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GROUNDWATER RESOURCES CONSULTANTS, INC.

TUCSON, ARIZONA

ANNUAL GROUNDWATER MONITORING REPORT SANTA SUSANA FIELD LABORATORY, 1999

BOEING NORTH AMERICAN, INC.
ROCKETDYNE PROPULSION & POWER
VENTURA COUNTY, CALIFORNIA

VOLUME I OF V

February 28, 2000
8640M-412

• WATER SUPPLY DEVELOPMENT • GROUNDWATER CONTAMINATION INVESTIGATIONS •

2017056

The Boeing Company
Rocketdyne Propulsion & Power
6633 Canoga Avenue
P.O. Box 7922
Canoga Park, CA 91309-7922

HAND DELIVERED

February 29, 2000
In reply refer to 2000RC0677

BOEING

Jose Kou, Chief
Facilities Management Branch
California Environmental Protection Agency
Department of Toxic Substances Control
1011 N. Grandview Avenue
Glendale, CA 91201

Subject: 1999 Annual Groundwater Monitoring Report
Santa Susana Field Laboratory, Ventura County, California

Dear Mr. Kou:

Boeing North American, Inc., Rocketdyne Propulsion & Power (Rocketdyne) is submitting the "Annual Groundwater Monitoring Report, SSFL, 1999, Volumes I-V," Report #8640M-412, Groundwater Resources Consultants, Inc., dated February 28, 2000. This report describes activities on the groundwater program at the Santa Susana Field Laboratory for the calendar year 1999.

The first volume of the report serves as a stand-alone document for recipients who are primarily interested in the data for 1999. The other volumes provide the detailed historic data for the site.

In 1999, there were 218 monitoring wells, 13 facility water supply wells, and 16 offsite private sources included in the groundwater program at SSFL. All water-producing wells in the monitoring network were sampled according to the 1999 monitoring schedule and groundwater sampling and analysis plans that were transmitted to the agencies in January 1999 and June 1999, respectively. The chemical and radiological analyses of all wells are presented in this Annual Groundwater Monitoring Report as required by state and federal regulations as well as the two post-closure permits for the site.

In 1999, Rocketdyne had six active groundwater treatment systems operating at SSFL in Areas I, II, and III. These include the Alfa, Area I Road, Bravo, STL-IV, and Delta air stripping towers plus one ultraviolet (UV)/peroxidation (H_2O_2) unit. The UV/H_2O_2 unit is located along the side of the Area II Service Road. The volume of groundwater extracted for treatment by these six units during 1999 was about 133 million gallons; to date, a total of approximately 1,550.2 million gallons of groundwater have been treated. The net effect of the pumping has been to reduce the contamination levels and to deter migration offsite. In addition, a total of about 2.8 million gallons of groundwater were treated by the interim extraction and treatment activities in Area IV since 1994.

If you have any questions, please call me at (818) 586-6188.

Sincerely,

Paul D. Chang
Environmental Remediation

PDC:bc
Attachment: Distribution

Enclosure: Annual Groundwater Monitoring Report, SSFL, 1999, Report #8640M-412, by Groundwater Resources Consultants, Inc., February 28, 2000.

(SHEA-089193)

SSFL GROUNDWATER PROGRAM MAILING LIST **2000RC0677** **29 February 2000**
1999 Annual Report

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Greg Sweel Calif Environmental Protection Agency Department of Toxic Substances Control Geological Services Unit Southern California Region 576 Corporate Avenue Cypress CA 90630	L/E	First Class
Richard McJunkin, CEG Geologic Services Site Mitigation Branch Department of Toxic Substances Control 10151 Croydon Way, Suite 3 Sacramento, CA 95827-2106	L/E	First Class
Chris Bonds, RG California Environmental Protection Agency Department of Toxic Substances Control 1011 N. Grandview Avenue Glendale, CA 91201	L/E	First Class
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California Regional Water Quality Control Board 101 Centre Plaza Drive Monterey Park, CA 91754-2156 Attn: Jim Ross, Chief, Hazardous Waste Unit	L/E	First Class
U. S. Environmental Protection Agency Toxics and Waste Mgmt. Division, Mail Stop H-3-1 75 Hawthorne Street San Francisco, CA 94105 Attn: Tom Kelley, Waste Compliance Branch	L/E (I)	First Class

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GROUNDWATER RESOURCES CONSULTANTS, INC.

CONSULTING HYDROGEOLOGISTS • ENVIRONMENTAL SPECIALISTS

6200 EAST 14TH STREET
SUITE A200
TUCSON, ARIZONA 85711
PHONE (520) 326-1898

CHUCK M. DICKENS, P.G.
DAVID B. HAWKINS, P.G.
SHELDON D. CLARK
KURT J. BLUST, P.G.
ALAN S. CUDDY, P.G.

February 28, 2000

Mr. Paul Chang, RG, RHG
Boeing North American, Inc.
Rocketdyne Propulsion & Power
6633 Canoga Avenue, D/393, T/487
Canoga Park, California 91303

RE: Submittal of 1999 Annual Groundwater Monitoring Report

Dear Mr. Chang:

Submitted herewith is the 1999 Annual Groundwater Monitoring Report for the Boeing North American, Inc., Rocketdyne Propulsion & Power, Santa Susana Field Laboratory. Included in the report are descriptions of the groundwater monitoring system, groundwater reclamation system operation, and tabulated groundwater level elevations and groundwater quality data for the year 1999.

Respectfully submitted,

GROUNDWATER RESOURCES CONSULTANTS, INC.

Laura A. Davis
Project Hydrologist

Sheldon D. Clark
Principal Hydrologist

Chuck M. Dickens
Principal Hydrogeologist
California Registered Geologist No. 3647

LAD:SDC:CMD:pm

8640 GWRC

GROUNDWATER RESOURCES CONSULTANTS, INC.

CONSULTING HYDROGEOLOGISTS • ENVIRONMENTAL SPECIALISTS

6200 EAST 14TH STREET
SUITE A200
TUCSON, ARIZONA 85711
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ROCKETDYNE PROPULSION & POWER
VENTURA COUNTY, CALIFORNIA

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SANTA SUSANA FIELD LABORATORY, 1999
BOEING NORTH AMERICAN, INC.
ROCKETDYNE PROPULSION & POWER
VENTURA COUNTY, CALIFORNIA

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ANNUAL GROUNDWATER MONITORING REPORT
SANTA SUSANA FIELD LABORATORY, 1999
BOEING NORTH AMERICAN, INC.
ROCKETDYNE PROPULSION & POWER
VENTURA COUNTY, CALIFORNIA

INTRODUCTION

This report has been prepared to summarize the results of groundwater monitoring, including groundwater extraction/treatment activities, conducted during the period of January through December 1999 at the Boeing North American, Inc., Rocketdyne Propulsion & Power Santa Susana Field Laboratory (SSFL) Facility located in Ventura County, California (**Figure 1**). Monitoring activities conducted during the year included the measurement of static water levels; collection and laboratory analysis of groundwater samples from Shallow Zone wells and Chatsworth Formation wells; measurement of groundwater extraction/treatment system pumping rates and volumes; and the collection and laboratory analysis of water samples collected from treatment system influent and effluent.

SCOPE OF REPORT

The scope of this annual report includes the following:

1) A tabulated historic summary of water level measurements;

2) A tabulated historic summary of the results of laboratory analyses of water samples;

3) A tabulated historic summary of groundwater extraction rates and volumes;

4) Water level and water quality hydrographs, including cumulative groundwater pumpage graphs for extraction wells;

5) Water level elevation contour maps;

6) Current contaminant concentration maps; and

7) Groundwater pumpage maps.

FACILITY DESCRIPTION AND HISTORY

The SSFL Facility is located in the Simi Hills of eastern Ventura County, west of Chatsworth, California (**Figure 1**). The Facility occupies approximately 2,850 acres. There is approximately 700 feet of topographic relief over the entire Facility.

The Facility has been subdivided into administrative areas: Area I, Area II, Area III, Area IV and undeveloped land (**Figure 2**). Areas I and III and undeveloped land are owned and operated by Boeing North American, Inc., Rocketdyne Propulsion & Power (Rocketdyne). Area II is owned by the U.S. National Aeronautics and Space Administration (NASA) and operated by Rocketdyne. The facilities and equipment in Area IV belong to the U.S. Department of Energy (DOE). They reside on land that DOE leases from Boeing North American, Inc., the current owner and operator.

The Facility has been operated as a rocket engine testing facility since 1948. Seven major rocket engine test areas, including Bowl, Canyon, STL-IV, Alfa, Bravo, Coca, and Delta, were in operation simultaneously in the late 1950's and early 1960's (**Figure 2**). Some of these test areas were phased out of operation in the late 1960's and 1970's. The Coca area was shut down in May 1988. Experimental, small-scale rocket engine testing has taken place at the area now designated APTF (**Figure 2**). The Alfa, Bravo, STL-IV and APTF test areas are currently in operation.

Rocketdyne Propulsion & Power and its predecessor organizations have conducted programs for the U.S. Department of Energy (formerly the Atomic Energy Commission and Energy Research and Development Agency) since the early 1950's. The programs have included engineering, research and development, and manufacturing functions primarily concerned with nuclear reactor development and applications. During the period from 1950 through 1973, the Rocketdyne division of Boeing North American, Inc. and its predecessor organizations conducted research and development on many nuclear reactor subsystems. In 1966, the Energy Technology Engineering Center (ETEC) was chartered to provide engineering development and testing of components for the Liquid Metal Fast Breeder Reactor Program. ETEC primarily conducts programs for DOE and, with DOE's approval, for other organizations (DOE, 1989). Currently, Boeing North American, Inc. is primarily conducting environmental restoration programs for DOE.

CHRONOLOGY OF MONITOR WELL CONSTRUCTION ACTIVITIES

The first wells constructed at the Facility were the deep water supply (WS) wells drilled during the early to mid-1950's. These initial wells (WS-1 through WS-SP) were constructed to satisfy the Facility industrial water demands. Though 18 water supply wells were constructed, four of the wells (WS-5, WS-6, WS-12, and WS-13) were the principal high-yield wells. Currently, wells WS-5, WS-6, WS-9 and WS-9A are operated as part of the Facility reclamation system. Wells WS-4A, WS-7, WS-8, WS-9B, WS-11, WS-12, WS-13, WS-14 and WS-SP have been incorporated into the groundwater monitoring programs. Wells WS-1, WS-2, WS-3, WS-4 and WS-10 have been abandoned or destroyed.

After the detection of TCE in water samples collected from water supply wells at the Facility in the early 1980's, Rocketdyne contracted consultants to investigate site hydrogeologic conditions. Regular monitoring of groundwater conditions began in 1984. Subsequent groundwater investigations at the Facility have indicated that the groundwater underlying portions of the Facility contains VOCs in excess of California Department of Health Services Maximum Contaminant Levels (DOHS, 1998 and 1999).

Field investigations, including well construction, water sampling, photogeologic assessment and well testing, commenced in 1984 and have continued through early 1999. From 1984 through 1992, 147 monitor wells were constructed at the Facility to evaluate groundwater conditions. During 1993 and 1994, 55 monitor wells were completed at or adjacent to the Facility as part of the site characterization. These included deeper monitor wells at 12 cluster well sites. At these sites, multiple wells were completed to variable depths to evaluate vertical variations in groundwater quality and hydrostatic pressure. One monitor well was constructed in 1995 as part of the work overseen by the Ventura County Environmental Health Department at a former underground storage tank location (A.E. Schmidt Environmental, Inc., 1995). During 1997, 11 monitor wells were added, including four additional wells to assess the vertical variations in groundwater quality and hydrostatic pressure (cluster wells). Two "B" zone wells were added to the monitoring network in 1998 (RD-38B and RD-46B). "B" zone well RD-35B and "A" zone well RD-74 were constructed during the first quarter of 1999.

Four wells were added to the regular groundwater monitoring programs in 1999. These wells were designated RD-35B, RD-38B, RD-46B, and RD-74 (GWRC, 1999a). Wells RD-35B and RD-46B were formerly equipped with Solinst Multi-Level sampling equipment as part of an on-going assessment of the vertical distribution of VOCs. These wells were converted to "3"-zone completions in early 1999. Monitor well RD-38B is located off-site near the SSFL main gate and was constructed to monitor the uppermost saturated bedrock. Monitor well RD-74 is located in Area IV and was constructed as part of the assessment of subsurface conditions in the vicinity of the Building 056 (B/056) landfill.

PRIMARY CONTAMINANTS AND SOURCES

Trichloroethylene (TCE) was discovered by Rocketdyne in Facility water supply wells in the early 1980's.

The primary contaminants of concern at the Facility are TCE and cis-1,2-dichloroethylene (cis-1,2-DCE). TCE was used extensively as an engine degreaser in conjunction with rocket engine testing. Prior to mid-1989, it was believed that the "trans" isomer of 1,2-dichloroethylene (1,2-DCE) was the most prevalent 1,2-DCE isomer present at the Facility. Though the historic data prior to 1992 do not reliably distinguish between the two isomers, the more recent data present both cis-1,2-DCE and trans-1,2-DCE results.

DESCRIPTION OF MONITORING SYSTEM

Groundwater conditions at the Facility are evaluated based on data compiled from a total of 247 wells. These wells include 218 monitor wells constructed at or adjacent to the Facility, 13 Facility water supply wells and 16 private off-site wells and springs. The monitor wells include 92 Shallow Zone monitor wells and 126 Chatsworth Formation monitor wells. Fifty-four of the 218 monitor wells were installed at 21 cluster sites. At these sites, multiple wells were completed to variable depths to evaluate vertical variations in groundwater quality and hydraulic head. **Figure 2** presents the locations of wells and springs.

DESCRIPTION OF GROUNDWATER RECLAMATION SYSTEM

The Groundwater Reclamation System (GRS) currently consists of 18 Shallow Zone extraction wells, 12 Chatsworth Formation extraction wells, the ECL French-drain, the ECL sump and six treatment systems. During 1999, most of the extraction wells were operated at least briefly, and six of eight treatment systems were operated continuously. Most of the extraction/treatment systems (ETS) began continuous operation at the end of 1989. Continuous operation of the WS-5 area and RD-9 area ETS began in January 1992 and May 1993, respectively. Rocketdyne received an operating permit from Ventura County and commenced operation of the STL-IV ETS in April 1994.

The current GRS is operated to maintain gradient control in select areas of the Facility and thereby reduce the potential for degraded groundwater in the Chatsworth Formation from moving off-site, and to extract and treat degraded groundwater from target areas on-site. Six of the eight permitted treatment systems are dual packed tower aeration units with vapor phase carbon treatment. Two systems are UV/H_2O_2 systems. One packed tower system (Canyon) and one UV/H_2O_2 system (RD-9 UV Batch) were inactive in 1999. Extraction wells influent to these systems were re-routed to the Area I Road system and the Bravo system, respectively. Details of the GRS operation and components are presented in **Appendix D**. The treatment capacity of the eight treatment systems is approximately 1,100 gallons per minute (gpm). The operational pumpage of the wellfield is 8 million gallons per month to maintain gradient control while minimizing downward contaminant migration.

Monitor wells constructed northeast of Area I have confirmed that degraded groundwater has migrated approximately 1,000 feet off-site and northeast of the Facility property boundary.

HYDROGEOLOGIC CONDITIONS

The geology of the area and the occurrence of groundwater at the Facility are discussed in this section.

GEOLOGIC CONDITIONS

The Facility is located in the Simi Hills of eastern Ventura County, California. The Simi Hills are in the northern part of the Transverse Range geomorphic province and separate the Simi Valley from the western part of the San Fernando Valley (**Figure 1**). The Simi Valley is a broad east/west trending synclinal depression and the Simi Hills form the southern flank of the syncline.

Geologic Units

The Simi Hills are composed primarily of exposures of the Upper Cretaceous Chatsworth Formation. This formation is a marine turbidite sequence of sandstone with interbedded siltstone/mudstone and minor conglomeratic lenses. The exposure of the Chatsworth Formation in the Simi Hills is characterized by massive, cliff-forming sandstone beds.

The principal geologic units at the Facility are the Chatsworth Formation and the shallow alluvium which overlies the Chatsworth Formation in some parts of the Facility (**Figure 3**). The Martinez Formation is exposed in the southwestern portion of the Facility and northwest of the Facility. The Topanga Formation is exposed in the extreme southeastern portion of the southern undeveloped land (**Figure 3**).

Chatsworth Formation

The middle member of the Chatsworth Formation underlies most of the Facility. It is about 5,080 feet thick and composed primarily of massive bedded sandstone with interbeds of siltstone, shale or claystone (Sage, 1971). The sandstone portion of the Formation is primarily an arkoric sandstone with carbonate cement.

The lower member of the Chatsworth Formation is exposed in the extreme southeastern corner of the Facility, near Dayton Canyon, and is composed of interbedded brown shale and light brown calcareous sandstone. The upper member of

the Chatsworth Formation consists of approximately 800 feet of arkoric sandstone with light-bluish gray to brown shale and pebble conglomerate. It contains more shale interbeds compared to the middle unit and is therefore less resistant to erosion. To the northwest of the Facility, the Chatsworth Formation is overlain by the Paleocene Martinez Formation.

Martinez and Topanga Formations

The Tertiary Martinez Formation is exposed to the north and northwest of the Facility and in the portion of the Facility south of Burro Flats. The Martinez Formation is younger than the Chatsworth Formation and is composed of bedded marine sandstones and shales with a basal conglomerate. The Martinez Formation to the north of the Facility dips to the northwest at approximately 30 to 35 degrees. The Martinez Formation weathers to form slopes.

The Topanga Formation of Tertiary age is exposed to the southeast of the Facility (**Figure 3**). It is composed primarily of bedded marine sandstone with a basal conglomerate. The Topanga Formation is younger than the Martinez and Chatsworth Formations.

Alluvium

The Chatsworth Formation and the Martinez Formation are overlain by a discontinuous layer of thin Quaternary alluvium, most notably in Burro Flats and along ephemeral drainages. The Quaternary alluvium consists of mixtures of unconsolidated sand, silt, and clay. Drill hole data indicate that the alluvium in some areas may be as thick as 20 feet. The alluvium is underlain in some places by a zone of Chatsworth Formation which has been weathered in place.

Zones of weakness in the Chatsworth Formation are formed by fractures or faults, or by easily eroded siltstone/claystone outcrops. In some places these zones of weakness have been eroded to form canyons which are part of the surface drainage system. Deposits of alluvium are thickest along these drainages.

Structure

At the Facility, Chatsworth Formation beds dip to the northwest at approximately 20 to 30 degrees. Well developed fractures or joint patterns are evident in the Chatsworth Formation outcrops in the Simi Hills. There are several major faults in the area which offset Paleocene and Upper Cretaceous rock units (Sage, 1971; Wentworth and others, 1973). One of these faults, the Burro Flats Fault, trends northwest-southeast and passes through the southwestern portion of the Facility (**Figure 3**). The southwestern block of this fault appears to be down-thrown relative to the northeastern block. It is not known if there has been strike-slip movement along this fault.

There appears to have been movement along a Shear Zone which trends northeast-southwest through the Facility (Sage, 1971). The Shear Zone is characterized by contorted bedding and breccia. The direction of movement along this Shear Zone is not known (**Figure 3**).

Fractures with no detectable movement, referred to as joints, are common at the Facility. They are very prominently displayed in outcrops of the Chatsworth Formation. Fracture patterns at the Facility have been mapped using photogeologic and field methods. Predominant fracture trends at the Facility are approximately north 45 degrees east and north 70 degrees west to east-west (**Figure 3**).

Large fractures, up to a mile in length, are present and are readily apparent in aerial photos. These features exert control on the topography. Often they are evident as linear drainages or valleys and are commonly highly eroded and vegetation filled. Due to this surface weathering, it is difficult to measure dip angles on the larger fractures. Three main strike directions are present: northwest-southeast; northeast-southwest; and east-west. A subsidiary set of joints trending approximately north-south is also apparent. Measurements of dip angles indicate that the northeast-southwest trending joints generally dip to the southeast and the northwest-southeast trending joints tend to dip to the southwest. The joint systems often tend to exhibit high angle dips, some approaching near vertical.

Significant fracture systems in terms of groundwater flow at the Facility include four distinct zones which intersect forming a rhombic pattern. These fracture zones include the Burro Flats Fault which dissects the southern portion of the Facility in a general east-west direction, and an east-west fracture zone dissecting the Facility along

the north boundary, the Shear Zone located along the Area I Road which trends northeast-southwest, and a zone of fractures parallel to and approximately 2,000 to 3,000 feet west of the Shear Zone (**Figure 3**).

GROUNDWATER SYSTEMS

There are two groundwater systems at the Facility: 1) a shallow groundwater system (Shallow Zone) in the surficial alluvium and the underlying zones of weathered sandstone and siltstone/claystone, and isolated shallow fracture systems; and 2) a deeper regional groundwater system in the fractured Chatsworth Formation. In some parts of the Facility the two systems appear to be hydraulically connected.

Shallow Zone

Ninety-two shallow wells have been constructed to investigate the hydrogeologic conditions in the Shallow Zone. Construction details for Shallow Zone wells are presented in **Table 1**. The locations of these wells are shown on **Figure 2**.

The Shallow Zone system is characterized as a thin layer of Quaternary alluvium distributed primarily in the Burro Flats area and along ephemeral drainages (**Figure 3**). The alluvium consists of unconsolidated sand, silt, and clay materials which have been eroded primarily from the surrounding Chatsworth and Martinez Formations. Also included in the Shallow Zone system is the underlying thin, weathered portion of the Chatsworth Formation.

The Shallow Zone is discontinuous in the area of the Facility. It may be saturated along ephemeral drainages and in the southern part of Burro Flats. Some portions of the Shallow Zone are saturated only during and immediately following the wet season.

Depth to groundwater in the Shallow Zone has ranged from land surface to over 30 feet. Groundwater in the Shallow Zone occurs under unconfined conditions. The saturated thickness of the Shallow Zone generally ranges from less than one foot to as much as 25 feet. The water table surface of the Shallow Zone is, in general, a subdued expression of the topographic surface. Water in the Shallow Zone may move laterally to an area of surface discharge or migrate downward into the underlying Chatsworth Formation.

Chatsworth Formation

Hydrogeologic conditions in the Chatsworth Formation have been evaluated based on data collected from 126 Chatsworth monitor wells, 13 water supply wells and 16 off-site private wells and springs which yield groundwater from the Chatsworth Formation groundwater system. Well construction details are presented in **Table 1**. The locations of these wells are shown on **Figure 2**.

The Chatsworth Formation is the principal water-bearing system at the Facility. It is predominately composed of well-consolidated, massive, fractured sandstone with interbeds of siltstone and claystone. Fractures occurring within the Chatsworth Formation may be associated with bedding planes, jointing, and/or faulting.

The permeability of the Chatsworth Formation is very low except along open fractures. Permeabilities determined from cores collected in 1991 ranged from only 10^{-6} to 10^{-8} centimeters per second for the coarsest grained sandstone cores (GWRC, 1992c). Finer grained cores exhibited permeabilities of 10^{-8} to 10^{-9} cm/sec. Wells constructed along the major fracture zones at the Facility produce greater volumes of groundwater relative to wells constructed in unfractured areas. Wells with the highest yields are located along the four fracture zones which intersect to form a rhombic pattern in the central to north central portion of the Facility (**Figure 3**). The highest yielding water supply wells, including WS-5, WS-6, WS-12, and WS-13, are located along these fracture zones (**Figure 3**).

Groundwater within fractures of the Chatsworth Formation occurs under both confined and unconfined conditions. The saturated thickness of the Chatsworth Formation groundwater system is not known. During November 1999, the static depth to groundwater in wells completed in the Chatsworth Formation groundwater system ranged from approximately land surface to about 567 feet in well RD-47, which is located in Area I between Alfa and the Area I Road (**Figure 2**).

PRECIPITATION AND SURFACE DRAINAGE

Precipitation is measured at the Ventura County Rain Gauge Number 249 which has been located in the northeastern portion of the SSFL Facility since 1987. This weather station, originally located in Burro Flats, was operated from 1959 to 1987 by a Rocketdyne meteorologist in order to collect data for on-site water management and rocket engine test scheduling. Since 1987, data have been collected from the weather station by Rocketdyne project engineers. Based on precipitation data collected during the operating period of the station, the mean annual precipitation at the Facility is approximately 18.96 inches. In general, the majority of precipitation at the Facility occurs during the months of January through March.

The annual precipitation measured at the Facility during the water year (October through September) ending in 1999 was 8.84 inches (**Table 2**). The measured precipitation during 1999 was roughly 53 percent below the average annual precipitation. The impact of precipitation on groundwater level elevations at the Facility is discussed in the *Groundwater Levels and Movement* section of this report.

The majority of the Facility surface area contributes runoff to the south, ultimately into Bell Canyon (**Figure 1**). Approximately one-fifth of the surface area of the Facility drains to the east, ultimately into Dayton Canyon. A small portion of the surface area of the Facility also drains to the east discharging to Woolsey Canyon. The area along the northern border drains to Meier Canyon. Approximate surface drainage divides are shown on **Figure 1**.

HISTORIC USE OF GROUNDWATER

EARLY WELLFIELD

Seventeen water wells were constructed by Rocketdyne in the early to mid-1950's to satisfy industrial water demands at the Facility. These wells are designated as WS-1, WS-2, WS-3, WS-4, WS-4A, WS-5, WS-6, WS-7, WS-8, WS-9, WS-9A, WS-9B, WS-10, WS-11, WS-12, WS-13, and WS-14 (**Figure 2**). Total depths of these wells range from 210 to 2,304 feet.

Historic groundwater withdrawals at the Facility have caused significant water level declines at wells. Groundwater withdrawals commenced in October 1948 at well WS-3. A summary of available historic well pumpage data from water supply wells is presented in **Table 3**.

Total groundwater extractions through 1957 exceeded 440 million gallons (1,350 acre-feet). Water level declines resulting from the pumpage through 1957 are presented in **Table 4**. As indicated in **Table 4**, water levels at many of the wells declined in excess of 170 feet. As a result of these water level declines, several existing wells were deepened and recycling of industrial water was implemented. As pumpage volumes continued to increase with time, water usage requirements also increased and Rocketdyne was required to import water from the Calleguas Municipal Water District commencing in 1964. Imported water was needed to supplement groundwater extractions in order to satisfy water demands at the Facility.

Groundwater extractions were greatly decreased with the commencement of water importations to the Facility from the Calleguas Municipal Water District in 1964. Facility water demands were almost entirely met (in excess of 95%) by imported water through the early 1970's. During the late 1970's through 1986, water supply at the Facility was composed of about 60 percent well extractions and 40 percent imported water, on an annual average basis. Since at least the early 1980's until operation of the Groundwater Reclamation System (GRS) commenced in 1987, groundwater extractions were limited exclusively to the northeastern quarter of the Facility. Since commencement of groundwater reclamation operations, groundwater has also been extracted from well WS-9A located in the southwestern quarter of Area II (**Figure 2**).

From 1984 to 1987, approximately 60 percent of the water used on-site was from well extractions and the remaining 40 percent was imported. The volumes of water imported to the Facility per year, since commencement of groundwater reclamation extraction operations in 1987, as well as the volume of groundwater pumped at SSFL, are as follows:

Year	GRS Extraction (gal X 10^6)	Percent of Total Water Use	Water Imported by Calleguas (gal X 10^6)	Percent of Total Water Use	Total Water Use (gal x 10^6)
1987	50.6	77.1	15	22.9	65.6
1988	66.8	57.7	49	42.3	115.8
1989	121.8	62.2	74	37.8	195.8
1990	159.1	93.5	11	6.5	170.1
1991	148.2	86.6	23	13.4	171.2
1992	143.2	74.1	50	25.9	193.2
1993	137.6	67.6	66	32.4	203.6
1994	139.5	69.6	60.9	30.4	200.4
1995	130.4	74.9	43.7	25.1	174.1
1996	78.7	75.6	25.4	24.4	104.1
1997	105.8	70.7	43.9	29.3	149.7
1998	134.9	61.8	83.4	38.2	218.3
1999	133.3	82.0	29.2	18.0	162.5

The percentages of imported water relative to the total volume of water for the years of 1987 through 1999 range from 6.5 percent in 1990 to 42.3 percent in 1988.

EARLY WATER LEVEL CHANGES

Complete data for most WS wells are available for the 1950's and the early 1960's, and from 1984 to the present. The earliest static water level elevations measured at the water supply wells are summarized in **Table 4**.

Historic groundwater withdrawals from the WS wells have caused significant water level declines. By the late 1950's, water levels in most WS wells had declined in excess of 100 feet. The impact of groundwater extractions on water level elevations and directions of groundwater movement from as early as 1957 and 1958 are illustrated

on **Figures 4** and **5**. As indicated on **Figure 4**, most of the groundwater withdrawal occurred in the northeast quarter of the Facility. Consequently, as early as 1957, well pumpage was having a significant impact, inducing groundwater to migrate toward the northeastern quarter of the Facility where most of the water level declines were occurring. Minor groundwater pumpage was also occurring in the western half of the Facility, primarily at well WS-9A.

The practice of large scale groundwater withdrawal in the northeastern quarter of the Facility has continued from the 1950's to the present time. The primary reason for this is that the WS wells in this area (WS-5, WS-6, WS-4A, and WS-12) have been the best yielding wells. These wells appear to be located along major fracture systems.

Although well pumpage and water level information are only sporadic from the early 1960's to the early 1980's, available data suggest that groundwater extraction rates may have peaked by the early to mid-1960's. Consequently, it is probable that the historic low water levels at the Facility water supply wells may have occurred in the mid-1960's.

Present groundwater levels are well below early 1950 levels, except in the extreme western portion of the Facility. Water levels at the end of 1999 in wells WS-4A, WS-5, WS-6, and WS-9, located in the northeastern, northern, and central portion of the Facility, were more than 165 feet lower than the pre-pumping early 1950 levels (**Table 4** and **Figure 5**). Water levels measured in wells WS-7 and WS-11 have increased from early 1950 levels by more than 46 and 21 feet, respectively, primarily due to a lack of historic pumping in this area in conjunction with the import of water into this area.

Early Groundwater Movement

Data indicate that as early as the mid-1950's, groundwater extraction from the Facility water supply wells had a significant impact on controlling the direction of groundwater movement in the Chatsworth Formation groundwater system. The predominant influence on groundwater movement has been the large pumping depression that has been maintained in the eastern or east-central portion of the Facility (**Figures 4, 5, 6** and **7**).

In addition to the pumping depression that has been maintained in the northeastern quarter of the Facility, a smaller pumping depression centered around water supply well WS-9A has been periodically maintained in the southwestern quarter of the Facility. Based on available pumpage data, it is probable that this water level depression was present during the late 1950's through the mid-1960's (**Figures 4** and **5**).

In addition to horizontal groundwater movement, vertical movement of groundwater flow has also undoubtedly occurred through fractures in the Chatsworth Formation. Water supply wells which have had a significant impact on water levels and groundwater movement at the Facility are as deep as 2,304 feet (well WS-5). Reductions in hydraulic head in fracture systems at depth due to historic extractions from the deeper water supply wells would likely induce vertical groundwater movement.

The significance of the historical pumping depressions is the probable limited movement of degraded groundwater beneath much of the Facility, thus confining the extent of known groundwater contamination to beneath the Facility except in the off-site area near the main Facility entrance in Area I.

SUMMARY OF GROUNDWATER RECLAMATION SYSTEM OPERATION

CONCEPTUAL DESIGN OF SYSTEM

Conceptual design of the site-wide groundwater reclamation system (GRS) was developed in 1987. The design of the GRS was based on the primary goals of preventing degraded groundwater from migrating beyond the Facility boundaries and extracting and treating degraded groundwater present beneath the Facility. The conceptual design of the GRS includes extraction from both the Shallow Zone and the Chatsworth Formation groundwater systems. Satisfying the objectives of the GRS requires developing and maintaining groundwater level depressions at the Facility in order to control directions of groundwater flow and to extract degraded groundwater from "target areas." Target areas are considered to be portions of the Facility where the concentrations of VOCs exceed 100 micrograms per liter (μg/l) in groundwater.

The prevention of the off-site migration of degraded groundwater will be accomplished by means of migration management through groundwater gradient control. Because of the discontinuous nature of the Shallow Zone, it is believed that there is limited risk of off-site migration of degraded groundwater in the thin discontinuous cover of alluvium which overlies the Chatsworth Formation along major drainages and in the Burro Flats area. Therefore, the focus of groundwater gradient control is groundwater pumpage from wells completed in the Chatsworth Formation. However, extraction of contaminated Shallow Zone groundwater is considered to be an integral component of the groundwater reclamation strategy.

Additional hydrogeologic studies conducted in the 1990's revealed off-site migration of degraded groundwater in isolated areas along the north-northwest property boundary and along the extreme northeast portion of the Facility (GWRC, 1995c). The off-site areas to the north-northwest were purchased by Boeing North American from the Brandeis-Bardin Institute in 1998. Additional hydrogeologic assessment conducted during 1997 provided data required for designing the expansion of the GRS into these areas. Pilot groundwater extraction studies have been completed at several of the isolated areas along the north-northwest border of Area IV (GWRC, 1995b and 1996a), and interim groundwater extraction has been implemented at two sites in Area IV from 1996 to the present.

The second goal of the groundwater remediation program is to pump and treat degraded groundwater at the Facility. This includes both groundwater extraction for gradient control and groundwater extraction for removal of contaminants at target areas. Target area extraction will generally be lower volume and higher concentration extraction than extraction for gradient control. The extraction of degraded groundwater from target areas should restrict the continued migration of contaminants through the groundwater system.

In some cases, the locations of former RCRA impoundments are included within target areas. In most cases, the groundwater contamination at these target areas also occurs upgradient of the sites of the former impoundments and appears not to have resulted from release of contaminants from the impoundments. The most likely sources for groundwater contamination at these sites were activities such as engine testing and component degreasing which took place upgradient of the impoundments.

DESCRIPTION OF CURRENT GROUNDWATER RECLAMATION SYSTEM

There are presently three categories of groundwater extraction/treatment systems used at the Facility. The categories of systems include the following: 1) permanently constructed and permitted treatment units and associated wells which have been in continuous usage commencing in 1987. Collectively these site-wide systems are referred to as the *Groundwater Reclamation System* (GRS) and they include the permitted, permanently installed extraction treatment systems (ETS); 2) interim extraction/treatment systems (Interim ETS) which are comprised of temporary granular activated carbon systems which have been in operation since mid-1996. These systems are intended to provide more detailed hydrogeologic data which will be used in evaluating long-term groundwater reclamation strategies; and 3) construction dewatering systems which are comprised of temporary granular activated carbon systems which generally are operated for variable periods. These systems are intended to develop more detailed hydrogeologic data which will be used to evaluate long-term reclamation strategies at select groundwater hotspots.

The GRS presently consists of 30 extraction wells, one French-drain, one sump and eight permitted treatment systems (**Table 6** and **Figure 8**). However, two of the treatment systems were taken out of operation near the end of 1998, and the extraction wells associated with them were re-directed to other nearby treatment systems. Twelve of the reclamation wells extract degraded groundwater from the Chatsworth

Formation and eighteen extract degraded groundwater from the Shallow Zone. Expansion of the GRS will be required following the completion of the on-going site characterization program. Five of the active treatment systems are dual packed tower aeration (PTA) units with vapor phase carbon treatment. The remaining system is an ultraviolet light/hydrogen peroxide (UV/H_2O_2) unit. These systems have been designed to reduce concentrations of organic constituents to below California Department of Health Services standards (DOHS, 1998). The total groundwater treatment capacity at the Facility is about 945 gpm. Monitoring and maintenance of the GRS, Interim ETS systems and the construction dewatering is performed by EnviroSolve Corporation, Inc., of Agoura Hills, California (EnviroSolve Corporation, 2000).

The following sections of this report present a summary of the operating status of the GRS, Interim ETS, and the construction dewatering during the current reporting year of 1999 and operational data for the period 1987 through 1999. Additional details on components of the GRS and specific operational data are presented in **Appendix D.**

STATUS OF GRS OPERATION

Six of the eight permitted treatment systems (ETS) were operated for most of the year during 1999, including Alfa, Area I Road, Bravo, Delta, WS-5 Area, and STL-IV (**Figure 8**). Both the RD-9 Area and Canyon ETS were taken out of operation in 1998. Shallow Zone wells ES-21 and ES-22 and Chatsworth Formation well RD-9, which previously pumped to the RD-9 Area UV/H_2O_2 system, were plumbed into the Bravo treatment system. Chatsworth Formation well RD-1, which previously pumped into the Canyon treatment system, was plumbed into the Area I Road treatment system. Most of the thirty constructed extraction wells were routinely operated, providing groundwater to these treatment systems. Extraction wells associated with the GRS are listed in **Table 6**.

For each ETS, the volume of groundwater treated during 1999 is summarized below. **Appendix D** lists monthly extraction volumes for each well. Annual extraction volumes for each well through 1999 are presented in **Table 7**.

TREATED GROUNDWATER - 1999			
ETS	**Wells**		**Volume (gallons x 1,000)**
Alfa	Chatsworth Formation:	WS-6	**22,540.9**
Bravo	Shallow Zone:	ES-21, ES-22	310.3
	Chatsworth Formation:	RD-4, RD-9, WS-9	7,074.2
		TOTAL	**7,384.5**
Delta	Chatsworth Formation:	WS-9A, HAR-7	**55,494.1**
Area I Road	Shallow Zone:	ES-1, ES-3, ES-4, ES-5, ES-6, ES-7	360.9
	Chatsworth Formation:	RD-1, RD-2	13,031.1
		TOTAL	**13,392.0**
WS-5 Area	Shallow Zone:	ES-11, HAR-4	53.2
	Chatsworth Formation:	WS-5, HAR-16	32,889.3
		TOTAL	**32,942.5**
STL-IV	Shallow Zone:	ES-14, ES-17, ES-23, ES-24, ES-26, ES-27, ES-30, ES-32	782.0
	Chatsworth Formation:	HAR-17, HAR-18	536.4
	ECL French-drain		67.0
	ECL Sump		195.9
		TOTAL	**1,581.3**

The total volume of groundwater extracted from the GRS during 1999 was 133,335,300 gallons.

STATUS OF INTERIM EXTRACTION SYSTEMS

RMHF Area - Interim ETS

Extraction well RD-63 was pumped throughout 1999 as part of an interim groundwater remediation program. Approximately 497,500 gallons of degraded groundwater were pumped and treated at the RMHF Area Interim ETS in 1999. A total of 2.72 million gallons have been extracted since initialization of the program in 1994 (**Table 8**). Degraded groundwater was treated for removal of VOCs by activated carbon adsorption and released to the #002 NPDES drainage.

FSDF Area - Interim ETS

Chatsworth Formation extraction well RD-21 and Shallow Zone extraction well RS-54 were pumped nearly continuously in 1999 as part of an interim groundwater remediation program. Well RD-21 was inoperable from late November 1998 through the end of January 1999, due to the apparent theft of the solar array which provides power to the pump and motor. Pumping occurred on an intermittent basis due to the low groundwater yields of these wells. Wells RD-21 and RS-54 combined produce groundwater at a rate of about 135 to 150 gallons per day. A total of about 31,100 gallons was extracted during 1999 (**Table 8**). Degraded groundwater was treated for removal of VOCs by activated carbon adsorption and released to the #002 NPDES drainage.

B/059 Construction De-Watering System

Groundwater has been pumped from well RD-24 and S-2 since 1995 in order to reduce seepage into the sub-basement of building B/059. These two sources have historically operated at a combined pumping rate of approximately 2 gpm. Approximately 490,000 gallons were pumped from well RD-24 and approximately 900 gallons were pumped from the S-2 sump in 1999 (**Table 8**).

Commencing in March 1999, the B/056 pit was pumped to eliminate potential recharge from the pit to the vicinity of B/059. Dewatering of the pit was completed in May 1999. A total of 1.27 million gallons of water was pumped from the B/056 pit (EnviroSolve, 2000). No water has been pumped from the pit since May 1999.

Chatsworth Formation wells RD-25 and RD-28 were activated as pumping wells in July 1999. These wells have been pumped on a regular basis from July through December 1999. Wells RD-25 and RD-28 pumped 87,100 and 73,500 gallons, respectively, during 1999. All degraded groundwater pumped as part of the B/059 dewatering program is treated for removal of VOCs by activated carbon adsorption and released to the #002 NPDES drainage.

GROUNDWATER EXTRACTION

Groundwater pumped and treated by the GRS (permitted ETS systems) is captured by Facility reservoirs before being released through the NPDES permitted

drainage system. All but one Chatsworth Formation extraction well and one Shallow Zone extraction well which comprise the GRS were operated at least briefly during 1999. Chatsworth Formation extraction well HAR-16 and Shallow Zone well ES-4 were not operated in 1999. Approximately 133 million gallons of groundwater were extracted from the GRS system in 1999 (**Table 7**). Of that amount, approximately 1.77 million gallons were extracted from Shallow Zone wells (primarily Area I Road ES wells and the ECL Sump and French-drain) while the remainder, 131.6 million gallons, was extracted from Chatsworth Formation wells. Total groundwater pumpage from the GRS (permitted ETS systems), including well WS-5, was 1,550.2 million gallons during the period of 1987 through 1999.

Groundwater pumped and treated by the Interim ETS systems is released to the #002 NPDES discharge drainage. A total of 529,000 gallons was extracted and treated at Interim ETS systems in 1999 (**Table 8**). Of that total, approximately 94% was pumped from well RD-63 (**Table 8**). The total volume of groundwater extracted and treated at Interim ETS systems since 1994 is approximately 2.8 million gallons (**Table 8**). Approximately 652,000 gallons of groundwater were extracted and treated as part of the B/059 construction dewatering program (**Table 8**).

Rates of groundwater extraction, water quality data from treatment system influent and effluent streams, and other pertinent operational data for treatment systems are summarized in **Appendix D**.

GROUNDWATER LEVELS AND MOVEMENT

During the period of January through December 1999, water level measurements were obtained from Shallow Zone monitor wells, Chatsworth Formation monitor wells, and Chatsworth Formation extraction wells. Water level elevation data derived from these measurements were used to evaluate water level changes and the apparent directions of groundwater flow. Historic water level data are presented on hydrographs in **Appendix A** and in tabular format in **Appendix C**. The extent of Shallow Zone groundwater occurrences in February 1999 and November 1999 are presented on **Figure 9**. Water level elevation contours for the Chatsworth Formation groundwater system in November 1999 are presented on **Figure 10**. The November 1999 water level data are presented in **Table 5**. Water level change maps for the Chatsworth Formation groundwater system for the periods 1987 through 1999, and 1998 through 1999 are presented on **Figures 6** and **7**.

SHALLOW ZONE

Water level measurements were obtained quarterly from all Shallow Zone wells during 1999 (**Appendix C**). Water levels during 1999 in the Shallow Zone were generally lower than the previous year, because precipitation was approximately 53% below average. Water level elevations in the Shallow Zone are generally highest during the late winter and spring rainy season and lowest during the summer and early fall dry months. Discharge of surface water to Facility storage reservoirs and channels as part of site operations also affects groundwater levels in the Shallow Zone.

The trend of Shallow Zone water levels at the Facility during 1999 was indicative of the relatively dry climatic year experienced by southern California. The number of dry Shallow Zone wells increased to 38 by November 1999 (**Table 5**). **Figure 9** displays the approximate areas in which Shallow Zone groundwater was present in February and November 1999. Of the 54 Shallow Zone monitor wells which had measurable water levels in both November 1998 and November 1999, six exhibited water level increases during the 1998 to 1999 period, with a mean increase of 1.67 feet. Forty-eight Shallow Zone wells exhibited water level decreases during the year, with a mean decline of 5.51 feet.

Depth to water in Shallow Zone wells measured during 1999 ranged from 3.29 feet in well RS-7 in February to about 33.47 feet in well ES-22 in May (**Appendix C**).

Water level data from Shallow Zone wells continue to indicate that groundwater movement in the Shallow Zone is generally a reflection of surface topography. Groundwater movement within the canyon areas, where most of the Shallow Zone groundwater occurs, is generally in the same direction as surface flow in the canyons. Downward vertical movement of Shallow Zone groundwater into fractures of the Chatsworth Formation also occurs.

CHATSWORTH FORMATION

Water level data were collected quarterly from all Chatsworth Formation wells during 1999. Water level data were collected from Chatsworth Formation extraction wells during monthly monitoring of extraction/treatment systems. Historic water level elevations measured in Chatsworth Formation wells are shown on hydrographs in **Appendix A** and tabulated in **Appendix C**. Water levels obtained in November 1999 were used to prepare the water level contour map presented on **Figure 10**. Changes in water level elevations occurring in the Chatsworth Formation groundwater system, during the operational period of the GRS (roughly from the fall of 1987 through November 1999) are presented on **Figure 6**. The changes in water level elevations occurring in the Chatsworth Formation groundwater system from November 1998 to 1999 are presented in **Figure 7**.

Static depth to water in Chatsworth Formation monitor wells measured during 1999 ranged from above land surface in artesian wells RD-59B, RD-59C, RD-68A and RD-68B throughout the year, to 567.64 feet at well RD-47 in August 1999. Water level elevations measured in Chatsworth Formation monitor wells during November 1999 ranged from approximately 1,314 feet above MSL at well RD-59A to 1,895 feet above MSL at well RD-42 (**Figure 10** and **Appendix C**).

Water level changes and groundwater movement in the Chatsworth Formation have been significantly affected historically by pumping from Rocketdyne water supply wells. In addition to the historic pumping of groundwater for water supply purposes, additional pumping of degraded groundwater as part of the site-wide groundwater reclamation program commenced in September 1987. Chatsworth Formation groundwater extractions at the Facility from the groundwater reclamation program, not including interim and pilot extraction systems, totaled nearly 1.538 billion gallons during the period 1987 through 1999 (**Tables 7** and **8**). The following text of this report discusses ranges in water level depths and elevations, changes in water levels,

directions of groundwater movement in the Chatsworth Formation groundwater system, and the impacts of GRS operations on groundwater conditions during the period of late 1987 through 1999.

Net water level changes during the period from late 1987 (commencement of GRS operation) to November 1999 are presented on **Figure 6**. The maximum water level decline observed in a non-pumping well during this period was 73.15 feet in well WS-8, located in Area III. Declines of 61.13 feet, 65.02 feet, 65.61 feet, and 69.70 feet were observed at non-pumping wells RD-10, WS-4A, WS-12, and WS-13, respectively. Wells WS-4A and WS-13 are located directly to the east and west of WS-12, along a major east-west trending fracture zone, roughly paralleling the northern boundary of Area I. Well RD-10 is located in Area I, northeast of the Canyon Area (**Figure 6**). All of the wells exhibiting substantial water level declines during this period are located along large prominent fracture systems which occur in the central and eastern part of the Facility.

Operation of the GRS, which commenced in September 1987, has resulted in significant water level declines in Areas I, II and III at the Facility. Water level declines in these areas during the period of late 1987 through 1999 have generally ranged from 10 to 50 feet, with declines approaching 100 feet (and exceeding 100 feet in the immediate vicinity of active extraction wells RD-4, WS-5, and WS-9) in the eastern and central portion of the Facility. These water level declines are in addition to the historic declines that have occurred and been maintained primarily in the eastern half of the Facility. Prior to commencement of operation of the GRS in late 1987, historic water level declines had already exceeded 100 feet in Areas I and II of the Facility as a result of groundwater extractions from water supply wells (**Table 4**). The overall net declines in groundwater levels that have occurred at the Facility from the early 1950's through 1999, including the additional declines resulting from the operation of the GRS, are presented on **Figure 5**. Historic water level declines have exceeded 200 feet at wells WS-5 and WS-9, and is just over 175 feet at well WS-6 (**Table 4** and **Figure 5**). Wells WS-12 and WS-13 have historic declines of approximately 175 feet, if it is assumed that they had static water levels similar to that of WS-4A in the early 1950's (**Table 4**). However, based on the earliest available water levels from wells WS-12 and WS-13, obtained in 1956 and 1957, respectively, the measurable water level declines in those wells are 83 feet and 84 feet (**Table 4** and **Figure 5**). All of these wells are located in the central to northeastern portion of the Facility.

Water level contours representing water level elevations in Chatsworth Formation wells during November 1999 indicate that groundwater in the central and northeastern portion of the Facility appears to be migrating toward the pumping depression which has been maintained primarily by pumpage from extraction wells WS-5, WS-6, WS-9, RD-1, RD-2, and RD-4 (**Figure 10**). Three groundwater divides appear to be present based on the November 1999 data. One divide trending northeast to southwest is indicated by the data in the northeastern portion of the Facility close to well RD-31 in Area I. Water level elevations in the northwestern portion of the Facility in Area IV and northern parts of Area II and III indicate the presence of a second groundwater divide (**Figure 10**). Groundwater northwest of the divide flows to the northwest and groundwater southeast of the divide flows to the east-southeast. A third groundwater divide is indicated by the water level elevations in the central portion of the Facility in the vicinity of well RD-42 in Area II. This divide appears to trend in a northwesterly fashion parallel to and north of the Burro Flats Fault (**Figure 10**).

By the end of 1999, a total of 21 cluster well sites, comprised of 57 wells, had been completed at or immediately off-site of the SSFL Facility. Cluster well sites consist of two or more wells located within approximately 25 to 50 feet of each other, and completed to different depths within the Chatsworth Formation groundwater system. These types of wells were constructed to evaluate potential variations in hydraulic head with depth and the vertical extent of degraded groundwater. Most cluster sites consist of three wells, although at seven of the 21 sites only two wells have been constructed, and at one site four wells comprise the cluster. A list of cluster wells is presented below and their locations are shown on **Figure 2**.

CLUSTER WELLS		
Cluster Designation	**Wells at Cluster**	**Location**
RD-5	A,B,C	Undeveloped land, south of Area II
RD-33	A,B,C	Undeveloped land, near Area IV
RD-34	A,B,C	Undeveloped land, near Area IV
RD-35	A,B	Area I, near APTF
RD-36	A,B,C,D	Off-site, near Area I main gate
RD-38	A,B	Off-site, near Area I main gate
RD-39	A,B	Off-site, near Sage Ranch Park main gate
RD-41	A,B,C	Area II, west of Coca

CLUSTER WELLS		
Cluster Designation	Wells at Cluster	Location
RD-43	A,B,C	Off-site, near Area I
RD-45	A,B,C	Area I, near APTF
RD-46	A,B	Area I, southeast of CTL III
RD-48	A,B,C	Undeveloped land, south of Area I
RD-49	A,B,C	Area II, west of Alfa
RD-51	A,B,C	Area II, near northern boundary of Area II
RD-52	A,B,C	Area I, in northwest portion
RD-54	A,B,C	Area IV, at Building 886
RD-55	A,B	Area III, west of STL-IV
RD-56	A,B	Undeveloped land, north of Area III boundary
RD-58	A,B,C	Area III, south of STL-IV
RD-59	A,B,C	Off-site, northwest of Area IV
RD-68	A,B	Off-site, north of Area III

Differences in water level elevations at each cluster site are presented in the table below. The water level elevations shown correspond to the most recent sampling round in November 1999. The water level differences shown are the calculated differences in water level elevations (hydraulic head) between wells, specifically the difference between the "A" and "B" zones; the "B" and "C" zones; and the "A" and "C" zones. For cases where no water level data were available (i.e., there are only two wells at the cluster site), no difference is calculated. The direction of the hydraulic potential between the zones also is indicated as either up or down arrows. The potential direction of groundwater flow between zones also is presented in **Figure 11**.

WATER LEVEL DIFFERENCES AT CLUSTER WELL SITES									
Cluster Well	Water Level Elevation (feet MSL)			Water Level Difference between A and B		Water Level Difference between B and C		Water Level Difference between A and C	
	A	B	C						
RD-5A, B, C	1,584.89	1,639.29	1,640.49	54.40	⇑	1.20	⇑	55.60	⇑
RD-33A, B, C	1,589.03	1,501.53	1,502.03	-87.50	⇓	0.50	⇑	-87.00	⇓
RD-34A, B, C	1,709.11	1,699.41	1,748.67	-9.70	⇓	49.26	⇑	39.56	⇑
RD-35A, B	1,835.89	1,833.33	---	-2.56	⇓	---	---	---	---

WATER LEVEL DIFFERENCES AT CLUSTER WELL SITES									
Cluster Well	Water Level Elevation (feet MSL)			Water Level Difference between A and B		Water Level Difference between B and C		Water Level Difference between A and C	
	A	B	C						
RD-36A, B, C[1/]	1,832.32	1,790.31	1,719.05	-42.01	⇓	-71.26	⇓	-113.27	⇓
RD-38A, B	1,786.62	1,557.78	---	-228.84	⇓	---	---	---	---
RD-39A, B	1,830.35	1,673.46	---	-156.89	⇓	---	---	---	---
RD-41A, B, C	1,707.39	1,645.64	1,607.00	-61.75	⇓	-38.64	⇓	-100.39	⇓
RD-43A, B, C	1,621.52	1,579.38	1,576.66	-42.14	⇓	-2.72	⇓	-44.86	⇓
RD-45A, B, C	1,478.44	1,477.96	1,378.93	-0.48	⇓	-99.03	⇓	-99.51	⇓
RD-46A, B	1,739.01	1,750.89	---	11.88	⇑	---	---	---	---
RD-48A, B, C	1,673.61	1,602.72	1,552.97	-70.89	⇓	-49.75	⇓	-120.64	⇓
RD-49A, B, C	1,848.91	1,588.97	1,502.75	-259.94	⇓	-86.22	⇓	-346.16	⇓
RD-51A, B, C	1,581.75	1,510.83	1,487.79	-70.92	⇓	-23.04	⇓	-93.96	⇓
RD-52A, B, C	1,627.78	1,484.13	1,484.33	-143.65	⇓	0.20	⇑	-143.45	⇓
RD-54A, B, C	1,692.30	1,594.40	1,619.68	-97.90	⇓	25.28	⇑	-72.62	⇓
RD-55A, B	1,736.57	1,708.83	---	-27.74	⇓	---	---	---	---
RD-56A, B	1,433.00	1,511.09	---	78.09	⇑	---	---	---	---
RD-58A, B, C	1,677.64	1,647.14	1,625.68	-30.50	⇓	-21.46	⇓	-51.96	⇓
RD-59A, B, C	1,313.98	1,381.40 (A)	1,383.16 (A)	67.42	⇑	1.76	⇑	69.18	⇑
RD-68A, B	1,307.64 (A)*	1,312.44 (A)*	---	---	---	---	---	---	---

1/ = Water level data for the RD-36D completion interval indicates a downward vertical gradient from all completion zones, A through C.
(*) = Water level elevation provided is the measuring point elevation
(A) = Well was artesian when measured
(---) = No data/not applicable
⇑/+ = Indicates upward hydraulic potential
⇓/- = Indicates downward hydraulic potential

Notes: All water level data were obtained during November 1999.
Although water level difference cannot be calculated for comparisons in which one well is artesian, the hydraulic gradient can be determined by comparing the artesian well measuring point elevation to the non-artesian well water level elevation.

The hydraulic potential between the "A" and "B" zone wells at clusters RD-33, RD-34, RD-35, RD-36, RD-38, RD-39, RD-41, RD-43, RD-45, RD-48, RD-49, RD-51, RD-52, RD-54, RD-55, and RD-58 was from the "A" zone to the "B" zone, indicating a downwards flow potential. In well clusters RD-5, RD-46, RD-56, and RD-59, the groundwater flow potential is from the "B" zone well upward to the "A" zone well. In six of the well clusters, the "C" zone well has a higher hydraulic head than the "B" zone well (RD-5, RD-33, RD-34, RD-52, RD-54 and RD-59). At these clusters the

groundwater flow potential is upwards from the "C" zone to the "B" zone. At three well clusters, the "C" zone well has a higher hydraulic head than the "A" zone well (RD-5, RD-34 and RD-59). In these cases, the groundwater flow potential is upwards towards the "A" zone. At the RD-5, RD-34 and RD-59 clusters, the highest hydraulic heads are in the "C" zone well.

These hydraulic head data indicate that the potential for upward movement of groundwater from the deep "C" zone toward the intermediate or upper zones represented by the "A" and "B" wells or from "B" wells toward "A" wells exists at cluster sites RD-5, RD-33, RD-34, RD-52, RD-54, RD-56, and RD-59. At cluster sites RD-35, RD-36, RD-38, RD-39, RD-41, RD-43, RD-45, RD-48, RD-49, RD-51, RD-55 and RD-58 downward potential movement of groundwater from the upper portions of the Chatsworth Formation to the deeper portions are indicated. At several of the cluster sites, the differences in hydraulic head were only one to three feet (RD-5, RD-33, RD-35, RD-43, RD-45, RD-52 and RD-59). The hydraulic gradient at the RD-68 cluster cannot be determined since both the "A" and "B" zone wells were artesian and the elevations provided are the measuring point elevations rather than water level elevations. Compared to hydraulic gradients observed in November 1998, groundwater movement directions remained unchanged except at cluster sites RD-5 and RD-52. At these sites, groundwater movement between the "B" and "C" zones changed from downward in November 1998 to upward in November 1999.

GROUNDWATER QUALITY

The groundwater monitoring program fulfills the requirements of multiple regulatory programs at the SSFL Facility, which are addressed in the Post-Closure Permits prepared by the California Department of Toxic Substances Control (DTSC), and the underground storage tank monitoring overseen by Ventura County Environmental Health Department (California DTSC, 1995).

Per the groundwater monitoring program, groundwater samples were collected during 1999 from Shallow Zone and Chatsworth Formation wells, and selected off-site wells and springs. A summary of the specific analyses conducted at individual wells and springs during 1999 as part of the quarterly groundwater monitoring program is presented in **Appendix B**. Also presented in **Appendix B** is the proposed 2000 monitoring schedule. This section presents the results of the routine quarterly groundwater monitoring program, including the sampling stipulated by various regulatory programs.

During the routine groundwater sampling program, field measurements of selected parameters are taken at each well sampled. Stabilization of temperature, turbidity, specific conductivity and pH during groundwater purging indicates that sufficient evacuation of the well has been achieved and formation groundwater will be sampled. The results for field parameters are presented in **Appendix O**, including historic turbidity analyses.

During 1999 routine quarterly sampling, laboratory analyses were performed for the determination of VOCs by EPA method 8021 (ETS monthly samples) and 8260 (quarterly samples). Complete historic results of VOC analyses performed on samples collected from Facility wells are presented in **Appendix E**. Results of 1999 priority pollutant VOC analyses for samples collected from Shallow Zone wells and the ECL French-drain and from Chatsworth Formation wells are presented in **Tables 9** and **10**, respectively. The VOC results for non-priority pollutants and semi-quantified compounds are presented in **Table 11**.

Samples from select wells also were analyzed for base/neutral and acid organic compounds (EPA method 8270); aromatic and halogenated volatile organics (EPA method 8021); fuel hydrocarbons (EPA method 8015M); trace metals (EPA method 6010 and 7000 series); common ions and inorganic constituents (EPA methods 6010,

7000 series, 160.1, 300.0, 340.2, and SM 2320B); formaldehyde (ASTM method D-19); ammonia (EPA method 350.3); cyanide (EPA method 335.2); phenols (EPA method 8270, acid extractable portion only); total organic carbon (EPA method 415.1); total organic halogens (EPA method 9020); pH (EPA method 150.1); specific conductance (EPA method 120.1); various anions by EPA method 300.0; iron, manganese and sodium (EPA method 6010); perchlorate (EPA Method 300M); and radiological parameters. The radiological parameters included gross alpha and beta activity (EPA method 900.0); gamma-emitting radionuclides (EPA method 901.1); isotopic uranium and thorium (EPA method 907.0); and tritium by liquid scintillation spectrometry (EPA method 906.0).

The results for any fuel hydrocarbons which were detected are presented along with results for non-priority and semi-quantified organic compounds for 1999 in **Table 11** and for all historical results in **Appendix H**. Historical laboratory results for the analyses of common ions and trace metals are presented in **Appendices I** and **J**, respectively. Trace metals and cyanide results for 1999 samples are presented in **Table 12**. Historical laboratory results for the analyses of radiological parameters are presented in **Appendix K**. Gross alpha and beta activities and tritium results for 1999 are presented in **Table 17**, while results of gamma-emitting radionuclides and isotopic uranium and thorium analyses for 1999 are presented in **Table 18**.

The analytical parameters for the background wells and point of compliance wells are discussed in separate sections later in this report entitled *Background Wells* and *Appendix IX Results*, respectively. Perchlorate results are discussed later in this report in the section entitled *Perchlorate Results*.

Analytical services were performed during 1999 by Columbia Analytical Services of Canoga Park, California (primary laboratory for the first through third quarters), Alpha Analytical, Inc. of Sparks, Nevada (primary laboratory during the fourth quarter), Associated Laboratories of Orange, California (secondary laboratory), E.S. Babcock and Sons of Riverside, California (primary laboratory for perchlorate, secondary laboratory for VOC analyses), and Thermo NUtech of Richmond, California (primary laboratory for radiological parameters). Columbia Analytical Services also subcontracted a limited number of analyses to Weck Laboratories, Inc. of City of Industry, California (perchlorate analyses). Each of these laboratories has been certified by the State of California.

The most prevalent contaminants detected in groundwater samples collected from SSFL Facility wells are trichloroethylene (TCE) and cis-1,2-dichloroethylene (cis-1,2-DCE). Concentrations of these two compounds and other VOCs in samples collected in 1999 are summarized in **Table 9** for Shallow Zone wells and in **Table 10** for Chatsworth Formation wells. The highest TCE concentrations for Shallow Zone groundwater samples collected in 1999 are presented on **Figure 9**. All 1999 TCE data were considered for **Figure 9** because so many of the Shallow Zone wells are periodically dry. The approximate lateral extents of groundwater degraded by TCE and cis-1,2-DCE concentrations in the Chatsworth Formation are shown on **Figures 12** and **13**, respectively. Concentrations of TCE in groundwater samples collected in November 1999 at the Chatsworth Formation cluster wells are shown on **Figure 14**. Historic trends of TCE or cis-1,2-DCE concentrations are illustrated on hydrographs in **Appendix A** for most Chatsworth Formation wells and for selected Shallow Zone wells. The following sections describe the groundwater quality conditions observed during 1999 and how those conditions compare to historic trends. The Shallow Zone and Chatsworth Formation groundwater conditions are discussed separately for SSFL Facility wells. Private off-site wells and springs also are discussed separately.

In some sections of this report, analytical results for groundwater samples collected from the SSFL facility wells are compared to California Drinking Water Maximum Contaminant Levels (MCLs) (DOHS, 1999) for discussion purposes only. The groundwater beneath the SSFL facility is not used as a source of potable water.

SHALLOW ZONE

Groundwater samples were collected from 54 Shallow Zone wells and the ECL French-drain as part of the groundwater monitoring program for 1999. Shallow Zone wells SH-4, RS-8, HAR-14, and HAR-15, which also serve as point of compliance wells, were sampled for Appendix IX parameters in February 1999. These results are discussed in a later section of this report entitled *Appendix IX Results*. Twenty-seven Shallow Zone wells were sampled for perchlorate during 1999. These results are discussed in a later section entitled *Perchlorate Results*.

During 1999, additional analyses performed on groundwater samples collected from Shallow Zone wells included VOCs, trace metals, fuel hydrocarbons, and radiochemicals. These results are discussed below. A summary of specific analyses conducted on samples collected in 1999 is presented in **Table B-2, Appendix B**.

Organics

Due to the discontinuous nature of the Shallow Zone groundwater, distinct areas of degraded groundwater occur in portions of the Facility. These areas include ECL, STL-IV, Delta-PLF, SPA-ABSP, RD-9 Area, along the Area I Road, and portions within Area IV (**Figures 2** and **9**). Groundwater samples for VOC analysis were collected from 37 Shallow Zone wells and the ECL French-drain as part of the 1999 annual groundwater monitoring. The compounds TCE and cis-1,2-DCE were the most common contaminants detected in Shallow Zone wells (**Table 9**). During 1999, TCE was detected during at least one sampling event from samples collected from 27 Shallow Zone wells and the ECL French-drain at concentrations as high as 9,900 μg/l at well ES-24 (**Table 9**). Cis-1,2-DCE was detected in samples collected from 23 Shallow Zone wells and the ECL French-drain at concentrations as high as 260 μg/l at well ES-6 (**Table 9**).

The areas of the Facility with the highest levels of organic contaminants in Shallow Zone groundwater during 1999 were the ECL and STL-IV areas in Area III and along Area I Road southwest of the APTF area (**Figure 9**).

Other VOCs detected in Shallow Zone wells included benzene, carbon tetrachloride, chloroform, 1,1-dichloroethane (1,1-DCA), 1,2-dichloroethane (1,2-DCA), 1,1-dichloroethylene (1,1-DCE), trans-1,2-dichloroethylene (trans-1,2-DCE), ethylbenzene, methylene chloride, tetrachloroethylene, 1,1,1-trichloroethane (1,1,1-TCA), toluene, vinyl chloride, Freon 113, m- and p-xylenes, and o-xylene (**Tables 9** and **11**). All results of organic analyses on Shallow Zone groundwater samples were within historic ranges (**Appendix E**).

Common Ions and Inorganic Constituents

No Shallow Zone wells were sampled during 1999 for analysis of common ion constituents. The inorganic chemical character of the Shallow Zone groundwater has been established based on the results of chemical analyses of water samples collected from monitor wells during the period from 1985 through 1989 (**Appendix I**).

Trace Metals

Twelve wells were sampled for dissolved trace metals during 1999 (**Table 12** and **Appendix J**). Except for nickel and chromium, all trace metals were either non-detected or occurred at concentrations below primary and secondary drinking water MCLs (**Table 12**). Nickel was detected at concentrations of 0.24 milligrams per liter (mg/l), up to 0.65 mg/l, and 0.29 mg/l in groundwater samples from wells RS-18, RS-54, and HAR-27, respectively. The primary drinking water MCL for nickel is 0.1 mg/l. Chromium was detected at 0.06 mg/l in the HAR-27 sample, exceeding the primary drinking water MCL of 0.05 mg/l. Nickel has been detected at concentrations exceeding the MCL in previous samples collected from well RS-54 (**Appendix J**). Wells RS-18 and HAR-27 had not been sampled previously for trace metals. Well RS-18 had been scheduled for duplicate trace metal sampling during the third quarter, but was dry during both the third and fourth quarter sampling events.

Fuel Hydrocarbons

Five Shallow Zone wells (HAR-11, RS-1, RS-30, RS-31, RS-32) were sampled during 1999 for the analysis of fuel hydrocarbons (EPA method 8015M, gasoline standard). Wells RS-1, RS-30, RS-31, and RS-32 are monitored semi-annually for fuel hydrocarbons as part of the Building 351 monitoring program. Except for well RS-30, which was dry during the third quarter, all RS wells in the Building 351 monitoring program were sampled during the first and third quarters.

Total petroleum hydrocarbons (TPH) as gasoline was detected in groundwater samples from wells RS-1, RS-30, RS-31, and RS-32 in concentrations ranging up to 420 μg/l (**Table 11**). The HAR-11 sample did not contain a detectable concentration of TPH as gasoline. The fuel hydrocarbon results are within historic ranges (**Appendix H**).

Specific information regarding the Building 351 monitoring is presented in a data package submitted semi-annually to Ventura County Environmental Health Department (GWRC, 1999b). The data package includes information on groundwater levels and summaries of fuel-related contaminants in the vicinity of Building 351.

Radiochemicals

Four Shallow Zone wells (RS-11, RS-18, RS-54, and ES-31) were sampled during 1999 for gross alpha, gross beta, tritium, and gamma-emitting radionuclides (**Tables 17** and **18**). Well RS-54 also was sampled for isotopic uranium and thorium (**Table 18**).

The gross alpha drinking water MCL of 15 picoCuries per liter (pCi/l) was exceeded by the RS-18 sample and the third quarter RS-54 sample. Gross beta and tritium results did not exceed the drinking water MCLs of 50 pCi/l and 20,000 pCi/l, respectively. None of the gamma-emitting radionuclides, including man-made gamma-emitting radionuclides cobalt-57, cobalt-60, cesium-134, and cesium-137, or thorium isotopes exceeded the minimum detectable activities (MDAs). In both the first and third quarter groundwater samples from well RS-54, each of the uranium isotopes were detected at activities above the MDAs. No MCLs have been established for individual thorium or uranium isotopes. All radiochemistry results were within historic ranges (**Appendix K**).

Naturally occurring uranium isotopes have the following approximate activity ratios: 1:1 for uranium-234 to uranium-238 and 22:1 for uranium-238 to uranium-235. Due to the variability of pH, Eh, and solubility, these ratios, particularly uranium-234 to uranium-238, can vary (Gilkeson and Cowart, 1987). Although natural enrichment of uranium-234 relative to uranium-238 is common in groundwater, moderate to extreme enrichment of uranium-235 could be indicative of man-made (anthropogenic) radioactivity. The isotopic ratios reported for the 1999 samples appear to be consistent with the ratios indicated above; therefore, the uranium detected in groundwater beneath the SSFL Facility is likely of natural origin.

CHATSWORTH FORMATION

Groundwater samples were collected from 127 Chatsworth Formation wells as part of the groundwater monitoring program in 1999, excluding the private off-site wells and springs. Five wells are monitored as background wells (RD-6, RD-13, RD-48A, RD-48B, and RD-48C) per the Post-Closure Permits (DTSC, 1995). The background well results are presented in a separate section of this report entitled *Post-Closure Permit Sampling Issues, Background Wells*. Chatsworth Formation wells HAR-7, HAR-16 and HAR-17, which serve as point of compliance wells, were sampled for Appendix IX parameters in February 1999. These results are discussed in a later section of this

report entitled *Appendix IX Results*. Perchlorate results for 52 Chatsworth Formation groundwater samples are discussed in a later section entitled *Perchlorate Results*.

Groundwater samples collected from the Chatsworth Formation as part of the routine quarterly groundwater monitoring program were analyzed for VOCs using EPA method 8260. A limited number of wells located in the vicinity of Building 351 near the Facility main gate were sampled for fuel-related compounds. These wells included RD-32, RD-36A, RD-36B, RD-36C, RD-36D, RD-37, RD-38A, RD-38B, RD-53, and RD-72. As discussed earlier, specific information regarding the Building 351 monitoring is presented in a data package submitted semi-annually to Ventura County Environmental Health Department (GWRC, 1999b).

During 1999, additional analyses performed on groundwater samples collected from Chatsworth Formation wells included VOCs, common ions and inorganic constituents, trace metals, cyanide, base/neutral and acid organic compounds, fuel hydrocarbons, and radiochemicals. These results are discussed below. A summary of the specific analyses conducted on samples conducted in 1999 is presented in **Table B-2, Appendix B.**

Organics

The most prevalent contaminants occurring in the Chatsworth Formation groundwater system continue to be trichloroethylene (TCE) and cis-1,2-dichloroethylene (cis-1,2-DCE). During the routine quarterly groundwater monitoring conducted in 1999, 124 Chatsworth Formation wells were sampled for VOCs (**Table 10**). TCE was detected in water samples collected from 63 Chatsworth Formation wells at concentrations ranging up to 33,000 µg/l at well RD-35B. There were a number of occurrences of detected TCE due to suspect results and laboratory contamination. These results are considered non-detectable for the purposes of this report. The VOC cis-1,2-DCE was detected in samples collected from 49 Chatsworth Formation wells at concentrations ranging up to 2,500 µg/l at well HAR-7.

The lateral extents of TCE and cis-1,2-DCE in Chatsworth Formation wells are shown on **Figures 12** and **13**, respectively. The figures were prepared using the most recent sampling during 1999, which was primarily the fourth quarter sampling conducted in November 1999. The TCE and cis-1,2-DCE results are indicated on **Table 10**.

Based on 1999 data, TCE concentrations exceeding 5 µg/l occurred over two large areas which include the vicinity of the Area I Road and within most of Area II, and three localized areas within Area IV (**Figure 12**). The three areas within Area IV occurred along the western boundary of Area IV. The numerical criterion for the lateral extent was based upon the primary drinking water standard of 5 µg/l for TCE (DOHS, 1999). Areas with TCE concentrations greater than 100 µg/l occurred in the vicinity of the Area I main gate; in the vicinity of the APTF impoundments; in the vicinity of CTL-III in Area I; in the vicinity of the Alfa, Bravo, and Delta test stands in Area II; near the RD-9 area in Area II; near the STL-IV impoundments in Area III; surrounding the Area III northern boundary; and in Area IV in the vicinity of the Former Sodium Disposal Facility.

Nine of the Chatsworth Formation wells sampled in 1999 contained TCE concentrations exceeding 1,000 µg/l, including wells RD-35A, RD-35B, RD-46A, RD-49A, RD-72, RD-73, HAR-7, HAR-16, and HAR-18. An additional 16 wells contained TCE concentrations equal to or exceeding 100 µg/l, including wells RD-9, RD-21, RD-23, RD-36C, RD-38A, RD-41B, RD-49B, RD-53, RD-54A, RD-56A, RD-58A, RD-60, RD-64, RD-65, HAR-24, and WS-9 (**Table 10**).

TCE concentrations greater than 100 µg/l occurred in deep wells within two well clusters (**Figure 14**). The TCE concentration in the deep RD-36 cluster well (RD-36C) ranged up to 110 µg/l during 1999, which is consistent with 1998 concentrations in this well. The TCE concentrations in the shallow and intermediate well samples in the RD-36 cluster were non-detected in the RD-36A samples, ranged up to 28 µg/l in RD-36B samples, and ranged up to 2.9 µg/l in RD-36D samples. These concentrations also are similar to 1998 data. At the RD-35 well cluster, TCE concentrations ranged from 19,000 µg/l in the RD-35A sample to 33,000 µg/l in samples from RD-35B. The RD-35A result was similar to historical results. Because RD-35B was added to the quarterly monitoring program in 1999, historical VOC results do not exist for this well. Except at cluster wells RD-36 and RD-41, TCE concentrations were highest in the shallow well and lowest in the deep well. At the RD-41 site, TCE concentrations at the A, B, and C zone wells were 11 µg/l, 800 µg/l, and less than the detection limit of 0.4 µg/l.

The approximate lateral extent of degraded water in the Chatsworth Formation containing cis-1,2-DCE concentrations above 6 µg/l is shown on **Figure 13**. The primary drinking water MCL for cis-1,2-DCE is 6 µg/l (DOHS, 1999). Ten of the Chatsworth Formation wells sampled in 1999 contained cis-1,2-DCE concentrations equal to or exceeding 100 µg/l, including wells RD-35B, RD-41B, RD-49A, RD-49B, RD-56A, RD-72,

RD-73, HAR-7, HAR-16, and HAR-18. One or more samples collected during 1999 from an additional 26 wells exhibited cis-1,2-DCE concentrations equal to or exceeding 6 µg/l, including wells RD-1, RD-2, RD-4, RD-9, RD-10, RD-21, RD-23, RD-36C, RD-38A, RD-41A, RD-45A, RD-45B, RD-46A, RD-49C, RD-54A, RD-55B, RD-60, RD-64, RD-65, HAR-17, HAR-20, HAR-21, WS-5, WS-6, WS-9, and WS-9A (**Table 10**).

Based on the most recent data collected during 1999, the compound cis-1,2-DCE was present in concentrations greater than 6 µg/l in nine areas on or adjacent to the SSFL Facility (**Figure 13**). These areas are related to those areas degraded by TCE contamination. This relationship was anticipated, because the compound cis-1,2-DCE is a breakdown product of TCE (Montgomery and Welkom, 1990). The affected areas included the vicinity of APTF in Area I; along Area I Road from the vicinity of Building 436 toward Building 324 in the northeastern portion of Area I; the main gate in the northeastern portion of the Facility; the vicinity of CTL-III in Area I; the Alfa Test Stand and the ABSP area located in the north-central portion of the Facility; the RD-9 area located in the northern portion of the Facility; the PLF-Delta area located in the west-central portion of the Facility; the northern part of Area III near the maintenance buildings; and near the Former Sodium Disposal Facility at Building 886 in Area IV.

Other VOCs detected in samples collected from Chatsworth Formation wells during 1999 included benzene; carbon tetrachloride; chloroform; 1,1-DCA; 1,2-DCA; 1,1-DCE; Freon 113; tetrachloroethylene; 1,1,1-TCA; 1,1,2-TCA; toluene; trans-1,2-DCE; trichlorofluoromethane (Freon 11); and vinyl chloride. These compounds were detected in only a limited number of wells.

Historically, other prevalent VOCs detected in Chatsworth Formation wells are trans-1,2-DCE, vinyl chloride, and 1,1-DCE. The compound trans-1,2-DCE was detected in water samples collected from 21 wells at concentrations ranging up to 70 µg/l in the sample collected from well HAR-7 (**Table 10**). Vinyl chloride was detected in samples collected from 10 wells at concentrations ranging up to 30 µg/l in the sample collected from well HAR-7 (**Table 10**). The compound 1,1-DCE was detected in 1999 in samples collected from 21 wells in concentrations ranging up to 1,800 µg/l in a sample collected from well RD-35B (**Table 10**). Historic data for EPA priority volatile organic compounds and non-priority compounds are presented in **Appendices E** and **H**, respectively.

Results of Buildings 324 and 351 Monitoring

Chatsworth Formation wells RD-32, RD-36A, RD-36B, RD-36C, RD-36D, RD-37, RD-38A, RD-38B, RD-53, RD-72, and RD-73 are monitored semi-annually for fuel-related compounds. These wells are all located near Building 351 and the main gate in Area I, with the exception of well RD-73, which is located near Building 324 in Area I, and well RD-72, which is located near Building 436 in Area I.

During 1999, fuel-related compounds were detected in samples collected from wells RD-38B and RD-73 based upon results of analyses using EPA methods 8015M and 8260 (**Tables 10** and **11**). Low levels of toluene were reported in groundwater samples collected from well RD-38B during the first and second quarters of 1999. Due to the recent construction of well RD-38B and the absence of detectable toluene in third and fourth quarter samples, the reported toluene concentrations possibly were artifacts of the drilling process. The RD-73 sample contained benzene at a concentration of 66 μg/l. TPH as gasoline was detected in samples collected from wells RD-38B and RD-53 at concentrations ranging up to 99 μg/l (**Table 11**). Verification samples collected from well RD-37 during the fourth quarter did not contain detectable concentrations of TPH as gasoline and, therefore, did not confirm the 20 μg/l of TPH as gasoline reported in the third quarter sample. Chromatograms of several other samples showed discrete peaks inconsistent with gasoline and were likely related to VOCs.

VOCs detected during 1999 in the Chatsworth Formation wells monitored for fuel-related compounds included 1,1-DCA, 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, tetrachloroethylene, Freon 113, 1,1,1-TCA, and TCE. VOCs were detected in wells RD-36B, RD-36C, RD-36D, RD-38A, RD-53, RD-72, and RD-73. More information regarding the sampling conducted as part of the Building 351 monitoring is contained in the last data package submitted to Ventura County Environmental Health Department (GWRC, 1999b).

Occurrence of TCE in Off-Site Wells

Degraded groundwater has migrated off-site near the main gate in Area I. The lateral and vertical extent of contamination near the Area I main gate is monitored by wells RD-32, RD-36A, RD-36B, RD-36C, RD-36D, RD-37, RD-38A, RD-38B, RD-39A, RD-39B, RD-66, RD-71, OS-16, OS-24, OS-25 and OS-26 (**Figures 2 and 12**). TCE was detected in one or more samples collected from wells RD-36B, RD-36C, RD-36D,

RD-38A, and OS-24 during 1999 (**Table 10**). The highest TCE concentration during 1999 was 570 μg/l in the well RD-38A sample collected in August.

Trends of TCE Concentrations

Trends in TCE concentrations over time have been assessed using the graphs presented in **Appendix A**. Groundwater monitoring began at the SSFL Facility in 1985 and remedial operations began in 1987. The TCE trends are discussed for all Chatsworth Formation wells, with the following caveats: not all wells were sampled during 1999; some wells have non-detectable concentrations of TCE; some wells have limited monitoring histories; several hydrographs show the trend of another predominant VOC (e.g., HAR-21 graph presents 1,2-DCE data and RD-25 graph presents tetrachloroethylene data); and the new wells constructed after September 1998 are not included because limited data are available for these wells. It should be noted that the scales vary per graph.

Each hydrograph is presented with an individualized scale, so scale should be taken into account when assessing the overall trend. The hydrographs are presented in **Appendix A** in numerical order following the well designation. The RD wells start with **Figure A-37**, followed by the Chatsworth Formation HAR wells, WS wells, and three off-site private wells (OS-24, OS- 25 and OS-26).

Wells exhibiting overall increases in TCE concentrations over time included RD-46A, RD-49A, RD-54A, RD-64 and RD-73. The TCE trends are presented on hydrographs in **Appendix A**.

Wells exhibiting an overall decrease in TCE concentrations over the monitoring history and no significant fluctuations during recent monitoring events included RD-9, RD-35A (though TCE concentrations are still high), RD-45A, RD-60, HAR-16, HAR-17, HAR-20, and HAR-25 (limited sampling history). Wells HAR-16 and HAR-17 are used as extraction wells for the extraction/treatment systems. The TCE trends are illustrated on hydrographs in **Appendix A**.

No significant changes in TCE trends, including non-detectable concentrations, were noted in sampling histories from most Chatsworth Formation wells, despite minor fluctuations exhibited by individual wells.

Wells which did not exhibit even generalized trends in TCE concentrations because of fluctuations in concentrations were RD-21, RD-23, RD-38A, RD-41B, RD-49B (limited sampling history), RD-53, RD-56A, HAR-1, HAR-7, HAR-19 (limited sampling history), HAR-24, WS-9 and WS-9A. In addition, a number of the water supply wells do not have extensive sampling histories, including WS-7, WS-8, WS-9B, WS-11, WS-12, WS-13, WS-14 and WS-SP; however, hydrographs presenting water level data are contained in **Appendix A**.

Base/Neutral and Acid Organic Compounds

Four recently constructed wells (RD-35B, RD-38B, RD-46B, and RD-74) were sampled during 1999 for analysis of base/neutral and acid (BNA) organic compounds using EPA method 8270 (**Tables 14** and **15**). Results for the background wells, which also were sampled for BNA compounds, are discussed in the later section *Background Wells*. The only detected BNA compound was 3 μg/l of benzoic acid in the RD-35B groundwater sample (**Table 11**). Historic base/neutral organic results and acid organic results for all sampled wells are tabulated in **Appendices F** and **G**, respectively.

Common Ions and Inorganic Constituents

New wells RD-35B, RD-38B, RD-46B, and RD-74 also were sampled for common ions and inorganic constituents in 1999 (**Table 13**). Total dissolved solids in the RD-35B, RD-46B, and RD-74 samples met or exceeded the recommended secondary drinking water MCL of 500 mg/l. In the samples collected from wells RD-46B and RD-74, the recommended electrical conductivity secondary MCL of 900 μmhos/cm was exceeded in the laboratory measurements but not in the field measurements. All other common ion and inorganic constituents were below the MCLs (**Table 13**). Historic common ion and inorganic results for all sampled wells are listed in **Appendix I**.

Trace Metals and Cyanide

During 1999, 39 Chatsworth Formation wells were sampled for trace metals as part of the quarterly monitoring program. In addition, five wells were sampled for cyanide (RD-33A, RD-33B, RD-33C, RD-34B, and RD-34C). The 1999 results for trace metals and cyanide are summarized in **Table 12**. The historic data are presented in **Appendix J**.

Detectable concentrations of arsenic, barium, chromium, copper, lead, molybdenum, nickel, selenium, and zinc were reported for select Chatsworth Formation wells (**Table 12**). The only MCLs exceeded by the samples were the action level of 0.015 mg/l for lead and the secondary drinking water MCL of 5 mg/l for zinc. The split sample from well RD-56A contained 0.036 mg/l of lead. Groundwater samples from wells RD-51B, RD-56A, RD-74, and HAR-24 contained zinc concentrations exceeding the MCL and ranging up to 12 mg/l.

Fuel Hydrocarbons

Twenty Chatsworth Formation wells were sampled during 1999 for fuel hydrocarbons. Eleven of these wells were sampled as part of the monitoring programs for Buildings 324 and 351; results were discussed in the earlier section entitled *Results of Buildings 324 and 351 Monitoring*. The nine other Chatsworth Formation wells sampled for fuel hydrocarbons were RD-2, RD-8, RD-11, RD-12, RD-41A, RD-41B, RD-41C, RD-50, and RD-60. None of the nine samples contained detectable concentrations of TPH as gasoline (**Table 11**).

Radiochemicals

Twenty-seven Chatsworth Formation wells were sampled during 1999 for gross alpha, gross beta, tritium, and gamma-emitting radionuclides (**Tables 17** and **18**). Eight of these wells also were sampled for isotopic uranium and isotopic thorium (**Table 18**).

The gross alpha drinking water MCL of 15 pCi/l was exceeded in samples collected from five wells (RD-25, RD-28, RD-35B, RD-54A, and RD-63) at concentrations ranging up to 22.8 ± 4.4 pCi/l. Previous samples collected from well RD-63 did not exceed the gross alpha MCL (**Appendix K, Table K-1**). Since RD-35B is a newly constructed well, radiochemical analyses were first performed in 1999. While the first quarter sample from RD-35B exceeded 15 pCi/l, the third quarter sample did not. All other gross alpha results were within historic ranges (**Appendix K, Table K-1**).

Only the sample from well RD-54A exceeded the gross beta drinking water MCL of 50 pCi/l (**Table 17**). Previous gross beta samples collected from this well have not exceeded 8 pCi/l (**Appendix K, Table K-1**). All other gross beta results were within historic ranges.

Tritium results from Chatsworth Formation groundwater samples ranged from 0 ± 120 pCi/l (well RD-21) to 697 ± 160 pCi/l (well RD-54A). None of the tritium results from Chatsworth Formation groundwater samples exceeded the 20,000 pCi/l drinking water MCL (**Table 17**). Of the gamma-emitting radionuclides, only lead-212 in the RD-34B groundwater sample and lead-210 in the RD-34C groundwater sample exceeded the MDAs. None of the man-made gamma-emitting radionuclides, including cobalt-57, cobalt-60, cesium-134, and cesium-137, exceeded the MDAs. All tritium and gamma-emitting radionuclide activities were within historic ranges (**Appendix K, Tables K-2** and **K-3**).

During 1999, thorium isotope activities were below MDAs except for thorium-228 activities in samples from wells RD-7 and RD-23 (**Table 18**). In most of the groundwater samples analyzed for uranium isotopes, the MDAs were exceeded. No MCLs have been established for individual thorium or uranium isotopes. Uranium isotopic ratios for the 1999 samples appear to be consistent with the activity ratios for naturally occurring uranium isotopes (1:1 for uranium-234 to uranium-238 and 22:1 for uranium-238 to uranium-235). All thorium and uranium isotope results were within historic ranges (**Appendix K, Table K-4**).

PRIVATE OFF-SITE WELLS AND SPRINGS

Groundwater samples were collected from 15 off-site private wells and springs, including OS-2, OS-3, OS-4, OS-5, OS-8, OS-10, OS-12, OS-15, OS-16, OS-17, OS-21, OS-24, OS-25, OS-26, and OS-27 during the 1999 monitoring period. The off-site private wells and springs are located to the west, north and east of the SSFL property boundaries (**Figure 2**). The off-site wells were completed in the Chatsworth Formation by private owners who have allowed Rocketdyne access to their property for well sampling purposes.

Samples collected from off-site private wells and springs were analyzed for VOCs by EPA method 8260. Results of perchlorate analyses performed on samples collected from off-site wells are discussed in a separate section of this report. Historic water quality data for off-site wells and springs are presented in **Appendices E** through **K**.

During 1999, no VOCs were detected in private off-site wells and springs with the exception of samples from well OS-24. TCE was detected in OS-24 samples at concentrations ranging up to 14 μg/l (**Table 10**). TCE has been detected in samples

collected from well OS-24 since the initiation of monitoring in 1992 (**Appendix E**). No other VOCs were detected in OS-24 samples.

PERCHLORATE RESULTS

Twenty-eight Shallow Zone wells, 52 Chatsworth Formation wells, and 14 off-site private wells and springs were sampled during 1999 for perchlorate. There is no federal drinking water standard for perchlorate, however, the California Department of Health Services has set a provisional action level of 18 μg/l. Perchlorate results for 1997 through 1999 are presented in **Table 16**.

During 1999, perchlorate was detected in samples collected from wells ES-12, ES-24, RS-18, RS-20, RS-54, RD-21, RD-54A, RD-73, HAR-1, HAR-16, HAR-24, and HAR-25. Concentrations detected in Chatsworth Formation wells RD-73, HAR-1, HAR-16, HAR-24 and HAR-25 exceeded the California action level of 18 μg/l. The highest concentrations detected ranged up to 480 μg/l in the samples collected from Chatsworth Formation well HAR-25. No perchlorate was detected in samples collected from off-site wells and springs.

