	320	**560**	**600**	**650**	**640**
Cation Sum	meq/l			5	5.52	9.09	9.86	10.7	10.7
Anion Sum	meq/l			4.76	5.25	9.03	9.9	10.5	10.5
Iron, Total, ICAP	mg/l	0.3	s	0.22	0.24	**0.43**	**0.4**	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	40	42	18	24	ND	2.4
Turbidity	NTU	5	s	1.5	1.9	2.3	1.9	0.1	0.2
Alkalinity	mg/l			156	163	188	182	204	205
Boron	mg/L			0.06	0.073	0.13	0.21	0.19	0.19
Bicarbonate as HCO3,calcula	mg/l			190	199	229	222	249	250
Calcium, Total, ICAP	mg/l			62	70	110	100	120	120
Carbonate as CO3, Calculate	mg/l			1.55	0.816	1.49	0.288	0.512	0.647
Hardness (Total, as CaCO3)	mg/l			200	224	353	336	386	390
Chloride	mg/l	500	s	15.5	19	65.7	99	85.6	87
Fluoride	mg/l	2	p	0.35	0.34	0.31	0.24	0.32	0.32
Hydroxide as OH, Calculated	mg/l			0.02	0.01	0.02	0.003	0.005	0.007
Langelier Index - 25 degree	None			0.73	0.5	0.96	0.2	0.53	0.63
Magnesium, Total, ICAP	mg/l			11	12	19	21	21	22
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	1.89	1.6
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			3	3	4.3	5.3	5.3	5.3
Sodium, Total, ICAP	mg/l			21	22	44	69	65	64
Sulfate	mg/l	500	s	56.7	69	163	166	183	182
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	0.062
Total Nitrate, Nitrite-N, CAL	mg/l			ND	ND	ND	ND	1.89	1.6
Total Organic Carbon	mg/l			ND	0.57	0.7	0.99	0.7	0.84
Carbon Dioxide	mg/l			3.02	6.31	4.58	22.3	15.7	12.6
General Physical									
Apparent Color	ACU	15	s	3	5	ND	3	ND	ND
Lab pH	Units			8.1	7.8	8	7.3	7.5	7.6
Odor	TON	3	s	1	1	1	1	1	1
pH of CaCO3 saturation(25C	Units			7.374	7.301	7.044	7.099	6.97	6.968
pH of CaCO3 saturation(60C	Units			6.9	6.9	6.6	6.7	6.5	6.5
Specific Conductance	umho/	1600	s	460	441	815	871	945	908
Metals									
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	ND	1.2	ND	3.5	3.6
Barium, Total, ICAP/MS	ug/l	1000	p	73	68	59	53	73	66
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND
Chromium, Hexavalent (Cr V	mg/l			ND	ND	ND	ND	0.8	0.4
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	5.2	ND	5.3
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds									
Trichloroethylene (TCE)	ug/l	5		ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5		ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND
Chloroform (Trichloromethar	ug/l	100		ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	5		ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5		ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5		ND	ND	ND	ND	ND	ND
Di-Isopropyl Ether	ug/l			ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freo	ug/l	150		ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND
Benzene	ug/l	1		ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700		ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750		ND	ND	ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10		ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Pico #2 Zone 1 11/16/00	Pico #2 Zone 1 6/25/01	Pico #2 Zone 2 11/16/00	Pico #2 Zone 2 6/25/01	Pico #2 Zone 3 11/16/00	Pico #2 Zone 3 6/25/01	Pico #2 Zone 4 11/16/00	Pico #2 Zone 4 6/25/01	Pico #2 Zone 5 11/16/00	Pico #2 Zone 5 6/25/01	Pico #2 Zone 6 11/16/00	Pico #2 Zone 6 6/25/01
General Mineral															
Total Dissolved Solid (TDS)	mg/l	500	p	460	**510**	**550**	**550**	**520**	**540**	**560**	**510**	**510**	480	**640**	460
Cation Sum	meq/l			7.93	8.2	9.25	9.3	8.68	8.85	8.99	8.34	7.94	8.04	10	7.51
Anion Sum	meq/l			7.73	7.95	9.33	9.26	8.61	8.67	9	8.51	8.01	7.97	9.99	7.78
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	ND	6.4	ND	ND	ND	ND	16	7.4	12	14	**1200**	**770**
Turbidity	NTU	5	s	0.8	0.35	0.2	0.1	1.1	0.4	0.45	0.15	0.3	0.05	0.4	0.4
Alkalinity	mg/l			188	191	232	233	191	197	169	162	157	145	142	119
Boron	mg/L			0.088	0.099	0.095	0.1	0.1	0.11	0.26	0.22	0.22	0.21	0.3	0.16
Bicarbonate as HCO3,calcula	mg/l			229	233	282	284	232	240	206	197	191	177	173	145
Calcium, Total, ICAP	mg/l			92	94	120	120	110	110	78	73	64	67	83	59
Carbonate as CO3, Calculate	mg/l			1.18	0.603	1.83	0.925	1.9	0.621	1.06	0.405	1.24	0.289	0.709	0.237
Hardness (Total, as CaCO3)	mg/l			308	317	394	394	357	361	261	244	221	233	306	217
Chloride	mg/l	500	s	42.8	48	60.3	59	60.7	60	91.2	86	78.4	84	125	93
Fluoride	mg/l	2	p	0.35	0.33	0.3	0.3	0.36	0.35	0.45	0.35	0.33	0.28	0.35	0.34
Hydroxide as OH, Calculated	mg/l			0.01	0.007	0.02	0.009	0.02	0.007	0.01	0.005	0.02	0.004	0.01	0.004
Langelier Index - 25 degree	None			0.78	0.49	1.1	0.79	1.1	0.58	0.66	0.21	0.64	0.029	0.51	-0.1
Magnesium, Total, ICAP	mg/l			19	20	23	23	20	21	16	15	15	16	24	17
Nitrate-N by IC	mg/l	10	p	2.9	2.8	2.89	3	3.15	3.2	2.94	2.2	1.41	1.7	2.67	1.6
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			6	6	3.6	3.9	3.9	4.1	4.9	4.4	4.3	4.5	7.5	6.2
Sodium, Total, ICAP	mg/l			37	39	29	30	33	35	84	77	78	75	85	69
Sulfate	mg/l	500	s	122	123	133	130	136	134	135	128	122	123	164	127
Surfactants	mg/l	0.5	s	ND	0.063	ND	0.073	ND	0.071	0.056	0.086	0.051	0.089	0.06	0.065
Total Nitrate, Nitrite-N, CAL	mg/l			2.9	2.8	2.89	3	3.15	3.2	2.94	2.2	1.41	1.7	2.67	1.6
Total Organic Carbon	mg/l			ND	0.87	ND	0.6	ND	ND	0.84	1.37	1.14	1.17	1.63	1.88
Carbon Dioxide	mg/l			5.77	11.7	5.64	11.3	3.69	12.1	5.19	12.5	3.82	14.1	5.48	11.5
General Physical															
Apparent Color	ACU	15	s	3	3	ND	3	ND	3	ND	ND	3	5	5	5
Lab pH	Units			7.9	7.6	8	7.7	8.1	7.6	7.9	7.5	8	7.4	7.8	7.4
Odor	TON	3	s	2	1	1	1	1	1	2	2	1	2	2	1
pH of CaCO3 saturation(25C	Units			7.121	7.105	6.916	6.913	7.038	7.023	7.239	7.287	7.358	7.371	7.288	7.513
pH of CaCO3 saturation(60C	Units			6.7	6.7	6.5	6.5	6.6	6.6	6.8	6.8	6.9	6.9	6.8	7.1
Specific Conductance	umho/	1600	s	705	711	825	783	790	708	840	760	770	716	850	706
Metals															
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	3.6	2.9	ND	ND	1.8	3.4	ND	1.4	1.3	23	14
Barium, Total, ICAP/MS	ug/l	1000	p	110	100	145	130	195	170	73	73	85	100	205	160
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	1.6	ND	ND	ND	1.4	ND	ND	ND	ND	ND	ND
Chromium, Hexavalent (Cr V	mg/l			2.5	1.5	0.9	0.5	2.1	1.1	ND	ND	ND	ND	ND	ND
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	2	ND	ND	ND	ND	ND	ND	2.4	2.2	5.4	3.7
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.5	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds															
Trichloroethylene (TCE)	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5		0.5	0.5	3.3	3.4	**12**	**11**	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform (Trichloromethar	ug/l	100		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-Isopropyl Ether	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freo	ug/l	150		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Rio Hondo #1 Zone 1 11/8/00	Rio Hondo #1 Zone 1 6/22/01	Rio Hondo #1 Zone 2 11/8/00	Rio Hondo #1 Zone 2 6/22/01	Rio Hondo #1 Zone 3 11/8/00	Rio Hondo #1 Zone 3 6/22/01	Rio Hondo #1 Zone 4 11/8/00	Rio Hondo #1 Zone 4 6/22/01	Rio Hondo #1 Zone 5 11/8/00	Rio Hondo #1 Zone 5 6/22/01	Rio Hondo #1 Zone 6 11/8/00	Rio Hondo #1 Zone 6 6/22/01
General Mineral															
Total Dissolved Solid (TDS)	mg/l	500	p	270	270	490	450	450	420	440	430	360	380	450	400
Cation Sum	meq/l			4.54	4.61	7.62	7.67	7.21	7.25	7.42	7.35	5.87	6.48	7.45	6.69
Anion Sum	meq/l			4.31	4.49	7.56	7.58	7.11	7.09	7.32	7.16	5.57	6.23	7.24	6.66
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	22	31	**61**	**57**	4.3	3.6	2.6	ND	17	13	36	29
Turbidity	NTU	5	s	0.9	1.5	0.5	0.7	0.3	0.4	0.5	0.2	2.9	1.6	1	0.3
Alkalinity	mg/l			140	146	166	168	150	154	144	143	116	130	133	127
Boron	mg/L			0.057	ND	ND	ND	0.15	0.13	0.19	0.17	0.14	0.13	0.16	0.16
Bicarbonate as HCO3,calcula	mg/l			170	178	202	205	183	188	175	174	141	158	162	155
Calcium, Total, ICAP	mg/l			42	43	100	100	81	80	71	68	54	61	71	59
Carbonate as CO3, Calculate	mg/l			1.1	1.46	1.04	0.668	0.945	0.612	1.14	0.45	0.459	0.325	0.264	0.16
Hardness (Total, as CaCO3)	mg/l			139	141	320	320	260	257	231	223	180	202	251	213
Chloride	mg/l	500	s	18	19	51.6	51	55.8	54	66.5	65	49.4	56	75.3	66
Fluoride	mg/l	2	p	0.28	0.26	0.22	0.22	0.32	0.32	0.43	0.43	0.35	0.34	0.28	0.3
Hydroxide as OH, Calculated	mg/l			0.02	0.02	0.01	0.009	0.01	0.009	0.02	0.007	0.009	0.005	0.004	0.003
Langelier Index - 25 degree	None			0.41	0.54	0.76	0.57	0.63	0.43	0.65	0.23	0.14	0.039	0.016	-0.19
Magnesium, Total, ICAP	mg/l			8.2	8.3	17	17	14	14	13	13	11	12	18	16
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	2.37	2.5	2.38	2.7	1.82	2.5	3.61	2.5
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			2.9	3	3.5	3.8	3.7	3.9	3.9	4	3.6	3.8	4.5	4.6
Sodium, Total, ICAP	mg/l			39	39	26	27	44	46	62	64	50	54	53	53
Sulfate	mg/l	500	s	47.2	49	133	133	113	110	114	108	82	89	105	99
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CAL	mg/l			ND	ND	ND	ND	2.37	2.5	2.38	2.7	1.82	2.5	3.61	2.5
Total Organic Carbon	mg/l			0.6	0.66	0.5	0.62	0.8	0.74	0.6	0.91	0.9	0.85	1	0.98
Carbon Dioxide	mg/l			3.4	2.83	5.09	8.18	4.61	7.5	3.5	8.74	5.63	9.99	12.9	19.6
General Physical															
Apparent Color	ACU	15	s	3	ND	3	ND	ND	ND	3	ND	3	ND	ND	3
Lab pH	Units			8	8.1	7.9	7.7	7.9	7.7	8	7.6	7.7	7.5	7.4	7.2
Odor	TON	3	s	1	1	2	1	1	1	2	1	1	1	1	1
pH of CaCO3 saturation(25C	Units			7.591	7.561	7.14	7.133	7.274	7.268	7.351	7.372	7.563	7.461	7.384	7.484
pH of CaCO3 saturation(60C	Units			7.1	7.1	6.7	6.7	6.8	6.8	6.9	6.9	7.1	7	6.9	7
Specific Conductance	umho/	1600	s	385	408	615	674	625	626	630	668	500	582	640	586
Metals															
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	ND	1.3	1.1	2.8	2.3	3	2.8	2.1	1.8	1.3	1.2
Barium, Total, ICAP/MS	ug/l	1000	p	15	18	53	51	115	100	57	52	45	48	85	73
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Hexavalent (Cr V	mg/l			ND	ND	ND	ND	0.33	0.3	ND	ND	ND	ND	ND	ND
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds															
Trichloroethylene (TCE)	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform (Trichloromethar	ug/l	100		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-Isopropyl Ether	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freo	ug/l	150		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Santa Fe Springs #1 Zone 1 8/1/01	Santa Fe Springs #1 Zone 2 8/1/01	Santa Fe Springs #1 Zone 3 9/12/00	Santa Fe Springs #1 Zone 4 8/1/01
General Mineral							
Total Dissolved Solid (TDS)	mg/l	500	p	**810**	**820**	**870**	**830**
Cation Sum	meq/l			13.1	12.7	13.6	13.1
Anion Sum	meq/l			13.2	13.1	12.7	12.7
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	24	2.1	47	24
Turbidity	NTU	5	s	**13**	0.7	3	**34**
Alkalinity	mg/l			319	311	441	303
Boron	mg/L			1	1	0.53	0.98
Bicarbonate as HCO3,calcula	mg/l			389	378	531	369
Calcium, Total, ICAP	mg/l			9.6	5.9	36	11
Carbonate as CO3, Calculate	mg/l			1.6	3.09	17.3	1.2
Hardness (Total, as CaCO3)	mg/l			41.2	25	197	41.4
Chloride	mg/l	500	s	171	174	124	168
Fluoride	mg/l	2	p	0.59	0.62	0.32	0.6
Hydroxide as OH, Calculated	mg/l			0.01	0.02	0.09	0.009
Langelier Index - 25 degree	None			-0.07	0.003	1.5	-0.1
Magnesium, Total, ICAP	mg/l			4.2	2.5	26	3.4
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			2.5	2.4	4.9	2.3
Sodium, Total, ICAP	mg/l			280	280	220	280
Sulfate	mg/l	500	s	93	92.7	18.1	91.2
Surfactants	mg/l	0.5	s	ND	0.062	0.06	ND
Total Nitrate, Nitrite-N, CAL	mg/l			ND	ND	ND	ND
Total Organic Carbon	mg/l			5.7	6.2	2	5.8
Carbon Dioxide	mg/l			12.3	6.01	2.12	14.7
General Physical							
Apparent Color	ACU	15	s	**45**	**50**	**250**	**40**
Lab pH	Units			7.8	8.1	8.7	7.7
Odor	TON	3	s	**200**	**200**	**400**	**200**
pH of CaCO3 saturation(25C	Units			7.873	8.097	7.164	7.837
pH of CaCO3 saturation(60C	Units			7.4	7.7	6.7	7.4
Specific Conductance	umho/	1600	s	1290	1230	1390	1270
Metals							
Aluminum, Total, ICAP/MS	ug/l	200	s	58	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	ND	1.4	ND
Barium, Total, ICAP/MS	ug/l	1000	p	14	5.6	41	38
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	2.1	ND
Chromium, Hexavalent (Cr V	mg/l			ND	ND	ND	ND
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	3.3	3.8	ND	5.3
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	**100**	**66**	ND	43
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	5.2	ND
Volatile Organic Compounds							
Trichloroethylene (TCE)	ug/l	5		ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5		ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6		ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6		ND	ND	ND	ND
Chloroform (Trichlorometha	ug/l	100		ND	ND	ND	ND
1,1-Dichloroethane	ug/l	5		ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5		ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5		ND	ND	ND	ND
Di-Isopropyl Ether	ug/l			ND	ND	ND	ND
Fluorotrichloromethane-Freo	ug/l	150		ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND
Benzene	ug/l	1		ND	ND	**1.4**	ND
Ethyl benzene	ug/l	700		ND	ND	1	ND
m,p-Xylenes	ug/l	1750		ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10		ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	South Gate #1 Zone 1 10/30/00	South Gate #1 Zone 1 6/12/01	South Gate #1 Zone 2 10/30/00	South Gate #1 Zone 2 6/12/01	South Gate #1 Zone 3 10/30/00	South Gate #1 Zone 3 6/12/01	South Gate #1 Zone 4 10/31/00	South Gate #1 Zone 4 6/12/01	South Gate #1 Zone 5 10/31/00	South Gate #1 Zone 5 6/12/01
General Mineral													
Total Dissolved Solid (TDS)	mg/l	500	p	330	310	420	410	440	450	480	470	450	460
Cation Sum	meq/l			5.18	5.21	6.59	6.44	7.01	7.22	7.83	7.69	7.57	8.28
Anion Sum	meq/l			5.15	5.2	6.57	6.64	7.19	7.1	7.66	7.76	7.38	7.97
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	**77**	**71**	ND	ND	ND	ND	ND	ND	**82**	**140**
Turbidity	NTU	5	s	0.4	0.25	0.5	0.5	2.1	0.9	0.6	0.3	0.5	0.35
Alkalinity	mg/l			164	169	145	147	166	165	170	177	193	193
Boron	mg/L			0.1	0.11	0.12	0.13	0.11	0.1	0.15	0.16	0.12	0.13
Bicarbonate as HCO3,calcula	mg/l			200	205	177	179	202	201	207	216	235	235
Calcium, Total, ICAP	mg/l			50	49	74	71	81	79	85	84	74	86
Carbonate as CO3, Calculate	mg/l			1.3	1.68	0.726	0.734	1.04	0.824	0.674	0.886	1.53	0.765
Hardness (Total, as CaCO3)	mg/l			158	155	238	231	264	263	278	276	263	301
Chloride	mg/l	500	s	22.8	21	47.3	48	48.3	47	54	53	66	79
Fluoride	mg/l	2	p	0.32	0.34	0.33	0.32	0.37	0.41	0.37	0.43	0.41	0.48
Hydroxide as OH, Calculated	mg/l			0.02	0.02	0.01	0.01	0.01	0.01	0.009	0.01	0.02	0.009
Langelier Index - 25 degree	None			0.55	0.66	0.47	0.46	0.67	0.56	0.5	0.61	0.79	0.56
Magnesium, Total, ICAP	mg/l			8	7.9	13	13	15	16	16	16	19	21
Nitrate-N by IC	mg/l	10	p	ND	ND	2.42	2.5	2.44	2.5	1.63	1.7	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			2.5	2.5	3.3	3.2	2.8	3.2	3.4	3.2	3.4	2.9
Sodium, Total, ICAP	mg/l			45	47	40	40	38	43	50	48	51	50
Sulfate	mg/l	500	s	58.3	58	103	103	111	109	125	124	78.5	89
Surfactants	mg/l	0.5	s	ND	ND	ND	0.06	ND	ND	ND	ND	ND	0.05
Total Nitrate, Nitrite-N, CAL	mg/l			ND	ND	2.42	2.5	2.44	2.5	1.63	1.7	ND	ND
Total Organic Carbon	mg/l			ND	0.64	0.5	ND	0.8	ND	0.6	0.51	1	0.85
Carbon Dioxide	mg/l			4	3.26	5.61	5.67	5.09	6.37	8.26	6.85	4.7	9.38
General Physical													
Apparent Color	ACU	15	s	ND	3	ND	ND	ND	ND	ND	ND	ND	3
Lab pH	Units			8	8.1	7.8	7.8	7.9	7.8	7.7	7.8	8	7.7
Odor	TON	3	s	2	**4**	1	1	1	2	1	2	1	2
pH of CaCO3 saturation(25C	Units			7.445	7.443	7.328	7.341	7.231	7.244	7.2	7.186	7.205	7.139
pH of CaCO3 saturation(60C	Units			7	7	6.9	6.9	6.8	6.8	6.8	6.7	6.8	6.7
Specific Conductance	umho/	1600	s	500	453	630	588	670	618	750	685	725	710
Metals													
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	2.3	2.7	2.6	3.3	3.6	4	2.6	2.6	ND	5.8
Barium, Total, ICAP/MS	ug/l	1000	p	125	130	84	87	135	140	76	73	170	190
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	3.6	ND	ND	ND	ND	ND
Chromium, Hexavalent (Cr V	mg/l				ND		0.3		1.1	0.4	0.4	ND	ND
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	**61**	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	5.4	ND	ND	ND	5.2
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	11	ND	22	ND	13	ND	ND	ND	ND	ND
Volatile Organic Compounds													
Trichloroethylene (TCE)	ug/l	5		ND	ND	ND	ND	ND	ND	1	1.1	ND	ND
Tetrachloroethylene (PCE)	ug/l	5		ND	ND	ND	ND	0.6	0.7	**9.1**	**9.9**	ND	ND
1,1-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform (Trichloromethar	ug/l	100		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-Isopropyl Ether	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freo	ug/l	150		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Whittier #1 Zone 1 10/23/00	Whittier #1 Zone 1 7/17/01	Whittier #1 Zone 2 10/24/00	Whittier #1 Zone 2 7/17/01	Whittier #1 Zone 3 10/24/00	Whittier #1 Zone 3 7/17/01	Whittier #1 Zone 4 10/23/00	Whittier #1 Zone 4 7/17/01	Whittier #1 Zone 5 10/23/00	Whittier #1 Zone 5 7/17/01
General Mineral													
Total Dissolved Solid (TDS)	mg/l	500	p	**2770**	**2670**	**2580**	**2560**	**1600**	**1580**	**1080**	**700**	**710**	**670**
Cation Sum	meq/l			39.7	41.9	38.8	38	23.7	24.7	11.1	11.4	10.9	11.2
Anion Sum	meq/l			40.7	40.8	38.4	39.1	25.4	25.7	11.3	11.1	11.1	10.9
Iron, Total, ICAP	mg/l	0.3	s	**0.57**	**0.59**	**0.42**	ND	0.29	0.26	ND	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	**110**	**110**	**155**	**130**	**175**	**170**	20	20	19	21
Turbidity	NTU	5	s	2.7	3.7	2.4	3.4	1.8	2.1	0.05	0.2	**6.4**	3
Alkalinity	mg/l			264	262	293	290	299	292	262	260	243	239
Boron	mg/L			0.83	0.89	0.89	0.92	0.57	0.59	0.18	0.18	0.14	0.15
Bicarbonate as HCO3,calcula	mg/l			322	319	357	354	364	356	319	317	296	291
Calcium, Total, ICAP	mg/l			200	210	200	200	140	150	79	81	80	81
Carbonate as CO3, Calculate	mg/l			1.32	0.521	2.32	0.578	1.88	0.921	1.04	0.651	0.766	0.598
Hardness (Total, as CaCO3)	mg/l			1030	1100	993	993	654	703	333	346	352	358
Chloride	mg/l	500	s	265	270	231	236	173	179	79.9	76	81.7	79
Fluoride	mg/l	2	p	0.28	0.28	0.3	0.29	0.5	0.51	0.2	0.19	0.32	0.32
Hydroxide as OH, Calculated	mg/l			0.01	0.004	0.02	0.004	0.01	0.007	0.009	0.005	0.007	0.005
Langelier Index - 25 degree	None			1.2	0.78	1.4	0.81	1.2	0.88	0.66	0.46	0.53	0.43
Magnesium, Total, ICAP	mg/l			130	140	120	120	74	80	33	35	37	38
Nitrate-N by IC	mg/l	10	p		ND	ND	ND	ND	ND	4.38	4.4	5.02	5.1
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			11	12	9.9	10	7.3	7	4.1	4.5	3.4	3.7
Sodium, Total, ICAP	mg/l			430	450	430	410	240	240	100	100	87	90
Sulfate	mg/l	500	s	**1340**	**1340**	**1250**	**1280**	**695**	**710**	169	166	171	169
Surfactants	mg/l	0.5	s	ND	0.058	ND	0.054	ND	ND	0.051	ND	0.109	ND
Total Nitrate, Nitrite-N, CAL	mg/l			ND	ND	ND	ND	ND	ND	4.38	4.4	5.02	5.1
Total Organic Carbon	mg/l			1.7	2.17	2.3	2.7	1.2	1.42	ND	ND	ND	ND
Carbon Dioxide	mg/l			10.2	25.4	7.14	28.2	9.16	17.9	12.7	20	14.9	18.4
General Physical													
Apparent Color	ACU	15	s	15	15	15	10	5	10	ND	ND	3	ND
Lab pH	Units			7.8	7.4	8	7.4	7.9	7.6	7.7	7.5	7.6	7.5
Odor	TON	3	s	2	1	1	1	2	1	1	1	1	1
pH of CaCO3 saturation(25C	Units			6.636	6.619	6.591	6.595	6.738	6.717	7.044	7.035	7.071	7.073
pH of CaCO3 saturation(60C	Units			6.2	6.2	6.1	6.2	6.3	6.3	6.6	6.6	6.6	6.6
Specific Conductance	umho/	1600	s	**3470**	**3070**	**3100**	**2740**	**2120**	**1900**	1060	951	1040	950
Metals													
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	1.7	1.2	ND	1.4	1.2	ND	1.9	1.8	1.3	1.4
Barium, Total, ICAP/MS	ug/l	1000	p	23	18	21	20	23	22	32	30	28	27
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	2.7	ND	1.4	ND	ND	ND	ND	4	3.2
Chromium, Hexavalent (Cr V	mg/l			ND	ND	0.05	ND	ND	ND	3.1	ND	ND	3.2
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	3.7	3.2	4.4	2.8	3.1	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	6.7	ND	8.3	ND	6.1	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	5.8	7.2	7.1	9.9	6.7	ND	ND	ND	ND	ND
Volatile Organic Compounds													
Trichloroethylene (TCE)	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform (Trichloromethar	ug/l	100		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-Isopropyl Ether	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freo	ug/l	150		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.2
CENTRAL BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Willowbrook #1 Zone 1 11/2/00	Willowbrook #1 Zone 1 6/19/01	Willowbrook #1 Zone 2 11/2/00	Willowbrook #1 Zone 2 6/19/01	Willowbrook #1 Zone 3 11/2/00	Willowbrook #1 Zone 3 6/19/01	Willowbrook #1 Zone 4 11/2/00	Willowbrook #1 Zone 4 6/19/01
General Mineral											
Total Dissolved Solid (TDS)	mg/l	500	p	330	370	320	320	340	320	340	340
Cation Sum	meq/l			5.61	5.75	5.36	5.43	5.71	5.71	5.64	6.53
Anion Sum	meq/l			5.61	6.56	5.27	5.51	5.63	5.65	5.64	5.66
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	ND	ND	ND	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	**56**	**86**	49	**58**	32	32	**84**	34
Turbidity	NTU	5	s	0.1	0.15	0.05	0.15	0.2	0.45	**7.1**	**15**
Alkalinity	mg/l			176	298	160	168	179	177	179	179
Boron	mg/L			0.12	0.12	0.11	0.11	0.11	0.11	0.12	0.24
Bicarbonate as HCO3,calcula	mg/l			214	363	195	204	218	215	218	218
Calcium, Total, ICAP	mg/l			51	57	55	54	56	57	57	33
Carbonate as CO3, Calculate	mg/l			1.39	2.36	1.6	1.67	1.13	1.11	1.13	1.13
Hardness (Total, as CaCO3)	mg/l			168	183	176	174	189	192	182	112
Chloride	mg/l	500	s	20.1	14	20	21	19.8	20	22.2	22
Fluoride	mg/l	2	p	0.32	0.26	0.31	0.32	0.44	0.44	0.38	0.39
Hydroxide as OH, Calculated	mg/l			0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01
Langelier Index - 25 degree	None			0.59	0.87	0.68	0.7	0.54	0.54	0.55	0.31
Magnesium, Total, ICAP	mg/l			10	9.9	9.3	9.5	12	12	9.7	7.3
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			4	3.3	2.6	2.9	3.8	3.7	3	5.8
Sodium, Total, ICAP	mg/l			49	46	41	43	42	41	44	95
Sulfate	mg/l	500	s	72.1	9.4	71.5	74	70.6	73	67.8	69
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CAL	mg/l			ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			ND	4.2	ND	0.87	ND	ND	ND	0.66
Carbon Dioxide	mg/l			4.28	7.26	3.1	3.24	5.49	5.41	5.49	5.49
General Physical											
Apparent Color	ACU	15	s	5	**25**	3	3	3	3	ND	ND
Lab pH	Units			8	8	8.1	8.1	7.9	7.9	7.9	7.9
Odor	TON	3	s	3	1	1	2	1	1	1	1
pH of CaCO3 saturation(25C	Units			7.407	7.129	7.415	7.403	7.358	7.357	7.351	7.588
pH of CaCO3 saturation(60C	Units			7	6.7	7	7	6.9	6.9	6.9	7.1
Specific Conductance	umho/	1600	s	545	546	520	468	535	503	540	513
Metals											
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	10	6.9	ND	1.1	3.6	3.7	6.5	6
Barium, Total, ICAP/MS	ug/l	1000	p	68	120	49	51	73	71	130	43
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Hexavalent (Cr V	mg/l				ND		ND		ND		ND
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds											
Trichloroethylene (TCE)	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6		ND	ND	ND	ND	ND	ND	ND	ND
Chloroform (Trichlorometha	ug/l	100		ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	5		ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5		ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5		ND	ND	ND	ND	ND	ND	ND	ND
Di-Isopropyl Ether	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freo	ug/l	150		ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1		ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700		ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750		ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10		ND	ND	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Carson #1 Zone 1 10/10/00	Carson #1 Zone 1 5/21/01	Carson #1 Zone 2 10/10/00	Carson #1 Zone 2 5/21/01	Carson #1 Zone 3 10/10/00	Carson #1 Zone 3 5/21/01	Carson #1 Zone 4 10/10/00	Carson #1 Zone 4 5/21/01
General Mineral											
Total Dissolved Solid (TDS)	mg/l	1000	p	210	210	220	240	320	360	550	500
Cation Sum	meq/l			3.41	3.55	3.93	4.1	5.32	5.36	9.17	8.96
Anion Sum	meq/l			3.57	3.49	4.13	4	5.36	5.19	9.25	8.5
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	ND	ND	ND	ND	0.13	0.11
Manganese, Total, ICAP/MS	ug/l	50	s	29	27	22	19	38	36	**130**	**120**
Turbidity	NTU	5	s	3.5	2.7	0.05	0.2	ND	0.1	0.25	1.2
Alkalinity	mg/l			150	147	177	171	171	168	217	213
Boron	mg/L			0.088	0.092	0.093	0.1	0.1	0.1	0.11	0.12
Bicarbonate as HCO3,calculated	mg/l			182	178	215	208	208	204	264	259
Calcium, Total, ICAP	mg/l			21	20	32	33	47	46	90	83
Carbonate as CO3, Calculated	mg/l			2.36	2.31	2.79	2.7	2.14	2.1	2.16	3.36
Hardness (Total, as CaCO3)	mg/l			69.3	67.2	107	111	167	164	307	289
Chloride	mg/l	500	s	19.8	19.1	20.4	20	22.2	21	95.6	78.6
Fluoride	mg/l	2	p	0.26	0.28	0.22	0.23	0.3	0.31	0.41	0.43
Hydroxide as OH, Calculated	mg/l			0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.03
Langelier Index - 25 degree	None			0.44	0.41	0.69	0.69	0.74	0.73	1	1.2
Magnesium, Total, ICAP	mg/l			4.1	4.2	6.5	6.9	12	12	20	20
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			2.7	2.9	2.2	2.3	2.9	3	4.4	4.8
Sodium, Total, ICAP	mg/l			45	49	40	42	44	46	67	70
Sulfate	mg/l	500	s	ND	ND	ND	ND	62.4	58.8	105	96.2
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrate, Nitrite-N, CALC	mg/l			ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			0.7	0.63	ND	0.74	ND	ND	ND	ND
Carbon Dioxide	mg/l			1.82	1.78	2.16	2.08	2.62	2.57	4.19	2.6
General Physical											
Apparent Color	ACU	15	s	5	5	3	3	3	5	5	5
Lab pH	Units			8.3	8.3	8.3	8.3	8.2	8.2	8.1	8.3
Odor	TON	3	s	2	2	1	2	2	1	1	1
pH of CaCO3 saturation(25C)	Units			7.863	7.894	7.607	7.608	7.455	7.473	7.069	7.113
pH of CaCO3 saturation(60C)	Units			7.4	7.4	7.2	7.2	7	7	6.6	6.7
Specific Conductance	umho/	1600	s	335	316	375	362	500	463	875	743
Metals											
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	1.2	1	ND	ND	ND	ND	1.3	ND
Barium, Total, ICAP/MS	ug/l	1000	p	19	16	39	35	69	64	225	220
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Hexavalent (Cr VI)	mg/l				ND		ND		ND		ND
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	2.3	ND
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND	ND	ND	0.58	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	5.7
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	7.2	ND
Volatile Organic Compounds											
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform (Trichloromethane)	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND
Di-Isopropyl Ether	ug/l		p	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Chandler #3 Zone 1 12/6/00	Chandler #3 Zone 1 8/2/01	Chandler #3 Zone 2 12/6/00	Chandler #3 Zone 2 8/3/01
General Mineral							
Total Dissolved Solid (TDS)	mg/l	1000	p	700	680	**1240**	**1110**
Cation Sum	meq/l			12.3	11.3	19.1	17.2
Anion Sum	meq/l			12.1	11.8	20	18.2
Iron, Total, ICAP	mg/l	0.3	s	**0.32**	0.28	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	**120**	**99**	**55**	32
Turbidity	NTU	5	s	3.1	1.7	**27**	**138**
Alkalinity	mg/l			307	322	351	338
Boron	mg/L			0.2	0.18	0.37	0.26
Bicarbonate as HCO3,calculated	mg/l			374	392	428	412
Calcium, Total, ICAP	mg/l			89	81	150	140
Carbonate as CO3, Calculated	mg/l			1.22	1.61	1.39	0.847
Hardness (Total, as CaCO3)	mg/l			329	301	510	481
Chloride	mg/l	500	s	189	170	276	249
Fluoride	mg/l	2	p	0.24	0.21	0.24	0.22
Hydroxide as OH, Calculated	mg/l			0.009	0.01	0.009	0.005
Langelier Index - 25 degree	None			0.78	0.86	1.1	0.82
Magnesium, Total, ICAP	mg/l			26	24	33	32
Nitrate-N by IC	mg/l	10	p	ND	ND	**40**	**33.2**
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			3.3	3.1	5.6	5.1
Sodium, Total, ICAP	mg/l			130	120	200	170
Sulfate	mg/l	500	s	28.8	25.6	112	99.6
Surfactants	mg/l	0.5	s	ND	ND	0.072	ND
Total Nitrate, Nitrite-N, CALC	mg/l			ND	ND	40	33.2
Total Organic Carbon	mg/l			1.52	1.26	1.34	2.1
Carbon Dioxide	mg/l			14.9	12.4	17.1	26.1
General Physical							
Apparent Color	ACU	15	s	10	10	10	10
Lab pH	Units			7.7	7.8	7.7	7.5
Odor	TON	3	s	3	**4**	**4**	3
pH of CaCO3 saturation(25C)	Units			6.923	6.943	6.637	6.684
pH of CaCO3 saturation(60C)	Units			6.5	6.5	6.2	6.2
Specific Conductance	umho/	1600	s	1230	998	**1810**	**1610**
Metals							
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	4.6	3.5	7.8	5.1
Barium, Total, ICAP/MS	ug/l	1000	p	63	62	135	64
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	4	2.6
Chromium, Hexavalent (Cr VI)	mg/l			ND	ND	0.7	1.2
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	2.3
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	95	**340**
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	5.6
Volatile Organic Compounds							
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND
Chloroform (Trichloromethane)	ug/l	100	p	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	5	p	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND
Di-Isopropyl Ether	ug/l		p	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10	p	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Gardena #1 Zone 1 10/10/00	Gardena #1 Zone 1 5/23/01	Gardena #1 Zone 2 10/10/00	Gardena #1 Zone 2 5/23/01	Gardena #1 Zone 3 10/10/00	Gardena #1 Zone 3 5/24/01	Gardena #1 Zone 4 10/10/00	Gardena #1 Zone 4 5/24/01
General Mineral											
Total Dissolved Solid (TDS)	mg/l	1000	p	360	330	350	340	340	340	**1810**	**1570**
Cation Sum	meq/l			5.69	5.58	5.62	5.66	5.53	5.71	24.2	24.2
Anion Sum	meq/l			6.38	6.24	5.7	5.33	5.59	5.43	23.8	23
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	ND	ND	ND	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	42	45	**89**	**71**	29	24	ND	2
Turbidity	NTU	5	s	0.3	2.2	**10**	**6**	0.25	**5.3**	0.3	3.7
Alkalinity	mg/l			295	289	187	187	178	172	224	193
Boron	mg/L			0.35	0.32	0.12	0.13	0.11	0.12	0.14	0.14
Bicarbonate as HCO3,calculated	mg/l			358	351	228	227	216	209	273	235
Calcium, Total, ICAP	mg/l			14	13	57	55	56	58	270	270
Carbonate as CO3, Calculated	mg/l			3.69	3.62	1.48	2.34	2.22	2.71	0.354	0.964
Hardness (Total, as CaCO3)	mg/l			65	60.4	192	187	185	190	982	982
Chloride	mg/l	500	s	16.7	15.8	23	20.8	22.5	22	**605**	**604**
Fluoride	mg/l	2	p	0.21	0.22	0.41	0.39	0.36	0.37	0.19	0.19
Hydroxide as OH, Calculated	mg/l			0.03	0.03	0.02	0.03	0.03	0.03	0.003	0.01
Langelier Index - 25 degree	None			0.45	0.41	0.67	0.85	0.84	0.94	0.72	1.2
Magnesium, Total, ICAP	mg/l			7.3	6.8	12	12	11	11	75	75
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	**16.1**	**14**
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			10	11	3.4	3.9	3.2	3.2	5.4	5.9
Sodium, Total, ICAP	mg/l			95	94	39	42	40	42	100	100
Sulfate	mg/l	500	s	ND	ND	61.7	47	66.3	65	54.2	51
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	0.077	ND	0.062	0.151
Total Nitrate, Nitrite-N, CALC	mg/l			ND	ND	ND	ND	ND	ND	16.1	14
Total Organic Carbon	mg/l			2.7	2.63	ND	ND	ND	0.93	ND	0.58
Carbon Dioxide	mg/l			4.52	4.43	4.56	2.86	2.73	2.09	27.4	7.45
General Physical											
Apparent Color	ACU	15	s	**30**	**30**	3	3	3	5	ND	3
Lab pH	Units			8.2	8.2	8	8.2	8.2	8.3	7.3	7.8
Odor	TON	3	s	3	3	2	1	1	1	2	3
pH of CaCO3 saturation(25C)	Units			7.745	7.786	7.331	7.349	7.362	7.361	6.577	6.643
pH of CaCO3 saturation(60C)	Units			7.3	7.3	6.9	6.9	6.9	6.9	6.1	6.2
Specific Conductance	umho/	1600	s	585	523	535	461	520	461	**2530**	**2180**
Metals											
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	20	20	ND	ND	ND	ND	ND	ND
Barium, Total, ICAP/MS	ug/l	1000	p	16	17	51	48	25	24	320	280
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	19	6.7
Chromium, Hexavalent (Cr VI)	mg/l				ND		ND		ND		6.2
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	2.3	ND
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	11	18
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	6.2	ND	7.1	ND	7.6	14
Volatile Organic Compounds											
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform (Trichloromethane)	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND
Di-Isopropyl Ether	ug/l		p	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Haw-thorne #1 Zone 1 10/5/00	Haw-thorne #1 Zone 1 5/22/01	Haw-thorne #1 Zone 2 10/5/00	Haw-thorne #1 Zone 2 5/22/01	Haw-thorne #1 Zone 3 10/5/00	Haw-thorne #1 Zone 3 5/22/01	Haw-thorne #1 Zone 4 10/5/00	Haw-thorne #1 Zone 4 5/22/01	Haw-thorne #1 Zone 5 10/5/00	Haw-thorne #1 Zone 5 5/22/01	Haw-thorne #1 Zone 6 10/5/00	Haw-thorne #1 Zone 6 5/22/01
General Mineral															
Total Dissolved Solid (TDS)	mg/l	1000	p	890	890	780	740	550	630	450	490	570	640	**2370**	**2110**
Cation Sum	meq/l			14.4	15.4	12.5	13.6	10.1	10.4	8.26	8.07	9.5	9.28	35.3	35.3
Anion Sum	meq/l			15.3	15.6	13.4	13.5	9.89	10.2	7.94	8.03	8.95	9.87	34	20.3
Iron, Total, ICAP	mg/l	0.3	s	0.19	0.18	0.13	0.13	0.2	0.22	0.11	0.11	ND	ND	0.28	0.19
Manganese, Total, ICAP/MS	ug/l	50	s	17	15	**60**	**56**	**105**	**98**	**80**	**68**	**100**	**100**	**900**	**770**
Turbidity	NTU	5	s	0.55	1.4	0.3	1	0.45	0.4	0.15	0.3	0.2	1.2	**6.5**	3.5
Alkalinity	mg/l			702	715	609	616	433	448	333	334	204	208	281	279
Boron	mg/L			1.4	1.5	0.97	1	0.46	0.48	0.37	0.36	0.13	0.12	0.32	0.29
Bicarbonate as HCO3,calculated	mg/l			853	870	739	749	527	545	405	406	248	253	342	340
Calcium, Total, ICAP	mg/l			15	16	13	15	31	35	36	40	76	78	320	320
Carbonate as CO3, Calculated	mg/l			8.79	5.65	9.58	7.71	4.31	4.46	3.31	2.64	1.61	1.31	1.11	0.699
Hardness (Total, as CaCO3)	mg/l			86.8	93.4	64.9	74	160	174	160	174	297	302	1160	1160
Chloride	mg/l	500	s	44.4	46	41.9	42	43.3	42	44.6	47	157	190	**562**	286
Fluoride	mg/l	2	p	0.12	0.15	0.27	0.28	0.24	0.26	0.37	0.39	0.33	0.34	0.24	0.25
Hydroxide as OH, Calculated	mg/l			0.03	0.02	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.01	0.009	0.005
Langelier Index - 25 degree	None			0.86	0.7	0.84	0.81	0.87	0.93	0.82	0.77	0.83	0.75	1.3	1.1
Magnesium, Total, ICAP	mg/l			12	13	7.9	8.9	20	21	17	18	26	26	89	89
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.53	0.8
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			19	20	12	14	14	14	11	9.3	6.6	6.1	7.6	7.7
Sodium, Total, ICAP	mg/l			280	300	250	270	150	150	110	100	78	71	270	270
Sulfate	mg/l	500	s	ND	ND	ND	ND	ND	ND	ND	ND	20.2	16	**598**	317
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.424	**0.525**
Total Nitrate, Nitrite-N, CALC	mg/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.53	0.8
Total Organic Carbon	mg/l			13.1	13.8	11.6	11.8	4	3.5	2.7	2.75	0.8	0.92	5.1	5.3
Carbon Dioxide	mg/l			10.8	17.4	7.41	9.45	8.37	8.66	6.43	8.12	4.96	6.37	13.6	21.5
General Physical															
Apparent Color	ACU	15	s	**200**	**350**	**225**	**350**	**35**	**35**	**20**	**25**	3	3	3	5
Lab pH	Units			8.2	8	8.3	8.2	8.1	8.1	8.1	8	8	7.9	7.7	7.5
Odor	TON	3	s	2	3	3	2	2	1	2	1	2	3	**4**	**8**
pH of CaCO3 saturation(25C)	Units			7.338	7.301	7.462	7.394	7.232	7.165	7.281	7.234	7.17	7.15	6.406	6.408
pH of CaCO3 saturation(60C)	Units			6.9	6.9	7	6.9	6.8	6.7	6.8	6.8	6.7	6.7	6	6
Specific Conductance	umho/	1600	s	1350	1310	1180	1170	890	866	730	683	905	932	**3160**	**3030**
Metals															
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	1.8	ND	ND	1.2	ND	1.4	1.7	ND	1.6	ND	4.5	3.6
Barium, Total, ICAP/MS	ug/l	1000	p	31	33	24	26	33	34	29	32	77	84	58	56
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	2.6	1.7	2.9	2.1	ND	2.4	ND	1.9	ND	1.1	2.1	4.7
Chromium, Hexavalent (Cr VI)	mg/l				ND		ND		ND		ND		ND		ND
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	3	ND	ND	3.8	ND	ND	ND	ND	ND	ND	4.6	2.4
Lead, Total, ICAP/MS	ug/l			0.93	1.2	ND	0.96	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	6	19	31
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	13	ND	ND	ND	ND	ND	ND	17	24
Volatile Organic Compounds															
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**18**	**23**
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.9	1.1
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.5
Chloroform (Trichloromethane)	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.4	9
1,1-Dichloroethane	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.5
Di-Isopropyl Ether	ug/l		p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.4	8.3
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Inglewood #1 Zone 1 7/26/01	Inglewood #1 Zone 3 10/5/00	Inglewood #1 Zone 3 5/23/01	Inglewood #1 Zone 4 10/5/00	Inglewood #1 Zone 4 5/23/01	Inglewood #1 Zone 5 10/5/00	Inglewood #1 Zone 5 5/23/01
General Mineral										
Total Dissolved Solid (TDS)	mg/l	1000	p	**2330**	910	970	680	650	**1170**	**1270**
Cation Sum	meq/l			35.8	15.3	15.1	11.3	10.9	18.1	18.8
Anion Sum	meq/l			41.5	15.9	15.8	11	11.7	17.5	18.6
Iron, Total, ICAP	mg/l	0.3	s	0.3	**0.34**	**0.31**	0.29	0.3	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	**100**	**270**	**280**	**190**	**160**	ND	3.4
Turbidity	NTU	5	s	1.3	0.65	0.45	0.45	2.8	0.45	3.7
Alkalinity	mg/l			778	310	307	227	222	260	285
Boron	mg/L			3.4	0.39	0.36	0.18	0.17	0.23	0.23
Bicarbonate as HCO3,calculated	mg/l			949	378	374	276	270	317	347
Calcium, Total, ICAP	mg/l			160	100	97	79	81	170	180
Carbonate as CO3, Calculated	mg/l			1.55	1.55	1.53	1.79	1.39	0.82	0.898
Hardness (Total, as CaCO3)	mg/l			617	406	398	341	346	634	671
Chloride	mg/l	500	s	**858**	255	259	171	198	335	357
Fluoride	mg/l	2	p	0.31	0.53	0.53	0.44	0.46	0.21	0.23
Hydroxide as OH, Calculated	mg/l			0.004	0.01	0.01	0.02	0.01	0.007	0.007
Langelier Index - 25 degree	None			1.1	0.93	0.92	0.89	0.79	0.89	0.95
Magnesium, Total, ICAP	mg/l			53	38	38	35	35	51	54
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	**10.6**	**10.5**
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			15	6.6	6.3	10	8.7	6.9	6.5
Sodium, Total, ICAP	mg/l			530	160	160	96	86	120	120
Sulfate	mg/l	500	s	83	117	113	75.5	80.7	99.8	101
Surfactants	mg/l	0.5	s	0.154	ND	0.056	ND	ND	ND	0.078
Total Nitrate, Nitrite-N, CALC	mg/l			ND	ND	ND	ND	ND	10.6	10.5
Total Organic Carbon	mg/l			36	1.1	0.99	0.6	0.54	0.7	1.53
Carbon Dioxide	mg/l			75.6	12	11.9	5.52	6.8	15.9	17.4
General Physical										
Apparent Color	ACU	15	s	**120**	10	3	3	5	ND	10
Lab pH	Units			7.4	7.8	7.8	8	7.9	7.6	7.6
Odor	TON	3	s	**4**	2	1	1	1	1	1
pH of CaCO3 saturation(25C)	Units			6.264	6.868	6.885	7.106	7.105	6.713	6.649
pH of CaCO3 saturation(60C)	Units			5.8	6.4	6.4	6.7	6.7	6.3	6.2
Specific Conductance	umho/	1600	s	**3520**	1470	1430	1080	1050	**1720**	**1680**
Metals										
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	1.5	ND	ND	ND
Barium, Total, ICAP/MS	ug/l	1000	p	210	39	37	94	90	190	210
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	1.8	2.7	1.1	ND	1	2.2	2.2
Chromium, Hexavalent (Cr VI)	mg/l			ND		ND		ND		0.5
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	2.2	ND
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	7.4	ND	12	ND	11	7.6	20
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	6.5	ND
Volatile Organic Compounds										
Trichloroethylene (TCE)	ug/l	5	p	**26**	ND	ND	ND	ND	**42**	**51**
Tetrachloroethylene (PCE)	ug/l	5	p	**7.9**	ND	ND	ND	ND	**19**	**18**
1,1-Dichloroethylene	ug/l	6	p	5.3	ND	ND	ND	ND	**20**	**15**
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	1.2	0.9
Chloroform (Trichloromethane)	ug/l	100	p	ND	ND	ND	ND	ND	0.6	0.6
1,1-Dichloroethane	ug/l	5	p	ND	ND	ND	ND	ND	0.6	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND
Di-Isopropyl Ether	ug/l		p	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10	p	ND	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Lomita #1 Zone 1 10/4/00	Lomita #1 Zone 1 5/10/01	Lomita #1 Zone 2 10/4/00	Lomita #1 Zone 2 5/10/01	Lomita #1 Zone 3 10/4/00	Lomita #1 Zone 3 5/10/01	Lomita #1 Zone 4 10/4/00	Lomita #1 Zone 4 5/10/01	Lomita #1 Zone 5 10/4/00	Lomita #1 Zone 5 5/10/01
General Mineral													
Total Dissolved Solid (TDS)	mg/l	1000	p	**1360**	**1300**	970	950	860	750	650	640	**1230**	**1170**
Cation Sum	meq/l			20.9	21	16	16.1	14.1	13.3	10.9	10.9	17.6	18.8
Anion Sum	meq/l			21.3	21.8	15.1	16.4	14.1	13.4	11.1	11	18	17.8
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	**230**	**200**	**155**	**140**	**150**	**110**	**92**	**110**	**220**	**220**
Turbidity	NTU	5	s	0.05	2.3	3.6	5	0.2	3.5	0.15	4.1	0.1	1
Alkalinity	mg/l			226	233	230	243	268	291	484	233	227	224
Boron	mg/L			0.9	0.83	0.44	0.46	0.39	0.42	0.4	0.43	0.59	0.6
Bicarbonate as HCO3,calculated	mg/l			275	284	280	296	326	354	589	283	277	273
Calcium, Total, ICAP	mg/l			110	110	100	110	88	77	56	63	120	130
Carbonate as CO3, Calculated	mg/l			0.711	0.925	0.912	1.53	1.34	2.3	3.04	2.32	0.902	1.41
Hardness (Total, as CaCO3)	mg/l			398	402	369	398	322	283	206	227	431	464
Chloride	mg/l	500	s	**574**	**570**	336	383	284	253	37.7	211	453	450
Fluoride	mg/l	2	p	0.11	0.11	0.14	0.13	0.15	0.15	0.22	0.2	0.16	0.1
Hydroxide as OH, Calculated	mg/l			0.007	0.009	0.009	0.01	0.01	0.02	0.01	0.02	0.009	0.01
Langelier Index - 25 degree	None			0.64	0.75	0.7	0.97	0.81	0.99	0.97	0.91	0.78	1
Magnesium, Total, ICAP	mg/l			30	31	29	30	25	22	16	17	32	34
Nitrate-N by IC	mg/l	10	p	ND	1	ND	0.8	ND	0.5	ND	0.5	ND	0.9
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			14	14	13	11	11	10	8.5	8.8	12	13
Sodium, Total, ICAP	mg/l			290	290	190	180	170	170	150	140	200	210
Sulfate	mg/l	500	s	29.7	46	46.4	32	36.1	18	14.9	16	31.9	29
Surfactants	mg/l	0.5	s	0.064	0.182	ND	0.162	ND	0.128	ND	0.091	0.052	0.169
Total Nitrate, Nitrite-N, CALC	mg/l			ND	1	ND	0.8	ND	0.5	ND	0.5	ND	0.9
Total Organic Carbon	mg/l			1.4	1.4	1.5	1.44	2.3	3.09	2.3	2.38	1.4	1.39
Carbon Dioxide	mg/l			13.8	11.3	11.2	7.45	10.3	7.08	14.8	4.5	11.1	6.87
General Physical													
Apparent Color	ACU	15	s	3	3	5	5	10	15	**20**	**20**	3	5
Lab pH	Units			7.6	7.7	7.7	7.9	7.8	8	7.9	8.1	7.7	7.9
Odor	TON	3	s	3	1	3	2	2	**4**	2	3	3	2
pH of CaCO3 saturation(25C)	Units			6.964	6.95	6.998	6.932	6.987	7.01	6.927	7.194	6.923	6.895
pH of CaCO3 saturation(60C)	Units			6.5	6.5	6.6	6.5	6.5	6.6	6.5	6.7	6.5	6.5
Specific Conductance	umho/	1600	s	**2170**	**2060**	1530	1370	1400	1240	1060	975	**1840**	**1770**
Metals													
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	2.2	ND	ND	ND	ND	ND	ND	ND	ND
Barium, Total, ICAP/MS	ug/l	1000	p	82	69	62	67	57	49	34	37	81	75
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	2	ND	2.8	ND	2.3	ND	2.3	2.4	3
Chromium, Hexavalent (Cr VI)	mg/l				ND		ND		ND		ND		ND
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	5.3	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds													
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform (Trichloromethane)	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-Isopropyl Ether	ug/l		p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Long Beach #3 Zone 1 10/15/00	Long Beach #3 Zone 1 6/18/01	Long Beach #3 Zone 2 10/15/00	Long Beach #3 Zone 2 6/18/01	Long Beach #3 Zone 3 10/15/00	Long Beach #3 Zone 3 6/18/01	Long Beach #3 Zone 4 10/15/00	Long Beach #3 Zone 4 6/18/01	Long Beach #3 Zone 5 10/15/00	Long Beach #3 Zone 5 6/18/01
General Mineral													
Total Dissolved Solid (TDS)	mg/l	1000	p	480	480	260	240	220	220	510	**1240**	**1400**	**1460**
Cation Sum	meq/l			7.87	7.88	4	3.92	3.92	3.8	9.01	17.4	22	22.6
Anion Sum	meq/l			8.15	8.26	4.02	3.85	3.86	3.83	8.17	17.8	21.6	23.5
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	ND	ND	ND	ND	ND	ND	0.12	0.16
Manganese, Total, ICAP/MS	ug/l	50	s	16	14	11	9.9	9.6	10	**68**	**60**	**300**	**250**
Turbidity	NTU	5	s	1.2	0.95	3.2	1.6	0.35	0.2	**10**	**6**	4.3	**5.1**
Alkalinity	mg/l			377	386	144	137	157	154	139	146	150	139
Boron	mg/L			0.35	0.38	0.14	0.13	0.1	0.12	0.088	0.11	0.091	0.11
Bicarbonate as HCO3,calculated	mg/l			457	469	175	166	191	187	169	178	183	169
Calcium, Total, ICAP	mg/l			11	11	17	17	16	18	55	180	230	260
Carbonate as CO3, Calculated	mg/l			7.46	6.08	2.27	2.71	1.97	2.42	1.1	0.73	0.945	0.55
Hardness (Total, as CaCO3)	mg/l			41	41	53.5	54	53.1	58.5	203	639	804	900
Chloride	mg/l	500	s	18.4	18	19.8	20	24.9	26	143	474	**606**	**687**
Fluoride	mg/l	2	p	0.57	0.53	0.41	0.38	0.41	0.36	0.35	0.21	0.26	0.19
Hydroxide as OH, Calculated	mg/l			0.04	0.03	0.03	0.04	0.03	0.03	0.02	0.01	0.01	0.009
Langelier Index - 25 degree	None			0.66	0.57	0.33	0.41	0.24	0.38	0.52	0.86	1.1	0.9
Magnesium, Total, ICAP	mg/l			3.3	3.3	2.7	2.8	3.2	3.3	16	46	56	61
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			3.7	3.9	2.3	2.3	2.8	2.6	6.2	10	8.9	8.6
Sodium, Total, ICAP	mg/l			160	160	66	64	64	59	110	100	130	100
Sulfate	mg/l	500	s	2.69	ND	27	25	ND	ND	64.4	70	71.6	65
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	ND	ND	0.05	0.078	0.073
Total Nitrate, Nitrite-N, CALC	mg/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			1.5	8.29	2.4	1.86	2.3	2	1.4	1.05	1.3	1.26
Carbon Dioxide	mg/l			3.64	4.7	1.75	1.32	2.41	1.87	3.38	5.64	4.61	6.74
General Physical													
Apparent Color	ACU	15	s	**90**	**70**	**20**	15	**25**	**20**	3	3	3	3
Lab pH	Units			8.4	8.3	8.3	8.4	8.2	8.3	8	7.8	7.9	7.7
Odor	TON	3	s	1	2	1	2	2	1	2	1	2	2
pH of CaCO3 saturation(25C)	Units			7.744	7.732	7.972	7.994	7.96	7.918	7.477	6.939	6.821	6.802
pH of CaCO3 saturation(60C)	Units			7.3	7.3	7.5	7.6	7.5	7.5	7	6.5	6.4	6.4
Specific Conductance	umho/	1600	s	710	662	370	351	345	344	815	**1650**	**2160**	**2160**
Metals													
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	3.5	1.1	ND	ND
Barium, Total, ICAP/MS	ug/l	1000	p	8.8	10	6.2	9.8	9	10	16	51	78	110
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Hexavalent (Cr VI)	mg/l			ND	0.2	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	7.2	11
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	15	23	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds													
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform (Trichloromethane)	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-Isopropyl Ether	ug/l		p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	PM-3 Madrid Zone 1 10/11/00	PM-3 Madrid Zone 1 5/29/01	PM-3 Madrid Zone 2 10/11/00	PM-3 Madrid Zone 2 5/29/01	PM-3 Madrid Zone 3 10/11/00	PM-3 Madrid Zone 3 5/29/01	PM-3 Madrid Zone 4 10/11/00	PM-3 Madrid Zone 4 5/29/01
General Mineral											
Total Dissolved Solid (TDS)	mg/l	1000	p	410	349	300	300	700	730	800	800
Cation Sum	meq/l			6.9	6.92	4.93	4.88	11.4	11.8	13.4	13.2
Anion Sum	meq/l			7.14	7.02	5.2	4.94	11.1	13.1	14.5	14.1
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	0.16	0.13	0.14	0.13	**0.52**	**0.38**
Manganese, Total, ICAP/MS	ug/l	50	s	44	45	**57**	**53**	**75**	**78**	**350**	**310**
Turbidity	NTU	5	s	0.2	1.3	0.75	0.15	0.1	3	0.85	0.55
Alkalinity	mg/l			324	319	210	201	212	218	208	208
Boron	mg/L			0.34	0.33	0.11	0.11	0.11	0.11	0.35	0.32
Bicarbonate as HCO3,calculated	mg/l			394	387	256	245	258	266	253	253
Calcium, Total, ICAP	mg/l			12	12	40	37	110	110	110	100
Carbonate as CO3, Calculated	mg/l			4.06	5.02	1.05	1.59	1.06	1.09	0.655	1.04
Hardness (Total, as CaCO3)	mg/l			67.4	72.3	145	145	394	439	402	369
Chloride	mg/l	500	s	22.8	22	34.9	32	226	258	322	319
Fluoride	mg/l	2	p	0.31	0.31	0.37	0.38	0.32	0.32	0.28	0.28
Hydroxide as OH, Calculated	mg/l			0.03	0.03	0.01	0.02	0.01	0.01	0.007	0.01
Langelier Index - 25 degree	None			0.43	0.52	0.37	0.51	0.81	0.82	0.6	0.76
Magnesium, Total, ICAP	mg/l			9.1	9.3	11	11	29	32	31	29
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			13	13	2.8	3	5.2	5.3	6.5	6.4
Sodium, Total, ICAP	mg/l			120	120	45	47	78	81	120	130
Sulfate	mg/l	500	s	ND	ND	ND	ND	20.8	68	60.7	43
Surfactants	mg/l	0.5	s	ND	ND	ND	ND	ND	0.136	ND	0.163
Total Nitrate, Nitrite-N, CALC	mg/l			ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			3.1	2.77	ND	ND	0.9	0.54	1	ND
Carbon Dioxide	mg/l			4.97	3.88	8.11	4.9	8.18	8.43	12.7	8.02
General Physical											
Apparent Color	ACU	15	s	**30**	**30**	5	5	5	5	10	3
Lab pH	Units			8.2	8.3	7.8	8	7.8	7.8	7.6	7.8
Odor	TON	3	s	1	**4**	3	1	3	1	**4**	2
pH of CaCO3 saturation(25C)	Units			7.77	7.778	7.435	7.488	6.992	6.979	7	7.042
pH of CaCO3 saturation(60C)	Units			7.3	7.3	7	7	6.5	6.5	6.6	6.6
Specific Conductance	umho/	1600	s	640	604	475	447	1160	1180	1410	1290
Metals											
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	1.9	1.3	5.9	7.6
Barium, Total, ICAP/MS	ug/l	1000	p	26	26	24	22	75	77	84	73
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	1.3	ND	ND	ND	ND	ND	1.1
Chromium, Hexavalent (Cr VI)	mg/l										
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	ND	ND	ND
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	7.4	13	7.7	5.9
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds											
Trichloroethylene (TCE)	ug/l	5	p	ND		ND	ND	ND		1.6	1.4
Tetrachloroethylene (PCE)	ug/l	5	p	ND		ND	ND	ND		ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND		ND	ND	0.9		**85**	**43**
cis-1,2-Dichloroethylene	ug/l	6	p	ND		ND	ND	1.6		1.5	1
Chloroform (Trichloromethane)	ug/l	100	p	ND		ND	ND	ND		ND	ND
1,1-Dichloroethane	ug/l	5	p	ND		ND	ND	3.5		**15**	**6.5**
1,2-Dichloroethane	ug/l	0.5	p	ND		ND	ND	ND		ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND		ND	ND	ND		ND	ND
Di-Isopropyl Ether	ug/l		p	ND		ND	ND	ND		ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND		ND	ND	ND		ND	ND
Isopropylbenzene	ug/l			ND		ND	ND	ND		ND	ND
n-Propylbenzene	ug/l			ND		ND	ND	ND		ND	ND
Benzene	ug/l	1	p	ND		ND	ND	ND		ND	ND
Ethyl benzene	ug/l	700	p	ND		ND	ND	ND		ND	ND
m,p-Xylenes	ug/l	1750	p	ND		ND	ND	ND		ND	ND
sec-Butylbenzene	ug/l			ND		ND	ND	ND		ND	ND
trans-1,2-Dichloroethylene	ug/l	10	p	ND		ND	ND	ND		ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	PM-4 Mariner Zone 1 10/1/00	PM-4 Mariner Zone 1 6/10/01	PM-4 Mariner Zone 2 10/1/00	PM-4 Mariner Zone 2 6/10/01	PM-4 Mariner Zone 3 10/1/00	PM-4 Mariner Zone 3 6/10/01	PM-4 Mariner Zone 4 10/1/00	PM-4 Mariner Zone 4 6/10/01
General Mineral											
Total Dissolved Solid (TDS)	mg/l	1000	p	340	330	**15000**	**11700**	930	890	750	730
Cation Sum	meq/l			5.69	6.3	171	171	13.9	14	12	12
Anion Sum	meq/l			5.9	5.88	179	179	14.9	14.1	11.9	12.4
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	0.29	ND	ND	ND	0.21	0.18
Manganese, Total, ICAP/MS	ug/l	50	s	45	42	**1200**	**1100**	**110**	**89**	**110**	**87**
Turbidity	NTU	5	s	ND	0.05	0.4	1.2	0.5	0.7	0.7	2.9
Alkalinity	mg/l			254	255	157	159	160	153	186	187
Boron	mg/L			0.15	0.16	0.19	ND	0.25	0.28	0.25	0.26
Bicarbonate as HCO3,calculated	mg/l			309	310	191	194	195	186	226	227
Calcium, Total, ICAP	mg/l			28	27	1500	1500	120	120	94	88
Carbonate as CO3, Calculated	mg/l			2.53	3.19	0.393	0.399	1.27	1.21	1.47	1.86
Hardness (Total, as CaCO3)	mg/l			115	113	5430	5430	427	427	329	310
Chloride	mg/l	500	s	28.3	27	**5730**	**5740**	168	157	138	148
Fluoride	mg/l	2	p	0.35	0.39	0.12	0.13	0.28	0.28	0.28	0.29
Hydroxide as OH, Calculated	mg/l			0.02	0.03	0.005	0.005	0.02	0.02	0.02	0.02
Langelier Index - 25 degree	None			0.59	0.68	1.5	1.5	0.92	0.9	0.88	0.96
Magnesium, Total, ICAP	mg/l			11	11	410	410	31	31	23	22
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			6.5	8.5	37	39	6.9	7.6	6.5	7.2
Sodium, Total, ICAP	mg/l			74	88	1400	1400	120	120	120	130
Sulfate	mg/l	500	s	ND	ND	**678**	**645**	332	318	207	216
Surfactants	mg/l	0.5	s	ND	ND	0.208	0.28	ND	0.054	ND	0.054
Total Nitrate, Nitrite-N, CALC	mg/l			ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			1.5	1.55	ND	1.73	0.9	1.36	0.6	1.53
Carbon Dioxide	mg/l			4.91	3.91	12.1	12.3	3.9	3.72	4.52	3.61
General Physical											
Apparent Color	ACU	15	s	15	15	5	5	3	5	10	10
Lab pH	Units			8.1	8.2	7.5	7.5	8	8	8	8.1
Odor	TON	3	s	1	2	3	1	1	2	2	1
pH of CaCO3 saturation(25C)	Units			7.508	7.522	5.988	5.981	7.076	7.096	7.118	7.144
pH of CaCO3 saturation(60C)	Units			7.1	7.1	5.5	5.5	6.6	6.7	6.7	6.7
Specific Conductance	umho/	1600	s	540	508	**15800**	**14730**	1320	1240	1140	1090
Metals											
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	1.6	ND	ND	ND	1.4	ND	1.5	1.2
Barium, Total, ICAP/MS	ug/l	1000	p	26	24	320	280	130	120	60	58
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	2.3	1.3	ND	ND	ND	ND
Chromium, Hexavalent (Cr VI)	mg/l				ND		ND		ND		ND
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	7.3	4.7	2.3	ND	ND	ND
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	44	64	ND	5.4	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	0.6	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	9.8	ND	ND	ND	ND	ND
Volatile Organic Compounds											
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform (Trichloromethane)	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND
Di-Isopropyl Ether	ug/l		p	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Wilmington #1 Zone 1 10/2/00	Wilmington #1 Zone 1 5/8/01	Wilmington #1 Zone 2 10/2/00	Wilmington #1 Zone 2 5/8/01	Wilmington #1 Zone 3 10/2/00	Wilmington #1 Zone 3 5/8/01	Wilmington #1 Zone 4 10/2/00	Wilmington #1 Zone 4 5/8/01	Wilmington #1 Zone 5 10/2/00	Wilmington #1 Zone 5 5/8/01
General Mineral													
Total Dissolved Solid (TDS)	mg/l	1000	p	580	580	**1100**	**1280**	**2200**	**1850**	**2800**	**2410**	830	930
Cation Sum	meq/l			8.39	9.02	14.9	19	30.7	27.7	42.7	37.4	13.3	15
Anion Sum	meq/l			9.25	9.63	15.3	20	30.4	29.1	44	36.3	12.8	15
Iron, Total, ICAP	mg/l	0.3	s	ND	ND	ND	ND	ND	ND	ND	ND	0.15	**0.42**
Manganese, Total, ICAP/MS	ug/l	50	s	22	21	17	20	12	7.8	46	36	**69**	**120**
Turbidity	NTU	5	s	0.15	0.7	ND	0.2	0.15	0.35	0.05	1.2	**12**	**21**
Alkalinity	mg/l			128	134	135	137	160	157	146	153	186	229
Boron	mg/L			0.11	0.11	0.19	0.19	0.24	0.24	0.22	0.22	0.2	0.2
Bicarbonate as HCO3,calculated	mg/l			155	163	165	167	195	191	178	186	227	279
Calcium, Total, ICAP	mg/l			51	53	130	170	230	170	250	220	91	94
Carbonate as CO3, Calculated	mg/l			1.6	1.33	0.135	0.862	0.253	0.197	0.58	0.763	0.931	1.14
Hardness (Total, as CaCO3)	mg/l			193	202	436	572	784	589	965	853	351	370
Chloride	mg/l	500	s	237	246	399	**564**	**943**	**906**	**1240**	**995**	224	281
Fluoride	mg/l	2	p	0.17	0.29	0.1	0.08	0.06	0.06	0.07	0.06	0.13	0.1
Hydroxide as OH, Calculated	mg/l			0.03	0.02	0.002	0.01	0.003	0.003	0.009	0.01	0.01	0.01
Langelier Index - 25 degree	None			0.65	0.59	-0.01	0.91	0.51	0.27	0.9	0.97	0.67	0.77
Magnesium, Total, ICAP	mg/l			16	17	27	36	51	40	83	74	30	33
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			7	7.5	5.5	6.9	9.7	9.3	13	12	7.1	7.6
Sodium, Total, ICAP	mg/l			100	110	140	170	340	360	530	460	140	170
Sulfate	mg/l	500	s	ND	ND	62.9	63	28.6	21	291	248	131	121
Surfactants	mg/l	0.5	s	0.274	0.252	0.37	0.44	0.442	0.466	0.282	0.382	**1**	**1.8**
Total Nitrate, Nitrite-N, CALC	mg/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			2.4	2.59	3.4	3.79	4.7	5.56	3.1	3.7	7.1	10.7
Carbon Dioxide	mg/l			1.96	2.59	26.2	4.2	19.5	24.1	7.1	5.9	7.2	8.84
General Physical													
Apparent Color	ACU	15	s	3	5	3	5	10	15	ND	5	3	10
Lab pH	Units			8.2	8.1	7.1	7.9	7.3	7.2	7.7	7.8	7.8	7.8
Odor	TON	3	s	**8**	**67**	**17**	**67**	**67**	**200**	**40**	**100**	**200**	**200**
pH of CaCO3 saturation(25C)	Units			7.547	7.509	7.114	6.992	6.793	6.934	6.797	6.833	7.13	7.026
pH of CaCO3 saturation(60C)	Units			7.1	7.1	6.7	6.5	6.3	6.5	6.4	6.4	6.7	6.6
Specific Conductance	umho/	1600	s	955	902	**1640**	**1880**	**3350**	**2810**	**4270**	**3590**	1330	1400
Metals													
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	ND	1.9	ND	ND	ND	1.8	ND	ND	1.8	1.5
Barium, Total, ICAP/MS	ug/l	1000	p	11	11	9.9	11	36	27	120	92	82	110
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Hexavalent (Cr VI)	mg/l				ND		ND		ND		ND		ND
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	ND	ND	ND	ND	ND	5.3	3	ND	ND	ND
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	8	ND	9.1	ND	ND	ND
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds													
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform (Trichloromethane)	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-Isopropyl Ether	ug/l		p	ND	ND	ND	11	ND	6	ND	6.4	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	1.6	5.2
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	1.5	5.1
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1
sec-Butylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND	0.6
trans-1,2-Dichloroethylene	ug/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