Based on 1999 results, detected levels of perchlorate were confirmed in both the Shallow Zone and Chatsworth Formation groundwater systems over two areas, including the vicinity of Area I Road and within the Former Sodium Disposal Facility (**Figures 15** and **16**). In addition, a localized area of Shallow Zone perchlorate contamination occurs near the STL-IV impoundments (**Figure 15**).

By the end of 1999, 207 wells and springs, the ECL French-drain, and the ECL sump had been sampled for perchlorate. Twenty-seven Shallow Zone wells, twelve Chatsworth Formation wells, and five off-site private wells and springs (OS-13, OS-18, OS-19, OS-22, and OS-23) have not been sampled, primarily because most of these wells have been dry or contained insufficient water for sampling purposes during quarterly monitoring events.

POST-CLOSURE PERMIT SAMPLING ISSUES

Post-Closure Permits have been issued by the California Environmental Protection Agency, DTSC, to address components of the groundwater monitoring program at the SSFL Facility (DTSC, 1995). Elements of the groundwater monitoring program were

stipulated as part of the permits, including a detection monitoring program, an evaluation monitoring program, interim corrective action monitoring, and a list of constituents of concern.

During 1995, one compound (1,3-dinitrobenzene) was added to the list of constituents of concern. The constituents of concern identified in the permits, as well as the compound detected during the 1995 monitoring, are listed in **Table 22**.

Wells currently in the detection monitoring program and the evaluation monitoring program are identified in **Tables 23** and **24**, respectively. The lists of wells have been altered slightly since the permits were issued. At the end of 1995, one well (RD-47) was deleted as a background well due to the confirmed detection of the compound cis-1,2-DCE in some samples. During 1996, one well (RD-58C) was moved from the detection monitoring program to the evaluation monitoring program due to the confirmed detection of vinyl chloride in multiple sampling events. Wells RD-61 and RD-62 were added to the list of detection monitoring wells in 1996.

Groundwater sampling was conducted during 1999 per the requirements of the Post-Closure Permits. The background wells (RD-6, RD-13, RD-48A, RD-48B and RD-48C) were sampled quarterly during 1999. Seven wells (SH-4, RS-8, HAR-14, HAR-15, HAR-7, HAR-16, and HAR-17) designated as point of compliance wells were sampled for Appendix IX constituents during the first quarter of 1999. The background wells were sampled during the second quarter of 1999 for constituents of concern.

In some cases, the wells selected specifically for the Post-Closure Permit sampling were also part of the regular quarterly monitoring program for analysis of volatile organic compounds. The quarterly monitoring results for 1999 were discussed previously in this report as a separate section. The results of the Post-Closure Permit sampling for background wells, detection monitoring wells, and point of compliance wells are discussed in this section.

Background Wells

Background wells were sampled quarterly during 1999. The five wells designated for background sampling include well RD-13, located in the central portion of Area IV, and wells RD-6, RD-48A, RD-48B, and RD-48C, located in the southern undeveloped land.

Per the 1999 schedule (**Table B-2, Appendix B**), the background wells were sampled twice for the parameters used as indicators of groundwater contamination (pH, specific conductance, total organic carbon and total organic halogens), once for parameters establishing groundwater quality (chloride, iron, manganese, phenols, sodium and sulfate), and quarterly for the expanded list of monitoring parameters specified in Table 5 of the *Post-Closure Permits*. The analytical parameters which establish groundwater quality and indicate groundwater contamination are listed in Title 40, Code of Federal Regulations, § 265.92, *Sampling and Analysis* and are not required under the Post-Closure Permits. Background wells also were sampled during the second quarter for constituents of concern; these results are discussed in a later section. The 1999 analytical results for each background well are summarized in **Table 19**. Historic results for background wells also are presented in **Appendix P, Tables P-1** through **P-6**.

No VOCs, phenols, 1,4-dioxane, or total organic halogens were detected in the background well samples collected during 1999. Results for pH were within the range of the secondary drinking water standard (DOHS, 1998 and 1999). Specific conductance results exceeded the recommended secondary drinking water MCL of 900 μmhos/cm in samples from wells RD-6, RD-48B and RD-48C, and exceeded the upper and short-term MCLs of 1,600 μmhos/cm and 2,200 μmhos/cm in the samples from well RD-48A. Total organic carbon was detected in groundwater samples from four of the background wells at concentrations ranging up to 0.9 mg/l. All indicator parameters were within historic ranges (**Appendix P**).

Secondary drinking water MCLs for iron, manganese, and sulfate were met or exceeded in groundwater samples from each of the background wells except well RD-13. All groundwater quality parameters were within historic ranges (**Appendix P**).

Appendix IX Results

The seven point of compliance wells were sampled during the first quarter of 1999 for the Appendix IX parameters as specified in the *Post-Closure Permits*. The point of compliance wells include Shallow Zone wells SH-4, RS-8, HAR-14 and HAR-15 and Chatsworth Formation wells HAR-7, HAR-16 and HAR-17. These wells are located in areas of known releases. The analytical parameters correspond to parameters listed in the Code of Federal Regulations, Title 40, Part 264, Appendix IX. Results from all Appendix IX sampling events are presented in Appendix M. A summary of the Appendix IX results for samples collected during 1999 is presented in **Table M-11, Appendix M.** The Appendix IX parameters can be divided into the following categories: inorganic parameters; pesticides and herbicides; volatile organic compounds; and semi-volatile organic compounds. The results for 1999 are presented in **Table 20** and discussed below.

Inorganic Parameters

The point of compliance wells were sampled for total cyanide and 18 total metals, including antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, selenium, silver, sulfide, thallium, tin, vanadium, and zinc. Since Appendix IX of the Code of Federal Regulations, Title 40, Part 264, calls for the analysis of total metals and cyanide, the samples were not field filtered. All inorganic compounds except cyanide, selenium, and sulfide were detected (**Table 20**).

Volatile Organic Compounds

VOCs were detected in all point of compliance wells except HAR-15 (**Table 20**). The predominant VOCs detected were TCE and cis-1,2-DCE with wells HAR-7 and HAR-16 exhibiting the highest concentrations. Other VOCs detected in point of compliance wells were benzene, carbon tetrachloride; chloroform; 1,1-DCA; 1,2-DCA; 1,1-DCE; trans-1,2-DCE; methylene chloride; tetrachloroethylene; toluene; 1,1,1-TCA; trichlorofluoromethane; and vinyl chloride. All VOCs detected are currently on the list of *Constituents of Concern* per the *Post-Closure Permits* (**Table 22**).

Semi-Volatile Organic Compounds

No semi-volatile organic compounds were detected in samples from wells RS-8, HAR-7, HAR-15, and HAR-17 (**Table 20**). Semi-volatile organic compounds detected in 1999 samples from wells SH-4, HAR-14, and HAR-16 included diethyl phthalate (HAR-14), 1,3-dinitrobenzene (SH-4), nitrobenzene (SH-4), N-nitrosodimethylamine (HAR-16), and 2,4,6-trichlorophenol (SH-4). Phenol detected in SH-4 and HAR-16 samples is considered suspect since phenol also was detected in the laboratory method blank. Diethyl phthalate and 2,4,6-trichlorophenol have not been detected in previous samples from wells HAR-14 and SH-4 (**Appendix M**). Although N-nitrosodimethylamine (NDMA) has been detected previously in HAR-16 groundwater samples, the concentration of 20 μg/l exceeded the 0.002 μg/l California action level (DOHS, 1999). Nitrobenzene and 1,3-dinitrobenzene have been detected in previous samples from well SH-4 (**Appendix M**). Well SH-4 was scheduled for verification sampling to confirm the presence of 2,4,6-trichlorophenol, however, the well was dry the remainder of the year.

Pesticides and Herbicides

The pesticide aldrin was detected at point of compliance well SH-4 at a concentration of 0.37 μg/l. Heptachlor was detected in the HAR-15 groundwater sample at 0.007 μg/l. Because the SSFL facility has not used significant quantities of pesticides, both pesticide results are considered suspect. The presence of heptachlor in the sample collected from well HAR-15 is attributed to the high suspended sediment concentration in the water sample. Well SH-4 had been scheduled for verification sampling during the third quarter of 1999 to confirm or deny the presence of aldrin, but was dry during the sampling round conducted in August. No other pesticides or herbicides were detected (**Table 20**).

Dioxins and furans were detected only in samples from well HAR-15 at concentrations ranging from 54 to 920 picograms per liter (**Table 20, page 20-9**). The hepta and octa chlorinated dioxins and furans detected are similar to HAR-15 sample results obtained in 1997. The presence of these congeners in samples collected from well HAR-15 is attributed to the high suspended sediment concentration in the water samples.

Results of Analyses for Constituents of Concern

The detection monitoring wells (**Table 23**) were sampled and analyzed for all constituents of concern during the second quarter of 1996 (**Appendix Q, Table Q-1**). The background wells are scheduled for sampling of constituents of concern every five years, and were sampled during the second quarter of 1999 (**Table 19** and **Appendix Q, Table Q-2**).

Constituents of concern detected in 1999 samples from background wells included fluoride, formaldehyde, ammonia, and nitrate (**Table 21**). Fluoride was detected in samples from all wells at concentrations ranging up to 0.67 mg/l. Nitrate was detected only in the RD-13 sample at a concentration of 6.33 mg/l. Ammonia concentrations ranged from less than the detection limit of 0.12 mg/l in the RD-6 sample to 0.24 mg/l in samples from wells RD-48A and RD-48C. Formaldehyde was detected in samples from three background wells at concentrations ranging from 0.06 mg/l to 0.3 mg/l. The action level for formaldehyde is 0.030 mg/l (DOHS, 1999). No other constituents of concern were detected in background well samples. Compared to historic data, formaldehyde results for 1999 samples were slightly higher than in previous samples. All other constituents of concern results were within historic ranges (**Appendix Q**).

Post-Closure Permit Compliance

Per the Post-Closure Permits, monitoring was conducted during 1999 for the evaluation monitoring and the detection monitoring programs (DTSC, 1995). Monitoring included sampling of the point of compliance wells during the first quarter of 1999, quarterly sampling of the facility background wells, quarterly sampling of the detection monitoring wells, and annual sampling of the evaluation monitoring wells. Specific compliance issues specified in the Post-Closure Permits are discussed below for the evaluation and detection monitoring programs.

Evaluation Monitoring

Per the Post-Closure Permits, the evaluation monitoring wells were sampled annually during 1999 and the point of compliance wells were sampled once for Appendix IX parameters. New compounds detected during 1999 included the pesticides aldrin and heptachlor in the SH-4 and HAR-15 samples, respectively (**Table 20**). The

high suspended sediment concentration in the HAR-15 sample is the likely source of the heptachlor result. Since well SH-4 did not contain sufficient water for sampling purposes during subsequent quarterly monitoring events, the presence of aldrin could not be confirmed. Other than the addition of 1,3-dinitrobenzene to the list of constituents of concern in 1995, no other changes have been made to the list (**Table 22**).

Detection Monitoring

Detection monitoring wells were sampled quarterly during 1999, except for wells RD-16 and RD-62 which were sampled annually and semi-annually, respectively. A few contaminants reported in detection monitoring well samples were not confirmed in subsequent analyses (**Tables 10** and **11**). TCE was reported as a laboratory contaminant at 0.5 $\mu g/l$ in the second quarter sample from well RD-51C. No TCE was detected in samples collected from RD-51C during the third and fourth quarters. TPH as gasoline and m- and p-xylenes reported in RD-37 and RD-43B third quarter samples, respectively, were not confirmed in fourth quarter verification samples. There were no confirmed occurrences of VOCs in any other detection monitoring well samples during 1999.

REFERENCES

California Department of Health Services (DOHS), 1998. ***California Drinking Water Primary and Secondary Maximum Contaminant Levels, Action Levels, and Unregulated Chemicals Requiring Monitoring.*** June 30, 1998.

------, 1999. ***California Drinking Water Standards, Action Levels, and Unregulated Chemicals Requiring Monitoring.*** June 4, 1999

California Department of Toxic Substances Control, 1994. Correspondence, ***Request for Modification of Analytical Parameters for Appendix IX Sampling - EPA ID Numbers CAD093365435 and CA18000900100 - Santa Susana Field Laboratory (SSFL) Rocketdyne Division Facility, Santa Susana, California.*** September 13, 1994.

------, 1995. ***Hazardous Waste Facility Post-Closure Permit, Regional Permit Numbers PC-94/95-3-02 and PC-94/95-3-03.*** Permits for Areas I and III, and Area II, effective May 11, 1995.

40 CFR 264. ***Code of Federal Regulations, Title 40, Section 264, Appendix IX.***

40 CFR 265.92. ***Code of Federal Regulations, Title 40, Section 265.92, Sampling and Analysis.***

Colburn, I. P., Saul, L. R., and Almgren, A. A., 1981. ***The Chatsworth Formation: a new formation name for the upper Cretaceous strata of the Simi Hills, California,*** in Link, M. H., Squires, R. L., and Colburn, I. P., eds., 1981. ***Simi Hills Cretaceous Turbidites, Southern California.*** Pacific Section, Society of Economic Paleontologists and Mineralogists.

DOE, 1989. U. S. Department of Energy. ***Environmental Survey Preliminary Report, DOE Activities at the Santa Susana Field Laboratories, Ventura County, California,*** February 1989.

EnviroSolve Corporation, Inc., 2000. ***Santa Susana Field Laboratory, Groundwater Treatment System, Monthly Monitoring Report, Month of December 1999.***

ETEC, 1987. Rockwell International Corporation, Energy Technical Engineering Center. ***CERCLA Program Phase II - Site Characterization,*** May 29, 1987.

Gilkeson, R. H., and Cowart, J. B., 1987. ***Radium, radon, and uranium isotopes in groundwater from Cambrian-Ordovician sandstone aquifers in Illinois, in Radon in Groundwater,*** B. Groves, ed.

Groundwater Resources Consultants, Inc. (GWRC), 1986a. ***Draft Recommendations for ECL Pond Closure Activities,*** July 1986.

------, 1986b. ***Phase II Groundwater Investigation, Santa Susana Field Laboratory, Rocketdyne Division, Rockwell International Corporation, Ventura County, California,*** October 1986.

------, 1987. ***Hydrogeologic Assessment Report, Santa Susana Field Laboratory, Rockwell International Corporation, Rocketdyne Division,*** five volumes, November 30, 1987.

------, 1989a. ***Phase II Report Investigation of Soil and Shallow Groundwater Conditions, Santa Susana Field Laboratory - Area IV, Rockwell International Corporation, Rocketdyne Division,*** May 5, 1989.

------, 1989b. ***Phase III Report, Investigation of Groundwater Conditions, Santa Susana Field Laboratory - Area IV, Rockwell International Corporation, Rocketdyne Division,*** December 5, 1989.

------, 1991. ***Phase II Investigation of Soil in the Vicinity of Excavated Underground Storage Tanks Near Building 351 at the Rockwell International Corporation, Rocketdyne Division, Santa Susana Field Laboratory, Ventura County, California.*** May 10, 1991.

------, 1992a. ***Completion Report, Monitor Well RD-53, Rockwell International Corporation, Rocketdyne Division, Santa Susana Field Laboratory, Ventura County, California.*** January 22, 1992.

------, 1992b. ***Completion Report, Cluster Well Sites RD-33, RD-34 and RD-51, Santa Susana Field Laboratory, Rockwell International Corporation, Rocketdyne Division, Ventura County, California.*** April 24, 1992.

------, 1992c. ***Results of Collection and Analyses of Rock Cores, Santa Susana Field Laboratory, Rockwell International Corporation, Rocketdyne Division, Canoga Park, California***. May 4, 1992.

------, 1992d. ***Proposed Interim Well Construction Plan.*** Letter report dated August 17, 1992.

------, 1993a. ***Progress Report, Construction and Testing of Additional Monitor Wells, Data Summary, January through March 1993, Santa Susana Field Laboratory, Rockwell International Corporation, Rocketdyne Division, Ventura County, California.*** May 13, 1993.

------, 1993b. ***Progress Report, Construction and Testing of Additional Monitor Wells, Data Summary, April through June 1993, Santa Susana Field Laboratory, Rockwell International Corporation, Rocketdyne Division, Ventura County, California.*** July 30, 1993.

------, 1993c. ***Progress Report, Construction and Testing of Additional Monitor Wells, Data Summary, July through September 1993, Santa Susana Field Laboratory, Rockwell International Corporation, Rocketdyne Division, Ventura County, California.*** October 28, 1993.

------, 1994a. ***Progress Report, Construction and Testing of Additional Monitor Wells, Data Summary, October through December 1993, Santa Susana Field Laboratory, Rockwell International Corporation, Rocketdyne Division, Ventura County, California.*** January 31, 1994.

------, 1994b. ***Progress Report, Construction and Testing of Additional Monitor Wells, Data Summary, January through March 1994, Santa Susana Field Laboratory, Rockwell International Corporation, Rocketdyne Division, Ventura County, California.*** April 28, 1994.

------, 1994c. ***Progress Report, Construction and Testing of Additional Monitor Wells, Data Summary, April through June 1994, Santa Susana Field Laboratory, Rockwell International Corporation, Rocketdyne Division, Ventura County, California.*** August 5, 1994.

------, 1995b. ***Results of Well RD-63 Pilot Extraction Test, RMDF Area, Santa Susana Field Laboratory, Rockwell International Corporation, Rocketdyne Division, Ventura County, California.*** May 22, 1995.

------, 1995c. ***Technical Data Summary, Construction, Testing, and Sampling of Monitor Wells Completed During 1993 and 1994, Santa Susana Field Laboratory, Rockwell International Corporation, Rocketdyne Division, Ventura County, California.*** June 15, 1995.

------, 1996a. ***Results of Pilot Groundwater Extraction Test at the B/886 Former Sodium Disposal Facility Area, Santa Susana Field Laboratory, Rockwell International Corporation, Rocketdyne Division, Ventura, California.*** Draft report prepared January 24, 1996.

------, 1999a. ***Data Summary, Monitor Well Drilling, Construction, Testing, and Sampling, June 1997 through February 1999, Boeing North American, Inc., Rocketdyne Propulsion & Power, Santa Susana Field Laboratory, Ventura County, California.*** April 28, 1999.

------, 1999b. ***Quarterly Groundwater Monitoring Data for the Vicinity of Excavated Underground Storage Tanks near Building 351, Fourth Quarter 1998 and First and Second Quarters 1999.*** August 30, 1999.

Hargis + Associates, Inc., 1985a. ***Phase I Investigation of Hydrogeologic Conditions, Santa Susana Field Laboratory, Ventura County, California,*** three volumes, prepared for Rocketdyne Division, Rockwell International Corporation.

------, 1985b. ***Interim Report Groundwater Quality Investigation, ECL Pond, Santa Susana Field Laboratory, Rockwell International Corporation, Rocketdyne Division,*** prepared for Rocketdyne Division, Rockwell International Corporation.

Montgomery, John H. and Welkom, Linda M., 1990. ***Groundwater Chemicals Desk Reference,*** Lewis Publishers, 640 p.

Sage, O. G., Jr., 1971. ***Geology of the Eastern Portion of the Chico Formation, Simi Hills, California.*** University of California at Santa Barbara, M. S. Thesis.

(A.E.) Schmidt Environmental, Inc., 1995. ***Site Assessment Report for Underground Storage Tank UT-37*** prepared for Rockwell International Corporation, Rocketdyne Division, Environmental Protection Department. September 1995.

Wentworth, C. M., Bonilla, M. G., and Bucanan, J. M., 1973. ***Seismic Environment of the Burro Flats Site, Ventura County, California.*** U.S. Geological Survey Open-File Report.

[redacted]

TABLE 1

WELL CONSTRUCTION DATA

WELL IDENTIFIER	AREA NO.	EFFECTIVE BOREHOLE DEPTH (feet)	BOREHOLE		CASING		SEALED INTERVAL (feet)	PERFORATED INTERVAL (feet)	MEASURING POINT ELEVATION (ft MSL)	DATE DRILLING COMPLETED
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
SHALLOW ZONE WELLS										
SH-1	III	10.0	16	0 - 10.0	4	0 - 10.0	0 - 5.0	5.5 - 10.0	1771.89	12-11-84
SH-2	III	10.6	16	0 - 10.6	4	0 - 10.6	0 - 5.0	6.0 - 10.6	1762.00	12-11-84
SH-3	III	9.5	16	0 - 9.5	4	0 - 9.5	0 - 4.6	5.0 - 9.5	1761.97	12-12-84
SH-4	III	17.0	16	0 - 17.0	4	0 - 13.0	0 - 8.0	9.0 - 13.0	1764.22	12-12-84
SH-5	III	10.5	16	0 - 10.5	4	0 - 10.5	0 - 5.6	6.0 - 10.5	1761.96	12-13-84
SH-6	III	11.5	16	0 - 11.5	4	0 - 11.5	0 - 6.2	7.0 - 11.5	1776.99	12-17-84
SH-7	III	13.5	16	0 - 13.5	4	0 - 13.5	0 - 8.5	9.5 - 13.5	1774.11	01-16-85
SH-8	III	12.0	16	0 - 12.0	4	0 - 11.4	0 - 5.2	5.9 - 11.4	1762.37	01-17-85
SH-9	III	9.0	16	0 - 9.0	4	0 - 9.0	0 - 3.5	4.0 - 9.0	1760.02	01-18-85
SH-10	III	8.0	16	0 - 8.0	4	0 - 7.5	0 - 2.0	3.0 - 7.5	1756.75	01-18-85
SH-11	III	17.5	16	0 - 17.5	4	0 - 17.5	0 - 11.0	13.0 - 17.5	1754.56	01-16-85
RS-1	I	24.5	16	0 - 24.5	4	0 - 24.5	0 - 12.5	14.5 - 24.5	1878.60	06-08-85
RS-2	I	26.0	16	0 - 26.0	4	0 - 26.0	0 - 15.0	16.0 - 26.0	1901.28	06-08-85
RS-3	I	21.0	16	0 - 21.0	4	0 - 21.0	0 - 10.0	11.0 - 21.0	1832.39	06-08-85
RS-4	I	30.0	16	0 - 30.0	4	0 - 30.0	0 - 18.0	20.0 - 30.0	1824.66	06-08-85
RS-5	I	20.0	16	0 - 20.0	4	0 - 20.0	0 - 7.5	10.0 - 20.0	1776.72	06-07-85
RS-6	I	18.0	16	0 - 18.0	4	0 - 18.0	0 - 7.0	8.0 - 18.0	1757.43	06-07-85
RS-7	I	7.5	16	0 - 7.5	4	0 - 7.5	0 - 1.6	2.5 - 7.5	1731.37	06-07-85
RS-8	II	12.5	16	0 - 12.5	4	0 - 12.5	0 - 5.0	7.0 - 12.5	1820.47	06-09-85
RS-9	III	26.2	16	0 - 26.2	4	0 - 26.2	0 - 14.2	16.0 - 26.2	1735.52	09-11-85

See last page of Table 1 for explanations and footnotes.

TABLE 1

WELL CONSTRUCTION DATA

WELL IDENTIFIER	AREA NO.	EFFECTIVE BOREHOLE DEPTH (feet)	BOREHOLE		CASING		SEALED INTERVAL (feet)	PERFORATED INTERVAL (feet)	MEASURING POINT ELEVATION (ft MSL)	DATE DRILLING COMPLETED
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
RS-10	II	17.0	16	0 - 17.0	4	0 - 17.0	0 - 6.0	7.3 - 17.0	1762.08	06-10-85
RS-11	IV	17.5	16	0 - 17.5	4	0 - 17.5	0 - 9.0	10.0 - 17.5	1789.30	06-10-85
RS-12	III	15.3	16	0 - 15.3	4	0 - 15.3	0 - 4.0	5.0 - 15.3	1725.86	06-09-85
RS-13	II	22.8	16	0 - 22.8	4	0 - 22.8	0 - 15.0	17.0 - 22.8	1644.20	06-11-85
RS-14	III	16.0	16	0 - 16.0	4	0 - 16.0	0 - 5.0	6.0 - 16.0	1734.78	06-09-85
RS-15	III	12.0	16	0 - 12.0	4	0 - 12.0	0 - 4.5	5.0 - 12.0	1763.55	06-10-85
RS-16	IV	20.5	16	0 - 20.5	4	0 - 20.5	0 - 14.5	16.5 - 20.5	1809.10	06-11-85
RS-17	III	16.0	16	0 - 16.0	4	0 - 16.0	0 - 4.0	6.4 - 16.0	1766.52	06-10-85
RS-18	IV	13.0	16	0 - 13.0	4	0 - 13.0	0 - 6.0	7.5 - 13.0	1801.09	06-12-85
RS-19	I	15.0	16	0 - 15.0	4	0 - 15.0	0 - 4.8	4.8 - 15.0	1812.60	09-12-85
RS-20	I	20.5	16	0 - 20.5	4	0 - 20.5	0 - 8.5	10.5 - 20.5	1821.89	09-12-85
RS-21	II	29.0	16	0 - 29.0	4	0 - 24.6	0 - 3.5	14.5 - 24.6	1765.84	10-23-85
RS-22	II	31.0	16	0 - 31.0	4	0 - 31.0	0 - 4.0	21.0 - 31.0	1770.16	10-23-85
RS-23	IV	13.0	12	0 - 13.0	4	0 - 13.0	0 - 6.8	8.0 - 13.0	1887.25	08-23-88
RS-24	IV	8.5	12	0 - 8.5	4	0 - 8.5	0 - 3.0	4.0 - 8.5	1809.24	08-25-88
RS-25	IV	13.5	TRENCHED	0 - 13.5	4	0 - 13.5	0 - 2.0	8.5 - 13.5	1862.71	08-25-88
RS-26	DESTROYED JULY 1989 DURING SOILS REMOVAL									
RS-27	IV	9.0	8	0 - 9.0	4	0 - 9.0	0 - 3.0	5.0 - 9.0	1804.78	08-02-88
RS-28	IV	19.0	8	0 - 19.0	4	0 - 19.0	0 - 9.0	14.0 - 19.0	1768.59	08-17-89
RS-29	II	38.0	9-7/8	0 - 38.0	4	0 - 37.5	0 - 17.0	27.0 - 37.5	1833.09	02-20-93
RS-30	I	23.0	12	0 - 23.0	4	0 - 21.0	0 - 9.0	10.5 - 21.0	1905.91	03-20-91

See last page of Table 1 for explanations and footnotes.

TABLE 1

WELL CONSTRUCTION DATA

WELL IDENTIFIER	AREA NO.	EFFECTIVE BOREHOLE DEPTH (feet)	BOREHOLE		CASING		SEALED INTERVAL (feet)	PERFORATED INTERVAL (feet)	MEASURING POINT ELEVATION (ft MSL)	DATE DRILLING COMPLETED
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
RS-31	I	18.0	12	0 - 18.0	4	0 - 17.5	0 - 6.0	7.0 - 17.5	1906.68	03-19-91
RS-32	I	18.0	12	0 - 18.0	4	0 - 17.0	0 - 6.0	6.5 - 17.0	1906.79	03-19-91
RS-54	IV	38.0	11-1/4 5-7/8	0 - 7.0 7.0 - 38.0	6-1/4 ---	0 - 7.0 ---	0 - 7.0	OPEN HOLE	1836.32	08-09-93
ES-1	I	26.0	15	0 - 26.0	6	(v)1.3 - 25.5	0 - 6.0	15.5 - 25.5	1776.72	10-20-86
ES-2	I	17.5	15	0 - 17.5	6	(v)1.5 - 16.7	0 - 4.8	6.7 - 16.7	1814.60	10-20-86
ES-3	I	27.0	15	0 - 27.0	6	(v)1.3 - 27.0	0 - 9.4	17.0 - 27.0	1777.88	10-21-86
ES-4	I	20.0	15	0 - 20.0	6	(v)1.4 - 20.0	0 - 4.0	5.8 - 20.0	1817.24	10-21-86
ES-5	I	19.0	15	0 - 19.0	6	(v)1.3 - 19.0	0 - 5.8	9.0 - 19.0	1818.13	10-21-86
ES-6	I	25.0	15	0 - 25.0	6	0 - 25.0	0 - 5.6	11.6 - 25.0	1824.91	11-04-86
ES-7	I	23.2	15	0 - 23.2	6	0 - 23.2	0 - 6.5	8.5 - 23.2	1826.01	11-05-86
ES-8	I	24.1	15	0 - 24.1	6	0.6 - 24.1	0 - 4.7	12.1 - 24.1	1824.63	11-05-86
ES-9	I	24.2	15	0 - 24.2	6	0 - 24.2	0 - 3.4	11.9 - 24.2	1827.80	11-05-86
ES-10	I	20.0	15	0 - 20.0	6	0 - 20.0	0 - 5.0	9.7 - 20.0	1829.46	11-05-86
ES-11	I	27.0	15	0 - 27.0	6	0 - 27.0	0 - 4.2	7.2 - 27.0	1834.62	11-06-86
ES-12	I	22.5	15	0 - 22.5	6	0 - 22.5	0 - 6.9	10.9 - 22.5	1837.74	11-06-86
ES-13	I	30.0	15	0 - 30.0	6	(v)1.2 - 23.6	0 - 3.1	6.0 - 23.6	1776.30	11-06-86
ES-14	III	24.6	15	0 - 24.6	6	0 - 23.5	0 - 9.4	12.9 - 23.5	1728.45	11-10-86
ES-15	III	24.0	15	0 - 24.0	6	0 - 24.0	0 -10.8	13.5 - 24.0	1729.94	11-10-86
ES-16	III	24.8	15	0 - 24.8	6	0 - 24.8	0 - 4.3	8.1 - 24.8	1737.90	11-10-86
ES-17	III	28.0	15	0 - 28.0	6	0 - 28.0	0 - 7.9	10.4 - 28.0	1739.25	11-11-86

See last page of Table 1 for explanations and footnotes.

TABLE 1

WELL CONSTRUCTION DATA

WELL IDENTIFIER	AREA NO.	EFFECTIVE BOREHOLE DEPTH (feet)	BOREHOLE		CASING		SEALED INTERVAL (feet)	PERFORATED INTERVAL (feet)	MEASURING POINT ELEVATION (ft MSL)	DATE DRILLING COMPLETED
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
ES-18	II	35.0	15	0 - 35.0	6	0 - 26.9	0 - 9.1	12.9 - 26.9	1770.20	11-11-86
ES-19	II	33.0	15	0 - 33.0	6	0 - 26.3	0 - 6.3	10.3 - 26.3	1769.38	11-11-86
ES-20	II	35.0	15	0 - 35.0	6	0 - 23.0	0 - 3.5	9.8 - 23.0	1770.53	11-13-86
ES-21	II	35.0	12	0 - 35.0	6	0 - 35.0	0 - 2.2	15.8 - 35.0	1769.56	01-26-87
ES-22	II	35.5	12	0 - 35.5	6	0 - 35.5	0 - 5.2	17.5 - 35.5	1770.91	01-27-87
ES-23	III	20.0	12	0 - 20.0	6	0 - 20.0	0 - 2.4	10.6 - 20.0	1760.59	01-27-87
ES-24	III	30.0	12	0 - 30.0	6	0 - 30.0	0 -11.7	18.3 - 30.0	1728.41	01-28-87
ES-25	III	35.0	12	0 - 35.0	6	0 - 35.0	0 - 9.2	19.5 - 35.0	1737.51	01-28-87
ES-26	III	35.0	12	0 - 35.0	6	0 - 34.5	0 - 8.7	17.5 - 34.5	1748.01	01-28-87
ES-27	III	35.0	12	0 - 35.0	6	0 - 35.0	0 - 9.5	15.3 - 35.0	1740.60	01-28-87
ES-28	III	21.0	12	0 - 21.0	6	0 - 21.0	0 - 1.7	8.9 - 21.0	1759.44	01-28-87
ES-29	III	28.0	12	0 - 28.0	6	0 - 28.0	0 - 8.4	11.6 - 28.0	1760.75	01-29-87
ES-30	III	25.0	12	0 - 25.0	6	0 - 25.0	0 - 5.5	10.1 - 25.0	1759.41	01-29-87
ES-31	IV	25.0	12	0 - 25.0	6	0 - 25.0	0 - 9.7	11.6 - 25.0	1787.01	01-29-87
ES-32	III	25.0	12	0 - 25.0	6	0 - 21.5	0 - 4.6	7.5 - 21.5	1740.47	01-29-87
HAR-2	I	30.0	8	0 - 30.0	4	(v)1.1 - 30.0	0 - 6.2	15.4 - 30.0	1886.38	05-12-87
HAR-3	I	30.0	8	0 - 30.0	4	0 - 30.0	0 - 6.2	14.7 - 30.0	1875.48	05-13-87
HAR-4	I	29.0	8	0 - 29.0	4	0 - 29.0	0 - 6.4	12.1 - 29.0	1873.40	05-13-87
HAR-9	II	30.5	8	0 - 30.5	4	0 - 30.5	0 - 5.9	16.1 - 30.5	1821.31	05-16-87
HAR-11	II	31.0	8	0 - 31.0	4	0 - 31.0	0 - 5.0	11.2 - 31.0	1828.34	05-16-87
HAR-12	III	30.5	8	0 - 30.5	4	0 - 30.5	0 - 3.5	15.5 - 30.5	1796.73	05-17-87

See last page of Table 1 for explanations and footnotes.

TABLE 1

WELL CONSTRUCTION DATA

WELL IDENTIFIER	AREA NO.	EFFECTIVE BOREHOLE DEPTH (feet)	BOREHOLE		CASING		SEALED INTERVAL (feet)	PERFORATED INTERVAL (feet)	MEASURING POINT ELEVATION (ft MSL)	DATE DRILLING COMPLETED
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
HAR-13	III	31.6	8	0 - 31.6	4	0 - 31.6	0 - 5.5	17.4 - 31.6	1801.18	05-17-87
HAR-14	III	40.0	8	0 - 40.0	4	0 - 40.0	0 - 5.5	11.8 - 40.0	1797.02	05-19-87
HAR-15	II	40.0	8	0 - 40.0	4	0 - 40.0	0 - 5.0	10.2 - 40.0	1809.69	05-19-87
HAR-27	II	40.0	8	0 - 40.0	4	0 - 40.0	0 - 3.0	21 - 40.0	1720.00	06-14-87
HAR-28	II	40.0	8	0 - 40.0	4	0 - 40.0	0 - 6.0	20 - 40.0	1720.17	06-14-87
HAR-29	II	40.2	8	0 - 40.2	4	0 - 40.2	0 - 7.0	20 - 40.2	1721.88	06-14-87
HAR-30	II	35.0	8	0 - 35.0	4	0 - 35.0	0 - 6.5	14 - 35.0	1806.47	06-15-87
HAR-31	II	40.0	8	0 - 40.0	4	0 - 40.0	0 - 6.0	22 - 40.0	1812.45	06-15-87
HAR-32	III	40.0	8	0 - 40.0	4	0 - 40.0	0 - 6.0	21 - 40.0	1735.31	06-17-87
HAR-33	III	35.0	8	0 - 35.0	4	0 - 35.0	0 - 6.0	18 - 35.0	1744.66	06-17-87
HAR-34	III	23.0	8	0 - 23.0	4	0 - 23.0	0 - 3.0	9 - 23.0	1751.67	06-17-87
CHATSWORTH FORMATION										
RD-1	I	506	15 8-5/8	0 - 26.0 26.0 - 506.0	10-1/8 ---	0 - 26.0 ---	0 - 26.0	OPEN HOLE	1935.89	01-09-86
RD-2	I	400	15 8-5/8	0 - 26.0 26.0 - 400.0	10-1/8 ---	0 - 26.0 ---	0 - 26.0	OPEN HOLE	1873.92	01-16-86
RD-3	I	300	15 8-5/8	0 - 27.0 27.0 - 300.0	10-1/8 ---	0 - 27.0 ---	0 - 27.0	OPEN HOLE	1743.50	01-10-86
RD-4	II	496	15 8-5/8	0 - 27.0 27.0 - 496.0	10-1/8 ---	0 - 27.0 ---	0 - 27.0	OPEN HOLE	1883.85	01-22-86
RD-5A	UL-S	158	12-1/4 6-1/4	0 - 29.5 29.5 - 158.0	8-1/4 ---	0 - 29.5 ---	0 - 29.5	OPEN HOLE	1704.66	02-17-93

See last page of Table 1 for explanations and footnotes.

TABLE 1

WELL CONSTRUCTION DATA

WELL IDENTIFIER	AREA NO.	EFFECTIVE BOREHOLE DEPTH (feet)	BOREHOLE		CASING		SEALED INTERVAL (feet)	PERFORATED INTERVAL (feet)	MEASURING POINT ELEVATION (ft MSL)	DATE DRILLING COMPLETED
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
RD-5B	UL-S	310	15 9-7/8	0 - 27.0 27.0 - 310.0	10-1/8 5	0 - 27.0 0 - 310.0	0 - 27.0 0 - 248.0	257.6 - 310.0	1705.89	05-20-93
RD-5C	UL-S	480	17-1/2 11-7/8 6-1/4	0 - 29.0 29.0 - 421.0 421.0 - 480.0	12-1/8 6-1/4 ---	0 - 28.0 0 - 418.0 ---	0 - 29.0 0 - 421.0	OPEN HOLE	1705.25	06-27-94
RD-6	UL-S	260	15 9-7/8 8-5/8	0 - 27.0 27.0 - 136.0 136.0 - 260.0	10-1/8 6-1/4 ---	0 - 27.0 0 - 140.0 ---	0 - 27.0	70.0 - 140.0 OPEN HOLE	1617.21	01-31-86
RD-7	IV	300	15 8-5/8	0 - 25.0 25.0 - 300.0	10-1/8 ---	0 - 25.0 ---	0 - 25.0	OPEN HOLE	1812.82	01-08-86
RD-8	III	50	15 8-5/8	0 - 27.0 27.0 - 50.0	10-1/8 ---	0 - 27.0 ---	0 - 27.0	OPEN HOLE	1763.43	01-29-86
RD-9	II	200	15 8-5/8	0 - 37.0 37.0 - 200.0	10-1/8 ---	0 - 37.0 ---	0 - 37.0	OPEN HOLE	1773.80	01-28-86
RD-10	I	400	15 8-3/8	0 - 30.0 30.0 - 400.0	10-1/8 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1904.43	05-07-86
RD-11	III	71	15 8-3/8	0 - 30.0 30.0 - 71.0	10-1/8 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1762.59	10-23-86
RD-12	III	72	15 8-3/8	0 - 30.0 30.0 - 72.0	10-1/8 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1762.55	10-23-86
RD-13	IV	160	12 6-1/2	0 - 30.0 30.0 - 160.0	8-1/4 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1840.27	07-25-89
RD-14	IV	125	12 6-1/2	0 - 30.0 30.0 - 125.0	8-1/4 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1824.29	07-27-89
RD-15	IV	152	12 6-1/2	0 - 30.0 30.0 - 152.0	8-1/4 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1817.70	07-27-89

See last page of Table 1 for explanations and footnotes.

TABLE 1

WELL CONSTRUCTION DATA

WELL IDENTIFIER	AREA NO.	EFFECTIVE BOREHOLE DEPTH (feet)	BOREHOLE		CASING		SEALED INTERVAL (feet)	PERFORATED INTERVAL (feet)	MEASURING POINT ELEVATION (ft MSL)	DATE DRILLING COMPLETED
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
RD-16	IV	220	12 6-1/2	0 - 30.0 30.0 - 220.0	8-1/4 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1808.99	08-15-89
RD-17	IV	125	12 6-1/2	0 - 30.0 30.0 - 125.0	8-1/4 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1836.30	08-10-89
RD-18	IV	240	12 6-1/2	0 - 30.0 30.0 - 240.0	8-1/4 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1839.49	07-28-89
RD-19	IV	135	12 6-1/2	0 - 30.0 30.0 - 135.0	8-1/4 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1853.13	07-31-89
RD-20	IV	127	12 6-1/2	0 - 30.0 30.0 - 127.0	8-1/4 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1819.72	07-27-89
RD-21	IV	175	12 6-1/2	0 - 30.0 30.0 - 175.0	8-1/4 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1866.96	08-11-89
RD-22	IV	440	12 6-1/2	0 - 30.0 30.0 - 440.0	8-1/4 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1853.41	08-15-89
RD-23	IV	440	12 6-1/2	0 - 30.0 30.0 - 440.0	8-1/4 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1836.37	08-16-89
RD-24	IV	150	12 6-1/2	0 - 30.0 30.0 - 150.0	8-1/4 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1809.93	08-09-89
RD-25	IV	175	12 6-1/2	0 - 30.0 30.0 - 175.0	8-1/4 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1810.76	08-07-89
RD-26	II	160	12 6-1/2	0 - 30.0 30.0 - 160.0	8-1/4 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1880.39	08-03-89
RD-27	IV	150	12 6-1/2	0 - 30.0 30.0 - 150.0	8-1/4 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1841.67	08-10-89
RD-28	IV	150	12 6-1/2	0 - 30.0 30.0 - 150.0	8-1/4 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1810.92	08-10-89

See last page of Table 1 for explanations and footnotes.

TABLE 1

WELL CONSTRUCTION DATA

WELL IDENTIFIER	AREA NO.	EFFECTIVE BOREHOLE DEPTH (feet)	BOREHOLE		CASING		SEALED INTERVAL (feet)	PERFORATED INTERVAL (feet)	MEASURING POINT ELEVATION (ft MSL)	DATE DRILLING COMPLETED
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
RD-29	IV	100	12 6-1/2	0 - 30.0 30.0 - 100.0	8-1/4 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1806.29	08-10-89
RD-30	IV	75	12 6-1/2	0 - 30.0 30.0 - 75.0	8-1/4 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1768.69	08-11-89
RD-31	I	175	12 6-1/2	0 - 30.0 30.0 - 175.0	8-1/4 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1945.02	08-16-89
RD-32	OS	150	17-1/2 11-7/8 5-7/8	0 - 19.0 19.0 - 99.0 99.0 - 150.0	12-1/8 6-1/4 ---	0 - 19.0 0 - 99.0 ---	0 - 19.0 0 - 99.0	OPEN HOLE	1808.47	02-09-94
RD-33A	UL-N	320	17-1/2 11 5-1/2	0 - 11.0 11.0 - 100.0 100.0 - 320.0	12-1/8 6-1/4 ---	0 - 11.0 0 - 100.0 ---	0 - 11.0 0 - 100.0	OPEN HOLE	1792.97	09-27-91
RD-33B	UL-N	415	17-1/2 11 6-1/4	0 - 20.0 20.0 - 360.0 360.0 - 415.0	12-1/8 6-1/4 ---	0 - 20.0 0 - 360.0 ---	0 - 20.0 20.0 - 360.0	OPEN HOLE	1793.21	09-27-91
RD-33C	UL-N	520	17-1/2 11 6-1/4	0 - 10.0 10.0 - 480.0 480.0 - 520.0	12-1/8 6-1/4 ---	0 - 10.0 0 - 480.0 ---	0 - 10.0 0 - 480.0	OPEN HOLE	1793.54	09-21-91
RD-34A	UL-N	60	12-1/4 6-1/2	0 - 16.0 16.0 - 60.0	8-1/4 ---	0 - 16.0 ---	0 - 16.0	OPEN HOLE	1761.83	07-25-91
RD-34B	UL-N	240	17-1/2 11 6-1/4	0 - 30.0 30.0 - 180.0 180.0 - 240.0	12-1/8 6-1/4 ---	0 - 30.0 0 - 180.0 ---	0 - 30.0 0 - 180.0	OPEN HOLE	1762.51	08-11-91
RD-34C	UL-N	450	17-1/2 11 6-1/4	0 - 30.0 30.0 - 380.0 380.0 - 450.0	12-1/8 6-1/4 ---	0 - 30.0 0 - 380.0 ---	0 - 30.0 0 - 380.0	OPEN HOLE	1762.60	08-10-91
RD-35A	I	110	12-1/4 6-1/4	0 - 19.5 19.5 - 110.0	8-1/4 4	0 - 19.5 0 - 105.5	0 - 19.5 0 - 30.0	65.0 - 105.5	1906.68	01-24-93

See last page of Table 1 for explanations and footnotes.

TABLE 1

WELL CONSTRUCTION DATA

WELL IDENTIFIER	AREA NO.	EFFECTIVE BOREHOLE DEPTH (feet)	BOREHOLE		CASING		SEALED INTERVAL (feet)	PERFORATED INTERVAL (feet)	MEASURING POINT ELEVATION (ft MSL)	DATE DRILLING COMPLETED
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
RD-35B	I	328	24 17-1/2 9-7/8 3	0 - 10 10 - 162 162 - 328 328 - 359	18 12 4 ---	0 - 11 0 - 158 0 - 324 ---	0 - 11 0 - 162 0 - 292 328 - 359	303 - 324	1905.65	01-18-99
RD-36A	OS	95	17-1/2 6-1/4	0 - 20.0 20.0 - 95.0	12-1/8 ---	0 - 20.0 ---	0 - 20.0	OPEN HOLE	1913.09	01-14-94
RD-36B	OS	170	17-1/2 11-7/8 5-7/8	0 - 20.5 20.5 - 120.0 120.0 - 170.0	12-1/8 6-1/4 ---	0 - 20.5 0 - 120.0 ---	0 - 20.5 0 - 120.0	OPEN HOLE	1915.26	03-13-94
RD-36C	OS	466	26 15 5-7/8	0 - 20.0 20.0 - 198.0 198.0 - 466.0	20 10-1/8 4	0 - 20.0 0 - 197.0 0 - 455.5	0 - 20.0 0 - 198.0 0 - 381.0	405.0 - 455.5	1913.82	04-23-94
RD-36D	OS	605	24-1/2 15 9-7/8	0 - 10 10 - 554 554 - 608	18 10 4	0 - 10 0 - 550 0 - 605	0 - 10 0 - 550 0 - 560	575 - 605	1920.08	09-10-97
RD-37	OS	400	17-1/2 11-7/8 7-7/8	0 - 38.0 38.0 - 260.0 260.0 - 400.0	12-1/8 4	0 - 38.0 0 - 377.0	0 - 38.0	272.0 - 377.0	1870.01	01-28-94
RD-38A	OS	120	17-1/2 6-1/2	0 - 20.0 20.0 - 120.0	12-1/8 ---	0 - 20.0 ---	0 - 20.0	OPEN HOLE	1878.92	02-12-94
RD-38B	OS	370	24 17-1/2 11-7/8 5-1/2	0-6 6-170 170-279 279-370	18 12 6 ---	0 - 6 0 - 161 0 - 277 ---	0 - 6 0 - 170 0 - 279	OPEN HOLE	1881.45	12-15-98
RD-39A	OS	159	17-1/2 6-1/2	0 - 20.0 20.0 - 159.0	12-1/8 ---	0 - 20.0 ---	0 - 20.0	OPEN HOLE	1960.23	02-02-94
RD-39B	OS	477	24 15 9-1/2 6-1/2	0 - 12 12 - 213 213 - 477 477 - 500	16 10 4 ---	0 - 12 0 - 210 0 - 470 ---	0 - 12 0 - 213 0 - 424 477 - 500	440 - 470	1959.48	11-11-97

See last page of Table 1 for explanations and footnotes.

TABLE 1

WELL CONSTRUCTION DATA

WELL IDENTIFIER	AREA NO.	EFFECTIVE BOREHOLE DEPTH (feet)	BOREHOLE		CASING		SEALED INTERVAL (feet)	PERFORATED INTERVAL (feet)	MEASURING POINT ELEVATION (ft MSL)	DATE DRILLING COMPLETED
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
RD-40	II	300	12-1/4 6-1/4	0 - 19.5 19.5 - 300.0	8-1/4 ---	0 - 19.5 ---	0 - 19.5	OPEN HOLE	1972.02	01-08-93
RD-41A	II	120	12-1/4 6-1/4	0 - 19.5 19.5 - 120.0	8-1/4 ---	0 - 19.5 ---	0 - 19.5	OPEN HOLE	1773.09	01-10-93
RD-41B	II	390	17-1/2 11-7/8 5-7/8	0 - 19.5 19.5 - 340.0 340.0 - 390.0	12-1/8 6-1/4 ---	0 - 19.5 0 - 336.0 ---	0 - 19.5 0 - 340.0	OPEN HOLE	1774.32	10-19-93
RD-41C	II	558	17-1/2 11-1/4 6-1/4	0 - 19.5 19.5 - 492.0 492.0 - 558.0	12-1/8 6-1/4 ---	0 - 19.5 0 - 491.0 ---	0 - 19.5 0 - 492.0	OPEN HOLE	1773.33	10-05-93
RD-42	II	120	12-1/4 6-1/4	0 - 19.5 19.5 - 120.0	8-1/4 ---	0 - 19.5 ---	0 - 19.5	OPEN HOLE	1945.46	01-09-93
RD-43A	OS	98	17-1/2 6-1/2	0 - 19.5 19.5 - 98.0	12-1/8 ---	0 - 19.5 ---	0 - 19.5	OPEN HOLE	1680.16	09-09-94
RD-43B	OS	295	17-1/2 11-7/8 6-1/2	0 - 20.0 20.0 - 240.5 240.5 - 295.0	12-1/8 6-1/4 ---	0 - 20.0 0 - 240.5 ---	0 - 20.0 0 - 30.5 115.5 - 240.5	OPEN HOLE	1680.21	10-25-94
RD-43C	OS	439.5	17-1/2 11-7/8 6-1/2	0 - 20.0 20.0 - 370.0 370.0 - 439.5	12-1/8 6-1/4 ---	0 - 20.0 0 - 370.0 ---	0 - 20.0 5.0 - 140.0 183.0 - 219.0 318.0 - 368.0	OPEN HOLE	1679.31	10-10-94
RD-44	I	485	17-1/2 6-1/4	0 - 20.0 20.0 - 485.0	12-1/8 ---	0 - 20.0 ---	0 - 20.0	OPEN HOLE	2035.92	03-13-93
RD-45A	I	480	17-1/2 6-1/2	0 - 19.5 19.5 - 480.0	12-1/8 ---	0 - 19.5 ---	0 - 19.5	OPEN HOLE	1837.66	02-06-93
RD-45B	I	590	17-1/2 11-7/8 6-1/2	0 - 20.0 20.0 - 538.0 538.0 - 590.0	12-1/8 6-1/4 ---	0 - 20.0 0 - 538.0 ---	0 - 20.0 0 - 127.0 471.0 - 538.0	OPEN HOLE	1840.09	09-11-94

See last page of Table 1 for explanations and footnotes.

TABLE 1

WELL CONSTRUCTION DATA

WELL IDENTIFIER	AREA NO.	EFFECTIVE BOREHOLE DEPTH (feet)	BOREHOLE		CASING		SEALED INTERVAL (feet)	PERFORATED INTERVAL (feet)	MEASURING POINT ELEVATION (ft MSL)	DATE DRILLING COMPLETED
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
RD-45C	I	798	24 11-7/8 6-1/4	0 - 20.0 20.0 - 750.0 750.0 - 798.0	16 6-1/4 ---	0 - 19.0 0 - 750.0 ---	0 - 20.0 0 - 135.0 483.0 - 540.0 590.0 - 750.0	OPEN HOLE	1835.74	08-26-94
RD-46A	I	140	12-1/4 6-1/4	0 - 29.5 29.5 - 140.0	8-1/4 ---	0 - 29.5 ---	0 - 29.5	OPEN HOLE	1805.80	01-13-93
RD-46B	I	328	24 17-1/2 9-7/8 3	0 - 20 20 - 193 193 - 328 328 - 366	18 12 4 ---	0 - 20 0 - 190 0 - 325 ---	0 - 20 0 - 193 0 - 281 328 - 366	293 - 325	1807.19	12-19-98
RD-47	I	710	17-1/2 6-1/2	0 - 19.0 19.0 - 710.0	12-1/8 ---	0 - 19.0 ---	0 - 19.0	OPEN HOLE	2045.72	04-01-93
RD-48A	UL-S	110	12-1/4 6-1/2	0 - 20.0 20.0 - 110.0	8-1/4 ---	0 - 20.0 ---	0 - 20.0	OPEN HOLE	1736.54	03-15-93
RD-48B	UL-S	248	17-1/2 11-1/4 6-1/4	0 - 29.5 29.5 - 200.0 200.0 - 248.0	12-1/8 6-1/4 ---	0 - 29.5 0 - 200.0 ---	0 - 29.5 0 - 198.5	OPEN HOLE	1735.40	05-26-93
RD-48C	UL-S	438	17-1/2 11-1/4 6-1/4	0 - 30.0 30.0 - 371.0 371.0 - 438.0	12-1/8 6-1/4 ---	0 - 30.0 0 - 371.0 ---	0 - 30.0 0 - 371.0	OPEN HOLE	1734.95	05-16-93
RD-49A	II	50	12-3/4 6-1/4	0 - 18.5 18.5 - 50.0	8-1/4 ---	0 - 18.5 ---	0 - 18.5	OPEN HOLE	1867.11	06-08-93
RD-49B	II	298	17-1/2 11-7/8 5-7/8	0 - 20.0 20.0 - 250.0 250.0 - 298.0	12-1/8 6-1/4 ---	0 - 20.0 0 - 250.0 ---	0 - 20.0 0 - 250.0	OPEN HOLE	1867.74	06-14-93
RD-49C	II	558	17-1/2 11-7/8 6-1/4	0 - 19.0 19.0 - 500.0 500.0 - 558.0	12-1/8 6-1/4 ---	0 - 19.0 0 - 491.0 ---	0 - 19.0 0 - 491.0	OPEN HOLE	1869.22	07-07-93

See last page of Table 1 for explanations and footnotes.

TABLE 1

WELL CONSTRUCTION DATA

WELL IDENTIFIER	AREA NO.	EFFECTIVE BOREHOLE DEPTH (feet)	BOREHOLE		CASING		SEALED INTERVAL (feet)	PERFORATED INTERVAL (feet)	MEASURING POINT ELEVATION (ft MSL)	DATE DRILLING COMPLETED
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
RD-50	IV	195	12-3/4 6-1/4	0 - 18.5 18.5 - 195.0	8-1/4 ---	0 - 18.5 ---	0 - 18.5	OPEN HOLE	1914.88	05-28-93
RD-51A	II	250	24 11-3/4 5-1/2	0 - 50.0 50.0 - 160.0 160.0 - 250.0	12-1/8 6-1/4 ---	0 - 50.0 0 - 160.0 ---	0 - 50.0 0 - 160.0	OPEN HOLE	1832.51	07-11-91
RD-51B	II	370	24 11-3/4 5-1/2	0 - 48.0 48.0 - 300.0 300.0 - 370.0	12-1/8 6-1/4 ---	0 - 48.0 0 - 300.0 ---	0 - 48.0 0 - 300.0	OPEN HOLE	1832.68	07-11-91
RD-51C	II	602	14 11-3/4 5-1/2	0 - 13.5 13.5 - 510.0 510.0 - 602.0	12-1/8 6-1/4 ---	0 - 13.5 0 - 510.0 ---	0 - 13.5 0 - 510.0	OPEN HOLE	1831.65	07-09-91
RD-52A	I	137	12-1/4 6-1/2	0 - 19.5 19.5 - 137.0	8-1/4 ---	0 - 19.5 ---	0 - 19.5	OPEN HOLE	1755.09	01-25-93
RD-52B	I	318	17-1/2 11-1/4 5-7/8	0 - 24.0 24.0 - 200.0 200.0 - 318.0	12-1/8 6-1/4 ---	0 - 24.0 0 - 200.0 ---	0 - 24.0 0 - 199.0	OPEN HOLE	1712.15	12-06-93
RD-52C	I	678	17-1/2 11-7/8 11-1/4 6-1/4	0 - 20.0 20.0 - 450.0 450.0 - 620.0 620.0 - 678.0	12-1/8 6-1/4 ---	0 - 20.0 0 - 620.0 ---	0 - 20.0 0 - 620.0	OPEN HOLE	1712.83	11-29-93
RD-53	I	159	14 12 5-1/2	0 - 20.0 20.0 - 77.0 77.0 - 159.0	12-1/8 6-1/4 ---	0 - 20.0 0 - 77.0 ---	0 - 20.0 0 - 77.0	OPEN HOLE	1909.19	05-15-91
RD-54A	IV	278	17-1/2 11-1/4 5-7/8	0 - 19.0 19.0 - 119.0 119.0 - 278.0	12-1/8 6-1/4 ---	0 - 19.0 0 - 119.0 ---	0 - 19.0 0 - 119.0	OPEN HOLE	1834.99	08-07-93
RD-54B	IV	437	17-1/2 11-1/4 5-7/8	0 - 19.0 19.0 - 379.0 379.0 - 437.0	12-1/8 6-1/4 ---	0 - 19.0 0 - 379.0 ---	0 - 19.0 0 - 379.0	OPEN HOLE	1835.48	08-31-93

See last page of Table 1 for explanations and footnotes.

TABLE 1

WELL CONSTRUCTION DATA

WELL IDENTIFIER	AREA NO.	EFFECTIVE BOREHOLE DEPTH (feet)	BOREHOLE		CASING		SEALED INTERVAL (feet)	PERFORATED INTERVAL (feet)	MEASURING POINT ELEVATION (ft MSL)	DATE DRILLING COMPLETED
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
RD-54C	IV	638	17-1/2 11-1/4 6-1/4	0 - 20.0 20.0 - 558.0 558.0 - 638.0	12-1/8 6-1/4 ---	0 - 20.0 0 - 557.0 ---	0 - 20.0 0 - 557.0	OPEN HOLE	1834.58	07-27-93
RD-55A	III	106	17-1/2 6-1/4	0 - 28.0 28.0 - 106.0	12-1/8 ---	0 - 28.0 ---	0 - 28.0	OPEN HOLE	1756.70	02-19-93
RD-55B	III	250	17-1/2 11 5-7/8	0 - 20.0 20.0 - 199.5 199.5 - 250.0	12-1/8 6-1/4 ---	0 - 20.0 0 - 199.5 ---	0 - 20.0 0 - 199.5	OPEN HOLE	1757.19	04-19-93
RD-56A	UL-N	397.5	17-1/2 6-1/2	0 - 20.5 20.5 - 397.5	12-1/8 ---	0 - 20.5 ---	0 - 20.5	OPEN HOLE	1758.62	03-08-94
RD-56B	UL-N	463	22 15 6-1/2	0 - 10 10 - 453 453 - 463	16 10 ---	0 - 10 0 - 443 ---	0 -10 0 - 443	OPEN HOLE	1761.83	07-24-97
RD-57	UL-N	419	17-1/2 6-1/2	0 - 19.5 19.5 - 419.0	12-1/8 ---	0 - 19.5 ---	0 - 19.5	OPEN HOLE	1774.15	02-23-94
RD-58A	III	126	12-1/4 6-1/4	0 - 19.5 19.5 - 126.0	8-1/4 ---	0 - 19.5 ---	0 - 19.5	OPEN HOLE	1756.11	02-01-93
RD-58B	III	268	17-1/2 11-7/8 6-1/2	0 - 20.0 20.0 - 220.0 220.0 - 268.0	12-1/8 6-1/4 ---	0 - 20.0 0 - 220.0 ---	0 - 20.0 0 - 220.0	OPEN HOLE	1761.34	08-28-94
RD-58C	III	498	17-1/2 11-7/8 6-1/2	0 - 19.0 19.0 - 450.0 450.0 - 498.0	12-1/8 6-1/4 ---	0 - 19.0 0 - 450.0 ---	0 - 19.0 0 - 450.0	OPEN HOLE	1759.59	08-09-94
RD-59A	OS	58	17-1/2 6-1/2	0 - 21.0 21.0 - 58.0	12-1/8 ---	0 - 21.0 ---	0 - 21.0	OPEN HOLE	1340.50	05-19-94
RD-59B	OS	214	17-1/2 6-1/2	0 - 19.5 19.5 - 214.0	12-1/8 2	0 - 19.5 0 - 209.0	0 - 19.5 0 - 161.0	178.0 - 209.0	1342.49	07-02-94

See last page of Table 1 for explanations and footnotes.

TABLE 1

WELL CONSTRUCTION DATA

WELL IDENTIFIER	AREA NO.	EFFECTIVE BOREHOLE DEPTH (feet)	BOREHOLE		CASING		SEALED INTERVAL (feet)	PERFORATED INTERVAL (feet)	MEASURING POINT ELEVATION (ft MSL)	DATE DRILLING COMPLETED
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
RD-59C	OS	398	17-1/2 6-1/2	0 - 19.0 19.0 - 398.0	12-1/8 2	0 - 19.0 0 - 397.0	0 - 19.0 0 - 186.0 250.0 - 328.0	345.5 - 397.0	1345.41	07-02-94
RD-60	III	126	12-1/4 6-1/4	0 - 19.5 19.5 - 126.0	8-1/4 ---	0 - 19.5 ---	0 - 19.5	OPEN HOLE	1870.40	01-21-93
RD-61	I	129	17-1/2 6-1/4	0 - 19.0 19.0 - 129.0	12-1/8 ---	0 - 19.0 ---	0 - 19.0	OPEN HOLE	1843.88	04-26-94
RD-62	UL-S	238	17-1/2 6-1/2	0 - 20.7 20.7 - 238.0	12-1/8 ---	0 - 20.7 ---	0 - 19.5	OPEN HOLE	1837.20	05-06-94
RD-63	IV	230	12-3/4 6-1/2	0 - 20.0 20.0 - 230.0	8-1/4 ---	0 - 20.0 ---	0 - 20.0	OPEN HOLE	1764.85	05-10-94
RD-64	IV	398	12-1/4 6-1/2	0 - 19.0 19.0 - 398.0	8-1/4 ---	0 - 19.0 ---	0 - 19.0	OPEN HOLE	1852.40	05-19-94
RD-65	IV	397	12-3/4 6-1/2	0 - 19.0 19.0 - 397.0	8-1/4 ---	0 - 19.0 ---	0 - 19.0	OPEN HOLE	1819.14	08-14-94
RD-66	OS	225	22 6-1/2	0 - 19 19 - 225	12 ---	0 - 19 ---	0 - 19	OPEN HOLE	1730.79	07-28-97
RD-67	UL-S	102	17-1/2 6-1/2	0 - 20 20 - 102	12 ---	0 - 20 ---	0 - 20	OPEN HOLE	1901.71	09-19-97
RD-68A	OS	90	17-1/2 6-1/4	0 - 19 19 - 90	12 ---	0 - 19 ---	0 - 19	OPEN HOLE	1307.64	06-05-97
RD-68B	OS	272	— 11-7/8	0 - 52 52 - 272	12 4	0 - 52 0 - 270	0 - 224	240-270	1312.44	06-11-97
RD-69	I	103	17-1/2 6-1/4	0 - 19 19 - 103	12 ---	0 - 19 ---	0 - 19	OPEN HOLE	1831.28	06-16-97
RD-70	UL-N	278	17-1/2 6-1/2	0 - 19 19 - 278	12 ---	0 - 19 ---	0 - 19	OPEN HOLE	1732.26	06-14-97

See last page of Table 1 for explanations and footnotes.

TABLE 1

WELL CONSTRUCTION DATA

WELL IDENTIFIER	AREA NO.	EFFECTIVE BOREHOLE DEPTH (feet)	BOREHOLE		CASING		SEALED INTERVAL (feet)	PERFORATED INTERVAL (feet)	MEASURING POINT ELEVATION (ft MSL)	DATE DRILLING COMPLETED
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
RD-71	OS	281	17-1/2 6-1/2	0 - 20 20 - 281	12 ---	0 - 20 ---	0 - 20	OPEN HOLE	1740.02	07-27-97
RD-72	I	182	24 6-1/2	0 - 27 27 - 182	12 ---	0 - 27 ---	0 - 27	OPEN HOLE	1907.25	12-23-97
RD-73	I	141	12 6	0 - 20 20 - 141	10	0 - 20	0 - 20	OPEN HOLE	1901.60	07-19-95
RD-74	IV	101	17-1/2 6-1/2	0 - 30 30 - 101	12 ---	0 - 30 ---	0 - 30	OPEN HOLE	1810.90	01-21-99
WS-4A	I	502	13 10	0 - 300.0 300.0 - 502.0	10-1/4 ---	0 - 288.0 ---	UNKNOWN	96.0 - 288.0 OPEN HOLE	1749.77	1953
WS-5	I	2304	>12-1/4 12-1/4	0 - 40.0 40.0 - 2304.0	12 ---	0 - 40.0 ---	0 - 55.0	OPEN HOLE	1830.20	1951
WS-6	I	1440	30 13 8-1/4	0 - 6.0 6.0 - 450.0 450.0 - 1440.0	12-1/8 ---	0 - 450.0 ---	0 - 6.0	306.0 - 450.0 OPEN HOLE	1932.72	1953
WS-7	IV	700	15 10	0 - 400.0 400.0 - 700.0	12-1/8 ---	0 - 400.0 ---	UNKNOWN	216.0 - 400.0 OPEN HOLE	1826.19	1954
WS-8	III	700	15 10	0 - 400.0 400.0 - 700.0	12-1/8 ---	0 - 400.0 ---	UNKNOWN	192.0 - 400.0 OPEN HOLE	1794.39	1954
WS-9	II	1800	30 15 10	0 - 17.0 17.0 - 690.0 690.0 - 1800.0	12-1/8 ---	0 - 17.0 ---	0 - 14.0	OPEN HOLE	1883.99	1955
WS-9A	II	541	30 15	0 - 34.0 34.0 - 541.0	14 12-1/8 8-1/4	0 - 34.0 0 - 541.0 0 - 539.0	0 - 20.0	20.0 - 539.0	1646.00	1956
WS-9B	II	220	16	0 - 220.0	---	---	UNKNOWN	OPEN HOLE	1796.89	1956

See last page of Table 1 for explanations and footnotes.

TABLE 1

WELL CONSTRUCTION DATA

WELL IDENTIFIER	AREA NO.	EFFECTIVE BOREHOLE DEPTH (feet)	BOREHOLE		CASING		SEALED INTERVAL (feet)	PERFORATED INTERVAL (feet)	MEASURING POINT ELEVATION (ft MSL)	DATE DRILLING COMPLETED
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
WS-11	III	677	13 9	0 - 400.0 400.0 - 677.0	12-1/8 8-1/4	0 - 400.0 365.5 - 615.0	UNKNOWN	200.0 - 400.0 365.0 - 615.0 OPEN HOLE	1748.70	1956
WS-12	I	1768	15 12	0 - 408.0 408.0 - 1768.0	14 ---	0 - 375.0 ---	UNKNOWN	OPEN HOLE	1705.98	1956
WS-13	II	940	>13 11-1/2	0 - 750.0 750.0 - 940.0	12-1/8 ---	0 - 750.0 ---	0 - 15.0	22.0 - 750.0 OPEN HOLE	1658.62	1957
WS-14	I	1272	>16 12-3/4	0 - 40.0 40.0 - 1272.0	16 ---	0 - 40.0 ---	UNKNOWN	OPEN HOLE	1878.23	1957
WS-SP	II	203	UNKNOWN	0 - 203.0	6	0 - 203.0	UNKNOWN	UNKNOWN	1766.70	UNKNOWN
HAR-1	I	110	15 8	0 - 30.0 30.0 - 110.0	10-1/8 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1874.13	05-16-87
HAR-5	II	180	15 8	0 - 30.0 30.0 - 180.0	10-1/8 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1812.65	05-16-87
HAR-6	II	160	15 8	0 - 30.0 30.0 - 160.0	10-1/8 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1815.03	05-16-87
HAR-7	II	100	15 8	0 - 30.0 30.0 - 100.0	10-1/8 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1728.38	05-20-87
HAR-8	II	130	15 8	0 - 30.0 30.0 - 130.0	10-1/8 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1730.75	05-20-87
HAR-16	I	120	15 8	0 - 30.0 30.0 - 120.0	10-1/8 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1872.31	05-20-87
HAR-17	II	100	15 8	0 - 30.0 30.0 - 100.0	10-1/8 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1711.59	05-20-87
HAR-18	III	80	15 8	0 - 30.0 30.0 - 80.0	10-1/8 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1749.41	05-20-87

See last page of Table 1 for explanations and footnotes.

TABLE 1

WELL CONSTRUCTION DATA

WELL IDENTIFIER	AREA NO.	EFFECTIVE BOREHOLE DEPTH (feet)	BOREHOLE		CASING		SEALED INTERVAL (feet)	PERFORATED INTERVAL (feet)	MEASURING POINT ELEVATION (ft MSL)	DATE DRILLING COMPLETED
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
HAR-19	II	220	15 8	0 - 30.0 30.0 - 220.0	10-1/8 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1833.46	06-17-87
HAR-20	II	230	15 8	0 - 30.0 30.0 - 230.0	10-1/8 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1830.60	06-16-87
HAR-21	II	130	15 8	0 - 30.0 30.0 - 130.0	10-1/8 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1821.30	06-18-87
HAR-22	II	90	15 8	0 - 30.0 30.0 - 90.0	10-1/8 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1816.41	06-18-87
HAR-23	III	90	15 8	0 - 30.0 30.0 - 90.0	10-1/8 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1805.87	06-18-87
HAR-24	I	110	15 8	0 - 30.0 30.0 - 110.0	10-1/8 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1906.89	06-18-87
HAR-25	I	90	15 8	0 - 30.0 30.0 - 90.0	10-1/8 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1889.75	06-18-87
HAR-26	III	90	15 8	0 - 30.0 30.0 - 90.0	10-1/8 ---	0 - 30.0 ---	0 - 30.0	OPEN HOLE	1763.17	06-18-87
PRIVATE OFF-SITE WELLS AND SPRINGS										
OS-1 (converted to RD-68B)	OS	288	UNKNOWN	UNKNOWN	10 ---	0 - 52 ---	UNKNOWN	OPEN HOLE	1310.34	UNKNOWN
OS-2	OS	700	UNKNOWN	UNKNOWN	10 ---	0 - 17 ---	0 - 17	OPEN HOLE	1237.01	03-18-59
OS-3	OS	100	Drilled With Cable Tools		8-1/4 ---	0 - 59 ---	0 - 30	30 - 60 OPEN HOLE	1298.15	06-12-50
OS-4	OS	Well Construction Data Unresolved Or Not Available							1334.00	
OS-5	OS	Well Construction Data Unresolved Or Not Available								

See last page of Table 1 for explanations and footnotes.

TABLE 1

WELL CONSTRUCTION DATA

WELL IDENTIFIER	AREA NO.	EFFECTIVE BOREHOLE DEPTH (feet)	BOREHOLE		CASING		SEALED INTERVAL (feet)	PERFORATED INTERVAL (feet)	MEASURING POINT ELEVATION (ft MSL)	DATE DRILLING COMPLETED
			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
OS-8(S)	OS									
OS-10	OS	600	18 12	0 - 10 10 - 600	12-1/8 ---	0 - 10 ---	0 - 10	OPEN HOLE	1016.97	12-54
OS-12(S)	OS									
OS-13(S)	OS									
OS-15	OS	218	Drilled With Cable Tools		8-1/4 ---	0 - 40 ---	0 - 40	OPEN HOLE	1404.86	08-27-60
OS-16	OS	Well Construction Data Unresolved Or Not Available							1785.05	
OS-17	OS	Well Construction Data Unresolved Or Not Available							1564.07	
OS-21	OS	Well Construction Data Unresolved Or Not Available							1900.39	
OS-24	OS	515	10 6	0 - 40 40 - 515	6-1/4 ---	0 - 40 ---	0 - 40	OPEN HOLE	1947.30	12-02-87
OS-25	OS	515	10 6	0 - 36 36 - 515	6-1/4 ---	0 - 36 ---	0 - 36	OPEN HOLE	2043.58	12-10-87
OS-26	OS	515	10 6	0 - 40 40 - 515	6-1/4 ---	0 - 40 ---	0 - 40	OPEN HOLE	2080.58	11-16-87
OS-27	OS	477	10-1/4	0 - 30	10	0 - 5.5	0 - 30		2043.90	05-16-95

Depth/intervals are measured in feet below land surface.
Note: Well OS-1 was converted to well RD-68B in 1997.

(---) = No casing installed over the borehole interval specified; open hole.
(v) = Top of well below land surface, installed inside zero-grade vault.
S = Spring; construction data not applicable.
OS = Off-site.
UL-N = Undeveloped land north of Facility.
UL-S = Undeveloped land south of Facility.

TABLE 2

SUMMARY OF ANNUAL RAINFALL MEASURED AT THE SANTA SUSANA FIELD LABORATORY 1960 - 1999

WATER YEAR ENDING IN	PRECIPITATION (inches)	WATER YEAR ENDING IN	PRECIPITATION (inches)
1960	10.52	1980	28.61
1961	6.18	1981	16.25
1962	24.79	1982	12.11
1963	13.74	1983	40.93
1964	9.96	1984	9.50
1965	16.06	1985	9.64
1966	27.18	1986	23.55
1967	23.99	1987	6.27
1968	19.54	1988	17.75
1969	32.11	1989	9.46
1970	11.81	1990	8.38
1971	16.79	1991	15.10
1972	8.68	1992	32.21
1973	20.69	1993	36.23
1974	16.11	1994	12.52
1975	16.58	1995	29.91
1976	10.99	1996	21.81
1977	13.91	1997	15.44
1978	40.06	1998	41.24
1979	22.96	1999	8.84
AVERAGE ANNUAL PRECIPITATION = 18.96 INCHES			

NOTE: Precipitation reported annually for the period of October through September.

TABLE 3

HISTORIC GROUNDWATER EXTRACTIONS (in gallons x 1,000)
SSFL WATER SUPPLY WELLS

WELL IDENTIFIER	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
WS-1										
WS-2										
WS-3	12,600[1/]		4,775	7,478						
WS-4	1,748	4,617	4,849							
WS-4A				7,920	20,015	17,232				
WS-5	3,186	5,893	10,192	9,707	20,621	30,021	13,760	4,864		16,048
WS-6					5,987	58,531	12,482	40,946	48,010	27,070
WS-7					1,163	1,626	4,352	3,752	309	
WS-8							7,462	4,996	1,043	
WS-9										
WS-9A							24,775	15,923	6,134	4,677
WS-9B										
WS-10										
WS-11						740	2,751	3,860	289	
WS-12						7,042	94,166	92,332	57,746	51,651
WS-13								43,798	58,646	28,805
WS-14										
WS-SP										
TOTALS	**17,534**	**10,510**	**19,816**	**25,105**	**47,786**	**115,192**	**159,748**	**210,471**	**172,177**	**128,251**

See last page of Table 3 for footnotes and explanations.

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TABLE 3

HISTORIC GROUNDWATER EXTRACTIONS (in gallons x 1,000)
SSFL WATER SUPPLY WELLS

WELL IDENTIFIER	1961[2]	1962	1963[3]	1964	1967	1968	1969	1984	1985	1986
WS-1										
WS-2										
WS-3										
WS-4										
WS-4A										
WS-5	20,649	37,558	47,864		5,424	497	564	32,353	5,742	35,631
WS-6	28,281	35,892	25,639							
WS-7										
WS-8										
WS-9		24								
WS-9A	1,238									
WS-9B										
WS-10										
WS-11										
WS-12	43,209	56,762	48,169		3,870	28	0			
WS-13	26,930	21,710	4,581		5,654	30	0	14,124	25,198	6,168
WS-14[4]					2,600					
WS-SP										
TOTALS	**120,307**	**151,946**	**126,253**		**17,548**	**555**	**564**	**46,477**	**30,940**	**41,799**

See last page of Table 3 for footnotes and explanations.
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TABLE 3

HISTORIC GROUNDWATER EXTRACTIONS (in gallons x 1,000)
SSFL WATER SUPPLY WELLS

WELL IDENTIFIER	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
WS-1											
WS-2											
WS-3											
WS-4											
WS-4A											
WS-5	38,105	38,812	21,864	34,733	48,852	57,943	54,447	70,047	50,266	27,567	21,148
WS-6	1,326	11,183	55,877	60,760	62,110	55,687	44,322	38,529	49,653	19,029	33,661
WS-7											
WS-8											
WS-9	1,318	33	4,310	6,641	6,891	4,742	4,450	5,483	4,825	4,240	6,930
WS-9A	8,466	9,363	26,574	21,847	13,170	7,846	21,851	10,199	11,046	12,529	25,153
WS-9B											
WS-10											
WS-11											
WS-12											
WS-13											
WS-14											
WS-SP											
TOTALS	**49,215**	**59,391**	**108,625**	**123,981**	**131,023**	**126,218**	**125,070**	**124,258**	**115,790**	**63,365**	**86,892**

See last page of Table 3 for footnotes and explanations.

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TABLE 3

HISTORIC GROUNDWATER EXTRACTIONS (in gallons x 1,000)
SSFL WATER SUPPLY WELLS

WELL IDENTIFIER	1998	1999									
WS-1											
WS-2											
WS-3											
WS-4											
WS-4A											
WS-5	26,029	32,889									
WS-6	27,740	22,540									
WS-7											
WS-8											
WS-9	3,845	4,039									
WS-9A	58,356	55,389									
WS-9B											
WS-10											
WS-11											
WS-12											
WS-13											
WS-14											
WS-SP											
TOTALS	**115,970**	**114,857**									

See last page of Table 3 for footnotes and explanations.

TABLE 3

FOOTNOTES AND EXPLANATIONS

1/ Total water volume for well WS-3 includes all water pumped between 1949 - 1951.

2/ Does not include December 1961 discharge.

3/ Water volumes indicated are for first 7½ months of 1963.

4/ Well WS-14 commenced pumping in 1964 but little historic data are available.

NOTE: Pumpage data were not available for the years 1964, 1965, 1966, and 1970 through 1983.

Blanks indicate that no information was available or that the well was not pumped.

TABLE 4

SUMMARY OF GROUNDWATER ELEVATION DATA FOR WATER SUPPLY (WS) WELLS

Well Id	Year Constructed	Water Level			Monitoring Period	Approximate Water Level Change (feet)
		Date Measured	Depth (feet)	Elevation (feet MSL)		
WS-4A	1953	12/53	95	1660	12/53 - 12/57	-161
		11/99	258.59	1491.18	12/53 - 11/99	-168.82
WS-5	1951	09/54	186	1646	04/51 - 01/58	-184
		11/99	452.35	2/1377.85	09/54 - 11/99	-268.15
WS-6	1954	09/54	277	1661	12/53 - 12/57	-153
		11/99	449.60	1483.12	09/54 - 11/99	-177.88
WS-7	1954	06/54	105	1723	04/54 - 12/57	-143
		11/99	56.90	1769.29	06/54 - 11/99	+46.29
WS-8	1954	07/54	108	1688	07/54 - 12/57	-121
		11/99	191.54	1602.85	07/54 - 11/99	-85.15
WS-9	1955	11/55	231	1653	11/55 - 01/58	-121
		11/99	472.80	2/1411.19	11/55 - 11/99	-241.81
WS-9A	1956	07/56	22	1626	07/56 - 12/57	-163
		11/99	86.70	2/1560.91	07/56 - 11/99	-65.09
WS-11	1956	01/56	70	1681	01/56 - 12/57	-115
		11/99	46.99	1701.71	01/56 - 11/99	+20.71
WS-12	1956	1954	---	1/1660	1954 - 11/99	-176
		02/56	141	1567	02/56 - 12/57	-107
		11/99	221.49	1484.49	02/56 - 11/99	-82.51
WS-13	1957	1954	---	1/1660	1954 - 11/99	-174
		06/57	95	1570	Constructed 06/57	---
		11/99	172.92	1485.70	06/57 - 11/99	-84.30

See last page of Table 4 for footnotes and explanations.

TABLE 4

SUMMARY OF GROUNDWATER ELEVATION DATA FOR WATER SUPPLY (WS) WELLS

Well Id	Year Constructed	Water Level			Monitoring Period	Approximate Water Level Change (feet)
		Date Measured	Depth (feet)	Elevation (feet MSL)		
WS-14	1958	1954	---	1/1660	1954 - 11/99	-152
		12/58	300	1575	Constructed 12/58	---
		11/99	370.66	1507.57	12/58 - 11/99	-67.43

(-) = Water level decline
(---) = Data not available
(+) = Water level rise
MSL = Mean sea level
1/ = Assumed elevation in early 1954 of 1660 feet MSL, based upon elevation data for well WS-4A constructed along same fracture system.
2/ = Pumping water level

NOTE: Well WS-9B not included due to insufficient early water level data. Well WS-10 also has little historic data. Well WS-10 was destroyed in 1993.

TABLE 5

SUMMARY OF WATER LEVEL DATA
FOURTH QUARTER 1999

Well Identifier	Date of Measurement	Reference Point Elevation (feet above MSL)	Depth to Water (feet)	Static Water Level Elevation (feet above MSL)
SHALLOW ZONE WELLS				
SH-1	11-02-99	1771.73	DRY	---
SH-2	11-02-99	1762.68	DRY	---
SH-3	11-02-99	1761.81	DRY	---
SH-4	11-02-99	1764.05	DRY	---
SH-5	11-02-99	1761.76	DRY	---
SH-6	11-02-99	1776.99	DRY	---
SH-7	11-02-99	1773.87	DRY	---
SH-8	11-02-99	1763.41	11.21	1752.20
SH-9	11-02-99	1761.38	DRY	---
SH-10	11-02-99	1757.91	DRY	---
SH-11	11-02-99	1756.28	11.19	1745.09
RS-1	11-02-99	1879.68	23.40	1856.28
RS-2	11-01-99	1901.08	DRY	---
RS-3	11-01-99	1832.39	DRY	---
RS-4	11-01-99	1824.66	DRY	---
RS-5	11-01-99	1776.72	15.95	1760.77
RS-6	11-02-99	1757.43	DRY	---
RS-7	11-02-99	1732.27	3.55	1728.72
RS-8	11-03-99	1821.57	9.41	1812.16
RS-9	11-02-99	1735.52	24.58	1710.94
RS-10	11-02-99	1762.08	DRY	---
RS-11	11-01-99	1790.39	13.43	1776.96
RS-12	11-02-99	1725.86	DRY	---
RS-13	11-02-99	1644.20	DRY	---
RS-14	11-02-99	1734.78	DRY	---
RS-15	11-01-99	1763.55	7.64	1755.91
RS-16	11-01-99	1811.05	DRY	---
RS-17	11-01-99	1766.52	11.06	1755.46

See last page of Table 5 for footnotes and explanations.

TABLE 5

SUMMARY OF WATER LEVEL DATA
FOURTH QUARTER 1999

Well Identifier	Date of Measurement	Reference Point Elevation (feet above MSL)	Depth to Water (feet)	Static Water Level Elevation (feet above MSL)
RS-18	11-01-99	1802.86	DRY	---
RS-19	11-01-99	1812.42	DRY	---
RS-20	11-01-99	1821.89	16.42	1805.47
RS-21	11-02-99	1765.84	25.42	1740.42
RS-22	11-02-99	1770.16	26.86	1743.30
RS-23	11-01-99	1887.25	DRY	---
RS-24	11-01-99	1809.24	DRY	---
RS-25	11-01-99	1862.71	DRY	---
RS-27	11-01-99	1804.78	DRY	---
RS-28	11-01-99	1768.59	DRY	---
RS-29	11-02-99	1833.09	DRY	---
RS-30	11-01-99	1905.91	DRY	---
RS-31	11-01-99	1906.68	DRY	---
RS-32	11-01-99	1906.79	15.38	1891.41
RS-54	11-04-99	1836.32	25.28*	1811.04
ES-1	11-04-99	1776.72	21.33*	1755.39
ES-2	11-01-99	1814.60	DRY	---
ES-3	11-04-99	1777.88	15.50*	1762.38
ES-4	11-04-99	1817.24	DRY*	---
ES-5	11-04-99	1818.13	DRY*	---
ES-6	11-04-99	1824.91	23.09*	1801.82 (P)
ES-7	11-04-99	1826.01	23.65*	1802.36
ES-8	11-01-99	1824.63	24.71	1799.92
ES-9	11-01-99	1827.80	DRY	---
ES-10	11-01-99	1829.46	DRY	---
ES-11	11-04-99	1834.62	DRY*	---
ES-12	11-01-99	1837.74	22.08	1815.66
ES-13	11-01-99	1777.30	12.97	1764.33
ES-14	11-04-99	1728.45	21.75*	1706.70

See last page of Table 5 for footnotes and explanations.

TABLE 5

SUMMARY OF WATER LEVEL DATA
FOURTH QUARTER 1999

Well Identifier	Date of Measurement	Reference Point Elevation (feet above MSL)	Depth to Water (feet)	Static Water Level Elevation (feet above MSL)
ES-15	11-02-99	1729.94	24.21	1705.73
ES-16	11-02-99	1737.90	24.01	1713.89
ES-17	11-04-99	1739.25	25.85*	1713.40
ES-18	11-02-99	1770.20	DRY	---
ES-19	11-02-99	1769.38	26.81	1742.57
ES-20	11-02-99	1770.53	25.31	1745.22
ES-21	11-04-99	1769.56	32.26*	1737.30
ES-22	11-04-99	1770.91	32.32*	1738.59
ES-23	11-04-99	1760.59	17.53*	1743.06
ES-24	11-04-99	1728.41	26.05*	1702.36
ES-25	11-02-99	1737.51	DRY	---
ES-26	11-04-99	1748.01	32.93*	1715.08
ES-27	11-04-99	1740.60	32.83*	1707.77
ES-28	11-02-99	1759.44	9.41	1750.03
ES-29	11-02-99	1760.75	9.97	1750.78
ES-30	11-04-99	1759.41	20.71*	1738.70
ES-31	11-01-99	1787.01	13.25	1773.76
ES-32	11-04-99	1740.47	18.94*	1721.53
HAR-2	11-01-99	1886.38	DRY	---
HAR-3	11-01-99	1875.48	DRY	---
HAR-4	11-04-99	1873.40	24.98*	1848.42
HAR-9	11-03-99	1821.31	11.26	1810.05
HAR-11	11-03-99	1828.34	12.03	1816.31
HAR-12	11-02-99	1796.73	10.61	1786.12
HAR-13	11-02-99	1801.18	14.78	1786.40
HAR-14	11-02-99	1797.02	11.35	1785.67
HAR-15	11-02-99	1809.69	10.86	1798.83
HAR-27	11-03-99	1720.00	25.66	1694.34
HAR-28	11-03-99	1720.17	26.15	1694.02

See last page of Table 5 for footnotes and explanations.

TABLE 5

SUMMARY OF WATER LEVEL DATA
FOURTH QUARTER 1999

Well Identifier	Date of Measurement	Reference Point Elevation (feet above MSL)	Depth to Water (feet)	Static Water Level Elevation (feet above MSL)
HAR-29	11-03-99	1724.13	29.82	1694.31
HAR-30	11-02-99	1806.47	10.81	1795.66
HAR-31	11-02-99	1812.45	13.05	1799.40
HAR-32	11-02-99	1735.31	19.95	1715.36
HAR-33	11-02-99	1744.66	20.30	1724.36
HAR-34	11-02-99	1751.67	15.14	1736.53
CHATSWORTH FORMATION WELLS				
RD-1	11-04-99	1935.89	311.95*	1623.94 (P)
RD-2	11-04-99	1873.92	242.20*	1631.72 (P)
RD-3	11-02-99	1743.50	5.14	1738.36
RD-4	11-04-99	1883.85	401.84*	1482.01
RD-5A	11-02-99	1704.66	119.77	1584.89
RD-5B	11-02-99	1705.89	66.60	1639.29
RD-5C	11-02-99	1705.25	64.76	1640.49
RD-6	11-02-99	1617.21	45.60	1571.61
RD-7	11-01-99	1812.82	70.40	1742.42
RD-8	11-02-99	1763.43	11.63	1751.80
RD-9	11-04-99	1773.80	28.00*	1745.80
RD-10	11-01-99	1904.43	229.16	1675.27
RD-11	11-02-99	1762.59	15.20	1747.39
RD-12	11-02-99	1762.55	17.89	1744.66
RD-13	11-01-99	1840.27	43.74	1796.53
RD-14	11-01-99	1824.29	54.59	1769.70
RD-15	11-01-99	1817.70	46.28	1771.42
RD-16	11-01-99	1808.99	46.56	1762.43
RD-17	11-01-99	1836.30	19.40	1816.90
RD-18	11-01-99	1839.49	71.91	1767.58
RD-19	11-01-99	1853.13	73.59	1779.54
RD-20	11-01-99	1819.72	36.22	1783.50

See last page of Table 5 for footnotes and explanations.