TABLE 4.3
WEST COAST BASIN WATER QUALITY RESULTS
REGIONAL GROUNDWATER MONITORING - WATER YEAR 2000/2001

Water Quality Constituent	Units	MCL	MCL Type	Wilmington #2 Zone 1 10/3/00	Wilmington #2 Zone 1 5/15/01	Wilmington #2 Zone 2 7/25/01	Wilmington #2 Zone 3 10/3/00	Wilmington #2 Zone 3 5/15/01	Wilmington #2 Zone 4 10/3/00	Wilmington #2 Zone 4 5/15/01	Wilmington #2 Zone 5 10/3/00	Wilmington #2 Zone 5 5/15/01
General Mineral												
Total Dissolved Solid (TDS)	mg/l	1000	p	550	550	**1430**	470	480	**2300**	**2110**	**11400**	**9800**
Cation Sum	meq/l			8.28	8.3	22.8	7.55	8.44	33	34.2	155	153
Anion Sum	meq/l			7.4	8.64	25.1	8.29	8.06	52.4	34.8	159	139
Iron, Total, ICAP	mg/l	0.3	s	ND	0.1	ND	ND	ND	ND	ND	ND	ND
Manganese, Total, ICAP/MS	ug/l	50	s	7.8	7.4	20	20	19	**55**	40	**185**	**190**
Turbidity	NTU	5	s	0.2	0.55	0.4	0.3	0.9	0.15	0.9	**6.9**	1.7
Alkalinity	mg/l			299	373	472	232	212	276	274	206	197
Boron	mg/L			0.6	0.64	1.5	0.25	0.33	0.54	0.52	0.7	0.55
Bicarbonate as HCO3,calculated	mg/l			365	452	575	282	258	337	334	251	240
Calcium, Total, ICAP	mg/l			3.1	3.3	32	33	33	150	150	660	630
Carbonate as CO3, Calculated	mg/l			0.596	9.29	2.97	2.31	2.66	0.55	0.686	0.163	0.621
Hardness (Total, as CaCO3)	mg/l			16.8	17.3	170	132	132	654	670	2920	2810
Chloride	mg/l	500	s	48.7	40	**555**	129	135	**1210**	**1040**	**5070**	**4400**
Fluoride	mg/l	2	p	0.94	0.98	0.33	0.24	0.23	0.24	0.23	0.17	0.16
Hydroxide as OH, Calculated	mg/l			0.004	0.05	0.01	0.02	0.03	0.004	0.005	0.002	0.007
Langelier Index - 25 degree	None			-0.89	0.23	0.72	0.62	0.68	0.66	0.75	0.77	1.3
Magnesium, Total, ICAP	mg/l			2.2	2.2	22	12	12	68	72	310	300
Nitrate-N by IC	mg/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrite, Nitrogen by IC	mg/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium, Total, ICAP	mg/l			4.8	4.9	11	5.1	5.9	15	15	28	30
Sodium, Total, ICAP	mg/l			180	180	440	110	130	450	470	2200	2200
Sulfate	mg/l	500	s	ND	ND	ND	ND	ND		ND	**590**	**520**
Surfactants	mg/l	0.5	s	ND	ND	0.082	ND	0.052	0.092	0.154	0.11	0.182
Total Nitrate, Nitrite-N, CALC	mg/l			ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon	mg/l			13.3	13.4	18	4.3	5.29	5.4	5.52	2.5	2.59
Carbon Dioxide	mg/l			29.1	2.86	14.5	4.48	3.26	26.8	21.1	50.2	12.1
General Physical												
Apparent Color	ACU	15	s	**300**	**300**	**100**	**30**	**30**	**35**	**35**	10	10
Lab pH	Units			7.4	8.5	7.9	8.1	8.2	7.4	7.5	7	7.6
Odor	TON	3	s	**4**	**4**	2	3	3	**400**	**200**	**4**	**17**
pH of CaCO3 saturation(25C)	Units			8.391	8.271	7.18	7.476	7.515	6.741	6.745	6.226	6.265
pH of CaCO3 saturation(60C)	Units			7.9	7.8	6.7	7	7.1	6.3	6.3	5.8	5.8
Specific Conductance	umho/	1600	s	790	761	**2440**	820	753	**3730**	**3190**	**16400**	**12620**
Metals												
Aluminum, Total, ICAP/MS	ug/l	200	s	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony, Total, ICAP/MS	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic, Total, ICAP/MS	ug/l	50	p	1.9	ND	ND	ND	1.2	ND	ND	ND	ND
Barium, Total, ICAP/MS	ug/l	1000	p	7.3	7.9	49	21	20	120	110	130	130
Beryllium, Total, ICAP/MS	ug/l	4	p	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium, Total, ICAP/MS	ug/l	50	p	2.9	2.2	2.9	ND	ND	2.3	ND	ND	ND
Chromium, Hexavalent (Cr VI)	mg/l				ND	ND		ND		ND		ND
Cadmium, Total, ICAP/MS	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper, Total, ICAP/MS	ug/l	1000	s	2.8	3.1	ND	ND	ND	ND	ND	6	ND
Lead, Total, ICAP/MS	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	ug/l	2	p	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel, Total, ICAP/MS	ug/l	100	p	ND	ND	ND	ND	ND	7.1	12	30	34
Selenium, Total, ICAP/MS	ug/l	50	p	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver, Total, ICAP/MS	ug/l	100	s	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium, Total, ICAP/MS	ug/l	2	s	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc, Total, ICAP/MS	ug/l	5000	s	ND	11	ND	ND	7	ND	ND	13	ND
Volatile Organic Compounds												
Trichloroethylene (TCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	ug/l	6	p	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform (Trichloromethane)	ug/l	100	p	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/l	5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/l	0.5	p	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-Isopropyl Ether	ug/l		p	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotrichloromethane-Freon11	ug/l	150	p	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/l	1	p	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl benzene	ug/l	700	p	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylenes	ug/l	1750	p	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	ug/l			ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ug/l	10	p	ND	ND	ND	ND	ND	ND	ND	ND	ND