TABLE 5

SUMMARY OF WATER LEVEL DATA
FOURTH QUARTER 1999

Well Identifier	Date of Measurement	Reference Point Elevation (feet above MSL)	Depth to Water (feet)	Static Water Level Elevation (feet above MSL)
RD-21	11-04-99	1866.96	170.50*	1696.46
RD-22	11-01-99	1853.41	305.88	1547.53
RD-23	11-01-99	1836.37	238.19	1598.18
RD-24	11-04-99	1809.93	137.08*	1672.85 (P)
RD-25	11-04-99	1810.76	154.50*	1656.26
RD-26	11-03-99	1880.39	100.46	1779.93
RD-27	11-01-99	1841.67	50.78	1790.89
RD-28	11-04-99	1810.92	128.27*	1682.65
RD-29	11-01-99	1806.29	14.43	1791.86
RD-30	11-01-99	1768.69	20.87	1747.82
RD-31	11-01-99	1945.02	112.14	1832.88
RD-32	11-02-99	1808.47	29.17	1779.30
RD-33A	11-01-99	1792.97	203.94	1589.03
RD-33B	11-01-99	1793.21	291.68	1501.53
RD-33C	11-01-99	1793.54	291.51	1502.03
RD-34A	11-01-99	1761.83	52.72	1709.11
RD-34B	11-01-99	1762.51	63.10	1699.41
RD-34C	11-01-99	1762.60	13.93	1748.67
RD-35A	11-01-99	1906.68	70.79	1835.89
RD-35B	11-01-99	1905.65	72.32	1833.33
RD-36A	11-02-99	1913.09	80.77	1832.32
RD-36B	11-02-99	1915.26	124.95	1790.31
RD-36C	11-02-99	1913.82	194.77	1719.05
RD-36D	11-02-99	1920.08	361.59	1558.49
RD-37	11-02-99	1870.01	333.30	1536.71
RD-38A	11-02-99	1878.92	92.30	1786.62
RD-38B	11-02-99	1881.45	323.67	1557.78
RD-39A	11-02-99	1960.23	129.88	1830.35
RD-39B	11-02-99	1959.48	286.02	1673.46

See last page of Table 5 for footnotes and explanations

TABLE 5

SUMMARY OF WATER LEVEL DATA
FOURTH QUARTER 1999

Well Identifier	Date of Measurement	Reference Point Elevation (feet above MSL)	Depth to Water (feet)	Static Water Level Elevation (feet above MSL)
RD-40	11-02-99	1972.02	283.95	1688.07
RD-41A	11-02-99	1773.09	65.70	1707.39
RD-41B	11-02-99	1774.32	128.68	1645.64
RD-41C	11-02-99	1773.33	166.33	1607.00
RD-42	11-02-99	1945.46	52.11	1893.35
RD-43A	11-02-99	1680.16	58.64	1621.52
RD-43B	11-02-99	1680.21	100.83	1579.38
RD-43C	11-02-99	1679.31	102.65	1576.66
RD-44	11-02-99	2035.92	420.00	1615.92
RD-45A	11-01-99	1837.66	359.22	1478.44
RD-45B	11-01-99	1840.09	362.13	1477.96
RD-45C	11-01-99	1835.74	456.81	1378.93
RD-46A	11-02-99	1805.80	66.79	1739.01
RD-46B	11-02-99	1807.19	56.30	1750.89
RD-47	11-03-99	2045.72	566.66	1479.06
RD-48A	11-02-99	1736.54	62.93	1673.61
RD-48B	11-02-99	1735.40	132.68	1602.72
RD-48C	11-02-99	1734.95	181.98	1552.97
RD-49A	11-03-99	1867.11	18.20	1848.91
RD-49B	11-03-99	1867.74	278.77	1588.97
RD-49C	11-03-99	1869.22	366.47	1502.75
RD-50	11-01-99	1914.88	96.56	1818.32
RD-51A	11-02-99	1832.51	250.76	1581.75
RD-51B	11-02-99	1832.68	321.85	1510.83
RD-51C	11-02-99	1831.65	343.86	1487.79
RD-52A	11-02-99	1755.09	127.31	1627.78
RD-52B	11-02-99	1712.15	228.02	1484.13
RD-52C	11-02-99	1712.83	228.50	1484.33
RD-53	11-01-99	1909.19	122.23	1786.96

See last page of Table 5 for footnotes and explanations.

TABLE 5

SUMMARY OF WATER LEVEL DATA
FOURTH QUARTER 1999

Well Identifier	Date of Measurement	Reference Point Elevation (feet above MSL)	Depth to Water (feet)	Static Water Level Elevation (feet above MSL)
RD-54A	11-01-99	1834.99	142.69	1692.30
RD-54B	11-01-99	1835.48	241.08	1594.40
RD-54C	11-01-99	1834.58	214.90	1619.68
RD-55A	11-02-99	1756.70	20.13	1736.57
RD-55B	11-02-99	1757.19	48.36	1708.83
RD-56A	11-02-99	1758.62	325.62	1433.00
RD-56B	11-02-99	1761.83	250.74	1511.09
RD-57	11-01-99	1774.15	359.88	1414.27
RD-58A	11-02-99	1756.11	78.47	1677.64
RD-58B	11-02-99	1761.34	114.20	1647.14
RD-58C	11-02-99	1759.59	133.91	1625.68
RD-59A	11-06-99	1340.50	26.52	1313.98
RD-59B	11-06-99	1342.49	-38.91	1381.40 (A)
RD-59C	11-06-99	1345.41	-37.75	1383.16 (A)
RD-60	11-02-99	1870.40	82.34	1788.06
RD-61	11-02-99	1843.88	95.16	1748.72
RD-62	11-02-99	1837.20	204.00	1633.20
RD-63	11-04-99	1764.85	68.73*	1696.12 (P)
RD-64	11-01-99	1852.40	223.29	1629.11
RD-65	11-01-99	1819.14	229.77	1589.37
RD-66	11-02-99	1730.79	171.88	1558.91
RD-67	11-02-99	1901.71	57.68	1844.03
RD-68A	11-06-99	1307.64	0.00	1307.64 (A)
RD-68B	11-06-99	1312.44	0.00	1312.44 (A)
RD-69	11-02-99	1831.28	51.28	1780.00
RD-70	11-02-99	1732.26	221.50	1510.76
RD-71	11-02-99	1740.02	181.50	1558.52
RD-72	11-01-99	1907.25	78.00	1829.25
RD-73	11-01-99	1901.60	65.40	1836.2

See last page of Table 5 for footnotes and explanations.

TABLE 5

SUMMARY OF WATER LEVEL DATA
FOURTH QUARTER 1999

Well Identifier	Date of Measurement	Reference Point Elevation (feet above MSL)	Depth to Water (feet)	Static Water Level Elevation (feet above MSL)
RD-74	11-01-99	1810.90	66.98	1743.92
HAR-1	11-01-99	1874.13	44.14	1829.99
HAR-5	11-02-99	1812.65	17.83	1794.82
HAR-6	11-02-99	1815.03	16.38	1798.65
HAR-7	11-04-99	1728.38	80.08*	1648.30
HAR-8	11-03-99	1730.75	51.89	1678.86
HAR-16	11-04-99	1872.31	40.12*	1832.19
HAR-17	11-04-99	1711.59	80.02*	1631.57
HAR-18	11-04-99	1749.41	63.58*	1685.83
HAR-19	11-03-99	1833.46	DRY	---
HAR-20	11-03-99	1830.60	208.10	1622.50
HAR-21	11-03-99	1821.30	8.07	1813.23
HAR-22	11-02-99	1816.41	25.74	1790.67
HAR-23	11-02-99	1805.87	19.45	1786.42
HAR-24	11-01-99	1906.89	73.60	1833.29
HAR-25	11-01-99	1889.75	53.78	1835.97
HAR-26	11-02-99	1763.17	18.78	1744.39
WS-4A	11-02-99	1749.77	258.59	1491.18
WS-5	11-04-99	1830.20	452.35*	1377.85 (P)
WS-6	11-04-99	1932.72	449.60*	1483.12
WS-7	11-01-99	1826.19	56.90	1769.29
WS-8	11-01-99	1794.39	191.54	1602.85
WS-9	11-04-99	1883.99	472.80*	1411.19 (P)
WS-9A	11-04-99	1647.61	86.70*	1560.91 (P)
WS-9B	11-02-99	1796.89	168.65	1628.24
WS-11	11-02-99	1748.70	46.99	1701.71
WS-12	11-02-99	1705.98	221.49	1484.49
WS-13	11-02-99	1658.62	172.92	1485.70
WS-14	11-01-99	1878.23	370.66	1507.57

See last page of Table 5 for footnotes and explanations.

TABLE 5

SUMMARY OF WATER LEVEL DATA
FOURTH QUARTER 1999

Well Identifier	Date of Measurement	Reference Point Elevation (feet above MSL)	Depth to Water (feet)	Static Water Level Elevation (feet above MSL)
WS-SP	11-02-99	1766.70	26.75	1739.95
OS-24	11-02-99	1947.30	282.00	1665.30
OS-25	11-02-99	2043.58	DRY	---
OS-26	11-02-99	2080.58	191.36	1889.22

(*) = Water level measured by EnviroSolve Corporation
(A) = Artesian
(P) = Pumping water level
MSL = Mean Sea Level
(---) = No data available/not applicable

Negative values in the Depth to Water column indicate total heads above the reference point elevations.

TABLE 6

GROUNDWATER RECLAMATION SYSTEM EXTRACTION WELLS

SHALLOW ZONE GROUNDWATER SYSTEM		CHATSWORTH FORMATION GROUNDWATER SYSTEM	
EXTRACTION WELL	**TREATMENT SYSTEM**	**EXTRACTION WELL**	**TREATMENT SYSTEM**
ES-1	AREA I ROAD	WS-5	WS-5 AREA
ES-3	AREA I ROAD	WS-6	ALFA
ES-4	AREA I ROAD	WS-9	BRAVO
ES-5	AREA I ROAD	WS-9A	DELTA
ES-6	AREA I ROAD	RD-1	CANYON/AREA I ROAD[1/]
ES-7	AREA I ROAD	RD-2	AREA I ROAD
ES-11	WS-5 AREA	RD-4	BRAVO
ES-14	STL-IV	RD-9	RD-9 AREA/BRAVO[1/]
ES-17	STL-IV	HAR-7	DELTA
ES-21	RD-9 AREA/BRAVO[1/]	HAR-16	WS-5 AREA
ES-22	RD-9 AREA/BRAVO[1/]	HAR-17	STL-IV
ES-23	STL-IV	HAR-18	STL-IV
ES-24	STL-IV	***Interim Extraction System***	
ES-26	STL-IV	RD-21	FSDF
ES-27	STL-IV	RD-63	RMHF
ES-30	STL-IV	***B/059 Construction Dewatering***	
ES-32	STL-IV	B/056	B/059
HAR-4	WS-5 AREA	RD-24	B/059
ECL FRENCH-DRAIN AND SUMP	STL-IV	RD-25	B/059
		RD-28	B/059
		S-2 Sump	B/059
Interim Extraction System			
RS-54	FSDF		

NOTE: Treatment system that well discharges to is indicated in column designated as Treatment System
FSDF = Former Sodium Disposal Facility at Building 886, Area IV.
RMHF = Radioactive Materials Handling Facility near Building 59, Area IV.
B/056 = Building 56 Pit
B/059 = Building 59

1/ The RD-9 Area and Canyon ETS were taken out of operation in October 1998 Wells which previously pumped into the RD-9 Area UV/H_2O_2 system were plumbed into the Bravo system Well RD-1, which previously pumped into the Canyon treatment system, was plumbed into the Area I Road treatment system.

TABLE 7

SUMMARY OF GROUNDWATER EXTRACTIONS
GROUNDWATER RECLAMATION SYSTEM

WELL IDENTIFIER	EXTRACTIONS IN GALLONS								
	1990	1991	1992	1993	1994	1995	1996	1997	1998
SHALLOW ZONE - GRS									
ES-1	0	0	50	220	10	60	210	10,400	32,000
ES-3	0	12,296	130	260	30	50,048	4,937	363,600	53,000
ES-4	0	0	326	650	30	112,880	0	44,800	260,700
ES-5	0	0	300	310	50	81,070	7,990	53,300	149,100
ES-6	33	481	9,470	500	260	3,990	54,900	202,900	442,800
ES-7	0	2,028	580	10	50	1,475	0	6,200	35,700
ES-11	0	47	40	0	70	1,790	3,450	0	26,500
ES-14	10	106	21,970	1,630	20	4,280	2,200	11,000	17,500
ES-17	21,621	141	9,725	1,650	38,950	72,500	37,910	41,700	25,000
ES-21	0	0	160[1/]	0[1/]	36,100	28,700	65,200	111,300	83,200
ES-22	0	0	0[1/]	0[1/]	62,010	187,660	40,070	45,300	80,400
ES-23	677	62	21,190	0	10,930	23,400	13,650	13,400	17,800
ES-24	0	0	6,991	1,150	7,510	100	9,248	23,100	17,800
ES-26	118,051	304	269,090	10,620	301,760	462,800	387,950	271,700	168,400
ES-27	1,550	202	57,460	1,930	46,460	50,600	56,030	54,900	28,200
ES-30	16,158	532	212,030	3,230	268,770	267,850	210,740	130,200	12,400
ES-32	433	112	359	290	1,070	2,858	4,852	1,600	500
HAR-4	0	9,682	504,000	73,000	10,868	40,115	19,500	10,800	1,500
ECL FRENCH-DRAIN	6,771	20,029	46,450	24,850	107,360	459,420	708,570	442,000	577,200
ECL SUMP	6,331	13,589	45,100	27,760	33,010	221,165	84,755	142,000	240,500
TOTAL SHALLOW ZONE EXTRACTIONS - GRS									
	171,635	59,611	1,205,421	148,060	925,318	2,072,761	1,712,162	1,980,200	2,270,200

See last page of Table 7 for footnotes and explanations.

TABLE 7

SUMMARY OF GROUNDWATER EXTRACTIONS
GROUNDWATER RECLAMATION SYSTEM

WELL IDENTIFIER	EXTRACTIONS IN GALLONS									
	1999									TOTALS
SHALLOW ZONE - GRS										
ES-1	10,200									53,140
ES-3	269,200									753,511
ES-4	0									419,406
ES-5	900									293,020
ES-6	78,400									793,694
ES-7	2,200									48,218
ES-11	11,600									43,467
ES-14	10,400									69,071
ES-17	16,200									265,367
ES-21	89,800									414,430
ES-22	220,500									635,970
ES-23	13,500									114,643
ES-24	17,300									83,219
ES-26	285,900									2,276,595
ES-27	44,700									342,062
ES-30	385,700									1,507,600
ES-32	8,300									20,374
HAR-4	41,600									711,074
ECL FRENCH-DRAIN	67,000									2,459,695
ECL SUMP	195,900									1,010,061
TOTAL SHALLOW ZONE EXTRACTIONS - GRS										
	1,769,300									12,314,617

See last page of Table 7 for footnotes and explanations.

TABLE 7

SUMMARY OF GROUNDWATER EXTRACTIONS
GROUNDWATER RECLAMATION SYSTEM

WELL IDENTIFIER	EXTRACTIONS IN GALLONS X 1000							
	1987	1988	1989	1990	1991	1992	1993	1994
CHATSWORTH FORMATION - GRS								
RD-1	2,706	5,203	10,386	10,224	4,697	5,932	5,540	7,837
RD-2	0	0	1,068	8,252	8,179	8,687	5,542	4,537
RD-4	37	0	1,701	16,424	3,264	611	17	606
RD-9	0	622	0	0	36	83	666	987
WS-5	38,105	39,135	21,864	34,733	48,852	57,943	54,447	70,047
WS-6	0	12,509	55,877	60,761	62,266	55,687	44,322	38,529
WS-9	1,318	0	4,310	6,641	6,891	4,742	4,450	5,483
WS-9A	8,466	9,362	26,574	21,847	13,751[2/]	7,846	21,851	10,199
HAR-7	0	0	0	2	185	117	451	272
HAR-16	0	0	0	1	19	282	187	49
HAR-17	0	0	0	95	5	257	16	277
HAR-18	0	0	0	0	5	40	0	67
TOTALS	**50,632**	**66,831**	**121,780**	**158,980**	**148,150**	**142,227**	**137,489**	**138,890**

See last page of Table 7 for footnotes and explanations.

TABLE 7

SUMMARY OF GROUNDWATER EXTRACTIONS
GROUNDWATER RECLAMATION SYSTEM

WELL IDENTIFIER	EXTRACTIONS IN GALLONS X 1000									
	1995	1996	1997	1998	1999					TOTALS
RD-1	3,642	6,465	6,751	5,139	4,583					79,105
RD-2	6,665	4,203	6,979	4,848	8,448					67,408
RD-4	31	906	4,691	5,847	2,408					36,543
RD-9	835	953	517	115	627					5,441
WS-5	50,266	27,567	21,333	26,029	32,889					523,210
WS-6	49,653	19,029	33,661	27,740	22,541					482,575
WS-9	4,825	4,240	3,931	3,845	4,039					54,715
WS-9A	11,046	12,529	25,153	58,356	55,386					282,366
HAR-7	638	243	384	140	108					2,540
HAR-16	367	110	13	0	0					1,028
HAR-17	237	180	363	633	436					2,499
HAR-18	95	60	81	41	100					489
TOTAL CHATSWORTH FORMATION EXTRACTIONS										
	128,300	76,485	103,857	132,733	131,565					1,537,919

1/ = Flow meter not functioning.
2/ = Flow meter at the Delta treatment system did not function properly during second half of 1991.

NOTE: All totals do not add up exactly, as presented on table, due to rounding.

TABLE 8

SUMMARY OF GROUNDWATER EXTRACTIONS
INTERIM AND PILOT SYSTEMS

WELL IDENTIFIER	EXTRACTION (gallons x 1,000)							
	1993	1994	1995	1996	1997	1998	1999	TOTAL
RMHF INTERIM ETS SYSTEM								
RD-63	0	277	0	484	665	794	498	2,718
FSDF INTERIM ETS SYSTEM								
RS-54	0	0	5	0	6	12	7	30
RD-21	0	0	0	0	22	31	24	77
PILOT ETS SYSTEMS								
RD-60	0	0	0	0	1/0.06	0	0	0.06
RD-73	0	0	0	0	337	0	0	337
RD-46A	0	0	0	0	0	397	0	397
B-059 DEWATERING								
RD-24	0	---	---	---	---	530	490	1,020
RD-25							87	87
RD-28							74	74
S-2 French-drain	---	---	---	---	---	90	1	91
B-056	---	---	---	---	---	---	1,270	1,270

8640M-412 GWRC

1/ Pilot extraction test was terminated due to low yield from well RD-60.
(---) Pumpage not recorded on a routine monthly basis.

TABLE 9
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN SHALLOW ZONE WELLS AND THE ECL FRENCH-DRAIN

ORGANIC COMPOUND (µg/l)	SH-3	SH-4	SH-11	ECL-FD						
	02-07-99	02-08-99	02-07-99	02-11-99	02-11-99*					
SHALLOW ZONE SH WELLS										
Acrolein	-0.9	-4	-0.9	-500	-500					
Acrylonitrile	-0.7	-0.2	-0.7	-500	-500					
Benzene	-0.3	0.4	-0.3	-25	-25					
Bromodichloromethane	-0.2	-0.2	-0.2	-25	-25					
Bromoform	-0.3	-0.2	-0.3	-25	-25					
Bromomethane	-0.3	-0.3	-0.3	-25	-25					
Carbon Tetrachloride	61	250	-0.2	44	43					
Chlorobenzene	-0.3	-0.2	-0.3	-25	-25					
Chloroethane	-0.2	-0.2	-0.2	-25	-25					
2-Chloroethylvinyl Ether	-0.9	---	-0.9	-25	-25					
Chloroform	170	110	-0.4	110	110					
Chloromethane	-0.2	-0.2	-0.2	-25	-25					
Dibromochloromethane	-0.2	-0.2	-0.2	-25	-25					
1,1-Dichloroethane	23	25	-0.2	20	21					
1,2-Dichloroethane	130	49	-0.3	3.6	4.0					
1,1-Dichloroethylene	10	15	-0.2	6.6	6.2					
Cis-1,2-Dichloroethylene	19	30	-0.2	17	19					
Trans-1,2-Dichloroethylene	-0.2	0.5	-0.2	-25	-25					
1,2-Dichloropropane	-0.3	-0.2	-0.3	-25	-25					
Cis-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-25	-25					
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-25	-25					
Ethylbenzene	-0.2	-0.2	-0.2	-25	-25					
Methylene Chloride	-0.4	5	-0.4	-25	-25					
1,1,2,2-Tetrachloroethane	-0.5	-0.2	-0.5	-25	-25					
Tetrachloroethylene	11	23	-0.4	4.5	5.0					
1,1,1-Trichloroethane	8.5	9	-0.2	7.2	6.9					
1,1,2-Trichloroethane	-0.3	-0.3	-0.3	-25	-25					
Trichloroethylene	63	150	-0.4	45	44					
Toluene	-0.3	0.2	-0.3	-25	-25					
Vinyl Chloride	0.7	2.1	-0.3	-25	-25					
Method	8260	8260	8260	8260	8260					
Laboratory	CAS	CAS	CAS	CAS	CAS					

See last page of Table 9 for footnotes and explanations.

TABLE 9
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN SHALLOW ZONE WELLS AND THE ECL FRENCH-DRAIN

ORGANIC COMPOUND (µg/l)	RS-1		RS-7	RS-8	RS-11		RS-13	RS-18		RS-21
	02-17-99	08-06-99	02-17-99	02-07-99	02-06-99	02-06-99**	02-18-99	05-12-99	05-12-99**	02-10-99
SHALLOW ZONE RS WELLS										
Acrolein	-0.9	-8	-0.9	-4	-0.9	-172	-0.9	-1000	---	-0.9
Acrylonitrile	-0.7	-8	-0.7	-0.2	-0.7	-1.3	-0.7	-1000	---	-0.7
Benzene	-0.3	-0.2	-0.3	-0.2	-0.3	-0.4	-0.3	-5	-0.3	-0.3
Bromodichloromethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.4	-0.2	-5	-0.2	-0.2
Bromoform	-0.3	-0.3	-0.3	-0.2	-0.3	-0.7	-0.3	-5	-0.1	-0.3
Bromomethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.4	-0.3	-5	-0.5	-0.3
Carbon Tetrachloride	-0.2	-0.4	-0.2	-0.3	-0.2	-0.4	-0.2	-5	-0.2	-0.2
Chlorobenzene	-0.3	-0.3	-0.3	-0.2	-0.3	-0.3	-0.3	-5	-0.5	-0.3
Chloroethane	-0.2	-0.4	-0.2	-0.2	-0.2	-1.1	-0.2	-5	-0.4	-0.2
2-Chloroethylvinyl Ether	-0.9	-2	-0.9	---	-0.9	-1.2	-0.9	-50	-0.2	-0.9
Chloroform	-0.4	-0.3	-0.4	-0.2	-0.4	-0.2	-0.4	-5	**3.2**	-0.4
Chloromethane	-0.2	-0.4	-0.2	-0.2	-0.2	-0.7	-0.2	-5	-0.3	-0.2
Dibromochloromethane	-0.2	-0.3	-0.2	-0.2	-0.2	-0.6	-0.2	-5	-0.2	-0.2
1,1-Dichloroethane	-0.2	-0.4	-0.2	-0.2	-0.2	**-2.8**	-0.2	**57**	**116**	-0.2
1,2-Dichloroethane	-0.3	-0.3	-0.3	-0.2	-0.3	-1.0	-0.3	-5	-0.2	-0.3
1,1-Dichloroethylene	-0.2	-0.3	-0.2	-0.2	-0.2	-1.2	-0.2	**140**	**230**	-0.2
Cis-1,2-Dichloroethylene	-0.2	-0.3	**1.7**	**43**	-0.2	-0.5	-0.2	**34**	**53**	-0.2
Trans-1,2-Dichloroethylene	-0.2	-0.2	**0.4**	**10**	-0.2	-0.9	-0.2	-5	-0.4	-0.2
1,2-Dichloropropane	-0.3	-0.2	-0.3	-0.2	-0.3	-0.5	-0.3	-5	-0.3	-0.3
Cis-1,3-Dichloropropylene	-0.2	-0.3	-0.2	-0.2	-0.2	-0.4	-0.2	-5	-0.2	-0.2
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.4	-0.2	-5	-0.3	-0.2
Ethylbenzene	-0.2	-0.3	-0.2	-0.2	-0.2	-0.5	-0.2	-5	-0.2	-0.2
Methylene Chloride	-0.4	-0.3	-0.4	-0.3	-0.4	-2.0	-0.4	-20	-0.2	-0.4
1,1,2,2-Tetrachloroethane	-0.5	-0.3	-0.5	-0.2	-0.5	-0.3	-0.5	-5	-0.2	-0.5
Tetrachloroethylene	-0.4	-0.4	-0.4	-0.2	-0.4	-0.4	-0.4	-5	-0.2	-0.4
1,1,1-Trichloroethane	-0.2	-0.2	-0.2	-0.3	-0.2	-0.3	-0.2	**70**	**98**	-0.2
1,1,2-Trichloroethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-0.3	-5	-0.2	-0.3
Trichloroethylene	-0.4	-0.3	**0.9**	**1.7**	-0.4	-0.5	-0.4	**1000**	**1170**	**4.8**
Toluene	-0.3	-0.2	-0.3	-0.2	-0.3	-0.7	-0.3	-5	-0.2	-0.3
Vinyl Chloride	-0.3	-0.4	**0.4**	**3.0**	-0.3	-0.6	-0.3	-5	-0.3	-0.3
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	CAS	CAS	CAS	AL	CAS	CAS	AL	CAS

See last page of Table 9 for footnotes and explanations.

TABLE 9
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN SHALLOW ZONE WELLS AND THE ECL FRENCH-DRAIN

ORGANIC COMPOUND (µg/l)	RS-30	RS-31		RS-32			RS-54			
	02-17-99	02-17-99	08-06-99	02-17-99	08-06-99	08-06-99*	02-02-99	08-18-99		
SHALLOW ZONE RS WELLS										
Acrolein	-0.9	-0.9	-8	-0.9	-8	-8	-5000	-200		
Acrylonitrile	-0.7	-0.7	-8	-0.7	-8	-8	-5000	-200		
Benzene	**0.7**	-0.3	-0.2	-0.3	-0.2	-0.2	-250	**6**		
Bromodichloromethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-250	-5		
Bromoform	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-250	-7.5		
Bromomethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-250	-7.5		
Carbon Tetrachloride	-0.2	-0.2	-0.4	-0.2	-0.4	-0.4	-250	-10		
Chlorobenzene	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-250	-7.5		
Chloroethane	-0.2	-0.2	-0.4	-0.2	-0.4	-0.4	-250	-10		
2-Chloroethylvinyl Ether	-0.9	-0.9	-2	-0.9	-2	-2	-250	-50		
Chloroform	-0.4	-0.4	-0.3	-0.4	-0.3	-0.3	-250	**9**		
Chloromethane	-0.2	-0.2	-0.4	-0.2	-0.4	-0.4	-250	-10		
Dibromochloromethane	-0.2	-0.2	-0.3	-0.2	-0.3	-0.3	-250	-7.5		
1,1-Dichloroethane	-0.2	-0.2	-0.4	-0.2	-0.4	-0.4	**580**	**510**		
1,2-Dichloroethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-250	-7.5		
1,1-Dichloroethylene	-0.2	-0.2	-0.3	-0.2	-0.3	-0.3	**660**	**730**		
Cis-1,2-Dichloroethylene	-0.2	-0.2	-0.3	**0.6**	**2.3**	**2.2**	-250	**15**		
Trans-1,2-Dichloroethylene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-250	-5		
1,2-Dichloropropane	-0.3	-0.3	-0.2	-0.3	-0.2	-0.2	-250	-5		
Cis-1,3-Dichloropropylene	-0.2	-0.2	-0.3	-0.2	-0.3	-0.3	-250	-7.5		
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-250	-5		
Ethylbenzene	41	-0.2	-0.3	-0.2	-0.3	-0.3	-250	-7.5		
Methylene Chloride	-0.4	-0.4	-0.3	-0.4	-0.3	-0.3	-250	**9**		
1,1,2,2-Tetrachloroethane	-0.5	-0.5	-0.3	-0.5	-0.3	-0.3	-250	-7.5		
Tetrachloroethylene	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-250	-10		
1,1,1-Trichloroethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	**4100**	**4300**		
1,1,2-Trichloroethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-250	-7.5		
Trichloroethylene	-0.4	-0.4	-0.3	-0.4	-0.3	-0.3	**1300**	**2000**		
Toluene	-0.3	-0.3	-0.2	-0.3	-0.2	-0.2	-250	-5		
Vinyl Chloride	-0.3	-0.3	-0.4	-0.3	-0.4	-0.4	-250	-10		
Method	8260	8260	8260	8260	8260	8260	8260	8260		
Laboratory	CAS	CAS	CAS	CAS	CAS	CAS	CAS	CAS		

See last page of Table 9 for footnotes and explanations.

TABLE 9
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN SHALLOW ZONE WELLS AND THE ECL FRENCH-DRAIN

ORGANIC COMPOUND (µg/l)	ES-1	ES-3	ES-5	ES-6	ES-7	ES-11	ES-12	ES-14	ES-21	
	05-07-99	05-06-99	05-07-99	02-10-99	08-05-99	02-19-99	05-14-99	02-18-99	02-10-99	02-10-99*
SHALLOW ZONE ES WELLS										
Acrolein	-0.9	-0.9	-0.9	-500	-8	-2000	-0.9	-500	-1000	-1000
Acrylonitrile	-0.7	-0.7	-0.7	-500	-8	-2000	-0.7	-500	-1000	-1000
Benzene	-0.3	-0.3	-0.3	-25	-0.2	-100	-0.3	-25	-50	-50
Bromodichloromethane	-0.2	-0.2	-0.2	-25	-0.2	-100	-0.2	-25	-50	-50
Bromoform	-0.3	-0.3	-0.3	-25	-0.3	-100	-0.3	-25	-50	-50
Bromomethane	-0.3	-0.3	-0.3	-25	-0.3	-100	-0.3	-25	-50	-50
Carbon Tetrachloride	-0.2	-0.2	-0.2	-25	-0.4	-100	-0.2	-25	-50	-50
Chlorobenzene	-0.3	-0.3	-0.3	-25	-0.3	-100	-0.3	-25	-50	-50
Chloroethane	-0.2	-0.2	-0.2	-25	-0.4	-100	-0.2	-25	-50	-50
2-Chloroethylvinyl Ether	-0.9	-0.9	-0.9	-25	-2	-100	-0.9	-25	-50	-50
Chloroform	-0.4	-0.4	**0.8**	-25	-0.3	-100	-0.4	-25	-50	-50
Chloromethane	-0.2	-0.2	-0.2	-25	-0.4	-100	-0.2	-25	-50	-50
Dibromochloromethane	-0.2	-0.2	-0.2	-25	-0.3	-100	-0.2	-25	-50	-50
1,1-Dichloroethane	-0.2	-0.2	**1.8**	-25	-0.4	-100	-0.2	-25	-50	-50
1,2-Dichloroethane	-0.3	-0.3	-0.3	-25	-0.3	-100	-0.3	-25	-50	-50
1,1-Dichloroethylene	-0.2	**1.2**	**3.7**	**8.8**	**0.5**	-100	-0.2	**9.8**	-50	-50
Cis-1,2-Dichloroethylene	**27**	**150**	**150**	**260**	**61**	**43**	-0.2	**13**	**35**	**32**
Trans-1,2-Dichloroethylene	**5.5**	**32**	**3.5**	-25	**4.7**	-100	-0.2	-25	-50	-50
1,2-Dichloropropane	-0.3	-0.3	-0.3	-25	-0.2	-100	-0.3	-25	-50	-50
Cis-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-25	-0.3	-100	-0.2	-25	-50	-50
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-25	-0.2	-100	-0.2	-25	-50	-50
Ethylbenzene	-0.2	-0.2	-0.2	-25	-0.3	-100	-0.2	-25	-50	-50
Methylene Chloride	-0.4	-0.4	-0.4	-25	-0.3	-100	-0.4	-25	-50	-50
1,1,2,2-Tetrachloroethane	-0.5	-0.5	-0.5	-25	-0.3	-100	-0.5	-25	-50	-50
Tetrachloroethylene	-0.4	-0.4	**1.2**	-25	-0.4	-100	-0.4	-25	-50	-50
1,1,1-Trichloroethane	-0.2	-0.2	-0.2	-25	-0.2	-100	-0.2	-25	-50	-50
1,1,2-Trichloroethane	-0.3	-0.3	-0.3	-25	-0.3	-100	-0.3	-25	-50	-50
Trichloroethylene	**47**	**350**	**2600**	**3200**	**72**	**3100**	-0.4	**320**	**300**	**270**
Toluene	-0.3	-0.3	-0.3	-25	-0.2	-100	-0.3	-25	-50	-50
Vinyl Chloride	-0.3	**9.0**	-0.3	-25	**2.1**	-100	-0.3	-25	-50	-50
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	CAS	CAS	CAS	CAS	CAS	CAS	CAS	CAS

See last page of Table 9 for footnotes and explanations.

TABLE 9
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN SHALLOW ZONE WELLS AND THE ECL FRENCH-DRAIN

ORGANIC COMPOUND (µg/l)	ES-22	ES-23	ES-24	ES-26	ES-27	ES-30	ES-31	ES-32		
	02-10-99	02-11-99	02-18-99	02-07-99	02-07-99	02-11-99	02-06-99	02-07-99		
SHALLOW ZONE ES WELLS										
Acrolein	-0.9	-200	-2000	-500	-1000	-0.9	-0.9	-0.9		
Acrylonitrile	-0.7	-200	-2000	-500	-1000	-0.7	-0.7	-0.7		
Benzene	-0.3	-10	-100	-25	-50	-0.3	-0.3	-0.3		
Bromodichloromethane	-0.2	-10	-100	-25	-50	-0.2	-0.2	-0.2		
Bromoform	-0.3	-10	-100	-25	-50	-0.3	-0.3	-0.3		
Bromomethane	-0.3	-10	-100	-25	-50	-0.3	-0.3	-0.3		
Carbon Tetrachloride	-0.2	-10	-100	-25	-50	-0.2	-0.2	-0.2		
Chlorobenzene	-0.3	-10	-100	-25	-50	-0.3	-0.3	-0.3		
Chloroethane	-0.2	-10	-100	-25	-50	-0.2	-0.2	-0.2		
2-Chloroethylvinyl Ether	-0.9	-10	-100	-25	-50	-0.9	-0.9	-0.9		
Chloroform	-0.4	**1.0**	-100	-25	-50	-0.4	-0.4	-0.4		
Chloromethane	-0.2	-10	-100	-25	-50	-0.2	-0.2	-0.2		
Dibromochloromethane	-0.2	-10	-100	-25	-50	-0.2	-0.2	-0.2		
1,1-Dichloroethane	-0.2	-10	**50**	-25	**6.0**	-0.2	-0.2	**1.4**		
1,2-Dichloroethane	-0.3	-10	-100	-25	-50	-0.3	-0.3	-0.3		
1,1-Dichloroethylene	-0.2	-10	**110**	-25	-50	**0.5**	-0.2	**8.9**		
Cis-1,2-Dichloroethylene	**3.1**	-10	**100**	**4.0**	**41**	-0.2	-0.2	**65**		
Trans-1,2-Dichloroethylene	-0.2	-10	**10**	-25	-50	-0.2	-0.2	-0.2		
1,2-Dichloropropane	-0.3	-10	-100	-25	-50	-0.3	-0.3	-0.3		
Cis-1,3-Dichloropropylene	-0.2	-10	-100	-25	-50	-0.2	-0.2	-0.2		
Trans-1,3-Dichloropropylene	-0.2	-10	-100	-25	-50	-0.2	-0.2	-0.2		
Ethylbenzene	-0.2	-10	-100	-25	-50	-0.2	-0.2	-0.2		
Methylene Chloride	-0.4	-10	-100	-25	**250**[1/]	-0.4	-0.4	-0.4		
1,1,2,2-Tetrachloroethane	-0.5	-10	-100	-25	-50	-0.5	-0.5	-0.5		
Tetrachloroethylene	-0.4	-10	-100	-25	-50	-0.4	-0.4	**0.4**		
1,1,1-Trichloroethane	-0.2	-10	**9.4**	-25	**15**	-0.2	-0.2	**2.0**		
1,1,2-Trichloroethane	-0.3	-10	-100	-25	-50	-0.3	-0.3	-0.3		
Trichloroethylene	**61**	**100**	**9900**	**110**	**830**	**36**	-0.4	**140**		
Toluene	-0.3	-10	-100	-25	-50	-0.3	-0.3	-0.3		
Vinyl Chloride	-0.3	-10	-100	-25	-50	-0.3	-0.3	-0.3		
Method	8260	8260	8260	8260	8260	8260	8260	8260		
Laboratory	CAS	CAS	CAS	CAS	CAS	CAS	CAS	CAS		

See last page of Table 9 for footnotes and explanations.

TABLE 9
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN SHALLOW ZONE WELLS AND THE ECL FRENCH-DRAIN

ORGANIC COMPOUND (µg/l)	HAR-3	HAR-4	HAR-11	HAR-14	HAR-15	HAR-27				
	02-17-99	02-17-99	02-07-99	02-09-99	02-09-99	02-09-99				
SHALLOW ZONE HAR WELLS										
Acrolein	-0.9	-0.9	-0.9	-4	-4	-0.9				
Acrylonitrile	-0.7	-0.7	-0.7	-0.2	-0.2	-0.7				
Benzene	-0.3	-0.3	-0.3	-0.2	-0.2	-0.3				
Bromodichloromethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2				
Bromoform	-0.3	-0.3	-0.3	-0.2	-0.2	-0.3				
Bromomethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3				
Carbon Tetrachloride	-0.2	-0.2	-0.2	**3.1**	-0.3	-0.2				
Chlorobenzene	-0.3	-0.3	-0.3	-0.2	-0.2	-0.3				
Chloroethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2				
2-Chloroethylvinyl Ether	-0.9	-0.9	-0.9	---	---	-0.9				
Chloroform	**0.9**	**0.8**	-0.4	**3.8**	-0.2	-0.4				
Chloromethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2				
Dibromochloromethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2				
1,1-Dichloroethane	-0.2	-0.2	-0.2	**0.3**	-0.2	-0.2				
1,2-Dichloroethane	-0.3	-0.3	-0.3	-0.2	-0.2	-0.3				
1,1-Dichloroethylene	-0.2	-0.2	-0.2	**14**	-0.2	-0.2				
Cis-1,2-Dichloroethylene	**2.7**	-0.2	**17**	-0.3	-0.3	**30**				
Trans-1,2-Dichloroethylene	-0.2	-0.2	-0.2	-0.2	-0.2	**20**				
1,2-Dichloropropane	-0.3	-0.3	-0.3	-0.2	-0.2	-0.3				
Cis-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2				
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2				
Ethylbenzene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2				
Methylene Chloride	-0.4	-0.4	-0.4	-0.3	-0.3	-0.4				
1,1,2,2-Tetrachloroethane	-0.5	-0.5	-0.5	-0.2	-0.2	-0.5				
Tetrachloroethylene	-0.4	-0.4	-0.4	-0.2	-0.2	-0.4				
1,1,1-Trichloroethane	-0.2	-0.2	-0.2	**2.8**	-0.3	-0.2				
1,1,2-Trichloroethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3				
Trichloroethylene	**49**	**20**	**0.8**	**5.3**	-0.3	**4.4**				
Toluene	-0.3	-0.3	-0.3	-0.2	-0.2	-0.3				
Vinyl Chloride	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3				
Method	8260	8260	8260	8260	8260	8260				
Laboratory	CAS	CAS	CAS	CAS	CAS	CAS				

See last page of Table 9 for footnotes and explanations.

TABLE 9

FOOTNOTES AND EXPLANATIONS

Laboratory Abbreviation

AL	=	Associated Laboratories of Orange, California.
CAS	=	Columbia Analytical Services, Inc. of Canoga Park, California.

Footnotes

1/	=	Suspect result.
(-)	=	Less than; numerical value represents the Limit of Detection for that compound.
(*)	=	Sample duplicate.
(**)	=	Sample split.
8260	=	EPA Method 8260 for volatile organic compounds (GC/MS). Laboratory uses most current promulgated version (e.g., 8260A, 8260B).

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-1	RD-2	RD-3	RD-4	RD-5A					RD-5B
	02-20-99	02-18-99	02-09-99	05-11-99	02-04-99	05-11-99	08-10-99	11-06-99	11-06-99**	02-04-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-8	---	-10	-0.9
Acrylonitrile	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-8	---	-10	-0.7
Benzene	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.2	-0.5	-0.5	-0.3
Bromodichloromethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5	-0.5	-0.2
Bromoform	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3
Bromomethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3
Carbon Tetrachloride	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.4	-0.5	-0.5	-0.2
Chlorobenzene	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3
Chloroethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.4	-0.5	-0.5	-0.2
2-Chloroethylvinyl Ether	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-2	-5	-1	-0.9
Chloroform	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.3	-0.5	-0.5	-0.4
Chloromethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.4	-1	-0.5	-0.2
Dibromochloromethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.5	-0.5	-0.2
1,1-Dichloroethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.4	-0.5	-0.5	-0.2
1,2-Dichloroethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3
1,1-Dichloroethylene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.5	-0.5	-0.2
Cis-1,2-Dichloroethylene	**50**	**97**	-0.2	**33**	-0.2	-0.2	-0.3	-0.5	-0.5	-0.2
Trans-1,2-Dichloroethylene	**4.6**	**16**	-0.2	**0.9**	-0.2	-0.2	-0.2	-0.5	-0.5	-0.2
1,2-Dichloropropane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.2	-0.5	-0.5	-0.3
Cis-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.5	-0.5	-0.2
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5	-0.5	-0.2
Ethylbenzene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.5	-0.5	-0.2
Methylene Chloride	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.3	-1	-3	-0.4
1,1,2,2-Tetrachloroethane	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.3	-0.5	-0.5	-0.5
Tetrachloroethylene	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.5	-0.5	-0.4
1,1,1-Trichloroethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5	-0.5	-0.2
1,1,2-Trichloroethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3
Trichloroethylene	**84**	**87**	-0.4	**47**	-0.4	-0.4	-0.3	-0.5	-0.5	-0.4
Toluene	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.2	-0.5	-0.5	-0.3
Vinyl Chloride	**1.6**	**2.1**	-0.3	**0.8**	-0.3	-0.3	-0.4	-0.5	-0.5	-0.3
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	CAS	CAS	CAS	CAS	CAS	AA	Babcock	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-5B			RD-5C						RD-6
	05-11-99	08-09-99	11-05-99	02-03-99	02-03-99*	05-13-99	05-13-99*	08-10-99	11-06-99	02-04-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	-0.9	-8	---	-0.9	-0.9	-0.9	-0.9	-8	---	-0.9
Acrylonitrile	-0.7	-8	---	-0.7	-0.7	-0.7	-0.7	-8	---	-0.7
Benzene	-0.3	-0.2	-0.5	-0.3	-0.3	-0.3	-0.3	-0.2	-0.5	-0.3
Bromodichloromethane	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5	-0.2
Bromoform	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-0.3
Bromomethane	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-0.3
Carbon Tetrachloride	-0.2	-0.4	-0.5	-0.2	-0.2	-0.2	-0.2	-0.4	-0.5	-0.2
Chlorobenzene	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-0.3
Chloroethane	-0.2	-0.4	-0.5	-0.2	-0.2	-0.2	-0.2	-0.4	-0.5	-0.2
2-Chloroethylvinyl Ether	-0.9	-2	-5	-0.9	-0.9	-0.9	-0.9	-2	-5	-0.9
Chloroform	-0.4	-0.3	-0.5	-0.4	-0.4	-0.4	-0.4	-0.3	-0.5	-0.4
Chloromethane	-0.2	-0.4	-1	-0.2	-0.2	-0.2	-0.2	-0.4	-1	-0.2
Dibromochloromethane	-0.2	-0.3	-0.5	-0.2	-0.2	-0.2	-0.2	-0.3	-0.5	-0.2
1,1-Dichloroethane	-0.2	-0.4	-0.5	-0.2	-0.2	-0.2	-0.2	-0.4	-0.5	-0.2
1,2-Dichloroethane	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-0.3
1,1-Dichloroethylene	-0.2	-0.3	-0.5	-0.2	-0.2	-0.2	-0.2	-0.3	-0.5	-0.2
Cis-1,2-Dichloroethylene	-0.2	-0.3	-0.5	-0.2	-0.2	-0.2	-0.2	-0.3	-0.5	-0.2
Trans-1,2-Dichloroethylene	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5	-0.2
1,2-Dichloropropane	-0.3	-0.2	-0.5	-0.3	-0.3	-0.3	-0.3	-0.2	-0.5	-0.3
Cis-1,3-Dichloropropylene	-0.2	-0.3	-0.5	-0.2	-0.2	-0.2	-0.2	-0.3	-0.5	-0.2
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5	-0.2
Ethylbenzene	-0.2	-0.3	-0.5	-0.2	-0.2	-0.2	-0.2	-0.3	-0.5	-0.2
Methylene Chloride	-0.4	-0.3	-1	-0.4	-0.4	-0.4	-0.4	-0.3	-1	-0.4
1,1,2,2-Tetrachloroethane	-0.5	-0.3	-0.5	-0.5	-0.5	-0.5	-0.5	-0.3	-0.5	-0.5
Tetrachloroethylene	-0.4	-0.4	-0.5	-0.4	-0.4	-0.4	-0.4	-0.4	-0.5	-0.4
1,1,1-Trichloroethane	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5	-0.2
1,1,2-Trichloroethane	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-0.3
Trichloroethylene	-0.4	-0.3	-0.5	-0.4	-0.4	-0.4	-0.4	-0.3	-0.5	-0.4
Toluene	-0.3	-0.2	-0.5	-0.3	-0.3	-0.3	-0.3	-0.2	-0.5	-0.3
Vinyl Chloride	-0.3	-0.4	-0.5	-0.3	-0.3	-0.3	-0.3	-0.4	-0.5	-0.3
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	AA	CAS	CAS	CAS	CAS	CAS	AA	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-6			RD-7			RD-8	RD-9	RD-10	
	05-12-99	08-11-99[3/]	11-09-99	02-06-99	08-19-99	08-19-99*	02-10-99	02-10-99	02-20-99	08-16-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	-0.9	-8	---	-0.9	-8	-8	-0.9	-500	-0.9	-8
Acrylonitrile	-0.7	-8	---	-0.7	-8	-8	-0.7	-500	-0.7	-8
Benzene	-0.3	-0.2	-0.5	-0.3	-0.2	-0.2	-0.3	-25	-0.3	-0.2
Bromodichloromethane	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	-25	-0.2	-0.2
Bromoform	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-25	-0.3	-0.3
Bromomethane	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-25	-0.3	-0.3
Carbon Tetrachloride	-0.2	-0.4	-0.5	-0.2	-0.4	-0.4	-0.2	-25	-0.2	-0.4
Chlorobenzene	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-25	-0.3	-0.3
Chloroethane	-0.2	-0.4	-0.5	-0.2	-0.4	-0.4	-0.2	-25	-0.2	-0.4
2-Chloroethylvinyl Ether	-0.9	-2	-5	-0.9	-2	-2	-0.9	-25	-0.9	-2
Chloroform	-0.4	-0.3	-0.5	-0.4	-0.3	-0.3	-0.4	-25	-0.4	-0.3
Chloromethane	-0.2	-0.4	-1	-0.2	-0.4	-0.4	-0.2	-25	-0.2	-0.4
Dibromochloromethane	-0.2	-0.3	-0.5	-0.2	-0.3	-0.3	-0.2	-25	-0.2	-0.3
1,1-Dichloroethane	-0.2	-0.4	-0.5	-0.2	-0.4	-0.4	-0.2	-25	-0.2	-0.4
1,2-Dichloroethane	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	**13**	-25	-0.3	-0.3
1,1-Dichloroethylene	-0.2	-0.3	-0.5	-0.2	-0.3	-0.3	-0.2	-25	-0.2	-0.3
Cis-1,2-Dichloroethylene	-0.2	-0.3	-0.5	**2.6**	**3**	**3**	-0.2	**19**	**6.0**	**6**
Trans-1,2-Dichloroethylene	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	-25	**1.1**	**1**
1,2-Dichloropropane	-0.3	-0.2	-0.5	-0.3	-0.2	-0.2	-0.3	-25	-0.3	-0.2
Cis-1,3-Dichloropropylene	-0.2	-0.3	-0.5	-0.2	-0.3	-0.3	-0.2	-25	-0.2	-0.3
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	-25	-0.2	-0.2
Ethylbenzene	-0.2	-0.3	-0.5	-0.2	-0.3	-0.3	-0.2	-25	-0.2	-0.3
Methylene Chloride	-0.4	-0.3	-1	-0.4	-0.3	-0.3	-0.4	-25	-0.4	-0.3
1,1,2,2-Tetrachloroethane	-0.5	-0.3	-0.5	-0.5	-0.3	-0.3	-0.5	-25	-0.5	-0.3
Tetrachloroethylene	-0.4	-0.4	-0.5	-0.4	-0.4	-0.4	-0.4	-25	-0.4	-0.4
1,1,1-Trichloroethane	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	-25	-0.2	-0.2
1,1,2-Trichloroethane	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-25	-0.3	-0.3
Trichloroethylene	-0.4	-0.3	-0.5	**48**	**52**	**56**	-0.4	**280**	**8.1**	**7**
Toluene	-0.3	-0.2	-0.5	-0.3	-0.2	-0.2	-0.3	-25	-0.3	-0.2
Vinyl Chloride	-0.3	-0.4	-0.5	-0.3	-0.4	-0.4	-0.3	-25	-0.3	-0.4
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	AA	CAS	CAS	CAS	CAS	CAS	CAS	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-11	RD-12	RD-13				RD-14	RD-15	RD-16	RD-17
	02-10-99	02-10-99	02-07-99	05-13-99	08-12-99	11-05-99	02-09-99	05-14-99	02-08-99	02-08-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	-0.9	-0.9	-0.9	-0.9	-8	---	-0.9	-0.9	-0.9	-0.9
Acrylonitrile	-0.7	-0.7	-0.7	-0.7	-8	---	-0.7	-0.7	-0.7	-0.7
Benzene	-0.3	-0.3	-0.3	-0.3	-0.2	-0.5	-0.3	-0.3	-0.3	-0.3
Bromodichloromethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2
Bromoform	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3
Bromomethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3
Carbon Tetrachloride	-0.2	-0.2	-0.2	-0.2	-0.4	-0.5	-0.2	-0.2	-0.2	-0.2
Chlorobenzene	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3
Chloroethane	-0.2	-0.2	-0.2	-0.2	-0.4	-0.5	-0.2	-0.2	-0.2	-0.2
2-Chloroethylvinyl Ether	-0.9	-0.9	-0.9	-0.9	-2	-5	-0.9	-0.9	-0.9	-0.9
Chloroform	-0.4	-0.4	-0.4	-0.4	-0.3	-0.5	-0.4	-0.4	-0.4	-0.4
Chloromethane	-0.2	-0.2	-0.2	-0.2	-0.4	-1	-0.2	-0.2	-0.2	-0.2
Dibromochloromethane	-0.2	-0.2	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.2	-0.2
1,1-Dichloroethane	-0.2	-0.2	-0.2	-0.2	-0.4	-0.5	-0.2	-0.2	-0.2	-0.2
1,2-Dichloroethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3
1,1-Dichloroethylene	-0.2	-0.2	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.2	-0.2
Cis-1,2-Dichloroethylene	-0.2	-0.2	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.2	-0.2
Trans-1,2-Dichloroethylene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2
1,2-Dichloropropane	-0.3	-0.3	-0.3	-0.3	-0.2	-0.5	-0.3	-0.3	-0.3	-0.3
Cis-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.2	-0.2
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2
Ethylbenzene	-0.2	-0.2	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.2	-0.2
Methylene Chloride	-0.4	-0.4	-0.4	-0.4	-0.3	-1	-0.4	-0.4	-0.4	-0.4
1,1,2,2-Tetrachloroethane	-0.5	-0.5	-0.5	-0.5	-0.3	-0.5	-0.5	-0.5	-0.5	-0.5
Tetrachloroethylene	-0.4	-0.4	-0.4	-0.4	-0.4	-0.5	-0.4	-0.4	-0.4	-0.4
1,1,1-Trichloroethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2
1,1,2-Trichloroethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3
Trichloroethylene	-0.4	-0.4	-0.4	-0.4	-0.3	-0.5	**0.6**	**1.0**	-0.4	**1.6**
Toluene	-0.3	-0.3	-0.3	-0.3	-0.2	-0.5	-0.3	-0.3	-0.3	-0.3
Vinyl Chloride	-0.3	-0.3	-0.3	-0.3	-0.4	-0.5	-0.3	-0.3	-0.3	-0.3
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	CAS	CAS	CAS	AA	CAS	CAS	CAS	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-18					RD-19				RD-20
	02-17-99	05-10-99	08-13-99	11-08-99	11-08-99**	02-17-99	05-13-99	08-13-99	11-08-99	02-15-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	-0.9	-0.9	-8	---	-10	-0.9	-0.9	-8	---	-0.9
Acrylonitrile	-0.7	-0.7	-8	---	-10	-0.7	-0.7	-8	---	-0.7
Benzene	-0.3	-0.3	-0.2	-0.5	-0.5	-0.3	-0.3	-0.2	-0.5	-0.3
Bromodichloromethane	-0.2	-0.2	-0.2	-0.5	-0.5	-0.2	-0.2	-0.2	-0.5	-0.2
Bromoform	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3	-0.3	-0.3	-0.5	-0.3
Bromomethane	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3	-0.3	-0.3	-0.5	-0.3
Carbon Tetrachloride	-0.2	-0.2	-0.4	-0.5	-0.5	-0.2	-0.2	-0.4	-0.5	-0.2
Chlorobenzene	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3	-0.3	-0.3	-0.5	-0.3
Chloroethane	-0.2	-0.2	-0.4	-0.5	-0.5	-0.2	-0.2	-0.4	-0.5	-0.2
2-Chloroethylvinyl Ether	-0.9	-0.9	-2	-5	-1	-0.9	-0.9	-2	-5	-0.9
Chloroform	-0.4	-0.4	-0.3	-0.5	-0.5	-0.4	-0.4	-0.3	-0.5	-0.4
Chloromethane	-0.2	-0.2	-0.4	-1	-0.5	-0.2	-0.2	-0.4	-1	-0.2
Dibromochloromethane	-0.2	-0.2	-0.3	-0.5	-0.5	-0.2	-0.2	-0.3	-0.5	-0.2
1,1-Dichloroethane	-0.2	-0.2	-0.4	-0.5	-0.5	-0.2	-0.2	-0.4	-0.5	-0.2
1,2-Dichloroethane	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3	-0.3	-0.3	-0.5	-0.3
1,1-Dichloroethylene	-0.2	-0.2	-0.3	-0.5	-0.5	-0.2	-0.2	-0.3	-0.5	-0.2
Cis-1,2-Dichloroethylene	-0.2	-0.2	-0.3	-0.5	-0.5	-0.2	-0.2	-0.3	-0.5	-0.2
Trans-1,2-Dichloroethylene	-0.2	-0.2	-0.2	-0.5	-0.5	-0.2	-0.2	-0.2	-0.5	-0.2
1,2-Dichloropropane	-0.3	-0.3	-0.2	-0.5	-0.5	-0.3	-0.3	-0.2	-0.5	-0.3
Cis-1,3-Dichloropropylene	-0.2	-0.2	-0.3	-0.5	-0.5	-0.2	-0.2	-0.3	-0.5	-0.2
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-0.5	-0.5	-0.2	-0.2	-0.2	-0.5	-0.2
Ethylbenzene	-0.2	-0.2	-0.3	-0.5	-0.5	-0.2	-0.2	-0.3	-0.5	-0.2
Methylene Chloride	-0.4	-0.4	-0.3	-1	-3	-0.4	-0.4	-0.3	-1	-0.4
1,1,2,2-Tetrachloroethane	-0.5	-0.5	-0.3	-0.5	-0.5	-0.5	-0.5	-0.3	-0.5	-0.5
Tetrachloroethylene	-0.4	-0.4	-0.4	-0.5	-0.5	-0.4	-0.4	-0.4	-0.5	-0.4
1,1,1-Trichloroethane	-0.2	-0.2	-0.2	-0.5	-0.5	-0.2	-0.2	-0.2	-0.5	-0.2
1,1,2-Trichloroethane	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3	-0.3	-0.3	-0.5	-0.3
Trichloroethylene	-0.4	-0.4	-0.3	-0.5	-0.5	-0.4	-0.4	-0.3	-0.5	-0.4
Toluene	-0.3	-0.3	-0.2	-0.5	-0.5	-0.3	-0.3	-0.2	-0.5	-0.3
Vinyl Chloride	-0.3	-0.3	-0.4	-0.5	-0.5	-0.3	-0.3	-0.4	-0.5	-0.3
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	CAS	AA	Babcock	CAS	CAS	CAS	AA	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-21			RD-22					RD-23	
	02-16-99	02-16-99**	08-05-99	02-17-99	05-13-99	08-12-99	11-08-99	11-08-99*	02-08-99	08-18-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	-200	-172	-8	-0.9	-0.9	-8	---	---	-500	-8
Acrylonitrile	-200	-1.3	-8	-0.7	-0.7	-8	---	---	-500	-8
Benzene	-10	-0.4	-0.2	-0.3	-0.3	-0.2	-0.5	-0.5	-25	-0.2
Bromodichloromethane	-10	-0.4	-0.2	-0.2	-0.2	-0.2	-0.5	-0.5	-25	-0.2
Bromoform	-10	-0.7	-0.3	-0.3	-0.3	-0.3	-0.5	-0.5	-25	-0.3
Bromomethane	-10	-0.4	-0.3	-0.3	-0.3	-0.3	-0.5	-0.5	-25	-0.3
Carbon Tetrachloride	**5.8**	**6.4**	**2.2**	-0.2	-0.2	-0.4	-0.5	-0.5	-25	-0.4
Chlorobenzene	-10	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-0.5	-25	-0.3
Chloroethane	-10	-1.1	-0.4	-0.2	-0.2	-0.4	-0.5	-0.5	-25	-0.4
2-Chloroethylvinyl Ether	-10	-1.2	-2	-0.9	-0.9	-2	-5	-5	-25	-2
Chloroform	**9.8**	**10**	**2.7**	-0.4	-0.4	-0.3	-0.5	-0.5	-25	-0.3
Chloromethane	-10	-0.7	-0.4	-0.2	-0.2	-0.4	-1	-1	-25	-0.4
Dibromochloromethane	-10	-0.6	-0.3	-0.2	-0.2	-0.3	-0.5	-0.5	-25	-0.3
1,1-Dichloroethane	-10	-2.8	-0.4	-0.2	-0.2	-0.4	-0.5	-0.5	-25	**4**
1,2-Dichloroethane	-10	-1.0	-0.3	-0.3	-0.3	-0.3	-0.5	-0.5	**5.1**	**5**
1,1-Dichloroethylene	-10	-1.2	-0.3	-0.2	-0.2	-0.3	-0.5	-0.5	-25	**12**
Cis-1,2-Dichloroethylene	-10	**2.1**	**8.8**	-0.2	-0.2	-0.3	-0.5	-0.5	**17**	**19**
Trans-1,2-Dichloroethylene	-10	-0.9	-0.2	-0.2	-0.2	-0.2	-0.5	-0.5	-25	**0.2**[2/]
1,2-Dichloropropane	-10	-0.5	-0.2	-0.3	-0.3	-0.2	-0.5	-0.5	-25	-0.2
Cis-1,3-Dichloropropylene	-10	-0.4	-0.3	-0.2	-0.2	-0.3	-0.5	-0.5	-25	-0.3
Trans-1,3-Dichloropropylene	-10	-0.4	-0.2	-0.2	-0.2	-0.2	-0.5	-0.5	-25	-0.2
Ethylbenzene	-10	-0.5	-0.3	-0.2	-0.2	-0.3	-0.5	-0.5	-25	-0.3
Methylene Chloride	-10	-2.0	-0.3	-0.4	-0.4	-0.3	-1	-1	-25	-0.3
1,1,2,2-Tetrachloroethane	-10	-0.3	-0.3	-0.5	-0.5	-0.3	-0.5	-0.5	-25	-0.3
Tetrachloroethylene	-10	-0.4	-0.4	-0.4	-0.4	-0.4	-0.5	-0.5	-25	-0.4
1,1,1-Trichloroethane	-10	-0.3	-0.2	-0.2	-0.2	-0.2	-0.5	-0.5	-25	-0.2
1,1,2-Trichloroethane	-10	-0.5	-0.3	-0.3	-0.3	-0.3	-0.5	-0.5	-25	-0.3
Trichloroethylene	**380**	**620**	**280**	-0.4	-0.4	-0.3	-0.5	-0.5	**370**	**490**
Toluene	-10	-0.7	-0.2	-0.3	-0.3	-0.2	-0.5	-0.5	-25	-0.2
Vinyl Chloride	-10	-0.6	-0.4	-0.3	-0.3	-0.4	-0.5	-0.5	-25	-0.4
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	AL	CAS	CAS	CAS	CAS	AA	AA	CAS	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-23		RD-24			RD-25		RD-26	RD-27	
	11-08-99	11-08-99*	02-02-99	08-04-99	08-04-99*	02-16-99	08-19-99	02-09-99	02-16-99	08-17-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	---	---	-0.9	-8	-8	-0.9	-8	-0.9	-0.9	-8
Acrylonitrile	---	---	-0.7	-8	-8	-0.7	-8	-0.7	-0.7	-8
Benzene	-2.5	-2.5	-0.3	-0.2	-0.2	-0.3	-0.2	-0.3	-0.3	-0.2
Bromodichloromethane	-2.5	-2.5	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
Bromoform	-2.5	-2.5	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
Bromomethane	-2.5	-2.5	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
Carbon Tetrachloride	-2.5	-2.5	-0.2	-0.4	-0.4	-0.2	-0.4	-0.2	-0.2	-0.4
Chlorobenzene	-2.5	-2.5	-0.3	-0.3	-0.3	-0.3	-0.3	-0.2	-0.3	-0.3
Chloroethane	-2.5	-2.5	-0.2	-0.4	-0.4	-0.2	-0.4	-0.2	-0.2	-0.4
2-Chloroethylvinyl Ether	-25	-25	-0.9	-2	-2	-0.9	-2	-0.9	-0.9	-2
Chloroform	-2.5	-2.5	-0.4	-0.3	-0.3	-0.4	-0.3	-0.4	-0.4	-0.3
Chloromethane	-5	-5	-0.2	-0.4	-0.4	-0.2	-0.4	-0.2	-0.2	-0.4
Dibromochloromethane	-2.5	-2.5	-0.2	-0.3	-0.3	-0.2	-0.3	-0.2	-0.2	-0.3
1,1-Dichloroethane	-2.5	-2.5	-0.2	-0.4	-0.4	-0.2	-0.4	-0.2	-0.2	-0.4
1,2-Dichloroethane	-2.5	-2.5	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
1,1-Dichloroethylene	**8.2**	**9.1**	-0.2	-0.3	-0.3	-0.2	-0.3	-0.2	-0.2	-0.3
Cis-1,2-Dichloroethylene	**18**	**17**	-0.2	-0.3	-0.3	**1.0**	**0.5**	-0.2	-0.2	-0.3
Trans-1,2-Dichloroethylene	-2.5	-2.5	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
1,2-Dichloropropane	-2.5	-2.5	-0.3	-0.2	-0.2	-0.3	-0.2	-0.3	-0.3	-0.2
Cis-1,3-Dichloropropylene	-2.5	-2.5	-0.2	-0.3	-0.3	-0.2	-0.3	-0.2	-0.2	-0.3
Trans-1,3-Dichloropropylene	-2.5	-2.5	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
Ethylbenzene	-2.5	-2.5	-0.2	-0.3	-0.3	-0.2	-0.3	-0.2	-0.2	-0.3
Methylene Chloride	-5	-5	-0.4	-0.3	-0.3	-0.4	-0.3	-0.4	-0.4	-0.3
1,1,2,2-Tetrachloroethane	-2.5	-2.5	-0.5	-0.3	-0.3	-0.5	-0.3	-0.5	-0.5	-0.3
Tetrachloroethylene	-2.5	-2.5	**0.8**	**1.2**	**1.4**	**19**	**10**	-0.4	-0.4	-0.4
1,1,1-Trichloroethane	-2.5	-2.5	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
1,1,2-Trichloroethane	-2.5	-2.5	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
Trichloroethylene	**520**	**500**	-0.4	**0.4**	-0.3	**0.7**	**1.0**	**3.2**	-0.4	-0.3
Toluene	-2.5	-2.5	-0.3	-0.2	-0.2	-0.3	**0.9**	-0.3	-0.3	-0.2
Vinyl Chloride	-2.5	-2.5	-0.3	-0.4	-0.4	-0.3	-0.4	-0.3	-0.3	-0.4
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	AA	AA	CAS	CAS	CAS	CAS	CAS	CAS	CAS	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-28		RD-29	RD-30	RD-31	RD-32				
	02-16-99	08-19-99	02-07-99	02-05-99	02-16-99	02-06-99	05-10-99	08-10-99	08-10-99*	11-04-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	-0.9	-8	-0.9	-0.9	-0.9	-0.9	-0.9	-8	-8	---
Acrylonitrile	-0.7	-8	-0.7	-0.7	-0.7	-0.7	-0.7	-8	-8	---
Benzene	-0.3	-0.2	-0.3	-0.3	-0.3	-0.3	-0.3	-0.2	-0.2	-0.5
Bromodichloromethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5
Bromoform	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5
Bromomethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5
Carbon Tetrachloride	-0.2	-0.4	-0.2	-0.2	-0.2	-0.2	-0.2	-0.4	-0.4	-0.5
Chlorobenzene	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5
Chloroethane	-0.2	-0.4	-0.2	-0.2	-0.2	-0.2	-0.2	-0.4	-0.4	-0.5
2-Chloroethylvinyl Ether	-0.9	-2	-0.9	-0.9	-0.9	-0.9	-0.9	-2	-2	-5
Chloroform	-0.4	-0.3	-0.4	-0.4	-0.4	-0.4	-0.4	-0.3	-0.3	-0.5
Chloromethane	-0.2	-0.4	-0.2	-0.2	-0.2	-0.2	-0.2	-0.4	-0.4	-1
Dibromochloromethane	-0.2	-0.3	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.3	-0.5
1,1-Dichloroethane	-0.2	-0.4	-0.2	-0.2	-0.2	-0.2	-0.2	-0.4	-0.4	-0.5
1,2-Dichloroethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5
1,1-Dichloroethylene	-0.2	-0.3	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.3	-0.5
Cis-1,2-Dichloroethylene	-0.2	-0.3	-0.2	1.5	-0.2	-0.2	-0.2	-0.3	-0.3	-0.5
Trans-1,2-Dichloroethylene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5
1,2-Dichloropropane	-0.3	-0.2	-0.3	-0.3	-0.3	-0.3	-0.3	-0.2	-0.2	-0.5
Cis-1,3-Dichloropropylene	-0.2	-0.3	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.3	-0.5
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5
Ethylbenzene	-0.2	-0.3	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.3	-0.5
Methylene Chloride	-0.4	-0.3	-0.4	-0.4	-0.4	-0.4	-0.4	-0.3	-0.3	-1
1,1,2,2-Tetrachloroethane	-0.5	-0.3	-0.5	-0.5	-0.5	-0.5	-0.5	-0.3	-0.3	-0.5
Tetrachloroethylene	-0.4	-0.4	-0.4	0.8	-0.4	-0.4	-0.4	-0.4	-0.4	-0.5
1,1,1-Trichloroethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5
1,1,2-Trichloroethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5
Trichloroethylene	-0.4	-0.3	0.7	15	2.5	-0.4	-0.4	-0.3	-0.3	-0.5
Toluene	-0.3	5	-0.3	-0.3	-0.3	-0.3	-0.3	-0.2	-0.2	-0.5
Vinyl Chloride	-0.3	-0.4	-0.3	-0.3	-0.3	-0.3	-0.3	-0.4	-0.4	-0.5
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	CAS	CAS	CAS	CAS	CAS	CAS	CAS	AA

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-33A			RD-33B				RD-33C		
	02-03-99	08-11-99[3/]	08-11-99**	02-03-99	05-13-99	08-11-99[3/]	11-06-99	02-03-99	05-13-99	08-11-99[3/]
CHATSWORTH FORMATION RD WELLS										
Acrolein	-0.9	-8	---	-0.9	-0.9	-8	---	-0.9	-0.9	-8
Acrylonitrile	-0.7	-8	---	-0.7	-0.7	-8	---	-0.7	-0.7	-8
Benzene	-0.3	-0.2	-0.3	-0.3	-0.3	-0.2	-0.5	-0.3	-0.3	-0.2
Bromodichloromethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2
Bromoform	-0.3	-0.3	-0.1	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3
Bromomethane	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3
Carbon Tetrachloride	-0.2	-0.4	-0.2	-0.2	-0.2	-0.4	-0.5	-0.2	-0.2	-0.4
Chlorobenzene	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3
Chloroethane	-0.2	-0.4	-0.4	-0.2	-0.2	-0.4	-0.5	-0.2	-0.2	-0.4
2-Chloroethylvinyl Ether	-0.9	-2	-0.2	-0.9	-0.9	-2	-5	-0.9	-0.9	-2
Chloroform	-0.4	-0.3	-0.2	-0.4	-0.4	-0.3	-0.5	-0.4	-0.4	-0.3
Chloromethane	-0.2	-0.4	-0.3	-0.2	-0.2	-0.4	-1	-0.2	-0.2	-0.4
Dibromochloromethane	-0.2	-0.3	-0.2	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3
1,1-Dichloroethane	-0.2	**0.7**	-0.2	-0.2	-0.2	-0.4	-0.5	-0.2	-0.2	-0.4
1,2-Dichloroethane	-0.3	-0.3	-0.2	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3
1,1-Dichloroethylene	-0.2	**2**	**2.2**	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3
Cis-1,2-Dichloroethylene	-0.2	**0.4**	-0.3	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3
Trans-1,2-Dichloroethylene	-0.2	-0.2	-0.4	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2
1,2-Dichloropropane	-0.3	-0.2	-0.3	-0.3	-0.3	-0.2	-0.5	-0.3	-0.3	-0.2
Cis-1,3-Dichloropropylene	-0.2	-0.3	-0.2	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.3	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2
Ethylbenzene	-0.2	-0.3	-0.2	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3
Methylene Chloride	-0.4	-0.3	-0.2	-0.4	-0.4	-0.3	-1	-0.4	-0.4	-0.3
1,1,2,2-Tetrachloroethane	-0.5	-0.3	-0.2	-0.5	-0.5	-0.3	-0.5	-0.5	-0.5	-0.3
Tetrachloroethylene	-0.4	-0.4	-0.2	-0.4	-0.4	-0.4	-0.5	-0.4	-0.4	-0.4
1,1,1-Trichloroethane	-0.2	-0.2	-0.3	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2
1,1,2-Trichloroethane	-0.3	-0.3	-0.2	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3
Trichloroethylene	**2.7**	**8**	**8.9**	-0.4	-0.4	-0.3	-0.5	-0.4	-0.4	-0.3
Toluene	-0.3	-0.2	-0.2	-0.3	-0.3	-0.2	-0.5	-0.3	-0.3	-0.2
Vinyl Chloride	-0.3	-0.4	-0.3	-0.3	-0.3	-0.4	-0.5	-0.3	-0.3	-0.4
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	AL	CAS	CAS	CAS	AA	CAS	CAS	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-33C		RD-34B		RD-34C		RD-35A	RD-35B		
	08-11-99*[3/]	11-04-99	02-04-99	08-11-99[3/]	02-04-99	08-12-99	08-16-99	02-05-99	02-05-99*	05-07-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	-8	---	-0.9	-8	-0.9	-8	-800	-1000	-1000	-2000
Acrylonitrile	-8	---	-0.7	-8	-0.7	-8	-800	-1000	-1000	-2000
Benzene	-0.2	-0.5	-0.3	-0.2	-0.3	-0.2	-20	-50	-50	-10
Bromodichloromethane	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	-20	-50	-50	-10
Bromoform	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-30	-50	-50	-10
Bromomethane	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-30	-50	-50	-10
Carbon Tetrachloride	-0.4	-0.5	-0.2	-0.4	-0.2	-0.4	-40	-50	-50	-10
Chlorobenzene	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-30	-50	-50	-10
Chloroethane	-0.4	-0.5	-0.2	-0.4	-0.2	-0.4	-40	-50	-50	-10
2-Chloroethylvinyl Ether	-2	-5	-0.9	-2	-0.9	-2	-200	-50	-50	-100
Chloroform	-0.3	-0.5	-0.4	-0.3	-0.4	-0.3	-30	**20**	**20**	-10
Chloromethane	-0.4	-1	-0.2	-0.4	-0.2	-0.4	-40	-50	-50	-10
Dibromochloromethane	-0.3	-0.5	-0.2	-0.3	-0.2	-0.3	-30	-50	-50	-10
1,1-Dichloroethane	-0.4	-0.5	-0.2	-0.4	-0.2	-0.4	-40	**35**	**34**	**59**
1,2-Dichloroethane	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-30	-50	-50	-10
1,1-Dichloroethylene	-0.3	-0.5	-0.2	-0.3	-0.2	-0.3	**910**	**1400**	**1800**	**1100**
Cis-1,2-Dichloroethylene	-0.3	-0.5	**1.1**	**0.3**	-0.2	-0.3	-30	**43**	**44**	**50**
Trans-1,2-Dichloroethylene	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	-20	-50	-50	-10
1,2-Dichloropropane	-0.2	-0.5	-0.3	-0.2	-0.3	-0.2	-20	-50	-50	-10
Cis-1,3-Dichloropropylene	-0.3	-0.5	-0.2	-0.3	-0.2	-0.3	-30	-50	-50	-10
Trans-1,3-Dichloropropylene	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	-20	-50	-50	-10
Ethylbenzene	-0.3	-0.5	-0.2	-0.3	-0.2	-0.3	-30	-50	-50	-10
Methylene Chloride	-0.3	-1	-0.4	-0.3	-0.4	-0.3	-30	-50	-50	-40
1,1,2,2-Tetrachloroethane	-0.3	-0.5	-0.5	-0.3	-0.5	-0.3	-30	-50	-50	-10
Tetrachloroethylene	-0.4	-0.5	-0.4	-0.4	-0.4	-0.4	-40	**8.9**	**10**	**10**
1,1,1-Trichloroethane	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	**290**	**290**	**290**	**44**
1,1,2-Trichloroethane	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-30	**10**	**9.1**	-10
Trichloroethylene	-0.3	-0.5	**2.5**	**0.6**	-0.4	-0.3	**19000**	**28000**	**33000**	**22000**
Toluene	-0.2	-0.5	-0.3	-0.2	-0.3	-0.2	-20	**8.0**	**8.9**	-10
Vinyl Chloride	-0.4	-0.5	-0.3	-0.4	-0.3	-0.4	-40	-50	-50	-10
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	AA	CAS	CAS	CAS	CAS	CAS	CAS	CAS	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-35B		RD-36A		RD-36B			RD-36C		RD-36D
	05-07-99*	05-07-99**	02-18-99	08-10-99	02-16-99	08-09-99	08-09-99**	02-18-99	08-10-99	02-16-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	-2000	-172	-0.9	-8	-0.9	-8	---	-200	-8	-0.9
Acrylonitrile	-2000	-1.3	-0.7	-8	-0.7	-8	---	-200	-8	-0.7
Benzene	-10	-0.4	-0.3	-0.2	-0.3	-0.2	-0.3	-10	-0.2	-0.3
Bromodichloromethane	-10	-0.4	-0.2	-0.2	-0.2	-0.2	-0.2	-10	-0.2	-0.2
Bromoform	-10	-0.7	-0.3	-0.3	-0.3	-0.3	-0.1	-10	-0.3	-0.3
Bromomethane	-10	-0.4	-0.3	-0.3	-0.3	-0.3	-0.5	-10	-0.3	-0.3
Carbon Tetrachloride	-10	-0.4	-0.2	-0.4	-0.2	-0.4	-0.2	-10	-0.4	-0.2
Chlorobenzene	-10	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-10	-0.3	-0.3
Chloroethane	-10	-1.1	-0.2	-0.4	-0.2	-0.4	-0.4	-10	-0.4	-0.2
2-Chloroethylvinyl Ether	-100	-1.2	-0.9	-2	-0.9	-2	-0.2	-10	-2	-0.9
Chloroform	**8.2**	**8.1**	-0.4	-0.3	-0.4	-0.3	-0.2	-10	-0.3	-0.4
Chloromethane	-10	-0.7	-0.2	-0.4	-0.2	-0.4	-0.3	-10	-0.4	-0.2
Dibromochloromethane	-10	-0.6	-0.2	-0.3	-0.2	-0.3	-0.2	-10	-0.3	-0.2
1,1-Dichloroethane	**68**	**59**	-0.2	-0.4	-0.2	-0.4	-0.2	-10	**0.9**	-0.2
1,2-Dichloroethane	-10	**4.9**	-0.3	-0.3	-0.3	-0.3	-0.2	-10	-0.3	-0.3
1,1-Dichloroethylene	**1300**	**1200**	-0.2	-0.3	-0.2	-0.3	-0.4	**2.8**	**3.6**	-0.2
Cis-1,2-Dichloroethylene	**100**	**55**	-0.2	-0.3	-0.2	-0.3	-0.3	**11**	**8.6**	-0.2
Trans-1,2-Dichloroethylene	**8.4**	-0.9	-0.2	-0.2	-0.2	-0.2	-0.4	-10	-0.2	-0.2
1,2-Dichloropropane	-10	-0.5	-0.3	-0.2	-0.3	-0.2	-0.3	-10	-0.2	-0.3
Cis-1,3-Dichloropropylene	-10	-0.4	-0.2	-0.3	-0.2	-0.3	-0.2	-10	-0.3	-0.2
Trans-1,3-Dichloropropylene	-10	-0.4	-0.2	-0.2	-0.2	-0.2	-0.3	-10	-0.2	-0.2
Ethylbenzene	-10	-0.5	-0.2	-0.3	-0.2	-0.3	-0.2	-10	-0.3	-0.2
Methylene Chloride	-40	-2.0	-0.4	-0.3	-0.4	-0.3	-0.2	-10	-0.3	-0.4
1,1,2,2-Tetrachloroethane	-10	-0.3	-0.5	-0.3	-0.5	-0.3	-0.2	-10	-0.3	-0.5
Tetrachloroethylene	**11**	**10.0**	-0.4	-0.4	-0.4	-0.4	-0.2	-10	**4.4**	-0.4
1,1,1-Trichloroethane	**48**	**47.9**	-0.2	-0.2	-0.2	-0.2	-0.3	-10	-0.2	-0.2
1,1,2-Trichloroethane	-10	**7.7**	-0.3	-0.3	-0.3	-0.3	-0.2	-10	-0.3	-0.3
Trichloroethylene	**25000**	**20100**	-0.4	-0.3	**24**	**26**	**28**	**78**	**110**	**1.2**
Toluene	-10	**4.4**	-0.3	-0.2	-0.3	-0.2	-0.2	-10	-0.2	-0.3
Vinyl Chloride	-10	-0.6	-0.3	-0.4	-0.3	-0.4	-0.3	-10	-0.4	-0.3
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	AL	CAS	CAS	CAS	CAS	AL	CAS	CAS	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-36D		RD-37				RD-38A		RD-38B	
	02-16-99**	08-09-99	02-05-99	05-10-99	08-16-99	11-09-99	02-17-99	08-18-99	02-17-99	02-17-99*
CHATSWORTH FORMATION RD WELLS										
Acrolein	-172	-8	-0.9	-0.9	-8	---	-500	-8	-0.9	-0.9
Acrylonitrile	-1.3	-8	-0.7	-0.7	-8	---	-500	-8	-0.7	-0.7
Benzene	-0.4	-0.2	-0.3	-0.3	-0.2	-0.5	-25	-0.2	-0.3	-0.3
Bromodichloromethane	-0.4	-0.2	-0.2	-0.2	-0.2	-0.5	-25	-0.2	-0.2	-0.2
Bromoform	-0.7	-0.3	-0.3	-0.3	-0.3	-0.5	-25	-0.3	-0.3	-0.3
Bromomethane	-0.4	-0.3	-0.3	-0.3	-0.3	-0.5	-25	-0.3	-0.3	-0.3
Carbon Tetrachloride	-0.4	-0.4	-0.4	-0.2	-0.4	-0.5	-25	-0.4	-0.2	-0.2
Chlorobenzene	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-25	-0.3	-0.3	-0.3
Chloroethane	-1.1	-0.4	-0.2	-0.2	-0.4	-0.5	-25	-0.4	-0.2	-0.2
2-Chloroethylvinyl Ether	-1.2	-2	-0.9	-0.9	-2	-5	-25	-2	-0.9	-0.9
Chloroform	-0.2	-0.3	-0.4	-0.4	-0.3	-0.5	-25	-0.3	-0.4	-0.4
Chloromethane	-0.7	-0.4	-0.2	-0.2	-0.4	-1	-25	-0.4	-0.2	-0.2
Dibromochloromethane	-0.6	-0.3	-0.2	-0.2	-0.3	-0.5	-25	-0.3	-0.2	-0.2
1,1-Dichloroethane	-2.8	-0.4	-0.2	-0.2	-0.4	-0.5	**2.8**	**6**	-0.2	-0.2
1,2-Dichloroethane	-1.0	-0.3	-0.3	-0.3	-0.3	-0.5	-25	-0.3	-0.3	-0.3
1,1-Dichloroethylene	-1.2	-0.3	-0.2	-0.2	-0.3	-0.5	**10**	**20**	-0.2	-0.2
Cis-1,2-Dichloroethylene	-0.5	-0.3	-0.2	-0.2	-0.3	-0.5	**11**	**21**	-0.2	-0.2
Trans-1,2-Dichloroethylene	-0.9	-0.2	-0.2	-0.2	-0.2	-0.5	-25	**0.2**	-0.2	-0.2
1,2-Dichloropropane	-0.5	-0.2	-0.3	-0.3	-0.2	-0.5	-25	-0.2	-0.3	-0.3
Cis-1,3-Dichloropropylene	-0.4	-0.3	-0.2	-0.2	-0.3	-0.5	-25	-0.3	-0.2	-0.2
Trans-1,3-Dichloropropylene	-0.4	-0.2	-0.2	-0.2	-0.2	-0.5	-25	-0.2	-0.2	-0.2
Ethylbenzene	-0.5	-0.3	-0.2	-0.2	-0.3	-0.5	-25	-0.3	-0.2	-0.2
Methylene Chloride	-2.0	-0.3	-0.4	-0.4	-0.3	-1	-25	-0.3	-0.4	-0.4
1,1,2,2-Tetrachloroethane	-0.3	-0.3	-0.5	-0.5	-0.3	-0.5	-25	-0.3	-0.5	-0.5
Tetrachloroethylene	-0.4	-0.4	-0.4	-0.4	-0.4	-0.5	-25	-0.4	-0.4	-0.4
1,1,1-Trichloroethane	-0.3	-0.2	-0.2	-0.2	-0.2	-0.5	-25	**0.2**	-0.2	-0.2
1,1,2-Trichloroethane	-0.5	-0.3	-0.3	-0.3	-0.3	-0.5	-25	-0.3	-0.3	-0.3
Trichloroethylene	**2.9**	**1.0**	-0.4	-0.4	-0.3	-0.5	**330**	**570**	-0.4	-0.4
Toluene	-0.7	-0.2	-0.3	-0.3	-0.2	-0.5	-25	-0.2	**0.8**	1.0
Vinyl Chloride	-0.6	-0.4	-0.3	-0.3	-0.4	-0.5	-25	-0.4	-0.3	-0.3
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	AL	CAS	CAS	CAS	CAS	AA	CAS	CAS	CAS	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-38B								RD-39A	
	02-17-99**	05-05-99	05-05-99*	05-05-99**	08-17-99	08-17-99*	08-17-99**[3/]	11-06-99	02-15-99	05-05-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	-172	-0.9	-0.9	-172	-8	-8	---	---	-0.9	-0.9
Acrylonitrile	-1.3	-0.7	-0.7	-1.3	-8	-8	---	---	-0.7	-0.7
Benzene	-0.4	-0.3	-0.3	-0.4	-0.2	-0.2	---	-0.5	-0.3	-0.3
Bromodichloromethane	-0.4	-0.2	-0.2	-0.4	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2
Bromoform	-0.7	-0.3	-0.3	-0.7	-0.3	-0.3	-0.1	-0.5	-0.3	-0.3
Bromomethane	-0.4	-0.3	-0.3	-0.4	-0.3	-0.3	-0.5	-0.5	-0.3	-0.3
Carbon Tetrachloride	-0.4	-0.2	-0.2	-0.4	-0.4	-0.4	-0.2	-0.5	-0.2	-0.2
Chlorobenzene	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.1	-0.5	-0.3	-0.3
Chloroethane	-1.1	-0.2	-0.2	-1.1	-0.4	-0.4	-0.3	-0.5	-0.2	-0.2
2-Chloroethylvinyl Ether	-1.2	-0.9	-0.9	-1.2	-2	-2	-0.7	-5	-0.9	-0.9
Chloroform	-0.2	-0.4	-0.4	-0.2	-0.3	-0.3	-0.2	-0.5	-0.4	-0.4
Chloromethane	-0.7	-0.2	-0.2	-0.7	-0.4	-0.4	-0.5	-1	-0.2	-0.2
Dibromochloromethane	-0.6	-0.2	-0.2	-0.6	-0.3	-0.3	-0.2	-0.5	-0.2	-0.2
1,1-Dichloroethane	-2.8	-0.2	-0.2	-2.8	-0.4	-0.4	-0.2	-0.5	-0.2	-0.2
1,2-Dichloroethane	-1.0	-0.3	-0.3	-1.0	-0.3	-0.3	-0.2	-0.5	-0.3	-0.3
1,1-Dichloroethylene	-1.2	-0.2	-0.2	-1.2	-0.3	-0.3	-0.1	-0.5	-0.2	-0.2
Cis-1,2-Dichloroethylene	-0.5	-0.2	-0.2	-0.5	-0.3	-0.3	-0.2	-0.5	-0.2	-0.2
Trans-1,2-Dichloroethylene	-0.9	-0.2	-0.2	-0.9	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2
1,2-Dichloropropane	-0.5	-0.3	-0.3	-0.5	-0.2	-0.2	-0.2	-0.5	-0.3	-0.3
Cis-1,3-Dichloropropylene	-0.4	-0.2	-0.2	-0.4	-0.3	-0.3	-0.1	-0.5	-0.2	-0.2
Trans-1,3-Dichloropropylene	-0.4	-0.2	-0.2	-0.4	-0.2	-0.2	-0.1	-0.5	-0.2	-0.2
Ethylbenzene	-0.5	-0.2	-0.2	-0.5	-0.3	-0.3	---	-0.5	-0.2	-0.2
Methylene Chloride	-2.0	-0.4	-0.4	-2.0	-0.3	-0.3	-0.1	-1	-0.4	-0.4
1,1,2,2-Tetrachloroethane	-0.3	-0.5	-0.5	-0.3	-0.3	-0.3	-0.2	-0.5	-0.5	-0.5
Tetrachloroethylene	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.2	-0.5	-0.4	-0.4
1,1,1-Trichloroethane	-0.3	-0.2	-0.2	-0.3	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2
1,1,2-Trichloroethane	-0.5	-0.3	-0.3	-0.5	-0.3	-0.3	-0.2	-0.5	-0.3	-0.3
Trichloroethylene	-0.5	0.7[1/]	0.8[1/]	-0.5	-0.3	-0.3	-0.2	-0.5	-0.4	-0.4
Toluene	-0.7	0.9[1/]	1.0[1/]	-0.7	-0.2	-0.2	---	-0.5	-0.3	-0.3
Vinyl Chloride	-0.6	-0.3	-0.3	-0.6	-0.4	-0.4	-0.5	-0.5	-0.3	-0.3
Method	8260	8260	8260	8260	8260	8260	8021	8260	8260	8260
Laboratory	AL	CAS	CAS	AL	CAS	CAS	AL	AA	CAS	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-39A		RD-39B				RD-41A	RD-41B	RD-41C	RD-42
	08-10-99	11-08-99	02-15-99	05-05-99	08-10-99	11-08-99	02-16-99	02-16-99	02-16-99	02-17-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	-8	---	-0.9	-0.9	-8	---	-0.9	-2000	-0.9	-0.9
Acrylonitrile	-8	---	-0.7	-0.7	-8	---	-0.7	-2000	-0.7	-0.7
Benzene	-0.2	-0.5	-0.3	-0.3	-0.2	-0.5	-0.3	-100	-0.3	-0.3
Bromodichloromethane	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5	-0.2	-100	-0.2	-0.2
Bromoform	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-0.3	-100	-0.3	-0.3
Bromomethane	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-0.3	-100	-0.3	-0.3
Carbon Tetrachloride	-0.4	-0.5	-0.2	-0.2	-0.4	-0.5	-0.2	-100	-0.2	-0.2
Chlorobenzene	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-0.3	-100	-0.3	-0.3
Chloroethane	-0.4	-0.5	-0.2	-0.2	-0.4	-0.5	-0.2	-100	-0.2	-0.2
2-Chloroethylvinyl Ether	-2	-5	-0.9	-0.9	-2	-5	-0.9	-100	-0.9	-0.9
Chloroform	-0.3	-0.5	-0.4	-0.4	-0.3	-0.5	-0.4	-100	-0.4	-0.4
Chloromethane	-0.4	-1	-0.2	-0.2	-0.4	-1	-0.2	-100	-0.2	-0.2
Dibromochloromethane	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	-0.2	-100	-0.2	-0.2
1,1-Dichloroethane	-0.4	-0.5	-0.2	-0.2	-0.4	-0.5	-0.2	-100	-0.2	-0.2
1,2-Dichloroethane	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-0.3	-100	-0.3	-0.3
1,1-Dichloroethylene	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	-0.2	-100	-0.2	**0.7**
Cis-1,2-Dichloroethylene	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	**6.8**	**370**	-0.2	-0.2
Trans-1,2-Dichloroethylene	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5	-0.2	**33**	-0.2	-0.2
1,2-Dichloropropane	-0.2	-0.5	-0.3	-0.3	-0.2	-0.5	-0.3	-100	-0.3	-0.3
Cis-1,3-Dichloropropylene	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	-0.2	-100	-0.2	-0.2
Trans-1,3-Dichloropropylene	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5	-0.2	-100	-0.2	-0.2
Ethylbenzene	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	-0.2	-100	-0.2	-0.2
Methylene Chloride	-0.3	-1	-0.4	-0.4	-0.3	-1	-0.4	-100	-0.4	-0.4
1,1,2,2-Tetrachloroethane	-0.3	-0.5	-0.5	-0.5	-0.3	-0.5	-0.5	-100	-0.5	-0.5
Tetrachloroethylene	-0.4	-0.5	-0.4	-0.4	-0.4	-0.5	-0.4	-100	-0.4	-0.4
1,1,1-Trichloroethane	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5	-0.2	-100	-0.2	-0.2
1,1,2-Trichloroethane	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-0.3	-100	-0.3	-0.3
Trichloroethylene	-0.3	-0.5	-0.4	-0.4	-0.3	-0.5	**11**	**800**	-0.4	-0.4
Toluene	-0.2	-0.5	-0.3	-0.3	-0.2	-0.5	-0.3	-100	-0.3	-0.3
Vinyl Chloride	-0.4	-0.5	-0.3	-0.3	-0.4	-0.5	-0.3	-100	-0.3	-0.3
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	AA	CAS	CAS	CAS	AA	CAS	CAS	CAS	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-43A				RD-43B					
	02-06-99	05-06-99	08-05-99	11-04-99	02-06-99	05-06-99	08-05-99	08-05-99*	11-04-99	11-04-99*
CHATSWORTH FORMATION RD WELLS										
Acrolein	-0.9	-0.9	-8	---	-0.9	-0.9	-8	-8	---	---
Acrylonitrile	-0.7	-0.7	-8	---	-0.7	-0.7	-8	-8	---	---
Benzene	-0.3	-0.3	-0.2	-0.5	-0.3	-0.3	-0.2	-0.2	-0.5	-0.5
Bromodichloromethane	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	-0.5	-0.5
Bromoform	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-0.5	-0.5
Bromomethane	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-0.5	-0.5
Carbon Tetrachloride	-0.2	-0.2	-0.4	-0.5	-0.2	-0.2	-0.4	-0.4	-0.5	-0.5
Chlorobenzene	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-0.5	-0.5
Chloroethane	-0.2	-0.2	-0.4	-0.5	-0.2	-0.2	-0.4	-0.4	-0.5	-0.5
2-Chloroethylvinyl Ether	-0.9	-0.9	-2	-5	-0.9	-0.9	-2	-2	-5	-5
Chloroform	-0.4	-0.4	-0.3	-0.5	-0.4	-0.4	-0.3	-0.3	-0.5	-0.5
Chloromethane	-0.2	-0.2	-0.4	-1	-0.2	-0.2	-0.4	-0.4	-1	-1
Dibromochloromethane	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.3	-0.5	-0.5
1,1-Dichloroethane	-0.2	-0.2	-0.4	-0.5	-0.2	-0.2	-0.4	-0.4	-0.5	-0.5
1,2-Dichloroethane	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-0.5	-0.5
1,1-Dichloroethylene	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.3	-0.5	-0.5
Cis-1,2-Dichloroethylene	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.3	-0.5	-0.5
Trans-1,2-Dichloroethylene	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	-0.5	-0.5
1,2-Dichloropropane	-0.3	-0.3	-0.2	-0.5	-0.3	-0.3	-0.2	-0.2	-0.5	-0.5
Cis-1,3-Dichloropropylene	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.3	-0.5	-0.5
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	-0.5	-0.5
Ethylbenzene	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.3	-0.5	-0.5
Methylene Chloride	-0.4	-0.4	-0.3	-1	-0.4	-0.4	-0.3	-0.3	-1	-1
1,1,2,2-Tetrachloroethane	-0.5	-0.5	-0.3	-0.5	-0.5	-0.5	-0.3	-0.3	-0.5	-0.5
Tetrachloroethylene	-0.4	-0.4	-0.4	-0.5	-0.4	-0.4	-0.4	-0.4	-0.5	-0.5
1,1,1-Trichloroethane	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	-0.5	-0.5
1,1,2-Trichloroethane	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-0.5	-0.5
Trichloroethylene	-0.4	-0.4	-0.3	-0.5	-0.4	-0.4	-0.3	-0.3	-0.5	-0.5
Toluene	-0.3	-0.3	-0.2	-0.5	-0.3	-0.3	-0.2	-0.2	-0.5	-0.5
Vinyl Chloride	-0.3	-0.3	-0.4	-0.5	-0.3	-0.3	-0.4	-0.4	-0.5	-0.5
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	CAS	AA	CAS	CAS	CAS	CAS	AA	AA

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-43C				RD-44				RD-45A	
	02-06-99	05-06-99	08-05-99	11-04-99	02-02-99	05-11-99	08-05-99	11-08-99	02-05-99	02-05-99*
CHATSWORTH FORMATION RD WELLS										
Acrolein	-0.9	-0.9	-8	---	-0.9	-0.9	-8	---	-0.9	-0.9
Acrylonitrile	-0.7	-0.7	-8	---	-0.7	-0.7	-8	---	-0.7	-0.7
Benzene	-0.3	-0.3	-0.2	-0.5	-0.3	-0.3	-0.2	-0.5	-0.3	-0.3
Bromodichloromethane	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2
Bromoform	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3
Bromomethane	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3
Carbon Tetrachloride	-0.2	-0.2	-0.4	-0.5	-0.2	-0.2	-0.4	-0.5	-0.2	-0.2
Chlorobenzene	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3
Chloroethane	-0.2	-0.2	-0.4	-0.5	-0.2	-0.2	-0.4	-0.5	-0.2	-0.2
2-Chloroethylvinyl Ether	-0.9	-0.9	-2	-5	-0.9	-0.9	-2	-5	-0.9	-0.9
Chloroform	-0.4	-0.4	-0.3	-0.5	-0.4	-0.4	-0.3	-0.5	-0.4	-0.4
Chloromethane	-0.2	-0.2	-0.4	-1	-0.2	-0.2	-0.4	-1	-0.2	-0.2
Dibromochloromethane	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2
1,1-Dichloroethane	-0.2	-0.2	-0.4	-0.5	-0.2	-0.2	-0.4	-0.5	-0.2	-0.2
1,2-Dichloroethane	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3
1,1-Dichloroethylene	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2
Cis-1,2-Dichloroethylene	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	**45**	**43**
Trans-1,2-Dichloroethylene	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5	**20**	**19**
1,2-Dichloropropane	-0.3	-0.3	-0.2	-0.5	-0.3	-0.3	-0.2	-0.5	-0.3	-0.3
Cis-1,3-Dichloropropylene	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2
Ethylbenzene	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2
Methylene Chloride	-0.4	-0.4	-0.3	-1	-0.4	-0.4	-0.3	-1	-0.4	-0.4
1,1,2,2-Tetrachloroethane	-0.5	-0.5	-0.3	-0.5	-0.5	-0.5	-0.3	-0.5	-0.5	-0.5
Tetrachloroethylene	-0.4	-0.4	-0.4	-0.5	-0.4	-0.4	-0.4	-0.5	-0.4	-0.4
1,1,1-Trichloroethane	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2
1,1,2-Trichloroethane	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3
Trichloroethylene	-0.4	-0.4	-0.3	-0.5	-0.4	-0.4	-0.3	-0.5	**86**	**85**
Toluene	-0.3	-0.3	-0.2	-0.5	-0.3	-0.3	-0.2	-0.5	-0.3	-0.3
Vinyl Chloride	-0.3	-0.3	-0.4	-0.5	-0.3	-0.3	-0.4	-0.5	-0.3	-0.3
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	CAS	AA	CAS	CAS	CAS	AA	CAS	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-45B	RD-45C	RD-46A			RD-46B				
	02-05-99	02-05-99	02-15-99	02-15-99**	08-17-99	02-15-99	02-15-99*	08-17-99	08-17-99*	11-08-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	-0.9	-0.9	-5000	-172	-200	-0.9	-0.9	-8	-8	---
Acrylonitrile	-0.7	-0.7	-5000	-1.3	-200	-0.7	-0.7	-8	-8	---
Benzene	-0.3	-0.3	-250	-0.4	-5	-0.3	-0.3	-0.2	-0.2	-0.5
Bromodichloromethane	-0.2	-0.2	-250	-0.4	-5	-0.2	-0.2	-0.2	-0.2	-0.5
Bromoform	-0.3	-0.3	-250	-0.7	-7.5	-0.3	-0.3	-0.3	-0.3	-0.5
Bromomethane	-0.3	-0.3	-250	-0.4	-7.5	-0.3	-0.3	-0.3	-0.3	-0.5
Carbon Tetrachloride	-0.2	-0.2	-250	-0.4	-10	-0.2	-0.2	-0.4	-0.4	-0.5
Chlorobenzene	-0.3	-0.3	-250	-0.3	-7.5	-0.3	-0.3	-0.3	-0.3	-0.5
Chloroethane	-0.2	-0.2	-250	-1.1	-10	-0.2	-0.2	-0.4	-0.4	-0.5
2-Chloroethylvinyl Ether	-0.9	-0.9	-250	-1.2	-50	-0.9	-0.9	-2	-2	-5
Chloroform	-0.4	-0.4	-250	-0.2	-7.5	-0.4	-0.4	-0.3	-0.3	-0.5
Chloromethane	-0.2	-0.2	-250	-0.7	-10	-0.2	-0.2	-0.4	-0.4	-1
Dibromochloromethane	-0.2	-0.2	-250	-0.6	-7.5	-0.2	-0.2	-0.3	-0.3	-0.5
1,1-Dichloroethane	-0.2	-0.2	-250	-2.8	-10	-0.2	-0.2	-0.4	-0.4	-0.5
1,2-Dichloroethane	-0.3	-0.3	-250	-1.0	-7.5	-0.3	-0.3	-0.3	-0.3	-0.5
1,1-Dichloroethylene	-0.2	-0.2	-250	-1.2	-7.5	-0.2	-0.2	-0.3	-0.3	-0.5
Cis-1,2-Dichloroethylene	**28**	-0.2	**32**	**37**	**20**	-0.2	-0.2	-0.3	-0.3	-0.5
Trans-1,2-Dichloroethylene	**7.3**	-0.2	-250	-0.9	-5	-0.2	-0.2	-0.2	-0.2	-0.5
1,2-Dichloropropane	-0.3	-0.3	-250	-0.5	-5	-0.3	-0.3	-0.2	-0.2	-0.5
Cis-1,3-Dichloropropylene	-0.2	-0.2	-250	-0.4	-7.5	-0.2	-0.2	-0.3	-0.3	-0.5
Trans-1,3-Dichloropropylene	-0.2	-0.2	-250	-0.4	-5	-0.2	-0.2	-0.2	-0.2	-0.5
Ethylbenzene	-0.2	-0.2	-250	-0.5	-7.5	-0.2	-0.2	-0.3	-0.3	-0.5
Methylene Chloride	-0.4	-0.4	-250	-2.0	-7.5	-0.4	-0.4	-0.3	-0.3	-1
1,1,2,2-Tetrachloroethane	-0.5	-0.5	-250	-0.3	-7.5	-0.5	-0.5	-0.3	-0.3	-0.5
Tetrachloroethylene	-0.4	-0.4	-250	-0.4	-10	-0.4	-0.4	-0.4	-0.4	-0.5
1,1,1-Trichloroethane	-0.2	-0.2	-250	-0.3	-5	-0.2	-0.2	-0.2	-0.2	-0.5
1,1,2-Trichloroethane	-0.3	-0.3	-250	-0.5	-7.5	-0.3	-0.3	-0.3	-0.3	-0.5
Trichloroethylene	**9.6**	-0.4	**4100**	**4060**	**4100**	-0.4	-0.4	-0.3	-0.3	-0.5
Toluene	-0.3	-0.3	-250	-0.7	-5	-0.3	-0.3	-0.2	-0.2	-0.5
Vinyl Chloride	-0.3	-0.3	-250	-0.6	-10	-0.3	-0.3	-0.4	-0.4	-0.5
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	CAS	AL	CAS	CAS	CAS	CAS	CAS	AA

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-46B	RD-47	RD-48A				RD-48B			
	11-08-99*	05-14-99	02-04-99	05-12-99	08-12-99	11-07-99	02-04-99	05-13-99	08-12-99	11-08-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	---	-0.9	-0.9	-0.9	-8	---	-0.9	-0.9	-8	---
Acrylonitrile	---	-0.7	-0.7	-0.7	-8	---	-0.7	-0.7	-8	---
Benzene	-0.5	-0.3	-0.3	-0.3	-0.2	-0.5	-0.3	-0.3	-0.2	-0.5
Bromodichloromethane	-0.5	-0.2	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5
Bromoform	-0.5	-0.3	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5
Bromomethane	-0.5	-0.3	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5
Carbon Tetrachloride	-0.5	-0.2	-0.2	-0.2	-0.4	-0.5	-0.2	-0.2	-0.4	-0.5
Chlorobenzene	-0.5	-0.3	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5
Chloroethane	-0.5	-0.2	-0.2	-0.2	-0.4	-0.5	-0.2	-0.2	-0.4	-0.5
2-Chloroethylvinyl Ether	-5	-0.9	-0.9	-0.9	-2	-5	-0.9	-0.9	-2	-5
Chloroform	-0.5	-0.4	-0.4	-0.4	-0.3	-0.5	-0.4	-0.4	-0.3	-0.5
Chloromethane	-1	-0.2	-0.2	-0.2	-0.4	-1	-0.2	-0.2	-0.4	-1
Dibromochloromethane	-0.5	-0.2	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5
1,1-Dichloroethane	-0.5	-0.2	-0.2	-0.2	-0.4	-0.5	-0.2	-0.2	-0.4	-0.5
1,2-Dichloroethane	-0.5	-0.3	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5
1,1-Dichloroethylene	-0.5	-0.2	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5
Cis-1,2-Dichloroethylene	-0.5	**0.6**	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5
Trans-1,2-Dichloroethylene	-0.5	-0.2	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5
1,2-Dichloropropane	-0.5	-0.3	-0.3	-0.3	-0.2	-0.5	-0.3	-0.3	-0.2	-0.5
Cis-1,3-Dichloropropylene	-0.5	-0.2	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5
Trans-1,3-Dichloropropylene	-0.5	-0.2	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5
Ethylbenzene	-0.5	-0.2	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5
Methylene Chloride	-1	-0.4	-0.4	-0.4	-0.3	-1	-0.4	-0.4	-0.3	-1
1,1,2,2-Tetrachloroethane	-0.5	-0.5	-0.5	-0.5	-0.3	-0.5	-0.5	-0.5	-0.3	-0.5
Tetrachloroethylene	-0.5	-0.4	-0.4	-0.4	-0.4	-0.5	-0.4	-0.4	-0.4	-0.5
1,1,1-Trichloroethane	-0.5	-0.2	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5
1,1,2-Trichloroethane	-0.5	-0.3	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5
Trichloroethylene	-0.5	-0.4	-0.4	-0.4	-0.3	-0.5	-0.4	-0.4	-0.3	-0.5
Toluene	-0.5	**0.6**	-0.3	-0.3	-0.2	-0.5	-0.3	-0.3	-0.2	-0.5
Vinyl Chloride	-0.5	-0.3	-0.3	-0.3	-0.4	-0.5	-0.3	-0.3	-0.4	-0.5
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	AA	CAS	CAS	CAS	CAS	AA	CAS	CAS	CAS	AA

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-48C				RD-49A	RD-49B	RD-49C	RD-50		RD-51B
	02-04-99	05-12-99	08-12-99	11-08-99	02-07-99	02-07-99	02-07-99	02-16-99	08-06-99	02-17-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	-0.9	-0.9	-8	---	-2000	-1000	-0.9	-0.9	-8	-0.9
Acrylonitrile	-0.7	-0.7	-8	---	-2000	-1000	-0.7	-0.7	-8	-0.7
Benzene	-0.3	-0.3	-0.2	-0.5	-100	-50	-0.3	-0.3	-0.2	-0.3
Bromodichloromethane	-0.2	-0.2	-0.2	-0.5	-100	-50	-0.2	-0.2	-0.2	-0.2
Bromoform	-0.3	-0.3	-0.3	-0.5	-100	-50	-0.3	-0.3	-0.3	-0.3
Bromomethane	-0.3	-0.3	-0.3	-0.5	-100	-50	-0.3	-0.3	-0.3	-0.3
Carbon Tetrachloride	-0.2	-0.2	-0.4	-0.5	-100	-50	-0.2	-0.2	-0.4	-0.2
Chlorobenzene	-0.3	-0.3	-0.3	-0.5	-100	-50	-0.3	-0.3	-0.3	-0.3
Chloroethane	-0.2	-0.2	-0.4	-0.5	-100	-50	-0.2	-0.2	-0.4	-0.2
2-Chloroethylvinyl Ether	-0.9	-0.9	-2	-5	-100	-50	-0.9	-0.9	-2	-0.9
Chloroform	-0.4	-0.4	-0.3	-0.5	-100	-50	-0.4	-0.4	-0.3	-0.4
Chloromethane	-0.2	-0.2	-0.4	-1	-100	-50	-0.2	-0.2	-0.4	-0.2
Dibromochloromethane	-0.2	-0.2	-0.3	-0.5	-100	-50	-0.2	-0.2	-0.3	-0.2
1,1-Dichloroethane	-0.2	-0.2	-0.4	-0.5	-100	-50	-0.2	-0.2	-0.4	-0.2
1,2-Dichloroethane	-0.3	-0.3	-0.3	-0.5	-100	-50	-0.3	-0.3	-0.3	-0.3
1,1-Dichloroethylene	-0.2	-0.2	-0.3	-0.5	-100	-50	-0.2	-0.2	-0.3	-0.2
Cis-1,2-Dichloroethylene	-0.2	-0.2	-0.3	-0.5	**860**	**220**	**87**	-0.2	-0.3	**3.4**
Trans-1,2-Dichloroethylene	-0.2	-0.2	-0.2	-0.5	**39**	**11**	**4.2**	-0.2	-0.2	-0.2
1,2-Dichloropropane	-0.3	-0.3	-0.2	-0.5	-100	-50	-0.3	-0.3	-0.2	-0.3
Cis-1,3-Dichloropropylene	-0.2	-0.2	-0.3	-0.5	-100	-50	-0.2	-0.2	-0.3	-0.2
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-0.5	-100	-50	-0.2	-0.2	-0.2	-0.2
Ethylbenzene	-0.2	-0.2	-0.3	-0.5	-100	-50	-0.2	-0.2	-0.3	-0.2
Methylene Chloride	-0.4	-0.4	-0.3	-1	-100	-50	-0.4	-0.4	-0.3	-0.4
1,1,2,2-Tetrachloroethane	-0.5	-0.5	-0.3	-0.5	-100	-50	-0.5	-0.5	-0.3	-0.5
Tetrachloroethylene	-0.4	-0.4	-0.4	-0.5	-100	-50	-0.4	-0.4	-0.4	-0.4
1,1,1-Trichloroethane	-0.2	-0.2	-0.2	-0.5	-100	-50	-0.2	-0.2	-0.2	-0.2
1,1,2-Trichloroethane	-0.3	-0.3	-0.3	-0.5	-100	-50	-0.3	-0.3	-0.3	-0.3
Trichloroethylene	-0.4	-0.4	-0.3	-0.5	**1200**	**400**	**50**	-0.4	-0.3	**1.1**
Toluene	-0.3	-0.3	-0.2	-0.5	-100	-50	**0.8**	-0.3	-0.2	-0.3
Vinyl Chloride	-0.3	-0.3	-0.4	-0.5	-100	**4.3**	-0.3	-0.3	-0.4	**1.2**
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	CAS	AA	CAS	CAS	CAS	CAS	CAS	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-51B	RD-51C							RD-52B	RD-52C
	02-17-99*	02-10-99	02-10-99*	05-06-99	05-06-99*	08-05-99	11-08-99	11-08-99**	02-05-99	02-05-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	-0.9	-0.9	-0.9	-0.9	-0.9	-8	---	-10	-0.9	-0.9
Acrylonitrile	-0.7	-0.7	-0.7	-0.7	-0.7	-8	---	-10	-0.7	-0.7
Benzene	-0.3	-0.3	-0.3	-0.3	-0.3	-0.2	-0.5	-0.5	-0.3	-0.3
Bromodichloromethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5	-0.5	-0.2	-0.2
Bromoform	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3	-0.3
Bromomethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3	-0.3
Carbon Tetrachloride	-0.2	-0.2	-0.2	-0.2	-0.2	-0.4	-0.5	-0.5	-0.2	-0.2
Chlorobenzene	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3	-0.3
Chloroethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.4	-0.5	-0.5	-0.2	-0.2
2-Chloroethylvinyl Ether	-0.9	-0.9	-0.9	-0.9	-0.9	-2	-5	-1	-0.9	-0.9
Chloroform	-0.4	-0.4	-0.4	-0.4	-0.4	-0.3	-0.5	-0.5	-0.4	-0.4
Chloromethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.4	-1	-0.5	-0.2	-0.2
Dibromochloromethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.5	-0.5	-0.2	-0.2
1,1-Dichloroethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.4	-0.5	-0.5	-0.2	-0.2
1,2-Dichloroethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3	-0.3
1,1-Dichloroethylene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.5	-0.5	-0.2	-0.2
Cis-1,2-Dichloroethylene	3.9	-0.2	-0.2	-0.2	-0.2	-0.3	-0.5	-0.5	4.4	-0.2
Trans-1,2-Dichloroethylene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5	-0.5	2.1	-0.2
1,2-Dichloropropane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.2	-0.5	-0.5	-0.3	-0.3
Cis-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.5	-0.5	-0.2	-0.2
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5	-0.5	-0.2	-0.2
Ethylbenzene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.5	-0.5	-0.2	-0.2
Methylene Chloride	-0.4	-0.4	-0.4	-0.4	-0.4	-0.3	-1	-3	-0.4	-0.4
1,1,2,2-Tetrachloroethane	-0.5	-0.5	-0.5	-0.5	-0.5	-0.3	-0.5	-0.5	-0.5	-0.5
Tetrachloroethylene	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.5	-0.5	-0.4	-0.4
1,1,1-Trichloroethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5	-0.5	-0.2	-0.2
1,1,2-Trichloroethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3	-0.3
Trichloroethylene	1.5	-0.4	-0.4	-0.4	0.5[1/]	-0.3	-0.5	-0.5	3.1	-0.4
Toluene	-0.3	-0.3	-0.3	-0.3	-0.3	-0.2	-0.5	-0.5	-0.3	-0.3
Vinyl Chloride	1.9	-0.3	-0.3	-0.3	-0.3	-0.4	-0.5	-0.5	-0.3	-0.3
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	CAS	CAS	CAS	CAS	AA	Babcock	CAS	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-52C				RD-53		RD-54A		RD-54B	
	05-11-99	08-11-99[3/]	08-11-99*[3/]	11-06-99	02-17-99	08-10-99	02-08-99	08-18-99	02-08-99	08-18-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	-0.9	-8	-8	---	-200	-8	-1000	-40	-0.9	-8
Acrylonitrile	-0.7	-8	-8	---	-200	-8	-1000	-40	-0.7	-8
Benzene	-0.3	-0.2	-0.2	-0.5	-10	-0.2	-50	-1	-0.3	-0.2
Bromodichloromethane	-0.2	-0.2	-0.2	-0.5	-10	-0.2	-50	-1	-0.2	-0.2
Bromoform	-0.3	-0.3	-0.3	-0.5	-10	-0.3	-50	-1.5	-0.3	-0.3
Bromomethane	-0.3	-0.3	-0.3	-0.5	-10	-0.3	-50	-1.5	-0.3	-0.3
Carbon Tetrachloride	-0.2	-0.4	-0.4	-0.5	-10	-0.4	-50	-2	-0.2	-0.4
Chlorobenzene	-0.3	-0.3	-0.3	-0.5	-10	-0.3	-50	-1.5	-0.3	-0.3
Chloroethane	-0.2	-0.4	-0.4	-0.5	-10	-0.4	-50	-2	-0.2	-0.4
2-Chloroethylvinyl Ether	-0.9	-2	-2	-5	-10	-2	-50	-10	-0.9	-2
Chloroform	-0.4	-0.3	-0.3	-0.5	-10	-0.3	**15**	**12**	-0.4	-0.3
Chloromethane	-0.2	-0.4	-0.4	-1	-10	-0.4	-50	-2	-0.2	-0.4
Dibromochloromethane	-0.2	-0.3	-0.3	-0.5	-10	-0.3	-50	-1.5	-0.2	-0.3
1,1-Dichloroethane	-0.2	-0.4	-0.4	-0.5	**1.3**	**1.4**	-50	**5**	-0.2	-0.4
1,2-Dichloroethane	-0.3	-0.3	-0.3	-0.5	-10	-0.3	**8.1**	**8**	-0.3	-0.3
1,1-Dichloroethylene	-0.2	-0.3	-0.3	-0.5	**10**	**8.5**	**19**	**16**	-0.2	-0.3
Cis-1,2-Dichloroethylene	-0.2	-0.3	-0.3	-0.5	**3.9**	**4.6**	**31**	**26**	-0.2	-0.3
Trans-1,2-Dichloroethylene	-0.2	-0.2	-0.2	-0.5	-10	-0.2	-50	-1	-0.2	-0.2
1,2-Dichloropropane	-0.3	-0.2	-0.2	-0.5	-10	-0.2	-50	-1	-0.3	-0.2
Cis-1,3-Dichloropropylene	-0.2	-0.3	-0.3	-0.5	-10	-0.3	-50	-1.5	-0.2	-0.3
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-0.5	-10	-0.2	-50	-1	-0.2	-0.2
Ethylbenzene	-0.2	-0.3	-0.3	-0.5	-10	-0.3	-50	-1.5	-0.2	-0.3
Methylene Chloride	-0.4	-0.3	-0.3	-1	-10	-0.3	-50	-1.5	-0.4	-0.3
1,1,2,2-Tetrachloroethane	-0.5	-0.3	-0.3	-0.5	-10	-0.3	-50	-1.5	-0.5	-0.3
Tetrachloroethylene	-0.4	-0.4	-0.4	-0.5	-10	-0.4	-50	-2	-0.4	-0.4
1,1,1-Trichloroethane	-0.2	-0.2	-0.2	-0.5	**1.0**	**0.6**	-50	-1	-0.2	-0.2
1,1,2-Trichloroethane	-0.3	-0.3	-0.3	-0.5	-10	-0.3	-50	-1.5	-0.3	-0.3
Trichloroethylene	-0.4	-0.3	-0.3	-0.5	**180**	**120**	**500**	**560**	-0.4	-0.3
Toluene	-0.3	-0.2	-0.2	-0.5	-10	-0.2	-50	-1	-0.3	-0.2
Vinyl Chloride	-0.3	-0.4	-0.4	-0.5	-10	-0.4	-50	-2	-0.3	-0.4
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	CAS	AA	CAS	CAS	CAS	CAS	CAS	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-54C		RD-55A	RD-55B	RD-56A	RD-56B				
	02-09-99	08-18-99	02-06-99	02-07-99	02-04-99	02-04-99	05-12-99	08-13-99	11-07-99	11-07-99*
CHATSWORTH FORMATION RD WELLS										
Acrolein	-0.9	-8	-0.9	-0.9	-1000	-0.9	-0.9	-8	---	---
Acrylonitrile	-0.7	-8	-0.7	-0.7	-1000	-0.7	-0.7	-8	---	---
Benzene	-0.3	-0.2	-0.3	-0.3	-50	-0.3	-0.3	-0.2	-0.5	-0.5
Bromodichloromethane	-0.2	-0.2	-0.2	-0.2	-50	-0.2	-0.2	-0.2	-0.5	-0.5
Bromoform	-0.3	-0.3	-0.3	-0.3	-50	-0.3	-0.3	-0.3	-0.5	-0.5
Bromomethane	-0.3	-0.3	-0.3	-0.3	-50	-0.3	-0.3	-0.3	-0.5	-0.5
Carbon Tetrachloride	-0.2	-0.4	-0.2	-0.2	-50	-0.2	-0.2	-0.4	-0.5	-0.5
Chlorobenzene	-0.3	-0.3	-0.3	-0.3	-50	-0.3	-0.3	-0.3	-0.5	-0.5
Chloroethane	-0.2	-0.4	-0.2	-0.2	-50	-0.2	-0.2	-0.4	-0.5	-0.5
2-Chloroethylvinyl Ether	-0.9	-2	-0.9	-0.9	-50	-0.9	-0.9	-2	-5	-5
Chloroform	-0.4	-0.3	-0.4	-0.4	-50	-0.4	-0.4	-0.3	-0.5	-0.5
Chloromethane	-0.2	-0.4	-0.2	-0.2	-50	-0.2	-0.2	-0.4	-1	-1
Dibromochloromethane	-0.2	-0.3	-0.2	-0.2	-50	-0.2	-0.2	-0.3	-0.5	-0.5
1,1-Dichloroethane	-0.2	-0.4	-0.2	-0.2	-50	-0.2	-0.2	-0.4	-0.5	-0.5
1,2-Dichloroethane	-0.3	-0.3	-0.3	-0.3	-50	-0.3	-0.3	-0.3	-0.5	-0.5
1,1-Dichloroethylene	-0.2	-0.3	-0.2	-0.2	-50	-0.2	-0.2	-0.3	-0.5	-0.5
Cis-1,2-Dichloroethylene	-0.2	-0.3	-0.2	**6.5**	**440**	-0.2	-0.2	-0.3	-0.5	-0.5
Trans-1,2-Dichloroethylene	-0.2	-0.2	-0.2	-0.2	**53**	-0.2	-0.2	-0.2	-0.5	-0.5
1,2-Dichloropropane	-0.3	-0.2	-0.3	-0.3	-50	-0.3	-0.3	-0.2	-0.5	-0.5
Cis-1,3-Dichloropropylene	-0.2	-0.3	-0.2	-0.2	-50	-0.2	-0.2	-0.3	-0.5	-0.5
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-0.2	-50	-0.2	-0.2	-0.2	-0.5	-0.5
Ethylbenzene	-0.2	-0.3	-0.2	-0.2	-50	-0.2	-0.2	-0.3	-0.5	-0.5
Methylene Chloride	-0.4	-0.3	-0.4	-0.4	-50	-0.4	-0.4	-0.3	-1	-1
1,1,2,2-Tetrachloroethane	-0.5	-0.3	-0.5	-0.5	-50	-0.5	-0.5	-0.3	-0.5	-0.5
Tetrachloroethylene	-0.4	-0.4	-0.4	-0.4	-50	-0.4	-0.4	-0.4	-0.5	-0.5
1,1,1-Trichloroethane	-0.2	-0.2	-0.2	-0.2	-50	-0.2	-0.2	-0.2	-0.5	-0.5
1,1,2-Trichloroethane	-0.3	-0.3	-0.3	-0.3	-50	-0.3	-0.3	-0.3	-0.5	-0.5
Trichloroethylene	-0.4	-0.3	**2.6**	**4.9**	**810**	-0.4	-0.4	**0.3**	-0.5	-0.5
Toluene	-0.3	-0.2	-0.3	-0.3	-50	-0.3	-0.3	-0.2	-0.5	-0.5
Vinyl Chloride	-0.3	-0.4	-0.3	-0.3	-50	-0.3	-0.3	-0.4	-0.5	-0.5
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	CAS	CAS	CAS	CAS	CAS	CAS	AA	AA

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-57			RD-58A	RD-58B					RD-58C
	05-13-99	08-11-99[3/]	11-06-99	02-07-99	02-07-99	05-12-99	08-13-99	11-06-99	11-06-99**	02-06-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	-0.9	-8	---	-1000	-0.9	-0.9	-8	---	-10	-0.9
Acrylonitrile	-0.7	-8	---	-1000	-0.7	-0.7	-8	---	-10	-0.7
Benzene	-0.3	-0.2	-0.5	-50	-0.3	-0.3	-0.2	-0.5	-0.5	-0.3
Bromodichloromethane	-0.2	-0.2	-0.5	-50	-0.2	-0.2	-0.2	-0.5	-0.5	-0.2
Bromoform	-0.3	-0.3	-0.5	-50	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3
Bromomethane	-0.3	-0.3	-0.5	-50	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3
Carbon Tetrachloride	-0.2	-0.4	-0.5	-50	-0.2	-0.2	-0.4	-0.5	-0.5	-0.2
Chlorobenzene	-0.3	-0.3	-0.5	-50	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3
Chloroethane	-0.2	-0.4	-0.5	-50	-0.2	-0.2	-0.4	-0.5	-0.5	-0.2
2-Chloroethylvinyl Ether	-0.9	-2	-5	-50	-0.9	-0.9	-2	-5	-1	-0.9
Chloroform	-0.4	-0.3	-0.5	-50	-0.4	-0.4	-0.3	-0.5	-0.5	-0.4
Chloromethane	-0.2	-0.4	-1	-50	-0.2	-0.2	-0.4	-1	-0.5	-0.2
Dibromochloromethane	-0.2	-0.3	-0.5	-50	-0.2	-0.2	-0.3	-0.5	-0.5	-0.2
1,1-Dichloroethane	-0.2	-0.4	-0.5	-50	-0.2	-0.2	-0.4	-0.5	-0.5	-0.2
1,2-Dichloroethane	-0.3	-0.3	-0.5	-50	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3
1,1-Dichloroethylene	-0.2	-0.3	-0.5	-50	-0.2	-0.2	-0.3	-0.5	-0.5	-0.2
Cis-1,2-Dichloroethylene	-0.2	-0.3	-0.5	-50	-0.2	-0.2	-0.3	-0.5	-0.5	1.0
Trans-1,2-Dichloroethylene	-0.2	-0.2	-0.5	-50	-0.2	-0.2	-0.2	-0.5	-0.5	-0.2
1,2-Dichloropropane	-0.3	-0.2	-0.5	-50	-0.3	-0.3	-0.2	-0.5	-0.5	-0.3
Cis-1,3-Dichloropropylene	-0.2	-0.3	-0.5	-50	-0.2	-0.2	-0.3	-0.5	-0.5	-0.2
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.5	-50	-0.2	-0.2	-0.2	-0.5	-0.5	-0.2
Ethylbenzene	-0.2	-0.3	-0.5	-50	-0.2	-0.2	-0.3	-0.5	-0.5	-0.2
Methylene Chloride	-0.4	-0.3	-1	-50	-0.4	-0.4	-0.3	-1	-3	-0.4
1,1,2,2-Tetrachloroethane	-0.5	-0.3	-0.5	-50	-0.5	-0.5	-0.3	-0.5	-0.5	-0.5
Tetrachloroethylene	-0.4	-0.4	-0.5	-50	-0.4	-0.4	-0.4	-0.5	-0.5	-0.4
1,1,1-Trichloroethane	-0.2	-0.2	-0.5	-50	-0.2	-0.2	-0.2	-0.5	-0.5	-0.2
1,1,2-Trichloroethane	-0.3	-0.3	-0.5	-50	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3
Trichloroethylene	-0.4	-0.3	-0.5	430	-0.4	-0.4	-0.3	-0.5	-0.5	-0.4
Toluene	-0.3	-0.2	-0.5	-50	-0.3	-0.3	-0.2	-0.5	-0.5	-0.3
Vinyl Chloride	-0.3	-0.4	-0.5	-50	-0.3	-0.3	-0.4	-0.5	-0.5	-0.3
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	AA	CAS	CAS	CAS	CAS	AA	Babcock	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-58C				RD-59A					RD-59B
	05-12-99	08-16-99	08-16-99*	11-07-99	02-16-99	02-16-99*	05-10-99	08-06-99	11-06-99	02-16-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	-0.9	-8	-8	---	-0.9	-0.9	-0.9	-8	---	-0.9
Acrylonitrile	-0.7	-8	-8	---	-0.7	-0.7	-0.7	-8	---	-0.7
Benzene	-0.3	-0.2	-0.2	-0.5	-0.3	-0.3	-0.3	-0.2	-0.5	-0.3
Bromodichloromethane	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	-0.5	-0.2
Bromoform	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-0.5	-0.3
Bromomethane	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-0.5	-0.3
Carbon Tetrachloride	-0.2	-0.4	-0.4	-0.5	-0.2	-0.2	-0.2	-0.4	-0.5	-0.2
Chlorobenzene	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-0.5	-0.3
Chloroethane	-0.2	-0.4	-0.4	-0.5	-0.2	-0.2	-0.2	-0.4	-0.5	-0.2
2-Chloroethylvinyl Ether	-0.9	-2	-2	-5	-0.9	-0.9	-0.9	-2	-5	-0.9
Chloroform	-0.4	-0.3	-0.3	-0.5	-0.4	-0.4	-0.4	-0.3	-0.5	-0.4
Chloromethane	-0.2	-0.4	-0.4	-1	-0.2	-0.2	-0.2	-0.4	-1	-0.2
Dibromochloromethane	-0.2	-0.3	-0.3	-0.5	-0.2	-0.2	-0.2	-0.3	-0.5	-0.2
1,1-Dichloroethane	-0.2	-0.4	-0.4	-0.5	-0.2	-0.2	-0.2	-0.4	-0.5	-0.2
1,2-Dichloroethane	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-0.5	-0.3
1,1-Dichloroethylene	-0.2	-0.3	-0.3	-0.5	-0.2	-0.2	-0.2	-0.3	-0.5	-0.2
Cis-1,2-Dichloroethylene	**0.9**	**0.6**	**0.6**	-0.5	-0.2	-0.2	-0.2	-0.3	-0.5	-0.2
Trans-1,2-Dichloroethylene	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	-0.5	-0.2
1,2-Dichloropropane	-0.3	-0.2	-0.2	-0.5	-0.3	-0.3	-0.3	-0.2	-0.5	-0.3
Cis-1,3-Dichloropropylene	-0.2	-0.3	-0.3	-0.5	-0.2	-0.2	-0.2	-0.3	-0.5	-0.2
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	-0.5	-0.2
Ethylbenzene	-0.2	-0.3	-0.3	-0.5	-0.2	-0.2	-0.2	-0.3	-0.5	-0.2
Methylene Chloride	-0.4	-0.3	-0.3	-1	-0.4	-0.4	-0.4	-0.3	-1	-0.4
1,1,2,2-Tetrachloroethane	-0.5	-0.3	-0.3	-0.5	-0.5	-0.5	-0.5	-0.3	-0.5	-0.5
Tetrachloroethylene	-0.4	-0.4	-0.4	-0.5	-0.4	-0.4	-0.4	-0.4	-0.5	-0.4
1,1,1-Trichloroethane	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	-0.5	-0.2
1,1,2-Trichloroethane	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-0.5	-0.3
Trichloroethylene	-0.4	-0.3	-0.3	-0.5	-0.4	-0.4	-0.4	-0.3	-0.5	-0.4
Toluene	-0.3	-0.2	-0.2	-0.5	-0.3	-0.3	-0.3	-0.2	-0.5	-0.3
Vinyl Chloride	**2.0**	-0.4	-0.4	**1.9**	-0.3	-0.3	-0.3	-0.4	-0.5	-0.3
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	CAS	AA	CAS	CAS	CAS	CAS	AA	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-59B			RD-59C				RD-60	RD-61	
	05-10-99	08-06-99	11-06-99	02-16-99	05-10-99	08-06-99	11-06-99	02-06-99	02-16-99	05-12-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	-0.9	-8	---	-0.9	-0.9	-8	---	-200	-0.9	-0.9
Acrylonitrile	-0.7	-8	---	-0.7	-0.7	-8	---	-200	-0.7	-0.7
Benzene	-0.3	-0.2	-0.5	-0.3	-0.3	-0.2	-0.5	-10	-0.3	-0.3
Bromodichloromethane	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5	-10	-0.2	-0.2
Bromoform	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-10	-0.3	-0.3
Bromomethane	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-10	-0.3	-0.3
Carbon Tetrachloride	-0.2	-0.4	-0.5	-0.2	-0.2	-0.4	-0.5	-10	-0.2	-0.2
Chlorobenzene	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-10	-0.3	-0.3
Chloroethane	-0.2	-0.4	-0.5	-0.2	-0.2	-0.4	-0.5	-10	-0.2	-0.2
2-Chloroethylvinyl Ether	-0.9	-2	-5	-0.9	-0.9	-2	-5	-10	-0.9	-0.9
Chloroform	-0.4	-0.3	-0.5	-0.4	-0.4	-0.3	-0.5	-10	-0.4	-0.4
Chloromethane	-0.2	-0.4	-1	-0.2	-0.2	-0.4	-1	-10	-0.2	-0.2
Dibromochloromethane	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	-10	-0.2	-0.2
1,1-Dichloroethane	-0.2	-0.4	-0.5	-0.2	-0.2	-0.4	-0.5	**3.4**	-0.2	-0.2
1,2-Dichloroethane	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	**16**	-0.3	-0.3
1,1-Dichloroethylene	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	**3.6**	-0.2	-0.2
Cis-1,2-Dichloroethylene	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	**29**	-0.2	-0.2
Trans-1,2-Dichloroethylene	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5	-10	-0.2	-0.2
1,2-Dichloropropane	-0.3	-0.2	-0.5	-0.3	-0.3	-0.2	-0.5	-10	-0.3	-0.3
Cis-1,3-Dichloropropylene	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	-10	-0.2	-0.2
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5	-10	-0.2	-0.2
Ethylbenzene	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	-10	-0.2	-0.2
Methylene Chloride	-0.4	-0.3	-1	-0.4	-0.4	-0.3	-1	-10	-0.4	-0.4
1,1,2,2-Tetrachloroethane	-0.5	-0.3	-0.5	-0.5	-0.5	-0.3	-0.5	-10	-0.5	-0.5
Tetrachloroethylene	-0.4	-0.4	-0.5	-0.4	-0.4	-0.4	-0.5	-10	-0.4	-0.4
1,1,1-Trichloroethane	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5	-10	-0.2	-0.2
1,1,2-Trichloroethane	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-10	-0.3	-0.3
Trichloroethylene	-0.4	-0.3	-0.5	-0.4	-0.4	-0.3	-0.5	**410**	-0.4	-0.4
Toluene	-0.3	-0.2	-0.5	-0.3	-0.3	-0.2	-0.5	-10	-0.3	-0.3
Vinyl Chloride	-0.3	-0.4	-0.5	-0.3	-0.3	-0.4	-0.5	-10	-0.3	-0.3
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	AA	CAS	CAS	CAS	AA	CAS	CAS	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-61			RD-62		RD-63		RD-64	RD-65	RD-66
	08-13-99	11-05-99	11-05-99**	02-04-99	08-12-99	02-02-99	08-12-99	02-09-99	02-09-99	02-04-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	-8	---	-10	-0.9	-8	-0.9	-8	-500	-1000	-0.9
Acrylonitrile	-8	---	-10	-0.7	-8	-0.7	-8	-500	-1000	-0.7
Benzene	-0.2	-0.5	-0.5	-0.3	-0.2	-0.3	-0.2	-25	-50	-0.3
Bromodichloromethane	-0.2	-0.5	-0.5	-0.2	-0.2	-0.2	-0.2	-25	-50	-0.2
Bromoform	-0.3	-0.5	-0.5	-0.3	-0.3	-0.3	-0.3	-25	-50	-0.3
Bromomethane	-0.3	-0.5	-0.5	-0.3	-0.3	-0.3	-0.3	-25	-50	-0.3
Carbon Tetrachloride	-0.4	-0.5	-0.5	-0.2	-0.4	-0.2	-0.4	-25	-50	-0.2
Chlorobenzene	-0.3	-0.5	-0.5	-0.3	-0.3	-0.3	-0.3	-25	-50	-0.3
Chloroethane	-0.4	-0.5	-0.5	-0.2	-0.4	-0.2	-0.4	-25	-50	-0.2
2-Chloroethylvinyl Ether	-2	-5	-1	-0.9	-2	-0.9	-2	-25	-50	-0.9
Chloroform	-0.3	-0.5	-0.5	-0.4	-0.3	-0.4	-0.3	-25	-50	-0.4
Chloromethane	-0.4	-1	-0.5	-0.2	-0.4	-0.2	-0.4	-25	-50	-0.2
Dibromochloromethane	-0.3	-0.5	-0.5	-0.2	-0.3	-0.2	-0.3	-25	-50	-0.2
1,1-Dichloroethane	-0.4	-0.5	-0.5	-0.2	-0.4	**1.1**	**0.9**	-25	**24**	-0.2
1,2-Dichloroethane	-0.3	-0.5	-0.5	-0.3	-0.3	-0.3	-0.3	-25	-50	-0.3
1,1-Dichloroethylene	-0.3	-0.5	-0.5	-0.2	-0.3	**2.6**	**2**	**3.4**	**62**	-0.2
Cis-1,2-Dichloroethylene	-0.3	-0.5	-0.5	-0.2	-0.3	**4.6**	**3**	**31**	**13**	-0.2
Trans-1,2-Dichloroethylene	-0.2	-0.5	-0.5	-0.2	-0.2	-0.2	-0.2	-25	-50	-0.2
1,2-Dichloropropane	-0.2	-0.5	-0.5	-0.3	-0.2	-0.3	-0.2	-25	-50	-0.3
Cis-1,3-Dichloropropylene	-0.3	-0.5	-0.5	-0.2	-0.3	-0.2	-0.3	-25	-50	-0.2
Trans-1,3-Dichloropropylene	-0.2	-0.5	-0.5	-0.2	-0.2	-0.2	-0.2	-25	-50	-0.2
Ethylbenzene	-0.3	-0.5	-0.5	-0.2	-0.3	-0.2	-0.3	-25	-50	-0.2
Methylene Chloride	-0.3	-1	-3	-0.4	-0.3	-0.4	-0.3	-25	-50	-0.4
1,1,2,2-Tetrachloroethane	-0.3	-0.5	-0.5	-0.5	-0.3	-0.5	-0.3	-25	-50	-0.5
Tetrachloroethylene	-0.4	-0.5	-0.5	-0.4	-0.4	-0.4	-0.4	-25	-50	-0.4
1,1,1-Trichloroethane	-0.2	-0.5	-0.5	-0.2	-0.2	-0.2	-0.2	-25	**13**	-0.2
1,1,2-Trichloroethane	-0.3	-0.5	-0.5	-0.3	-0.3	-0.3	-0.3	-25	-50	-0.3
Trichloroethylene	-0.3	-0.5	-0.5	-0.4	-0.3	**8.6**	**8**	**290**	**420**	-0.4
Toluene	-0.2	-0.5	-0.5	-0.3	-0.2	-0.3	-0.2	-25	-50	-0.3
Vinyl Chloride	-0.4	-0.5	-0.5	-0.3	-0.4	-0.3	-0.4	-25	-50	-0.3
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	AA	Babcock	CAS	CAS	CAS	CAS	CAS	CAS	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-66			RD-67		RD-68A				
	05-07-99	08-05-99	11-05-99	02-04-99	08-04-99	02-16-99	05-10-99	08-06-99	08-06-99*	11-06-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	-0.9	-8	---	-0.9	-8	-0.9	-0.9	-8	-8	---
Acrylonitrile	-0.7	-8	---	-0.7	-8	-0.7	-0.7	-8	-8	---
Benzene	-0.3	-0.2	-0.5	-0.3	-0.2	-0.3	-0.3	-0.2	-0.2	-0.5
Bromodichloromethane	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5
Bromoform	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5
Bromomethane	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5
Carbon Tetrachloride	-0.2	-0.4	-0.5	-0.2	-0.4	-0.2	-0.2	-0.4	-0.4	-0.5
Chlorobenzene	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5
Chloroethane	-0.2	-0.4	-0.5	-0.2	-0.4	-0.2	-0.2	-0.4	-0.4	-0.5
2-Chloroethylvinyl Ether	-0.9	-2	-5	-0.9	-2	-0.9	-0.9	-2	-2	-5
Chloroform	-0.4	-0.3	-0.5	-0.4	-0.3	-0.4	-0.4	-0.3	-0.3	-0.5
Chloromethane	-0.2	-0.4	-1	-0.2	-0.4	-0.2	-0.2	-0.4	-0.4	-1
Dibromochloromethane	-0.2	-0.3	-0.5	-0.2	-0.3	-0.2	-0.2	-0.3	-0.3	-0.5
1,1-Dichloroethane	-0.2	-0.4	-0.5	-0.2	-0.4	-0.2	-0.2	-0.4	-0.4	-0.5
1,2-Dichloroethane	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5
1,1-Dichloroethylene	-0.2	-0.3	-0.5	-0.2	-0.3	-0.2	-0.2	-0.3	-0.3	-0.5
Cis-1,2-Dichloroethylene	-0.2	-0.3	-0.5	-0.2	-0.3	-0.2	-0.2	-0.3	-0.3	-0.5
Trans-1,2-Dichloroethylene	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5
1,2-Dichloropropane	-0.3	-0.2	-0.5	-0.3	-0.2	-0.3	-0.3	-0.2	-0.2	-0.5
Cis-1,3-Dichloropropylene	-0.2	-0.3	-0.5	-0.2	-0.3	-0.2	-0.2	-0.3	-0.3	-0.5
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5
Ethylbenzene	-0.2	-0.3	-0.5	-0.2	-0.3	-0.2	-0.2	-0.3	-0.3	-0.5
Methylene Chloride	-0.4	-0.3	-1	-0.4	-0.3	-0.4	-0.4	-0.3	-0.3	-1
1,1,2,2-Tetrachloroethane	-0.5	-0.3	-0.5	-0.5	-0.3	-0.5	-0.5	-0.3	-0.3	-0.5
Tetrachloroethylene	-0.4	-0.4	-0.5	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.5
1,1,1-Trichloroethane	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.5
1,1,2-Trichloroethane	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5
Trichloroethylene	-0.4	-0.3	-0.5	-0.4	-0.3	-0.4	-0.4	-0.3	-0.3	-0.5
Toluene	-0.3	-0.2	-0.5	-0.3	-0.2	-0.3	-0.3	-0.2	-0.2	-0.5
Vinyl Chloride	-0.3	-0.4	-0.5	-0.3	-0.4	-0.3	-0.3	-0.4	-0.4	-0.5
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	AA	CAS	CAS	CAS	CAS	CAS	CAS	AA

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-68B				RD-69					RD-70
	02-16-99	05-10-99	08-06-99	11-06-99	02-04-99	05-12-99	08-17-99	11-09-99	11-09-99*	02-15-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	-0.9	-0.9	-8	---	-0.9	-0.9	-8	---	---	-0.9
Acrylonitrile	-0.7	-0.7	-8	---	-0.7	-0.7	-8	---	---	-0.7
Benzene	-0.3	-0.3	-0.2	-0.5	-0.3	-0.3	-0.2	-0.5	-0.5	-0.3
Bromodichloromethane	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5	-0.5	-0.2
Bromoform	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3
Bromomethane	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3
Carbon Tetrachloride	-0.2	-0.2	-0.4	-0.5	-0.2	-0.2	-0.4	-0.5	-0.5	-0.2
Chlorobenzene	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3
Chloroethane	-0.2	-0.2	-0.4	-0.5	-0.2	-0.2	-0.4	-0.5	-0.5	-0.2
2-Chloroethylvinyl Ether	-0.9	-0.9	-2	-5	-0.9	-0.9	-2	-5	-5	-0.9
Chloroform	-0.4	-0.4	-0.3	-0.5	-0.4	-0.4	-0.3	-0.5	-0.5	-0.4
Chloromethane	-0.2	-0.2	-0.4	-1	-0.2	-0.2	-0.4	-1	-1	-0.2
Dibromochloromethane	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	-0.5	-0.2
1,1-Dichloroethane	-0.2	-0.2	-0.4	-0.5	-0.2	-0.2	-0.4	-0.5	-0.5	-0.2
1,2-Dichloroethane	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3
1,1-Dichloroethylene	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	-0.5	-0.2
Cis-1,2-Dichloroethylene	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	-0.5	-0.2
Trans-1,2-Dichloroethylene	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5	-0.5	-0.2
1,2-Dichloropropane	-0.3	-0.3	-0.2	-0.5	-0.3	-0.3	-0.2	-0.5	-0.5	-0.3
Cis-1,3-Dichloropropylene	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	-0.5	-0.2
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5	-0.5	-0.2
Ethylbenzene	-0.2	-0.2	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	-0.5	-0.2
Methylene Chloride	-0.4	-0.4	-0.3	-1	-0.4	-0.4	-0.3	-1	-1	-0.4
1,1,2,2-Tetrachloroethane	-0.5	-0.5	-0.3	-0.5	-0.5	-0.5	-0.3	-0.5	-0.5	-0.5
Tetrachloroethylene	-0.4	-0.4	-0.4	-0.5	-0.4	-0.4	-0.4	-0.5	-0.5	-0.4
1,1,1-Trichloroethane	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5	-0.5	-0.2
1,1,2-Trichloroethane	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-0.5	-0.3
Trichloroethylene	-0.4	-0.4	-0.3	-0.5	-0.4	-0.4	-0.3	-0.5	-0.5	-0.4
Toluene	-0.3	-0.3	-0.2	-0.5	-0.3	-0.3	-0.2	-0.5	-0.5	-0.3
Vinyl Chloride	-0.3	-0.3	-0.4	-0.5	-0.3	-0.3	-0.4	-0.5	-0.5	-0.3
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	CAS	AA	CAS	CAS	CAS	AA	AA	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-70				RD-71				RD-72	
	05-11-99	08-12-99[3/]	08-12-99*	11-07-99	02-04-99	05-07-99	08-05-99	11-05-99	02-09-99	08-17-99
CHATSWORTH FORMATION RD WELLS										
Acrolein	-0.9	-8	-8	---	-0.9	-0.9	-8	---	-2000	-200
Acrylonitrile	-0.7	-8	-8	---	-0.7	-0.7	-8	---	-2000	-200
Benzene	-0.3	-0.2	-0.2	-0.5	-0.3	-0.3	-0.2	-0.5	-100	-5
Bromodichloromethane	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5	-100	-5
Bromoform	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-100	-7.5
Bromomethane	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-100	-7.5
Carbon Tetrachloride	-0.2	-0.4	-0.4	-0.5	-0.2	-0.2	-0.4	-0.5	-100	-10
Chlorobenzene	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-100	-7.5
Chloroethane	-0.2	-0.4	-0.4	-0.5	-0.2	-0.2	-0.4	-0.5	-100	-10
2-Chloroethylvinyl Ether	-0.9	-2	-2	-5	-0.9	-0.9	-2	-5	-100	-50
Chloroform	-0.4	-0.3	-0.3	-0.5	-0.4	-0.4	-0.3	-0.5	-100	-7.5
Chloromethane	-0.2	-0.4	-0.4	-1	-0.2	-0.2	-0.4	-1	-100	-10
Dibromochloromethane	-0.2	-0.3	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	-100	-7.5
1,1-Dichloroethane	-0.2	-0.4	-0.4	-0.5	-0.2	-0.2	-0.4	-0.5	-100	**29**
1,2-Dichloroethane	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-100	-7.5
1,1-Dichloroethylene	-0.2	-0.3	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	**150**	**220**
Cis-1,2-Dichloroethylene	-0.2	-0.3	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	**120**	**150**
Trans-1,2-Dichloroethylene	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5	-100	-5
1,2-Dichloropropane	-0.3	-0.2	-0.2	-0.5	-0.3	-0.3	-0.2	-0.5	-100	-5
Cis-1,3-Dichloropropylene	-0.2	-0.3	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	-100	-7.5
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5	-100	-5
Ethylbenzene	-0.2	-0.3	-0.3	-0.5	-0.2	-0.2	-0.3	-0.5	-100	-7.5
Methylene Chloride	-0.4	-0.3	-0.3	-1	-0.4	-0.4	-0.3	-1	-100	-7.5
1,1,2,2-Tetrachloroethane	-0.5	-0.3	-0.3	-0.5	-0.5	-0.5	-0.3	-0.5	-100	-7.5
Tetrachloroethylene	-0.4	-0.4	-0.4	-0.5	-0.4	-0.4	-0.4	-0.5	-100	-10
1,1,1-Trichloroethane	-0.2	-0.2	-0.2	-0.5	-0.2	-0.2	-0.2	-0.5	-100	-5
1,1,2-Trichloroethane	-0.3	-0.3	-0.3	-0.5	-0.3	-0.3	-0.3	-0.5	-100	-7.5
Trichloroethylene	-0.4	-0.3	-0.3	-0.5	-0.4	-0.4	-0.3	-0.5	**4100**	**6600**
Toluene	-0.3	-0.2	-0.2	-0.5	-0.3	-0.3	-0.2	-0.5	-100	-5
Vinyl Chloride	-0.3	-0.4	-0.4	-0.5	-0.3	-0.3	-0.4	-0.5	-100	-10
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	CAS	AA	CAS	CAS	CAS	AA	CAS	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	RD-73	RD-74								
	02-04-99	05-13-99	05-13-99*	05-13-99**	08-19-99					
CHATSWORTH FORMATION RD WELLS										
Acrolein	-5000	-0.9	-0.9	---	-8					
Acrylonitrile	-5000	-0.7	-0.7	---	-8					
Benzene	**66**	-0.3	-0.3	-0.3	-0.2					
Bromodichloromethane	-250	-0.2	-0.2	-0.2	-0.2					
Bromoform	-250	-0.3	-0.3	-0.1	-0.3					
Bromomethane	-250	-0.3	-0.3	-0.5	-0.3					
Carbon Tetrachloride	-250	-0.2	-0.2	-0.2	-0.4					
Chlorobenzene	-250	-0.3	-0.3	-0.5	-0.3					
Chloroethane	-250	-0.2	-0.2	-0.4	-0.4					
2-Chloroethylvinyl Ether	-250	-0.9	-0.9	-0.2	-2					
Chloroform	-250	-0.4	-0.4	-0.2	-0.3					
Chloromethane	-250	-0.2	-0.2	-0.3	-0.4					
Dibromochloromethane	-250	-0.2	-0.2	-0.2	-0.3					
1,1-Dichloroethane	-250	-0.2	-0.2	-0.2	-0.4					
1,2-Dichloroethane	-250	-0.3	-0.3	-0.2	-0.3					
1,1-Dichloroethylene	**480**	-0.2	-0.2	-0.4	-0.3					
Cis-1,2-Dichloroethylene	**290**	-0.2	-0.2	-0.3	-0.3					
Trans-1,2-Dichloroethylene	-250	-0.2	-0.2	-0.4	-0.2					
1,2-Dichloropropane	-250	-0.3	-0.3	-0.3	-0.2					
Cis-1,3-Dichloropropylene	-250	-0.2	-0.2	-0.2	-0.3					
Trans-1,3-Dichloropropylene	-250	-0.2	-0.2	-0.3	-0.2					
Ethylbenzene	-250	-0.2	-0.2	-0.2	-0.3					
Methylene Chloride	-250	-0.4	-0.4	-0.2	-0.3					
1,1,2,2-Tetrachloroethane	-250	-0.5	-0.5	-0.2	-0.3					
Tetrachloroethylene	-250	-0.4	-0.4	-0.2	-0.4					
1,1,1-Trichloroethane	**23**	-0.2	-0.2	-0.3	-0.2					
1,1,2-Trichloroethane	-250	-0.3	-0.3	-0.2	-0.3					
Trichloroethylene	**10000**	-0.4	-0.4	-0.2	-0.3					
Toluene	-250	-0.3	-0.3	-0.2	-0.2					
Vinyl Chloride	-250	-0.3	-0.3	-0.3	-0.4					
Method	8260	8260	8260	8260	8260					
Laboratory	CAS	CAS	CAS	AL	CAS					

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	HAR-6	HAR-7	HAR-16	HAR-17			HAR-18	HAR-20	HAR-21	HAR-22
	02-09-99	02-08-99	02-08-99	02-08-99	02-08-99*	02-08-99**	02-07-99	02-07-99	02-07-99	02-09-99
CHATSWORTH FORMATION HAR WELLS										
Acrolein	-0.9	-200	-200	-4	-0.9	-172	-5000	-0.9	-0.9	-0.9
Acrylonitrile	-0.7	-10	-10	-0.2	-0.7	-1.3	-5000	-0.7	-0.7	-0.7
Benzene	-0.3	-10	-10	-0.2	-0.3	-0.4	-250	-0.3	-0.3	-0.3
Bromodichloromethane	-0.2	-10	-10	-0.2	-0.2	-0.4	-250	-0.2	-0.2	-0.2
Bromoform	-0.3	-10	-10	-0.2	-0.3	-0.7	-250	-0.3	-0.3	-0.3
Bromomethane	-0.3	-15	-15	-0.3	-0.3	-0.4	-250	-0.3	-0.3	-0.3
Carbon Tetrachloride	-0.2	-15	-15	-0.3	-0.2	-0.4	-250	-0.2	-0.2	-0.2
Chlorobenzene	-0.3	-10	-10	-0.2	-0.3	-0.3	-250	-0.3	-0.3	-0.3
Chloroethane	-0.2	-10	-10	-0.2	-0.2	-1.1	-250	-0.2	-0.2	-0.2
2-Chloroethylvinyl Ether	-0.9	---	---	---	-0.9	-1.2	-250	-0.9	-0.9	-0.9
Chloroform	-0.4	-10	-10	**0.3**	-0.4	-0.2	-250	-0.4	-0.4	-0.4
Chloromethane	-0.2	-10	-10	-0.2	-0.2	-0.7	-250	-0.2	-0.2	-0.2
Dibromochloromethane	-0.2	-10	-10	-0.2	-0.2	-0.6	-250	-0.2	-0.2	-0.2
1,1-Dichloroethane	**21**	-10	-10	**0.6**	-0.2	-2.8	-250	-0.2	-0.2	-0.2
1,2-Dichloroethane	-0.3	-10	-10	-0.2	-0.3	-1.0	-250	-0.3	-0.3	-0.3
1,1-Dichloroethylene	**60**	**10**	**20**	**0.6**	-0.2	-1.2	**540**	-0.2	-0.2	-0.2
Cis-1,2-Dichloroethylene	**4.9**	**2500**	**100**	**8.7**	**11**	**8.7**	**910**	**13**	**92**	**5.5**
Trans-1,2-Dichloroethylene	-0.2	**70**	-10	**0.4**	**0.6**	-0.9	-250	**1.1**	-0.2	-0.2
1,2-Dichloropropane	-0.3	-10	-10	-0.2	-0.3	-0.5	-250	-0.3	-0.3	-0.3
Cis-1,3-Dichloropropylene	-0.2	-10	-10	-0.2	-0.2	-0.4	-250	-0.2	-0.2	-0.2
Trans-1,3-Dichloropropylene	-0.2	-10	-10	-0.2	-0.2	-0.4	-250	-0.2	-0.2	-0.2
Ethylbenzene	-0.2	-10	-10	-0.2	-0.2	-0.5	-250	-0.2	-0.2	-0.2
Methylene Chloride	-0.4	-15	-15	-0.3	-0.4	-2.0	-250	-0.4	-0.4	-0.4
1,1,2,2-Tetrachloroethane	-0.5	-10	-10	-0.2	-0.5	-0.3	-250	-0.5	-0.5	-0.5
Tetrachloroethylene	-0.4	-10	**10**	-0.2	-0.4	-0.4	-250	-0.4	-0.4	-0.4
1,1,1-Trichloroethane	-0.2	-15	-15	-0.3	-0.2	-0.3	**69**	-0.2	-0.2	-0.2
1,1,2-Trichloroethane	-0.3	-15	-15	-0.3	-0.3	-0.5	-250	-0.3	-0.3	-0.3
Trichloroethylene	**1.0**	**13000**	**9300**	**46**	**56**	**51**	**4300**	**16**	**6.2**	**1.4**
Toluene	-0.3	-10	-10	-0.2	-0.3	-0.7	-250	-0.3	-0.3	-0.3
Vinyl Chloride	**1.3**	**30**	-15	-0.3	-0.3	-0.6	-250	-0.3	**9.2**	-0.3
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	CAS	CAS	CAS	AL	CAS	CAS	CAS	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	HAR-23	HAR-24		HAR-25	HAR-26					
	02-09-99	02-17-99	02-17-99**	02-17-99	05-13-99					
CHATSWORTH FORMATION HAR WELLS										
Acrolein	-0.9	-500	-172	-0.9	-0.9					
Acrylonitrile	-0.7	-500	-1.3	-0.7	-0.7					
Benzene	-0.3	-25	-0.4	-0.3	-0.3					
Bromodichloromethane	-0.2	-25	-0.4	-0.2	-0.2					
Bromoform	-0.3	-25	-0.7	-0.3	-0.3					
Bromomethane	-0.3	-25	-0.4	-0.3	-0.3					
Carbon Tetrachloride	-0.2	-25	-0.4	-0.2	-0.2					
Chlorobenzene	-0.3	-25	-0.3	-0.3	-0.3					
Chloroethane	-0.2	-25	-1.1	-0.2	-0.2					
2-Chloroethylvinyl Ether	-0.9	-25	-1.2	-0.9	-0.9					
Chloroform	-0.4	-25	**4.0**	**0.9**	-0.4					
Chloromethane	-0.2	-25	-0.7	-0.2	-0.2					
Dibromochloromethane	-0.2	-25	-0.6	-0.2	-0.2					
1,1-Dichloroethane	-0.2	-25	-2.8	-0.2	-0.2					
1,2-Dichloroethane	-0.3	-25	-1.0	-0.3	-0.3					
1,1-Dichloroethylene	-0.2	-25	-1.2	**0.6**	-0.2					
Cis-1,2-Dichloroethylene	-0.2	-25	-0.5	-0.2	-0.2					
Trans-1,2-Dichloroethylene	-0.2	-25	-0.9	-0.2	-0.2					
1,2-Dichloropropane	-0.3	-25	-0.5	-0.3	-0.3					
Cis-1,3-Dichloropropylene	-0.2	-25	-0.4	-0.2	-0.2					
Trans-1,3-Dichloropropylene	-0.2	-25	-0.4	-0.2	-0.2					
Ethylbenzene	-0.2	-25	-0.5	-0.2	-0.2					
Methylene Chloride	-0.4	-25	-2.0	-0.4	-0.4					
1,1,2,2-Tetrachloroethane	-0.5	-25	-0.3	-0.5	-0.5					
Tetrachloroethylene	-0.4	-25	-0.4	**4.5**	-0.4					
1,1,1-Trichloroethane	-0.2	-25	-0.3	-0.2	-0.2					
1,1,2-Trichloroethane	-0.3	-25	-0.5	-0.3	-0.3					
Trichloroethylene	**1.5**	**110**	**160**	**87**	-0.4					
Toluene	-0.3	-25	-0.7	-0.3	-0.3					
Vinyl Chloride	-0.3	-25	-0.6	-0.3	-0.3					
Method	8260	8260	8260	8260	8260					
Laboratory	CAS	CAS	AL	CAS	CAS					

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	WS-4A				WS-5	WS-6	WS-9	WS-9A	WS-9B
	02-06-99	02-06-99**	05-13-99	08-11-99[3/]	02-10-99	02-15-99	02-18-99	02-18-99	02-06-99
CHATSWORTH FORMATION WS WELLS									
Acrolein	-0.9	-172	-0.9	-8	-0.9	-0.9	-0.9	-0.9	-0.9
Acrylonitrile	-0.7	-1.3	-0.7	-8	-0.7	-0.7	-0.7	-0.7	-0.7
Benzene	-0.3	-0.4	-0.3	-0.2	-0.3	-0.3	-0.3	-0.3	-0.3
Bromodichloromethane	-0.2	-0.4	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
Bromoform	-0.3	-0.7	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
Bromomethane	-0.3	-0.4	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
Carbon Tetrachloride	-0.2	-0.4	-0.2	-0.4	-0.2	-0.2	-0.2	-0.2	-0.2
Chlorobenzene	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
Chloroethane	-0.2	-1.1	-0.2	-0.4	-0.2	-0.2	-0.2	-0.2	-0.2
2-Chloroethylvinyl Ether	-0.9	-1.2	-0.9	-2	-0.9	-0.9	-0.9	-0.9	-0.9
Chloroform	-0.4	-0.2	-0.4	-0.3	-0.4	-0.4	-0.4	-0.4	-0.4
Chloromethane	-0.2	-0.7	-0.2	-0.4	-0.2	-0.2	-0.2	-0.2	-0.2
Dibromochloromethane	-0.2	-0.6	-0.2	-0.3	-0.2	-0.2	-0.2	-0.2	-0.2
1,1-Dichloroethane	-0.2	-2.8	-0.2	-0.4	-0.2	-0.2	-0.2	-0.2	-0.2
1,2-Dichloroethane	-0.3	-1.0	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
1,1-Dichloroethylene	-0.2	-1.2	-0.2	-0.3	-0.2	-0.2	-0.2	-0.2	-0.2
Cis-1,2-Dichloroethylene	-0.2	-0.5	-0.2	-0.3	**7.8**	**45**	**9.1**	**93**	-0.2
Trans-1,2-Dichloroethylene	-0.2	-0.9	-0.2	-0.2	-0.2	**5.8**	**0.8**	**5.1**	-0.2
1,2-Dichloropropane	-0.3	-0.5	-0.3	-0.2	-0.3	-0.3	-0.3	-0.3	-0.3
Cis-1,3-Dichloropropylene	-0.2	-0.4	-0.2	-0.3	-0.2	-0.2	-0.2	-0.2	-0.2
Trans-1,3-Dichloropropylene	-0.2	-0.4	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
Ethylbenzene	-0.2	-0.5	-0.2	-0.3	-0.2	-0.2	-0.2	-0.2	-0.2
Methylene Chloride	-0.4	-2.0	-0.4	-0.3	-0.4	-0.4	-0.4	-0.4	-0.4
1,1,2,2-Tetrachloroethane	-0.5	-0.3	-0.5	-0.3	-0.5	-0.5	-0.5	-0.5	-0.5
Tetrachloroethylene	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
1,1,1-Trichloroethane	-0.2	-0.3	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
1,1,2-Trichloroethane	-0.3	-0.5	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
Trichloroethylene	-0.4	-0.5	-0.4	-0.3	**4.0**	**26**	**100**	**61**	-0.4
Toluene	-0.3	-0.7	-0.3	-0.2	-0.3	-0.3	-0.3	-0.3	-0.3
Vinyl Chloride	-0.3	-0.6	-0.3	-0.4	-0.3	**2.8**	-0.3	-0.3	-0.3
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	AL	CAS	CAS	CAS	CAS	CAS	CAS	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	OS-2	OS-4	OS-8	OS-15	OS-16		OS-17		OS-21	OS-24
	02-16-99	02-16-99	02-16-99	02-09-99	02-09-99	08-13-99	02-18-99	08-13-99	02-10-99	02-18-99
CHATSWORTH FORMATION OS WELLS										
Acrolein	-0.9	-0.9	-0.9	-0.9	-0.9	-8	-0.9	-8	-0.9	-0.9
Acrylonitrile	-0.7	-0.7	-0.7	-0.7	-0.7	-8	-0.7	-8	-0.7	-0.7
Benzene	-0.3	-0.3	-0.3	-0.3	-0.3	-0.2	-0.3	-0.2	-0.3	-0.3
Bromodichloromethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
Bromoform	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
Bromomethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
Carbon Tetrachloride	-0.2	-0.2	-0.2	-0.2	-0.2	-0.4	-0.2	-0.4	-0.2	-0.2
Chlorobenzene	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
Chloroethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.4	-0.2	-0.4	-0.2	-0.2
2-Chloroethylvinyl Ether	-0.9	-0.9	-0.9	-0.9	-0.9	-2	-0.9	-2	-0.9	-0.9
Chloroform	-0.4	-0.4	-0.4	-0.4	-0.4	-0.3	-0.4	-0.3	-0.4	-0.4
Chloromethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.4	-0.2	-0.4	-0.2	-0.2
Dibromochloromethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.2	-0.3	-0.2	-0.2
1,1-Dichloroethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.4	-0.2	-0.4	-0.2	-0.2
1,2-Dichloroethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
1,1-Dichloroethylene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.2	-0.3	-0.2	-0.2
Cis-1,2-Dichloroethylene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.2	-0.3	-0.2	-0.2
Trans-1,2-Dichloroethylene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
1,2-Dichloropropane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.2	-0.3	-0.2	-0.3	-0.3
Cis-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.2	-0.3	-0.2	-0.2
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
Ethylbenzene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3	-0.2	-0.3	-0.2	-0.2
Methylene Chloride	-0.4	-0.4	-0.4	-0.4	-0.4	-0.3	-0.4	-0.3	-0.4	-0.4
1,1,2,2-Tetrachloroethane	-0.5	-0.5	-0.5	-0.5	-0.5	-0.3	-0.5	-0.3	-0.5	-0.5
Tetrachloroethylene	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
1,1,1-Trichloroethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
1,1,2-Trichloroethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
Trichloroethylene	-0.4	-0.4	-0.4	-0.4	-0.4	-0.3	-0.4	-0.3	-0.4	**9.0**
Toluene	-0.3	-0.3	-0.3	-0.3	-0.3	-0.2	-0.3	-0.2	-0.3	-0.3
Vinyl Chloride	-0.3	-0.3	-0.3	-0.3	-0.3	-0.4	-0.3	-0.4	-0.3	-0.3
Method	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Laboratory	CAS	CAS	CAS	CAS	CAS	CAS	CAS	CAS	CAS	CAS

See last page of Table 10 for footnotes and explanations.

TABLE 10
SUMMARY OF 1999 RESULTS FOR EPA PRIORITY VOLATILE ORGANIC COMPOUNDS IN CHATSWORTH FORMATION WELLS

ORGANIC COMPOUND (µg/l)	OS-24	OS-25	OS-26		OS-27					
	08-10-99	02-19-99	02-19-99	08-17-99	02-17-99	02-17-99**				
CHATSWORTH FORMATION OS WELLS										
Acrolein	-8	-0.9	-0.9	-8	-0.9	-172				
Acrylonitrile	-8	-0.7	-0.7	-8	-0.7	-1.3				
Benzene	-0.2	-0.3	-0.3	-0.2	-0.3	-0.4				
Bromodichloromethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.4				
Bromoform	-0.3	-0.3	-0.3	-0.3	-0.3	-0.7				
Bromomethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.4				
Carbon Tetrachloride	-0.4	-0.2	-0.2	-0.4	-0.2	-0.4				
Chlorobenzene	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3				
Chloroethane	-0.4	-0.2	-0.2	-0.4	-0.2	-1.1				
2-Chloroethylvinyl Ether	-2	-0.9	-0.9	-2	-0.9	-1.2				
Chloroform	-0.3	-0.4	-0.4	-0.3	-0.4	-0.2				
Chloromethane	-0.4	-0.2	-0.2	-0.4	-0.2	-0.7				
Dibromochloromethane	-0.3	-0.2	-0.2	-0.3	-0.2	-0.6				
1,1-Dichloroethane	-0.4	-0.2	-0.2	-0.4	-0.2	-2.8				
1,2-Dichloroethane	-0.3	-0.3	-0.3	-0.3	-0.3	-1.0				
1,1-Dichloroethylene	-0.3	-0.2	-0.2	-0.3	-0.2	-1.2				
Cis-1,2-Dichloroethylene	-0.3	-0.2	-0.2	-0.3	-0.2	-0.5				
Trans-1,2-Dichloroethylene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.9				
1,2-Dichloropropane	-0.2	-0.3	-0.3	-0.2	-0.3	-0.5				
Cis-1,3-Dichloropropylene	-0.3	-0.2	-0.2	-0.3	-0.2	-0.4				
Trans-1,3-Dichloropropylene	-0.2	-0.2	-0.2	-0.2	-0.2	-0.4				
Ethylbenzene	-0.3	-0.2	-0.2	-0.3	-0.2	-0.5				
Methylene Chloride	-0.3	-0.4	-0.4	-0.3	-0.4	-2.0				
1,1,2,2-Tetrachloroethane	-0.3	-0.5	-0.5	-0.3	-0.5	-0.3				
Tetrachloroethylene	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4				
1,1,1-Trichloroethane	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3				
1,1,2-Trichloroethane	-0.3	-0.3	-0.3	-0.3	-0.3	-0.5				
Trichloroethylene	14	-0.4	-0.4	-0.3	-0.4	-0.5				
Toluene	-0.2	-0.3	-0.3	-0.2	-0.3	-0.7				
Vinyl Chloride	-0.4	-0.3	-0.3	-0.4	-0.3	-0.6				
Method	8260	8260	8260	8260	8260	8260				
Laboratory	CAS	CAS	CAS	CAS	CAS	AL				

See last page of Table 10 for footnotes and explanations.

TABLE 10

FOOTNOTES AND EXPLANATIONS

Laboratory Abbreviation

AA	=	Alpha Analytical, Inc. of Sparks, Nevada.
AL	=	Associated Laboratories of Orange, California.
Babcock	=	E.S. Babcock & Sons, Inc. of Riverside, California.
CAS	=	Columbia Analytical Services, Inc. of Canoga Park, California.

Footnotes

(-)	=	Less than; numerical value represents the Limit of Detection for that compound.
(*)	=	Sample duplicate.
(**)	=	Sample split.
1/	=	Possible field or laboratory contaminant.
2/	=	Unconfirmed/suspect result. Result was not confirmed after re-analyzing the sample past the holding time.
3/	=	Sample analyzed past holding time.
8260	=	EPA method 8260 for volatile organic compounds (GC/MS). Laboratory uses most current promulgated version (e.g., 8260A, 8260B).
8021	=	EPA method 8021 for aromatic and halogenated volatile organic compounds (GC).

TABLE 11

SUMMARY OF 1999 RESULTS FOR NON-PRIORITY AND SEMI-QUANTIFIED ORGANIC COMPOUNDS

SAMPLE IDENTIFIER	DATE SAMPLED	ORGANIC COMPOUND	CONCENTRATION (micrograms per liter)	EPA METHOD NUMBER	LABORATORY
Shallow Zone Wells					
SH-3	02-07-99	Freon 113	81	8260	CAS
ECL-FD	02-11-99	Freon 113	25	8260	CAS
	02-11-99*	Freon 113	21	8260	CAS
RS-1	02-17-99	TPH as gasoline	50	8015	CAS
RS-18	05-12-99**	Freon 113	16	8260	AL
RS-30	02-17-99	m- and p-Xylenes	1.8	8260	CAS
	02-17-99	o-Xylene	0.6	8260	CAS
	02-17-99	TPH as gasoline	420	8015	CAS
RS-31	02-17-99	TPH as gasoline	40	8015	CAS
RS-32	02-17-99	TPH as gasoline	240	8015	CAS
	08-06-99	TPH as gasoline	100	8015	CAS
	08-06-99*	Methyl ethyl ketone[1/]	2	8260	CAS
	08-06-99*	TPH as gasoline	91	8015	CAS
RS-54	02-02-99	Freon 113	180	8260	CAS
ES-7	08-05-99	Acetone[1/]	8	8260	CAS
ES-23	02-11-99	Freon 113	1.6	8260	CAS
ES-26	02-07-99	Freon 113	750	8260	CAS
ES-27	02-07-99	Freon 113	7200	8260	CAS
ES-30	02-11-99	Freon 113	0.6	8260	CAS
ES-32	02-07-99	Freon 113	29	8260	CAS

See last page of Table 11 for footnotes and explanations.

TABLE 11

SUMMARY OF 1999 RESULTS FOR NON-PRIORITY AND SEMI-QUANTIFIED ORGANIC COMPOUNDS

SAMPLE IDENTIFIER	DATE SAMPLED	ORGANIC COMPOUND	CONCENTRATION (micrograms per liter)	EPA METHOD NUMBER	LABORATORY
Chatsworth Formation Wells					
RD-21	08-05-99	Methyl ethyl ketone[1/]	6	8260	CAS
RD-22	08-12-99	Carbon disulfide[3/]	5	8260	CAS
RD-24	08-04-99	Methyl ethyl ketone[1/]	5	8260	CAS
RD-30	02-05-99	Freon 113	1.6	8260	CAS
RD-35B	02-05-99	Freon 113	260	8260	CAS
	02-05-99*	Freon 113	270	8260	CAS
	05-07-99	Freon 113	200	8260	CAS
	05-07-99	Benzoic acid	3	8270	CAS
	05-07-99*	Freon 113	290	8260	CAS
	05-07-99**	Freon 113	202	8260	AL
RD-36B	02-16-99	TPH as gasoline[2/]	46	8015	CAS
	08-09-99	TPH as gasoline[2/]	32	8015	CAS
RD-36C	02-18-99	TPH as gasoline[2/]	93	8015	CAS
	08-10-99	Freon 113	0.5	8260	CAS
	08-10-99	TPH as gasoline[2/]	81	8015	CAS
RD-37	08-16-99	TPH as gasoline[3/]	20	8015	CAS
RD-38A	02-17-99	TPH as gasoline[2/]	170	8015	CAS
	08-18-99	TPH as gasoline[2/]	280	8015	CAS
RD-38B	05-05-99	Carbon disulfide[4/]	0.6	8260	CAS
	05-05-99*	Carbon disulfide[4/]	0.5	8260	CAS
	08-17-99	TPH as gasoline	29	8015	CAS

See last page of Table 11 for footnotes and explanations.

TABLE 11

SUMMARY OF 1999 RESULTS FOR NON-PRIORITY AND SEMI-QUANTIFIED ORGANIC COMPOUNDS

SAMPLE IDENTIFIER	DATE SAMPLED	ORGANIC COMPOUND	CONCENTRATION (micrograms per liter)	EPA METHOD NUMBER	LABORATORY
RD-43B	08-05-99*	Acetone[1/]	9	8260	CAS
	08-05-99*	m- and p-Xylenes[3/]	0.8	8260	CAS
RD-46B	08-17-99	Acetone[4/]	20	8260	CAS
	08-17-99*	Acetone[4/]	18	8260	CAS
RD-52C	05-11-99	Freon 113[1/]	5.6	8260	CAS
RD-53	02-17-99	Freon 113	6.6	8260	CAS
	02-17-99	TPH as gasoline	99	8015	CAS
	08-10-99	Freon 113	7.1	8260	CAS
	08-10-99	TPH as gasoline[2/]	87	8015	CAS
RD-58A	02-07-99	Freon 113	5.6	8260	CAS
RD-59B	05-10-99	Freon 113[1/]	1.3	8260	CAS
RD-59C	05-10-99	Freon 113[1/]	1.6	8260	CAS
	08-06-99	Acetone[1/]	4	8260	CAS
RD-67	08-04-99	Acetone[1/]	7	8260	CAS
RD-69	08-17-99	Acetone[4/]	10	8260	CAS
RD-72	08-17-99	TPH as gasoline[2/]	1800	8015	CAS
RD-73	02-04-99	Freon 113	60	8260	CAS
	02-04-99	TPH as gasoline[2/]	3500	8015	CAS
HAR-16	02-08-99	Freon 11	20	8260	CAS
HAR-17	02-08-99*	Freon 113	5.2	8260	CAS
	02-08-99**	Freon 113	7.2	8260	AL
HAR-18	02-07-99	Freon 113	780	8260	CAS

See last page of Table 11 for footnotes and explanations.

TABLE 11

SUMMARY OF 1999 RESULTS FOR NON-PRIORITY AND SEMI-QUANTIFIED ORGANIC COMPOUNDS

SAMPLE IDENTIFIER	DATE SAMPLED	ORGANIC COMPOUND	CONCENTRATION (micrograms per liter)	EPA METHOD NUMBER	LABORATORY
HAR-24	02-17-99	Freon 113	5.0	8260	CAS
	02-17-99**	Freon 113	23	8260	AL
HAR-25	02-17-99	Freon 11	67	8260	CAS
	02-17-99	Freon 113	2.1	8260	CAS

AL = Associated Laboratories of Orange, California.
Babcock = E.S. Babcock & Sons, Inc. of Riverside, California.
CAS = Columbia Analytical Services, Inc. of Canoga Park, California.
(*) = Sample duplicate.
(**) = Sample split.
1/ = Laboratory contaminant.
2/ = Chromatogram shows discrete peaks which are not characteristic of gasoline.
3/ = Compound not detected in re-analysis performed past the holding time.
4/ = Possible field or laboratory contaminant.
5/ = Second vial was diluted because of the high trichloroethylene concentration; the concentration of m- and p-Xylenes was below the quantifiable level in the diluted sample.

Note: The laboratories use the most current EPA method during laboratory analyses.

TABLE 12

RESULTS OF 1999 ANALYSES FOR TRACE METAL CONSTITUENTS AND CYANIDE

Constituent (mg/l)	Well Identifier	MCL[1/]	RS-9	RS-18	RS-54			ES-11
	Date Sampled		02-18-99	05-12-99	02-02-99	02-02-99**	08-18-99	02-19-99
Antimony		0.006	-0.05	-0.05	-0.05	-0.012	-0.05	-0.05
Arsenic		0.05	-0.002	-0.002	0.009	-0.003	-0.002	-0.002
Barium		1	0.07	0.09	0.09	0.096	0.12	0.03
Beryllium		0.004	-0.002	-0.002	-0.002	-0.001	-0.002	-0.002
Cadmium		0.005	-0.003	-0.003	-0.003	-0.004	-0.003	-0.003
Chromium (total)		0.05	-0.005	-0.005	-0.005	0.005	-0.005	-0.005
Cobalt		---	-0.01	0.03	0.20	0.216	0.23	-0.01
Copper		1.3[2/]	-0.01	-0.01	0.02	0.024	0.03	0.07
Lead		0.015[2/]	-0.05	-0.05	-0.05	0.003	-0.05	-0.05
Mercury		0.002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
Molybdenum		---	-0.01	-0.01	0.04	0.018	0.04	-0.01
Nickel		0.1	-0.02	0.24	0.49	0.488	0.65	-0.02
Selenium		0.05	-0.003	-0.003	-0.003	-0.004	-0.003	-0.003
Silver		0.1[3/]	-0.005	-0.005	-0.005	-0.004	-0.005	-0.005
Thallium		0.002	-0.1	-0.1	-0.1	-0.002	-0.1	-0.1
Vanadium		---	-0.01	-0.01	-0.01	0.003	-0.01	-0.01
Zinc		5.0[3/]	0.09	0.01	0.05	0.080	0.08	0.59
Cyanide		0.2	---	---	---	---	---	---
Laboratory		---	CAS	CAS	CAS	AL	CAS	CAS

See last page of Table 12 for explanations.
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TABLE 12

RESULTS OF 1999 ANALYSES FOR TRACE METAL CONSTITUENTS AND CYANIDE

Constituent (mg/l)	Well Identifier / Date Sampled	MCL[1/]	ES-16	ES-24	ES-26	ES-28	ES-29	HAR-27
	Date Sampled		02-18-99	02-18-99	02-07-99	02-18-99	02-18-99	02-09-99
Antimony		0.006	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Arsenic		0.05	**0.004**	**0.004**	-0.002	-0.002	-0.002	**0.028**
Barium		1	**0.04**	**0.07**	**0.05**	**0.08**	**0.10**	**0.07**
Beryllium		0.004	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Cadmium		0.005	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Chromium (total)		0.05	-0.005	-0.005	-0.005	-0.005	-0.005	**0.06**
Cobalt		---	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper		1.3[2/]	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead		0.015[2/]	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Mercury		0.002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
Molybdenum		---	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Nickel		0.1	-0.02	-0.02	-0.02	-0.02	-0.02	**0.29**
Selenium		0.05	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Silver		0.1[3/]	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Thallium		0.002	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Vanadium		---	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Zinc		5.0[3/]	**0.07**	**0.61**	**0.03**	**0.04**	**0.08**	**0.13**
Cyanide		0.2	---	---	---	---	---	---
Laboratory		---	CAS	CAS	CAS	CAS	CAS	CAS

See last page of Table 12 for explanations.