MCL: Maximum Contaminant Level, bold value indicates concentration exceeds MCL. (p): Primary MCL (s): Secondary MCL (ND): Not Detected

FIGURES

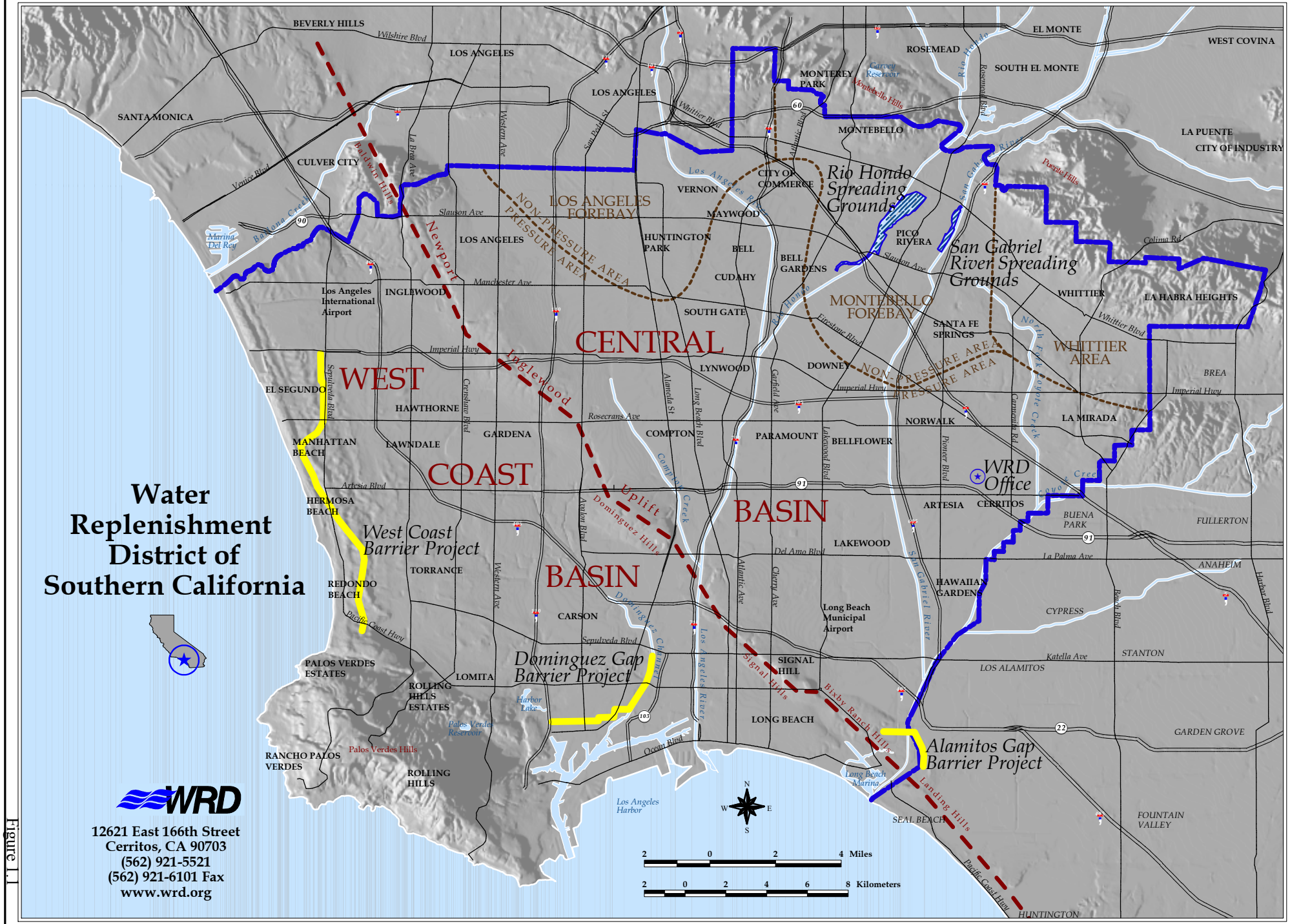
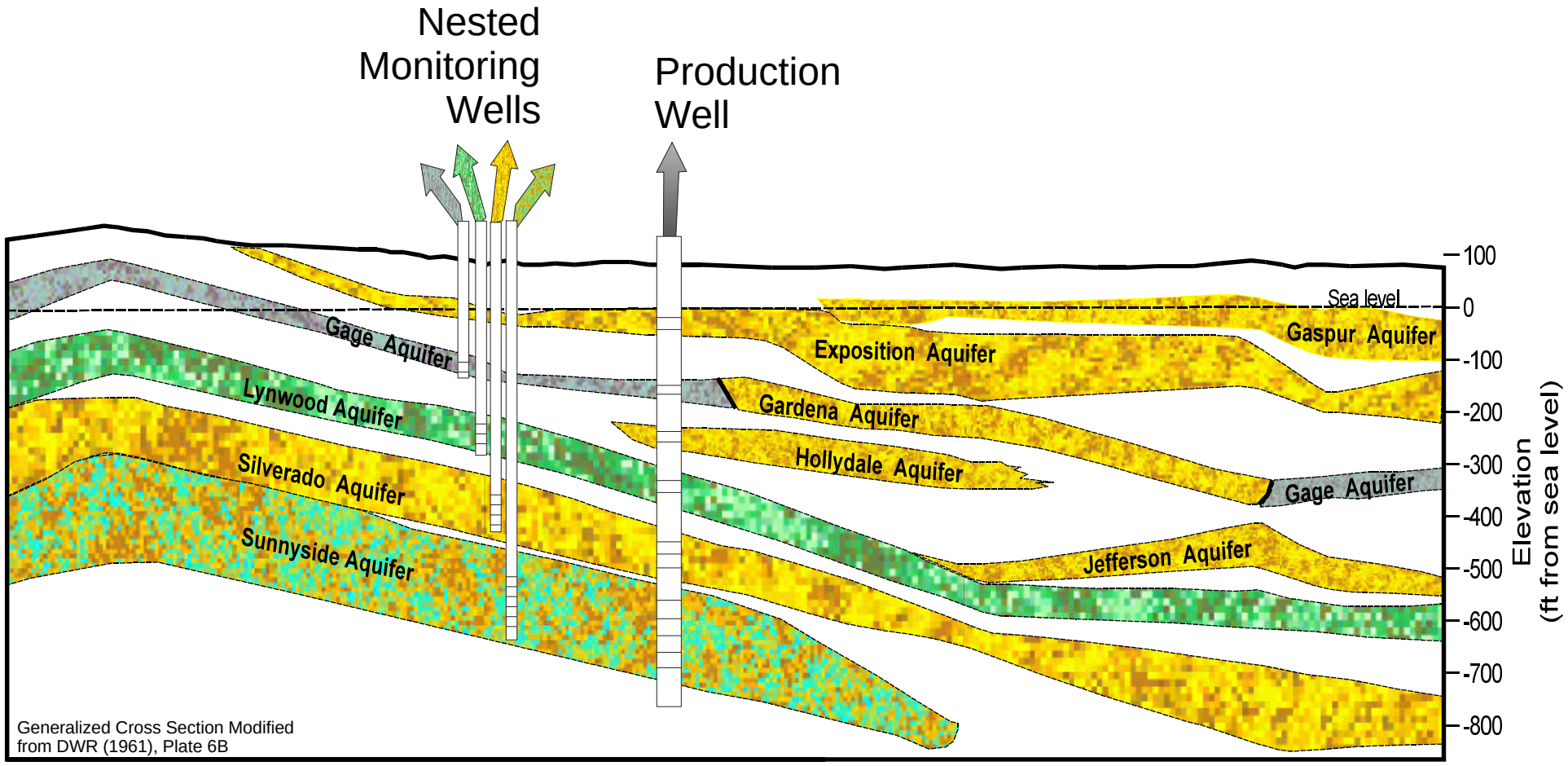

Water Replenishment District of Southern California
WRD
12621 East 166th Street
Cerritos, CA 90703
(562) 921-5521
(562) 921-6101 Fax
www.wrd.org
WEST COAST BASIN
CENTRAL BASIN
COASTAL PLAIN
LOS ANGELES FOREBAY
MONTEBELLO FOREBAY
WHITTIER AREA
NON-PRESSURE AREA
PRESSURE AREA
Rio Hondo Spreading Grounds
San Gabriel River Spreading Grounds
West Coast Barrier Project
Dominguez Gap Barrier Project
Alamitos Gap Barrier Project
Newport-Inglewood Uplift
Dominguez Hills
Signal Hills
Bixby Ranch Hills
Landing Hills
Palos Verdes Hills
Baldwin Hills
Puente Hills
Montebello Hills
Los Angeles International Airport
Long Beach Municipal Airport
Los Angeles Harbor
Long Beach Marina
Harbor Lake
Palos Verdes Reservoir
Carson Reservoir
Marina Del Rey
BEVERLY HILLS
SANTA MONICA
CULVER CITY
LOS ANGELES
INGLEWOOD
HAWTHORNE
EL SEGUNDO
MANHATTAN BEACH
HERMOSA BEACH
REDONDO BEACH
TORRANCE
GARDENA
LAWNDALE
COMPTON
CARSON
LONG BEACH
LOMITA
PALOS VERDES ESTATES
ROLLING HILLS ESTATES
RANCHO PALOS VERDES
ROLLING HILLS
SEAL BEACH
HUNTINGTON
VERNON
CITY OF COMMERCE
MAYWOOD
HUNTINGTON PARK
BELL
BELL GARDENS
CUDAHY
SOUTH GATE
LYNWOOD
PARAMOUNT
DOWNEY
SANTA FE SPRINGS
NORWALK
BELLFLOWER
ARTESIA
CERRITOS
LAKEWOOD
HAWAIIAN GARDENS
SIGNAL HILL
MONTEBELLO
MONTEREY PARK
ROSEMEAD
EL MONTE
SOUTH EL MONTE
WEST COVINA
LA PUENTE
CITY OF INDUSTRY
PICO RIVERA
WHITTIER
LA HABRA HEIGHTS
LA MIRADA
BUENA PARK
FULLERTON
ANAHEIM
CYPRESS
STANTON
LOS ALAMITOS
GARDEN GROVE
FOUNTAIN VALLEY
BREA
Wilshire Blvd
Venice Blvd
Slauson Ave
Manchester Ave
Imperial Hwy
Rosecrans Ave
Artesia Blvd
Pacific Coast Hwy
Sepulveda Blvd
Del Amo Blvd
La Palma Ave
Katella Ave
Ocean Blvd
Whittier Blvd
Firestone Blvd
Colima Rd
Western Ave
Crenshaw Blvd
Alameda St
Long Beach Blvd
Garfield Ave
Lakewood Blvd
Pioneer Blvd
Carmenita Rd
Avalon Blvd
Cherry Ave
Atlantic Ave
Rio Hondo
San Gabriel River
Los Angeles River
Coyote Creek
Compton Creek
Dominguez Channel
Harbor Blvd
Beach Blvd
Rosemead Blvd
Santa Fe Dam
Bonita Creek
Marina Del Rey
Carson Reservoir
Montebello Hills
Puente Hills
Baldwin Hills
Palos Verdes Hills
Palos Verdes Reservoir
Harbor Lake
Long Beach Marina
Los Angeles Harbor
2 0 2 4 Miles
2 0 2 4 6 8 Kilometers
N
W
E
S

Figure 1.1

NESTED WELLS versus PRODUCTION WELLS FOR AQUIFER-SPECIFIC DATA



Production wells are typically perforated across multiple aquifers producing an average water quality. Nested monitoring wells are screened in a portion of a specific aquifer, providing water quality and water level information for the specific zone.

WRD

Figure 1.2

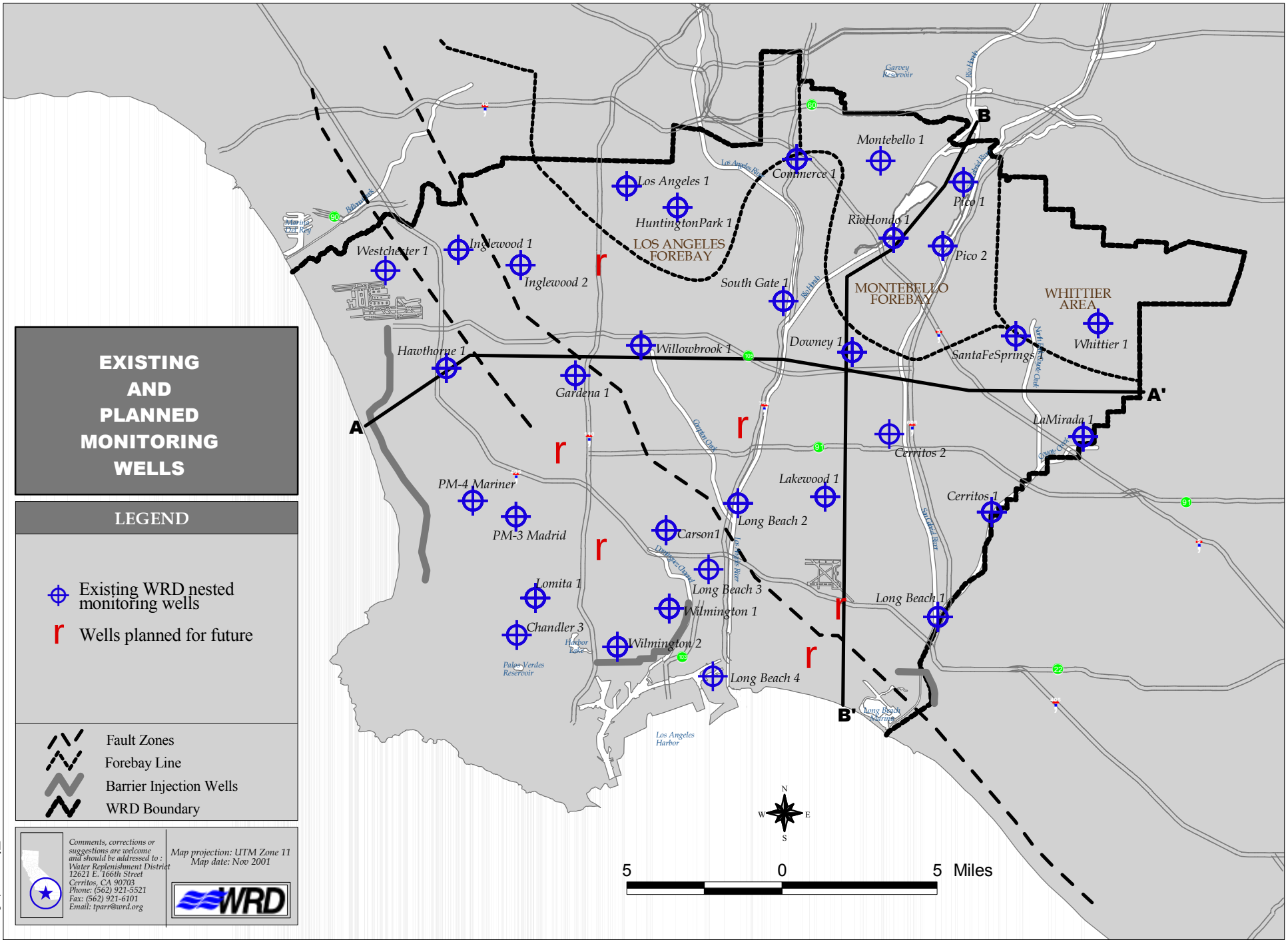

EXISTING AND PLANNED MONITORING WELLS
LEGEND
Existing WRD nested monitoring wells
r Wells planned for future
Fault Zones
Forebay Line
Barrier Injection Wells
WRD Boundary
Comments, corrections or suggestions are welcome and should be addressed to : Water Replenishment District 12621 E. 166th Street Cerritos, CA 90703 Phone: (562) 921-5521 Fax: (562) 921-6101 Email: tparr@wrd.org
Map projection: UTM Zone 11
Map date: Nov 2001
WRD
Montebello 1
Commerce 1
Los Angeles 1
HuntingtonPark 1
Pico 1
RioHondo 1
Pico 2
Inglewood 1
Westchester 1
Inglewood 2
LOS ANGELES FOREBAY
South Gate 1
MONTEBELLO FOREBAY
WHITTIER AREA
Whittier 1
Downey 1
SantaFeSprings 1
Hawthorne 1
Willowbrook 1
Gardena 1
LaMirada 1
Cerritos 2
PM-4 Mariner
Lakewood 1
Cerritos 1
Long Beach 2
PM-3 Madrid
Carson1
Lomita 1
Long Beach 3
Long Beach 1
Wilmington 1
Chandler 3
Wilmington 2
Long Beach 4
A
A'
B
B'
N
W
E
S
5 0 5 Miles

Figure 1.3

Monthly Groundwater Production
Water Year 2000-2001

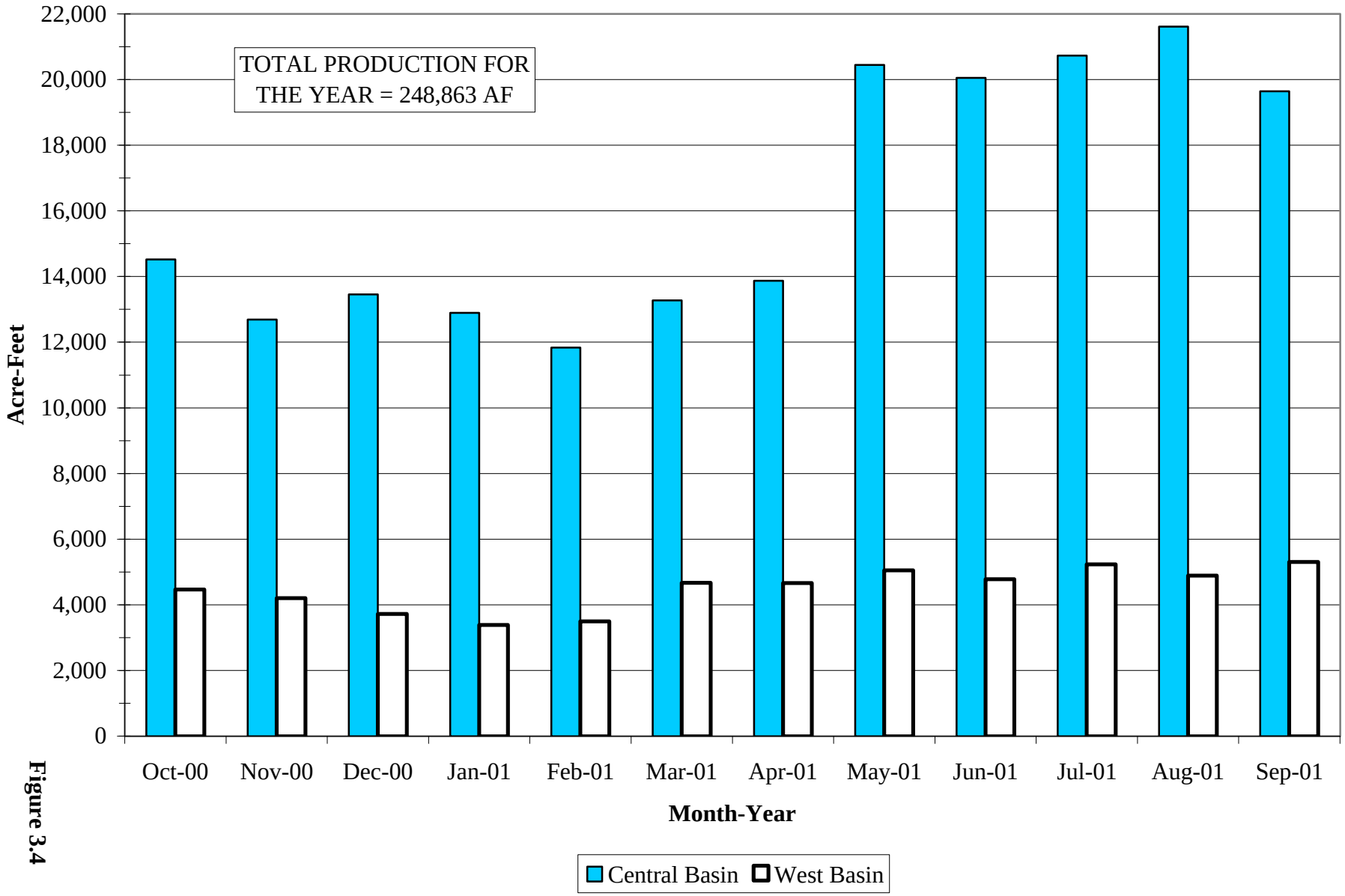
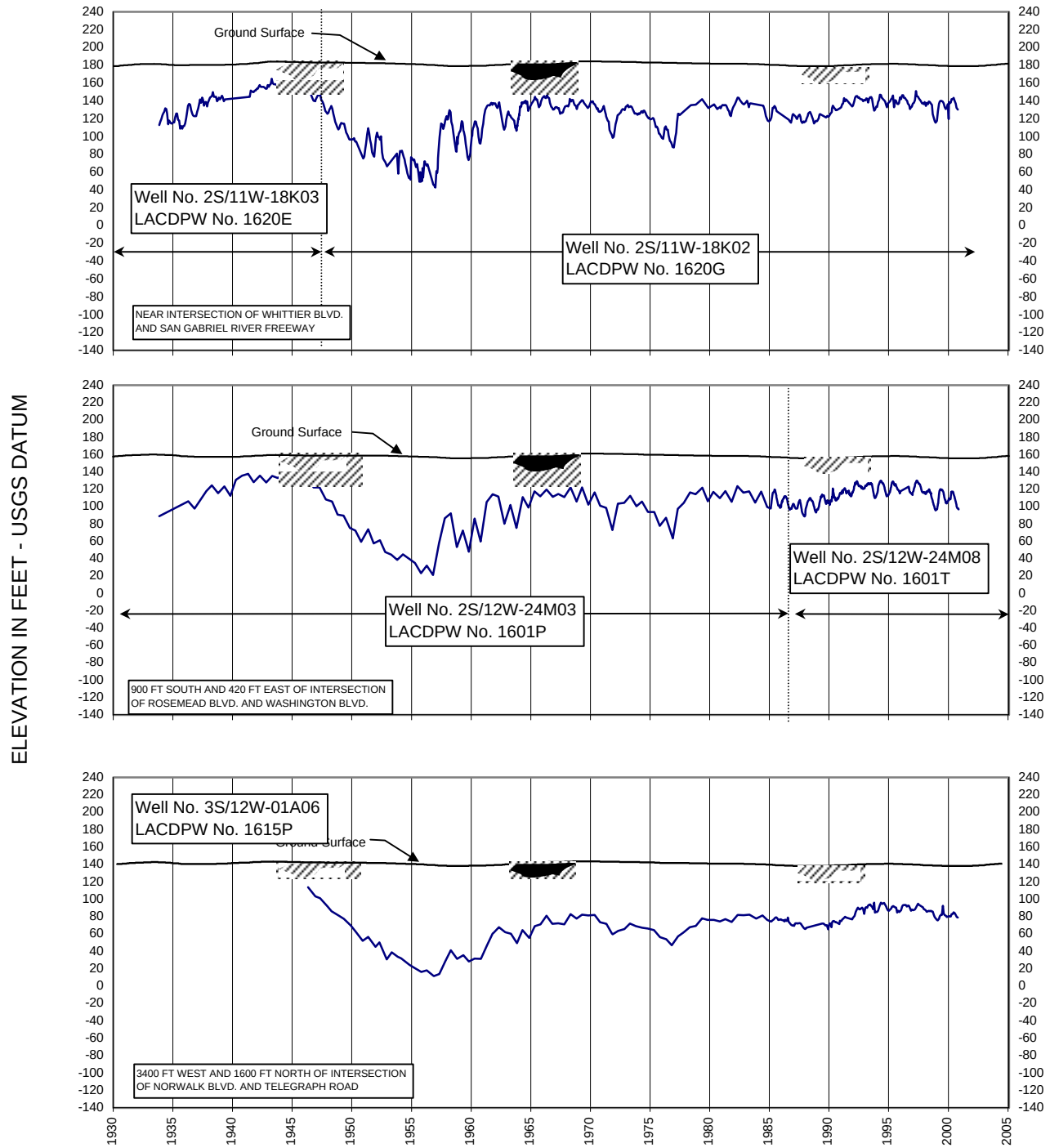