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TABLE 12

RESULTS OF 1999 ANALYSES FOR TRACE METAL CONSTITUENTS AND CYANIDE

Constituent (mg/l)	Well Identifier	MCL[1/]	HAR-28	HAR-29	RD-1	RD-2	RD-10	RD-15
	Date Sampled		02-09-99	02-09-99	02-20-99	02-18-99	02-20-99	05-14-99
Antimony		0.006	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Arsenic		0.05	**0.002**	**0.009**	-0.002	-0.002	-0.002	-0.002
Barium		1	**0.06**	**0.06**	**0.06**	**0.05**	**0.06**	**0.03**
Beryllium		0.004	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Cadmium		0.005	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Chromium (total)		0.05	**0.02**	-0.005	-0.005	-0.005	-0.005	-0.005
Cobalt		---	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper		1.3[2/]	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead		0.015[2/]	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Mercury		0.002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
Molybdenum		---	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Nickel		0.1	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Selenium		0.05	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Silver		0.1[3/]	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Thallium		0.002	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Vanadium		---	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Zinc		5.0[3/]	**0.23**	**0.19**	**0.10**	**0.35**	**0.25**	**1.8**
Cyanide		0.2	---	---	---	---	---	---
Laboratory		---	CAS	CAS	CAS	CAS	CAS	CAS

See last page of Table 12 for explanations.
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TABLE 12

RESULTS OF 1999 ANALYSES FOR TRACE METAL CONSTITUENTS AND CYANIDE

Constituent (mg/l)	Well Identifier	MCL[1/]	RD-15	RD-21			RD-22	RD-23
	Date Sampled		05-14-99*	02-16-99	02-16-99**	08-05-99	02-17-99	02-08-99
Antimony		0.006	-0.05	-0.05	-0.012	-0.05	-0.05	-0.05
Arsenic		0.05	-0.002	-0.002	-0.003	-0.002	-0.002	-0.002
Barium		1	**0.03**	**0.05**	**0.045**	**0.05**	**0.05**	**0.04**
Beryllium		0.004	-0.002	-0.002	-0.001	-0.002	-0.002	-0.002
Cadmium		0.005	-0.003	-0.003	-0.004	-0.003	-0.003	-0.003
Chromium (total)		0.05	-0.005	-0.005	-0.003	-0.005	-0.005	-0.005
Cobalt		---	-0.01	-0.01	-0.003	-0.01	-0.01	-0.01
Copper		1.3[2/]	-0.01	-0.01	**0.022**	-0.01	-0.01	-0.01
Lead		0.015[2/]	-0.05	-0.05	**0.007**	-0.05	-0.05	-0.05
Mercury		0.002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
Molybdenum		---	-0.01	-0.01	-0.009	-0.01	-0.01	-0.01
Nickel		0.1	-0.02	-0.02	-0.008	-0.02	-0.02	-0.02
Selenium		0.05	-0.003	-0.003	-0.004	-0.003	-0.003	-0.003
Silver		0.1[3/]	-0.005	-0.005	-0.004	-0.005	-0.005	-0.005
Thallium		0.002	-0.1	-0.1	-0.002	-0.1	-0.1	-0.1
Vanadium		---	-0.01	-0.01	-0.005	-0.01	-0.01	-0.01
Zinc		5.0[3/]	**1.8**	**1.3**	**1.21**	**0.79**	**4.9**	**2.2**
Cyanide		0.2	---	---	---	---	---	---
Laboratory		---	CAS	CAS	AL	CAS	CAS	CAS

See last page of Table 12 for explanations.
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TABLE 12

RESULTS OF 1999 ANALYSES FOR TRACE METAL CONSTITUENTS AND CYANIDE

Constituent (mg/l)	Well Identifier / Date Sampled	MCL[1]	RD-23	RD-31	RD-33A	RD-33B	RD-33C	RD-34B
	Date Sampled		08-18-99	02-16-99	02-03-99	02-03-99	02-03-99	02-04-99
Antimony		0.006	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Arsenic		0.05	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Barium		1	**0.04**	**0.02**	**0.04**	**0.05**	**0.08**	**0.08**
Beryllium		0.004	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Cadmium		0.005	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Chromium (total)		0.05	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Cobalt		---	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper		1.3[2]	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead		0.015[2]	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Mercury		0.002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
Molybdenum		---	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Nickel		0.1	**0.02**	-0.02	-0.02	-0.02	-0.02	-0.02
Selenium		0.05	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Silver		0.1[3]	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Thallium		0.002	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Vanadium		---	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Zinc		5.0[3]	**3.6**	**0.38**	**0.81**	**0.28**	**0.21**	**0.71**
Cyanide		0.2	---	---	-0.02	-0.02	-0.02	-0.02
Laboratory		---	CAS	CAS	CAS	CAS	CAS	CAS

See last page of Table 12 for explanations.
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TABLE 12

RESULTS OF 1999 ANALYSES FOR TRACE METAL CONSTITUENTS AND CYANIDE

Constituent (mg/l)	Well Identifier / Date Sampled	MCL[1]	RD-34C	RD-35A	RD-35B	RD-38B	RD-45A	RD-45B
	Date Sampled		02-04-99	08-16-99	05-07-99	02-17-99	02-05-99	02-05-99
Antimony		**0.006**	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Arsenic		**0.05**	-0.002	-0.002	**0.011**	**0.003**	**0.003**	-0.002
Barium		**1**	**0.06**	**0.03**	**0.10**	**0.06**	**0.06**	**0.06**
Beryllium		**0.004**	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Cadmium		**0.005**	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Chromium (total)		**0.05**	-0.005	-0.005	-0.005	-0.005	**0.02**	**0.006**
Cobalt		---	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper		**1.3[2]**	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead		**0.015[2]**	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Mercury		**0.002**	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
Molybdenum		---	-0.01	-0.01	**0.13**	-0.01	-0.01	-0.01
Nickel		**0.1**	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Selenium		**0.05**	-0.003	**0.006**	-0.003	-0.003	-0.003	-0.003
Silver		**0.1[3]**	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Thallium		**0.002**	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Vanadium		---	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Zinc		**5.0[3]**	**0.09**	**1.3**	**1.2**	**0.81**	**1.0**	**1.1**
Cyanide		**0.2**	-0.02	---	---	---	---	---
Laboratory		---	CAS	CAS	CAS	CAS	CAS	CAS

See last page of Table 12 for explanations.
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TABLE 12

RESULTS OF 1999 ANALYSES FOR TRACE METAL CONSTITUENTS AND CYANIDE

Constituent (mg/l)	Well Identifier / Date Sampled	MCL[1/]	RD-45C	RD-46B	RD-47	RD-51B	RD-51C	RD-52B
	Date Sampled		02-05-99	02-15-99	05-14-99	02-17-99	02-10-99	02-05-99
Antimony		0.006	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Arsenic		0.05	-0.002	**0.002**	-0.002	-0.002	-0.002	-0.002
Barium		1	**0.09**	**0.04**	**0.04**	**0.04**	**0.04**	**0.03**
Beryllium		0.004	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Cadmium		0.005	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Chromium (total)		0.05	-0.005	-0.005	-0.005	-0.005	-0.005	**0.007**
Cobalt		---	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper		1.3[2/]	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead		0.015[2/]	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Mercury		0.002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
Molybdenum		---	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Nickel		0.1	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Selenium		0.05	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Silver		0.1[3/]	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Thallium		0.002	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Vanadium		---	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Zinc		5.0[3/]	**0.94**	**0.53**	**1.3**	**9.0**	**0.31**	**0.64**
Cyanide		0.2	---	---	---	---	---	---
Laboratory		---	CAS	CAS	CAS	CAS	CAS	CAS

See last page of Table 12 for explanations.
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TABLE 12

RESULTS OF 1999 ANALYSES FOR TRACE METAL CONSTITUENTS AND CYANIDE

Constituent (mg/l)	Well Identifier	MCL[1]	RD-52C	RD-54A		RD-54B		RD-54C
	Date Sampled		02-05-99	02-08-99	08-18-99	02-08-99	08-18-99	02-09-99
Antimony		0.006	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Arsenic		0.05	-0.002	0.003	-0.002	-0.002	-0.002	-0.002
Barium		1	0.04	0.05	0.04	0.03	0.04	0.02
Beryllium		0.004	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Cadmium		0.005	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Chromium (total)		0.05	-0.005	0.010	-0.005	-0.005	-0.005	-0.005
Cobalt		---	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper		1.3[2]	-0.01	0.02	-0.01	-0.01	-0.01	-0.01
Lead		0.015[2]	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Mercury		0.002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
Molybdenum		---	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Nickel		0.1	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Selenium		0.05	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Silver		0.1[3]	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Thallium		0.002	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Vanadium		---	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Zinc		5.0[3]	0.81	3.7	2.5	1.0	2.0	0.07
Cyanide		0.2	---	---	---	---	---	---
Laboratory		---	CAS	CAS	CAS	CAS	CAS	CAS

See last page of Table 12 for explanations.
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TABLE 12

RESULTS OF 1999 ANALYSES FOR TRACE METAL CONSTITUENTS AND CYANIDE

Constituent (mg/l)	Well Identifier	MCL[1]	RD-54C	RD-56A			RD-56B	
	Date Sampled		08-18-99	02-04-99	02-04-99*	02-04-99**	02-04-99	08-13-99
Antimony		0.006	-0.05	-0.05	-0.05	-0.012	-0.05	-0.05
Arsenic		0.05	-0.002	-0.002	-0.002	-0.003	-0.002	-0.002
Barium		1	**0.08**	**0.06**	**0.06**	**0.069**	**0.07**	**0.07**
Beryllium		0.004	-0.002	-0.002	-0.002	-0.001	-0.002	-0.002
Cadmium		0.005	-0.003	-0.003	-0.003	-0.004	-0.003	-0.003
Chromium (total)		0.05	-0.005	-0.005	-0.005	**0.007**	-0.005	**0.01**
Cobalt		---	-0.01	-0.01	-0.01	-0.003	-0.01	-0.01
Copper		1.3[2]	-0.01	-0.01	**0.02**	**0.008**	-0.01	-0.01
Lead		0.015[2]	-0.05	-0.05	-0.05	**0.036**	-0.05	-0.05
Mercury		0.002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
Molybdenum		---	-0.01	-0.01	-0.01	**0.010**	-0.01	-0.01
Nickel		0.1	-0.02	-0.02	-0.02	**0.013**	-0.02	-0.02
Selenium		0.05	-0.003	-0.003	-0.003	-0.004	-0.003	-0.003
Silver		0.1[3]	-0.005	-0.005	-0.005	-0.004	-0.005	-0.005
Thallium		0.002	-0.1	-0.1	-0.1	-0.002	-0.1	-0.1
Vanadium		---	-0.01	-0.01	-0.01	-0.005	-0.01	-0.01
Zinc		5.0[3]	**0.90**	**6.0**	**6.4**	**5.99**	**0.68**	**0.71**
Cyanide		0.2	---	---	---	---	---	---
Laboratory		---	CAS	CAS	CAS	AL	CAS	CAS

See last page of Table 12 for explanations.
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TABLE 12

RESULTS OF 1999 ANALYSES FOR TRACE METAL CONSTITUENTS AND CYANIDE

Constituent (mg/l)	Well Identifier	MCL[1/]	RD-57	RD-59A		RD-59B		RD-59C
	Date Sampled		05-13-99	02-16-99	08-06-99	02-16-99	08-06-99	02-16-99
Antimony		0.006	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Arsenic		0.05	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Barium		1	**0.05**	**0.05**	**0.05**	**0.04**	**0.04**	**0.04**
Beryllium		0.004	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Cadmium		0.005	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Chromium (total)		0.05	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Cobalt		---	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Copper		1.3[2/]	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lead		0.015[2/]	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Mercury		0.002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
Molybdenum		---	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Nickel		0.1	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Selenium		0.05	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Silver		0.1[3/]	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
Thallium		0.002	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Vanadium		---	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Zinc		5.0[3/]	**3.8**	**0.12**	**0.15**	**0.02**	-0.01	-0.01
Cyanide		0.2	---	---	---	---	---	---
Laboratory		---	CAS	CAS	CAS	CAS	CAS	CAS

See last page of Table 12 for explanations.
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TABLE 12

RESULTS OF 1999 ANALYSES FOR TRACE METAL CONSTITUENTS AND CYANIDE

Constituent (mg/l)	Well Identifier	MCL[1/]	RD-59C	RD-72		RD-74		
	Date Sampled		08-06-99	02-09-99	02-09-99**	05-13-99	08-19-99	08-19-99*
Antimony		0.006	-0.05	-0.05	-0.012	-0.05	-0.05	-0.05
Arsenic		0.05	-0.002	-0.002	-0.003	-0.002	-0.002	-0.002
Barium		1	**0.05**	**0.07**	**0.055**	**0.05**	**0.04**	**0.05**
Beryllium		0.004	-0.002	-0.002	-0.001	-0.002	-0.002	-0.002
Cadmium		0.005	-0.003	-0.003	-0.004	-0.003	-0.003	-0.003
Chromium (total)		0.05	-0.005	-0.005	-0.003	-0.005	-0.005	-0.005
Cobalt		---	-0.01	-0.01	-0.003	-0.01	-0.01	-0.01
Copper		1.3[2/]	-0.01	-0.01	**0.008**	-0.01	-0.01	-0.01
Lead		0.015[2/]	-0.05	-0.05	**0.006**	-0.05	-0.05	-0.05
Mercury		0.002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
Molybdenum		---	-0.01	-0.01	-0.009	-0.01	-0.01	-0.01
Nickel		0.1	-0.02	-0.02	-0.008	-0.02	-0.02	-0.02
Selenium		0.05	-0.003	-0.003	-0.004	-0.003	-0.003	-0.003
Silver		0.1[3/]	-0.005	-0.005	-0.004	-0.005	-0.005	-0.005
Thallium		0.002	-0.1	-0.1	-0.002	-0.1	-0.1	-0.1
Vanadium		---	-0.01	-0.01	-0.005	-0.01	-0.01	-0.01
Zinc		5.0[3/]	-0.01	**0.70**	**0.645**	**5.1**	**6.1**	**6.3**
Cyanide		0.2	---	---	---	---	---	---
Laboratory		---	CAS	CAS	AL	CAS	CAS	CAS

See last page of Table 12 for explanations.
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TABLE 12

RESULTS OF 1999 ANALYSES FOR TRACE METAL CONSTITUENTS AND CYANIDE

Constituent (mg/l)	Well Identifier / Date Sampled	MCL[1/]	HAR-8	HAR-24	WS-4A			
			02-09-99	02-17-99	05-13-99			
Antimony		**0.006**	-0.05	-0.05	-0.05			
Arsenic		**0.05**	-0.002	-0.002	-0.002			
Barium		**1**	**0.07**	**0.04**	**0.05**			
Beryllium		**0.004**	-0.002	-0.002	-0.002			
Cadmium		**0.005**	-0.003	-0.003	-0.003			
Chromium (total)		**0.05**	**0.006**	-0.005	-0.005			
Cobalt		---	-0.01	-0.01	-0.01			
Copper		**1.3[2/]**	-0.01	-0.01	-0.01			
Lead		**0.015[2/]**	-0.05	-0.05	-0.05			
Mercury		**0.002**	-0.0002	-0.0002	-0.0002			
Molybdenum		---	-0.01	-0.01	-0.01			
Nickel		**0.1**	-0.02	-0.02	-0.02			
Selenium		**0.05**	-0.003	-0.003	-0.003			
Silver		**0.1[3/]**	-0.005	-0.005	-0.005			
Thallium		**0.002**	-0.1	-0.1	-0.1			
Vanadium		---	-0.01	-0.01	-0.01			
Zinc		**5.0[3/]**	**2.5**	**12**	**0.12**			
Cyanide		**0.2**	---	---	---			
Laboratory		---	CAS	CAS	CAS			

See last page of Table 12 for explanations.
8640M-412

TABLE 12

EXPLANATIONS

AL	=	Associated Laboratories of Orange, California
CAS	=	Columbia Analytical Services, Inc. of Canoga Park, California.
mg/l	=	milligrams per liter.
(-)	=	Less than; numerical value is the Limit of Detection for that compound.
(---)	=	Analysis not performed.
1/	=	Maximum Contaminant Level (MCL) is the California primary drinking water standard unless otherwise indicated (California Department of Health Services, *California Drinking Water Standards, Action Levels, and Unregulated Chemicals Requiring Monitoring*, June 4, 1999).
2/	=	Federal Action Level to be met at customer tap.
3/	=	Secondary drinking water MCL.

TABLE 13
SUMMARY OF RESULTS FOR COMMON ION CONSTITUENTS
1999

CONSTITUENT	RD-35B	RD-38B	RD-46B	RD-74	MCL[1]	UNITS
	05-07-99	02-17-99	02-15-99	05-13-99		
Calcium	85	87	100	110	---	mg/l
Magnesium	14	22	34	23	---	mg/l
Sodium	53	47	45	81	---	mg/l
Potassium	4.0	2.8	3.3	2.4	---	mg/l
Carbonate (as $CaCO_3$)	-5	-5	-5	-5	---	mg/l
Bicarbonate (as $CaCO_3$)	220	330	310	350	---	mg/l
Chloride	62	31	48	37	250/500/600[2]	mg/l
Sulfate	100	80	130	170	250/500/600[2]	mg/l
Nitrate (as NO_3)	-0.9	-0.4	-0.4	44.7	45	mg/l
Fluoride	0.3	0.31	0.37	0.40	2.0	mg/l
Total Dissolved Solids	500	480	580	730	500/1000/1500[2]	mg/l
Electrical Conductivity (lab/field)	810/650	810/550	910/725	1100/800	900/1600/2200[2]	µmhos/cm
pH (lab/field)	7.7/7.9	7.3[4]/7.2	7.3[4]/7.2	6.7/6.9	6.5 to 8.5[3]	Standard units
Temperature (field)	20.5	20	20	19	---	°C
Cation/Anion Balance	2.7	5.1	2.2	4.6	---	Percent
Laboratory	CAS	CAS	CAS	CAS	---	---

Explanation:

8640M-412 GWRC

CAS = Columbia Analytical Services of Canoga Park, California.
(-) = Less than; numerical value represents the Limit of Detection for that compound.
1/ = Maximum Contaminant Level (MCL) is the California primary drinking water standard unless otherwise indicated (California Department of Health Services, *California Drinking Water Standards, Action Levels, and Unregulated Chemicals Requiring Monitoring*, March 12, 1999).
2/ = Secondary drinking water MCL ranges (recommended/upper/short term).
3/ = Federal secondary drinking water MCL.
4/ = Analyzed past holding time.

TABLE 14
SUMMARY OF RESULTS FOR EPA PRIORITY BASE/NEUTRAL ORGANIC COMPOUNDS
1999

ORGANIC COMPOUND (µg/l)	RD-6	RD-13	RD-35B	RD-38B	RD-46B	RD-48A
	05-12-99	05-13-99	05-07-99	02-17-99	02-15-99	05-12-99
Acenaphthene	-2	-2	-2	-2	-2	-2
Acenaphthylene	-2	-2	-2	-2	-2	-2
Anthracene	-2	-2	-2	-2	-2	-2
Benzidine	---	---	---	---	---	---
Benzo(a)anthracene	-2	-2	-2	-2	-2	-2
Benzo(a)pyrene	-2	-2	-2	-2	-2	-2
3,4-Benzofluoranthene	-3	-3	-3	-3	-3	-3
Benzo(ghi)perylene	-2	-2	-2	-2	-2	-2
Benzo(k)fluoranthene	-2	-2	-2	-2	-2	-2
Bis(2-chloroethoxy) methane	-2	-2	-2	-2	-2	-2
Bis(2-chloroethyl) ether	-2	-2	-2	-2	-2	-2
Bis(2-chloroisopropyl) ether	-3	-3	-3	-3	-3	-3
Bis(2-ethylhexyl) phthalate	-4	-4	-4	-4	-4	-4
4-Bromophenyl phenyl ether	-2	-2	-2	-2	-2	-2
Butyl benzyl phthalate	-3	-3	-3	-3	-3	-3
2-Chloronaphthalene	-2	-2	-2	-2	-2	-2
4-Chlorophenyl phenyl ether	-2	-2	-2	-2	-2	-2
Chrysene	-2	-2	-2	-2	-2	-2
Dibenzo(a,h)anthracene	-2	-2	-2	-2	-2	-2
1,2-Dichlorobenzene	-2	-2	-2	-2	-2	-2
1,3-Dichlorobenzene	-2	-2	-2	-2	-2	-2
1,4-Dichlorobenzene	-2	-2	-2	-2	-2	-2
3,3'-Dichlorobenzidine	-5	-5	-5	-5	-5	-5
Diethyl phthalate	-2	-2	-2	-2	-2	-2
Dimethyl phthalate	-2	-2	-2	-2	-2	-2
Di-n-butyl phthalate	-2	-2	-2	-2	-2	-2
2,4-Dinitrotoluene	-2	-2	-2	-2	-2	-2
2,6-Dinitrotoluene	-2	-2	-2	-2	-2	-2
Di-n-octyl phthalate	-3	-3	-3	-3	-3	-3
1,2-Diphenylhydrazine	---	---	---	---	---	---
Fluoranthene	-2	-2	-2	-2	-2	-2
Fluorene	-2	-2	-2	-2	-2	-2
Hexachlorobenzene	-2	-2	-2	-2	-2	-2
Hexachlorobutadiene	-2	-2	-2	-2	-2	-2
Hexachlorocyclopentadiene	-3	-3	-3	-3	-3	-3
Hexachloroethane	-3	-3	-3	-3	-3	-3
Indeno(1,2,3-cd) pyrene	-2	-2	-2	-2	-2	-2
Isophorone	-3	-3	-3	-3	-3	-3
Naphthalene	-2	-2	-2	-2	-2	-2
Nitrobenzene	-2	-2	-2	-2	-2	-2
N-Nitrosodimethylamine	-2	-2	-2	-2	-2	-2
N-Nitrosodi-n-propylamine	-3	-3	-3	-3	-3	-3
N-Nitrosodiphenylamine	-3	-3	-3	-3	-3	-3
Phenanthrene	-2	-2	-2	-2	-2	-2
Pyrene	-3	-3	-3	-3	-3	-3
1,2,4-Trichlorobenzene	-2	-2	-2	-2	-2	-2
Method	8270	8270	8270	8270	8270	8270
Laboratory	CAS	CAS	CAS	CAS	CAS	CAS

See last page of Table 14 for footnotes and explanations.

TABLE 14
SUMMARY OF RESULTS FOR EPA PRIORITY BASE/NEUTRAL ORGANIC COMPOUNDS
1999

ORGANIC COMPOUND (µg/l)	RD-48B	RD-48C	RD-74			
	05-13-99	05-12-99	05-13-99			
Acenaphthene	-2	-2	-2			
Acenaphthylene	-2	-2	-2			
Anthracene	-2	-2	-2			
Benzidine	—	—	—			
Benzo(a)anthracene	-2	-2	-2			
Benzo(a)pyrene	-2	-2	-2			
3,4-Benzofluoranthene	-3	-3	-3			
Benzo(ghi)perylene	-2	-2	-2			
Benzo(k)fluoranthene	-2	-2	-2			
Bis(2-chloroethoxy) methane	-2	-2	-2			
Bis(2-chloroethyl) ether	-2	-2	-2			
Bis(2-chloroisopropyl) ether	-3	-3	-3			
Bis(2-ethylhexyl) phthalate	-4	-4	-4			
4-Bromophenyl phenyl ether	-2	-2	-2			
Butyl benzyl phthalate	-3	-3	-3			
2-Chloronaphthalene	-2	-2	-2			
4-Chlorophenyl phenyl ether	-2	-2	-2			
Chrysene	-2	-2	-2			
Dibenzo(a,h)anthracene	-2	-2	-2			
1,2-Dichlorobenzene	-2	-2	-2			
1,3-Dichlorobenzene	-2	-2	-2			
1,4-Dichlorobenzene	-2	-2	-2			
3,3'-Dichlorobenzidine	-5	-5	-5			
Diethyl phthalate	-2	-2	-2			
Dimethyl phthalate	-2	-2	-2			
Di-n-butyl phthalate	-2	-2	-2			
2,4-Dinitrotoluene	-2	-2	-2			
2,6-Dinitrotoluene	-2	-2	-2			
Di-n-octyl phthalate	-3	-3	-3			
1,2-Diphenylhydrazine	—	—	—			
Fluoranthene	-2	-2	-2			
Fluorene	-2	-2	-2			
Hexachlorobenzene	-2	-2	-2			
Hexachlorobutadiene	-2	-2	-2			
Hexachlorocyclopentadiene	-3	-3	-3			
Hexachloroethane	-3	-3	-3			
Indeno(1,2,3-cd) pyrene	-2	-2	-2			
Isophorone	-3	-3	-3			
Naphthalene	-2	-2	-2			
Nitrobenzene	-2	-2	-2			
N-Nitrosodimethylamine	-2	-2	-2			
N-Nitrosodi-n-propylamine	-3	-3	-3			
N-Nitrosodiphenylamine	-3	-3	-3			
Phenanthrene	-2	-2	-2			
Pyrene	-3	-3	-3			
1,2,4-Trichlorobenzene	-2	-2	-2			
Method	8270	8270	8270			
Laboratory	CAS	CAS	CAS			

See last page of Table 14 for footnotes and explanations.

TABLE 14

FOOTNOTES AND EXPLANATIONS

CAS	=	Columbia Analytical Services of Canoga Park, California.
(-)	=	Less than; numerical value represents the Limit of Detection for that compound.
(---)	=	Analysis not performed.
µg/l	=	Micrograms per liter.

TABLE 15
SUMMARY OF RESULTS FOR ACID ORGANIC COMPOUNDS
1999

ORGANIC COMPOUND (µg/l)	RD-6	RD-13	RD-35B	RD-38B	RD-46B	RD-48A	RD-48B	RD-48C	RD-74
	05-12-99	05-13-99	05-07-99	02-17-99	02-15-99	05-12-99	05-13-99	05-12-99	05-13-99
Benzoic acid	-2	-2	3	-2	-2	-2	-2	-2	-2
Benzyl alcohol	-2	-2	-2	-2	-2	-2	-2	-2	-2
2-Chlorophenol	-2	-2	-2	-2	-2	-2	-2	-2	-2
2,4-Dichlorophenol	-2	-2	-2	-2	-2	-2	-2	-2	-2
2,4-Dimethylphenol	-4	-4	-4	-4	-4	-4	-4	-4	-4
4,6-Dinitro-o-cresol	-2	-2	-2	-2	-2	-2	-2	-2	-2
2,4-Dinitrophenol	-2	-2	-2	-2	-2	-2	-2	-2	-2
2-Methylphenol	-2	-2	-2	-2	-2	-2	-2	-2	-2
3- and 4-Methylphenol Coelution	-2	-2	-2	-2	-2	-2	-2	-2	-2
2-Nitrophenol	-2	-2	-2	-2	-2	-2	-2	-2	-2
4-Nitrophenol	-2	-2	-2	-2	-2	-2	-2	-2	-2
p-Chloro-m-cresol	-2	-2	-2	-2	-2	-2	-2	-2	-2
Pentachlorophenol	-2	-2	-2	-2	-2	-2	-2	-2	-2
Phenol	-2	-2	-2	-2	-2	-2	-2	-2	-2
2,4,5-Trichlorophenol	-2	-2	-2	-2	-2	-2	-2	-2	-2
2,4,6-Trichlorophenol	-2	-2	-2	-2	-2	-2	-2	-2	-2
Method	8270	8270	8270	8270	8270	8270	8270	8270	8270
Laboratory	CAS	CAS	CAS	CAS	CAS	CAS	CAS	CAS	CAS

CAS = Columbia Analytical Services of Canoga Park, California.
(-) = Less than; numerical value represents the Limit of Detection for that compound.
µg/l = Micrograms per liter.

TABLE 16

SUMMARY OF PERCHLORATE RESULTS
1997-1999

Well Identifier	Area	Well Location	Date Sampled	Perchlorate (µg/l)	Laboratory
Shallow Zone Wells					
SH-1	III	ECL Area	02-07-99	-4	Babcock
SH-4	III	ECL Area	08-03-97	-4	Weck
			02-03-98	-4	Babcock
			05-03-98	-4	Babcock
			08-17-98	-8	Babcock
SH-7	III	ECL Area	02-07-99	-4	Babcock
SH-8	III	ECL Area	02-07-99	-4	Babcock
SH-11	III	ECL Area	02-07-99	-4	Babcock
			02-07-99**	-4	CAS
ECL French-drain	III	ECL Area	08-02-97	-4	Weck
			02-03-98	-4	Babcock
			05-03-98	-4	Babcock
			11-11-98	-4	Babcock
ECL Sump	III	ECL Area	06-03-98	-4	Babcock
ES-1	I	Along Area I Road, Between R1 Pond and Perimeter Pond	02-03-98	-4	Babcock
			05-06-98	-4	Babcock
			11-18-98	-4	Babcock
			08-06-99	-4	Babcock
ES-3	I	Along Area I Road, Between R1 Pond and Perimeter Pond	11-05-97	-1	LAS
			02-03-98	-4	Babcock
			05-06-98	-4	Babcock
ES-4	I	Along Area I Road, West of Canyon Area	02-03-98	-4	Babcock
			05-06-98	-4	Babcock
ES-5	I	Along Area I Road, West of Canyon Area	02-03-98	-4	Babcock
			05-06-98	-4	Babcock
ES-6	I	Along Area I Road, West of Canyon Area	02-03-98	-4	Babcock
			05-04-98	**6**	Babcock
			11-11-98	-4	Babcock
			11-11-98*	-4	Babcock
ES-7	I	Along Area I Road, West of Canyon Area	02-03-98	-4	Babcock
			05-04-98	**38**	Babcock
			11-11-98	-4	Babcock

See last page of Table 16 for footnotes and explanations.

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TABLE 16

SUMMARY OF PERCHLORATE RESULTS
1997-1999

Well Identifier	Area	Well Location	Date Sampled	Perchlorate (µg/l)	Laboratory
ES-11	I	Along Area I Road, S.W. of APTF	05-06-98	**7**	Babcock
			11-11-98	**48**	Babcock
ES-12	I	Along Area I Road, S.W. of APTF	05-14-99	**11**	Babcock
			05-14-99*	**12**	Babcock
ES-13	III	Along Area I Road, Between R1 Pond and Perimeter Pond	02-17-99	-4	Babcock
ES-14	III	Between STL-IV and ECL	05-03-98	-4	Babcock
ES-15	III	Between STL-IV and ECL	05-05-98	-4	Babcock
ES-16	III	Northeast of STL-IV	05-05-98	-4	Babcock
ES-17	III	STL-IV Area	05-03-98	-4	Babcock
ES-18	II	Swimming Pool Area	02-10-99	-4	Babcock
ES-19	II	Swimming Pool Area	02-10-99	-4	Babcock
ES-20	II	Swimming Pool Area	02-10-99	-4	Babcock
ES-21	II	Swimming Pool Area	05-06-98	-4	Babcock
			05-06-98*	-4	Babcock
			05-06-98**	-4	Weck
ES-22	II	Swimming Pool Area	05-06-98	-4	Babcock
ES-23	III	Along STL-IV Road, northeast of STL-IV area	05-03-98	-4	Babcock
ES-24	III	Between STL-IV and ECL	11-04-97	**6.6**	LAS
			02-07-98	-4	Babcock
			02-07-98**	-10	CAS
			02-25-98	**22**	CAS
			05-04-98	**15**	Babcock
			05-04-98*	**15**	Babcock
			05-04-98**	**20.4**	Weck
			08-18-98	**16**	Babcock
			02-18-99	**5**	Babcock
ES-26	III	STL-IV Area	05-03-98	-4	Babcock
ES-27	III	STL-IV Area	05-03-98	-4	Babcock
ES-28	III	Along STL-IV Road, northeast of STL-IV Area	05-04-98	-4	Babcock
ES-29	III	Along STL-IV Road, northeast of STL-IV Area	05-03-98	-4	Babcock

See last page of Table 16 for footnotes and explanations.

TABLE 16

SUMMARY OF PERCHLORATE RESULTS
1997-1999

Well Identifier	Area	Well Location	Date Sampled	Perchlorate (µg/l)	Laboratory
ES-30	III	Along STL-IV Road, northeast of STL-IV Area	11-04-97	-1	LAS
			05-03-98	-4	Babcock
ES-31	IV	Along G. Street	02-06-99	-4	Babcock
ES-32	III	STL-IV Area	05-03-98	-4	Babcock
RS-1	I	Near Main Gate	02-17-99	-4	Babcock
RS-2	I	Along Area I Road, northeast of APTF	05-03-98	**10**	Babcock
RS-6	I	N. of Perimeter Pond	02-17-99	-4	Babcock
RS-7	I	Southwest of perimeter pond	02-17-98	-4	Babcock
			05-07-98	-4	Babcock
RS-8	II	ABSP Area	02-20-98	-4	Babcock
			05-09-98	-4	Babcock
			05-09-98*	-4	Babcock
			08-19-98	-4	Babcock
RS-9	III	Northeast of STL-IV	05-03-98	-4	Babcock
			02-18-99	-4	Babcock
RS-11	IV	Along G. Street, N.W. of ECL	02-06-99	-4	Babcock
RS-12	III	Between STL-IV and ECL	05-03-98	-4	Babcock
RS-13	II	S. of R2 Pond	02-18-99	-4	Babcock
RS-14	III	STL-IV Area	05-03-98	-4	Babcock
RS-15	III	Along STL-IV Road, north of STL-IV area	05-03-98	-4	Babcock
RS-17	III	Along STL-IV Road, north of STL-IV area	05-03-98	-4	Babcock
RS-18	IV	Near N.W. Boundary of Site, N. of Bldg. 886	05-05-98	-4	Babcock
			05-12-99	**5**	Babcock
RS-20	I	Along Area I Road, W. of Canyon Area	02-17-99	**14**	Babcock
RS-21	II	Swimming Pool Area	08-18-99	-4	Babcock
RS-22	II	Swimming Pool Area	08-18-99	-4	Babcock
RS-30	I	Near Main Gate	02-17-99	-4	Babcock
RS-32	I	Near Main Gate	08-06-99	-4	Babcock
RS-54	IV	Near B/886, former Sodium Disposal Facility	11-03-97	**8.2**	LAS
			02-08-98	-4	Babcock
			05-04-98	-4	Babcock

See last page of Table 16 for footnotes and explanations.

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TABLE 16

SUMMARY OF PERCHLORATE RESULTS
1997-1999

Well Identifier	Area	Well Location	Date Sampled	Perchlorate (µg/l)	Laboratory
RS-54 (cont'd)	IV	Near B/886, former Sodium Disposal Facility	08-04-98	12	Babcock
			08-04-98*	15	Babcock
			08-04-98**	11.9	Weck
			11-18-98	8	Babcock
			02-02-99	8	Babcock
			08-18-99	12	Babcock
HAR-2	I	APTF	05-03-98	-4	Babcock
HAR-3	I	APTF	02-09-98	-4	Babcock
			05-03-98	-4	Babcock
HAR-4	I	APTF	08-08-97	-4	Weck
			11-03-97	-1	LAS
			11-03-97**	-4	Weck
			05-03-98	-4	Babcock
HAR-9	II	ABSP Area	05-09-98	-4	Babcock
HAR-11	II	ABSP Area	05-09-98	-4	Babcock
HAR-13	III	SPA Area	02-09-99	-4	Babcock
HAR-14	III	SPA Area	05-07-98	-4	Babcock
HAR-15	II	SPA Area	05-07-98	-4	Babcock
HAR-27	II	Delta Area	08-18-99	-4	Babcock
HAR-29	II	Delta Area	02-09-99	-4	Babcock
HAR-30	II	SPA Area	02-09-99	-4	Babcock
HAR-32	III	STL-IV Area	05-05-98	-4	Babcock
			05-05-98**	-4	Weck
HAR-33	III	STL-IV Area	05-05-98	-4	Babcock
HAR-34	III	STL-IV Area	05-03-98	-4	Babcock
Chatsworth Formation Wells					
RD-1	I	North of Canyon Area	11-03-97	-1	LAS
			11-03-97**	-4	Weck
			05-03-98	-4	Babcock
			05-03-98*	-4	Babcock
			05-03-98**	-4	Weck
RD-2	I	Bowl Area	05-03-98	-4	Babcock
RD-3	I	Southwest of Perimeter Pond	05-07-98	-4	Babcock
RD-4	II	Bravo Area	05-03-98	-4	Babcock

See last page of Table 16 for footnotes and explanations.

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TABLE 16

SUMMARY OF PERCHLORATE RESULTS
1997-1999

Well Identifier	Area	Well Location	Date Sampled	Perchlorate (µg/l)	Laboratory
RD-5A	UL	South of Area II	08-06-98	-4	Babcock
RD-5B	UL	South of Area II	11-06-97	-1	LAS
			05-20-98	-4	Babcock
			08-06-98	-4	Babcock
RD-5C	UL	South of Area II	11-06-97	-1	LAS
			05-20-98	-4	Babcock
			08-06-98	-4	Babcock
RD-6	UL	South of Area II	11-04-97	-1	LAS
			05-20-98	-4	Babcock
RD-7	IV	Near N.W. Boundary of Site, S.W. of Bldg. 59	02-06-99	-4	Babcock
RD-8	III	ECL Area	02-10-99	-4	Babcock
RD-9	II	Swimming Pool Area	05-28-98	-4	Babcock
RD-10	I	Northeast of Canyon Area	08-08-97	-4	Weck
			05-05-98	-4	Babcock
			05-05-98*	-4	Babcock
RD-12	III	ECL Area	02-10-99	-4	Babcock
			02-10-99*	-4	Babcock
RD-13	IV	Burro Flats, west of STL-IV	11-04-97	-1	LAS
			05-26-98	-4	Babcock
			05-26-98*	-4	Babcock
RD-14	IV	N.W. of Control Center	02-09-99	-4	Babcock
RD-15	IV	N.W. of SPA Area, S.W. of Control Center	05-14-99	-4	Babcock
RD-16	IV	North of ECL	11-05-97	-1	LAS
			05-27-98	-4	Babcock
			08-08-98	-4	Babcock
RD-17	IV	S.E. of Building 133, N.W. of G. Street	02-08-99	-4	Babcock
RD-18	IV	N.E. of Building 133, N.W. of Control Center	02-17-99	-4	Babcock
RD-19	IV	W. of Building 133	02-17-99	-4	Babcock
RD-20	IV	Burro Flats, S. of Building 59	02-15-99	-4	Babcock

See last page of Table 16 for footnotes and explanations.

TABLE 16

SUMMARY OF PERCHLORATE RESULTS
1997-1999

Well Identifier	Area	Well Location	Date Sampled	Perchlorate (µg/l)	Laboratory
RD-21	IV	South of Building 886	05-05-98	**5**	Babcock
			08-04-98	**8**	Babcock
			11-11-98	-4	Babcock
			02-16-99	**9**	Babcock
RD-22	IV	West of Building 886	05-28-98	-4	Babcock
			08-19-98	-4	Babcock
RD-23	IV	North of Building 886	05-06-98	-4	Babcock
RD-24	IV	E. of Building 59	02-02-99	-4	Babcock
			02-02-99**	-4	CAS
RD-25	IV	Near Building 59	02-16-99	-4	Babcock
RD-26	II	W. of Control Center	02-09-99	-4	Babcock
RD-27	IV	S.W. of Building 133	02-16-99	-4	Babcock
RD-28	IV	Near Building 59	02-16-99	-4	Babcock
RD-29	IV	Burro Flats, S.E. of Building 59	02-07-99	-4	Babcock
RD-30	IV	S.W. of Bldg.133, Near N.W. Boundary of Site	02-05-99	-4	Babcock
RD-31	I	South of Main Gate	08-07-98	-4	Babcock
RD-32	---	Off-site near Main Gate	11-06-97	-1	LAS
			05-05-98	-4	Babcock
			05-05-98**	-4	Weck
			08-05-98	-4	Babcock
RD-33A	UL	Northwest of Area IV	05-27-98	-4	Babcock
			05-27-98*	-4	Babcock
RD-33B	UL	Northwest of Area IV	05-27-98	-4	Babcock
RD-33C	UL	Northwest of Area IV	05-27-98	-4	Babcock
RD-34A	UL	Northwest of Area IV	08-18-98	-4	Babcock
RD-34B	UL	Northwest of Area IV	08-18-98	-4	Babcock
RD-34C	UL	Northwest of Area IV	08-17-98	-4	Babcock
RD-35A	I	APTF Area	05-06-98	-4	Babcock
RD-35B	I	APTF Area	08-18-99	-4	Babcock
RD-36A	---	Off-site near Main Gate on Sage Ranch Park Property	05-06-98	-4	Babcock
RD-36B	---	Off-site near Main Gate on Sage Ranch Park Property	05-05-98	-4	Babcock

See last page of Table 16 for footnotes and explanations.

TABLE 16

SUMMARY OF PERCHLORATE RESULTS
1997-1999

Well Identifier	Area	Well Location	Date Sampled	Perchlorate (µg/l)	Laboratory
RD-36C	---	Off-site near Main Gate on Sage Ranch Park Property	05-06-98	-4	Babcock
RD-36D	---	Off-site near Main Gate on Sage Ranch Park Property	05-06-98	-4	Babcock
RD-37	---	Off-site near Main Gate	11-05-97	-1	LAS
			05-21-98	-4	Babcock
			08-05-98	-4	Babcock
RD-38A	---	Off-site near Main Gate on Sage Ranch Park Property	05-05-98	-4	Babcock
RD-38B	---	Off-site near Main Gate on Sage Ranch Park Property	08-17-99	-4	Babcock
RD-39A	---	Off-site North of Main Gate on Sage Ranch Park Property	05-05-98	-4	Babcock
			08-06-98	-4	Babcock
RD-39B	---	Off-site North of Main Gate on Sage Ranch Park Property	05-05-98	-4	Babcock
			05-05-98**	-4	Weck
RD-41A	II	Between Delta and Coca	02-16-99	-4	Babcock
RD-41B	II	Between Delta and Coca	02-16-99	-4	Babcock
RD-41C	II	Between Delta and Coca	02-16-99	-4	Babcock
RD-42	II	N.E. of Coca	02-17-99	-4	Babcock
			02-17-99*	-4	Babcock
RD-43A	---	Off-site, along Woolsey Canyon Road	11-05-97	-1	LAS
			05-07-98	-4	Babcock
			08-04-98	-4	Babcock
			08-04-98*	-4	Babcock
RD-43B	---	Off-site, along Woolsey Canyon Road	11-05-97	-1	LAS
			05-07-98	-4	Babcock
			08-04-98	-4	Babcock
RD-43C	---	Off-site, along Woolsey Canyon Road	11-05-97	-1	LAS
			05-08-98	-4	Babcock
			08-04-98	-4	Babcock
RD-44	I	Near southern Undeveloped Land	11-06-97	-1	LAS
			05-08-98	-4	Babcock
			08-09-98	-4	Babcock
RD-45A	I	Along Area I Road near APTF	11-03-97	-1	LAS
			11-03-97**	-4	Weck

See last page of Table 16 for footnotes and explanations.

TABLE 16

SUMMARY OF PERCHLORATE RESULTS
1997-1999

Well Identifier	Area	Well Location	Date Sampled	Perchlorate (µg/l)	Laboratory
RD-45B	I	Along Area I Road near APTF	11-03-97	-1	LAS
RD-45C	I	Along Area I Road near APTF	11-04-97	-1	LAS
RD-46A	I	Southeast of CTL III	05-08-98	-4	Babcock
			02-15-99	-4	Babcock
RD-46B	I	Southeast of CTL III	02-15-99	-4	Babcock
RD-47	I	Between ALFA and Area I Road	05-14-99	-4	Babcock
RD-48A	UL	Southwest of Area I	05-06-98	-4	Babcock
RD-48B	UL	Southwest of Area I	11-05-97	-1	LAS
			05-07-98	-4	Babcock
			05-07-98**	-4	Weck
RD-48C	UL	Southwest of Area I	11-04-97	-1	LAS
			05-06-98	-4	Babcock
RD-49A	II	West of ALFA test stand	05-08-98	-4	Babcock
RD-49B	II	West of ALFA test stand	05-08-98	-4	Babcock
RD-49C	II	West of ALFA test stand	05-08-98	-4	Babcock
RD-50	IV	South of Building 370	05-28-98	-4	Babcock
RD-51B	II	North of Area II Road	02-17-99	-4	Babcock
RD-51C	II	North of Area II Road	11-07-97	-1	LAS
			05-04-98	-4	Babcock
			08-04-98	-4	Babcock
RD-52B	I	Along Service Road	02-06-99	-4	Babcock
RD-52C	I	Along Service Road	11-08-97	-1	LAS
			05-04-98	-4	Babcock
			08-05-98	-4	Babcock
RD-53	I	Near Main Gate	02-09-98	-4	Babcock
			08-04-98	-4	Babcock
			02-17-99	-4	Babcock
RD-54A	IV	In Former Sodium Disposal Facility Near Building 886, Lower Pond	11-05-97	10.7	LAS
			02-08-98	6	Babcock
			05-07-98	10	Babcock
			08-07-98	18	Babcock
			08-07-98**	11.6	Weck

See last page of Table 16 for footnotes and explanations.

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TABLE 16

SUMMARY OF PERCHLORATE RESULTS
1997-1999

Well Identifier	Area	Well Location	Date Sampled	Perchlorate (µg/l)	Laboratory
RD-54A (cont'd)	IV	In Former Sodium Disposal Facility Near Building 886, Lower Pond	11-13-98	**16**	Babcock
			02-08-99	**16**	Babcock
RD-54B	IV	In Former Sodium Disposal Facility Near Building 886, Lower Pond	02-08-98	-4	Babcock
			05-06-98	-4	Babcock
			02-08-99	-4	Babcock
RD-54C	IV	In Former Sodium Disposal Facility Near Building 886, Lower Pond	02-08-98	-4	Babcock
			05-06-98	-4	Babcock
			02-09-99	-4	Babcock
RD-55A	III	STL-IV Area	02-06-99	-4	Babcock
RD-55B	III	STL-IV Area	02-07-99	-4	Babcock
RD-56A	UL	North of Area III	05-28-98	-4	Babcock
RD-56B	UL	North of Area III	11-07-97	-1	LAS
			05-28-98	-4	Babcock
			08-09-98	-4	Babcock
RD-57	UL	Northwest of Area IV	05-26-98	-4	Babcock
RD-58A	III	South of STL-IV	05-05-98	-4	Babcock
RD-58B	III	South of STL-IV	05-04-98	-4	Babcock
			08-03-98	-4	Babcock
RD-58C	III	South of STL-IV	08-16-99	-4	Babcock
RD-59A	---	Off-site, West of Area IV RMHF	08-19-98	**5**	Babcock
			11-12-98	-4	Babcock
			02-16-99	-4	Babcock
			02-16-99**	-4	CAS
			05-10-99	-4	Babcock
			05-10-99**	-4	CAS
			08-06-99	-4	Babcock
			11-06-99	-4	Babcock
RD-59B	---	Off-site, West of Area IV RMHF	08-19-98	-4	Babcock
			08-19-98*	-4	Babcock
			02-16-99	-4	Babcock
			08-06-99	-4	Babcock

See last page of Table 16 for footnotes and explanations.

TABLE 16

SUMMARY OF PERCHLORATE RESULTS
1997-1999

Well Identifier	Area	Well Location	Date Sampled	Perchlorate (µg/l)	Laboratory
RD-59C	---	Off-site, west of Area IV RMHF	08-19-98	-4	Babcock
			02-16-99	-4	Babcock
			08-06-99	-4	Babcock
RD-60	III	West of Bldg. 211 in CTL II	05-08-98	-4	Babcock
RD-61	I	Near southern perimeter of Area I	11-07-97	-1	LAS
			05-28-98	-4	Babcock
			08-07-98	-4	Babcock
RD-62	UL	South of Area I	11-05-97	-1	LAS
			05-28-98	-4	Babcock
			08-06-98	-4	Babcock
RD-63	IV	At RMHF, southwest of Building 133	05-04-98	-8	Babcock
RD-64	IV	West of former Sodium Disposal Facility	05-28-98	-4	Babcock
RD-65	IV	North of former Sodium Disposal Facility	05-06-98	-4	Babcock
RD-66	---	Off-site, NE of Area I	11-05-97	-1	LAS
			06-04-98	-4	Babcock
			08-04-98	-4	Babcock
RD-67	UL	South of Area IV	05-29-98	-4	Babcock
			08-06-98	-4	Babcock
RD-68A	---	Off-site, N of Area III on BBI Property	11-06-97	-1	LAS
			08-19-98	-4	Babcock
RD-68B	---	Off-site, N of Area III on BBI Property	11-06-97	-1	LAS
			08-19-98	-4	Babcock
			08-19-98*	-4	Babcock
RD-69	I	North of Service Road	11-08-97	-1	LAS
			05-28-98	-4	Babcock
			08-08-98	-4	Babcock
RD-70	UL	North of Area II	05-29-98	-4	Babcock
RD-71	---	Off-site, NE of Area I on Gary Bang Property	11-05-97	-1	LAS
			06-04-98	-4	Babcock
			08-04-98	-4	Babcock

See last page of Table 16 for footnotes and explanations.

TABLE 16

SUMMARY OF PERCHLORATE RESULTS
1997-1999

Well Identifier	Area	Well Location	Date Sampled	Perchlorate (µg/l)	Laboratory
RD-72	I	Building 436 parking lot	05-04-98	-4	Babcock
			08-09-98	-4	Babcock
			08-09-98*	-4	Babcock
RD-73	I	Along Area I Road, near Building 324	11-03-97	**244**	LAS
			02-04-98	**140**	Babcock
			02-04-98**	**150**	CAS
			05-05-98	**140**	Babcock
			05-05-98*	**140**	Babcock
			05-05-98**	**187**	Weck
			08-03-98	**220**	Babcock
			02-04-99	**190**	Babcock
RD-74	IV	N.W. of Building 59	08-19-99	-4	Babcock
HAR-1	I	APTF Area	02-16-99	**33**	Babcock
HAR-5	II	SPA Area	05-14-99	-4	Babcock
HAR-6	II	SPA Area	02-09-99	-4	Babcock
HAR-7	II	Delta Area	05-07-98	-4	Babcock
HAR-8	II	Delta Area	02-09-99	-4	Babcock
HAR-16	I	APTF Area	11-03-97	**555**	LAS
			11-03-97*	**480**	Weck
			02-08-98	**200**	Babcock
			05-03-98	**230**	Babcock
			05-03-98*	**210**	Babcock
			05-03-98**	**241**	Weck
			08-19-98	**670**	Babcock
			02-08-99	**390**	Babcock
			02-08-99*	**390**	Babcock
HAR-17	II	East of STL-IV	11-04-97	-1	LAS
			05-29-98	-4	Babcock
HAR-18	III	STL-IV Area	05-03-98	-4	Babcock
HAR-20	II	ABSP Area	05-28-98	-8	Babcock
HAR-21	II	ABSP Area	02-07-99	-4	Babcock
HAR-22	II	N. of SPA Area	02-09-99	-4	Babcock
HAR-23	III	S.W. of SPA Area	02-09-99	-4	Babcock

See last page of Table 16 for footnotes and explanations.

TABLE 16

SUMMARY OF PERCHLORATE RESULTS
1997-1999

Well Identifier	Area	Well Location	Date Sampled	Perchlorate (µg/l)	Laboratory
HAR-24	I	APTF	08-08-97	620	Weck
			11-04-97	710	LAS
			02-09-98	750	Babcock
			02-09-98**	690	CAS
			05-03-98	300	Babcock
			05-03-98*	300	Babcock
			08-08-98	320	Babcock
			02-17-99	330	Babcock
HAR-25	I	APTF	08-08-97	95	Weck
			11-04-97	140	LAS
			11-04-97**	150	Weck
			02-09-98	190	Babcock
			02-09-98**	200	CAS
			05-03-98	-4	Babcock
			05-29-98	4	Babcock
			05-29-98**	6.31	Weck
			08-08-98	390	Babcock
			02-17-99	480	Babcock
			02-17-99*	460	Babcock
HAR-26	III	ECL Area	05-03-98	-4	Babcock
WS-4A	I	North of Service Area Road	11-03-97	-1	LAS
			05-07-98	-4	Babcock
			08-07-98	-4	Babcock
			02-06-99	-4	Babcock
WS-5	I	Along Area I Road, west of Canyon Area	11-03-97	-1	LAS
			11-03-97**	-4	Weck
			05-04-98	-4	Babcock
WS-6	I	ALFA Area	05-08-98	-4	Babcock
WS-9	II	Bravo Area	05-03-98	-4	Babcock
WS-9A	II	South of R2 Pond	05-06-98	-4	Babcock
WS-9B	II	Along Service Road Area, N. of ALFA Area	02-06-99	-4	Babcock
OS-2	---	Off-site, N.W. of Site	02-16-99	-4	Babcock
OS-3	---	Off-site, N.W. of Site	02-16-99	-4	Babcock

See last page of Table 16 for footnotes and explanations.

TABLE 16

SUMMARY OF PERCHLORATE RESULTS
1997-1999

Well Identifier	Area	Well Location	Date Sampled	Perchlorate (µg/l)	Laboratory
OS-4	---	Off-site, N.W. of Site	02-16-99	-4	Babcock
OS-5	---	Off-site, N.W. of Site	02-16-99	-4	Babcock
OS-8	---	Off-site, N. of Area II (Spring)	02-16-99	-4	Babcock
OS-10	---	Off-site, N. of Site	02-16-99	-4	Babcock
OS-12	---	Off-site, S.E. of Site (Spring)	02-08-99	-4	Babcock
OS-15	---	Off-site, N.E. of Site, E. of Woolsey Canyon Road	02-09-99	-4	Babcock
OS-16	---	Off-site, N.E. of Site, S. of Woolsey Canyon Road	02-09-99	-4	Babcock
OS-17	---	Off-site, East of site	05-28-98	-4	Babcock
			05-28-98*	-4	Babcock
			08-20-98	-4	Babcock
			08-20-98*	-4	Babcock
			02-18-99	-4	Babcock
			08-13-99	-4	Babcock
OS-21	---	Off-site, S.W. of Site	02-10-99	-4	Babcock
OS-24	---	Off-site, Northeast of site	08-06-98	-4	Babcock
OS-25	---	Off-site, N.E. of Site	02-19-99	-4	Babcock
OS-26	---	Off-site, N.E. of Site	02-19-99	-4	Babcock
OS-27	---	Off-site, N.E. of Site on Property Owned by Robert Mionske	02-17-99	-4	Babcock
Treatment System Effluent					
Area I Road Secondary Effluent	III	Area I Road	06-03-98	-4	Babcock
RD-21 Primary Effluent	IV	South of Building 886	05-28-98	-4	Babcock
STL-IV Secondary Effluent	III	STL-IV	06-03-98	-4	Babcock

See last page of Table 16 for footnotes and explanations.

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TABLE 16

FOOTNOTES AND EXPLANATIONS

μg/l	micrograms per liter
(-)	Less than; numerical value is the Limit of Detection for that compound.
(*)	Duplicate sample.
(**)	Split sample.
UL	Undeveloped land
Babcock	E.S. Babcock and Sons, Inc. of Riverside, California.
CAS	Columbia Analytical Services, Inc. of Canoga Park, California.
LAS	LAS Laboratories, Inc. of Las Vegas, Nevada.
Weck	Weck Laboratories, Inc. of City of Industry, California.

TABLE 17

RESULTS OF ANALYSES FOR GROSS ALPHA AND BETA, AND TRITIUM ACTIVITIES IN GROUNDWATER SAMPLES, 1999

WELL ID	DATE SAMPLED	RESULTS (picoCuries per liter/EPA Method)					
		Gross Alpha 900.0	MDA	Gross Beta 900.0	MDA	Tritium 906.0	MDA
Shallow Zone							
RS-11	02-06-99	1.58 ± 1.3	1.84	2.36 ± 1.5	2.31	80.1 ± 110	174
RS-18	05-12-99	26.9 ± 6.2	3.65	13.6 ± 2.1	2.24	135 ± 110	178
RS-54	02-02-99	10.2 ± 3.9	3.34	10.0 ± 1.9	2.25	85.4 ± 100	166
	08-18-99	16.1 ± 4.7	3.45	11.4 ± 3.2	4.34	66.4 ± 96	159
ES-31	02-06-99	6.85 ± 3.3	3.52	4.33 ± 2.7	4.18	62.7 ± 100	172
Chatsworth Formation							
RD-7	02-06-99	5.23 ± 2.3	2.01	11.9 ± 1.9	2.33	59.3 ± 100	168
	08-19-99	6.94 ± 2.3	1.71	8.51 ± 1.7	1.98	-18.1 ± 96	165
RD-17	02-08-99	4.31 ± 2.0	1.96	5.94 ± 1.7	2.33	-13.1 ± 120	206
RD-21	02-16-99	13.0 ± 4.5	3.73	6.58 ± 1.7	2.24	0 ± 120	207
RD-22	02-17-99	0.868 ± 2.0	3.50	4.48 ± 1.7	2.56	41.5 ± 120	207
RD-23	02-08-99	4.69 ± 2.1	2.24	4.64 ± 1.5	2.02	294 ± 130	205
RD-24	02-02-99	4.53 ± 2.3	2.28	7.10 ± 2.6	3.77	220 ± 120	182
	08-11-99	3.18 ± 2.0	2.44	7.07 ± 1.8	2.37	401 ± 110	157
RD-25	02-16-99	18.3 ± 5.2	3.55	9.37 ± 2.1	2.81	81 ± 120	202
	08-19-99	2.96 ± 1.7	1.89	5.74 ± 1.7	2.33	-20.3 ± 98	168
RD-27	02-16-99	4.86 ± 2.2	2.21	6.31 ± 1.9	2.64	3.33 ± 120	199
	08-17-99	5.30 ± 1.9	1.45	6.66 ± 1.8	2.62	-48.0 ± 94	162

See last page of Table 17 for footnotes and explanations.

TABLE 17

RESULTS OF ANALYSES FOR GROSS ALPHA AND BETA, AND TRITIUM ACTIVITIES IN GROUNDWATER SAMPLES, 1999

WELL ID	DATE SAMPLED	RESULTS (picoCuries per liter/EPA Method)					
		Gross Alpha 900.0	MDA	Gross Beta 900.0	MDA	Tritium 906.0	MDA
RD-28	02-16-99	14.0 ± 4.3	3.59	12.2 ± 1.9	2.16	55.3 ± 120	194
	08-19-99	21.4 ± 5.5	4.48	14.4 ± 3.2	3.96	---	---
	11-03-99	---	---	---	---	-50 ± 98	169
RD-30	02-05-99	6.46 ± 2.9	2.83	8.21 ± 2.7	3.87	38.5 ± 99	167
RD-33A	02-03-99	3.16 ± 1.4	1.26	4.87 ± 1.7	2.46	-2.34 ± 100	173
RD-33B	02-03-99	1.86 ± 1.4	1.75	3.80 ± 1.4	2.05	-6.96 ± 100	171
	08-11-99	---	---	---	---	-1.67 ± 88	150
RD-33C	02-03-99	3.40 ± 1.7	1.81	5.55 ± 1.6	2.24	-2.30 ± 99	169
	08-11-99	---	---	---	---	1.70 ± 90	153
RD-34B	02-04-99	7.65 ± 3.2	3.25	8.57 ± 2.3	3.08	650 ± 120	162
	08-11-99	---	---	---	---	176 ± 100	164
RD-34C	02-04-99	1.59 ± 1.6	2.48	2.72 ± 2.5	4.00	11.4 ±99	169
	08-12-99	---	---	---	---	45.0 ± 93	156
RD-35B	05-07-99	22.8 ± 4.4	2.29	12.6 ± 2.0	2.27	17.4 ± 100	176
	08-18-99	1.56 ± 1.2	1.46	4.05 ± 1.6	2.45	---	---
RD-38B	02-17-99	1.52 ± 2.0	3.09	4.98 ± 1.6	2.17	20.1 ± 120	200
RD-46B	02-15-99	3.26 ± 2.0	2.36	3.74 ± 1.6	2.39	125 ± 120	197
RD-54A	02-08-99	22.2 ± 12	9.94	58.0 ± 7.4	5.62	697 ± 160	212
	08-18-99	---	---	---	---	491 ± 110	157

See last page of Table 17 for footnotes and explanations.

TABLE 17

RESULTS OF ANALYSES FOR GROSS ALPHA AND BETA, AND TRITIUM ACTIVITIES IN GROUNDWATER SAMPLES, 1999

WELL ID	DATE SAMPLED	RESULTS (picoCuries per liter/EPA Method)					
		Gross Alpha 900.0	MDA	Gross Beta 900.0	MDA	Tritium 906.0	MDA
RD-54B	02-08-99	1.44 ± 3.7	6.84	17.2 ± 4.4	4.70	-59.8 ± 120	209
	08-18-99	---	---	---	---	-6.88 ± 92	157
RD-54C	02-09-99	-0.998 ± 1.4	4.91	7.69 ± 3.3	4.41	81 ± 120	204
	08-18-99	---	---	---	---	28.2 ± 96	161
RD-57	05-13-99	2.84 ± 1.6	1.92	3.90 ± 1.8	2.69	17.4 ± 100	176
	08-11-99	---	---	---	---	48.8 ± 94	156
RD-59A	02-16-99	3.17 ± 2.4	3.20	4.96 ± 1.9	2.89	107 ± 120	194
	08-06-99	---	---	---	---	52.9 ± 95	158
RD-59B	02-16-99	4.38 ± 2.3	2.58	5.32 ± 1.6	2.32	26.3 ± 110	196
	08-06-99	---	---	---	---	24.3 ± 93	156
RD-59C	02-16-99	0.660 ± 1.5	2.61	5.17 ± 1.8	2.66	30.6 ± 120	203
	08-06-99	---	---	---	---	-30.5 ± 94	161
RD-63	02-02-99	17.6 ± 5.3	3.78	19.1 ± 3.0	3.51	362 ± 110	170
RD-74	05-13-99	8.82 ± 3.4	2.74	5.29 ± 1.9	2.72	30.2 ± 110	184

Results are presented as the activity plus or minus the error. Any activity detected is reported by the laboratory.
Analyses were performed by Thermo NUtech of Richmond, California.
Analytical results that are less than the procedure background value are shown as negative values.
Samples are filtered and acidified in the field with the exception of tritium.
MDA = Minimum detectable activity.
(---) = Not analyzed.

TABLE 18

RESULTS OF ANALYSES FOR GAMMA-EMITTING RADIONUCLIDES
1999

WELL IDENTIFIER	RS-11		RS-18		RS-54				ES-31	
RADIONUCLIDE (picoCuries per liter/MDA)	02-06-99		05-12-99		02-02-99		08-18-99		02-06-99	
	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA
GAMMA-EMITTING										
Actinium-228	ND	59.4	ND	29.6	---	---	ND	49.3	ND	67.2
Bismuth-212	ND	105	ND	51.4	ND	101	ND	83.6	ND	112
Bismuth-214	ND	23.9	ND	13.2	---	---	ND	19.3	ND	28.2
Cobalt-57	ND	7.88	ND	3.80	ND	5.81	ND	8.18	ND	9.08
Cobalt-60	ND	14.2	ND	6.96	ND	20.0	ND	10.6	ND	14.6
Cesium-134	ND	14.0	ND	8.74	ND	17.5	ND	12.4	ND	16.6
Cesium-137	ND	11.2	ND	7.12	ND	13.4	ND	10.3	ND	13.2
Potassium-40	ND	213	ND	104	ND	184	ND	190	ND	227
Lead-210	ND	723	ND	460	ND	99.0	ND	2380	ND	795
Lead-212	ND	20.3	ND	11.1	ND	14.6	ND	15.7	ND	22.1
Lead-214	ND	24.0	ND	12.7	ND	24.0	ND	17.9	ND	27.0
Radium-226	ND	190	ND	110	ND	145	ND	172	ND	206
Thorium-234	ND	285	ND	190	ND	192	ND	341	ND	327
Thallium-208	ND	14.1	ND	7.12	ND	13.2	ND	10.4	ND	16.4
Uranium-235	ND	63.5	ND	35.5	ND	40.4	ND	60.2	ND	75.8
ISOTOPIC URANIUM and THORIUM										
Thorium-228	---	---	---	---	0.012 ± 0.020	0.031	0.030 ± 0.12	0.213	---	---
Thorium-230	---	---	---	---	0.034 ± 0.040	0.072	0.112 ± 0.12	0.187	---	---
Thorium-232	---	---	---	---	-0.002 ± 0.008	0.015	0 ± 0.041	0.097	---	---
Uranium-233/234	---	---	---	---	11.7 ± 0.75	0.109	15.7 ± 1.1	0.236	---	---
Uranium-235	---	---	---	---	0.745 ± 0.15	0.051	1.23 ± 0.25	0.133	---	---
Uranium-238	---	---	---	---	10.7 ± 0.70	0.101	14.0 ± 1.0	0.183	---	---

See last page of Table 18 for footnotes and explanations.

TABLE 18

RESULTS OF ANALYSES FOR GAMMA-EMITTING RADIONUCLIDES
1999

WELL IDENTIFIER	RD-7		RD-17		RD-21		RD-22		RD-23	
RADIONUCLIDE (picoCuries per liter/MDA)	02-06-99		02-08-99		02-16-99		02-17-99		02-08-99	
	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA
GAMMA-EMITTING										
Actinium-228	ND	29.5	ND	45.9	ND	73.4	ND	27.2	ND	67.7
Bismuth-212	ND	45.1	ND	85.6	ND	119	ND	49.6	ND	112
Bismuth-214	ND	11.8	---	---	ND	28.1	ND	12.8	---	---
Cobalt-57	ND	4.09	ND	4.52	ND	9.51	ND	4.44	ND	6.21
Cobalt-60	ND	7.65	ND	15.8	ND	15.4	ND	6.58	ND	21.2
Cesium-134	ND	8.38	ND	13.4	ND	17.0	ND	9.12	ND	16.9
Cesium-137	ND	6.28	ND	10.9	ND	15.1	ND	5.78	ND	13.3
Potassium-40	ND	148	ND	135	ND	277	ND	107	ND	162
Lead-210	ND	280	ND	148	ND	779	ND	488	ND	113
Lead-212	ND	10.6	ND	12.4	ND	22.2	ND	11.8	ND	19.2
Lead-214	ND	11.7	ND	18.9	ND	26.4	ND	12.7	ND	26.0
Radium-226	ND	134	ND	129	ND	214	ND	110	ND	178
Thorium-234	ND	182	ND	159	ND	333	ND	195	ND	211
Thallium-208	ND	6.53	ND	9.91	ND	20.7	ND	6.78	ND	13.1
Uranium-235	ND	34.0	ND	33.1	ND	81.2	ND	35.6	ND	51.9
ISOTOPIC URANIUM and THORIUM										
Thorium-228	0.026 ± 0.016	0.022	0.018 ± 0.048	0.093	---	---	---	---	0.073 ± 0.040	0.048
Thorium-230	0.028 ± 0.040	0.072	0.072 ± 0.060	0.074	---	---	---	---	0.016 ± 0.046	0.073
Thorium-232	0 ± 0.008	0.015	0.012 ± 0.024	0.046	---	---	---	---	0.003 ± 0.013	0.025
Uranium-233/234	7.76 ± 0.51	0.084	1.56 ± 0.16	0.039	---	---	---	---	1.16 ± 0.15	0.060
Uranium-235	0.414 ± 0.10	0.042	0.103 ± 0.043	0.033	---	---	---	---	0.097 ± 0.041	0.039
Uranium-238	6.68 ± 0.45	0.077	1.19 ± 0.14	0.034	---	---	---	---	1.08 ± 0.14	0.040

See last page of Table 18 for footnotes and explanations.

TABLE 18

RESULTS OF ANALYSES FOR GAMMA-EMITTING RADIONUCLIDES
1999

WELL IDENTIFIER	RD-24				RD-25				RD-27	
RADIONUCLIDE (picoCuries per liter/MDA)	02-02-99		08-11-99		02-16-99		08-19-99		02-16-99	
	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA
GAMMA-EMITTING										
Actinium-228	ND	60.9	ND	56.5	ND	67.2	ND	70.6	ND	29.8
Bismuth-212	ND	113	ND	89.8	ND	117	ND	126	ND	45.8
Bismuth-214	ND	27.4	ND	23.7	ND	29.2	ND	29.0	ND	11.8
Cobalt-57	ND	9.09	ND	9.55	ND	10.5	ND	6.91	ND	3.95
Cobalt-60	ND	14.5	ND	13.6	ND	16.8	ND	23.6	ND	7.38
Cesium-134	ND	15.6	ND	14.3	ND	17.0	ND	17.2	ND	7.29
Cesium-137	ND	14.4	ND	11.1	ND	15.9	ND	14.6	ND	5.56
Potassium-40	ND	248	ND	217	ND	264	ND	177	ND	99.8
Lead-210	ND	770	ND	3820	ND	819	ND	141	ND	481
Lead-212	ND	21.8	ND	36.3	ND	23.2	ND	20.6	ND	10.6
Lead-214	ND	28.7	ND	22.6	ND	27.5	ND	27.8	ND	12.0
Radium-226	ND	210	ND	192	ND	215	ND	186	ND	148
Thorium-234	ND	320	ND	387	ND	338	ND	240	ND	182
Thallium-208	ND	15.2	ND	12.1	ND	16.4	ND	16.1	ND	6.22
Uranium-235	ND	70.1	ND	65.0	ND	83.6	ND	57.5	ND	32.8
ISOTOPIC URANIUM and THORIUM										
Thorium-228	---	---	---	---	---	---	---	---	---	---
Thorium-230	---	---	---	---	---	---	---	---	---	---
Thorium-232	---	---	---	---	---	---	---	---	---	---
Uranium-233/234	---	---	---	---	---	---	---	---	---	---
Uranium-235	---	---	---	---	---	---	---	---	---	---
Uranium-238	---	---	---	---	---	---	---	---	---	---

See last page of Table 18 for footnotes and explanations.

TABLE 18

RESULTS OF ANALYSES FOR GAMMA-EMITTING RADIONUCLIDES
1999

WELL IDENTIFIER	RD-27		RD-28				RD-30		RD-33A	
RADIONUCLIDE (picoCuries per liter/MDA)	08-17-99		02-16-99		08-19-99		02-05-99		02-03-99	
	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA
GAMMA-EMITTING										
Actinium-228	ND	26.0	ND	46.2	ND	72.3	ND	26.6	ND	28.0
Bismuth-212	ND	40.0	ND	92.5	ND	107	ND	43.3	ND	47.7
Bismuth-214	ND	12.0	ND	23.0	ND	30.1	ND	20.2	ND	13.1
Cobalt-57	ND	3.57	ND	4.72	ND	9.94	ND	3.70	ND	3.92
Cobalt-60	ND	5.68	ND	17.2	ND	21.0	ND	7.27	ND	7.51
Cesium-134	ND	7.35	ND	15.2	ND	17.5	ND	7.47	ND	8.00
Cesium-137	ND	5.74	ND	11.6	ND	15.7	ND	5.26	ND	6.68
Potassium-40	ND	75.0	ND	158	ND	439	ND	97.5	ND	93.5
Lead-210	ND	365	ND	147	ND	839	ND	270	ND	302
Lead-212	ND	9.75	ND	14.9	ND	23.6	ND	10.5	ND	11.2
Lead-214	ND	11.0	ND	20.8	ND	28.8	ND	20.1	ND	12.3
Radium-226	ND	91.7	ND	141	ND	199	ND	95.2	ND	106
Thorium-234	ND	151	ND	187	ND	367	ND	174	ND	190
Thallium-208	ND	5.77	ND	11.8	ND	16.9	ND	6.22	ND	6.84
Uranium-235	ND	28.9	ND	40.9	ND	75.8	ND	31.9	ND	32.8
ISOTOPIC URANIUM and THORIUM										
Thorium-228	---	---	0.014 ± 0.017	0.030	---	---	---	---	---	---
Thorium-230	---	---	0.061 ± 0.041	0.069	---	---	---	---	---	---
Thorium-232	---	---	ND	0.013	---	---	---	---	---	---
Uranium-233/234	---	---	12.1 ± 0.83	0.119	---	---	---	---	---	---
Uranium-235	---	---	0.741 ± 0.16	0.058	---	---	---	---	---	---
Uranium-238	---	---	11.6 ± 0.80	0.110	---	---	---	---	---	---

See last page of Table 18 for footnotes and explanations.

TABLE 18

RESULTS OF ANALYSES FOR GAMMA-EMITTING RADIONUCLIDES
1999

WELL IDENTIFIER	RD-33B		RD-33C		RD-34B		RD-34C		RD-35B	
RADIONUCLIDE (picoCuries per liter/MDA)	02-03-99		02-03-99		02-04-99		02-04-99		05-07-99	
	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA
GAMMA-EMITTING										
Actinium-228	ND	19.7	ND	50.2	ND	64.8	ND	43.3	ND	71.3
Bismuth-212	ND	34.6	ND	91.0	ND	98.0	ND	81.1	ND	113
Bismuth-214	ND	9.07	ND	22.4	ND	26.3	ND	20.5	ND	27.2
Cobalt-57	ND	2.90	ND	4.12	ND	8.24	ND	3.62	ND	6.25
Cobalt-60	ND	4.90	ND	16.4	ND	16.8	ND	13.7	ND	16.4
Cesium-134	ND	6.02	ND	13.6	ND	15.3	ND	12.3	ND	19.3
Cesium-137	ND	4.43	ND	12.0	ND	13.3	ND	10.6	ND	15.0
Potassium-40	ND	71.7	ND	139	ND	226	ND	140	ND	181
Lead-210	ND	226	88.8 ± 64	92.5	ND	738	94.2 ± 62	87.9	ND	117
Lead-212	ND	7.91	ND	24.0	32.2 ± 26	25.9	ND	13.0	ND	18.4
Lead-214	ND	9.12	ND	20.8	ND	27.1	ND	18.7	ND	26.3
Radium-226	ND	76.3	ND	127	ND	190	ND	120	ND	176
Thorium-234	ND	136	ND	162	ND	293	ND	147	ND	222
Thallium-208	ND	4.48	ND	9.78	ND	13.6	ND	9.64	ND	14.3
Uranium-235	ND	25.4	ND	38.7	ND	74.5	ND	36.9	ND	54.2
ISOTOPIC URANIUM and THORIUM										
Thorium-228	---	---	---	---	---	---	---	---	---	---
Thorium-230	---	---	---	---	---	---	---	---	---	---
Thorium-232	---	---	---	---	---	---	---	---	---	---
Uranium-233/234	---	---	---	---	---	---	---	---	---	---
Uranium-235	---	---	---	---	---	---	---	---	---	---
Uranium-238	---	---	---	---	---	---	---	---	---	---

See last page of Table 18 for footnotes and explanations.

TABLE 18

RESULTS OF ANALYSES FOR GAMMA-EMITTING RADIONUCLIDES
1999

WELL IDENTIFIER	RD-35B		RD-38B		RD-46B		RD-54A		RD-54B	
RADIONUCLIDE (picoCuries per liter/MDA)	08-18-99		02-17-99		02-15-99		02-08-99		02-08-99	
	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA
GAMMA-EMITTING										
Actinium-228	---	---	ND	63.2	ND	62.6	ND	27.2	ND	65.3
Bismuth-212	---	---	ND	127	ND	127	ND	49.7	ND	111
Bismuth-214	---	---	ND	27.3	ND	29.5	---	---	---	---
Cobalt-57	---	---	ND	5.93	ND	6.18	ND	3.85	ND	9.48
Cobalt-60	---	---	ND	19.0	ND	20.3	ND	6.75	ND	13.1
Cesium-134	---	---	ND	18.2	ND	18.5	ND	8.46	ND	18.3
Cesium-137	---	---	ND	15.8	ND	15.1	ND	6.22	ND	15.2
Potassium-40	---	---	ND	171	ND	168	ND	100	ND	240
Lead-210	---	---	ND	193	ND	238	ND	384	ND	771
Lead-212	---	---	ND	18.6	ND	18.5	ND	11.8	ND	22.4
Lead-214	---	---	ND	24.1	ND	27.1	ND	11.5	ND	24.9
Radium-226	---	---	ND	184	ND	177	ND	107	ND	214
Thorium-234	---	---	ND	231	ND	216	ND	177	ND	322
Thallium-208	---	---	ND	13.6	ND	13.8	ND	6.28	ND	15.8
Uranium-235	---	---	ND	51.1	ND	44.8	ND	34.5	ND	82.6
ISOTOPIC URANIUM and THORIUM										
Thorium-228	0 ± 0.18	0.376	---	---	---	---	0.007 ± 0.070	0.124	ND	0.084
Thorium-230	-0.044 ± 0.13	0.212	---	---	---	---	0.028 ± 0.070	0.094	-0.013 ± 0.050	0.077
Thorium-232	0.022 ± 0.044	0.170	---	---	---	---	0 ± 0.014	0.054	-0.006 ± 0.013	0.048
Uranium-233/234	0.713 ± 0.19	0.099	---	---	---	---	6.58 ± 0.42	0.074	0.062 ± 0.048	0.064
Uranium-235	0.050 ± 0.050	0.096	---	---	---	---	0.307 ± 0.079	0.037	0.012 ± 0.012	0.044
Uranium-238	0.362 ± 0.13	0.079	---	---	---	---	5.79 ± 0.39	0.058	0.048 ± 0.029	0.036

See last page of Table 18 for footnotes and explanations.

TABLE 18

RESULTS OF ANALYSES FOR GAMMA-EMITTING RADIONUCLIDES
1999

WELL IDENTIFIER	RD-54C		RD-57		RD-59A		RD-59B		RD-59C	
RADIONUCLIDE (picoCuries per liter/MDA)	02-09-99		05-13-99		02-16-99		02-16-99		02-16-99	
	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA
GAMMA-EMITTING										
Actinium-228	ND	65.3	ND	27.1	ND	25.8	ND	66.6	ND	28.0
Bismuth-212	ND	126	ND	49.1	ND	45.0	ND	104	ND	52.2
Bismuth-214	---	---	ND	11.4	ND	11.8	ND	28.1	ND	13.3
Cobalt-57	ND	6.02	ND	3.62	ND	3.82	ND	9.33	ND	4.08
Cobalt-60	ND	21.9	ND	6.11	ND	6.82	ND	18.1	ND	7.02
Cesium-134	ND	20.4	ND	7.92	ND	7.58	ND	17.1	ND	8.54
Cesium-137	ND	15.7	ND	6.32	ND	5.30	ND	14.6	ND	6.57
Potassium-40	ND	180	ND	91.7	ND	87.0	ND	262	ND	102
Lead-210	ND	168	ND	468	ND	425	ND	765	ND	280
Lead-212	ND	19.2	ND	10.7	ND	10.5	ND	21.7	ND	11.6
Lead-214	ND	25.4	ND	11.9	ND	11.9	ND	26.6	ND	12.2
Radium-226	ND	182	ND	135	ND	102	ND	204	ND	121
Thorium-234	ND	236	ND	174	ND	161	ND	324	ND	176
Thallium-208	ND	13.9	ND	6.22	ND	6.01	ND	14.8	ND	6.80
Uranium-235	ND	51.4	ND	32.2	ND	31.3	ND	80.4	ND	35.4
ISOTOPIC URANIUM and THORIUM										
Thorium-228	0.013 ± 0.038	0.071	---	---	---	---	---	---	---	---
Thorium-230	0.064 ± 0.064	0.086	---	---	---	---	---	---	---	---
Thorium-232	0.006 ± 0.013	0.049	---	---	---	---	---	---	---	---
Uranium-233/234	0 ± 0.036	0.065	---	---	---	---	---	---	---	---
Uranium-235	0.011 ± 0.022	0.042	---	---	---	---	---	---	---	---
Uranium-238	0.018 ± 0.018	0.034	---	---	---	---	---	---	---	---

See last page of Table 18 for footnotes and explanations.

TABLE 18

RESULTS OF ANALYSES FOR GAMMA-EMITTING RADIONUCLIDES
1999

WELL IDENTIFIER	RD-63		RD-74							
RADIONUCLIDE (picoCuries per liter/MDA)	02-02-99		05-13-99							
	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA	ACTIVITY	MDA
GAMMA-EMITTING										
Actinium-228	ND	30.0	ND	61.4						
Bismuth-212	ND	45.7	ND	100						
Bismuth-214	ND	13.0	ND	27.4						
Cobalt-57	ND	4.11	ND	5.96						
Cobalt-60	ND	7.41	ND	20.8						
Cesium-134	ND	8.62	ND	18.2						
Cesium-137	ND	6.68	ND	13.0						
Potassium-40	ND	100	ND	179						
Lead-210	ND	327	ND	111						
Lead-212	ND	10.6	ND	18.4						
Lead-214	ND	12.7	ND	26.3						
Radium-226	ND	108	ND	172						
Thorium-234	ND	195	ND	238						
Thallium-208	ND	10.3	ND	12.2						
Uranium-235	ND	35.4	ND	51.4						
ISOTOPIC URANIUM and THORIUM										
Thorium-228	---	---	---	---						
Thorium-230	---	---	---	---						
Thorium-232	---	---	---	---						
Uranium-233/234	---	---	---	---						
Uranium-235	---	---	---	---						
Uranium-238	---	---	---	---						

See last page of Table 18 for footnotes and explanations.

TABLE 18

EXPLANATIONS AND FOOTNOTES

Detected concentrations are presented as the activity plus or minus the error. Any activity detected is reported by the laboratory whether or not it is less than the minimum detectable activity (MDA). Non-detectable results are presented as "ND" with the MDA.

Analyses were performed by Thermo NUtech of Richmond, California.

Analytical results that are less than the procedure background value are shown as negative values.

Samples are filtered and acidified in the field with the exception of tritium.

MDA	=	Minimum detectable activity
ND	=	Not detected
(---)	=	Analysis not performed

TABLE 19
RESULTS OF ANALYSES FOR BACKGROUND WELLS, 1999
RD-6

ANALYTICAL PARAMETERS	UNITS	MCL[1]	FIRST QUARTER 1999	SECOND QUARTER 1999	THIRD QUARTER 1999[3]	FOURTH QUARTER 1999
Indicator Parameters						
pH	units	6.5 - 8.5[5]	7.2	—	7.2	—
Specific conductance	µmhos/cm	900-1600-2200[4]	1200	—	1300	—
Total organic carbon	mg/l	NA	0.9	—	0.3	—
Total organic halogens	mg/l	NA	-9	—	-9	—
Groundwater Quality						
Chloride	mg/l	250-500-600[4]	65	—	—	—
Iron	mg/l	0.3[5]	3.7	—	—	—
Manganese	mg/l	0.05[5]	0.18	—	—	—
Sodium	mg/l	NA	100	—	—	—
Sulfate	mg/l	250-500-600[4]	280	—	—	—
Expanded List						
Tetrachloroethylene	µg/l	5	-0.4	-0.4	-0.4	-0.5
Trichloroethylene	µg/l	5	-0.4	-0.4	-0.3	-0.5
1,1,1-Trichloroethane	µg/l	200	-0.2	-0.2	-0.2	-0.5
1,1,2-Trichloroethane	µg/l	5	-0.3	-0.3	-0.3	-0.5
cis-1,2-Dichloroethylene	µg/l	6	-0.2	-0.2	-0.3	-0.5
trans-1,2-Dichloroethylene	µg/l	10	-0.2	-0.2	-0.2	-0.5
1,1-Dichloroethylene	µg/l	6	-0.2	-0.2	-0.3	-0.5
1,1-Dichloroethane	µg/l	5	-0.2	-0.2	-0.4	-0.5
Vinyl chloride	µg/l	0.5	-0.3	-0.3	-0.4	-0.5
Carbon tetrachloride	µg/l	0.5	-0.2	-0.2	-0.4	-0.5
Methylene chloride	µg/l	5	-0.4	-0.4	-0.3	-1
Chloroform	µg/l	NA	-0.4	-0.4	-0.3	-0.5
Methyl ethyl ketone	µg/l	NA	-1	-1	-2	-5
Benzene	µg/l	1	-0.3	-0.3	-0.2	-0.5
Toluene	µg/l	150	-0.3	-0.3	-0.2	-0.5
m- and p-Xylenes	µg/l	1750	-0.4	-0.4	-0.5	-0.5
o-Xylene	µg/l	1750	-0.2	-0.2	-0.4	-0.5
Ethylbenzene	µg/l	700	-0.2	-0.2	-0.3	-0.5
Miscellaneous						
1,4-Dioxane	µg/l	3[2]	—	-50	—	—
Formaldehyde	mg/l	0.030[2]	—	0.3	—	—
Fluoride	mg/l	2.0	—	0.67	—	—
Ammonia	mg/l	NA	—	-0.12	—	—
Nitrate	mg/l	45	—	-0.9	—	—
Phenols						
2,4,5-Trichlorophenol	µg/l	NA	-2	-2	—	—
2,4,6-Trichlorophenol	µg/l	NA	-2	-2	—	—
2,4-Dichlorophenol	µg/l	NA	-2	-2	—	—
2,4-Dimethylphenol	µg/l	400[2]	-4	-4	—	—
2,4-Dinitrophenol	µg/l	NA	-2	-2	—	—
2-Chlorophenol	µg/l	NA	-2	-2	—	—
2-Methyl-4,6-dinitrophenol	µg/l	NA	-2	-2	—	—
2-Methylphenol	µg/l	NA	-2	-2	—	—
2-Nitrophenol	µg/l	NA	-2	-2	—	—
4-Chloro-3-methylphenol	µg/l	NA	-2	-2	—	—
4-Methylphenol[6]	µg/l	NA	-2	-2	—	—
4-Nitrophenol	µg/l	NA	-2	-2	—	—
Phenol	µg/l	5[2]	-2	-2	—	—
Pentachlorophenol	µg/l	1	-2	-2	—	—

See last page of Table 19 for footnotes and explanations.

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TABLE 19
RESULTS OF ANALYSES FOR BACKGROUND WELLS, 1999
RD-13

ANALYTICAL PARAMETERS	UNITS	MCL[1]	FIRST QUARTER 1999	SECOND QUARTER 1999	THIRD QUARTER 1999	FOURTH QUARTER 1999
Indicator Parameters						
pH	units	6.5 - 8.5[5]	7.6	—	7.4	—
Specific conductance	µmhos/cm	900-1600-2200[4]	830	—	820	—
Total organic carbon	mg/l	NA	-0.07	—	-0.07	—
Total organic halogens	mg/l	NA	-9	—	-9	—
Groundwater Quality						
Chloride	mg/l	250-500-600[4]	39	—	—	—
Iron	mg/l	0.3[5]	-0.02	—	—	—
Manganese	mg/l	0.05[5]	0.02	—	—	—
Sodium	mg/l	NA	56	—	—	—
Sulfate	mg/l	250-500-600[4]	89	—	—	—
Expanded List						
Tetrachloroethylene	µg/l	5	-0.4	-0.4	-0.4	-0.5
Trichloroethylene	µg/l	5	-0.4	-0.4	-0.3	-0.5
1,1,1-Trichloroethane	µg/l	200	-0.2	-0.2	-0.2	-0.5
1,1,2-Trichloroethane	µg/l	5	-0.3	-0.3	-0.3	-0.5
cis-1,2-Dichloroethylene	µg/l	6	-0.2	-0.2	-0.3	-0.5
trans-1,2-Dichloroethylene	µg/l	10	-0.2	-0.2	-0.2	-0.5
1,1-Dichloroethylene	µg/l	6	-0.2	-0.2	-0.3	-0.5
1,1-Dichloroethane	µg/l	5	-0.2	-0.2	-0.4	-0.5
Vinyl chloride	µg/l	0.5	-0.3	-0.3	-0.4	-0.5
Carbon tetrachloride	µg/l	0.5	-0.2	-0.2	-0.4	-0.5
Methylene chloride	µg/l	5	-0.4	-0.4	-0.3	-1
Chloroform	µg/l	NA	-0.4	-0.4	-0.3	-0.5
Methyl ethyl ketone	µg/l	NA	-1	-1	-2	-5
Benzene	µg/l	1	-0.3	-0.3	-0.2	-0.5
Toluene	µg/l	150	-0.3	-0.3	-0.2	-0.5
m- and p-Xylenes	µg/l	1750	-0.4	-0.4	-0.5	-0.5
o-Xylene	µg/l	1750	-0.2	-0.2	-0.4	-0.5
Ethylbenzene	µg/l	700	-0.2	-0.2	-0.3	-0.5
Miscellaneous						
1,4-Dioxane	µg/l	3[2]	—	-50	—	—
Formaldehyde	mg/l	0.030[2]	—	-0.02	—	—
Fluoride	mg/l	2.0	—	0.52	—	—
Ammonia	mg/l	NA	—	0.17	—	—
Nitrate	mg/l	45	—	6.33	—	—
Phenols						
2,4,5-Trichlorophenol	µg/l	NA	-2	-2	—	—
2,4,6-Trichlorophenol	µg/l	NA	-2	-2	—	—
2,4-Dichlorophenol	µg/l	NA	-2	-2	—	—
2,4-Dimethylphenol	µg/l	400[2]	-4	-4	—	—
2,4-Dinitrophenol	µg/l	NA	-2	-2	—	—
2-Chlorophenol	µg/l	NA	-2	-2	—	—
2-Methyl-4,6-dinitrophenol	µg/l	NA	-2	-2	—	—
2-Methylphenol	µg/l	NA	-2	-2	—	—
2-Nitrophenol	µg/l	NA	-2	-2	—	—
4-Chloro-3-methylphenol	µg/l	NA	-2	-2	—	—
4-Methylphenol[6]	µg/l	NA	-2	-2	—	—
4-Nitrophenol	µg/l	NA	-2	-2	—	—
Phenol	µg/l	5[2]	-2	-2	—	—
Pentachlorophenol	µg/l	1	-2	-2	—	—

See last page of Table 19 for footnotes and explanations.