Figure 3.4

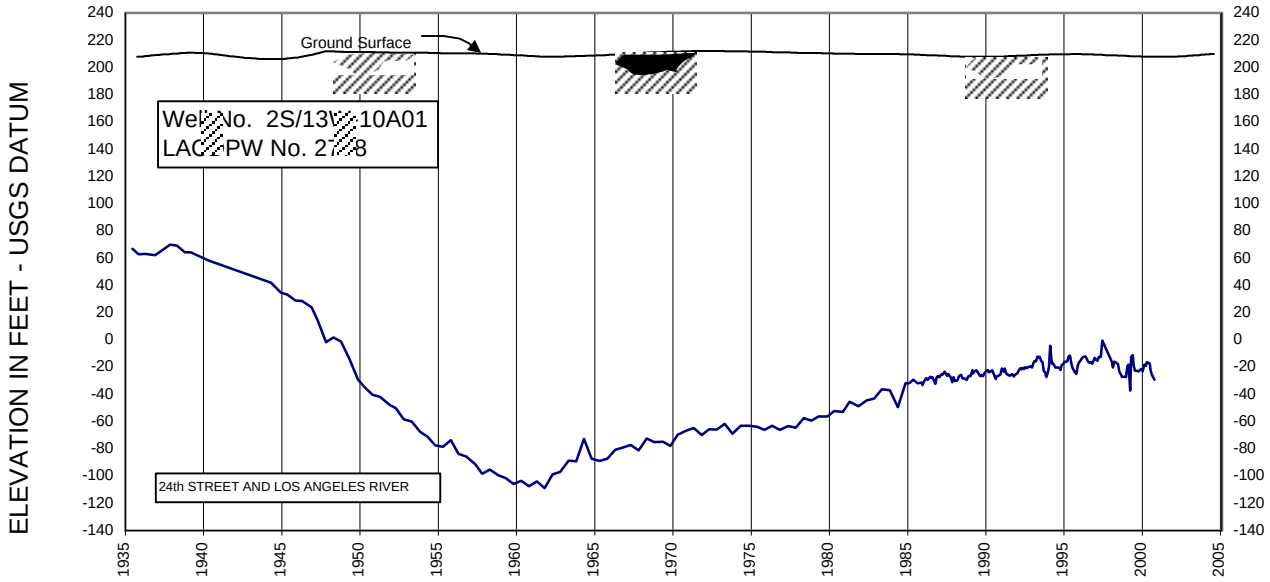


For Well Locations See Figure 3.2

FLUCTUATIONS OF WATER LEVEL AT WELLS

MONTEBELLO FOREBAY

Figure 3.7

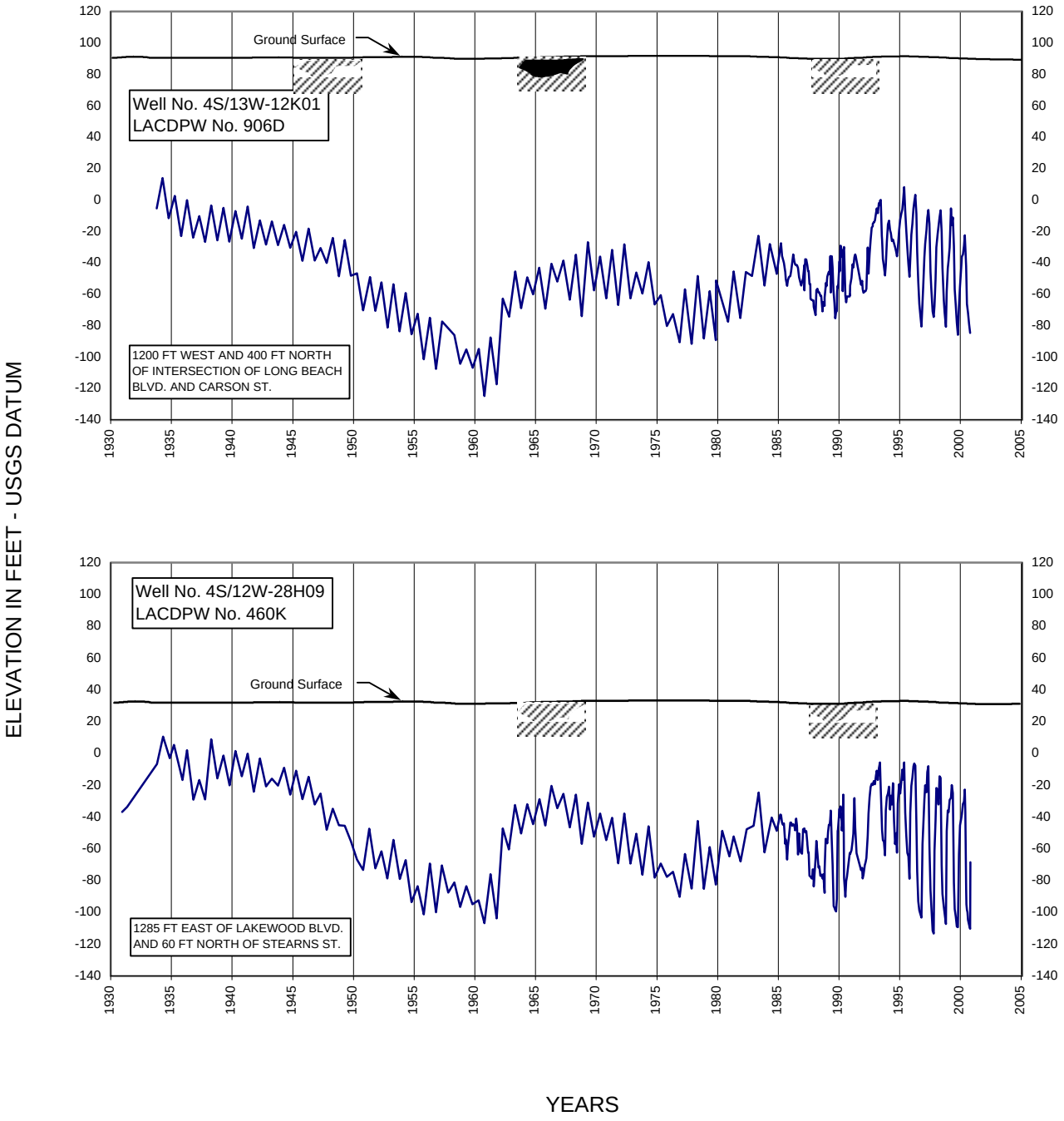


For Well Locations See Figure 3.2

FLUCTUATIONS OF WATER LEVEL AT WELLS

LOS ANGELES FOREBAY

Figure 3.8

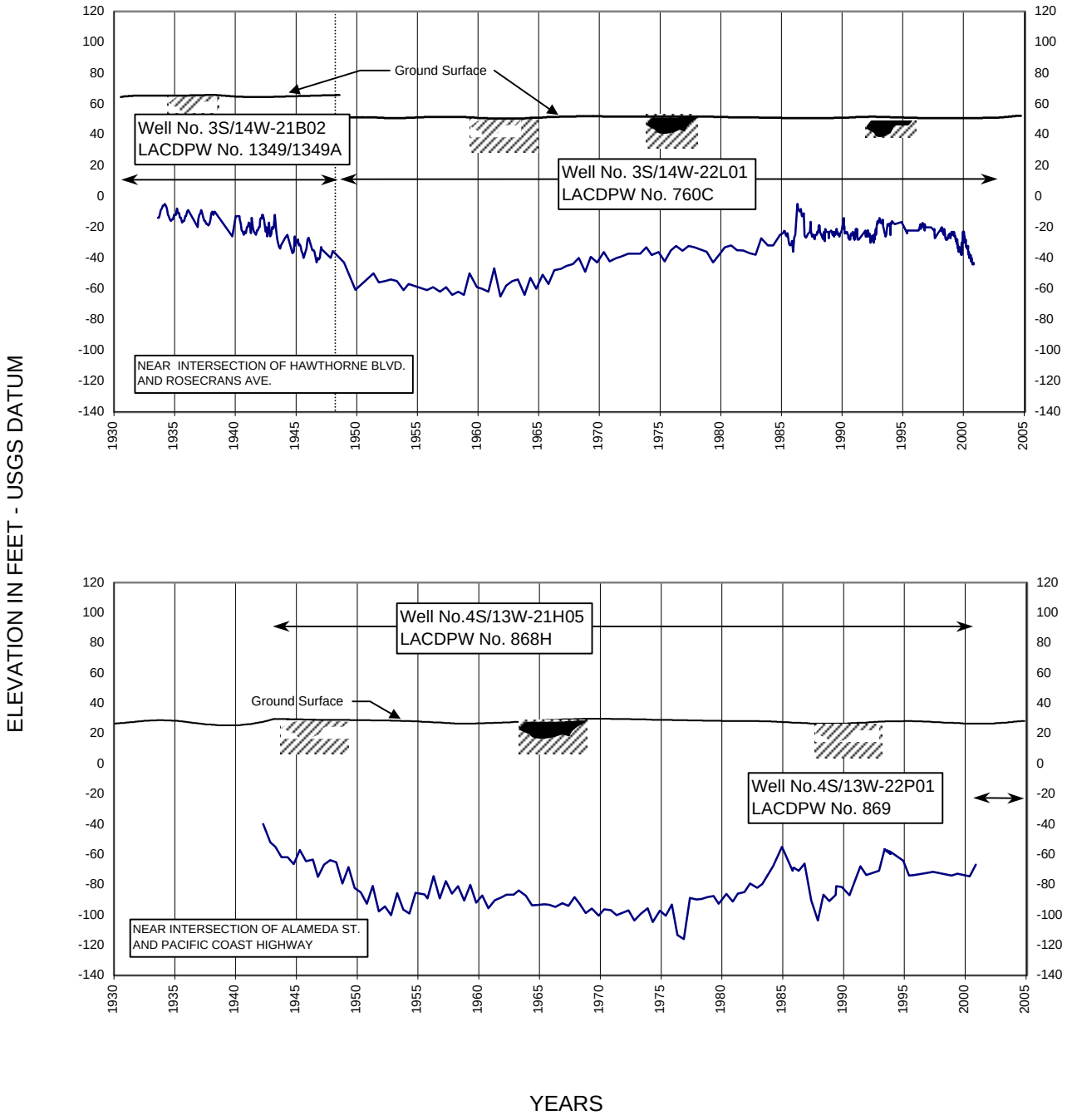


For Well Locations See Figure 3.2

FLUCTUATIONS OF WATER LEVEL AT WELLS

CENTRAL BASIN PRESSURE AREA

Figure 3.9



For Well Locations See Figure 3.2

FLUCTUATIONS OF WATER LEVEL AT WELLS

WEST BASIN

Figure 3.10

GROUNDWATER ELEVATION HYDROGRAPH
WRD Nested Monitoring Well - Rio Hondo #1

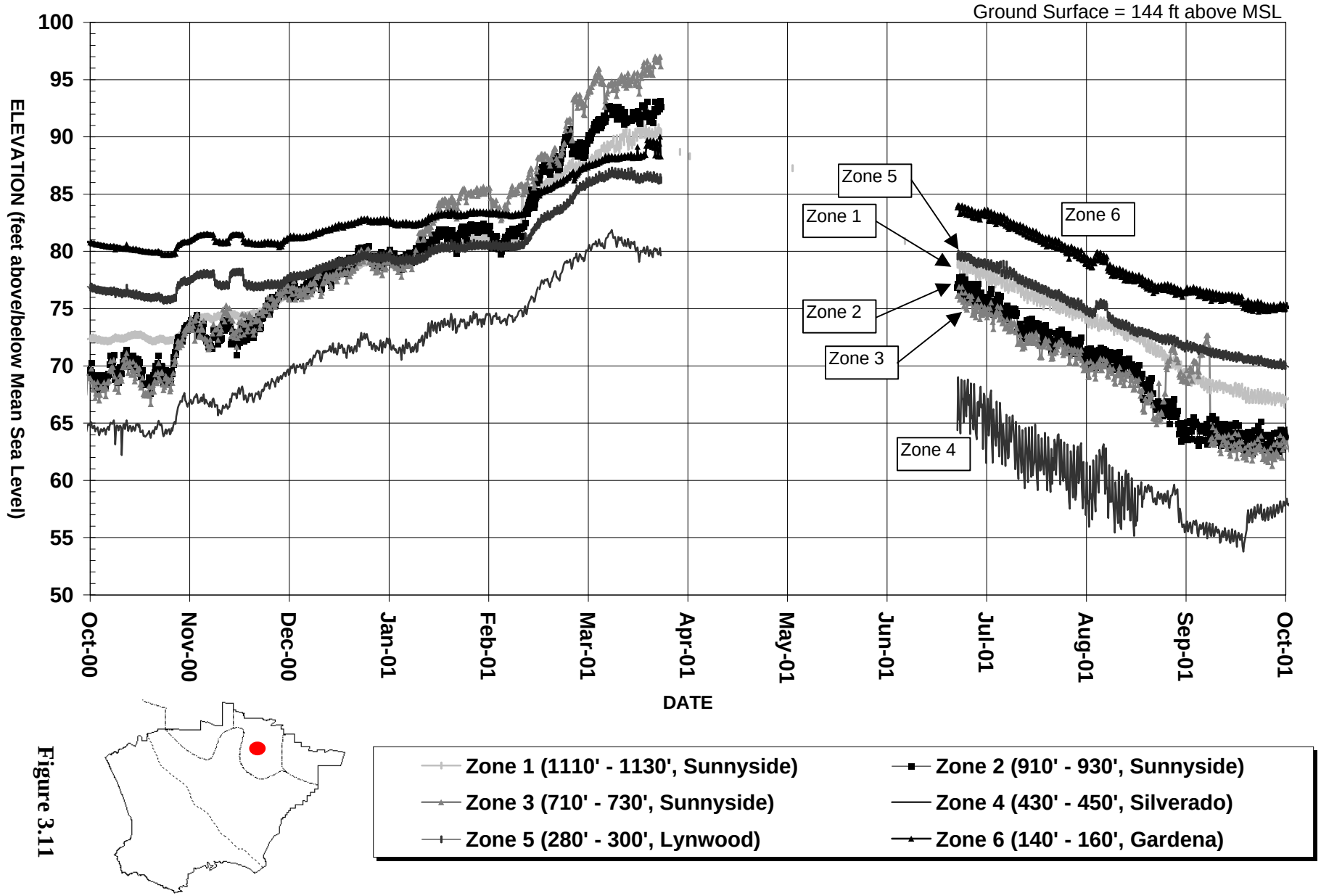


Figure 3.11

GROUNDWATER ELEVATION HYDROGRAPH
WRD Nested Monitoring Well - Huntington Park #1

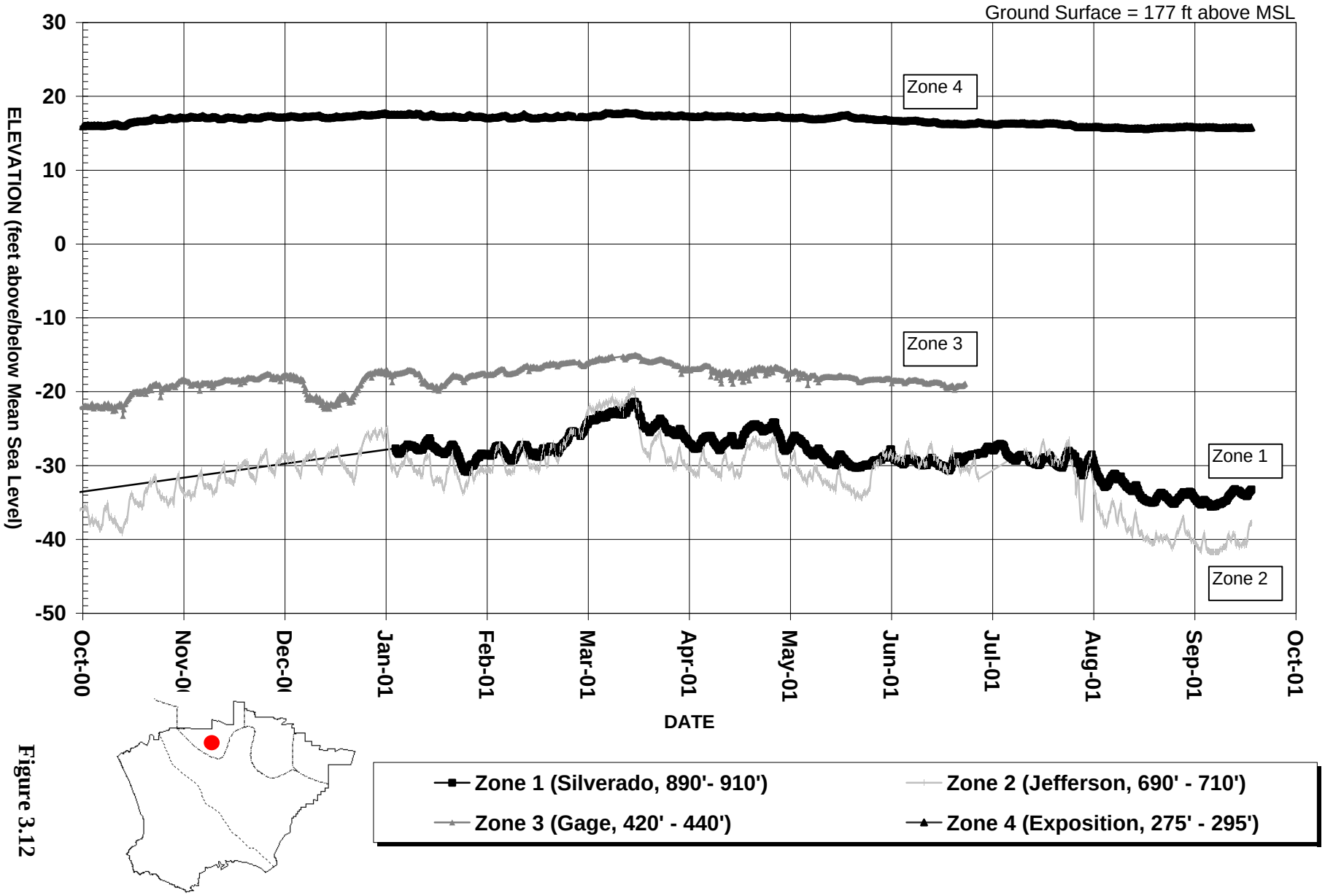


Figure 3.12

GROUNDWATER ELEVATION HYDROGRAPH
WRD Nested Monitoring Well - Long Beach #1

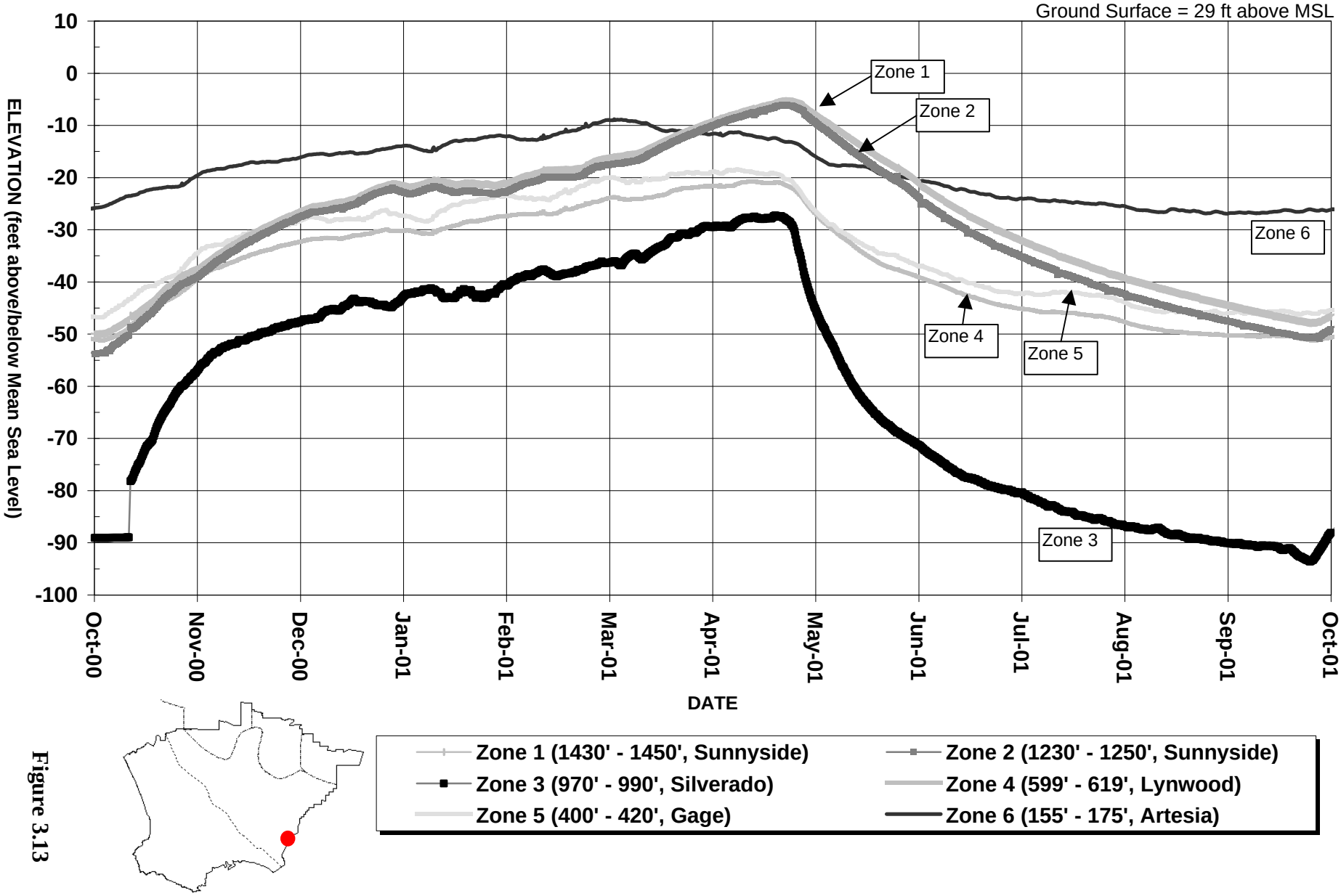


Figure 3.13

GROUNDWATER ELEVATION HYDROGRAPH
WRD Nested Monitoring Well - Carson #1

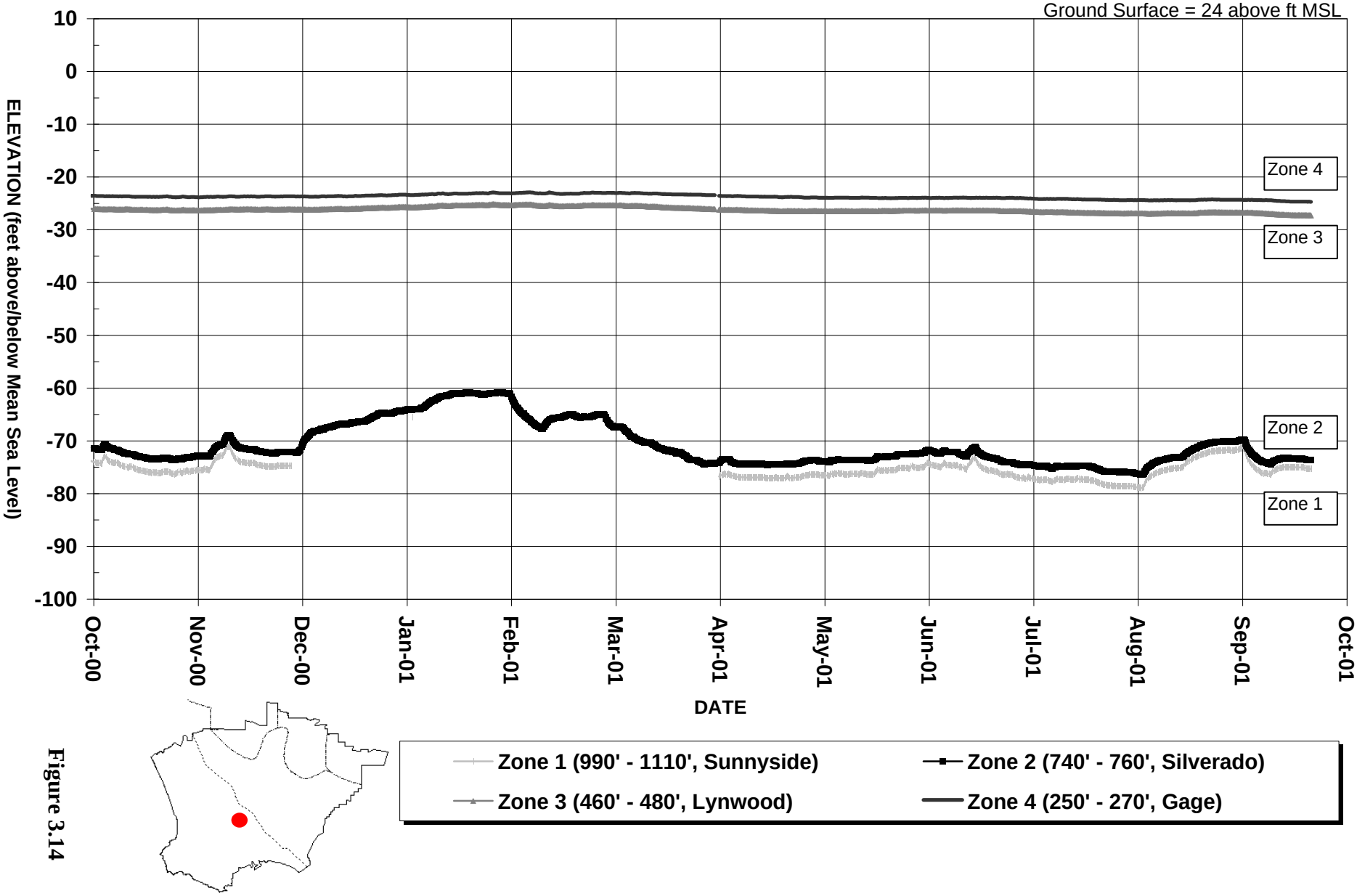
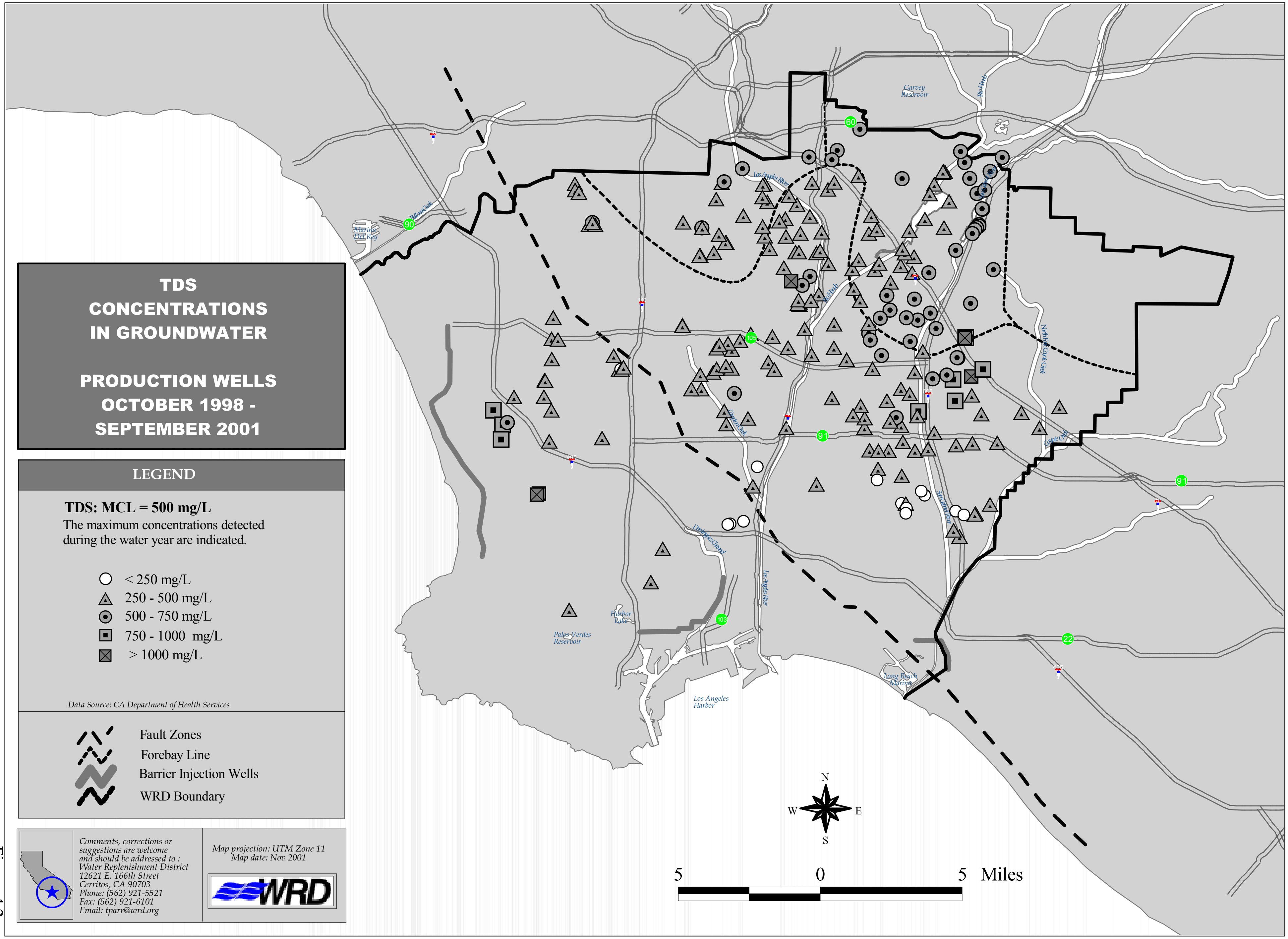


Figure 3.14



TDS CONCENTRATIONS IN GROUNDWATER
PRODUCTION WELLS
OCTOBER 1998 - SEPTEMBER 2001
LEGEND
TDS: MCL = 500 mg/L
The maximum concentrations detected during the water year are indicated.
< 250 mg/L
250 - 500 mg/L
500 - 750 mg/L
750 - 1000 mg/L
> 1000 mg/L
Data Source: CA Department of Health Services
Fault Zones
Forebay Line
Barrier Injection Wells
WRD Boundary
Comments, corrections or suggestions are welcome and should be addressed to :
Water Replenishment District
12621 E. 166th Street
Cerritos, CA 90703
Phone: (562) 921-5521
Fax: (562) 921-6101
Email: tparr@wrd.org
Map projection: UTM Zone 11
Map date: Nov 2001
WRD
N
W
E
S
5
0
5
Miles
Garvey Reservoir
Marina Del Rey
Palos Verdes Reservoir
Harbor Lake
Los Angeles Harbor
Long Beach Marina
Los Angeles River
San Gabriel River
Coyote Creek
Dominguez Channel
60
90
105
91
110
22

Figure 4.2

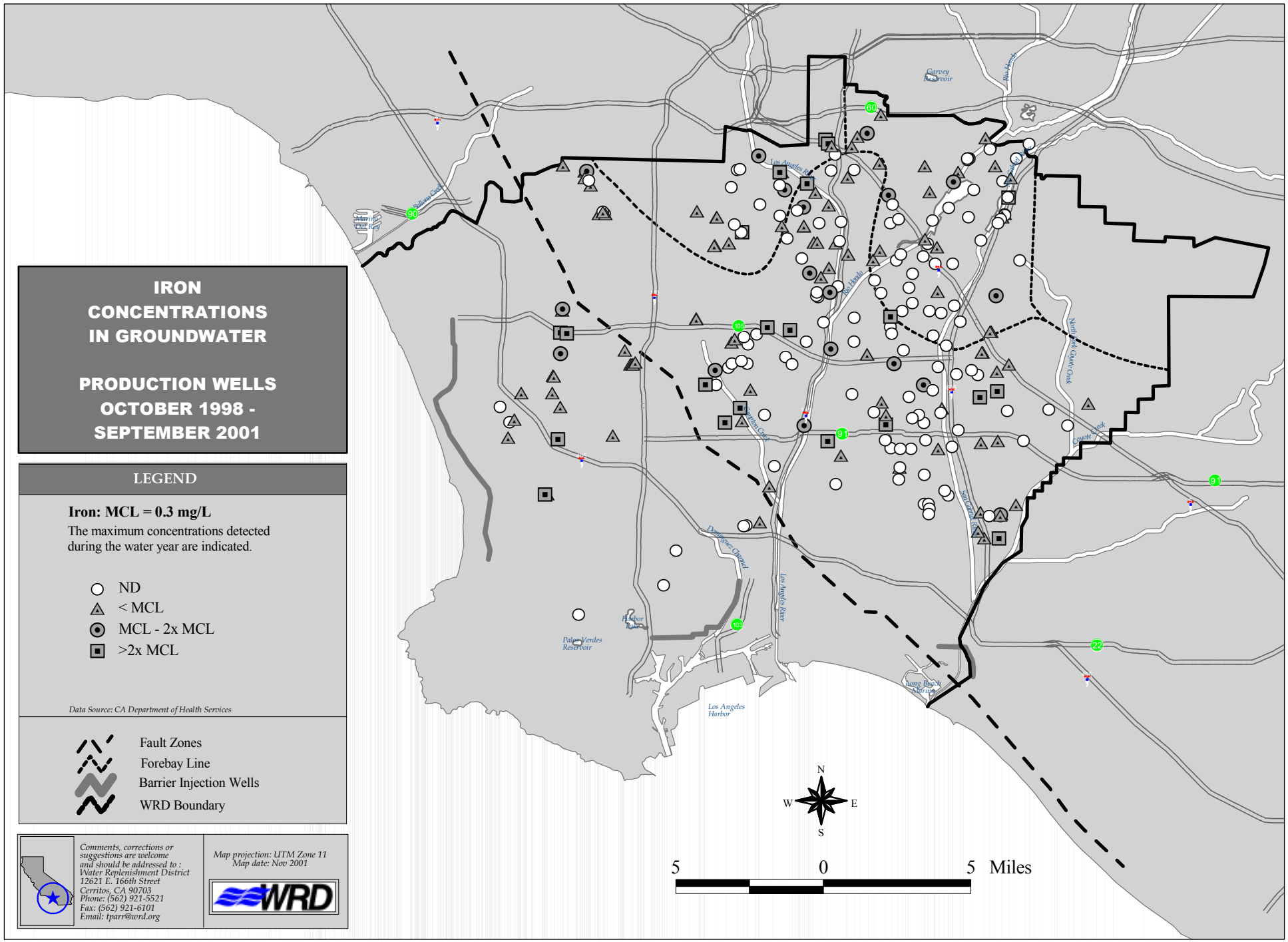

IRON
CONCENTRATIONS
IN GROUNDWATER
PRODUCTION WELLS
OCTOBER 1998 -
SEPTEMBER 2001
LEGEND
Iron: MCL = 0.3 mg/L
The maximum concentrations detected during the water year are indicated.
ND
< MCL
MCL - 2x MCL
>2x MCL
Data Source: CA Department of Health Services
Fault Zones
Forebay Line
Barrier Injection Wells
WRD Boundary
Comments, corrections or suggestions are welcome and should be addressed to :
Water Replenishment District
12621 E. 166th Street
Cerritos, CA 90703
Phone: (562) 921-5521
Fax: (562) 921-6101
Email: tparr@wrd.org
Map projection: UTM Zone 11
Map date: Nov 2001
WRD
N
W
E
S
5
0
5 Miles
Los Angeles River
Dominguez Channel
Los Angeles Harbor
Palos Verdes Reservoir
Carvey Reservoir
Rio Hondo
Long Beach Airport
90
60
105
91
22

Figure 4.4

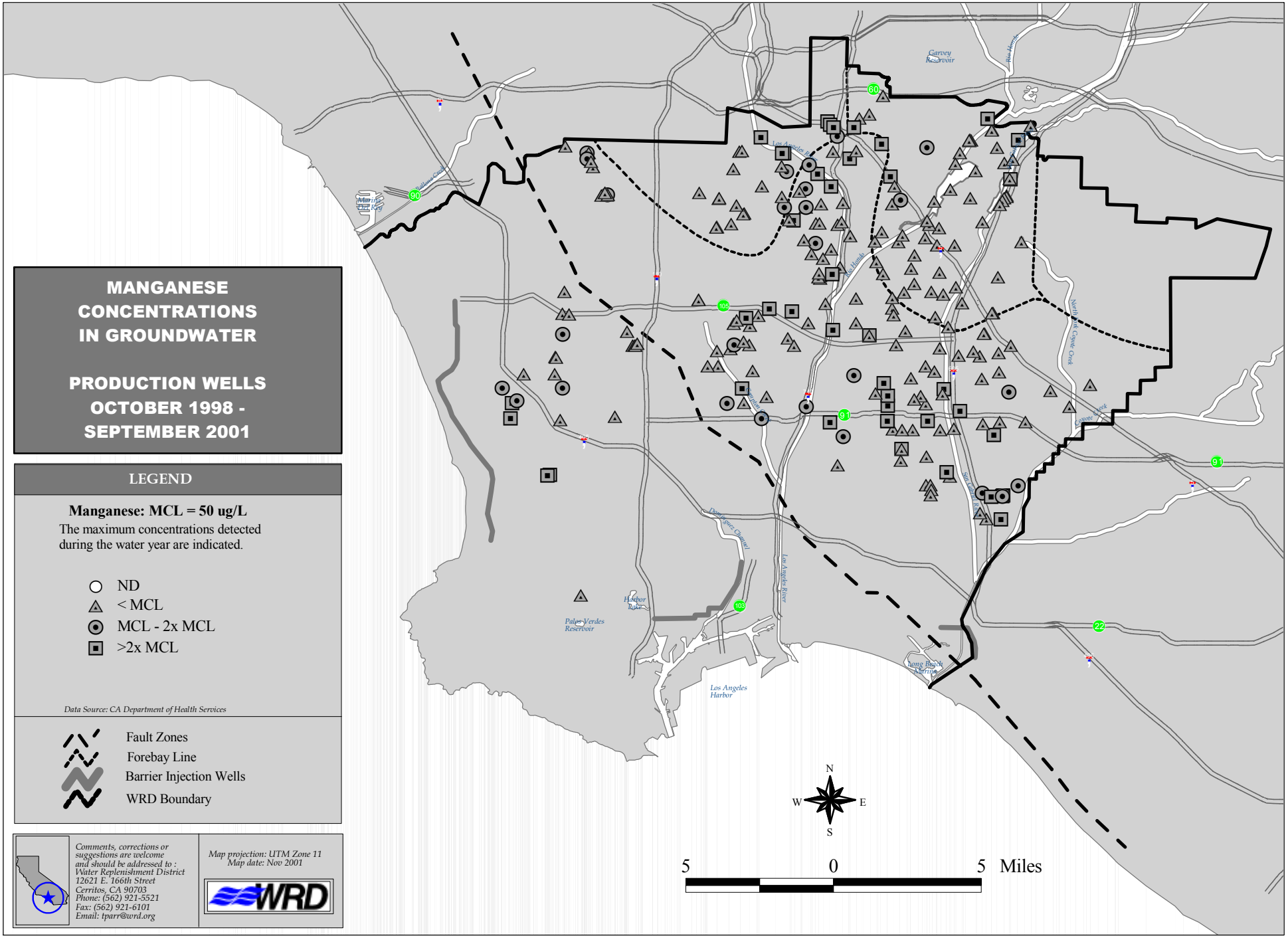

MANGANESE CONCENTRATIONS IN GROUNDWATER
PRODUCTION WELLS OCTOBER 1998 - SEPTEMBER 2001
LEGEND
Manganese: MCL = 50 ug/L
The maximum concentrations detected during the water year are indicated.
ND
< MCL
MCL - 2x MCL
>2x MCL
Data Source: CA Department of Health Services
Fault Zones
Forebay Line
Barrier Injection Wells
WRD Boundary
Comments, corrections or suggestions are welcome and should be addressed to :
Water Replenishment District
12621 E. 166th Street
Cerritos, CA 90703
Phone: (562) 921-5521
Fax: (562) 921-6101
Email: tparr@wrd.org
Map projection: UTM Zone 11
Map date: Nov 2001
WRD
N
W
E
S
5 0 5 Miles
Garvey Reservoir
Los Angeles River
Palos Verdes Reservoir
Harbor Lake
Los Angeles Harbor
Long Beach Marina
Coyote Creek
Dominguez Channel
60
90
105
91
22
710

Figure 4.6

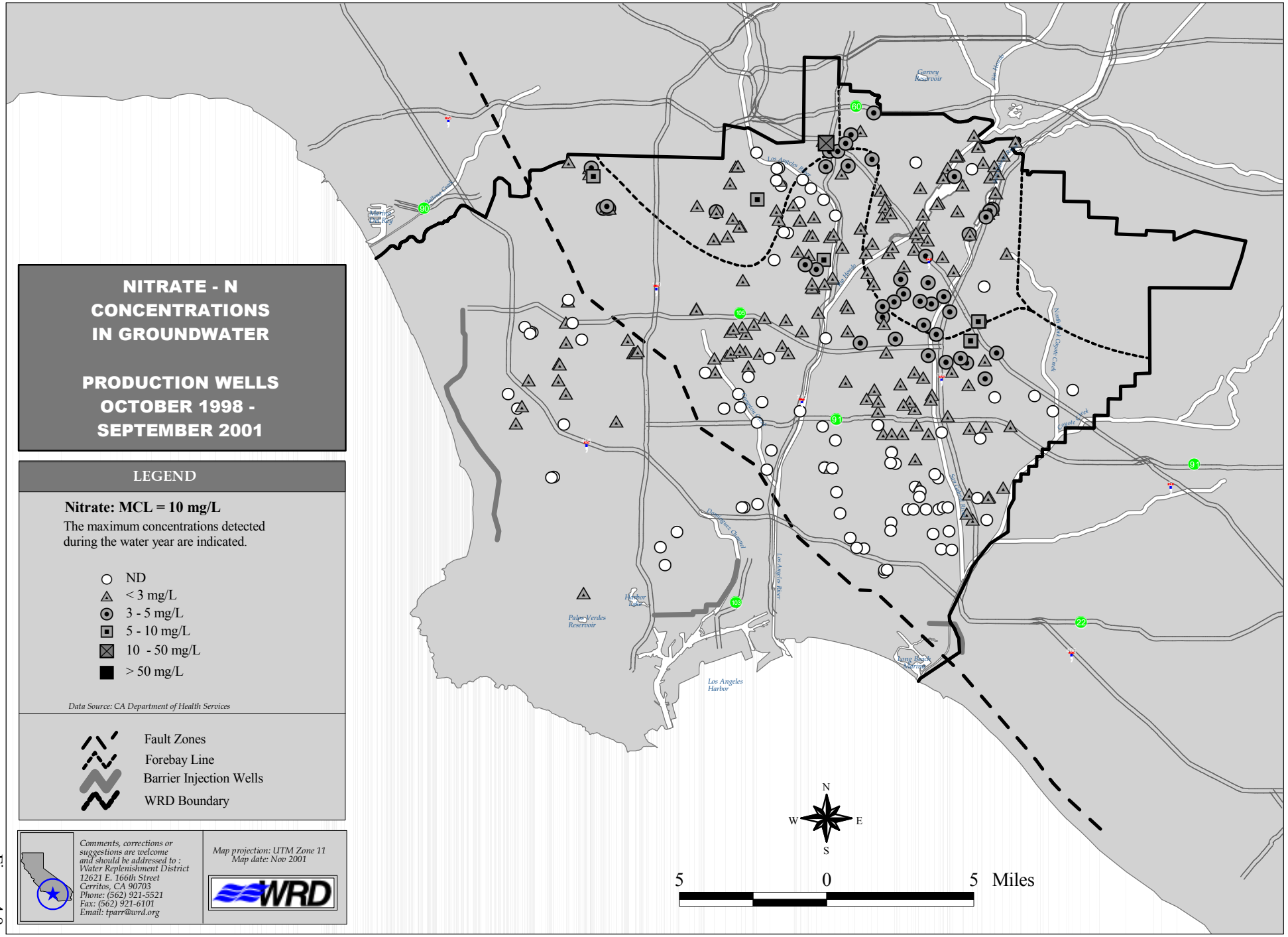

NITRATE - N
CONCENTRATIONS
IN GROUNDWATER
PRODUCTION WELLS
OCTOBER 1998 -
SEPTEMBER 2001
LEGEND
Nitrate: MCL = 10 mg/L
The maximum concentrations detected during the water year are indicated.
ND
< 3 mg/L
3 - 5 mg/L
5 - 10 mg/L
10 - 50 mg/L
> 50 mg/L
Data Source: CA Department of Health Services
Fault Zones
Forebay Line
Barrier Injection Wells
WRD Boundary
Comments, corrections or suggestions are welcome and should be addressed to :
Water Replenishment District
12621 E. 166th Street
Cerritos, CA 90703
Phone: (562) 921-5521
Fax: (562) 921-6101
Email: tparr@wrd.org
Map projection: UTM Zone 11
Map date: Nov 2001
WRD
N
W
E
S
5
0
5 Miles
Carvey Reservoir
Los Angeles River
Dominguez Channel
Harbor Lake
Palos Verdes Reservoir
Los Angeles Harbor
Long Beach Marina
San Gabriel River
North Fork Coyote Creek
Coyote Creek
90
60
105
91
103
22

Figure 4.8

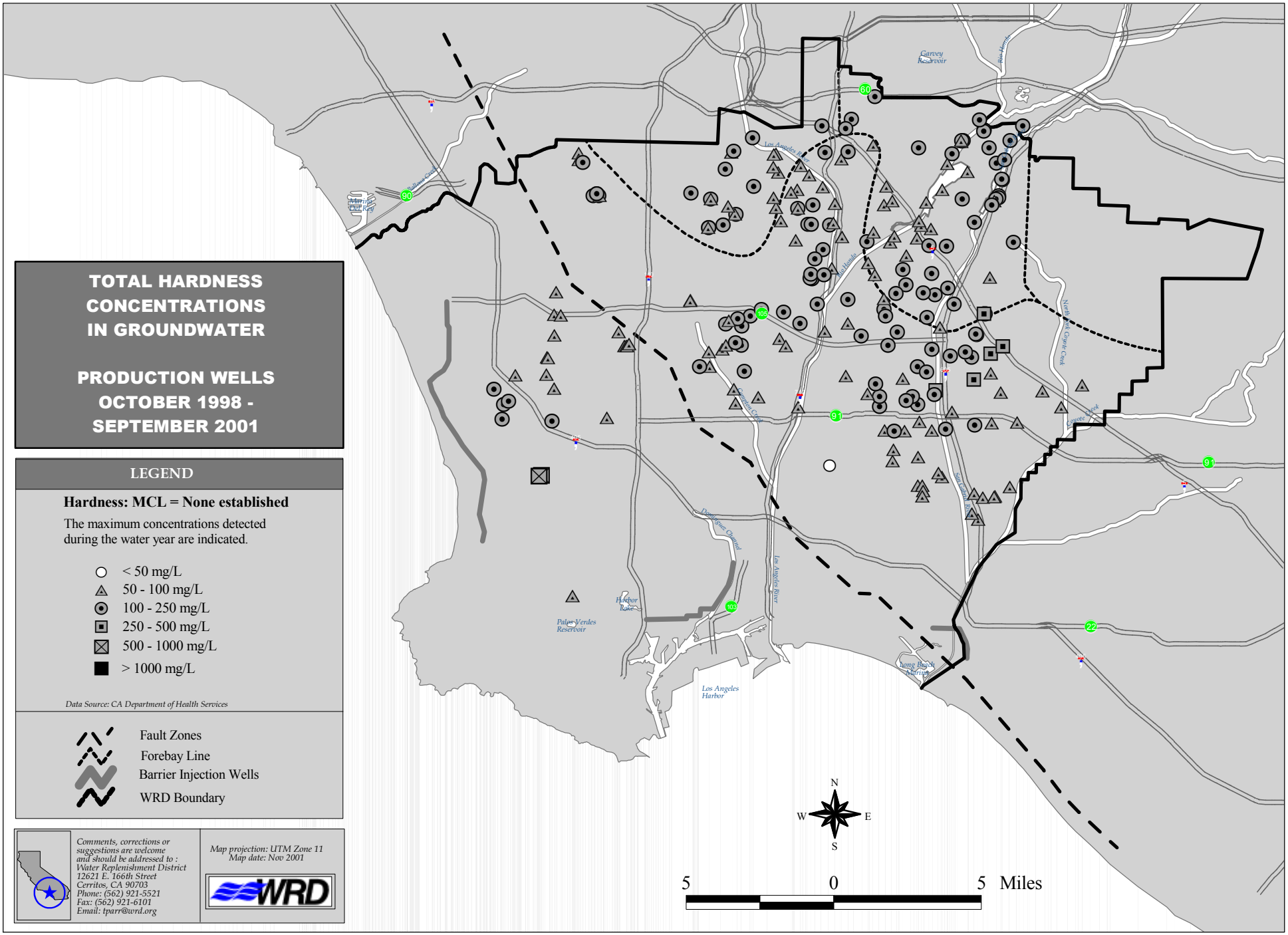

TOTAL HARDNESS CONCENTRATIONS IN GROUNDWATER
PRODUCTION WELLS OCTOBER 1998 - SEPTEMBER 2001
LEGEND
Hardness: MCL = None established
The maximum concentrations detected during the water year are indicated.
< 50 mg/L
50 - 100 mg/L
100 - 250 mg/L
250 - 500 mg/L
500 - 1000 mg/L
> 1000 mg/L
Data Source: CA Department of Health Services
Fault Zones
Forebay Line
Barrier Injection Wells
WRD Boundary
Comments, corrections or suggestions are welcome and should be addressed to :
Water Replenishment District
12621 E. 166th Street
Cerritos, CA 90703
Phone: (562) 921-5521
Fax: (562) 921-6101
Email: tparr@wrd.org
Map projection: UTM Zone 11
Map date: Nov 2001
WRD
N
W
E
S
5 0 5 Miles
Garvey Reservoir
Los Angeles River
Dominguez Channel
Palos Verdes Reservoir
Harbor Lake
Los Angeles Harbor
Long Beach Marina
San Gabriel River
Coyote Creek
Compton Creek
Torrance Lateral
Del Amo
Alondra
60
90
605
91
405
710
22