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TABLE 19
RESULTS OF ANALYSES FOR BACKGROUND WELLS, 1999
RD-48A

ANALYTICAL PARAMETERS	UNITS	MCL[1]	FIRST QUARTER 1999	SECOND QUARTER 1999	THIRD QUARTER 1999	FOURTH QUARTER 1999
Indicator Parameters						
pH	units	6.5 - 8.5[5]	7.0	—	6.9	—
Specific conductance	µmhos/cm	900-1600-2200[4]	1900	—	2400	—
Total organic carbon	mg/l	NA	0.6	—	0.6	—
Total organic halogens	mg/l	NA	-9	—	-9	—
Groundwater Quality						
Chloride	mg/l	250-500-600[4]	67	—	—	—
Iron	mg/l	0.3[5]	0.70	—	—	—
Manganese	mg/l	0.05[5]	0.20	—	—	—
Sodium	mg/l	NA	84	—	—	—
Sulfate	mg/l	250-500-600[4]	650	—	—	—
Expanded List						
Tetrachloroethylene	µg/l	5	-0.4	-0.4	-0.4	-0.5
Trichloroethylene	µg/l	5	-0.4	-0.4	-0.3	-0.5
1,1,1-Trichloroethane	µg/l	200	-0.2	-0.2	-0.2	-0.5
1,1,2-Trichloroethane	µg/l	5	-0.3	-0.3	-0.3	-0.5
cis-1,2-Dichloroethylene	µg/l	6	-0.2	-0.2	-0.3	-0.5
trans-1,2-Dichloroethylene	µg/l	10	-0.2	-0.2	-0.2	-0.5
1,1-Dichloroethylene	µg/l	6	-0.2	-0.2	-0.3	-0.5
1,1-Dichloroethane	µg/l	5	-0.2	-0.2	-0.4	-0.5
Vinyl chloride	µg/l	0.5	-0.3	-0.3	-0.4	-0.5
Carbon tetrachloride	µg/l	0.5	-0.2	-0.2	-0.4	-0.5
Methylene chloride	µg/l	5	-0.4	-0.4	-0.3	-1
Chloroform	µg/l	NA	-0.4	-0.4	-0.3	-0.5
Methyl ethyl ketone	µg/l	NA	-1	-1	-2	-5
Benzene	µg/l	1	-0.3	-0.3	-0.2	-0.5
Toluene	µg/l	150	-0.3	-0.3	-0.2	-0.5
m- and p-Xylenes	µg/l	1750	-0.4	-0.4	-0.5	-0.5
o-Xylene	µg/l	1750	-0.2	-0.2	-0.4	-0.5
Ethylbenzene	µg/l	700	-0.2	-0.2	-0.3	-0.5
Miscellaneous						
1,4-Dioxane	µg/l	3[2]	—	-50	—	—
Formaldehyde	mg/l	0.030[2]	—	0.06	—	—
Fluoride	mg/l	2.0	—	0.39	—	—
Ammonia	mg/l	NA	—	0.24	—	—
Nitrate	mg/l	45	—	-0.9	—	—
Phenols						
2,4,5-Trichlorophenol	µg/l	NA	-2	-2	—	—
2,4,6-Trichlorophenol	µg/l	NA	-2	-2	—	—
2,4-Dichlorophenol	µg/l	NA	-2	-2	—	—
2,4-Dimethylphenol	µg/l	400[2]	-4	-4	—	—
2,4-Dinitrophenol	µg/l	NA	-2	-2	—	—
2-Chlorophenol	µg/l	NA	-2	-2	—	—
2-Methyl-4,6-dinitrophenol	µg/l	NA	-2	-2	—	—
2-Methylphenol	µg/l	NA	-2	-2	—	—
2-Nitrophenol	µg/l	NA	-2	-2	—	—
4-Chloro-3-methylphenol	µg/l	NA	-2	-2	—	—
4-Methylphenol[6]	µg/l	NA	-2	-2	—	—
4-Nitrophenol	µg/l	NA	-2	-2	—	—
Phenol	µg/l	5[2]	-2	-2	—	—
Pentachlorophenol	µg/l	1	-2	-2	—	—

See last page of Table 19 for footnotes and explanations.

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TABLE 19
RESULTS OF ANALYSES FOR BACKGROUND WELLS, 1999
RD-48B

ANALYTICAL PARAMETERS	UNITS	MCL[1/]	FIRST QUARTER 1999	SECOND QUARTER 1999	THIRD QUARTER 1999	FOURTH QUARTER 1999
Indicator Parameters						
pH	units	6.5 - 8.5[5/]	**7.6**	—	**7.6**	—
Specific conductance	µmhos/cm	900-1600-2200[4/]	**1300**	—	**1300**	—
Total organic carbon	mg/l	NA	**0.47**	—	**0.1**	—
Total organic halogens	mg/l	NA	-9	—	-9	—
Groundwater Quality						
Chloride	mg/l	250-500-600[4/]	**45**	—	—	—
Iron	mg/l	0.3[5/]	**1.6**	—	—	—
Manganese	mg/l	0.05[5/]	**0.19**	—	—	—
Sodium	mg/l	NA	**71**	—	—	—
Sulfate	mg/l	250-500-600[4/]	**270**	—	—	—
Expanded List						
Tetrachloroethylene	µg/l	5	-0.4	-0.4	-0.4	-0.5
Trichloroethylene	µg/l	5	-0.4	-0.4	-0.3	-0.5
1,1,1-Trichloroethane	µg/l	200	-0.2	-0.2	-0.2	-0.5
1,1,2-Trichloroethane	µg/l	5	-0.3	-0.3	-0.3	-0.5
cis-1,2-Dichloroethylene	µg/l	6	-0.2	-0.2	-0.3	-0.5
trans-1,2-Dichloroethylene	µg/l	10	-0.2	-0.2	-0.2	-0.5
1,1-Dichloroethylene	µg/l	6	-0.2	-0.2	-0.3	-0.5
1,1-Dichloroethane	µg/l	5	-0.2	-0.2	-0.4	-0.5
Vinyl chloride	µg/l	0.5	-0.3	-0.3	-0.4	-0.5
Carbon tetrachloride	µg/l	0.5	-0.2	-0.2	-0.4	-0.5
Methylene chloride	µg/l	5	-0.4	-0.4	-0.3	-1
Chloroform	µg/l	NA	-0.4	-0.4	-0.3	-0.5
Methyl ethyl ketone	µg/l	NA	-1	-1	-2	-5
Benzene	µg/l	1	-0.3	-0.3	-0.2	-0.5
Toluene	µg/l	150	-0.3	-0.3	-0.2	-0.5
m- and p-Xylenes	µg/l	1750	-0.4	-0.4	-0.5	-0.5
o-Xylene	µg/l	1750	-0.2	-0.2	-0.4	-0.5
Ethylbenzene	µg/l	700	-0.2	-0.2	-0.3	-0.5
Miscellaneous						
1,4-Dioxane	µg/l	3[2/]	—	-50	—	—
Formaldehyde	mg/l	0.030[2/]	—	-0.02	—	—
Fluoride	mg/l	2.0	—	**0.30**	—	—
Ammonia	mg/l	NA	—	**0.13**	—	—
Nitrate	mg/l	45	—	-0.9	—	—
Phenols						
2,4,5-Trichlorophenol	µg/l	NA	-2	-2	—	—
2,4,6-Trichlorophenol	µg/l	NA	-2	-2	—	—
2,4-Dichlorophenol	µg/l	NA	-2	-2	—	—
2,4-Dimethylphenol	µg/l	400[2/]	-4	-4	—	—
2,4-Dinitrophenol	µg/l	NA	-2	-2	—	—
2-Chlorophenol	µg/l	NA	-2	-2	—	—
2-Methyl-4,6-dinitrophenol	µg/l	NA	-2	-2	—	—
2-Methylphenol	µg/l	NA	-2	-2	—	—
2-Nitrophenol	µg/l	NA	-2	-2	—	—
4-Chloro-3-methylphenol	µg/l	NA	-2	-2	—	—
4-Methylphenol[6/]	µg/l	NA	-2	-2	—	—
4-Nitrophenol	µg/l	NA	-2	-2	—	—
Phenol	µg/l	5[2/]	-2	-2	—	—
Pentachlorophenol	µg/l	1	-2	-2	—	—

See last page of Table 19 for footnotes and explanations.

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TABLE 19
RESULTS OF ANALYSES FOR BACKGROUND WELLS, 1999
RD-48C

ANALYTICAL PARAMETERS	UNITS	MCL[1]	FIRST QUARTER 1999	SECOND QUARTER 1999	THIRD QUARTER 1999	FOURTH QUARTER 1999
Indicator Parameters						
pH	units	6.5 - 8.5[5]	7.4	—	7.3	—
Specific conductance	µmhos/cm	900-1600-2200[4]	1200	—	1200	—
Total organic carbon	mg/l	NA	0.32	—	0.1	—
Total organic halogens	mg/l	NA	-9	—	-9	—
Groundwater Quality						
Chloride	mg/l	250-500-600[4]	41	—	—	—
Iron	mg/l	0.3[5]	0.95	—	—	—
Manganese	mg/l	0.05[5]	0.05	—	—	—
Sodium	mg/l	NA	69	—	—	—
Sulfate	mg/l	250-500-600[4]	250	—	—	—
Expanded List						
Tetrachloroethylene	µg/l	5	-0.4	-0.4	-0.4	-0.5
Trichloroethylene	µg/l	5	-0.4	-0.4	-0.3	-0.5
1,1,1-Trichloroethane	µg/l	200	-0.2	-0.2	-0.2	-0.5
1,1,2-Trichloroethane	µg/l	5	-0.3	-0.3	-0.3	-0.5
cis-1,2-Dichloroethylene	µg/l	6	-0.2	-0.2	-0.3	-0.5
trans-1,2-Dichloroethylene	µg/l	10	-0.2	-0.2	-0.2	-0.5
1,1-Dichloroethylene	µg/l	6	-0.2	-0.2	-0.3	-0.5
1,1-Dichloroethane	µg/l	5	-0.2	-0.2	-0.4	-0.5
Vinyl chloride	µg/l	0.5	-0.3	-0.3	-0.4	-0.5
Carbon tetrachloride	µg/l	0.5	-0.2	-0.2	-0.4	-0.5
Methylene chloride	µg/l	5	-0.4	-0.4	-0.3	-1
Chloroform	µg/l	NA	-0.4	-0.4	-0.3	-0.5
Methyl ethyl ketone	µg/l	NA	-1	-1	-2	-5
Benzene	µg/l	1	-0.3	-0.3	-0.2	-0.5
Toluene	µg/l	150	-0.3	-0.3	-0.2	-0.5
m- and p-Xylenes	µg/l	1750	-0.4	-0.4	-0.5	-0.5
o-Xylene	µg/l	1750	-0.2	-0.2	-0.4	-0.5
Ethylbenzene	µg/l	700	-0.2	-0.2	-0.3	-0.5
Miscellaneous						
1,4-Dioxane	µg/l	3[2]	—	-50	—	—
Formaldehyde	mg/l	0.030[2]	—	0.1	—	—
Fluoride	mg/l	2.0	—	0.31	—	—
Ammonia	mg/l	NA	—	0.24	—	—
Nitrate	mg/l	45	—	-0.9	—	—
Phenols						
2,4,5-Trichlorophenol	µg/l	NA	-2	-2	—	—
2,4,6-Trichlorophenol	µg/l	NA	-2	-2	—	—
2,4-Dichlorophenol	µg/l	NA	-2	-2	—	—
2,4-Dimethylphenol	µg/l	400[2]	-4	-4	—	—
2,4-Dinitrophenol	µg/l	NA	-2	-2	—	—
2-Chlorophenol	µg/l	NA	-2	-2	—	—
2-Methyl-4,6-dinitrophenol	µg/l	NA	-2	-2	—	—
2-Methylphenol	µg/l	NA	-2	-2	—	—
2-Nitrophenol	µg/l	NA	-2	-2	—	—
4-Chloro-3-methylphenol	µg/l	NA	-2	-2	—	—
4-Methylphenol[6]	µg/l	NA	-2	-2	—	—
4-Nitrophenol	µg/l	NA	-2	-2	—	—
Phenol	µg/l	5[2]	-2	-2	—	—
Pentachlorophenol	µg/l	1	-2	-2	—	—

See last page of Table 19 for footnotes and explanations.

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TABLE 19

FOOTNOTES AND EXPLANATIONS

1/	Maximum Contaminant Level (MCL) per California Department of Health Services (1999). MCLs are primary drinking water standards unless otherwise indicated.
2/	Action Level, a non-enforceable health-based guidance number (DOHS, 1999).
3/	Samples for pH and expanded list of volatile organic compounds were analyzed past the holding times.
4/	Recommended - Upper - Short Term Secondary Drinking Water Standards (DOHS, 1999).
5/	Secondary Drinking Water Standard (DOHS, 1999).
6/	Analyzed as 3- and 4-methylphenol coelution.
µg/l	micrograms per liter
mg/l	milligrams per liter
µmhos/cm	micromhos per centimeter
(-)	Less than; value indicated is method detection limit.
(---)	Not available; not analyzed.

TABLE 20

RESULTS OF ANALYSES FOR APPENDIX IX CONSTITUENTS, 1999
INORGANIC PARAMETERS

PARAMETERS (µg/l)	WELL IDENTIFIER/DATE SAMPLED						
	SH-4 02-08-99	RS-8 02-07-99	HAR-7 02-08-99	HAR-14 02-09-99	HAR-15 02-09-99	HAR-16 02-08-99	HAR-17 02-08-99
Antimony	0.2	0.1	0.02	0.04	0.07	-0.02	0.04
Arsenic	-2	2	-2	1	8	-2	-2
Barium	24.6	63.4	41.4	35.0	272	21.6	76.0
Beryllium	0.50	-0.007	0.02	0.01	0.40	0.02	0.01
Cadmium	1.33	0.15	0.05	0.06	0.52	0.04	0.12
Chromium	5.0	4.2	3.0	2.1	21.0	1.8	3.4
Cobalt	7.4	1.56	1.23	0.40	3.72	0.10	0.86
Copper	10.0	5.1	5.1	0.7	18.6	23.5	3.9
Cyanide	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Lead	1.02	0.24	0.84	0.29	46.5	2.01	3.62
Mercury	0.3	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Nickel	14.4	5.3	3.3	1.4	14.4	1.6	3.9
Selenium	-2	-2	-2	-2	-2	-2	-2
Silver	0.2	0.03	-0.006	-0.006	0.4	-0.006	-0.006
Sulfide	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Thallium	0.02	0.02	0.01	0.02	0.23	0.01	0.009
Tin	0.2	-0.1	-0.1	-0.1	-0.1	0.4	-0.1
Vanadium	3.5	1.7	1.4	1.8	37.8	1.6	1.5
Zinc	12.3	3.3	28.2	3.0	102	53.1	33.8

See last page of Table 20 for footnotes and explanations.
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TABLE 20

RESULTS OF ANALYSES FOR APPENDIX IX CONSTITUENTS, 1999
PESTICIDES AND HERBICIDES

PARAMETERS (µg/l)	MCL (µg/l)	WELL IDENTIFIER/DATE SAMPLED						
		SH-4 02-08-99	RS-8 02-07-99	HAR-7 02-08-99	HAR-14 02-09-99	HAR-15 02-09-99	HAR-16 02-08-99	HAR-17 02-08-99
Aldrin	0.05[1/]	0.37	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
α-BHC	0.7[1/]	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
β-BHC	0.3[1/]	-0.007	-0.007	-0.007	-0.007	-0.007	-0.007	-0.007
δ-BHC	NA	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004
γ-BHC (Lindane)	0.2	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
α-Chlordane	0.1	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005	-0.005
γ-Chlordane	0.1	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Chlorobenzilate	NA	-3	-3	-3	-3	-3	-3	-3
4,4-DDD (p,p-DDD)	NA	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
4,4-DDE (p,p-DDE)	NA	-0.007	-0.007	-0.007	-0.007	-0.007	-0.007	-0.007
4,4-DDT (p,p-DDT)	NA	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Diallate	NA	-4	-4	-4	-4	-4	-4	-4
Dieldrin	0.05[1/]	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Dinoseb	7	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Endosulfan I	NA	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Endosulfan II	NA	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Endosulfan sulfate	NA	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004
Endrin	2	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Endrin aldehyde	NA	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Heptachlor	0.01	-0.003	-0.003	-0.003	-0.003	0.007	-0.003	-0.003
Heptachlor epoxide	0.01	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
Isodrin	NA	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Kepone	NA	-6	-6	-6	-6	-6	-6	-6
Methoxychlor	40	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
PCBs (Aroclor 1016-1260)	0.5	-1.7	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04
PCDDs (dioxins)	NA	ND	ND	ND	ND	---[2/]	ND	ND
PCDFs (furans)	NA	ND	ND	ND	ND	---[2/]	ND	ND
Toxaphene	3	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
2,4-D	70	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09
2,4,5-T	NA	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04
2,4,5-TP (Silvex)	50	-0.06	-0.06	-0.06	-0.06	-0.06	-0.06	-0.06
2,3,7,8-TCDDs	0.00003	-0.0000018	-0.0000013	-0.0000019	-0.0000013	-0.0000013	-0.00000096	-0.0000016

See last page of Table 20 for footnotes and explanations.
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TABLE 20

RESULTS OF ANALYSES FOR APPENDIX IX CONSTITUENTS, 1999
VOLATILE ORGANIC COMPOUNDS

PARAMETERS (µg/l)	MCL (µg/l)	WELL IDENTIFIER/DATE SAMPLED						
		SH-4 02-08-99	RS-8 02-07-99	HAR-7 02-08-99	HAR-14 02-09-99	HAR-15 02-09-99	HAR-16 02-08-99	HAR-17 02-08-99
Acetone	NA	-8	-8	-8	-8	-8	-8	-8(-4*/-3.7**)
Acetonitrile	NA	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2(---*/-0.7**)
Acrolein	NA	-4	-4	-4	-4	-4	-4	-4(-0.9*/-172**)
Acrylonitrile	NA	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2(-0.7*/-1.3**)
Allyl Chloride (3-Chloro-propene)	NA	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09(---*/-0.4**)
Benzene	1	**0.4**	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2(-0.3*/-0.4**)
Bromodichloromethane	NA	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2(-0.2*/-0.4**)
Bromoform	NA	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2(-0.3*/-0.7**)
Carbon disulfide	NA	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2(-0.3*/-0.8**)
Carbon tetrachloride	0.5	**250**	-0.3	-0.3	**3.1**	-0.3	-0.3	-0.3(-0.2*/-0.4**)
Chlorobenzene	70	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2(-0.3*/-0.3**)
Chloroethane	NA	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2(-0.2*/-1.1**)
Chloroform	NA	**110**	-0.2	-0.2	**3.8**	-0.2	-0.2	**0.3**(-0.4*/-0.2**)
Chloroprene	NA	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1(---*/---**)
Dibromochloromethane	NA	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2(-0.2*/-0.6**)
1,2-Dibromo-3-chloropropene (DBCP)	0.02	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5(---*/-2.0**)
1,2-Dibromomethane (Dibromomethane)	NA	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1(---*/-0.4**)
Trans-1,4-Dichloro-2-butene	NA	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3(---*/-1.5**)
Dichlorodifluoromethane	1000[1/]	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2(---*/-1.1**)
1,1-Dichloroethane	5	**25**	-0.2	-0.2	**0.3**	-0.2	-0.2	**0.6**(-0.2*/-2.8**)
1,2-Dichloroethane	0.5	**49**	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2(-0.3*/-1.0**)
1,1-Dichloroethylene	6	**15**	-0.2	**10**	**14**	-0.2	**20**	**0.6**(-0.2*/-1.2**)
cis-1,2-Dichloroethylene	6	**30**	**43**	**2500**	-0.3	-0.3	**100**	**8.7(11*/8.7**)**
trans-1,2-Dichloroethylene	10	**0.5**	**10**	**70**	-0.2	-0.2	-0.2	**0.4(0.6*/-0.9**)**
1,2-Dichloropropane	5	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2(-0.3*/-0.5**)
cis-1,3-Dichloropropene	0.5(total)	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2(-0.2*/-0.4**)
trans-1,3-Dichloropropene	0.5(total)	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2(-0.2*/-0.4**)

See last page of Table 20 for footnotes and explanations.
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TABLE 20

RESULTS OF ANALYSES FOR APPENDIX IX CONSTITUENTS, 1999
VOLATILE ORGANIC COMPOUNDS

PARAMETERS (µg/l)	MCL (µg/l)	WELL IDENTIFIER/DATE SAMPLED						
		SH-4 02-08-99	RS-8 02-07-99	HAR-7 02-08-99	HAR-14 02-09-99	HAR-15 02-09-99	HAR-16 02-08-99	HAR-17 02-08-99
1,4-Dioxane	3[1/]	-40	-40	-40	-40	-40	-40	-40(---*/-200**)
Ethylbenzene	700	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2(-0.2*/-0.5**)
Ethyl methacrylate	NA	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07(---*/-1.8**)
2-Hexanone	NA	-6	-6	-6	-6	-6	-6	-6(-0.6*/-4.7**)
Isobutyl alcohol (Isobutanol)	NA	-50	-50	-50	-50	-50	-50	-50(---*/---**)
Methacrylonitrile	NA	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3(---*/-1.4**)
Methyl bromide (Bromomethane)	NA	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3(-0.3*/-0.4**)
Methyl chloride (Chloromethane)	NA	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2(-0.2*/-0.7**)
Methylene bromide (Dibromomethane)	NA	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1(---*/-0.4**)
Methylene chloride (Dichloromethane)	5	**5**	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3(-0.4*/-2.0**)
Methyl ethyl ketone (2-Butanone)	NA	-6	-6	-6	-6	-6	-6	-6(-1*/-38.6**)
Methyl iodide (Iodomethane)	NA	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05(---*/-0.6**)
Methyl methacrylate	NA	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2(---*/-1.8**)
Methyl isobutyl ketone (4-methyl-2-pentanone)	40[1/]	-7	-7	-7	-7	-7	-7	-7(-0.9*/-1.1**)
Propionitrile (propanenitrile)	NA	-2	-2	-2	-2	-2	-2	-2(---*/-100**)
Styrene	100	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2(-0.2*/-0.6**)
1,1,1,2-Tetrachloroethane	NA	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2(---*/-0.7**)
1,1,2,2-Tetrachloroethane	1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2(-0.5*/-0.3**)
Tetrachloroethylene	5	**23**	-0.2	-0.2	-0.2	-0.2	**10**	-0.2(-0.4*/-0.4**)
Toluene	150	**0.2**	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2(-0.3*/-0.7**)
1,1,1-Trichloroethane	200	**9**	-0.3	-0.3	**2.8**	-0.3	-0.3	-0.3(-0.2*/-0.3**)
1,1,2-Trichloroethane	5	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3(-0.3*/-0.5**)
Trichloroethylene	5	**150**	**1.7**	**13000**	**5.3**	-0.3	**9300**	**46(56*/51**)**
Trichlorofluoromethane	150	-0.2	-0.2	-0.2	-0.2	-0.2	**20**	-0.2(-0.2*/-1.6**)
1,2,3-Trichloropropane	NA	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3(---*/-1.5**)
Vinyl acetate	NA	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5(-2*/-10.2**)
Vinyl chloride	0.5	**2.1**	**3.0**	**30**	-0.3	-0.3	-0.3	-0.3(-0.3*/-0.6**)
Xylenes (total)	1750	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4(-0.4*/-0.8**)

See last page of Table 20 for footnotes and explanations.
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TABLE 20

RESULTS OF ANALYSES FOR APPENDIX IX CONSTITUENTS, 1999
SEMI-VOLATILE ORGANICS

COMPOUNDS (µg/l)	MCL	WELL IDENTIFIER/DATE SAMPLED						
		SH-4 02-08-99	RS-8 02-07-99	HAR-7 02-08-99	HAR-14 02-09-99	HAR-15 02-09-99	HAR-16 02-08-99	HAR-17 02-08-99
Acenaphthene	NA	-0.3	-0.3	-0.3	-0.3(-0.3*/-1.7**)	-0.3	-0.3	-0.3
Acenaphthylene	NA	-0.3	-0.3	-0.3	-0.3(-0.3*/-1.7**)	-0.3	-0.3	-0.3
Acetophenone	NA	-2	-2	-2	-2(-2*/---**)	-2	-2	-2
2-Acetylaminofluorene	NA	-3	-3	-3	-3(-3*/---**)	-3	-3	-3
4-Aminobiphenyl	NA	-6	-6	-6	-6(-6*/---**)	-6	-6	-6
Aniline	NA	-0.7	-0.7	-0.7	-0.7(-0.7*/---**)	-0.7	-0.7	-0.7
Anthracene	NA	-0.3	-0.3	-0.3	-0.3(-0.3*/-1.6**)	-0.3	-0.3	-0.3
Aramite	NA	-4	-4	-4	-4(-4*/---**)	-4	-4	-4
Benzo(a)anthracene	NA	-0.3	-0.3	-0.3	-0.3(-0.3*/-1.2**)	-0.3	-0.3	-0.3
Benzo(b)fluoranthene (3,4-Benzofluoranthene)	NA	-0.2	-0.2	-0.2	-0.2(-0.2*/-1.5**)	-0.2	-0.2	-0.2
Benzo(k)fluoranthene	NA	-0.4	-0.4	-0.4	-0.4(-0.4*/-2.3**)	-0.4	-0.4	-0.4
Benzo(ghi)perylene	NA	-0.4	-0.4	-0.4	-0.4(-0.4*/-1.7**)	-0.4	-0.4	-0.4
Benzo(a)pyrene	0.2	-0.3	-0.3	-0.3	-0.3(-0.3*/-1.6**)	-0.3	-0.3	-0.3
Benzyl Alcohol	NA	-0.6	-0.6	-0.6	-0.6(-0.6*/-5.2**)	-0.6	-0.6	-0.6
Bis(2-chloro-ethoxy)methane	NA	-0.2	-0.2	-0.2	-0.2(-0.2*/-1.6**)	-0.2	-0.2	-0.2
Bis(2-chloroethyl)ether	NA	-0.4	-0.4	-0.4	-0.4(-0.4*/-1.9**)	-0.4	-0.4	-0.4
Bis(2-chloro-1-methylethyl) ether [Bis(2-chloroisopropyl) ether]	NA	-0.8	-0.8	-0.8	-0.8(-0.8*/-1.9**)	-0.8	-0.8	-0.8
Bis(2-ethylhexyl) phthalate	NA	-6	-6	-6	-6(-6*/-1.9**)	-6	-6	-6
4-Bromophenyl phenyl ether	NA	-0 3	-0.3	-0.3	-0.3(-0.3*/-1.3**)	-0.3	-0.3	-0.3
Butyl benzyl phthalate	NA	-0.5	-0.5	-0.5	-0.5(-0.5*/-1.8**)	-0.5	-0.5	-0.5
p-Chloroaniline (4-Chloroaniline)	NA	-2	-2	-2	-2(-2*/-2.3**)	-2	-2	-2
p-Chloro-m-cresol (4-chloro-3-methylphenol)	NA	-0.3	-0.3	-0.3	-0.3(-0.3*/-6.0**)	-0.3	-0.3	-0.3
2-Chloronaphthalene	NA	-0.5	-0.5	-0.5	-0.5(-0.5*/-1.4**)	-0.5	-0.5	-0.5
2-Chlorophenol	NA	-0.3	-0.3	-0.3	-0.3(-0.3*/-8.1**)	-0.3	-0.3	-0.3
4-Chlorophenyl phenyl ether	NA	-0.2	-0.2	-0.2	-0.2(-0.2*/-1.5**)	-0.2	-0.2	-0.2
Chrysene	NA	-0.3	-0.3	-0.3	-0.3(-0.3*/-1.5**)	-0.3	-0.3	-0.3
o-Cresol (2-methylphenol)	NA	-0.4	-0.4	-0.4	-0.4(-0.4*/-7.9**)	-0.4	-0.4	-0.4
m-Cresol (3-methylphenol)	NA	-0.7	-0.7	-0.7	-0.7(-0.7*/---**)	-0.7	-0.7	-0.7
p-Cresol (4-methylphenol)	NA	-0.7	-0.7	-0.7	-0.7(-0.7*/-7.9**)	-0.7	-0.7	-0.7
Dibenzo(a,h)anthracene	NA	-0.4	-0.4	-0.4	-0.4(-0.4*/-1.9**)	-0.4	-0.4	-0.4
Dibenzofuran	NA	-0.2	-0.2	-0.2	-0.2(-0.2*/-1.5**)	-0.2	-0.2	-0.2

See last page of Table 20 for footnotes and explanations.

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TABLE 20

RESULTS OF ANALYSES FOR APPENDIX IX CONSTITUENTS, 1999
SEMI-VOLATILE ORGANICS

COMPOUNDS (µg/l)	MCL	WELL IDENTIFIER/DATE SAMPLED						
		SH-4 02-08-99	R8-8 02-07-99	HAR-7 02-08-99	HAR-14 02-09-99	HAR-15 02-09-99	HAR-16 02-08-99	HAR-17 02-08-99
Di-n-butyl phthalate	NA	-0.4	-0.4	-0.4	-0.4(-0.4*/-1.5**)	-0.4	-0.4	-0.4
o-Dichlorobenzene (1,2-Dichlorobenzene)	130[1/]	-0.6	-0.6	-0.6	-0.6(-0.6*/-1.5**)	-0.6	-0.6	-0.6
m-Dichlorobenzene (1,3-Dichlorobenzene)	130[1/]	-0.8	-0.8	-0.8	-0.8(-0.8*/-1.5**)	-0.8	-0.8	-0.8
p-Dichlorobenzene (1,4-Dichlorobenzene)	5	-0.9	-0.9	-0.9	-0.9(-0.9*/-1.8**)	-0.9	-0.9	-0.9
3,3-Dichlorobenzidine	NA	-4	-4	-4	-4(-4*/-2.5**)	-4	-4	-4
2,4-Dichlorophenol	NA	-0.4	-0.4	-0.4	-0.4(-0.4*/-6.8**)	-0.4	-0.4	-0.4
2,6-Dichlorophenol	NA	-2	-2	-2	-2(-2*/---**)	-2	-2	-2
Diethyl phthalate	NA	-0.2	-0.2	-0.2	0.3(-0.2*/-1.6**)	-0.2	-0.2	-0.2
0,0-Diethyl-0,2-pyrazinyl phosphorothioate (Thionazin)	NA	-0.2	-0.2	-0.2	-0.2(---*/---**)	-0.2	-0.2	-0.2
Dimethoate	140[1/]	-0.2	-0.2	-0.2	-0.2(---*/---**)	-0.2	-0.2	-0.2
p-(Dimethylamino)azobenzene	NA	-4	-4	-4	-4(-4*/---**)	-4	-4	-4
7,12-Dimethylbenz(a)anthracene	NA	-2	-2	-2	-2(-2*/---**)	-2	-2	-2
3,3-Dimethylbenzidine	NA	-9	-9	-9	-9(-9*/---**)	-9	-9	-9
α,α-Dimethylphenethylamine	NA	-20	-20	-20	-20(-20*/---**)	-20	-20	-20
2,4-Dimethylphenol	400[1/]	-3	-3	-3	-3(-3*/-6.2**)	-3	-3	-3
Dimethylphthalate	NA	-6	-6	-6	-6(-6*/-1.6**)	-6	-6	-6
m-Dinitrobenzene (1,3-Dinitrobenzene)	NA	15	-2	-2	-2(-2*/---**)	-2	-2	-2
4,6-Dinitro-o-cresol (2-methyl-4,6-dinitrophenol)	NA	-5	-5	-5	-5(-5*/-8.9**)	-5	-5	-5
2,4-Dinitrophenol	NA	-3	-3	-3	-3(-3*/-7.1**)	-3	-3	-3
2,4-Dinitrotoluene	NA	-2	-2	-2	-2(-2*/-2.3**)	-2	-2	-2
2,6-Dinitrotoluene	NA	-0.4	-0.4	-0.4	-0.4(-0.4*/-1.6**)	-0.4	-0.4	-0.4
Di-n-octyl phthalate	NA	-0.3	-0.3	-0.3	-0.3(-0.3*/-2.5**)	-0.3	-0.3	-0.3
Diphenylamine	NA	-3	-3	-3	-3(-3*/---**)	-3	-3	-3
Disulfoton	NA	-0.2	-0.2	-0.2	-0.2(---*/---**)	-0.2	-0.2	-0.2
Ethyl methane sulfonate	NA	-3	-3	-3	-3(-3*/---**)	-3	-3	-3
Famphur	NA	-0.2	-0.2	-0.2	-0.2(---*/---**)	-0.2	-0.2	-0.2
Fluoranthene	NA	-0.2	-0.2	-0.2	-0.2(-0.2*/-1.3**)	-0.2	-0.2	-0.2
Fluorene	NA	-0.2	-0.2	-0.2	-0.2(-0.2*/-1.6**)	-0.2	-0.2	-0.2
Hexachlorobenzene	1	-0.3	-0.3	-0.3	-0.3(-0.3*/-1.1**)	-0.3	-0.3	-0.3

See last page of Table 20 for footnotes and explanations.
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TABLE 20

RESULTS OF ANALYSES FOR APPENDIX IX CONSTITUENTS, 1999
SEMI-VOLATILE ORGANICS

COMPOUNDS (µg/l)	MCL (µg/l)	WELL IDENTIFIER/DATE SAMPLED						
		SH-4 02-08-99	RS-8 02-07-99	HAR-7 02-08-99	HAR-14 02-09-99	HAR-15 02-09-99	HAR-16 02-08-99	HAR-17 02-08-99
Hexachlorobutadiene	NA	-2	-2	-2	-2(-2*/-1.3**)	-2	-2	-2
Hexachlorocyclopentadiene	50	-6	-6	-6	-6(-6*/-1.3**)	-6	-6	-6
Hexachloroethane	NA	-0.7	-0.7	-0.7	-0.7(-0.7*/-1.7**)	-0.7	-0.7	-0.7
Hexachlorophene	NA	-100	-100	-100	-100(-100*/---**)	-100	-100	-100
Hexachloropropene	NA	-3	-3	-3	-3(-3*/---**)	-3	-3	-3
Indeno(1,2,3-cd)pyrene	NA	-0.2	-0.2	-0.2	-0.2(-0.2*/-1.7**)	-0.2	-0.2	-0.2
Isophorone	NA	-0.2	-0.2	-0.2	-0.2(-0.2*/-2.1**)	-0.2	-0.2	-0.2
Isosafrole	NA	-2	-2	-2	-2(-2*/---**)	-2	-2	-2
Methapyrilene	NA	-20	-20	-20	-20(-20*/---**)	-20	-20	-20
3-Methylcholanthrene	NA	-2	-2	-2	-2(-2*/---**)	-2	-2	-2
Methyl methane sulfonate	NA	-2	-2	-2	-2(-2*/---**)	-2	-2	-2
2-Methylnaphthalene	NA	-0.8	-0.8	-0.8	-0.8(-0.8*/-1.5**)	-0.8	-0.8	-0.8
Methyl parathion	30[1/]	-0.2	-0.2	-0.2	-0.2(---*/---**)	-0.2	-0.2	-0.2
Naphthalene	NA	-0.6	-0.6	-0.6	-0.6(-0.6*/-1.5**)	-0.6	-0.6	-0.6
1,4-Naphthoquinone	NA	-0.2	-0.2	-0.2	-2(-2*/---**)	-0.2	-0.2	-0 2
1-Naphthylamine	NA	-5	-5	-5	-5(-5*/---**)	-5	-5	-5
2-Naphthylamine	NA	-4	-4	-4	-4(-4*/---**)	-4	-4	-4
o-Nitroaniline (2-Nitroaniline)	NA	-6	-6	-6	-6(-6*/-2.8**)	-6	-6	-6
m-Nitroaniline (3-Nitroaniline)	NA	-5	-5	-5	-5(-5*/-2.9**)	-5	-5	-5
p-Nitroaniline (4-Nitroaniline)	NA	-3	-3	-3	-3(-3*/-3.6**)	-3	-3	-3
Nitrobenzene	NA	4	-0.7	-0.7	-0.7(-0.7*/-1.5**)	-0.7	-0.7	-0.7
o-Nitrophenol (2-Nitrophenol)	NA	-0.3	-0.3	-0.3	-0.3(-0.3*/-7.9**)	-0.3	-0.3	-0.3
p-Nitrophenol (4-Nitrophenol)	NA	-5	-5	-5	-5(-5*/-4.5**)	-5	-5	-5
4-Nitroquinoline 1-oxide	NA	-9	-9	-9	-9(-9*/---**)	-9	-9	-9
N-Nitrosodi-n-butylamine	NA	-2	-2	-2	-2(-2*/---**)	-2	-2	-2
N-Nitrosodiethylamine	NA	-2	-2	-2	-2(-2*/---**)	-2	-2	-2
N-Nitrosodimethylamine	0.002[1/]	-0.004	-0.004	-0.004	-0.004(-0.004*/---**)	-0.004	20	-0 004
N-Nitrosodiphenylamine	NA	-0.4	-0.4	-0.4	-0.4(-0.4*/-1.7**)	-0.4	-0.4	-0.4
N-Nitrosodipropylamine	NA	-0.3	-0.3	-0.3	-0.3(-0.3*/-2.6**)	-0.3	-0.3	-0.3
N-Nitrosomethylethylamine	NA	-4	-4	-4	-4(-4*/---**)	-4	-4	-4

See last page of Table 20 for footnotes and explanations.

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TABLE 20

RESULTS OF ANALYSES FOR APPENDIX IX CONSTITUENTS, 1999
SEMI-VOLATILE ORGANICS

COMPOUNDS (µg/l)	MCL	WELL IDENTIFIER/DATE SAMPLED						
		SH-4 02-08-99	RS-8 02-07-99	HAR-7 02-08-99	HAR-14 02-09-99	HAR-15 02-09-99	HAR-16 02-08-99	HAR-17 02-08-99
N-Nitrosomorpholine	NA	-2	-2	-2	-2(-2*/---**)	-2	-2	-2
N-Nitrosopiperidine	NA	-2	-2	-2	-2(-2*/---**)	-2	-2	-2
N-Nitrosopyrrolidine	NA	-2	-2	-2	-2(-2*/---**)	-2	-2	-2
5-Nitro-o-toluidine	NA	-3	-3	-3	-3(-3*/---**)	-3	-3	-3
Parathion (ethyl parathion)	30[1/]	-0.2	-0.2	-0.2	-0.2(---*/---**)	-0.2	-0.2	-0.2
Pentachlorobenzene	NA	-2	-2	-2	-2(-2*/---**)	-2	-2	-2
Pentachloroethane	NA	-3	-3	-3	-3(-3*/---**)	-3	-3	-3
Pentachloronitrobenzene	0.9[1/]	-2	-2	-2	-2(-2*/---**)	-2	-2	-2
Pentachlorophenol	1	-3	-3	-3	-3(-3*/-5.1**)	-3	-3	-3
Phenacetin	NA	-2	-2	-2	-2(-2*/---**)	-2	-2	-2
Phenanthrene	NA	-0.2	-0.2	-0.2	-0.2(-0.2*/-5.1**)	-0.2	-0.2	-0.2
Phenol	5[1/]	0.7[3/]	-0.4	-0.4	-0.4(-0.4*/-8.3**)	-0.4	0.4[3/]	-0.4
p-Phenylenediamine (4-Phenylenediamine)	NA	-60	-60	-60	-60(-60*/---**)	-60	-60	-60
Phorate	NA	-0.2	-0.2	-0.2	-0.2(---*/---**)	-0.2	-0.2	-0.2
2-Picoline	NA	-2	-2	-2	-2(-2*/---**)	-2	-2	-2
Pronamide	NA	-3	-3	-3	-3(-3*/---**)	-3	-3	-3
Pyrene	NA	-0.3	-0.3	-0.3	-0.3(-0.3*/-1.1**)	-0.3	-0.3	-0.3
Pyridine	NA	-3	-3	-3	-3(-3*/---**)	-3	-3	-3
Safrole	NA	-2	-2	-2	-2(-2*/---**)	-2	-2	-2
1,2,4,5-Tetrachlorobenzene	NA	-2	-2	-2	-2(-2*/---**)	-2	-2	-2
2,3,4,6-Tetrachlorophenol	NA	-2	-2	-2	-0.2(-0.2*/---**)	-2	-2	-2
Tetra ethyldithiopyrophosphate (Sulfotepp)	NA	-0.2	-0.2	-0.2	-0.2(---*/---**)	-0.2	-0.2	-0.2
o-Toluidine (2-Toluidine)	NA	-4	-4	-4	-4(-4*/---**)	-4	-4	-4
1,2,4-Trichlorobenzene	70	-0.8	-0.8	-0.8	-0.8(-0.8*/-1.2**)	-0.8	-0.8	-0.8
2,4,5-Trichlorophenol	NA	-0.6	-0.6	-0.6	-0.6(-0.6*/-6.7**)	-0.6	-0.6	-0.6
2,4,6-Trichlorophenol	NA	0.7	-0.4	-0.4	-0.4(-0.4*/-6.9**)	-0.4	-0.4	-0.4
0,0,0-Triethylphosphorothioate (Thionazin)	NA	-2	-2	-2	-2(-2*/---**)	-2	-2	-2
sym-Trinitrobenzene (1,3,5-Trinitrobenzene)	NA	-1	-1	-1	-1(-1*/---**)	-1	-1	-1

See last page of Table 20 for footnotes and explanations.
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TABLE 20

FOOTNOTES AND EXPLANATIONS

(-) = Less than; value indicated is the detection limit.
(---) = Not analyzed.
µg/l = Micrograms per liter.
mg/l = Milligrams per liter.
1/ = California Action Level.
2/ = The following dioxins and furans were detected:

Sample	Compound	Concentration (picograms/liter)
HAR-15	1,2,3,4,6,7,8-HpCDD	84
	Total HpCDD	190
	OCDD	920
	Total HpCDF	54

3/ = Compound also detected in method blank.

NA = Not available; no MCL promulgated.

ND = None detected, no method detection limit available. PCDD and PCDF analyses were subcontracted to Alta Analytical Laboratory.

MCL = Maximum Contaminant Level, California primary drinking water standard (California Department of Health Services, *California Drinking Water Primary and Secondary Maximum Contaminant Levels, Action Levels, and Unregulated Chemicals Requiring Monitoring*, June 30, 1998) unless otherwise indicated.

TABLE 21

RESULTS OF ANALYSES FOR CONSTITUENTS OF CONCERN DETECTION MONITORING PROGRAM, 1999

Constituents of Concern (µg/l)	Background Wells				
	RD-6	RD-13	RD-48A	RD-48B	RD-48C
Acetone	-4	-4	-4	-4	-4
Carbon Tetrachloride	-0.2	-0.2	-0.2	-0.2	-0.2
Methylene Chloride	-0.4	-0.4	-0.4	-0.4	-0.4
Chloroform	-0.4	-0.4	-0.4	-0.4	-0.4
Freon 11 (Trichlorofluoromethane)	-0.2	-0.2	-0.2	-0.2	-0.2
Freon 113	-0.2	-0.2	-0.2	-0.2	-0.2
1,1,1-Trichloroethane	-0.2	-0.2	-0.2	-0.2	-0.2
1,1,2-Trichloroethane	-0.3	-0.3	-0.3	-0.3	-0.3
1,4-Dioxane	-50	-50	-50	-50	-50
N-nitrosodimethylamine	-2	-2	-2	-2	-2
Nitrobenzene	-2	-2	-2	-2	-2
Methyl Ethyl Ketone	-1	-1	-1	-1	-1
Benzene	-0.3	-0.3	-0.3	-0.3	-0.3
Toluene	-0.3	-0.3	-0.3	-0.3	-0.3
m- and p-Xylenes	-0.4	-0.4	-0.4	-0.4	-0.4
o-Xylene	-0.2	-0.2	-0.2	-0.2	-0.2
Ethylbenzene	-0.2	-0.2	-0.2	-0.2	-0.2
Tetrachloroethylene	-0.4	-0.4	-0.4	-0.4	-0.4
Trichloroethylene	-0.4	-0.4	-0.4	-0.4	-0.4
cis-1,2-Dichloroethylene	-0.2	-0.2	-0.2	-0.2	-0.2
trans-1,2-Dichloroethylene	-0.2	-0.2	-0.2	-0.2	-0.2
1,1-Dichloroethylene	-0.2	-0.2	-0.2	-0.2	-0.2
Vinyl Chloride	-0.3	-0.3	-0.3	-0.3	-0.3
1,2-Dichloroethane	-0.3	-0.3	-0.3	-0.3	-0.3
1,1-Dichloroethane	-0.2	-0.2	-0.2	-0.2	-0.2
Naturally Occurring Constituents of Concern					
Fluoride (mg/l)	**0.67**	**0.52**	**0.39**	**0.30**	**0.31**
Formaldehyde (mg/l)	**0.3**	-0.02	**0.06**	**-0.02**	**0.1**
Ammonia (mg/l)	-0.12	**0.17**	**0.24**	**0.13**	**0.24**
Nitrate (mg/l)	-0.9	**6.33**	-0.9	-0.9	-0.9

mg/l = milligrams per liter.
µg/l = micrograms per liter.
(-) = less than; numerical value represents the method detection limit.

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TABLE 22
CONSTITUENTS OF CONCERN
POST-CLOSURE PERMITS
GROUNDWATER MONITORING PROGRAM

Acetone	Methyl ethyl ketone
Carbon Tetrachloride	Benzene
Methylene Chloride	Toluene
Chloroform	Xylenes
Fluoride	Ethylbenzene
Freon 11 (trichlorofluoromethane)	Tetrachloroethylene (PCE)
Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)	Trichloroethylene (TCE)
Formaldehyde	cis-1,2-Dichloroethylene (cis-1,2-DCE)
Ammonia	trans-1,2-Dichloroethylene (trans-1,2-DCE)
Nitrate	1,1-Dichloroethylene (1,1-DCE)
1,1,1-Trichloroethane (1,1,1-TCA)	Vinyl chloride
1,1,2-Trichloroethane (1,1,2-TCA)	1,2-Dichloroethane (1,2-DCA)
1,4-dioxane	1,1-Dichloroethane (1,1-DCA)
N-nitrosodimethylamine (NDMA)	
Nitrobenzene	
1,3-Dinitrobenzene[1/]	

NOTE: These constituents of concern are designated in the Post-Closure Permits issued by the California Department of Toxic Substances Control, *Hazardous Waste Facility Post-Closure Permit, Regional Permit Nos. PC-94/95-3-02 and PC-94-95-3-03.* The permits were issued specifically for Areas I and III, and Area II, respectively, at the SSFL Facility and have an effective date of May 11, 1995.

1/ The compound 1,3-dinitrobenzene was added to the list of constituents of concern after it was detected in the SH-4 sample analyzed for Appendix IX parameters in May 1995.

TABLE 23

DETECTION MONITORING PROGRAM
POST-CLOSURE PERMITS

BACKGROUND WELLS[1/]		
RD-6	RD-48B	
RD-13	RD-48C	
RD-48A		
DETECTION MONITORING WELLS[2/]		
RD-5B	RD-43B	RD-62
RD-5C	RD-43C	WS-4A
RD-16	RD-44	
RD-32	RD-51C	
RD-37	RD-52C	
RD-39A	RD-58B	
RD-43A	RD-61	

NOTE: These wells are designated in the Post-Closure Permits issued by the California Department of Toxic Substances Control, *Hazardous Waste Facility Post-Closure Permit, Regional Permit Nos. PC-94/95-3-02 and PC-94-95-3-03*. The permits were issued specifically for Areas I and III, and Area II, respectively, at the SSFL Facility and have an effective date of May 11, 1995.

1/ Well RD-47 was deleted as a background well following the fourth quarter of 1995, due to detectable occurrences of the compound cis-1,2-dichloroethylene. Well RD-47 was moved to the list of evaluation monitoring wells in 1996.

2/ Well RD-58C was moved to the evaluation monitoring program following the first quarter 1996, due to detectable occurrences of vinyl chloride. Wells RD-61 and RD-62 were added to the list of detection monitoring wells in 1996.

TABLE 24

EVALUATION MONITORING PROGRAM
POST-CLOSURE PERMITS

POINT OF COMPLIANCE WELLS			
SH-4	HAR-14	HAR-16	HAR-17
RS-8	HAR-15	HAR-7	
EVALUATION MONITORING WELLS			
SH-3	RD-3	RD-47[1/]	HAR-22
SH-11	RD-5A	RD-51A, B	HAR-23
RS-1	RD-10	RD-52A, B	HAR-24
RS-7	RD-26	RD-55A, B	HAR-26
RS-10	RD-36A, B, C	RD-58A	HAR-27
RS-11	RD-38A	RD-58C[2/]	
RS-13	RD-40	RD-60	
RS-19	RD-45A, B, C	HAR-3	
RS-21	RD-46A	HAR-11	
INTERIM CORRECTIVE ACTION WELLS			
ECL French-drain	ES-17	RD-1	HAR-18
ES-1	ES-21	RD-2	
ES-3	ES-22	RD-4	
ES-4	ES-23	RD-9	
ES-5	ES-24	WS-5	
ES-6	ES-26	WS-6	
ES-7	ES-27	WS-9	
ES-11	ES-30	WS-9A	
ES-14	ES-32	HAR-4	

NOTE: These wells are designated in the Post-Closure Permits issued by the California Department of Toxic Substances Control, *Hazardous Waste Facility Post-Closure Permit, Regional Permit Nos. PC-94/95-3-02 and PC-94-95-3-03*. The permits were issued specifically for Areas I and III, and Area II, respectively, at the SSFL Facility and have an effective date of May 11, 1995.

1/ Well RD-47 was added to this list following the fourth quarter of 1995, due to detectable occurrences of the compound cis-1,2-dichloroethylene. It was previously designated as a background well.

2/ Well RD-58C was added to this list following the first quarter of 1996, due to detectable occurrences of vinyl chloride. It was previously designated as a detection monitoring well.

APPENDIX A

WATER LEVEL AND WATER QUALITY HYDROGRAPHS

APPENDIX A

WATER LEVEL AND WATER QUALITY HYDROGRAPHS

FIGURE

A-1 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL SH-3

A-2 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL SH-4

A-3 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL SH-11

A-4 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL RS-1

A-5 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL RS-7

A-6 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL RS-8

A-7 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL RS-10

A-8 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL RS-11

A-9 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL RS-13

A-10 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL RS-19

A-11 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL RS-21

A-12 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL RS-28

A-13 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL RS-30

A-14 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL ES-1

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FIGURE

A-15 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL ES-3

A-16 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL ES-4

A-17 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL ES-5

A-18 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL ES-6

A-19 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL ES-7

A-20 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL ES-11

A-21 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL ES-14

A-22 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL ES-17

A-23 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL ES-21

A-24 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL ES-22

A-25 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL ES-23

A-26 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL ES-24

A-27 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL ES-26

A-28 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL ES-27

A-29 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL ES-30

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FIGURE

A-30 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL ES-32

A-31 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL HAR-3

A-32 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL HAR-4

A-33 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL HAR-11

A-34 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL HAR-14

A-35 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL HAR-15

A-36 WATER LEVEL AND WATER QUALITY HYDROGRAPH, SHALLOW ZONE WELL HAR-27

A-37 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-1

A-38 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-2

A-39 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-3

A-40 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-4

A-41 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-5A

A-42 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-5B

A-43 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-5C

A-44 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-6

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A-45 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-7

A-46 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-8

A-47 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-9

A-48 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-10

A-49 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-11

A-50 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-12

A-51 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-13

A-52 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-14

A-53 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-15

A-54 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-16

A-55 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-17

A-56 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-18

A-57 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-19

A-58 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-20

A-59 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-21

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FIGURE

A-60 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-22

A-61 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-23

A-62 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-24

A-63 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-25

A-64 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-26

A-65 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-27

A-66 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-28

A-67 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-29

A-68 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-30

A-69 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-31

A-70 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-32

A-71 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-33A

A-72 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-33B

A-73 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-33C

A-74 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-34A

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FIGURE

A-75 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-34B

A-76 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-34C

A-77 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-35A

A-78 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-36A

A-79 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-36B

A-80 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-36C

A-81 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-36D

A-82 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-37

A-83 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-38A

A-84 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-39A

A-85 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-39B

A-86 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-40

A-87 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-41A

A-88 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-41B

A-89 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-41C

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A-90 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-42

A-91 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-43A

A-92 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-43B

A-93 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-43C

A-94 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-44

A-95 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-45A

A-96 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-45B

A-97 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-45C

A-98 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-46A

A-99 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-47

A-100 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-48A

A-101 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-48B

A-102 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-48C

A-103 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-49A

A-104 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-49B

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FIGURE

A-105 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-49C

A-106 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-50

A-107 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-51A

A-108 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-51B

A-109 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-51C

A-110 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-52A

A-111 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-52B

A-112 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-52C

A-113 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-53

A-114 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-54A

A-115 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-54B

A-116 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-54C

A-117 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-55A

A-118 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-55B

A-119 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-56A

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FIGURE

A-120 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-56B

A-121 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-57

A-122 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-58A

A-123 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-58B

A-124 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-58C

A-125 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-59A

A-126 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-59B

A-127 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-59C

A-128 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-60

A-129 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-61

A-130 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-62

A-131 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-63

A-132 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-64

A-133 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-65

A-134 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-66

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FIGURE

A-135 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-67

A-136 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-68A

A-137 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-68B

A-138 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-69

A-139 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-70

A-140 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-71

A-141 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-72

A-142 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL RD-73

A-143 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL HAR-1

A-144 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL HAR-5

A-145 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL HAR-6

A-146 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL HAR-7

A-147 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL HAR-8

A-148 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL HAR-16

A-149 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL HAR-17

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FIGURE

A-150 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL HAR-18

A-151 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL HAR-19

A-152 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL HAR-20

A-153 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL HAR-21

A-154 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL HAR-22

A-155 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL HAR-23

A-156 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL HAR-24

A-157 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL HAR-25

A-158 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL HAR-26

A-159 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL WS-4A

A-160 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL WS-5

A-161 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL WS-6

A-162 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL WS-7

A-163 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL WS-8

A-164 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL WS-9

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FIGURE

A-165 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL WS-9A

A-166 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL WS-9B

A-167 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL WS-11

A-168 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL WS-12

A-169 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL WS-13

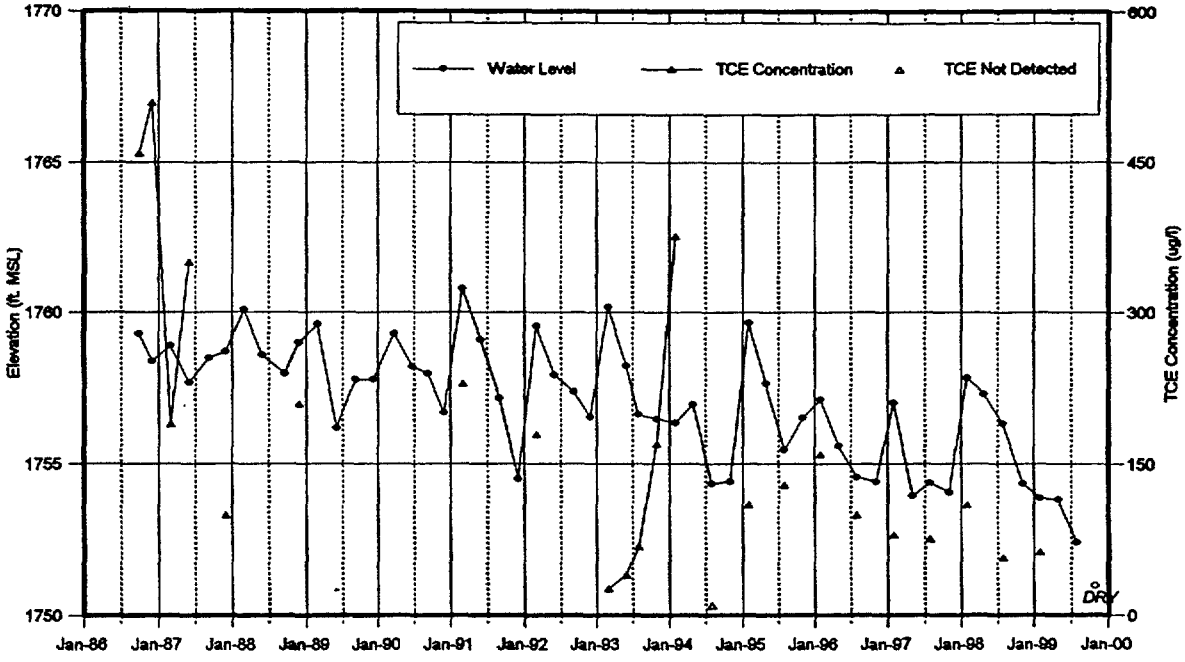
A-170 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL WS-14

A-171 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL WS-SP

A-172 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL OS-24

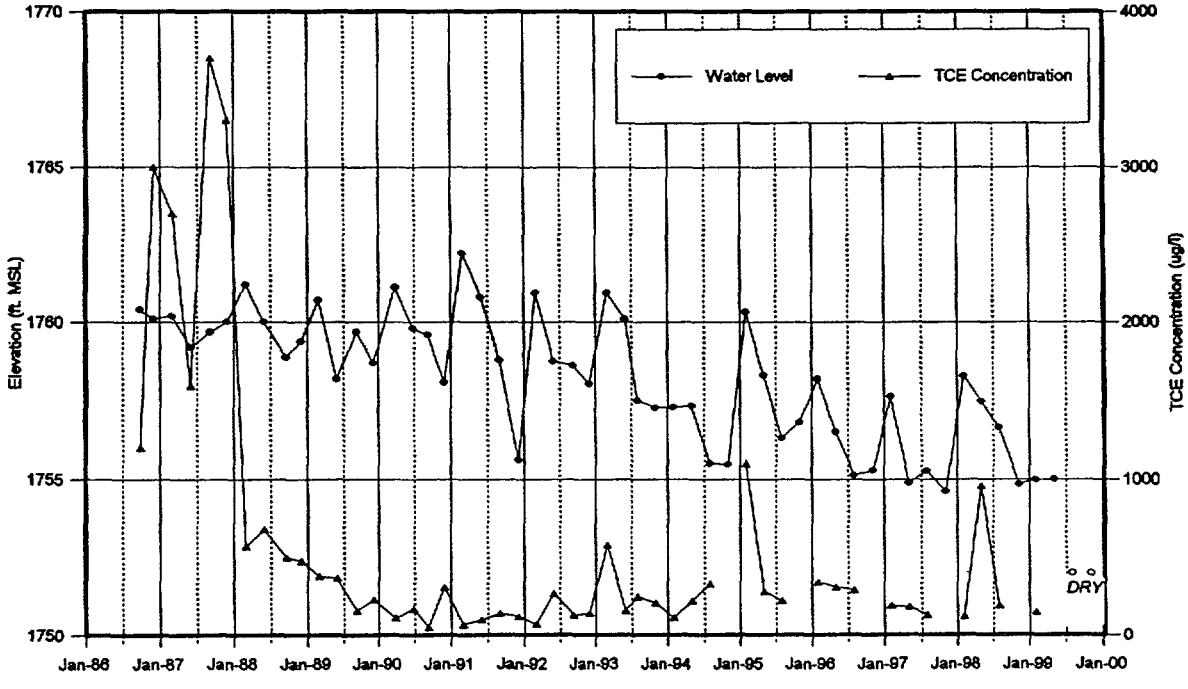
A-173 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL OS-25

A-174 WATER LEVEL AND WATER QUALITY HYDROGRAPH, CHATSWORTH FORMATION WELL OS-26



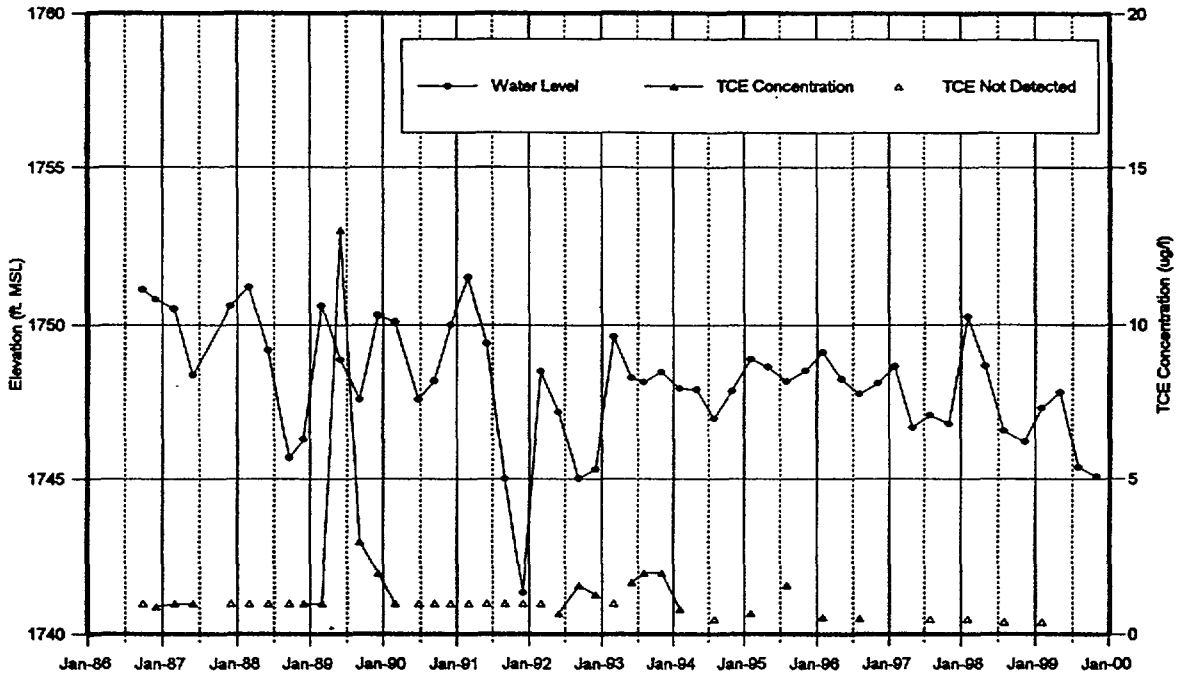
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well SH-3

Figure A-1



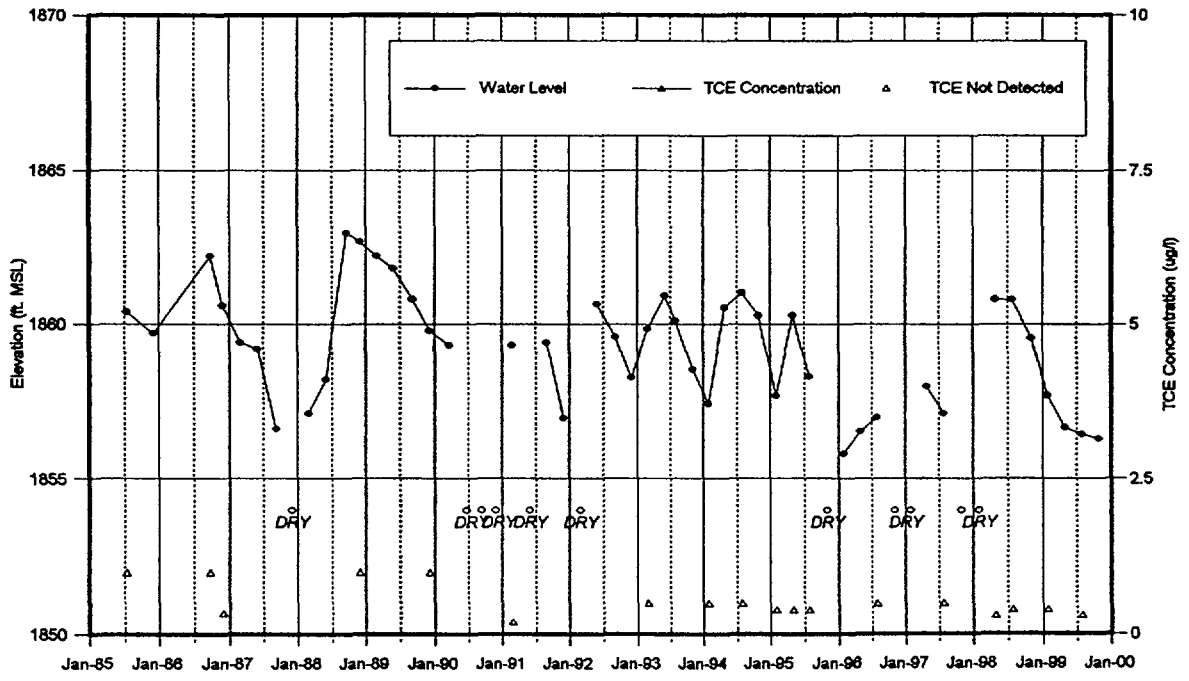
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well SH-4

Figure A-2



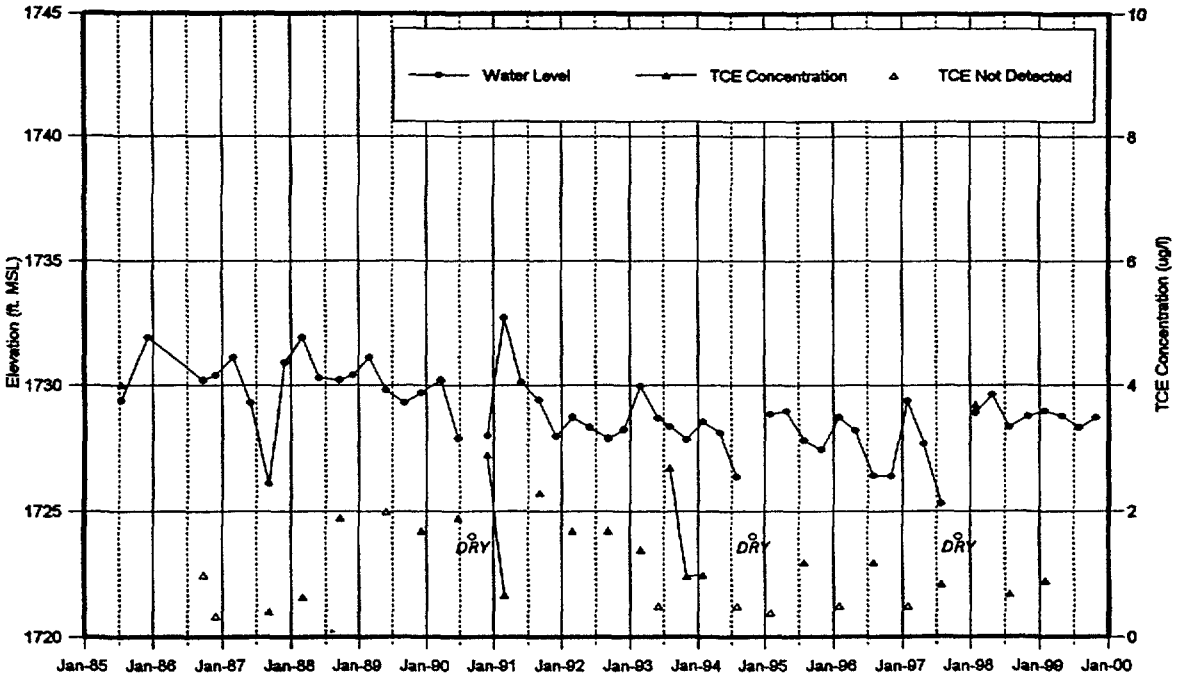
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well SH-11

Figure A-3



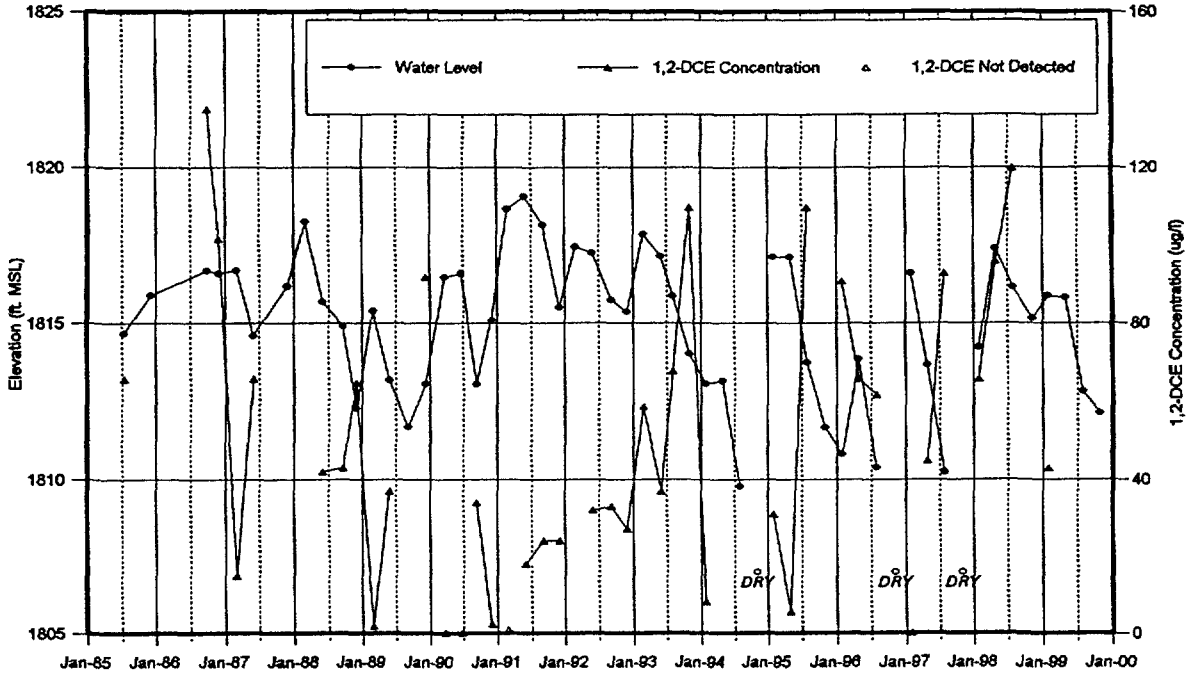
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well RS-1

Figure A-4



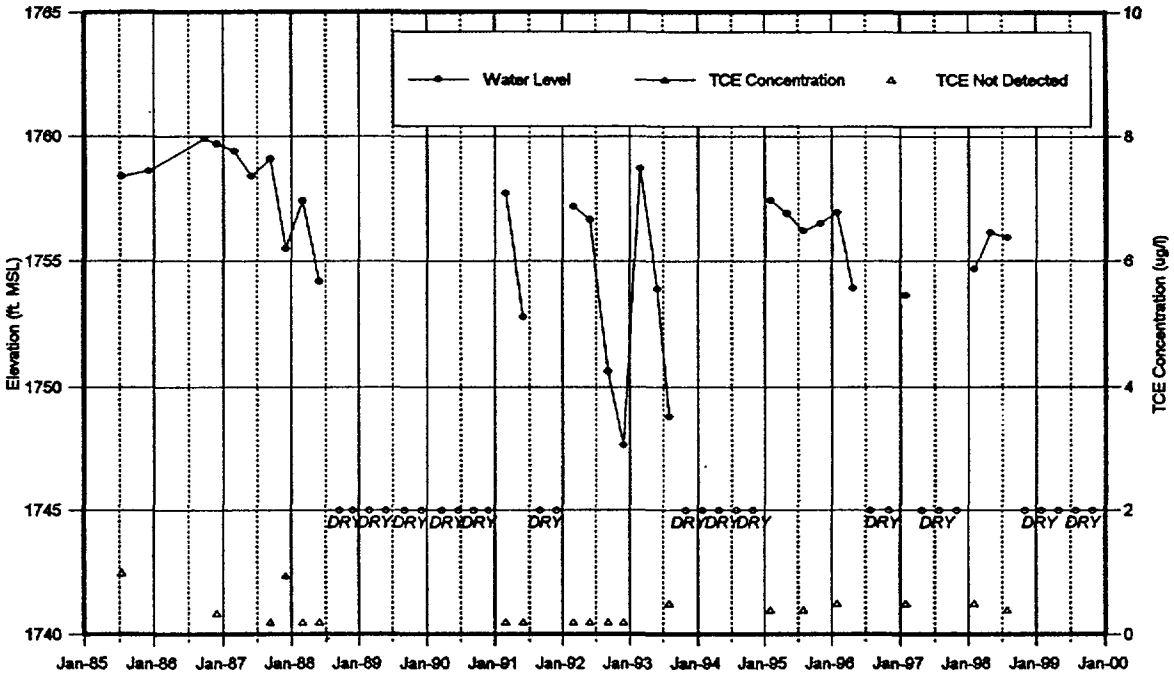
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well RS-7

Figure A-5



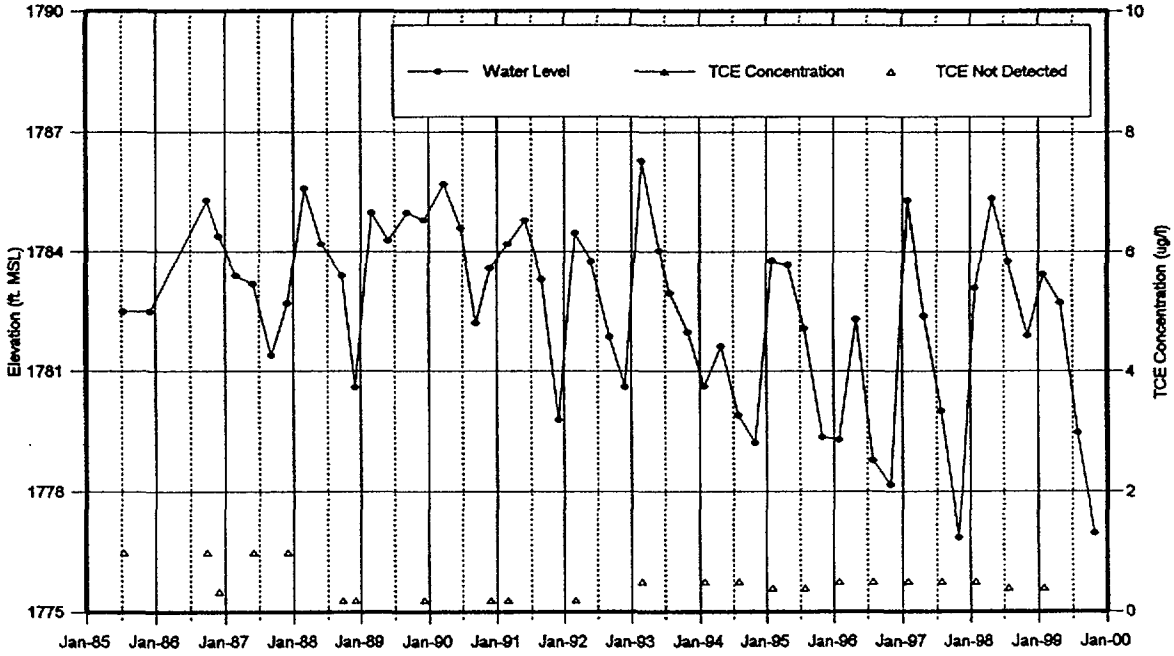
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well RS-8

Figure A-6



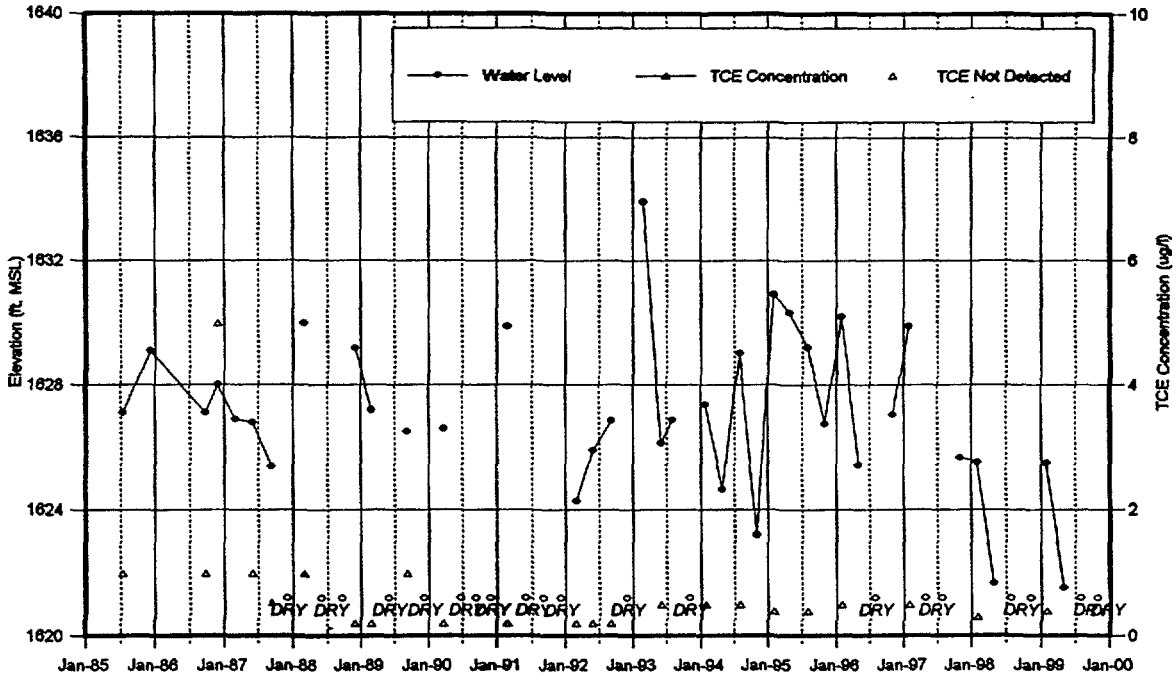
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well RS-10

Figure A-7



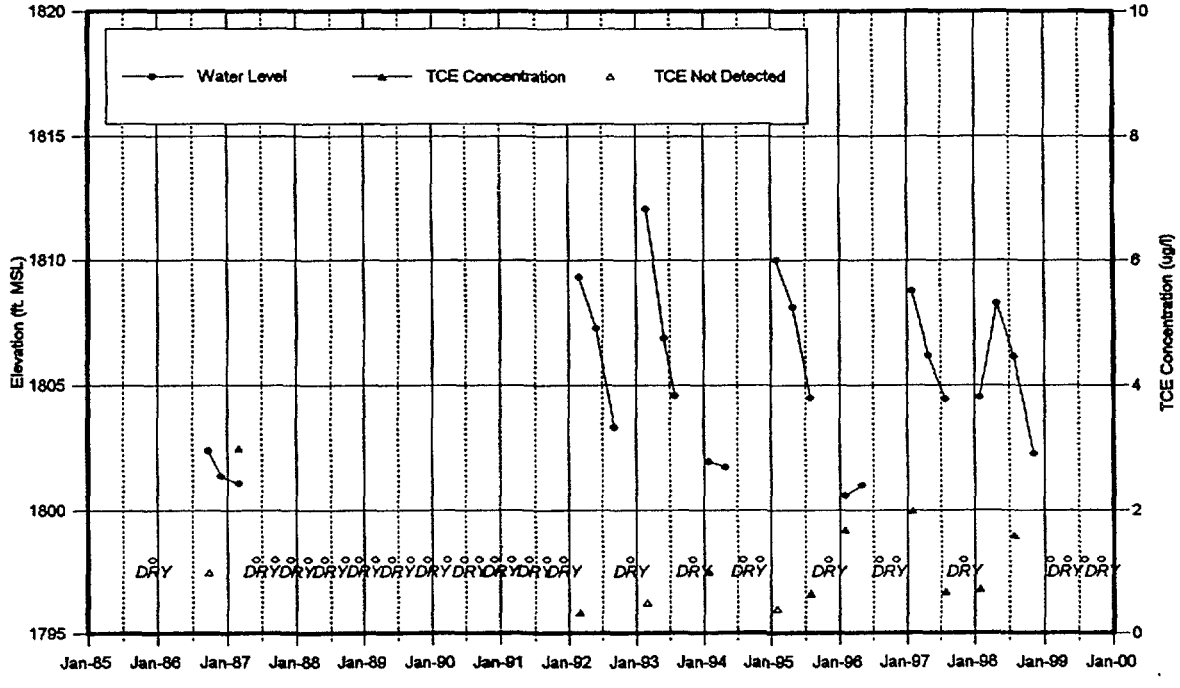
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well RS-11

Figure A-8



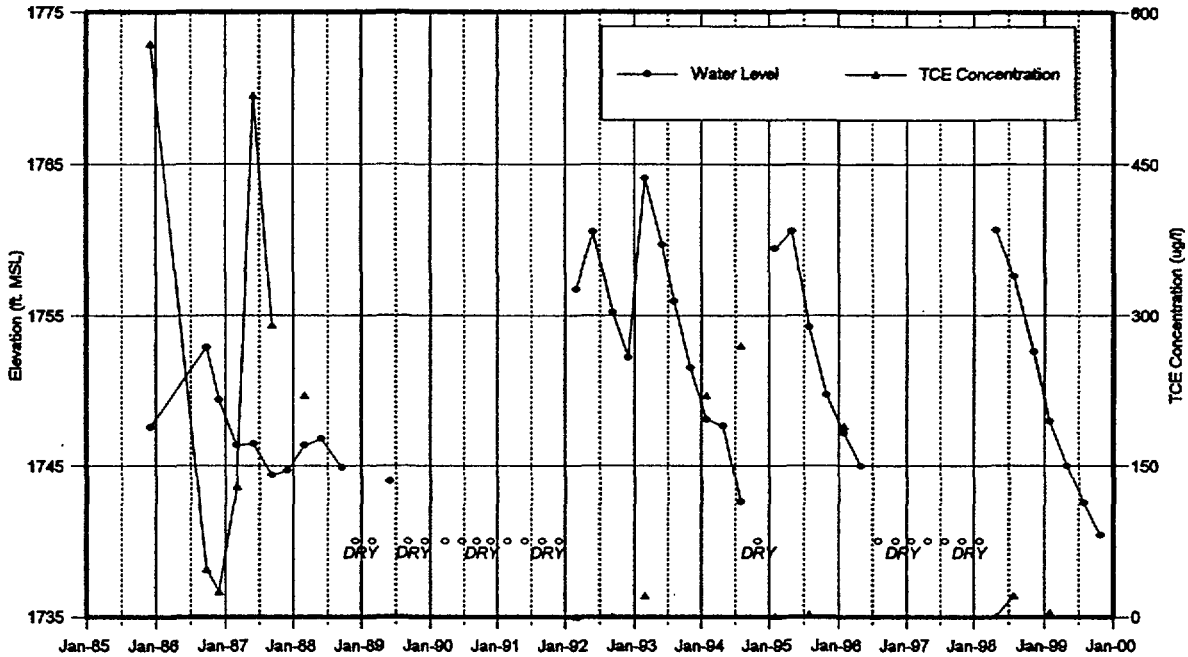
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well RS-13

Figure A-9



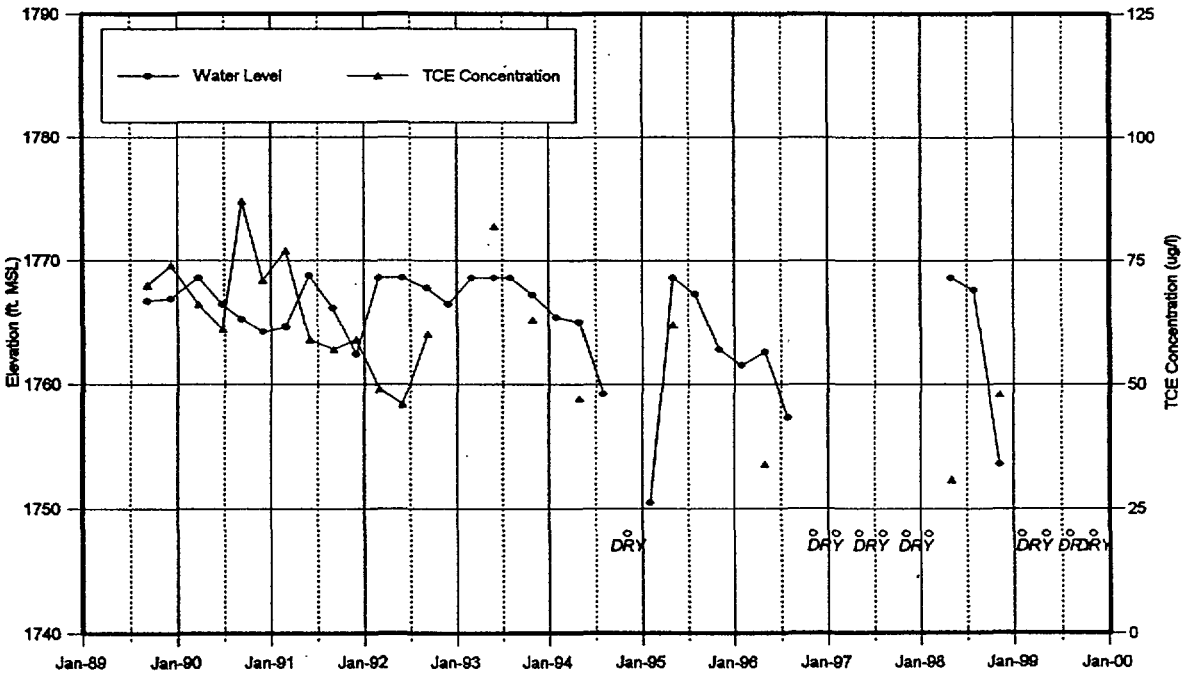
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well RS-19

Figure A-10



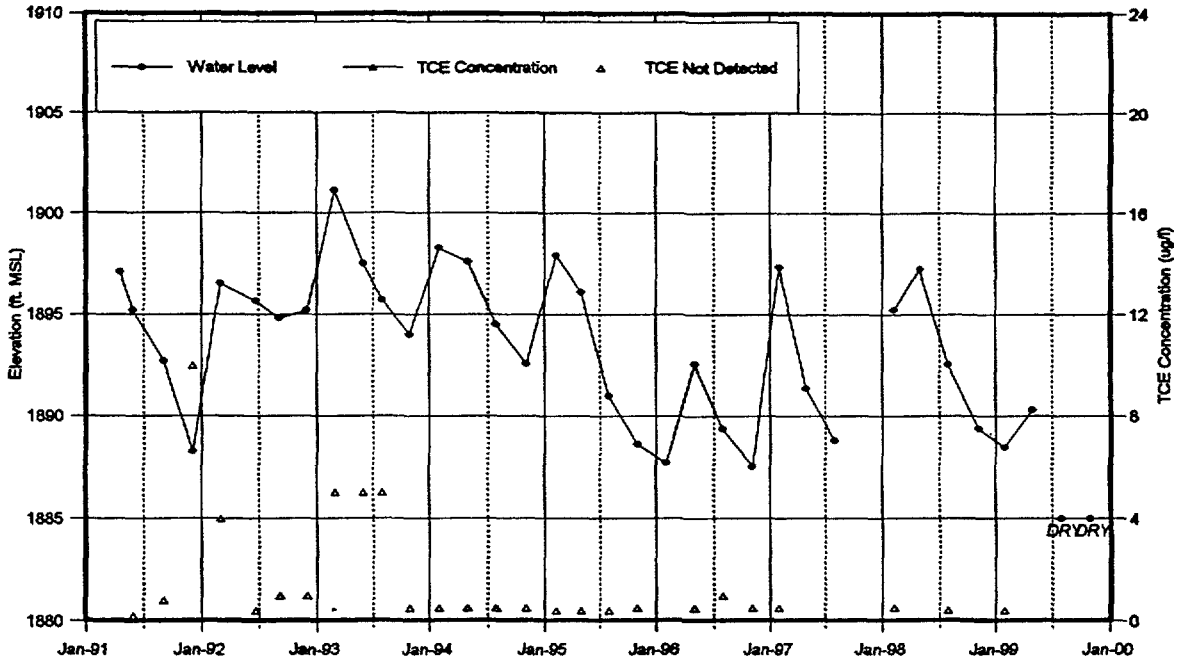
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well RS-21