Figure 4.10

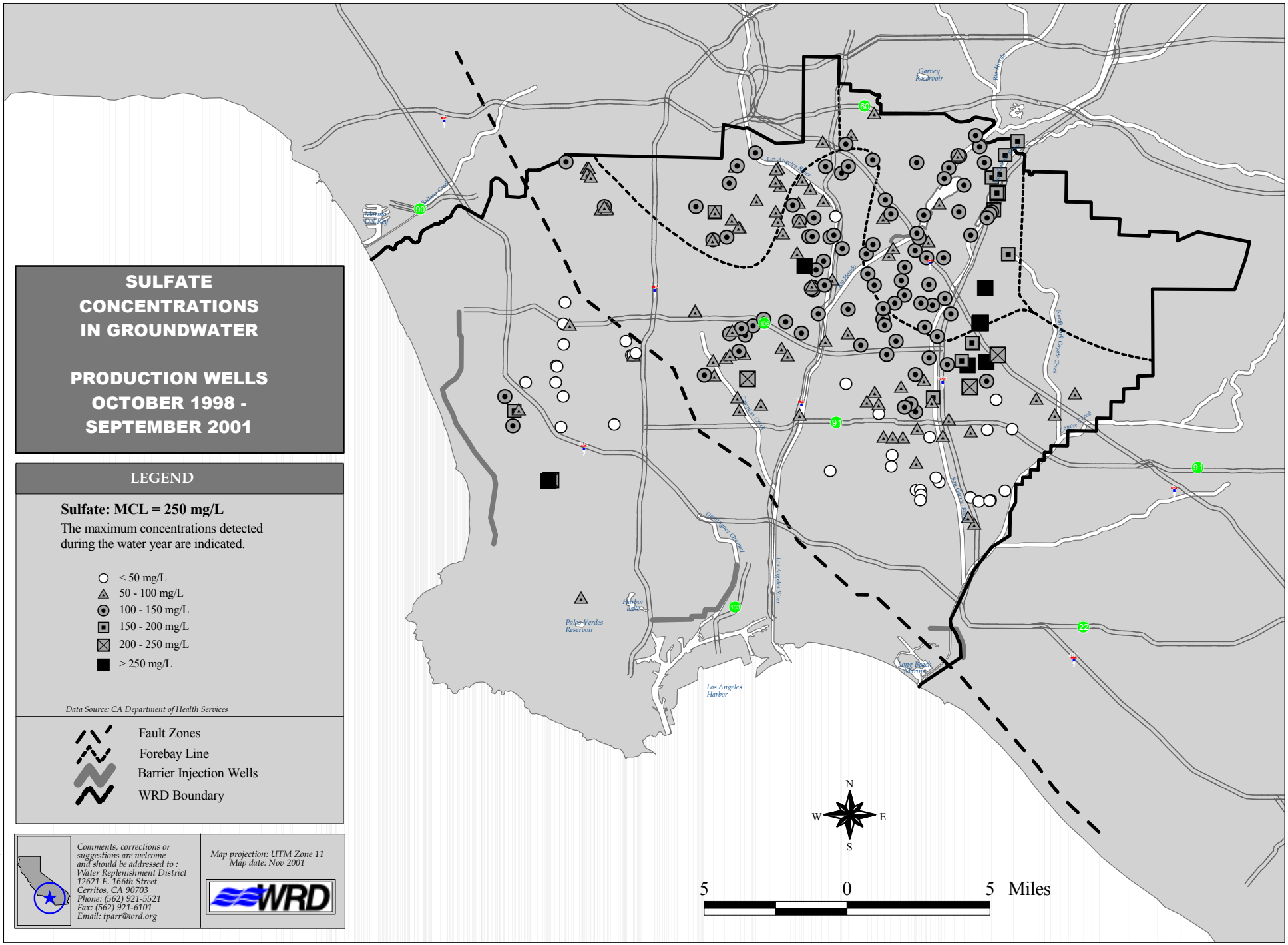

SULFATE CONCENTRATIONS IN GROUNDWATER
PRODUCTION WELLS OCTOBER 1998 - SEPTEMBER 2001
LEGEND
Sulfate: MCL = 250 mg/L
The maximum concentrations detected during the water year are indicated.
< 50 mg/L
50 - 100 mg/L
100 - 150 mg/L
150 - 200 mg/L
200 - 250 mg/L
> 250 mg/L
Data Source: CA Department of Health Services
Fault Zones
Forebay Line
Barrier Injection Wells
WRD Boundary
Comments, corrections or suggestions are welcome and should be addressed to :
Water Replenishment District
12621 E. 166th Street
Cerritos, CA 90703
Phone: (562) 921-5521
Fax: (562) 921-6101
Email: tparr@wrd.org
Map projection: UTM Zone 11
Map date: Nov 2001
WRD
N
W
E
S
5 0 5 Miles
Garvey Reservoir
Los Angeles River
Dominguez Channel
Palos Verdes Reservoir
Harbor Park
Los Angeles Harbor
Long Beach Marina
Marina Del Rey
Ballona Creek
Coyote Creek
San Gabriel River
60
90
105
91
22
103

Figure 4.12

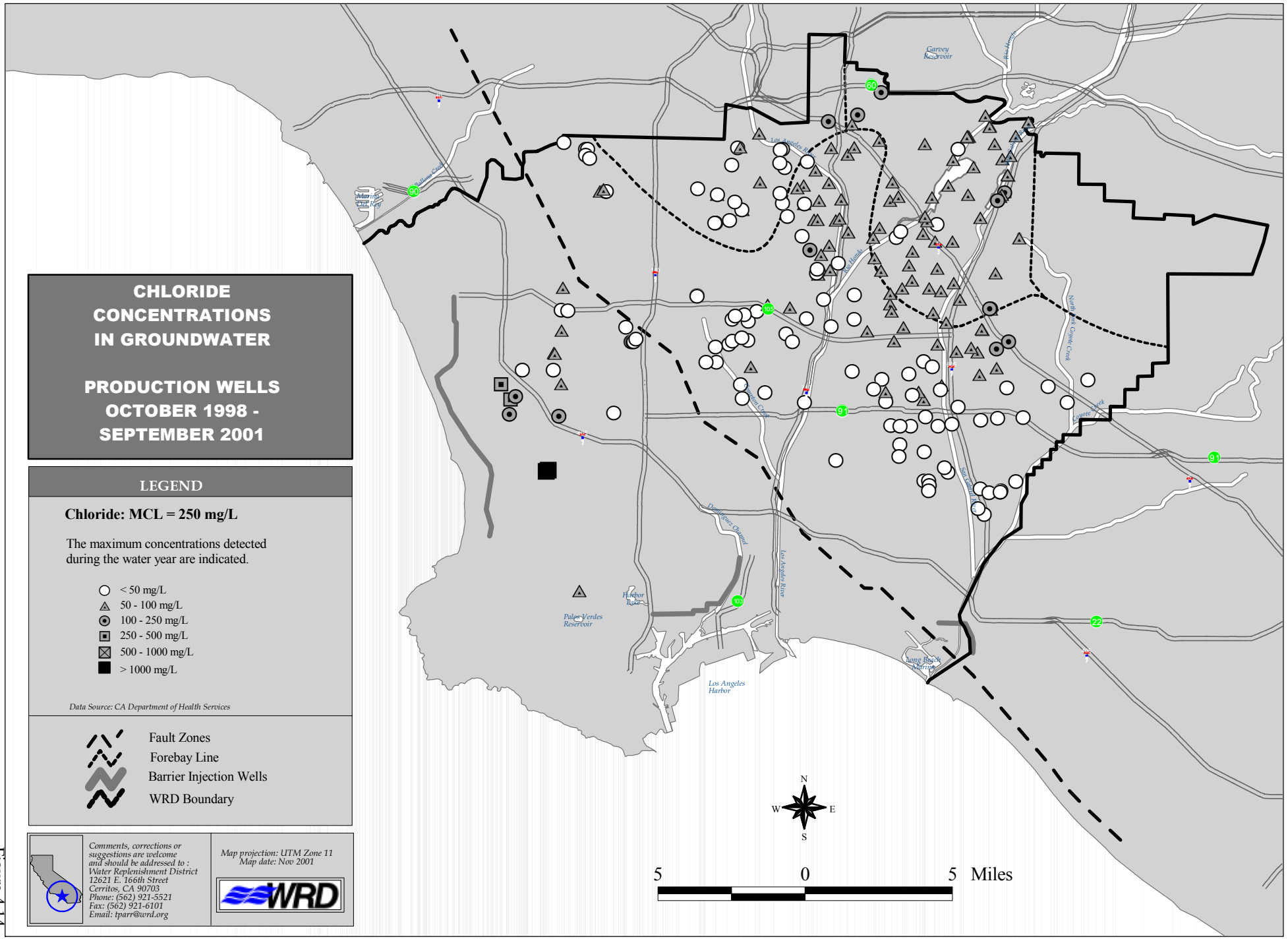

CHLORIDE CONCENTRATIONS IN GROUNDWATER
PRODUCTION WELLS OCTOBER 1998 - SEPTEMBER 2001
LEGEND
Chloride: MCL = 250 mg/L
The maximum concentrations detected during the water year are indicated.
< 50 mg/L
50 - 100 mg/L
100 - 250 mg/L
250 - 500 mg/L
500 - 1000 mg/L
> 1000 mg/L
Data Source: CA Department of Health Services
Fault Zones
Forebay Line
Barrier Injection Wells
WRD Boundary
Comments, corrections or suggestions are welcome and should be addressed to :
Water Replenishment District
12621 E. 166th Street
Cerritos, CA 90703
Phone: (562) 921-5521
Fax: (562) 921-6101
Email: tparr@wrd.org
Map projection: UTM Zone 11
Map date: Nov 2001
WRD
N
W
E
S
5 0 5 Miles
Garvey Reservoir
Los Angeles River
Dominguez Channel
Palos Verdes Reservoir
Harbor Lake
Los Angeles Harbor
Long Beach Marina
Alamitos Bay
Coyote Creek
San Gabriel River
90
60
105
91
103
22
405

Figure 4.14

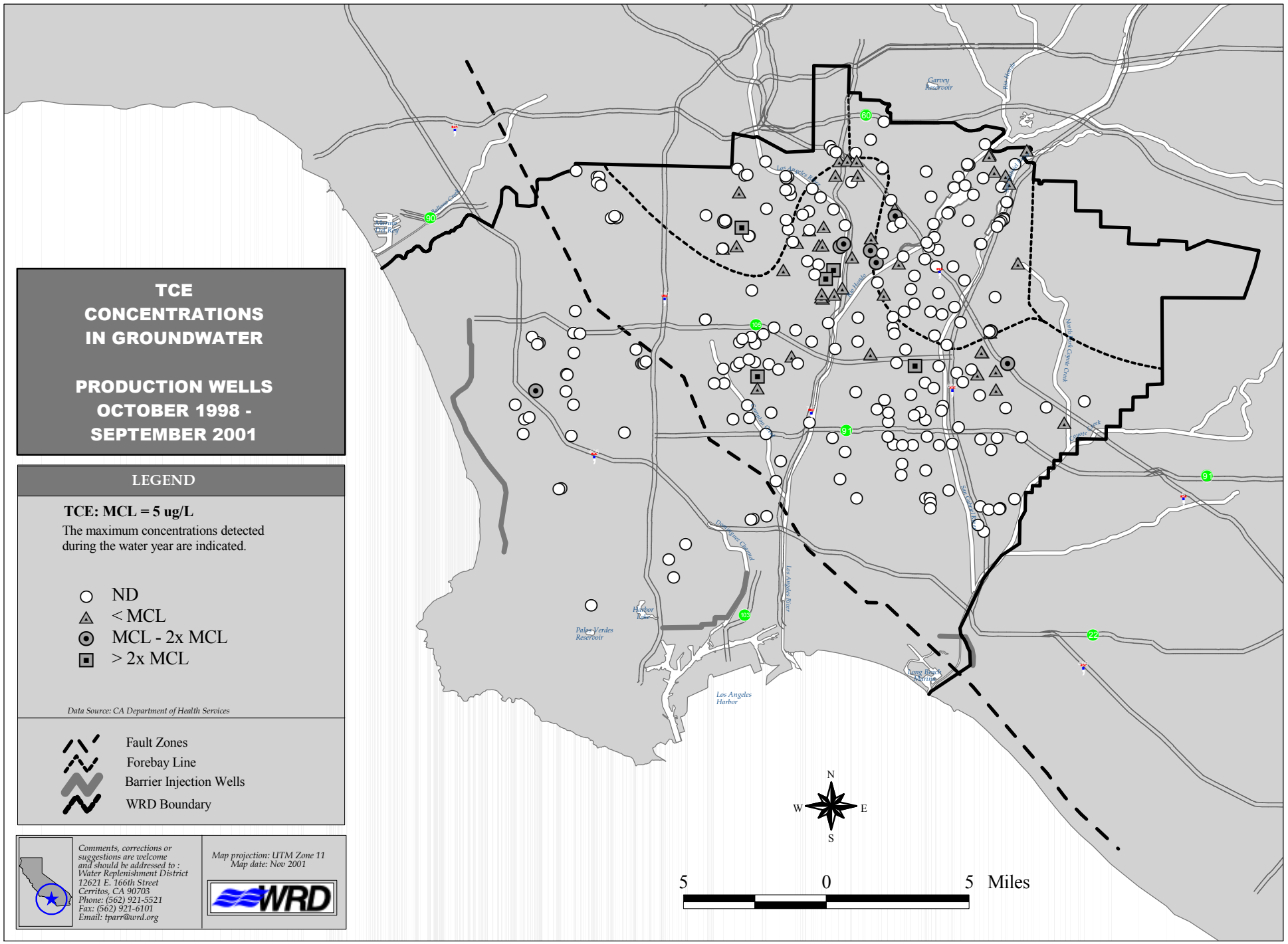

TCE
CONCENTRATIONS
IN GROUNDWATER
PRODUCTION WELLS
OCTOBER 1998 -
SEPTEMBER 2001
LEGEND
TCE: MCL = 5 ug/L
The maximum concentrations detected during the water year are indicated.
ND
< MCL
MCL - 2x MCL
> 2x MCL
Data Source: CA Department of Health Services
Fault Zones
Forebay Line
Barrier Injection Wells
WRD Boundary
Comments, corrections or suggestions are welcome and should be addressed to :
Water Replenishment District
12621 E. 166th Street
Cerritos, CA 90703
Phone: (562) 921-5521
Fax: (562) 921-6101
Email: tparr@wrd.org
Map projection: UTM Zone 11
Map date: Nov 2001
WRD
N
W
E
S
5
0
5 Miles
Carson Reservoir
Los Angeles River
Dominguez Channel
Harbor Lake
Palos Verdes Reservoir
Los Angeles Harbor
Long Beach Marina
Coyote Creek
San Gabriel River
Alamitos Bay
Marina Del Rey
Ballona Creek
90
60
105
91
103
22
405

Figure 4.16

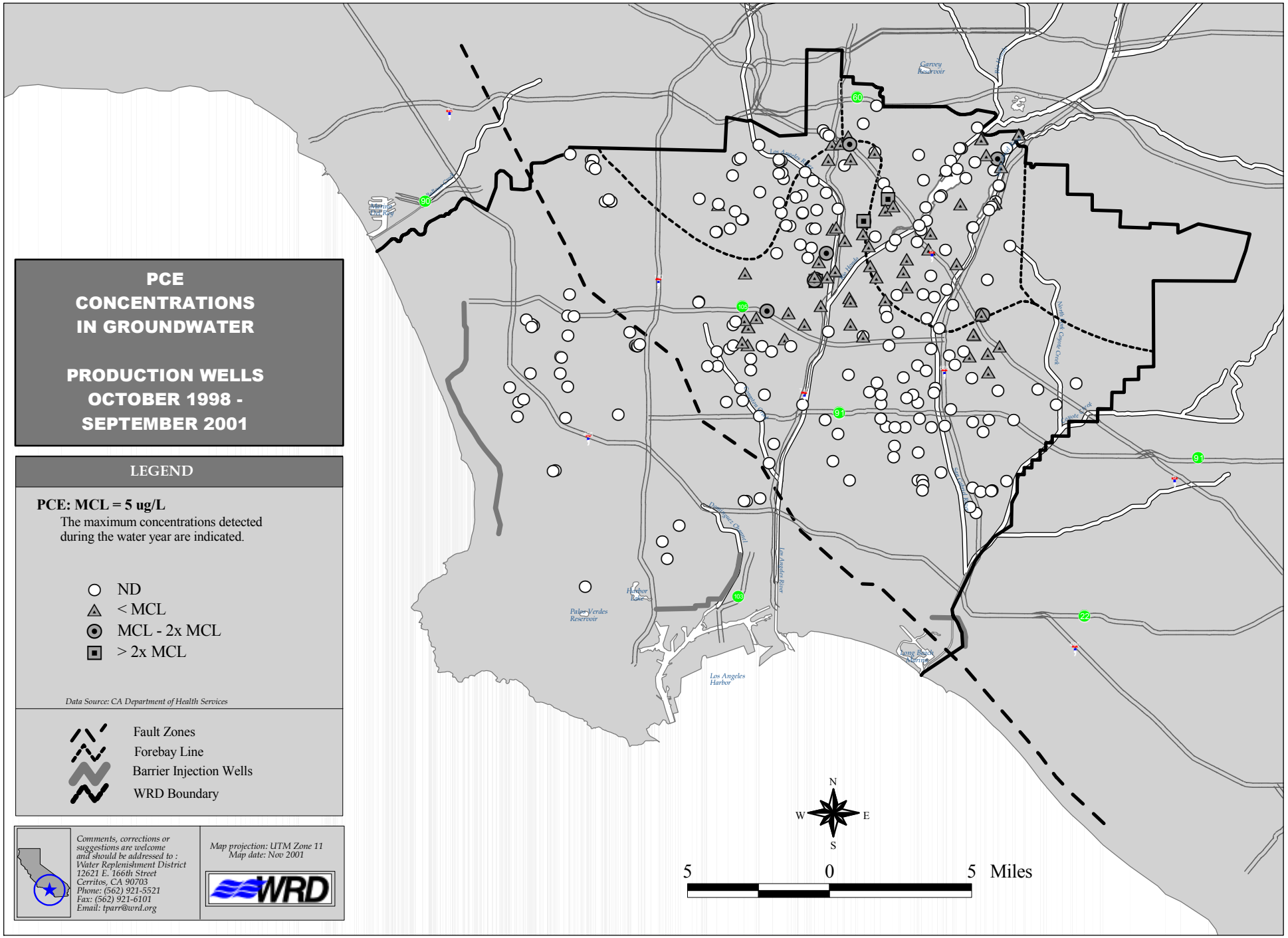

PCE
CONCENTRATIONS
IN GROUNDWATER
PRODUCTION WELLS
OCTOBER 1998 -
SEPTEMBER 2001
LEGEND
PCE: MCL = 5 ug/L
The maximum concentrations detected during the water year are indicated.
ND
< MCL
MCL - 2x MCL
> 2x MCL
Data Source: CA Department of Health Services
Fault Zones
Forebay Line
Barrier Injection Wells
WRD Boundary
Comments, corrections or suggestions are welcome and should be addressed to :
Water Replenishment District
12621 E. 166th Street
Cerritos, CA 90703
Phone: (562) 921-5521
Fax: (562) 921-6101
Email: tparr@wrd.org
Map projection: UTM Zone 11
Map date: Nov 2001
WRD
N
W
E
S
5
0
5 Miles
Carson Reservoir
Harbor Lake
Palos Verdes Reservoir
Los Angeles Harbor
Long Beach Harbor
Los Angeles River
Dominguez Channel
San Gabriel River
North Fork Coyote Creek
60
90
105
91
103
22

Figure 4.18

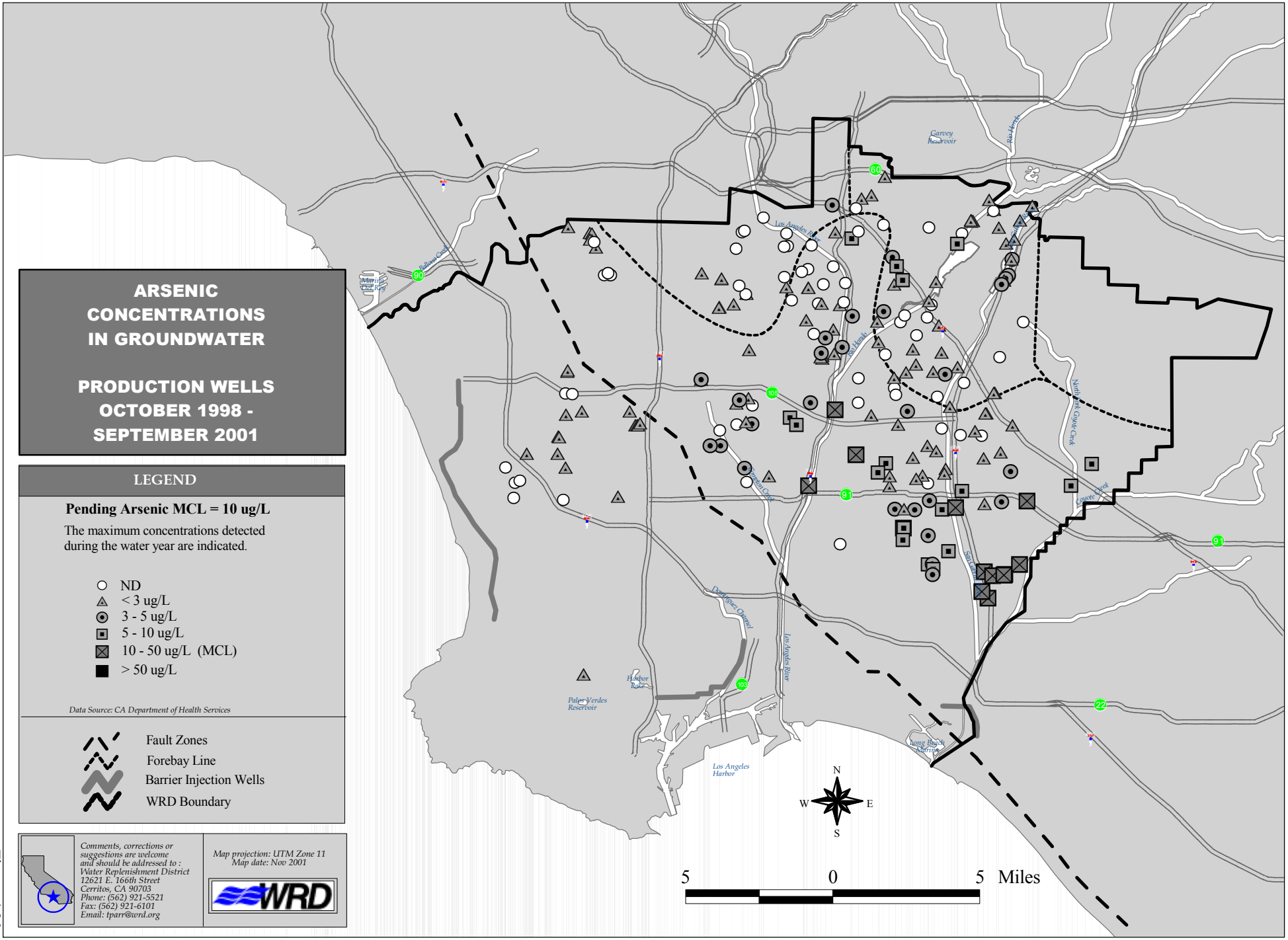

ARSENIC CONCENTRATIONS IN GROUNDWATER
PRODUCTION WELLS OCTOBER 1998 - SEPTEMBER 2001
LEGEND
Pending Arsenic MCL = 10 ug/L
The maximum concentrations detected during the water year are indicated.
ND
< 3 ug/L
3 - 5 ug/L
5 - 10 ug/L
10 - 50 ug/L (MCL)
> 50 ug/L
Data Source: CA Department of Health Services
Fault Zones
Forebay Line
Barrier Injection Wells
WRD Boundary
Comments, corrections or suggestions are welcome and should be addressed to :
Water Replenishment District
12621 E. 166th Street
Cerritos, CA 90703
Phone: (562) 921-5521
Fax: (562) 921-6101
Email: tparr@wrd.org
Map projection: UTM Zone 11
Map date: Nov 2001
WRD
Garvey Reservoir
Rio Hondo
Los Angeles River
San Gabriel River
Dominguez Channel
Harbor Lake
Palos Verdes Reservoir
Los Angeles Harbor
Long Beach Harbor
N
W
E
S
5 0 5 Miles