Figure A-11



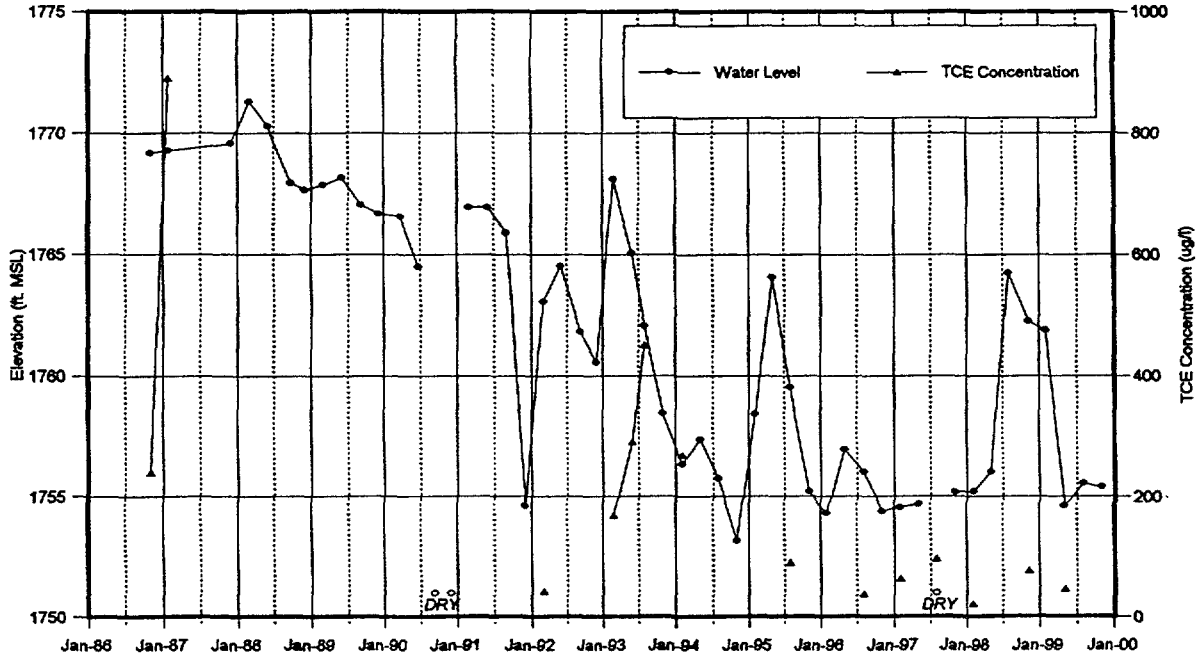
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well RS-28

Figure A-12



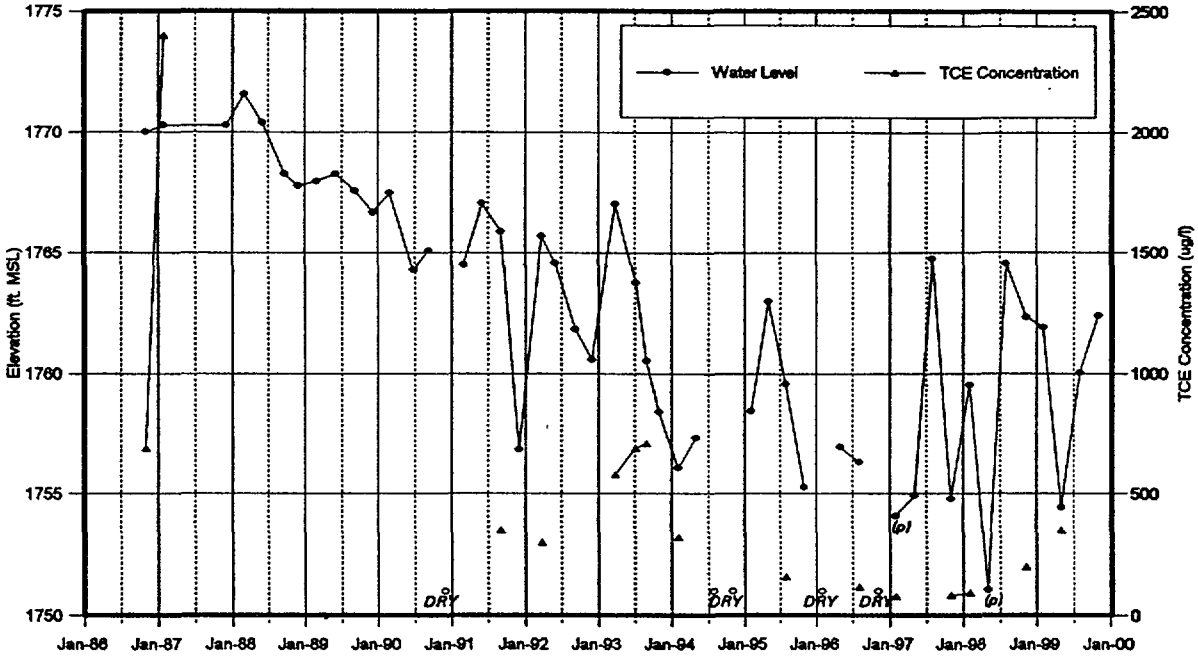
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well RS-30

Figure A-13



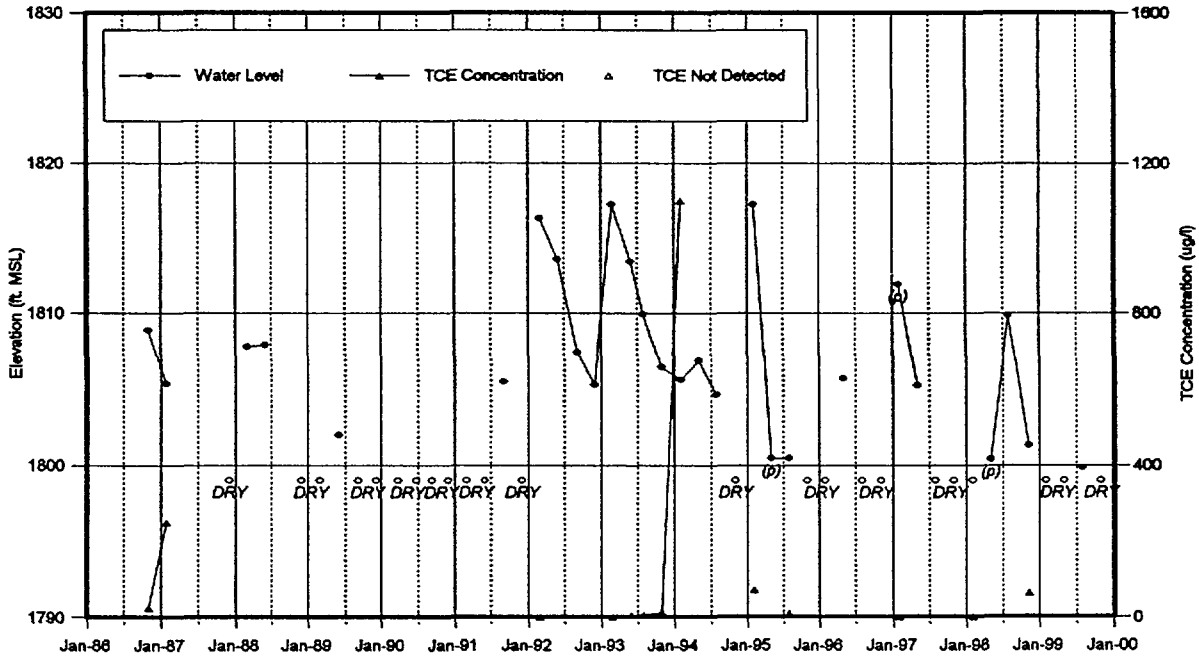
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well ES-1

Figure A-14



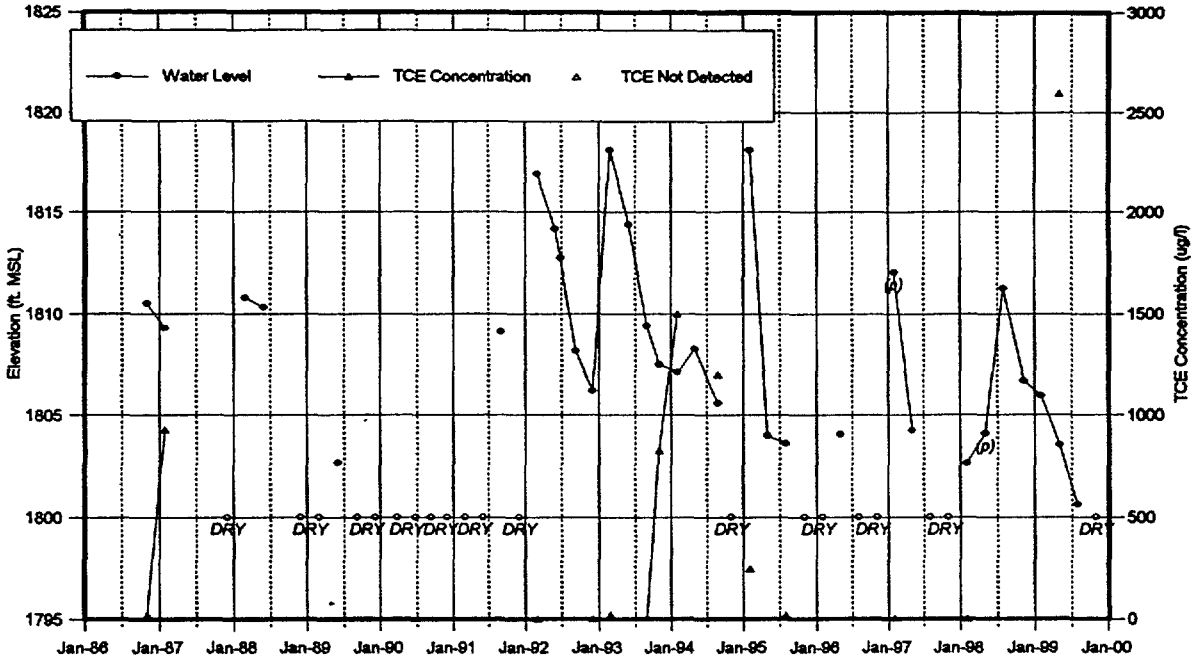
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well ES-3

Figure A-15



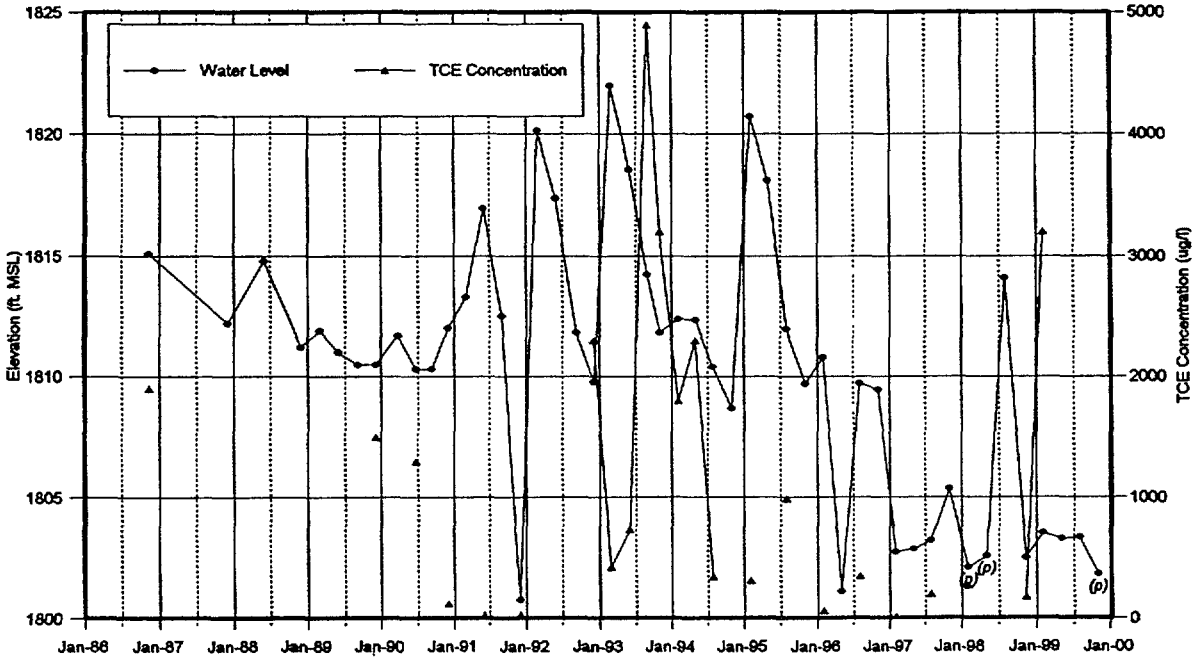
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well ES-4

Figure A-16



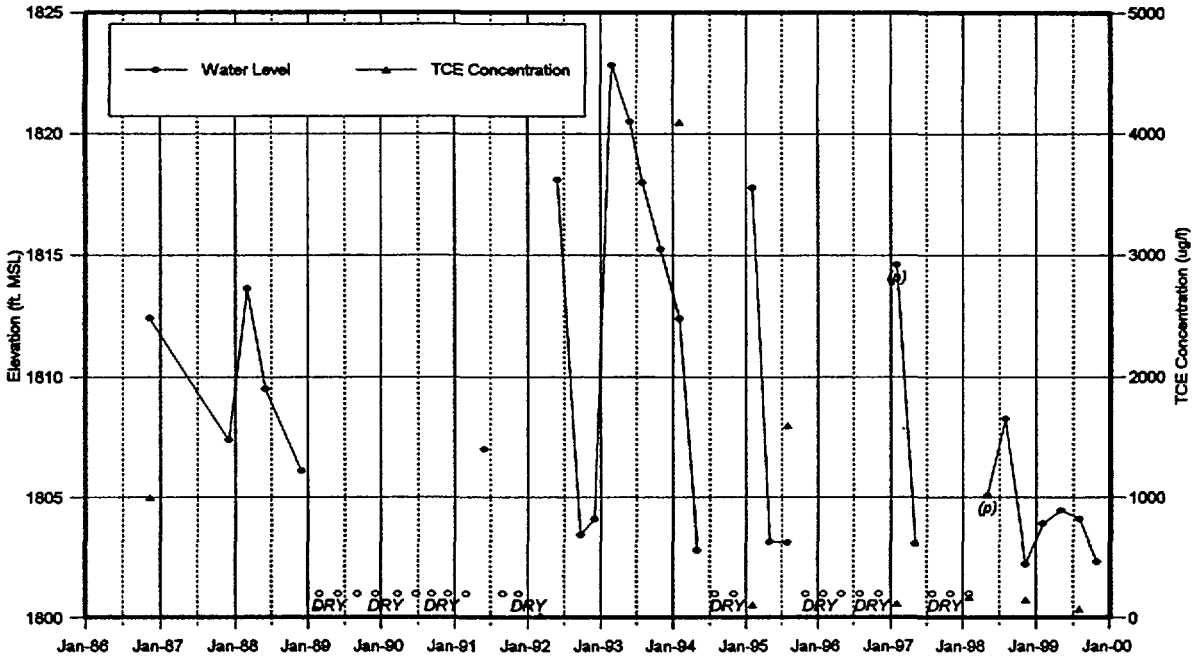
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well ES-5

Figure A-17



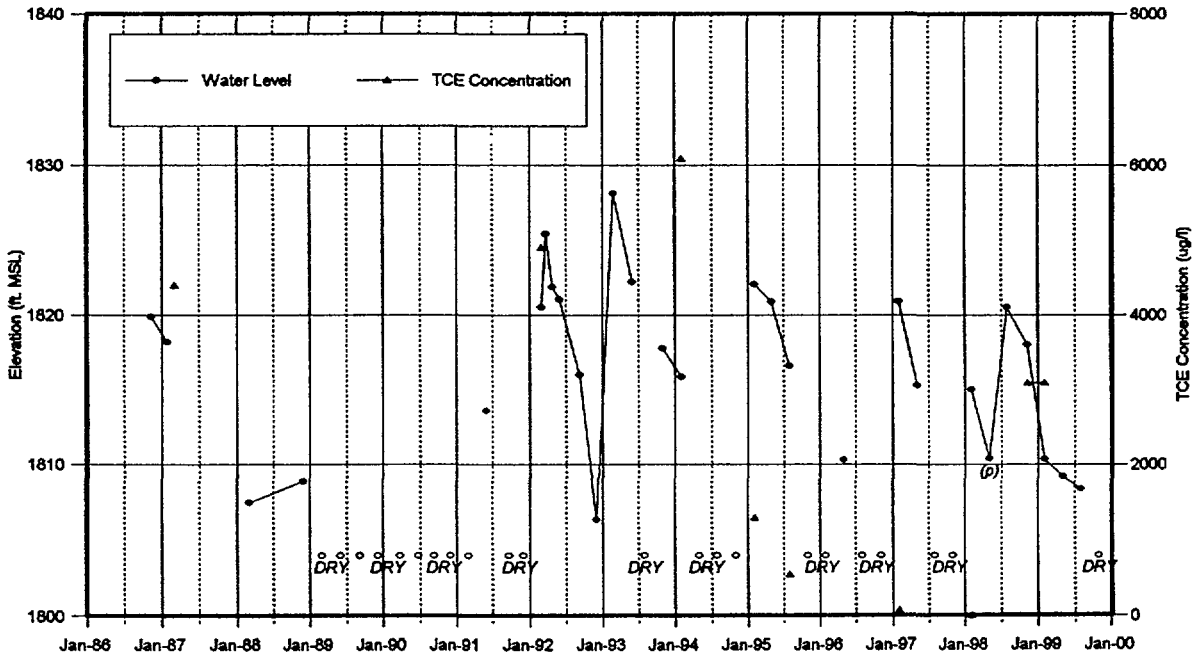
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well ES-6

Figure A-18



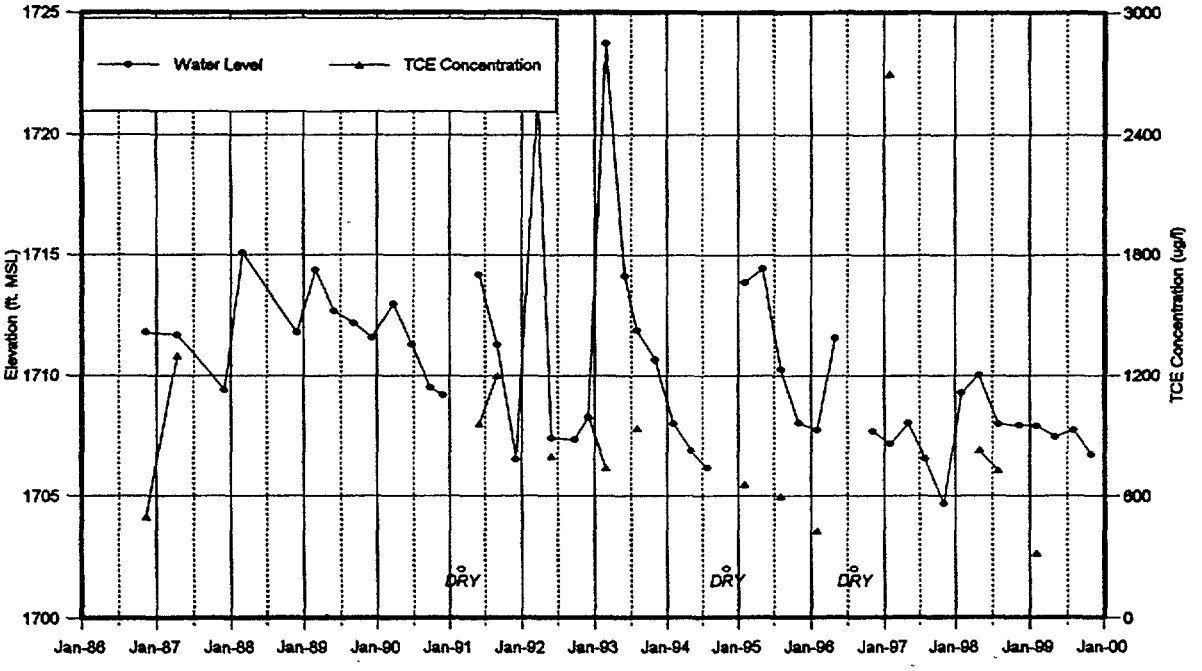
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well ES-7

Figure A-19



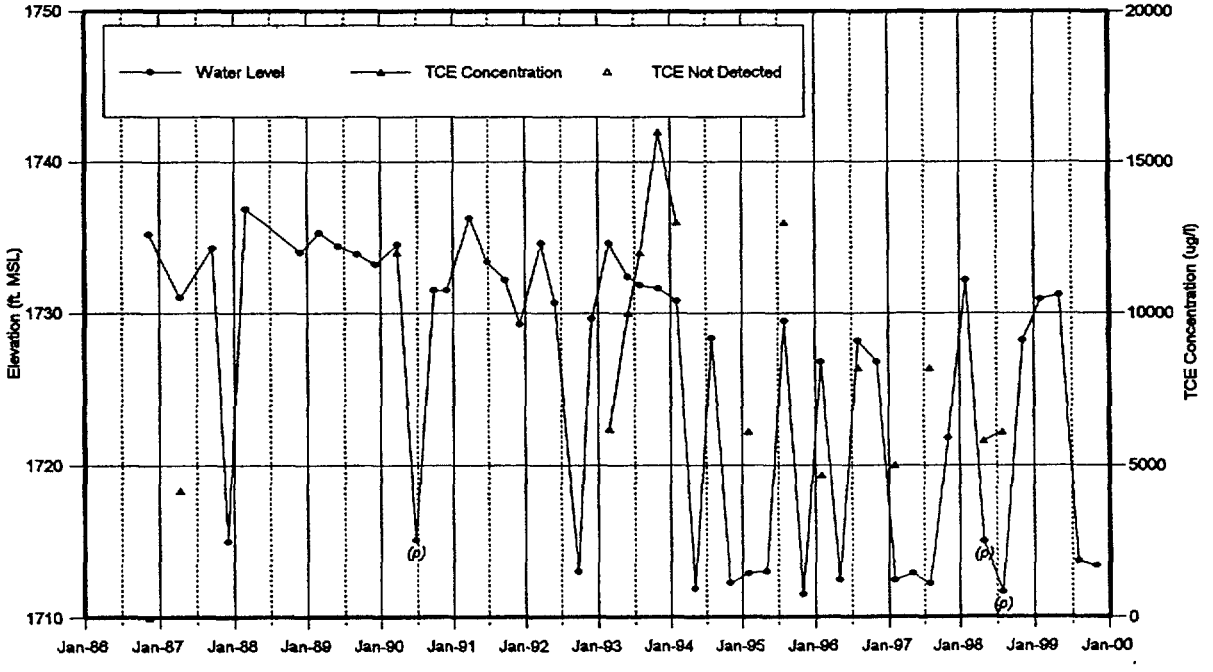
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well ES-11

Figure A-20



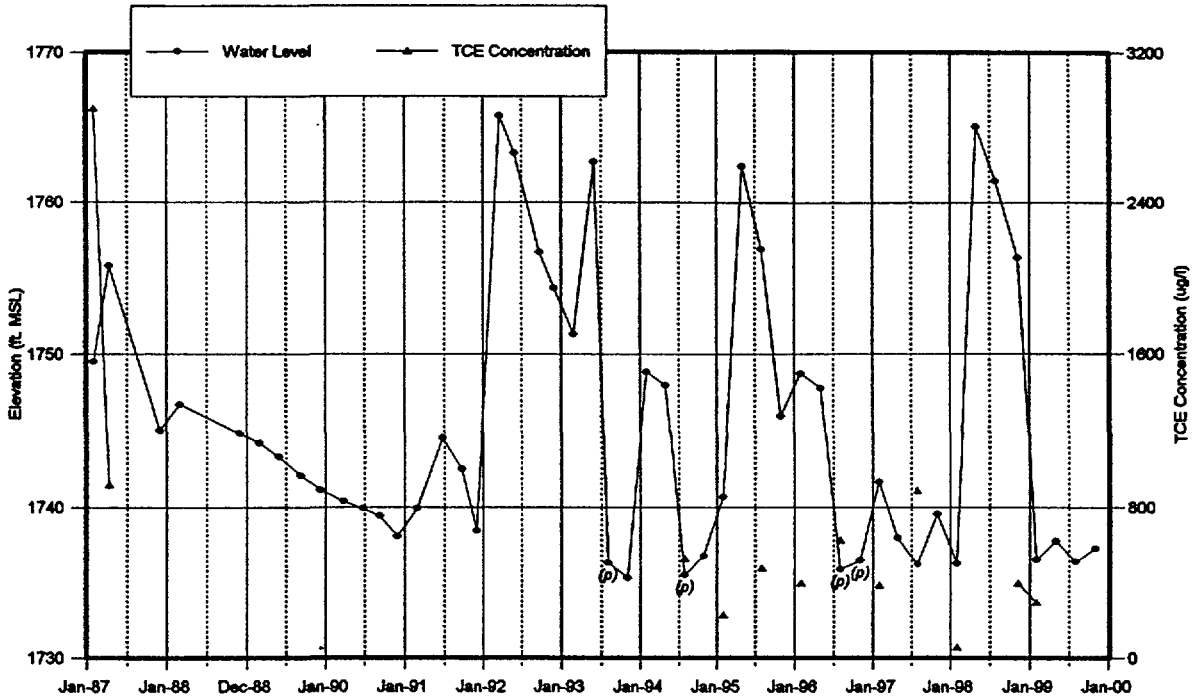
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well ES-14

Figure A-21



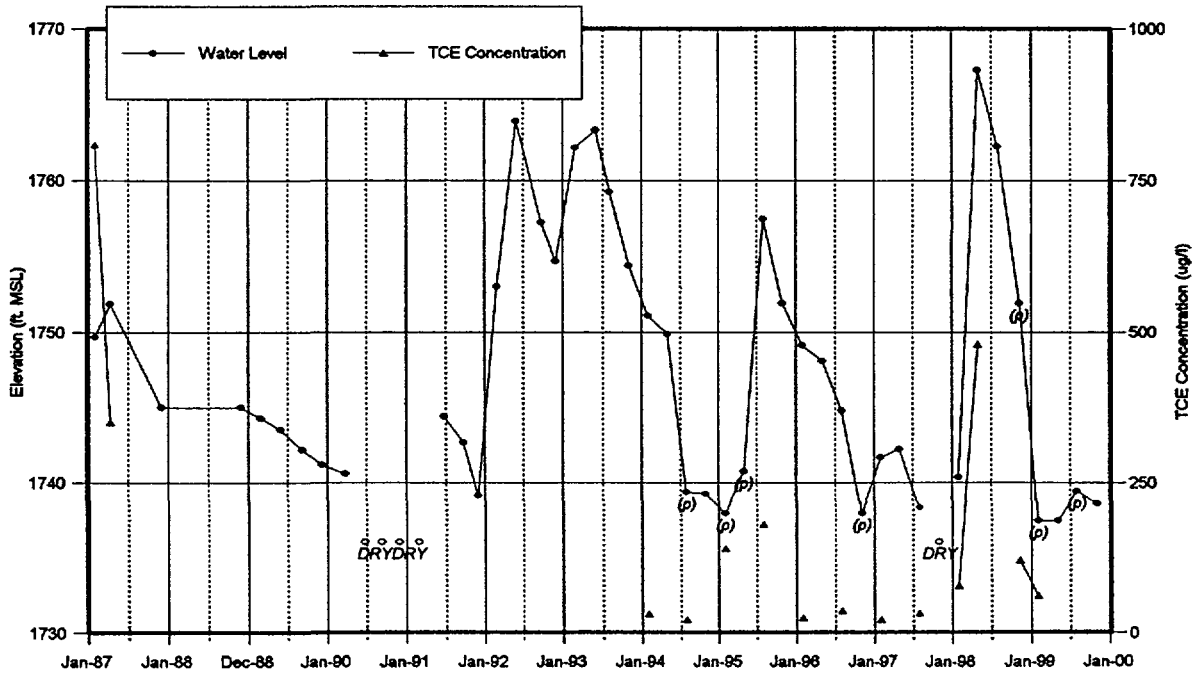
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well ES-17

Figure A-22



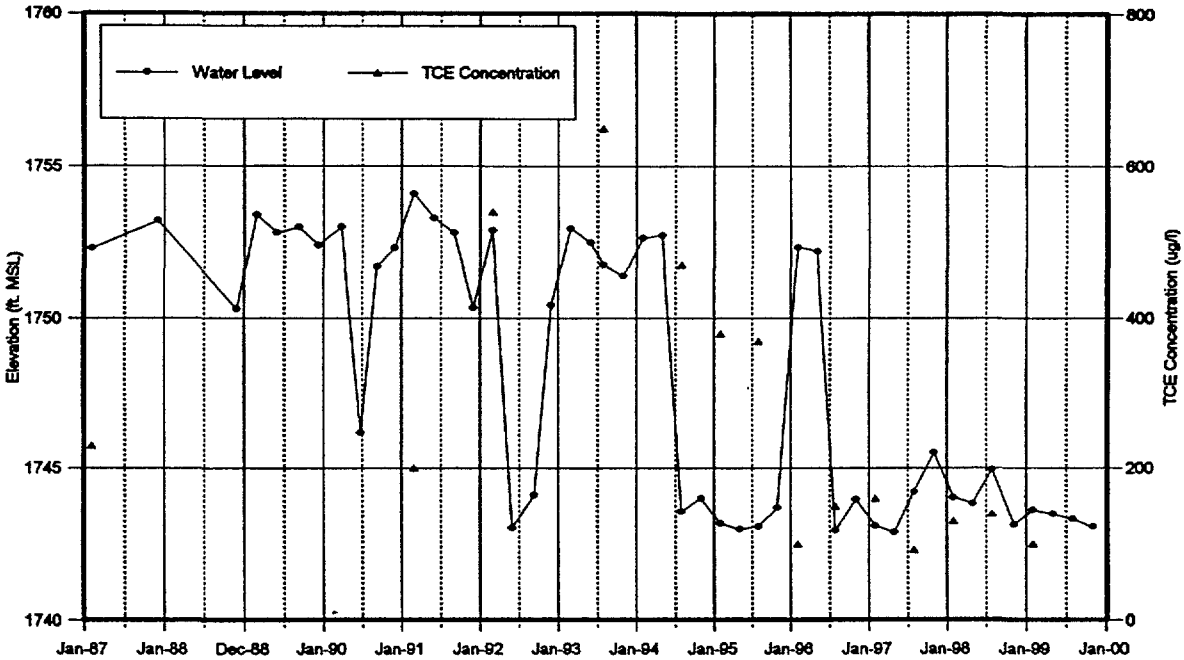
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well ES-21

Figure A-23



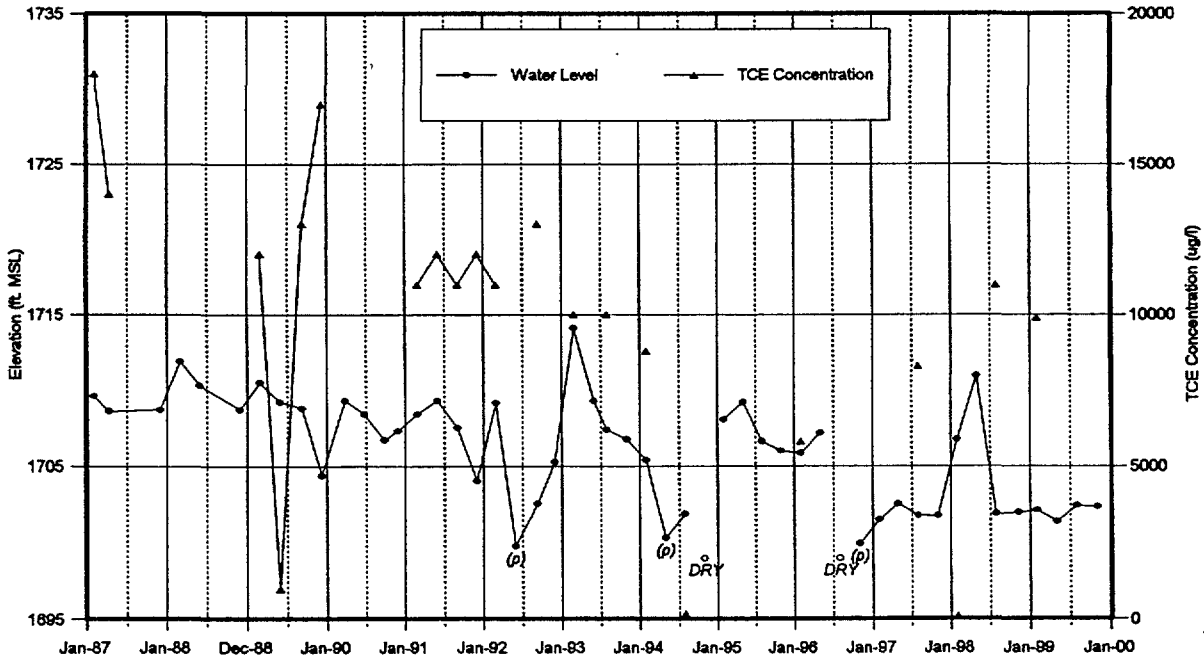
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well ES-22

Figure A-24



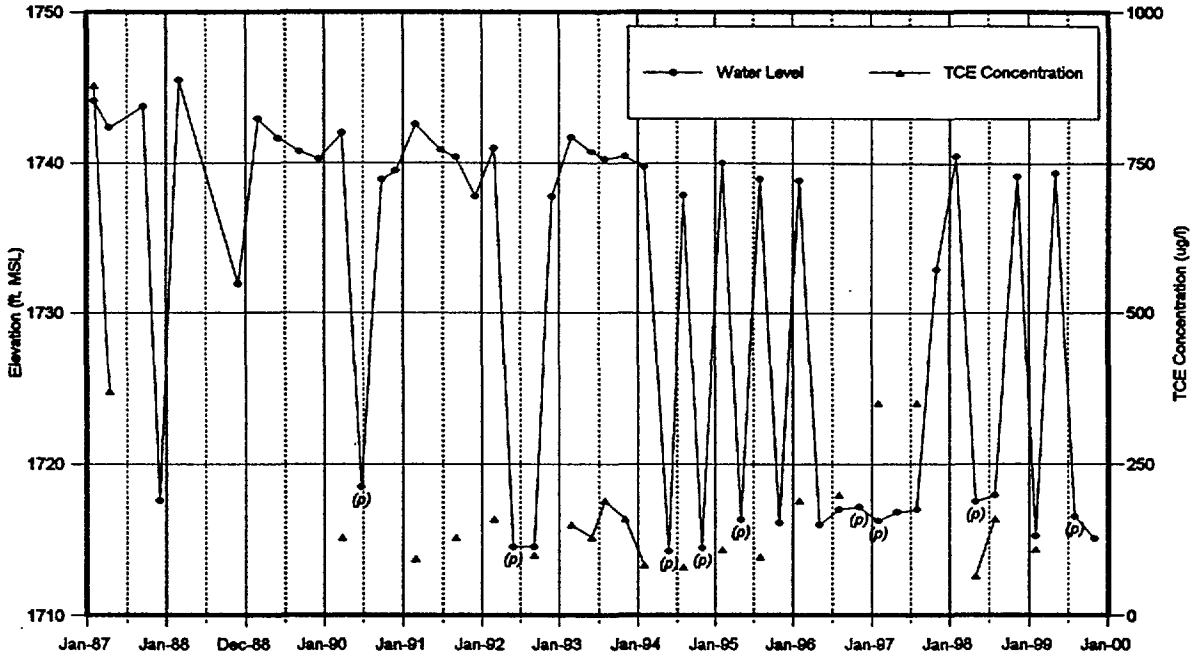
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well ES-23

Figure A-25



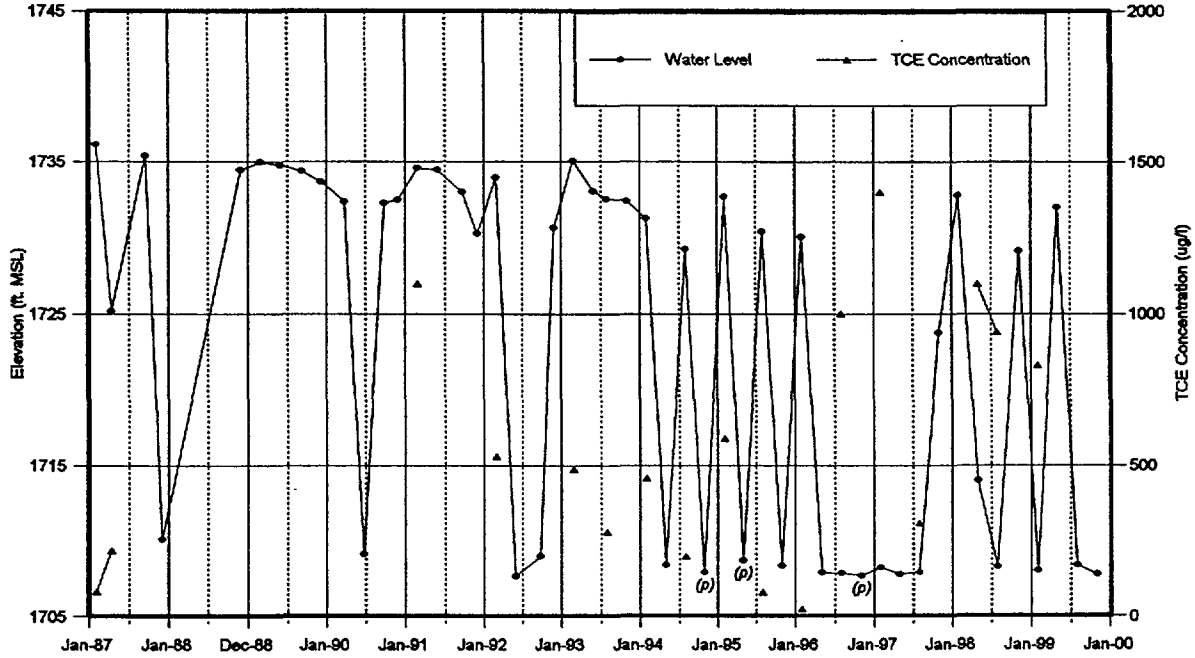
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well ES-24

Figure A-26



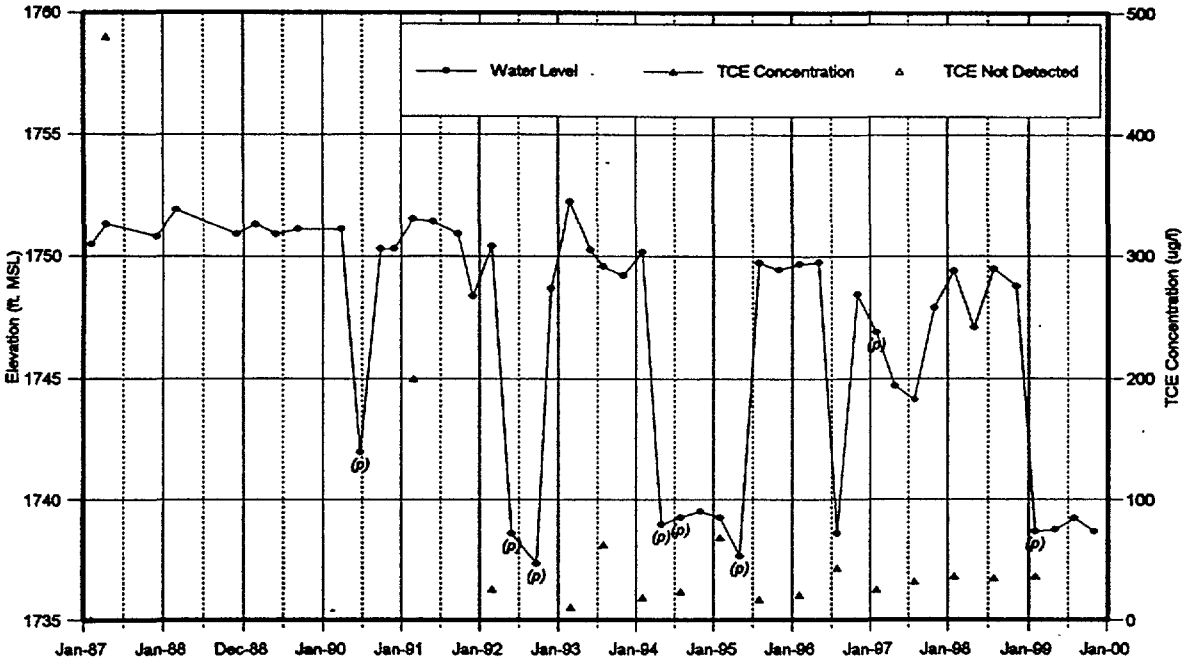
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well ES-26

Figure A-27



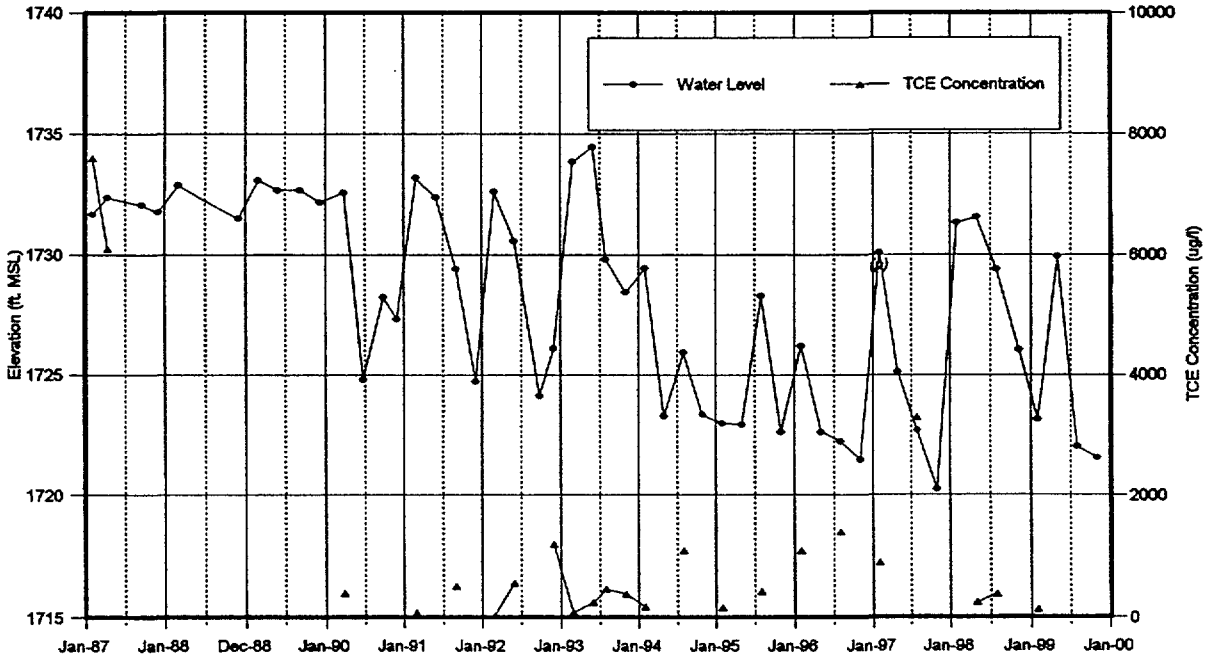
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well ES-27

Figure A-28



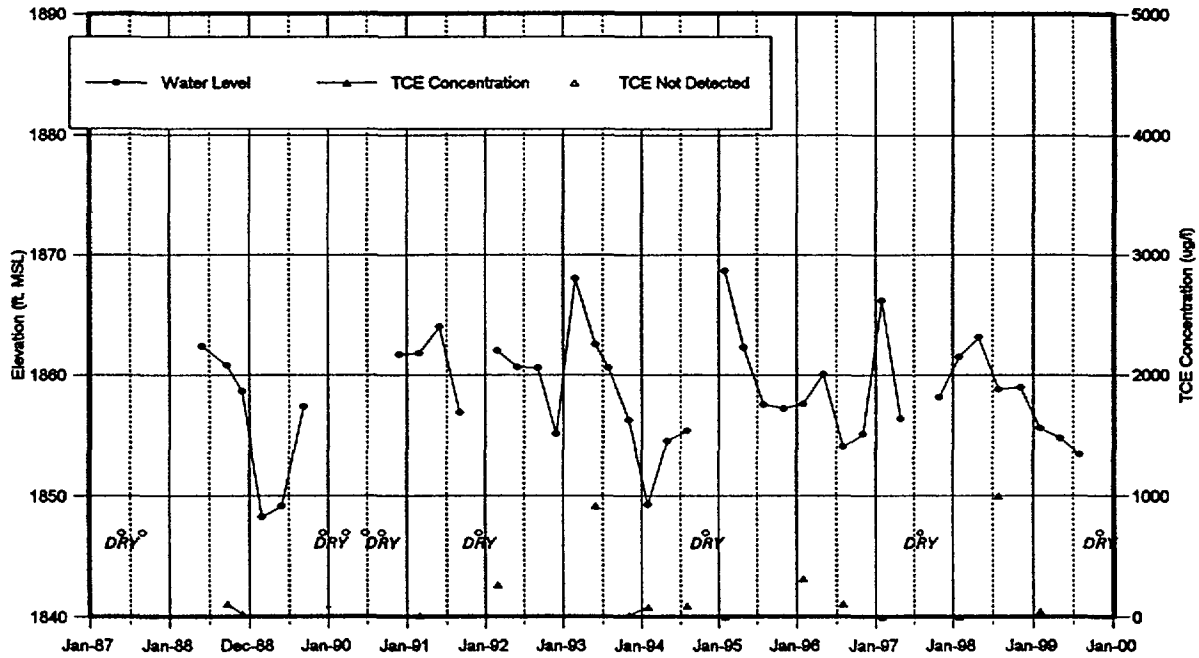
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well ES-30

Figure A-29



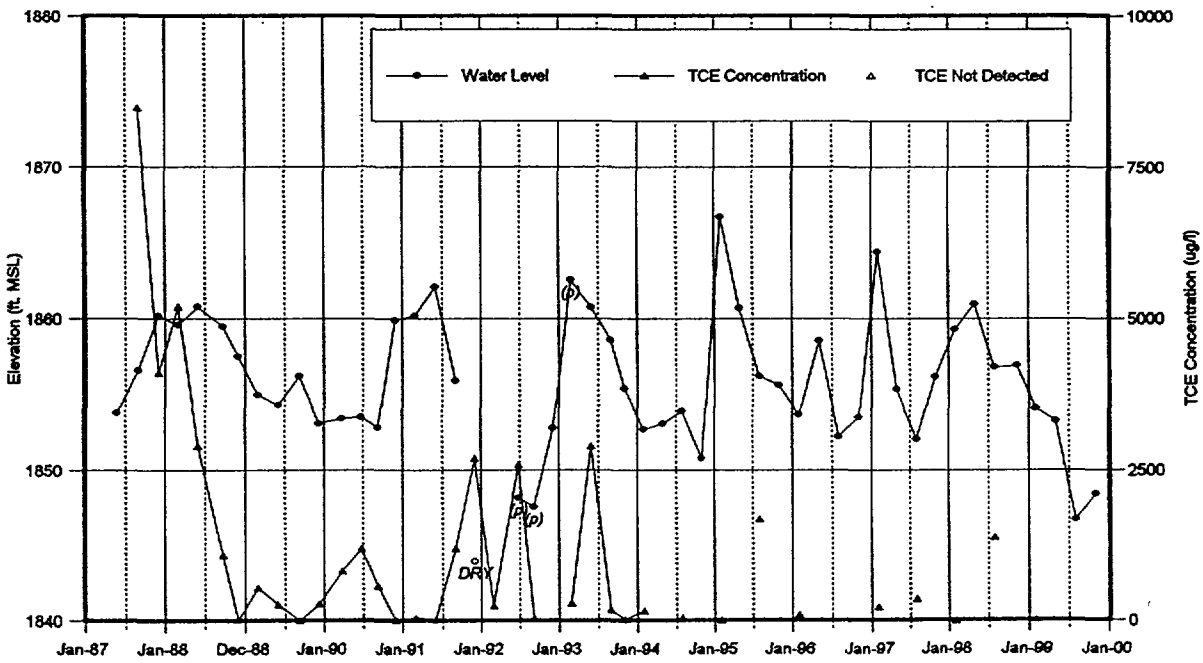
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well ES-32

Figure A-30



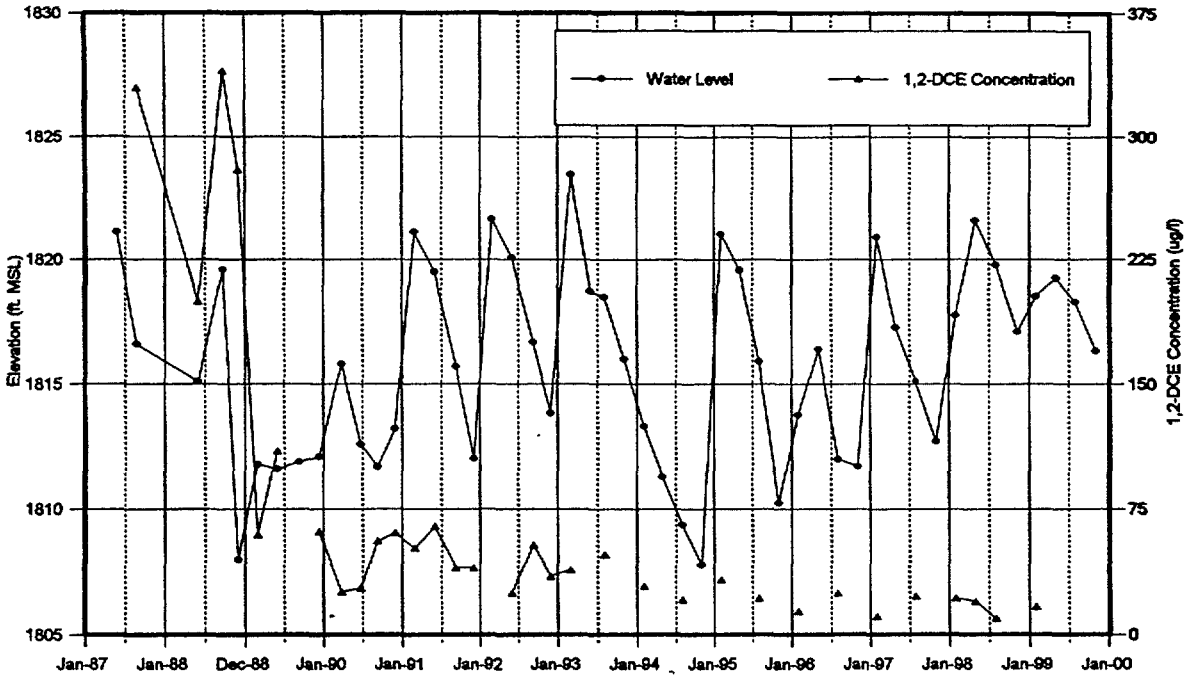
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well HAR-3

Figure A-31



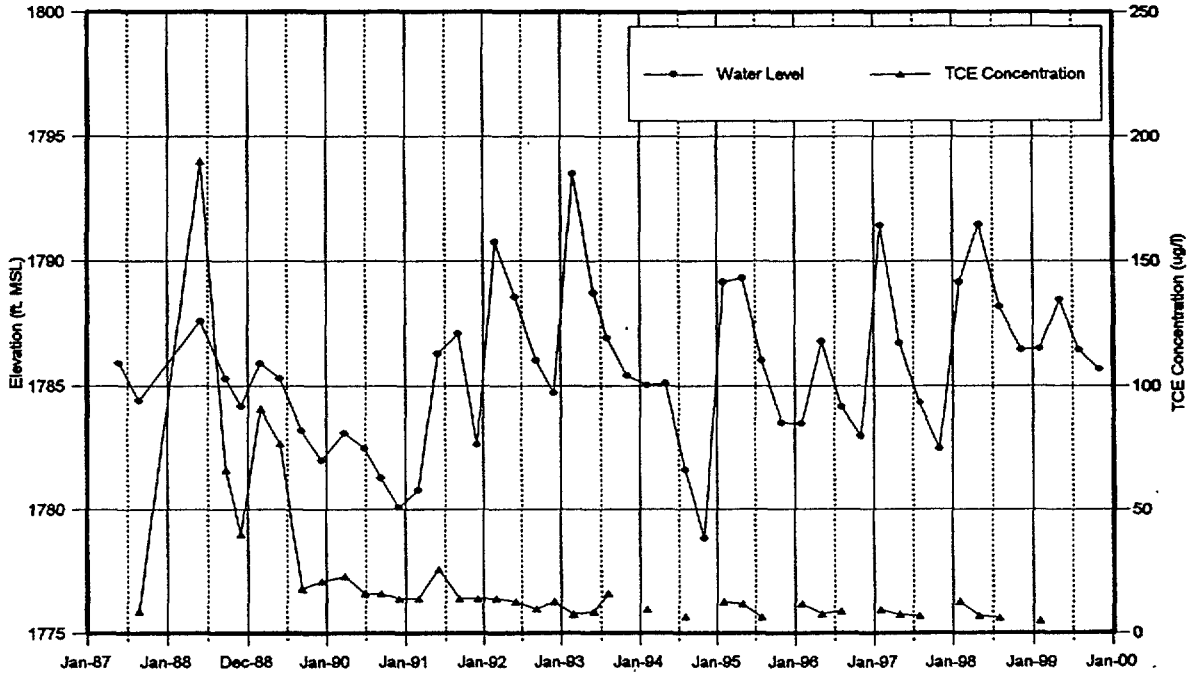
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well HAR-4

Figure A-32



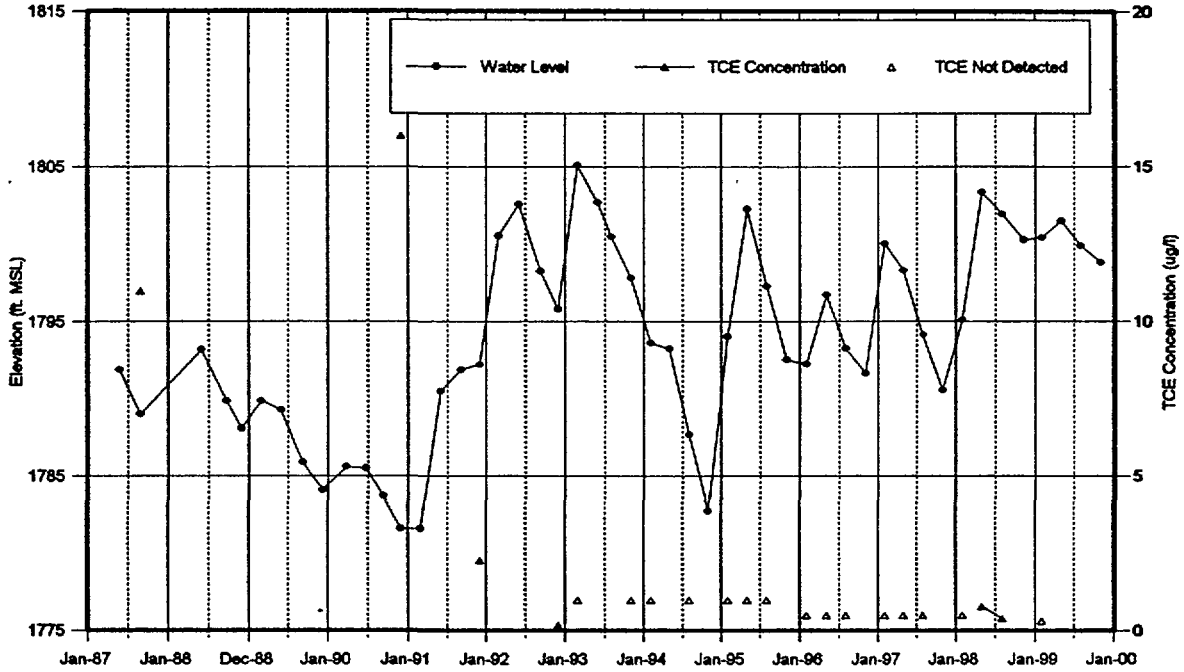
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well HAR-11

Figure A-33



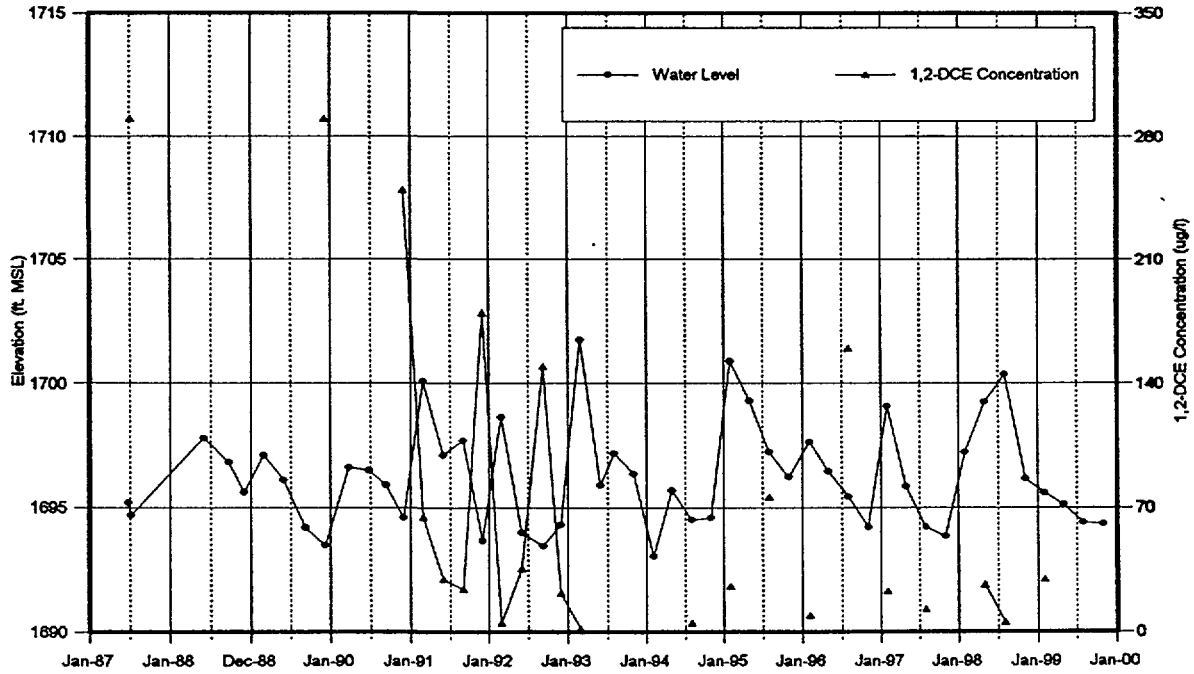
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well HAR-14

Figure A-34



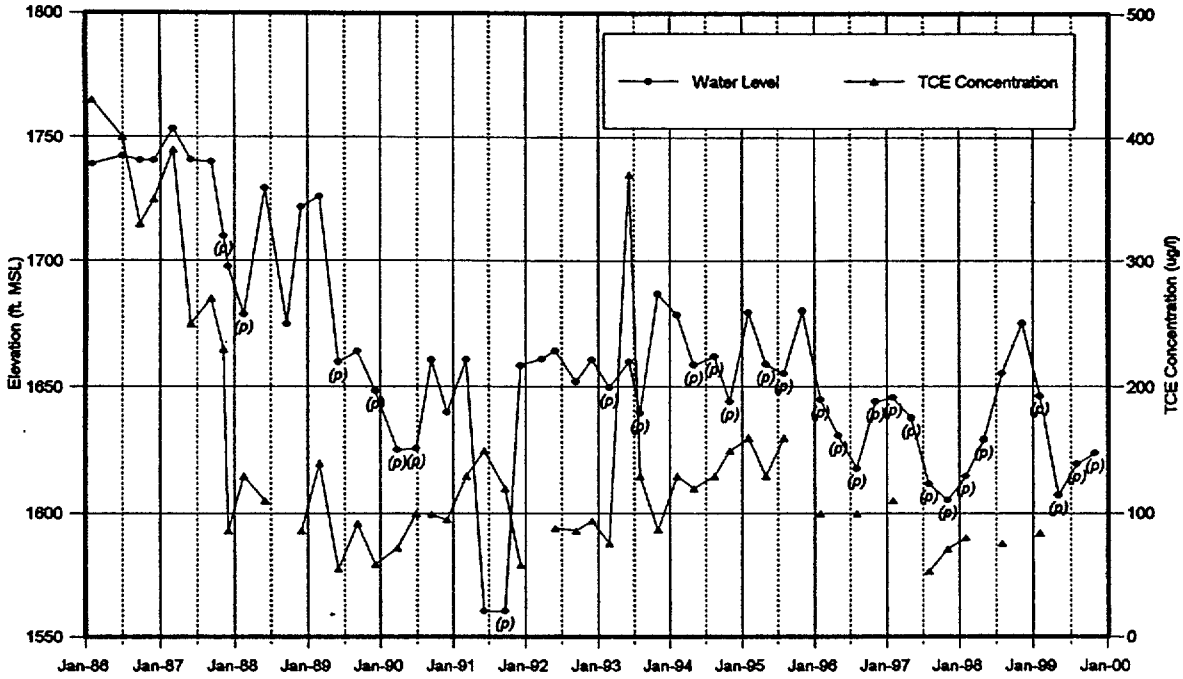
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well HAR-15

Figure A-35



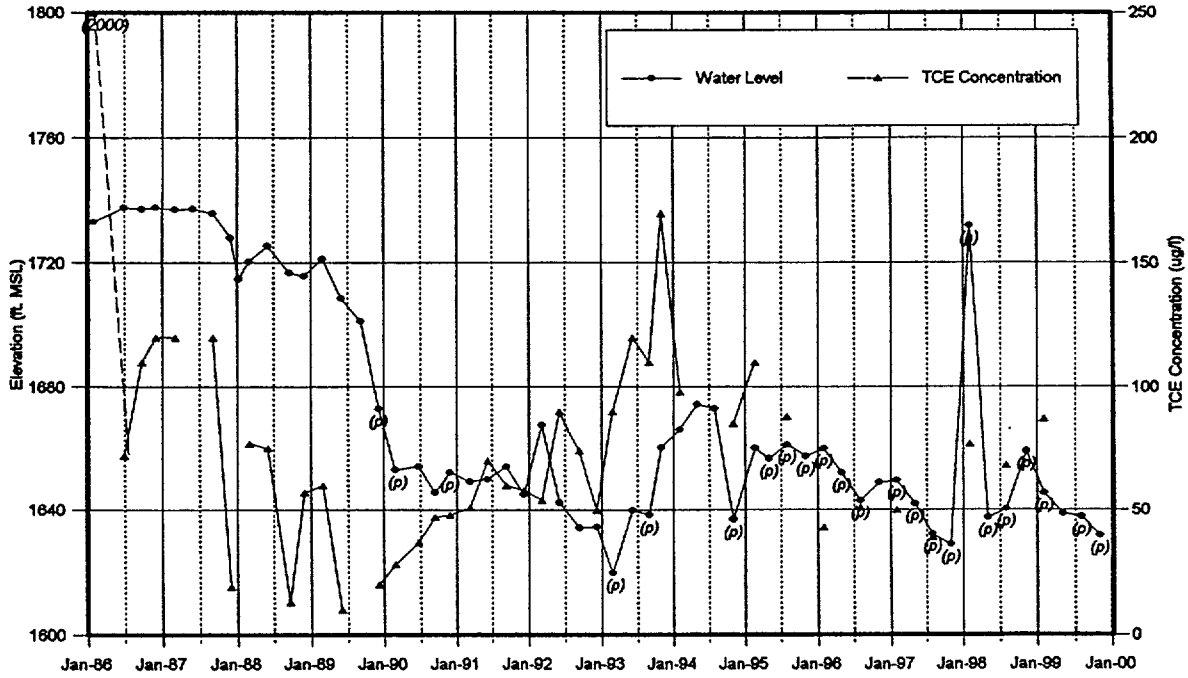
WATER LEVEL & WATER QUALITY HYDROGRAPH
Shallow Zone Well HAR-27

Figure A-36



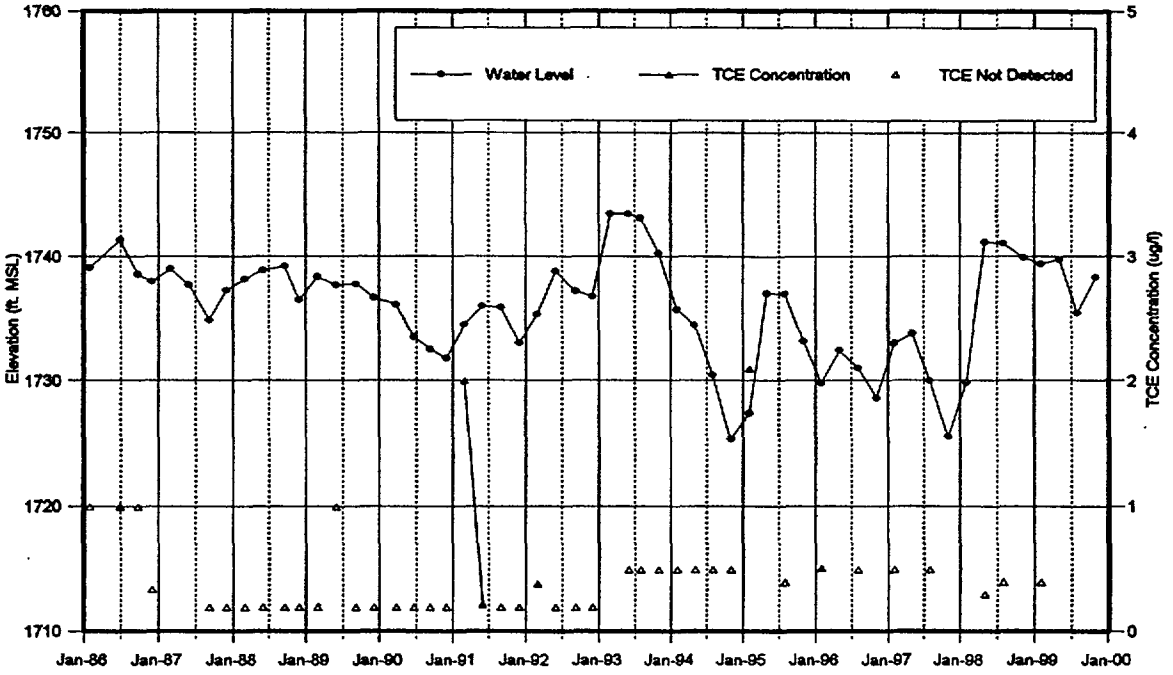
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-1

Figure A-37



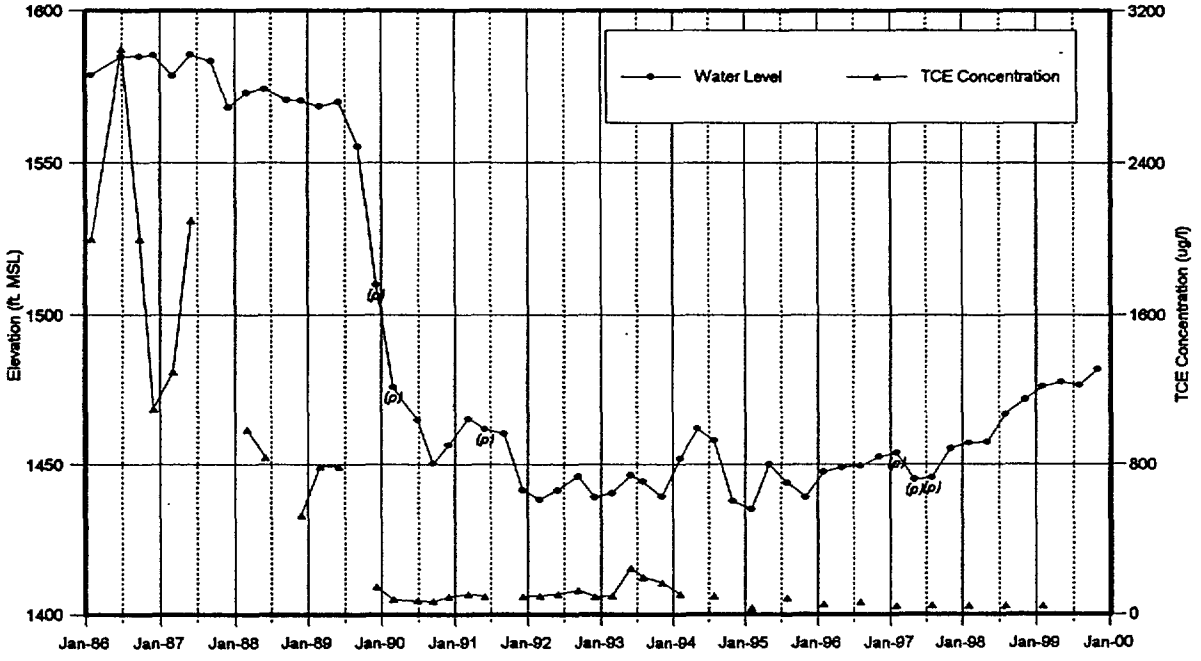
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-2

Figure A-38



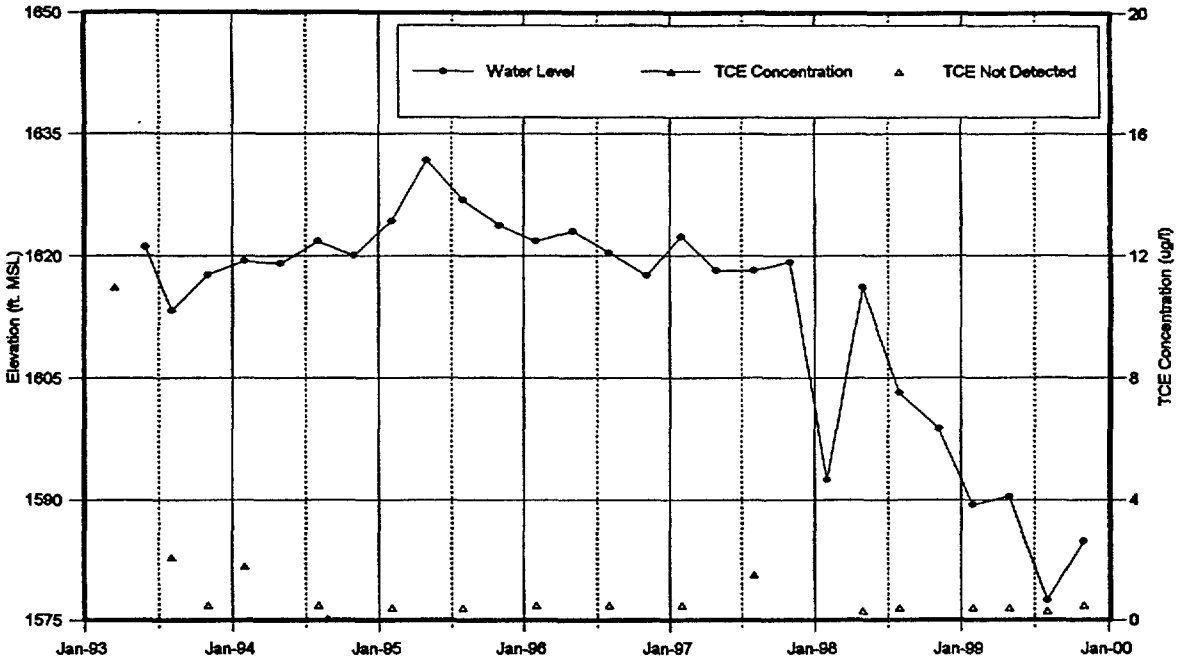
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-3

Figure A-39



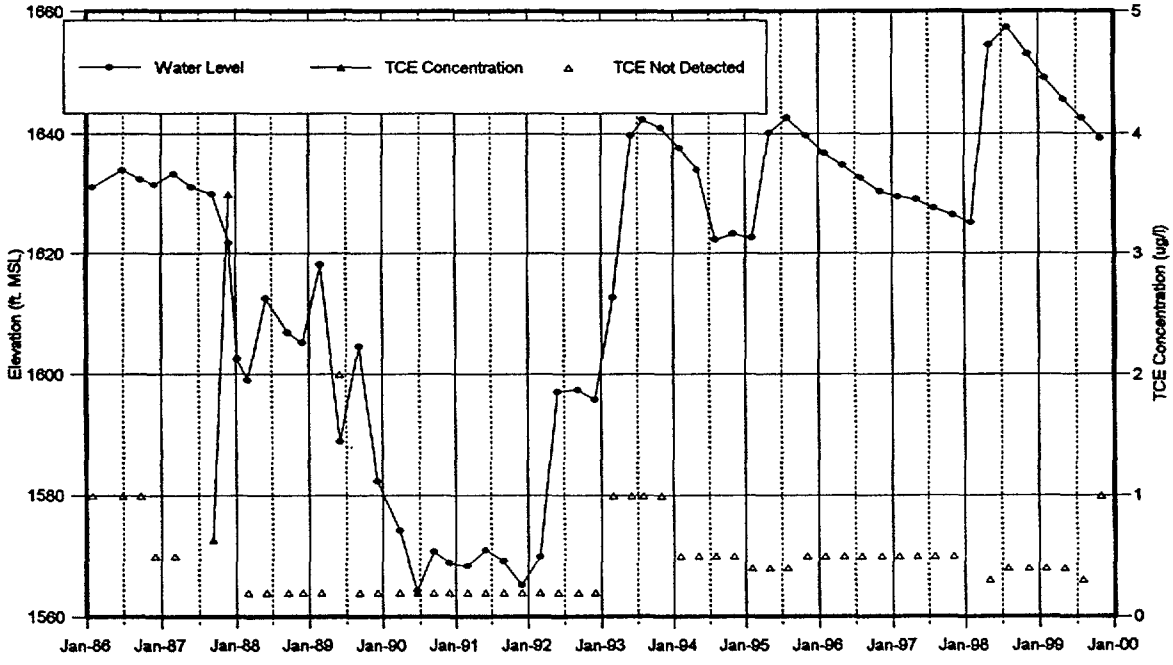
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-4

Figure A-40



WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-5A

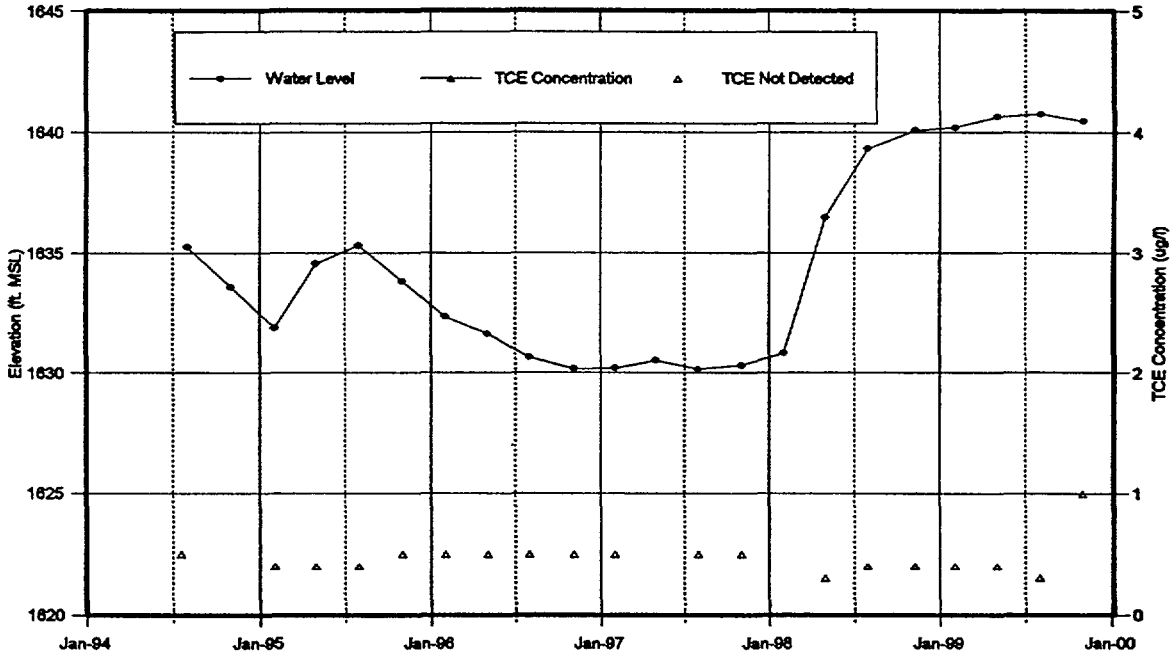
Figure A-41



WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-5B*

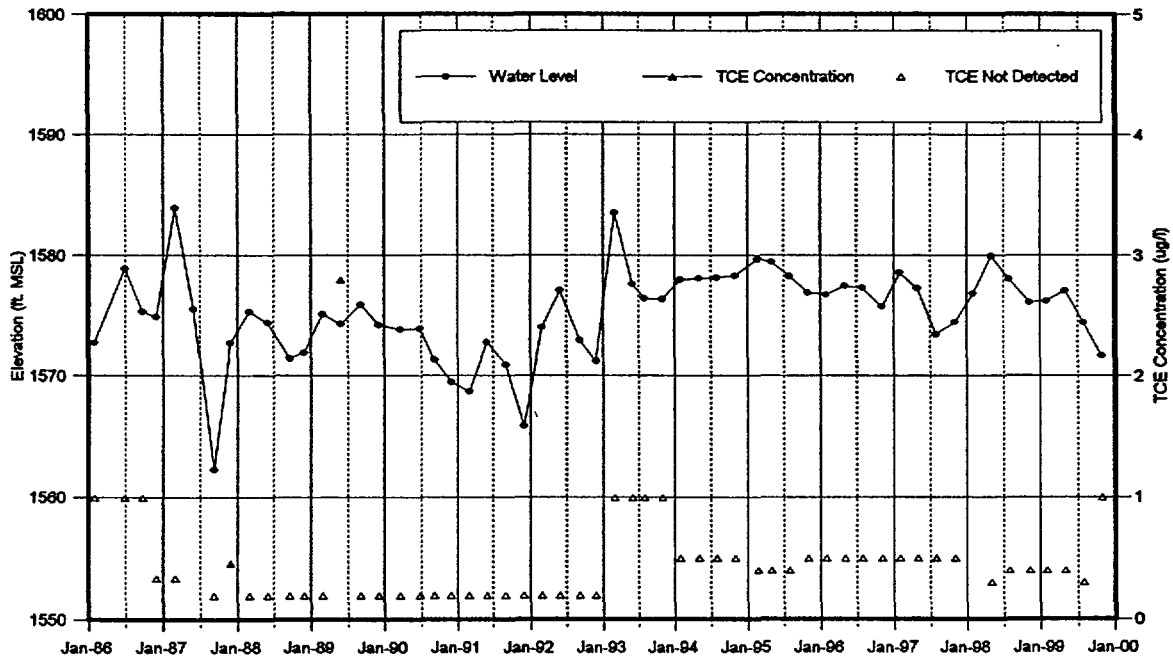
Figure A-42

*Well known as RD-5 prior to 05/93



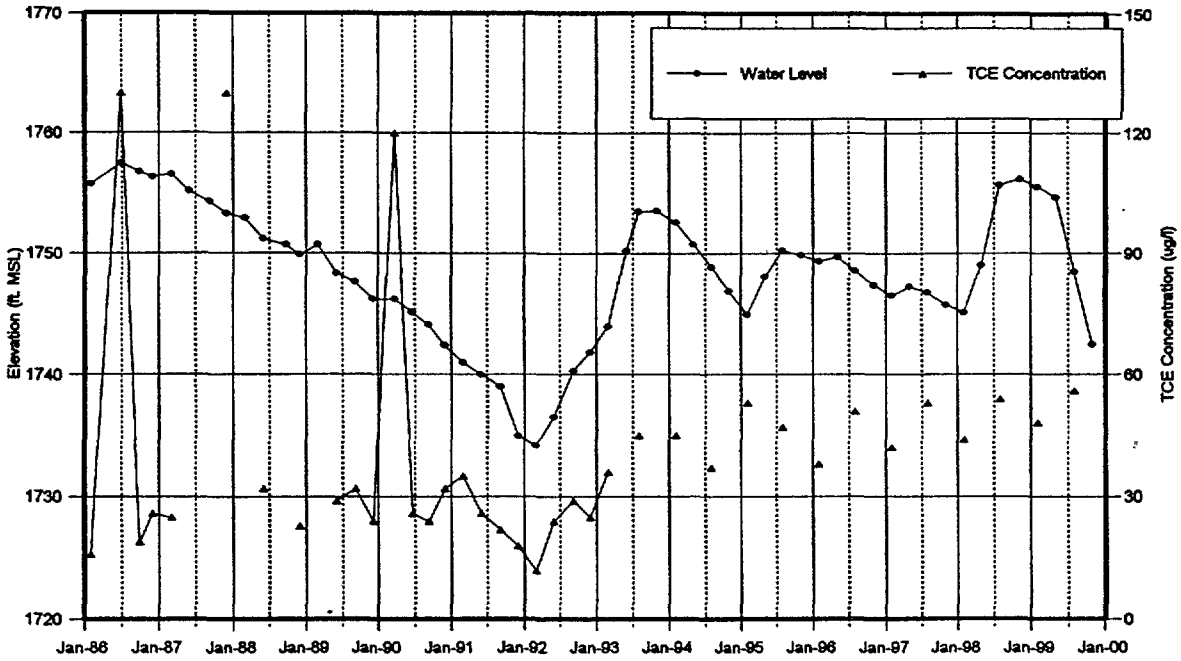
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-5C

Figure A-43



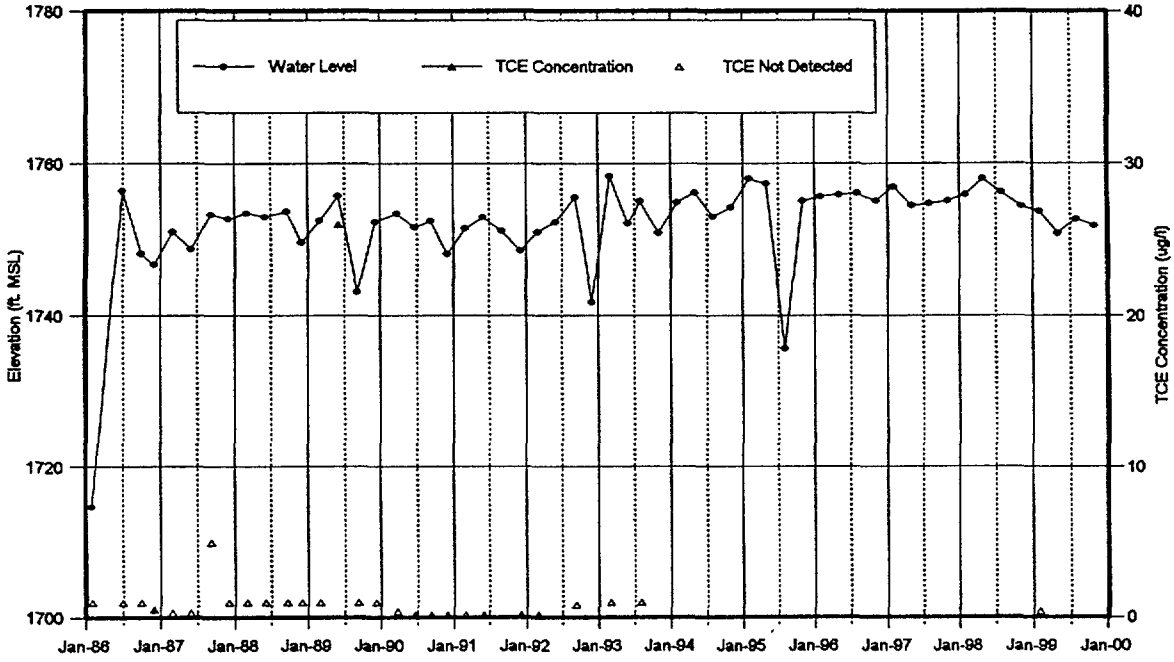
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-6

Figure A-44



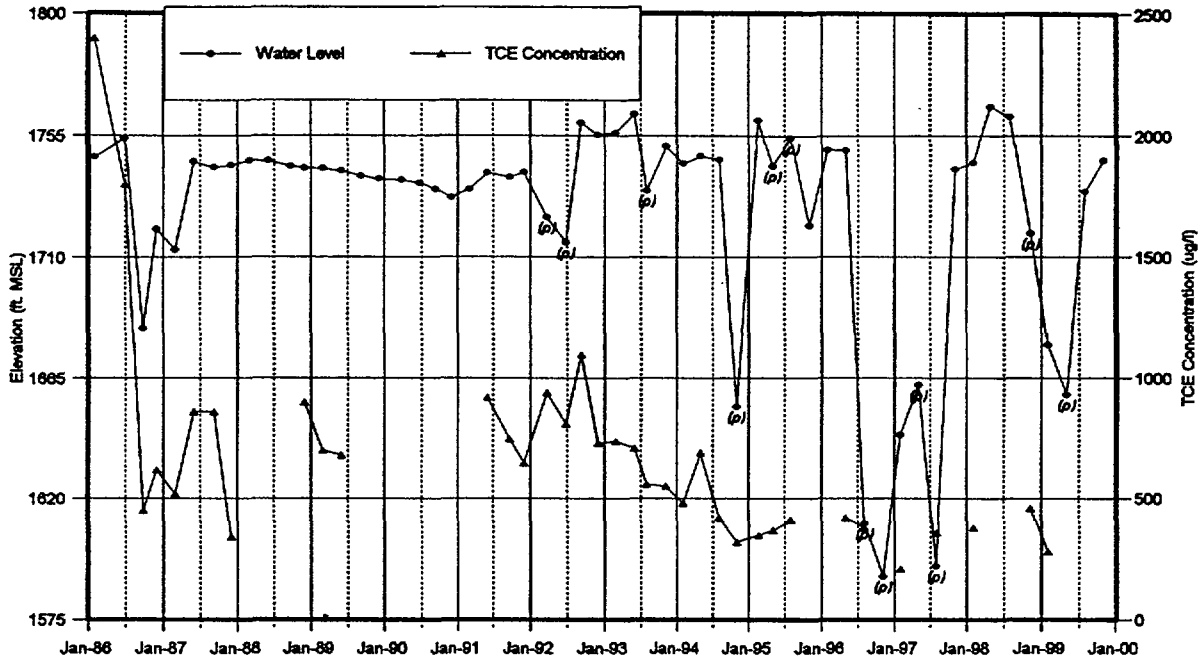
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-7

Figure A-45



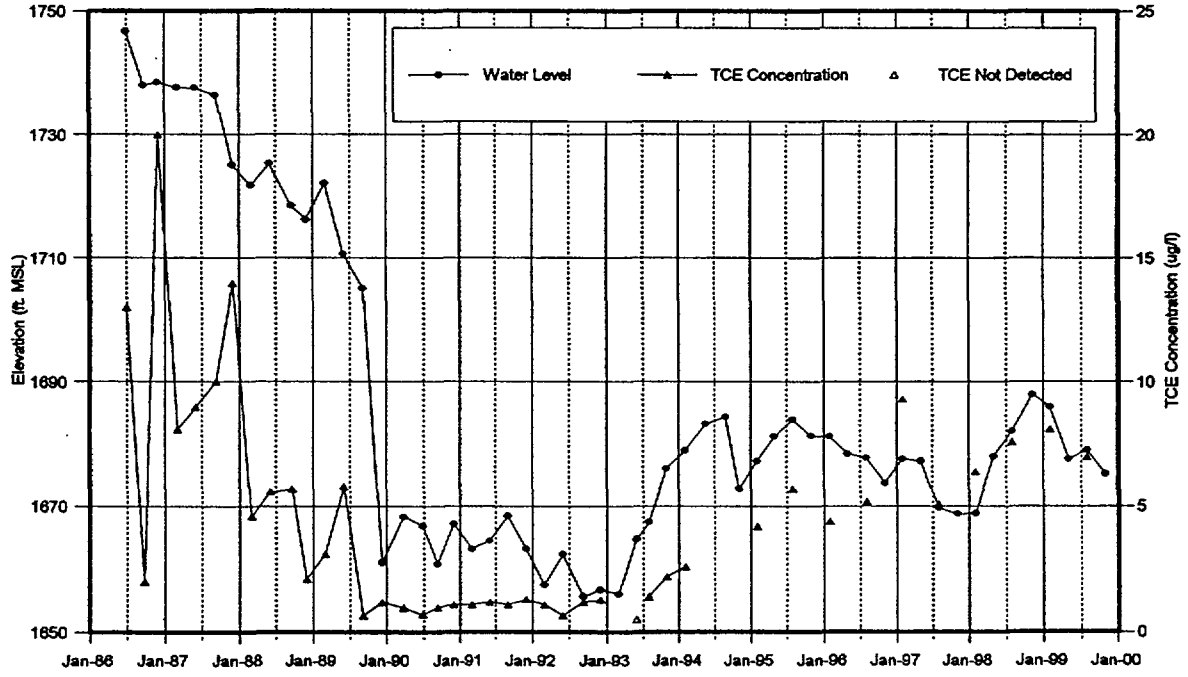
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-8