Figure 4.20

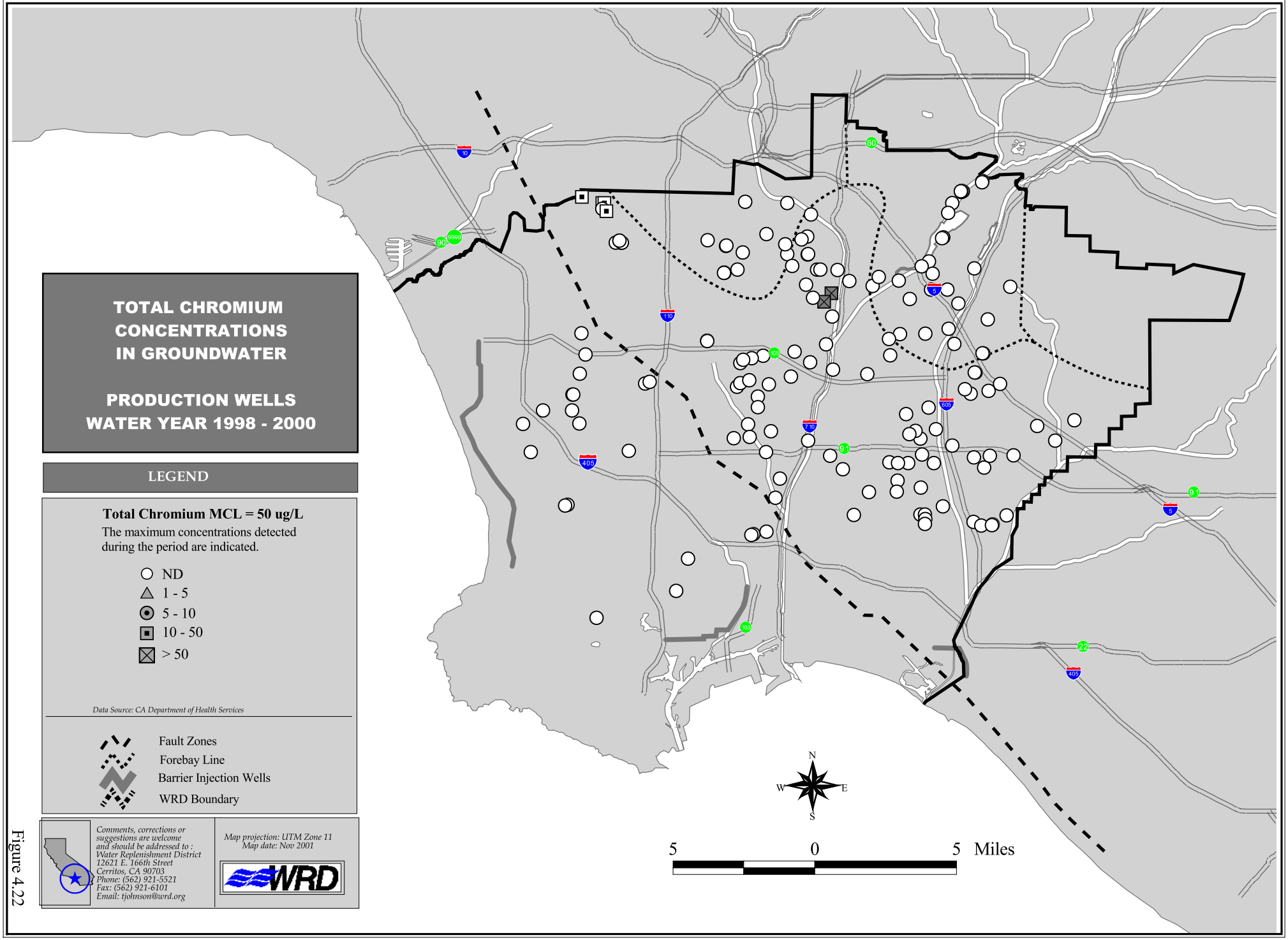

TOTAL CHROMIUM CONCENTRATIONS IN GROUNDWATER
PRODUCTION WELLS
WATER YEAR 1998 - 2000
LEGEND
Total Chromium MCL = 50 ug/L
The maximum concentrations detected during the period are indicated.
ND
1 - 5
5 - 10
10 - 50
> 50
Data Source: CA Department of Health Services
Fault Zones
Forebay Line
Barrier Injection Wells
WRD Boundary
Comments, corrections or suggestions are welcome and should be addressed to :
Water Replenishment District
12621 E. 166th Street
Cerritos, CA 90703
Phone: (562) 921-5521
Fax: (562) 921-6101
Email: tjohnson@wrd.org
Map projection: UTM Zone 11
Map date: Nov 2001
WRD
N
W
E
S
5
0
5 Miles

Figure 4.22

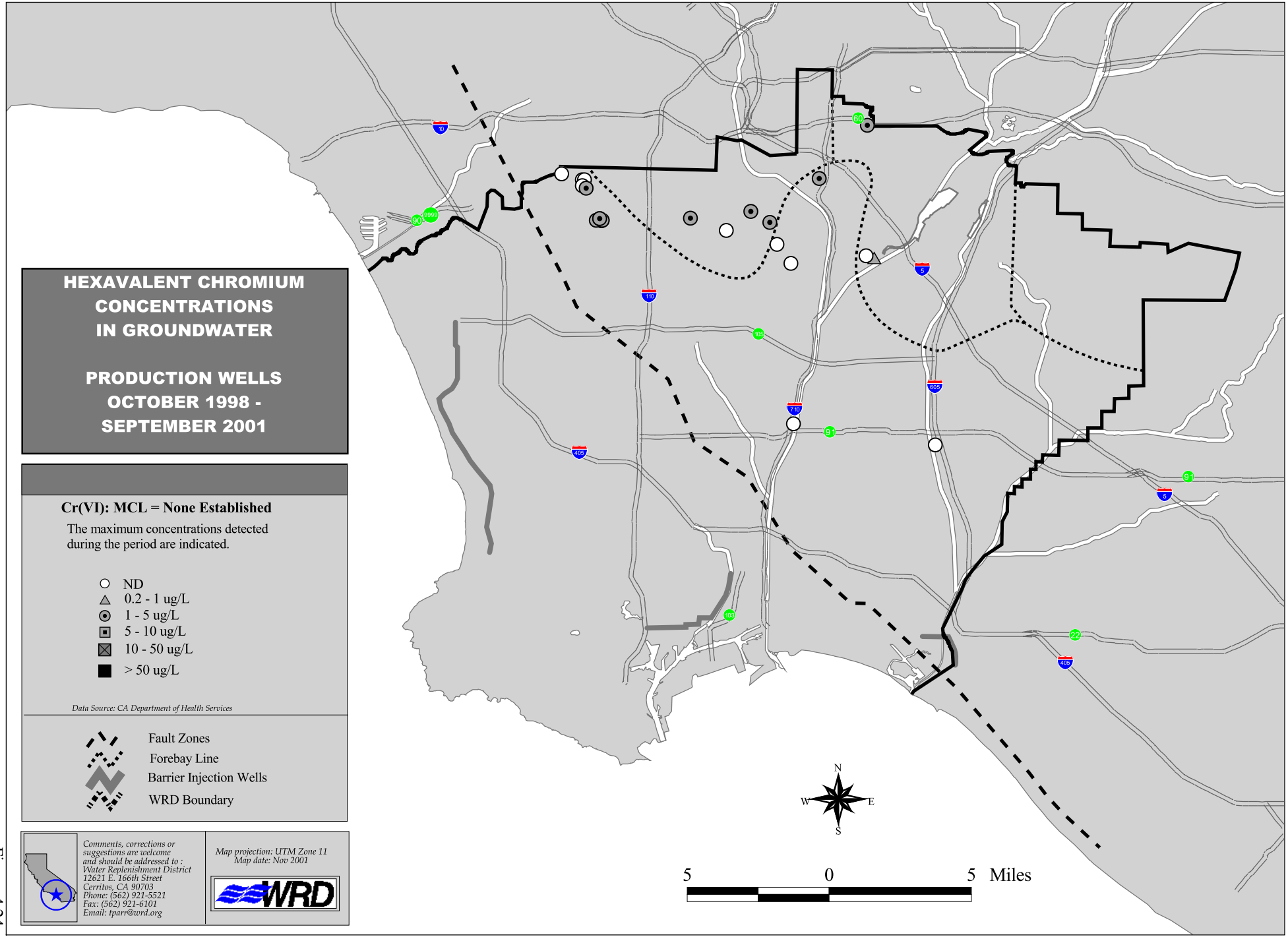
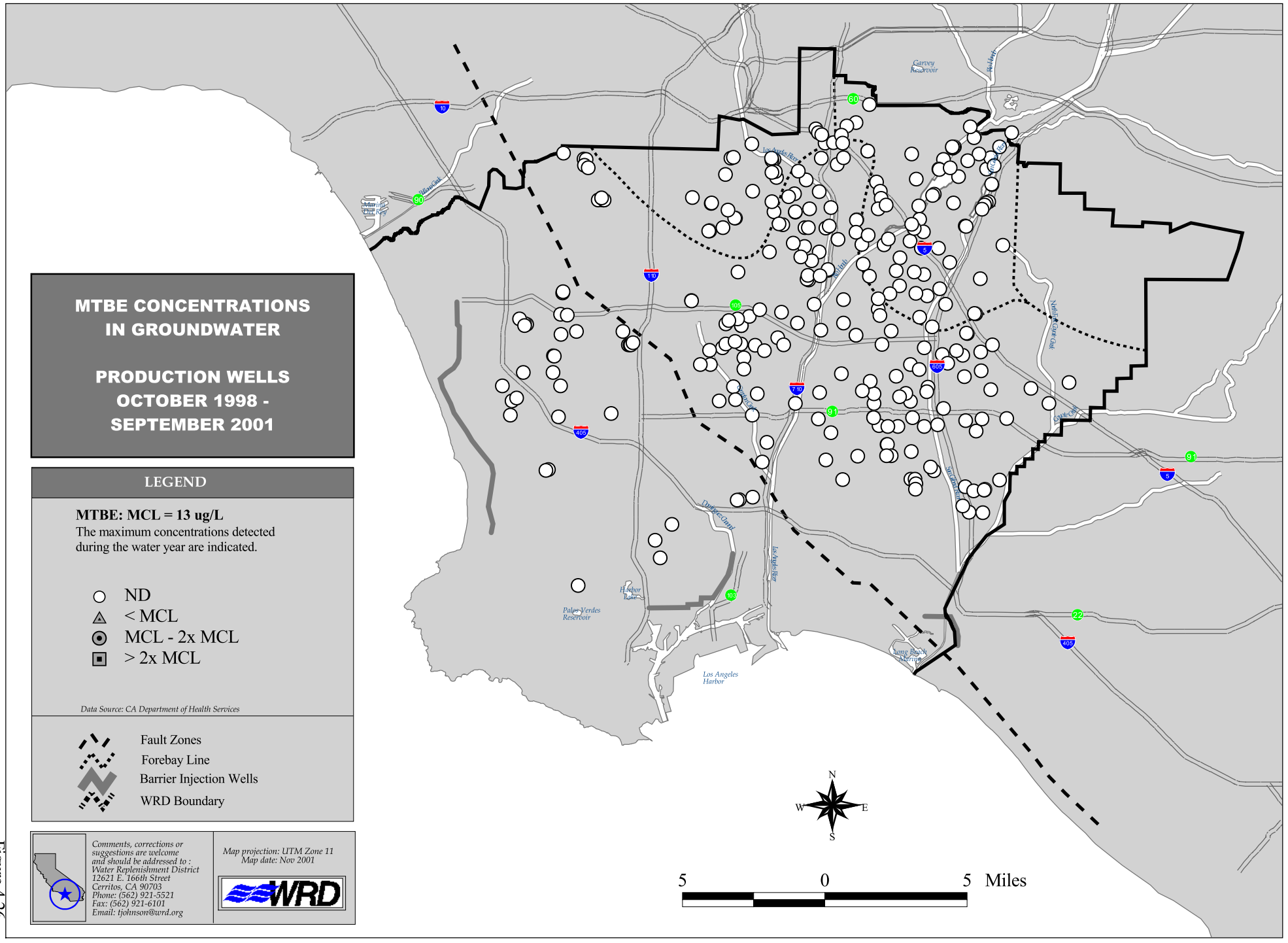

HEXAVALENT CHROMIUM
CONCENTRATIONS
IN GROUNDWATER
PRODUCTION WELLS
OCTOBER 1998 -
SEPTEMBER 2001
Cr(VI): MCL = None Established
The maximum concentrations detected
during the period are indicated.
ND
0.2 - 1 ug/L
1 - 5 ug/L
5 - 10 ug/L
10 - 50 ug/L
> 50 ug/L
Data Source: CA Department of Health Services
Fault Zones
Forebay Line
Barrier Injection Wells
WRD Boundary
Comments, corrections or
suggestions are welcome
and should be addressed to :
Water Replenishment District
12621 E. 166th Street
Cerritos, CA 90703
Phone: (562) 921-5521
Fax: (562) 921-6101
Email: tparr@wrd.org
Map projection: UTM Zone 11
Map date: Nov 2001
WRD
N
W
E
S
5
0
5 Miles

Figure 4.24


MTBE CONCENTRATIONS
IN GROUNDWATER
PRODUCTION WELLS
OCTOBER 1998 -
SEPTEMBER 2001
LEGEND
MTBE: MCL = 13 ug/L
The maximum concentrations detected during the water year are indicated.
ND
< MCL
MCL - 2x MCL
> 2x MCL
Data Source: CA Department of Health Services
Fault Zones
Forebay Line
Barrier Injection Wells
WRD Boundary
Comments, corrections or suggestions are welcome and should be addressed to :
Water Replenishment District
12621 E. 166th Street
Cerritos, CA 90703
Phone: (562) 921-5521
Fax: (562) 921-6101
Email: tjohnson@wrd.org
Map projection: UTM Zone 11
Map date: Nov 2001
WRD
N
W
E
S
5 0 5 Miles
Garvey Reservoir
Los Angeles River
Rio Hondo
Whittier Narrows
Dominguez Channel
Torrance Lateral
Palos Verdes Reservoir
Harbor Lake
Los Angeles Harbor
Long Beach Marina
Alamitos Bay
Coyote Creek
San Gabriel River
Walnut Creek
Puente Creek
Alamitos Gap
Alamitos Barrier
Dominguez Gap Barrier
Los Angeles Narrows
Water Spreading Facility
Seal Beach National Wildlife Refuge
Long Beach Generating Station
Los Cerritos Wetlands
Los Angeles River Estuary
Los Angeles River Mouth
Los Angeles River Bike Path
Los Angeles River Greenway
Los Angeles River Trail
Los Angeles River Watershed
Los Angeles River Basin
Los Angeles River Corridor
Los Angeles River Flood Control Channel
Los Angeles River Flood Control District
Los Angeles River Flood Control Project
Los Angeles River Flood Control System
Los Angeles River Flood Control Works
Los Angeles River Flood Plain
Los Angeles River Flood Protection
Los Angeles River Flood Protection Project
Los Angeles River Flood Protection System
Los Angeles River Flood Protection Works
Los Angeles River Flood Protection Zone
Los Angeles River Flood Protection Zone 1
Los Angeles River Flood Protection Zone 2
Los Angeles River Flood Protection Zone 3
Los Angeles River Flood Protection Zone 4
Los Angeles River Flood Protection Zone 5
Los Angeles River Flood Protection Zone 6
Los Angeles River Flood Protection Zone 7
Los Angeles River Flood Protection Zone 8
Los Angeles River Flood Protection Zone 9
Los Angeles River Flood Protection Zone 10
Los Angeles River Flood Protection Zone 11
Los Angeles River Flood Protection Zone 12
Los Angeles River Flood Protection Zone 13
Los Angeles River Flood Protection Zone 14
Los Angeles River Flood Protection Zone 15
Los Angeles River Flood Protection Zone 16
Los Angeles River Flood Protection Zone 17
Los Angeles River Flood Protection Zone 18
Los Angeles River Flood Protection Zone 19
Los Angeles River Flood Protection Zone 20
Los Angeles River Flood Protection Zone 21
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Los Angeles River Flood Protection Zone 23
Los Angeles River Flood Protection Zone 24
Los Angeles River Flood Protection Zone 25
Los Angeles River Flood Protection Zone 26
Los Angeles River Flood Protection Zone 27
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Los Angeles River Flood Protection Zone 32
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Los Angeles River Flood Protection Zone 38
Los Angeles River Flood Protection Zone 39
Los Angeles River Flood Protection Zone 40
Los Angeles River Flood Protection Zone 41
Los Angeles River Flood Protection Zone 42
Los Angeles River Flood Protection Zone 43
Los Angeles River Flood Protection Zone 44
Los Angeles River Flood Protection Zone 45
Los Angeles River Flood Protection Zone 46
Los Angeles River Flood Protection Zone 47
Los Angeles River Flood Protection Zone 48
Los Angeles River Flood Protection Zone 49
Los Angeles River Flood Protection Zone 50

Figure 4.26

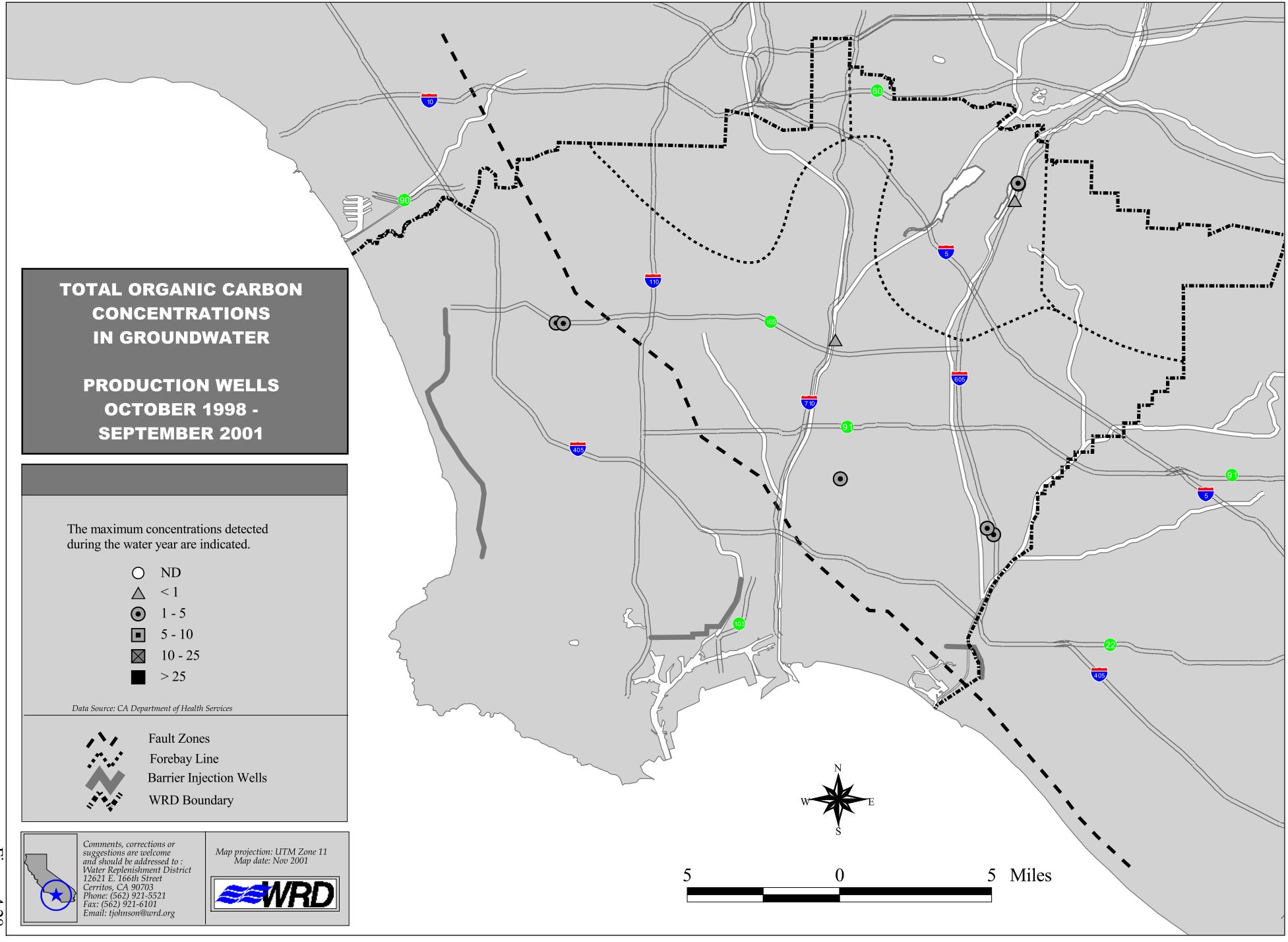
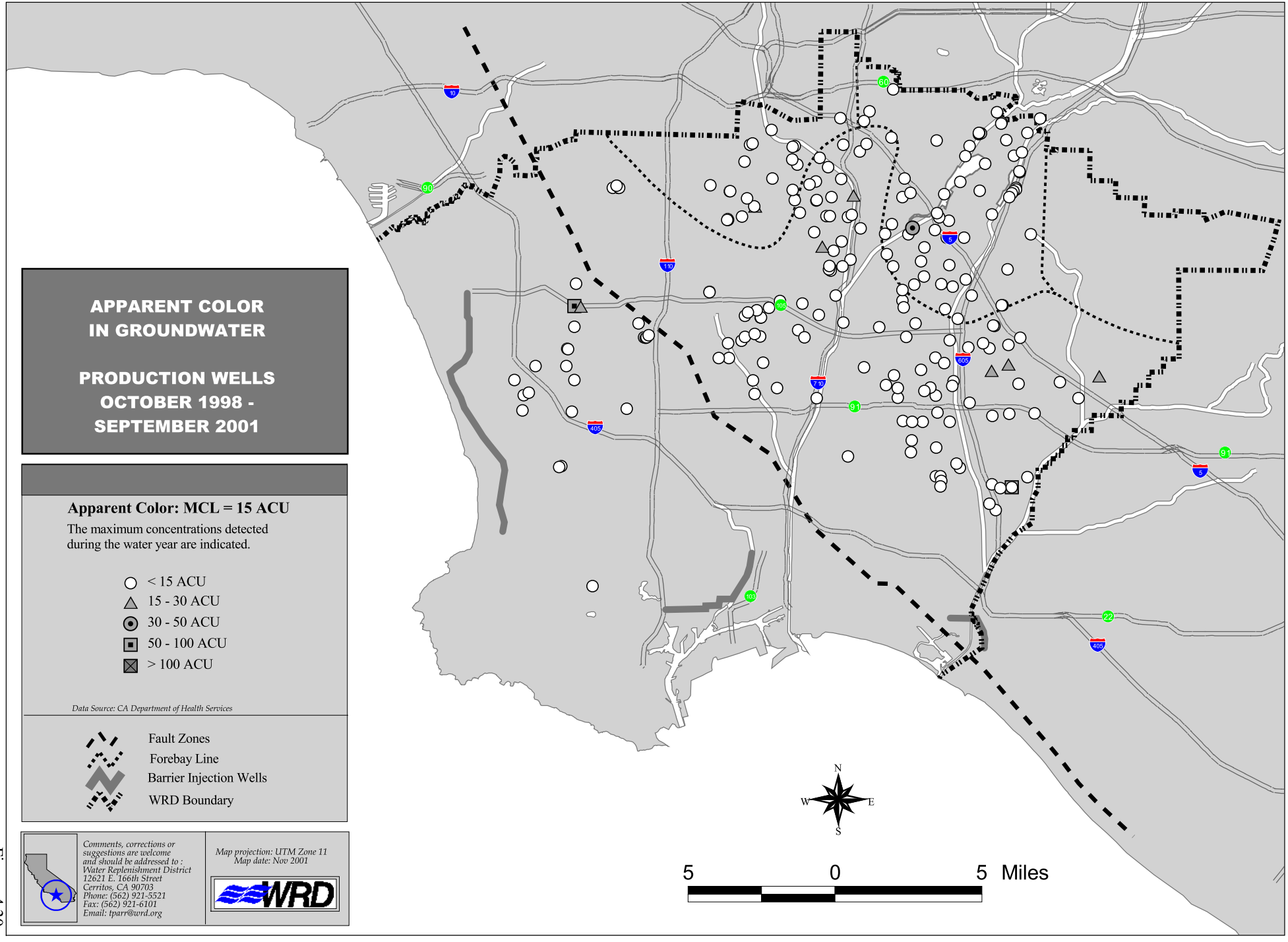

TOTAL ORGANIC CARBON CONCENTRATIONS IN GROUNDWATER
PRODUCTION WELLS OCTOBER 1998 - SEPTEMBER 2001
The maximum concentrations detected during the water year are indicated.
ND
< 1
1 - 5
5 - 10
10 - 25
> 25
Data Source: CA Department of Health Services
Fault Zones
Forebay Line
Barrier Injection Wells
WRD Boundary
Comments, corrections or suggestions are welcome and should be addressed to :
Water Replenishment District
12621 E. 166th Street
Cerritos, CA 90703
Phone: (562) 921-5521
Fax: (562) 921-6101
Email: tjohnson@wrd.org
Map projection: UTM Zone 11
Map date: Nov 2001
WRD
N
W
E
S
5 0 5 Miles

Figure 4.28


APPARENT COLOR
IN GROUNDWATER
PRODUCTION WELLS
OCTOBER 1998 -
SEPTEMBER 2001
Apparent Color: MCL = 15 ACU
The maximum concentrations detected
during the water year are indicated.
< 15 ACU
15 - 30 ACU
30 - 50 ACU
50 - 100 ACU
> 100 ACU
Data Source: CA Department of Health Services
Fault Zones
Forebay Line
Barrier Injection Wells
WRD Boundary
Comments, corrections or
suggestions are welcome
and should be addressed to :
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Cerritos, CA 90703
Phone: (562) 921-5521
Fax: (562) 921-6101
Email: tparr@wrd.org
Map projection: UTM Zone 11
Map date: Nov 2001
WRD
N
W
E
S
5
0
5 Miles

Figure 4.30