Figure A-46



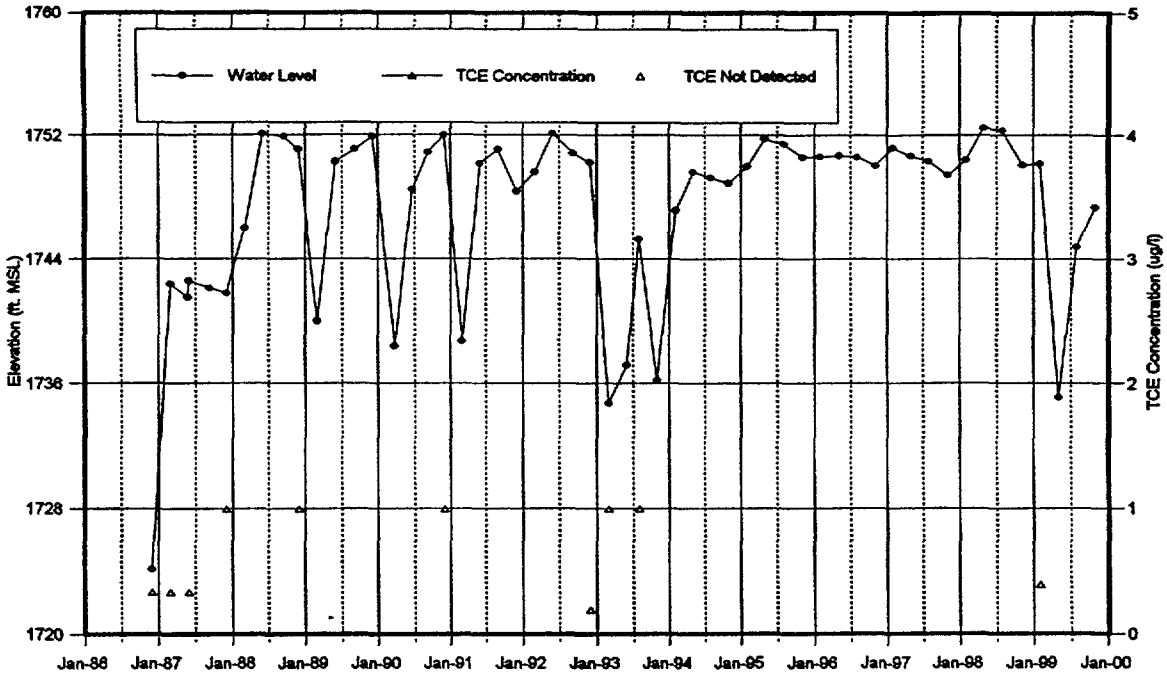
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-9

Figure A-47



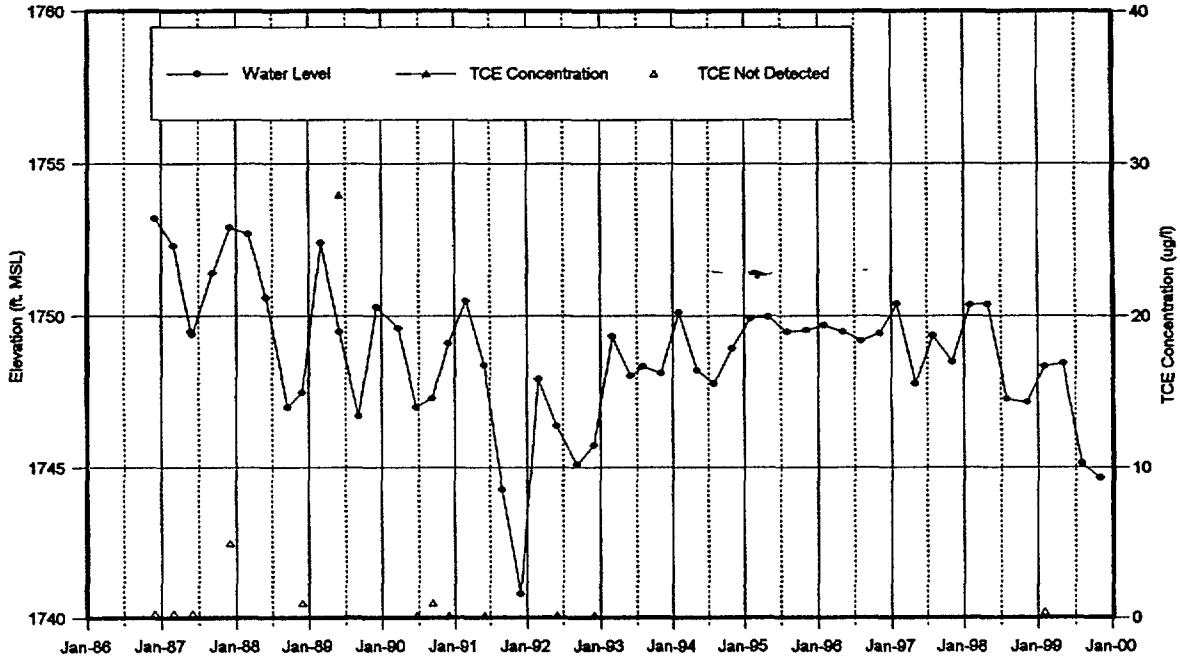
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-10

Figure A-48



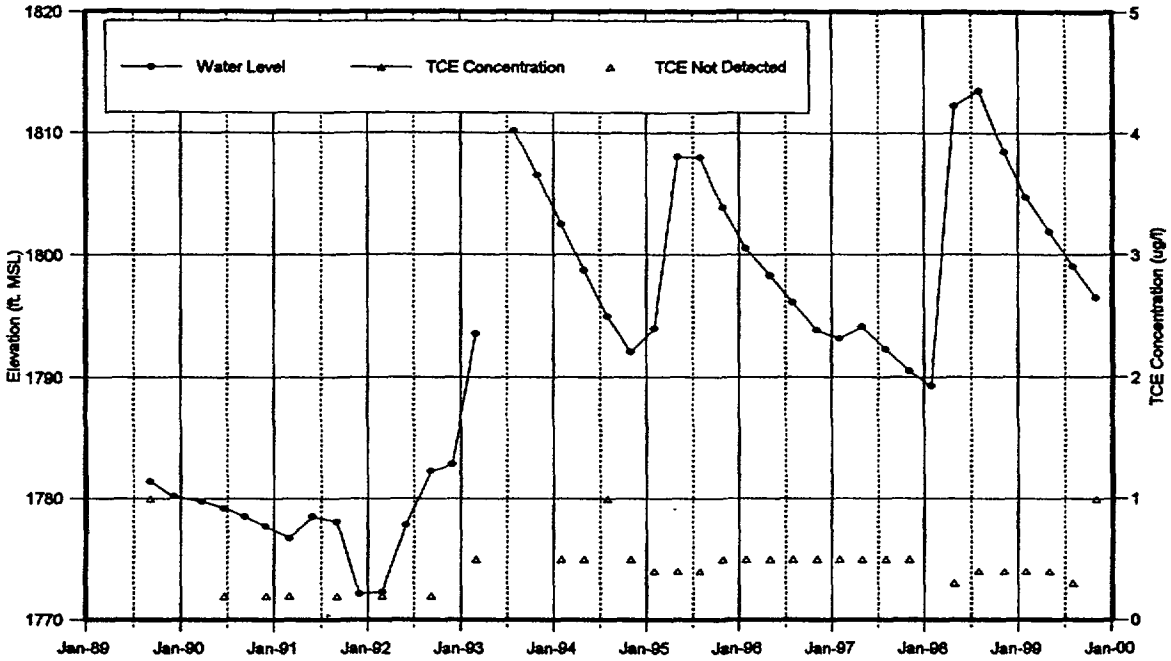
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-11

Figure A-49



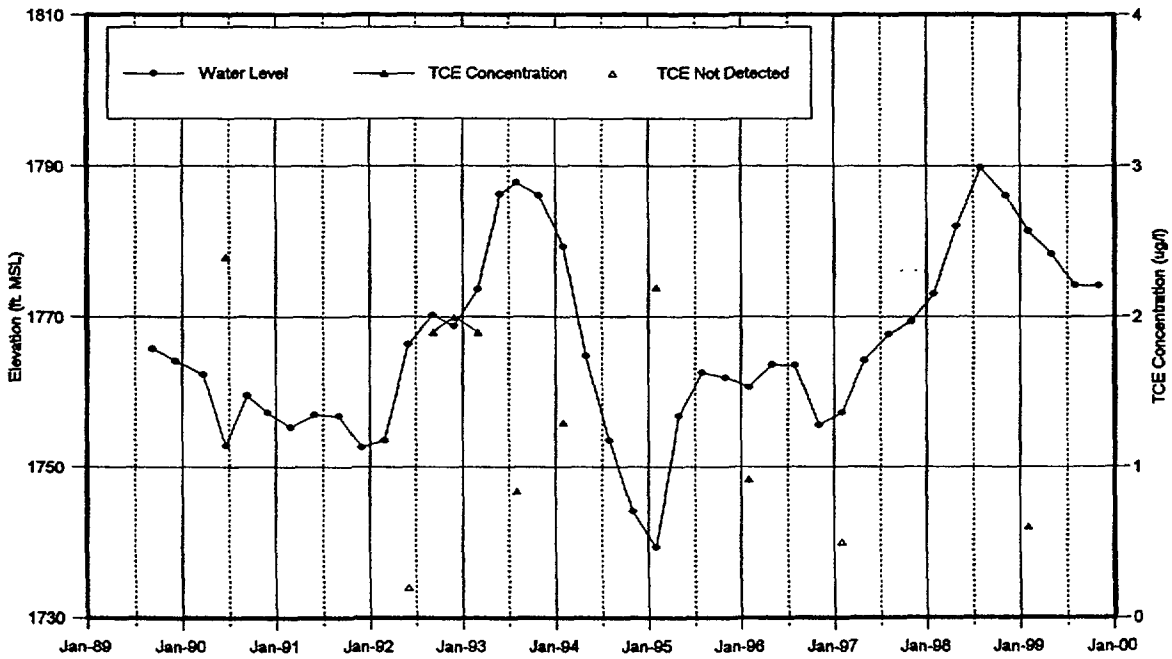
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-12

Figure A-50



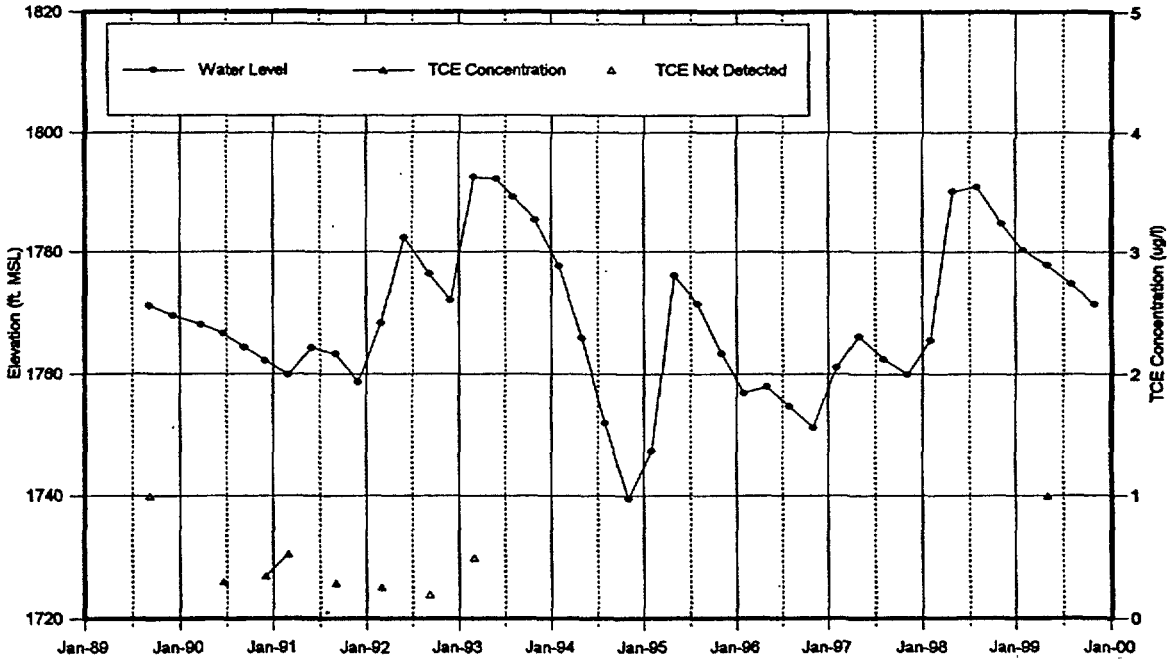
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-13

Figure A-51



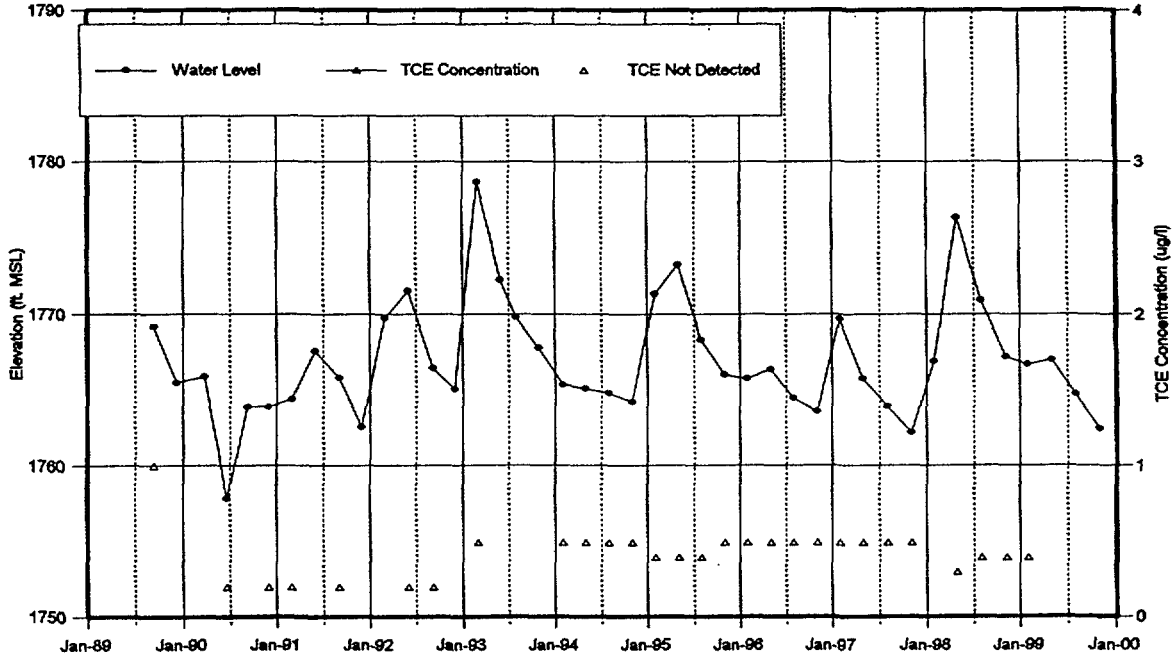
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-14

Figure A-52



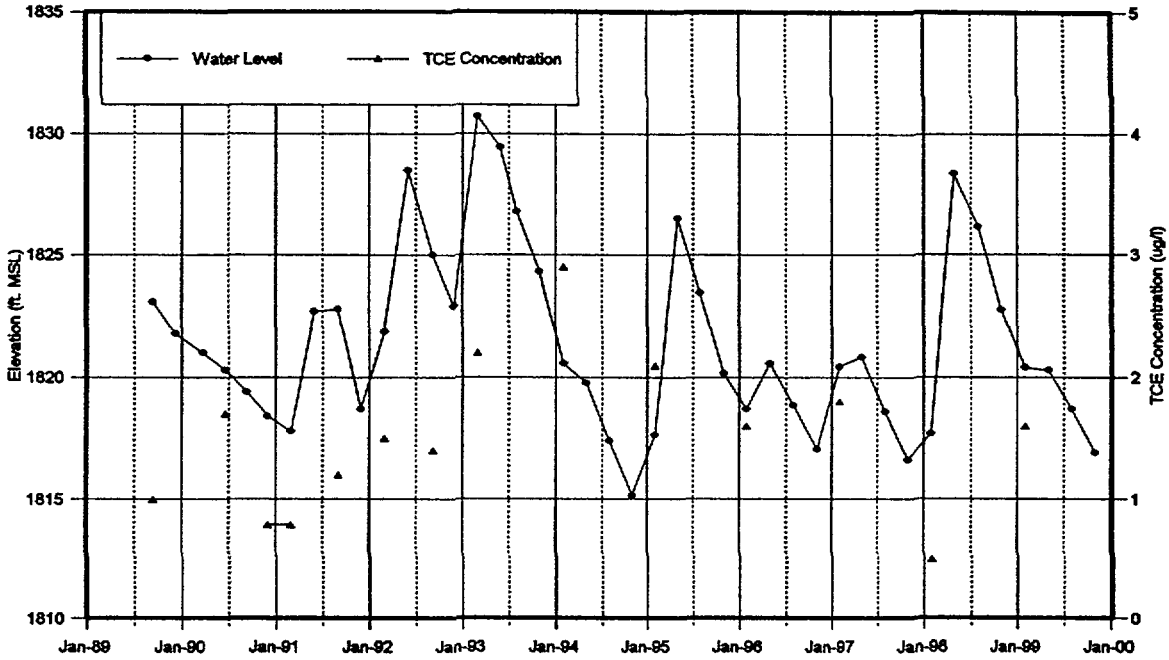
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-15

Figure A-53



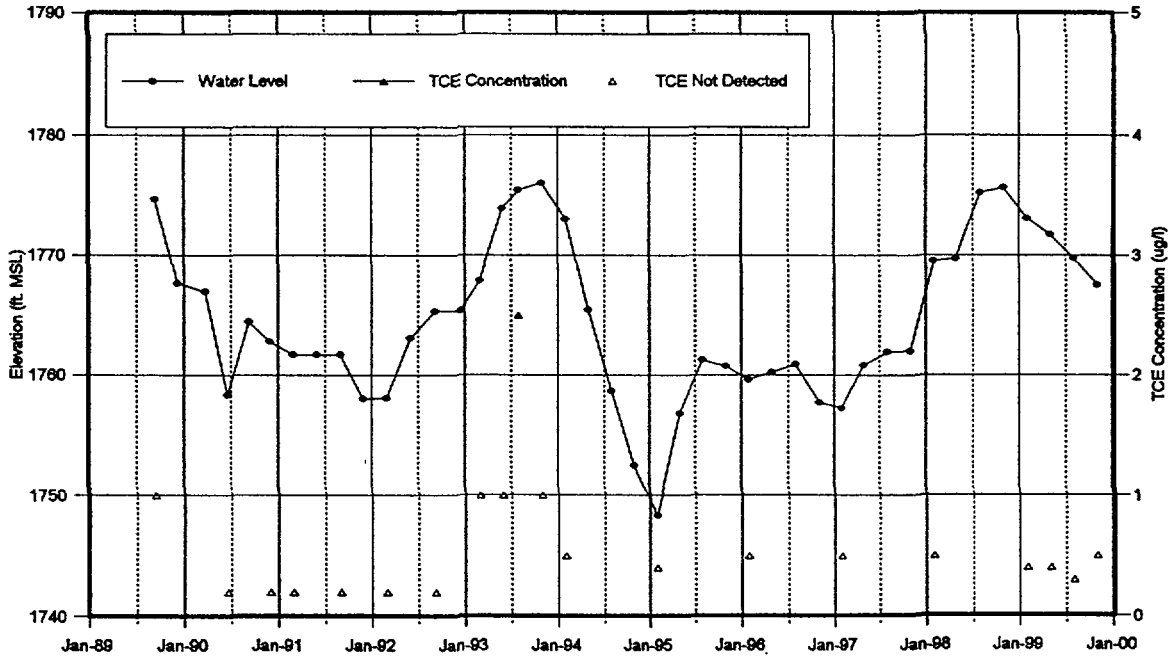
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-16

Figure A-54



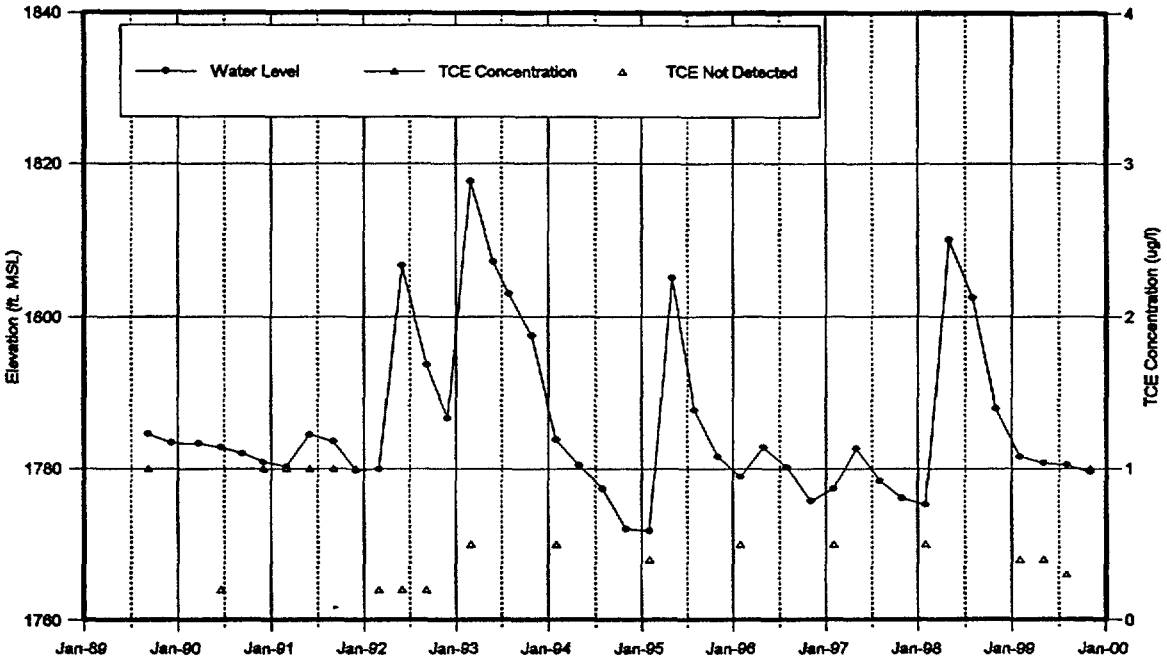
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-17

Figure A-55



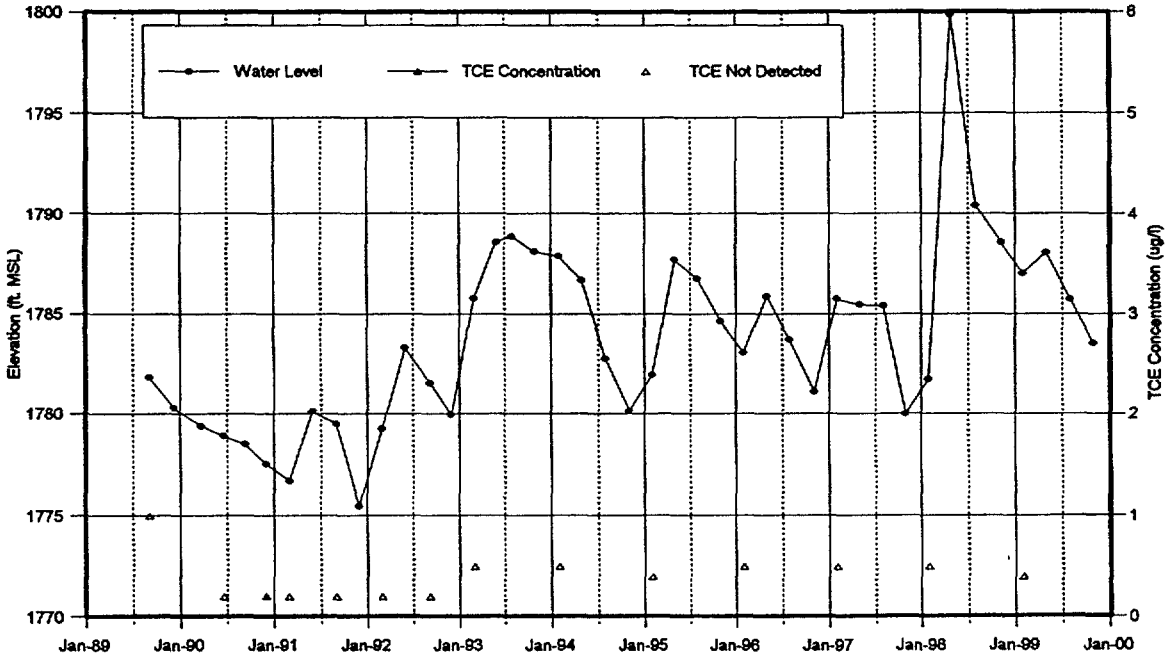
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-18

Figure A-56



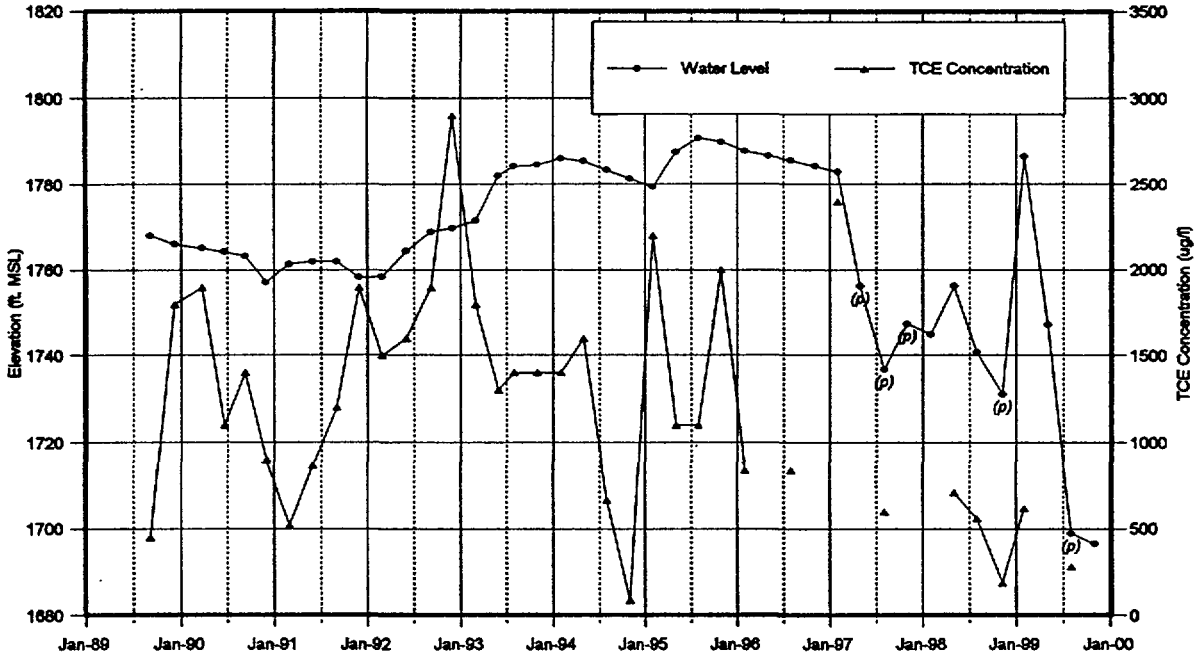
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-19

Figure A-57



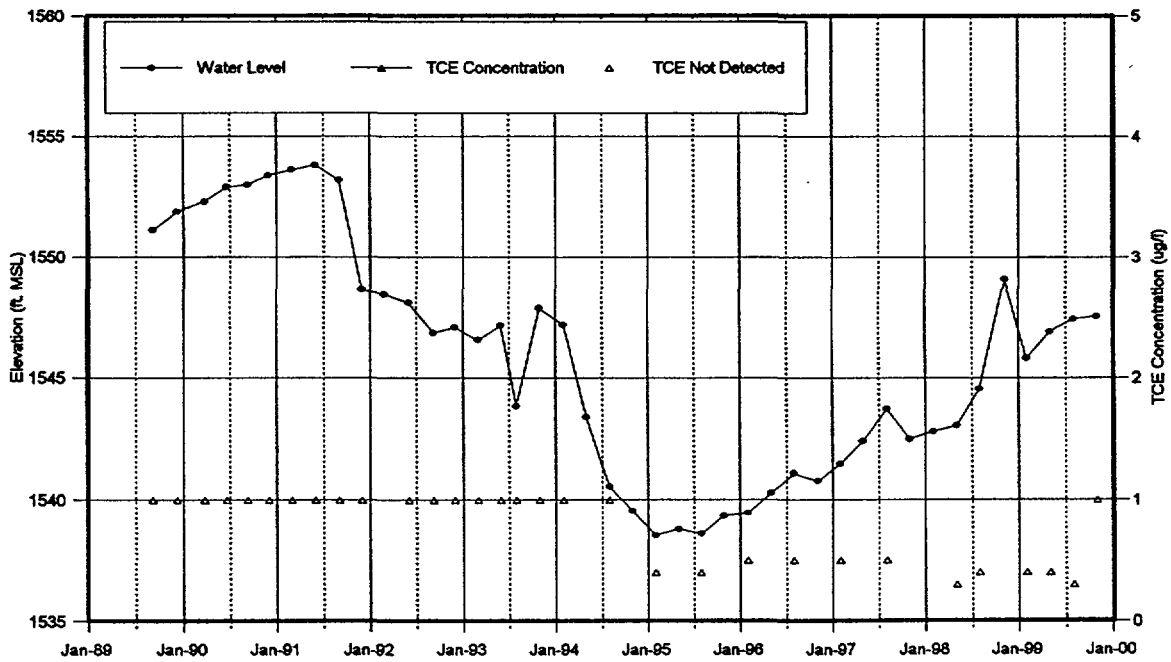
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-20

Figure A-58



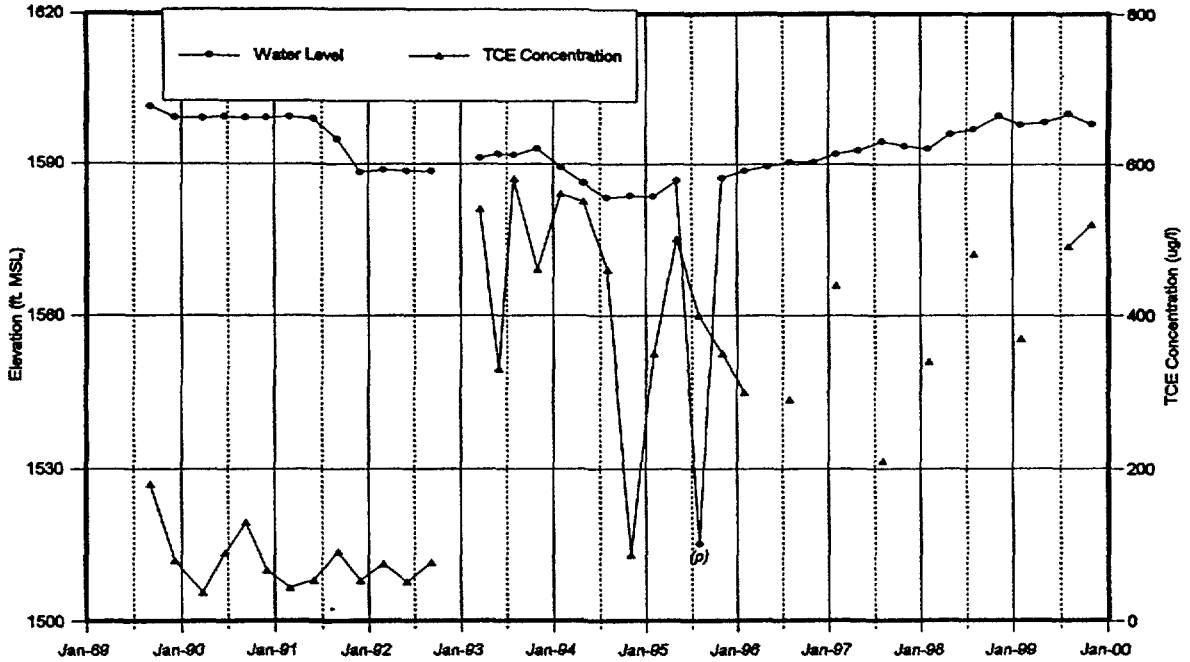
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-21

Figure A-59



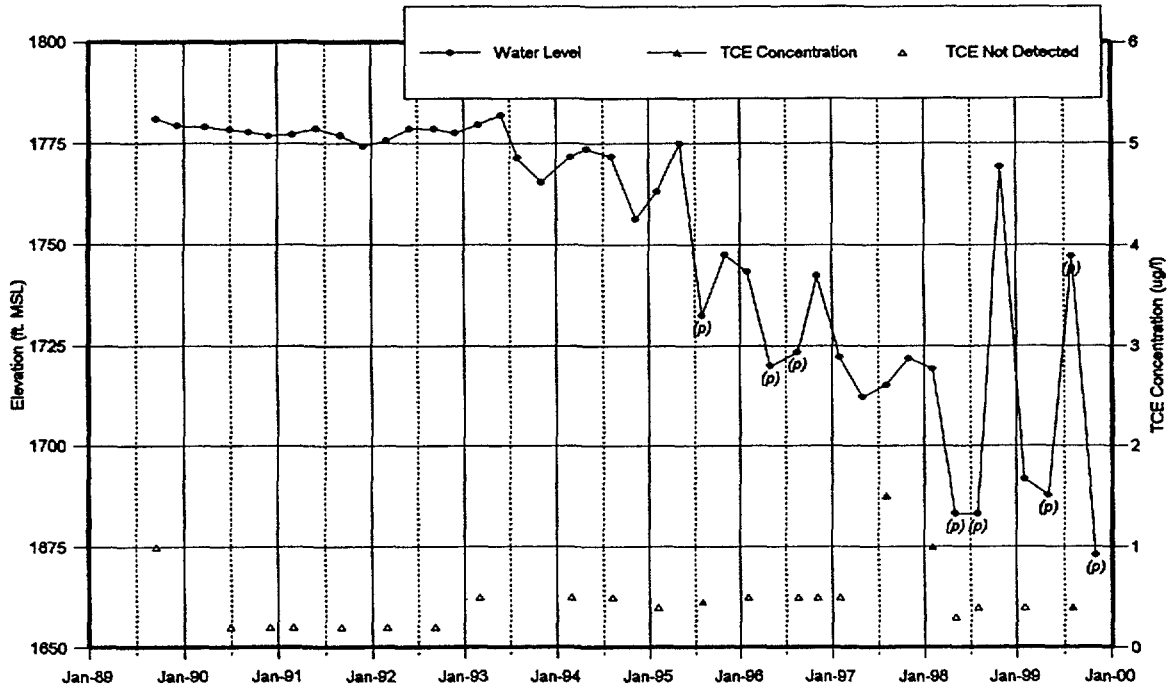
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-22

Figure A-60



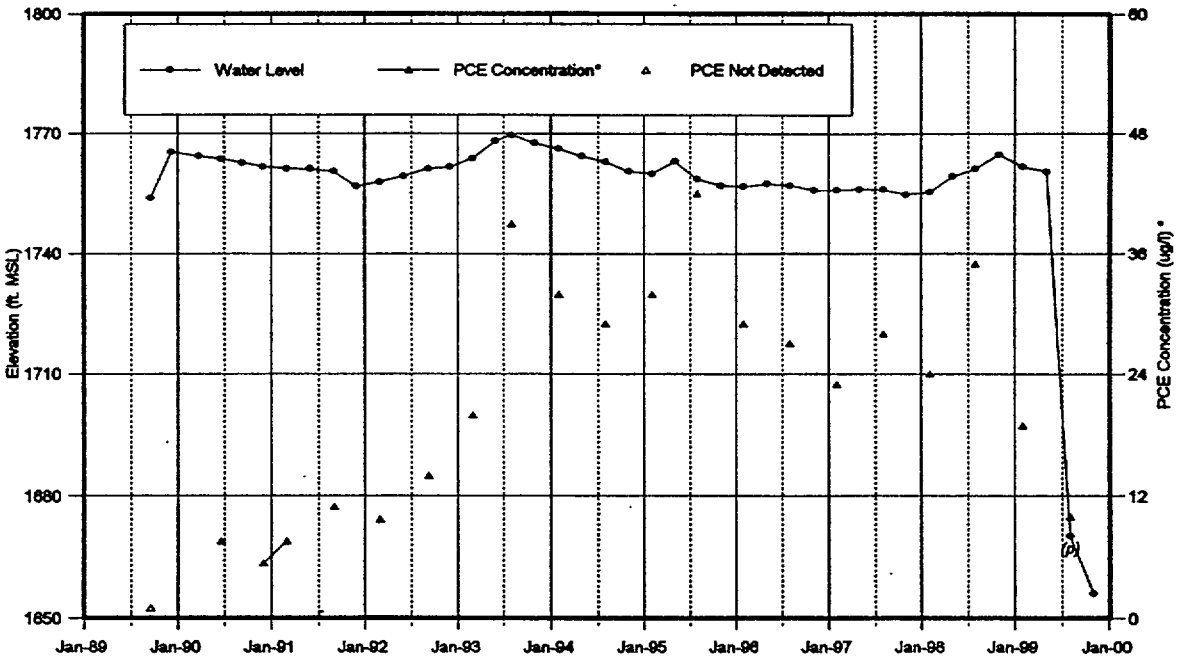
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-23

Figure A-61



WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-24

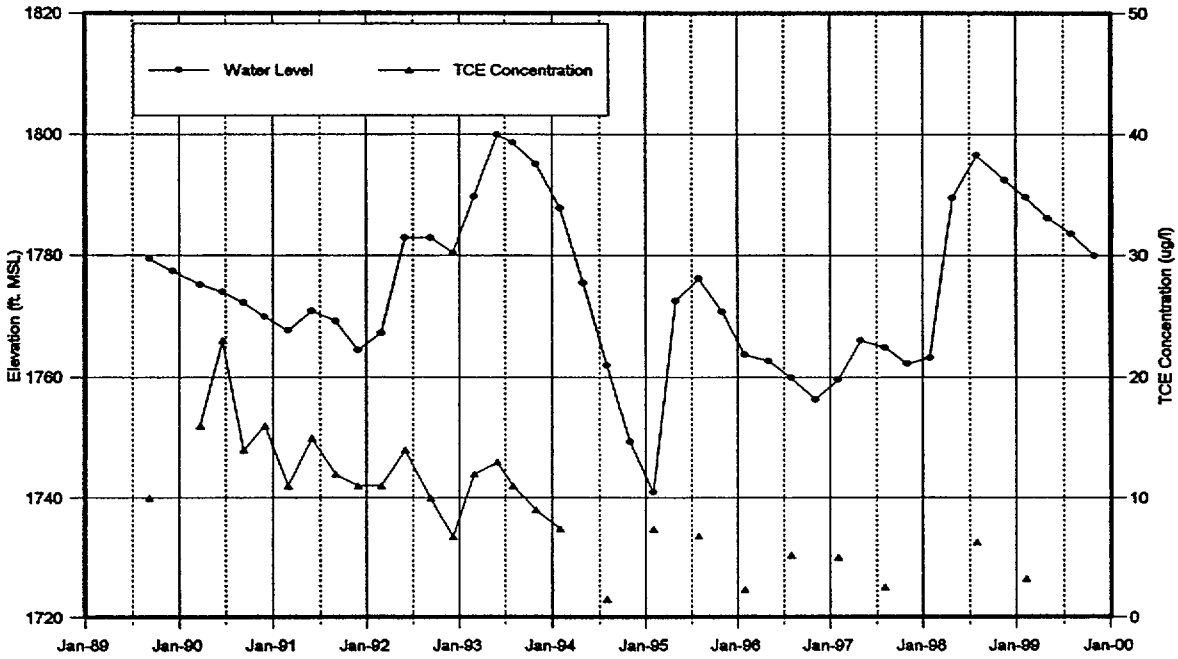
Figure A-62



*NOTE: PCE = tetrachloroethylene

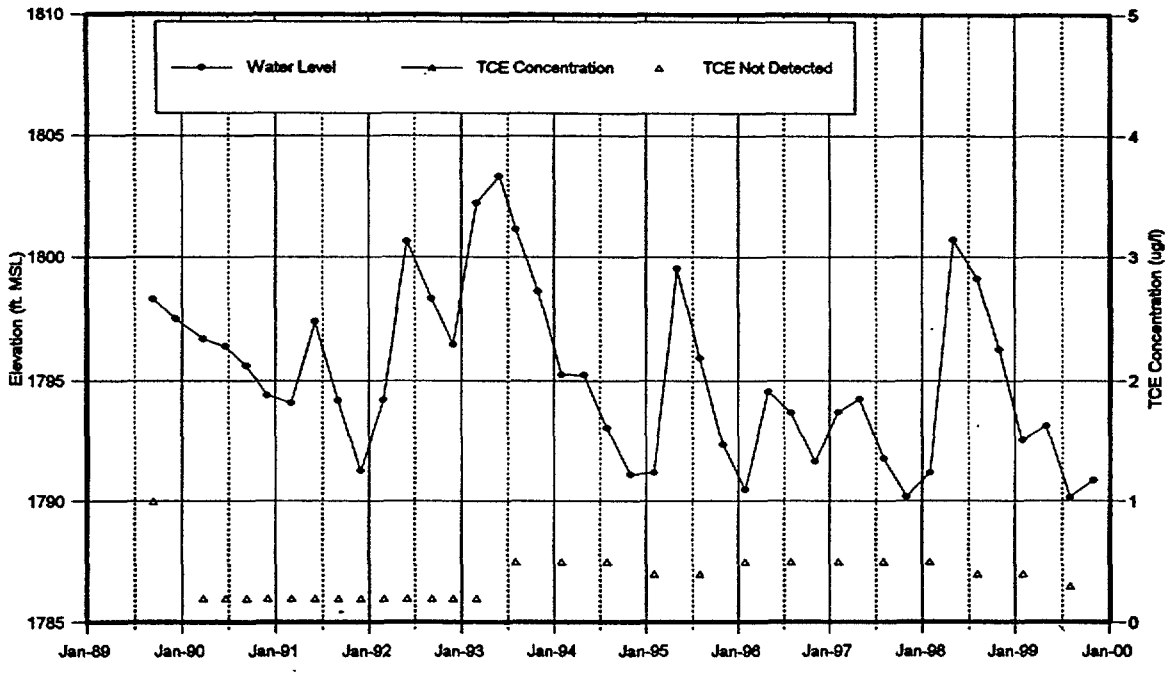
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-25

Figure A-63



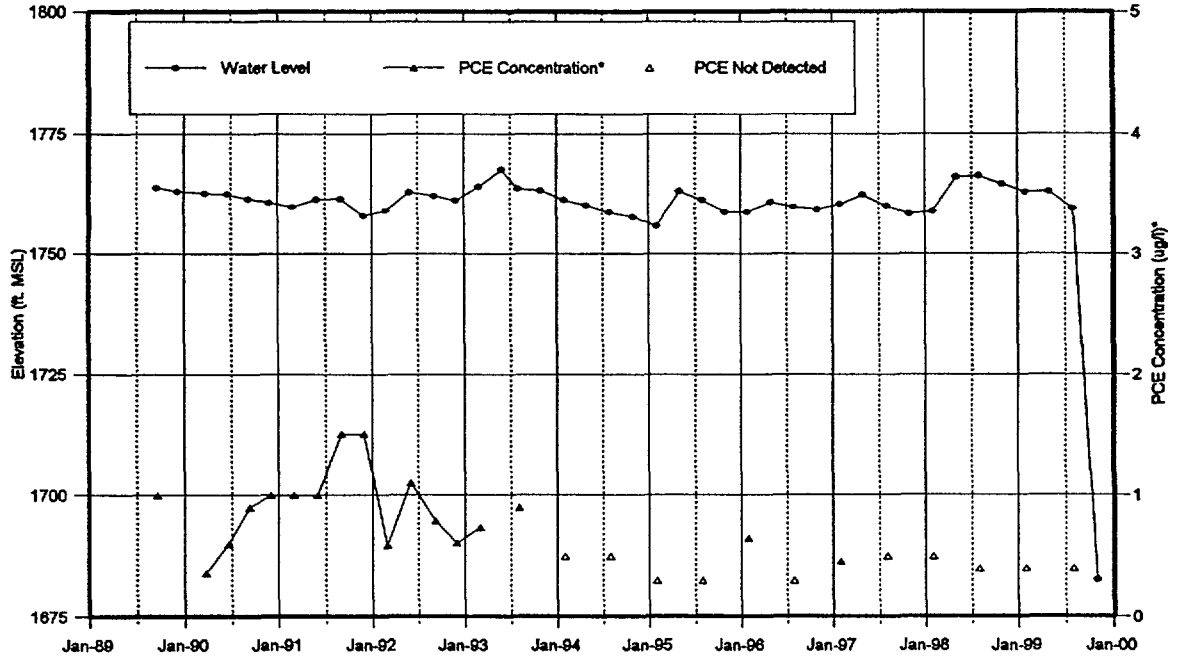
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-26

Figure A-64



WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-27

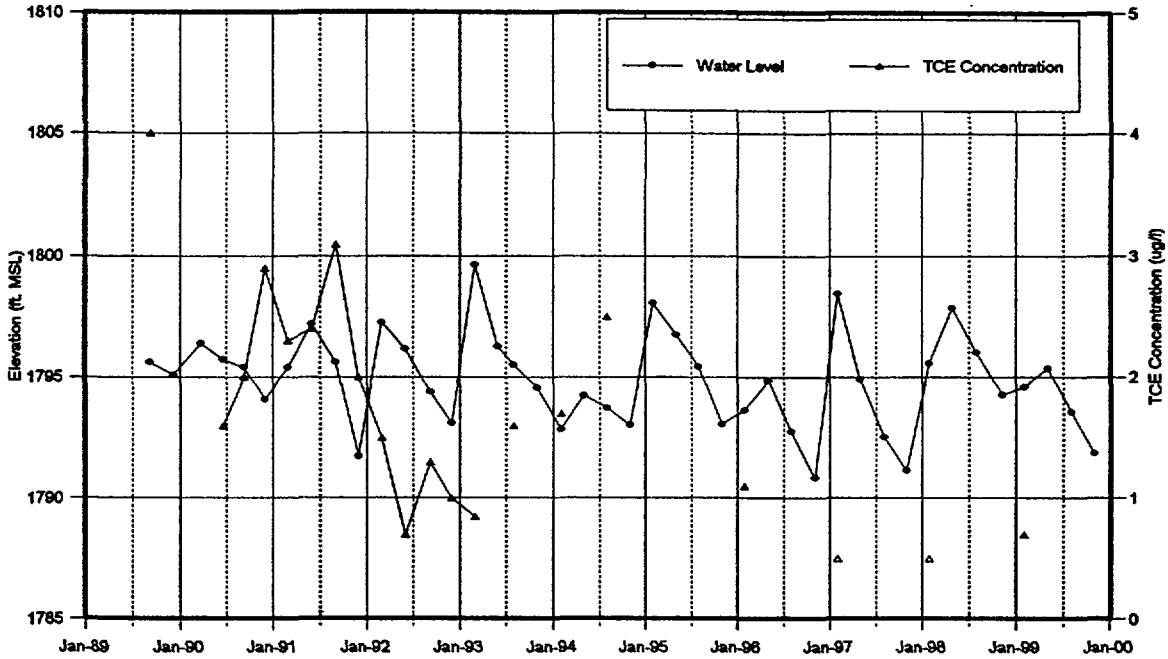
Figure A-65



*NOTE: PCE = tetrachloroethylene

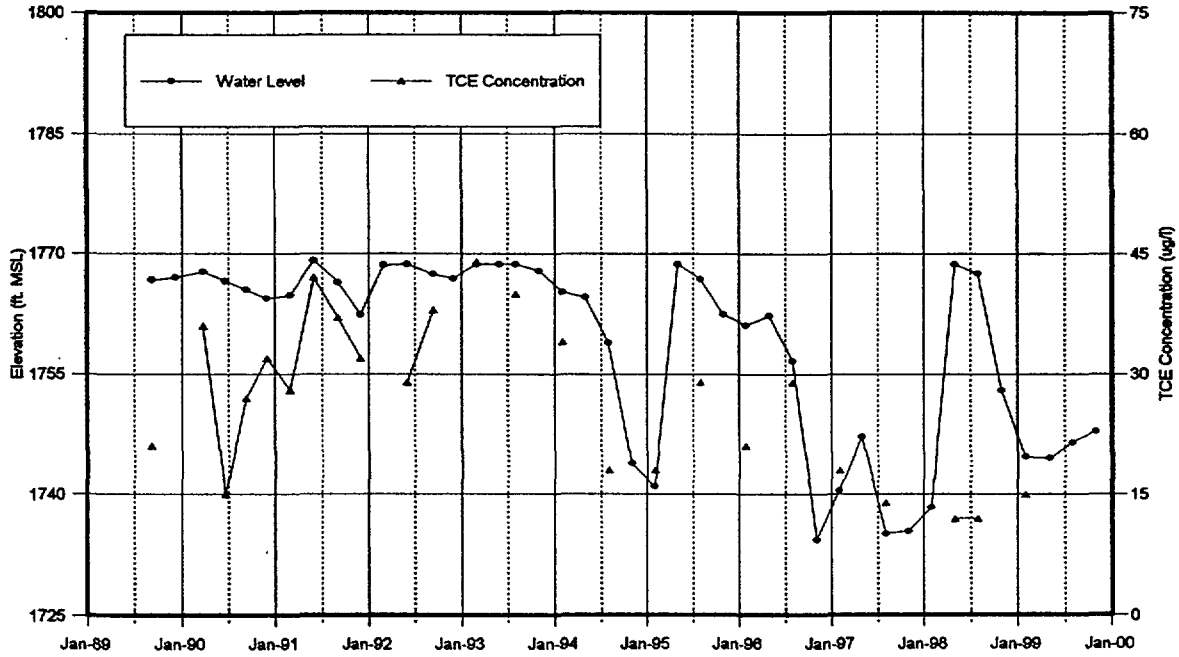
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-28

Figure A-66



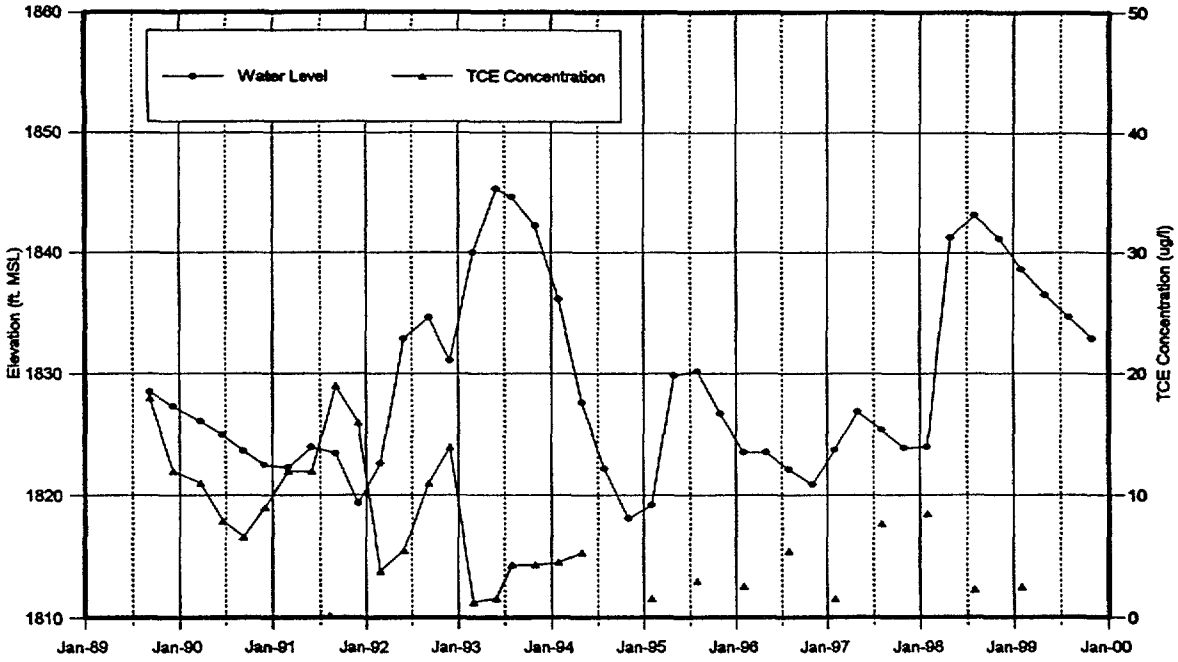
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-29

Figure A-67



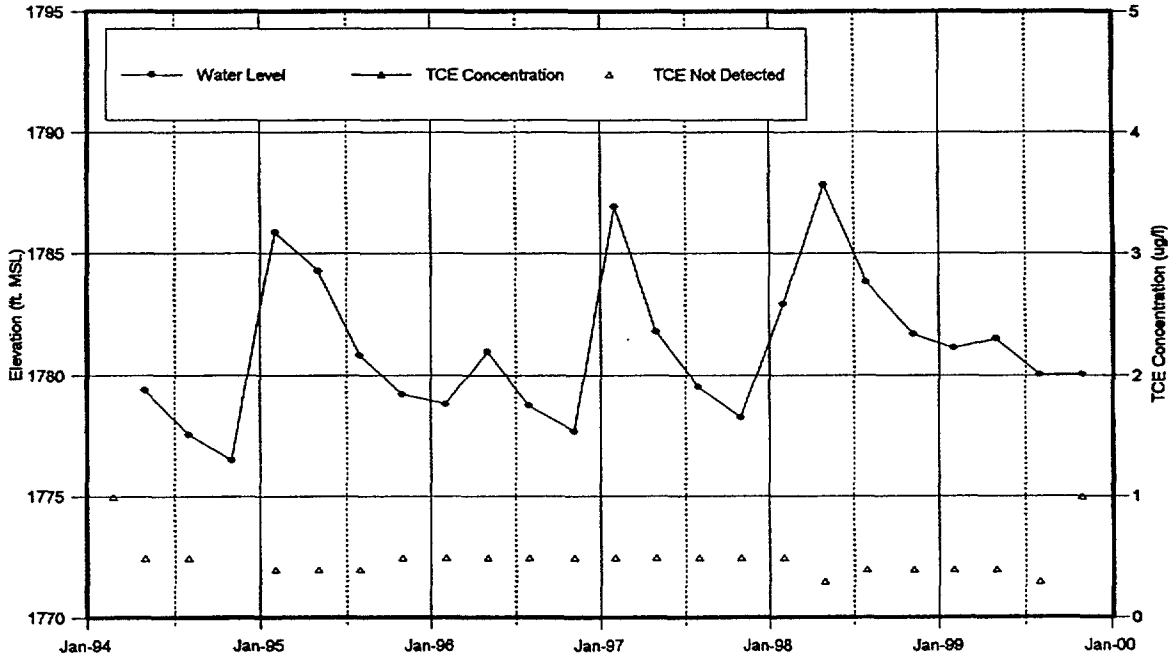
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-30

Figure A-68



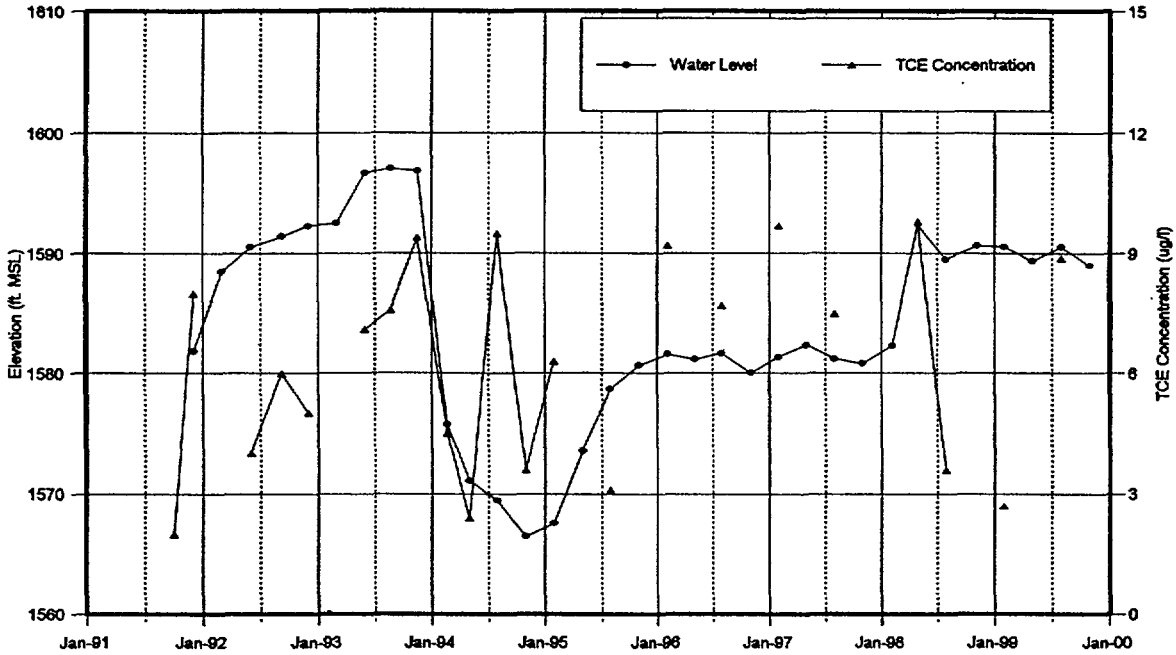
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-31

Figure A-69



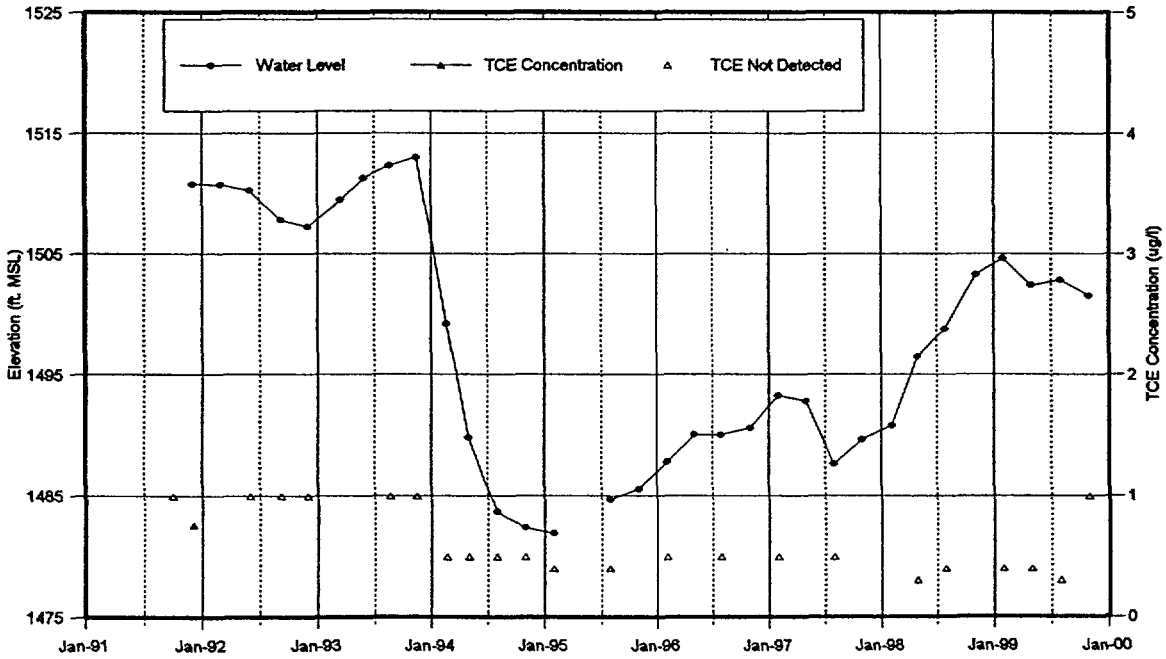
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-32

Figure A-70



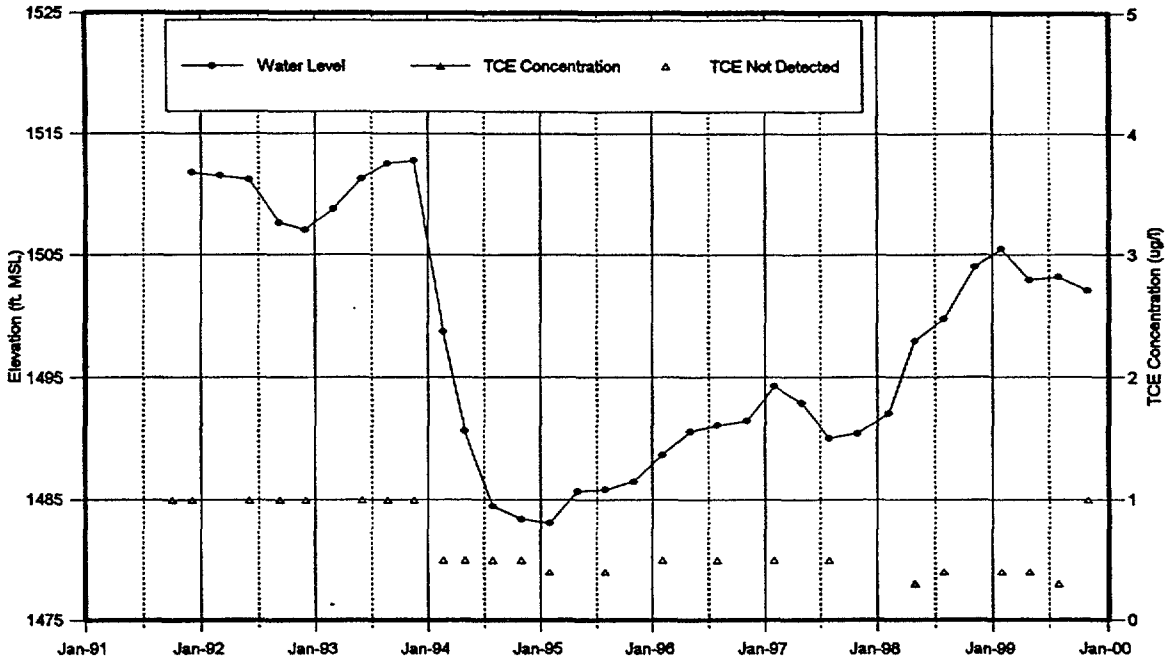
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-33A

Figure A-71



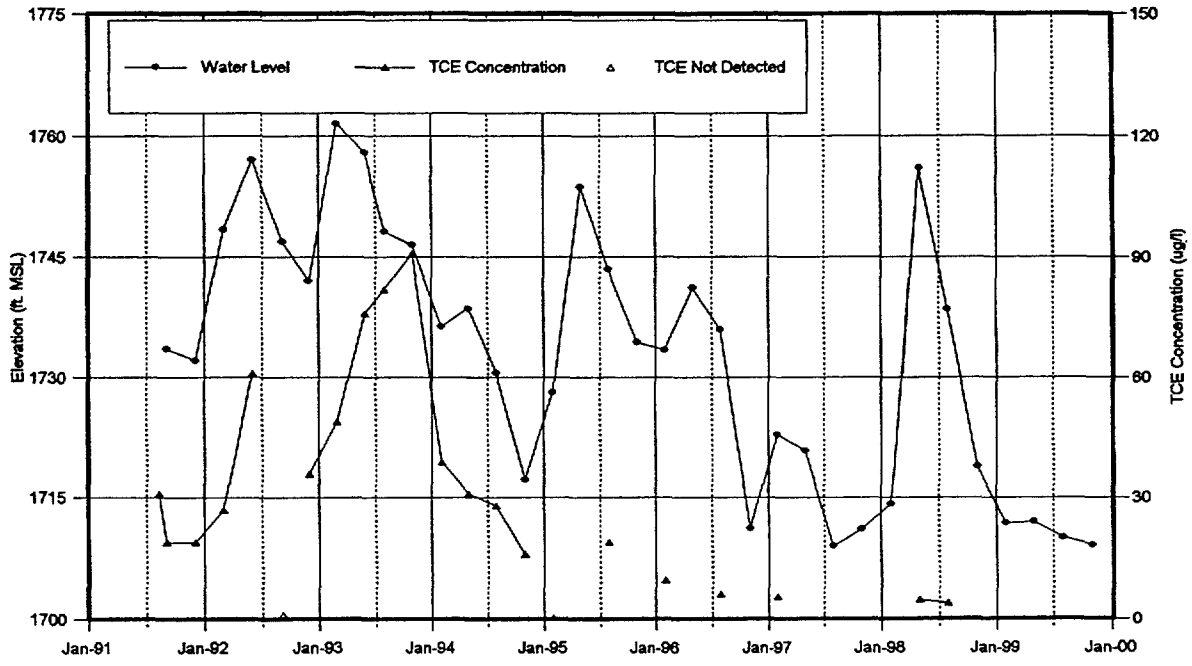
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-33B

Figure A-72



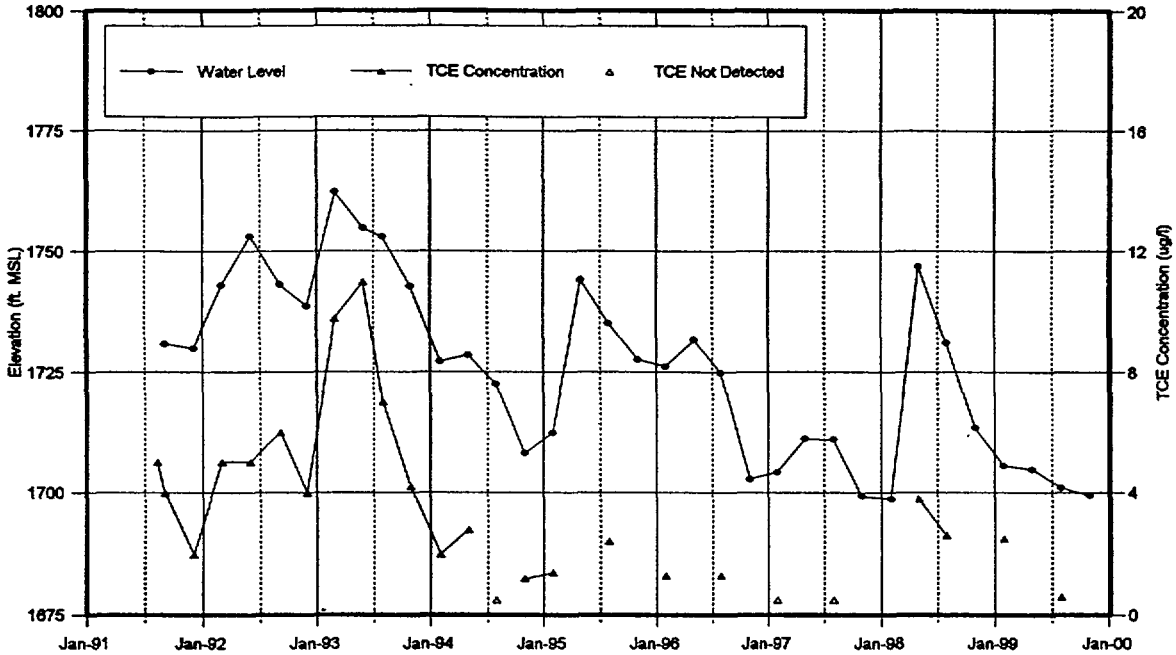
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-33C

Figure A-73



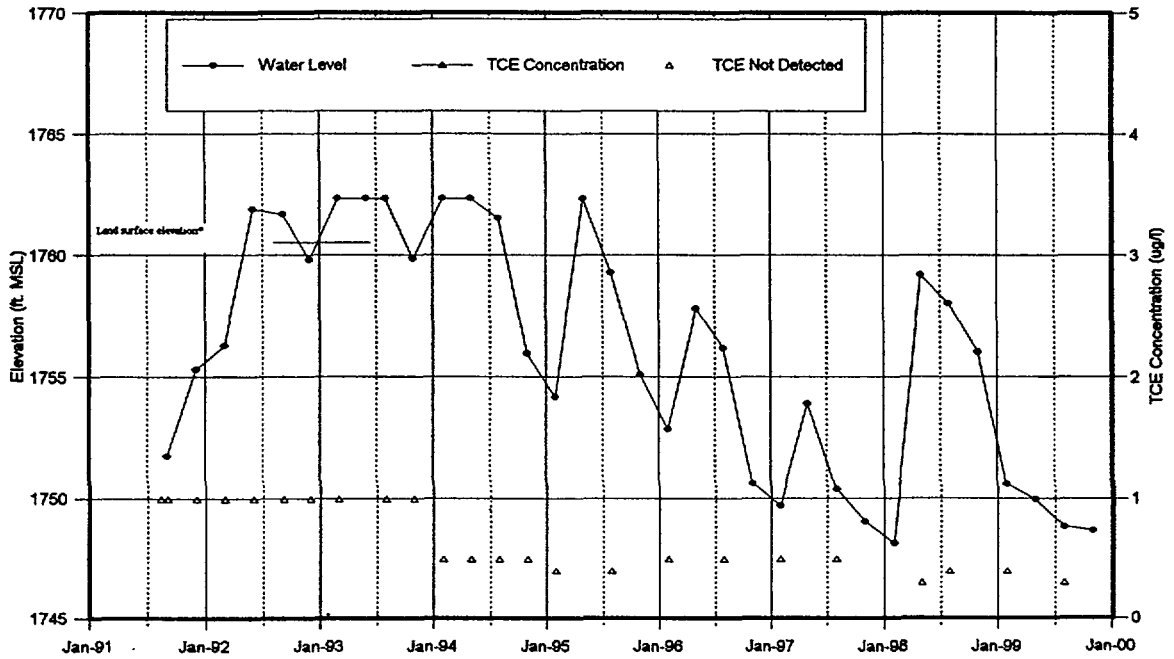
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-34A

Figure A-74



WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-34B

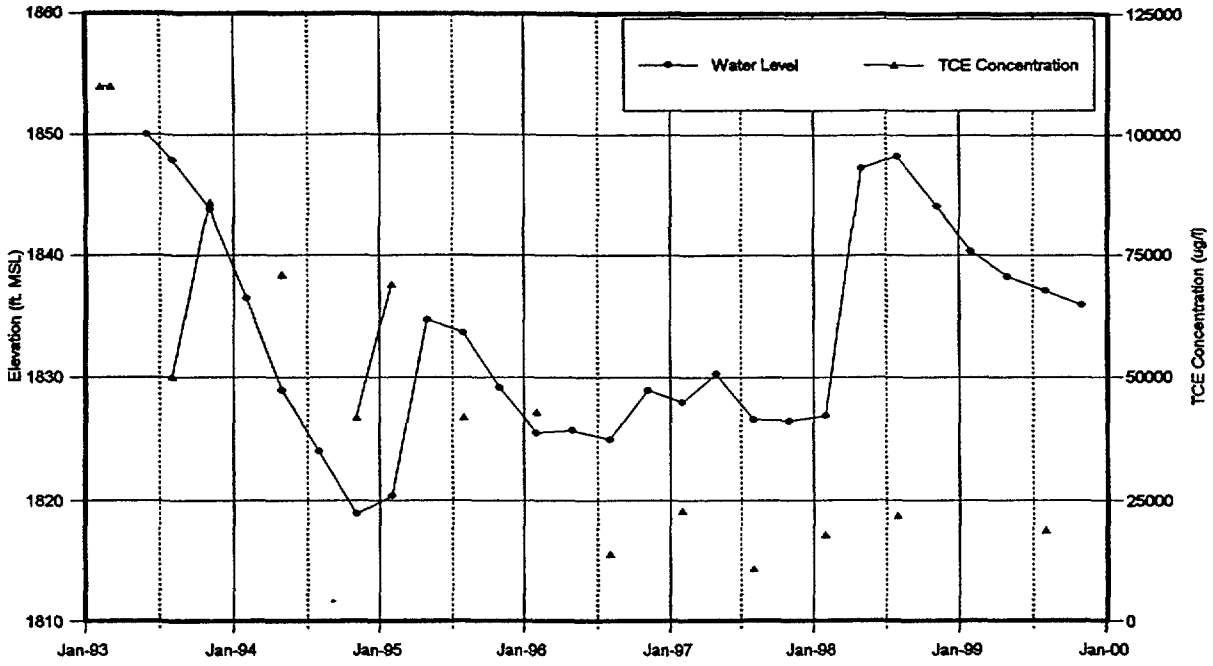
Figure A-75



WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-34C

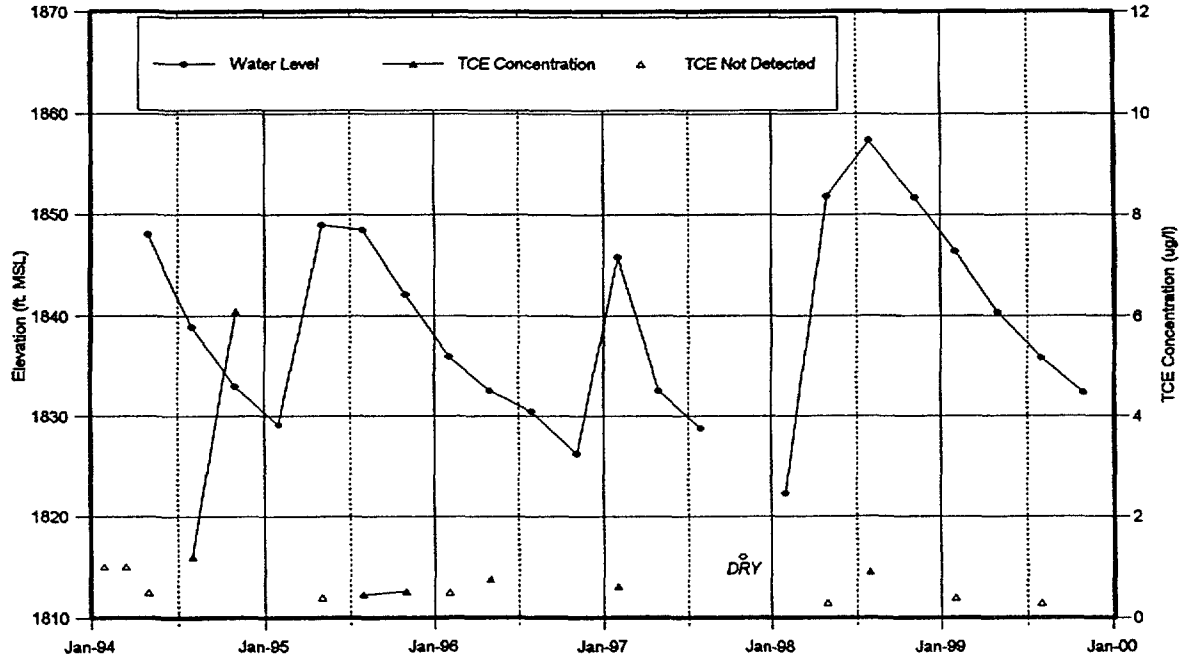
Figure A-76

* Elevation approx. 1760.6 feet MSL



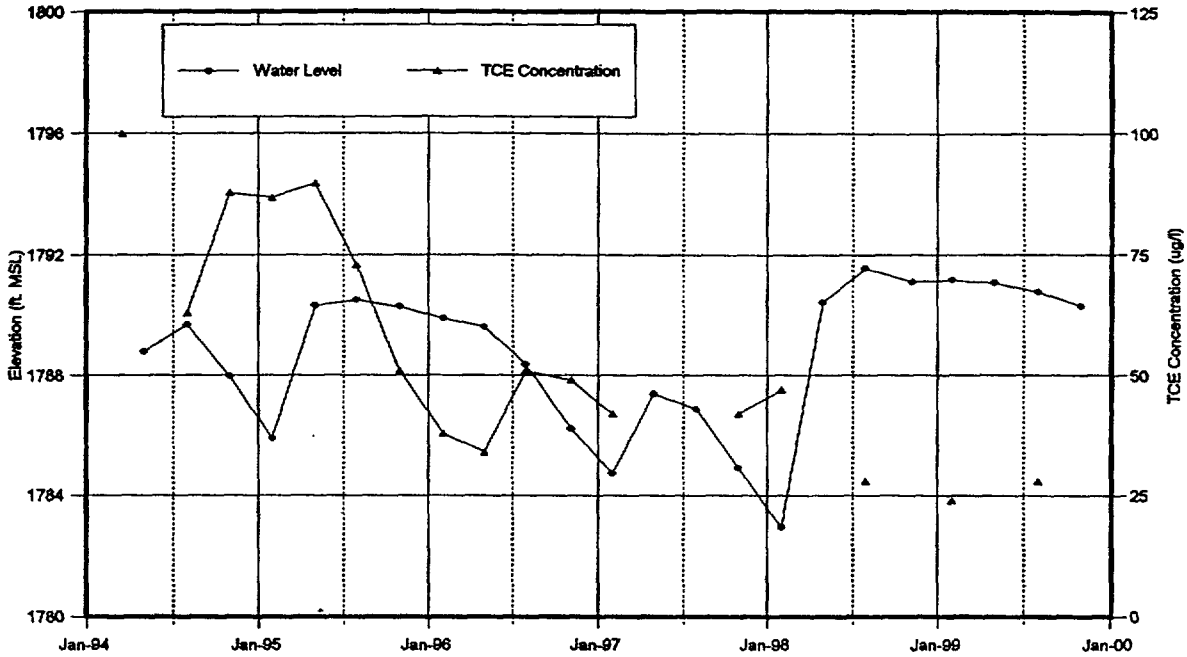
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-35A

Figure A-77



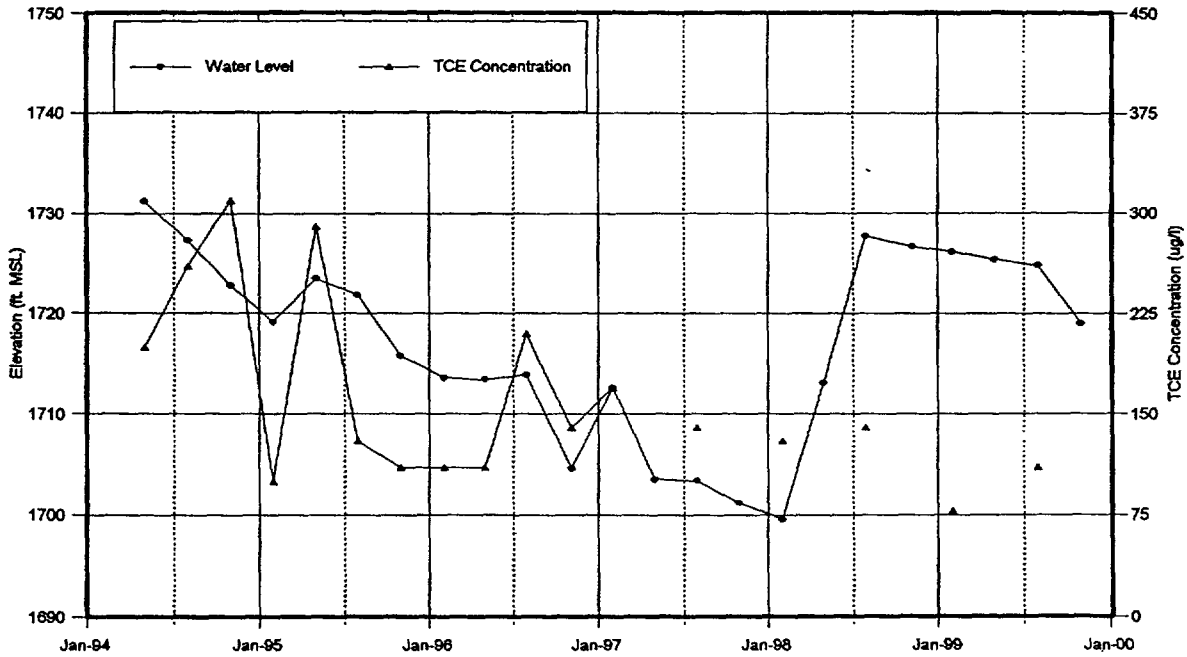
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-36A

Figure A-78



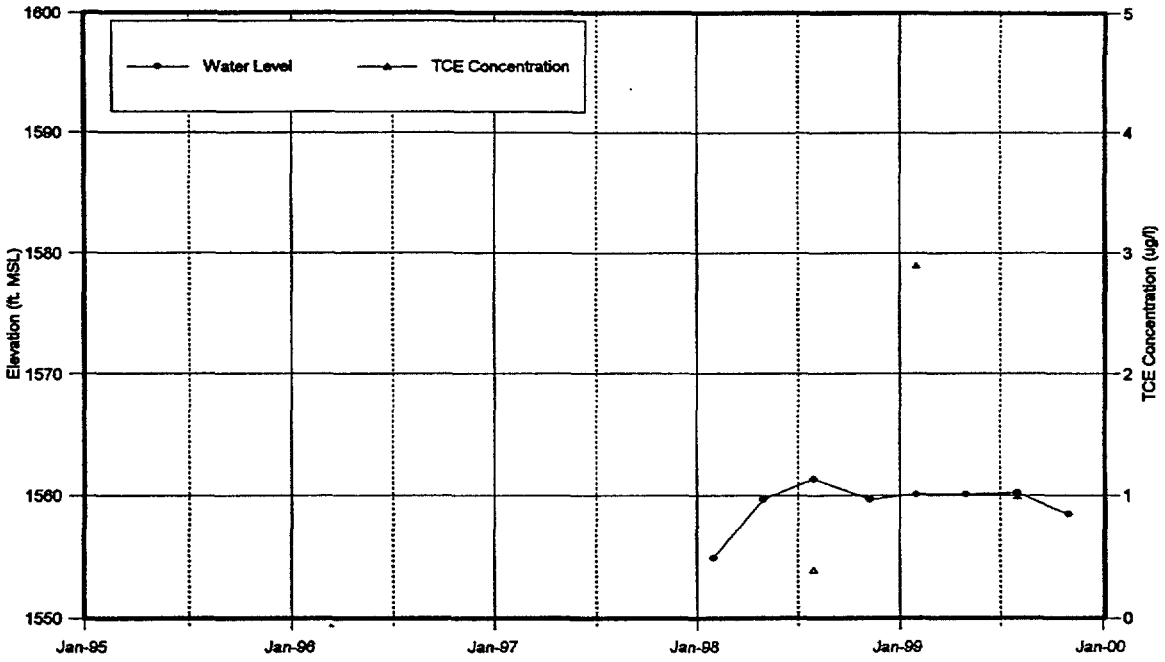
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-36B

Figure A-79



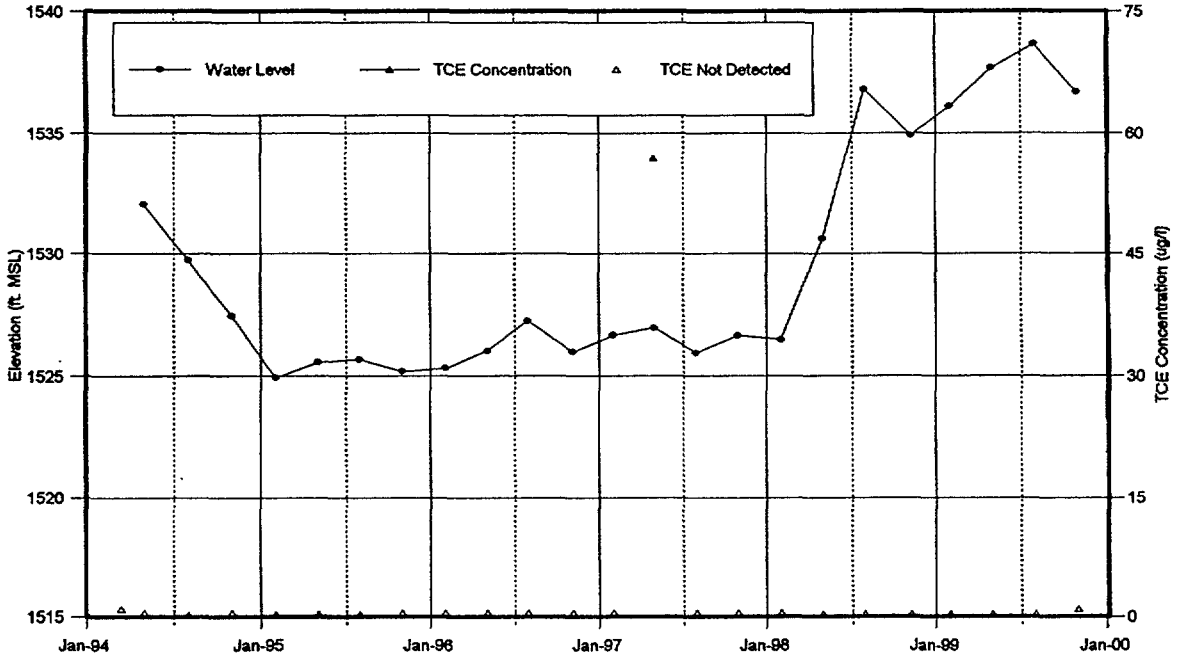
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-36C

Figure A-80



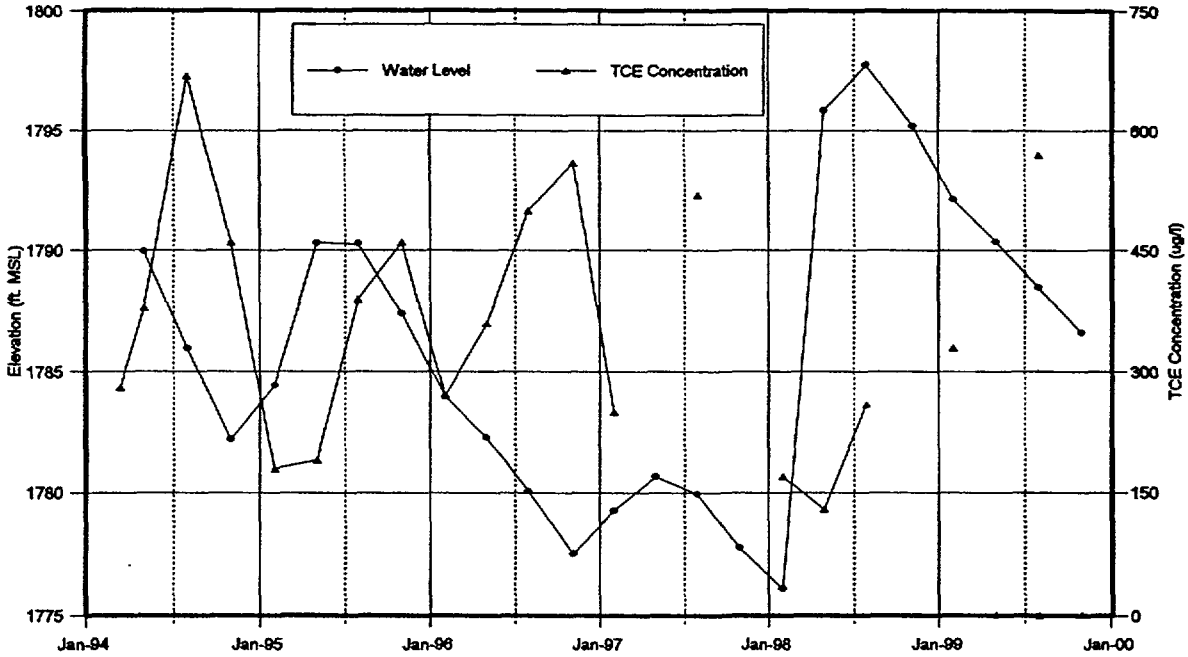
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-36D

Figure A-81



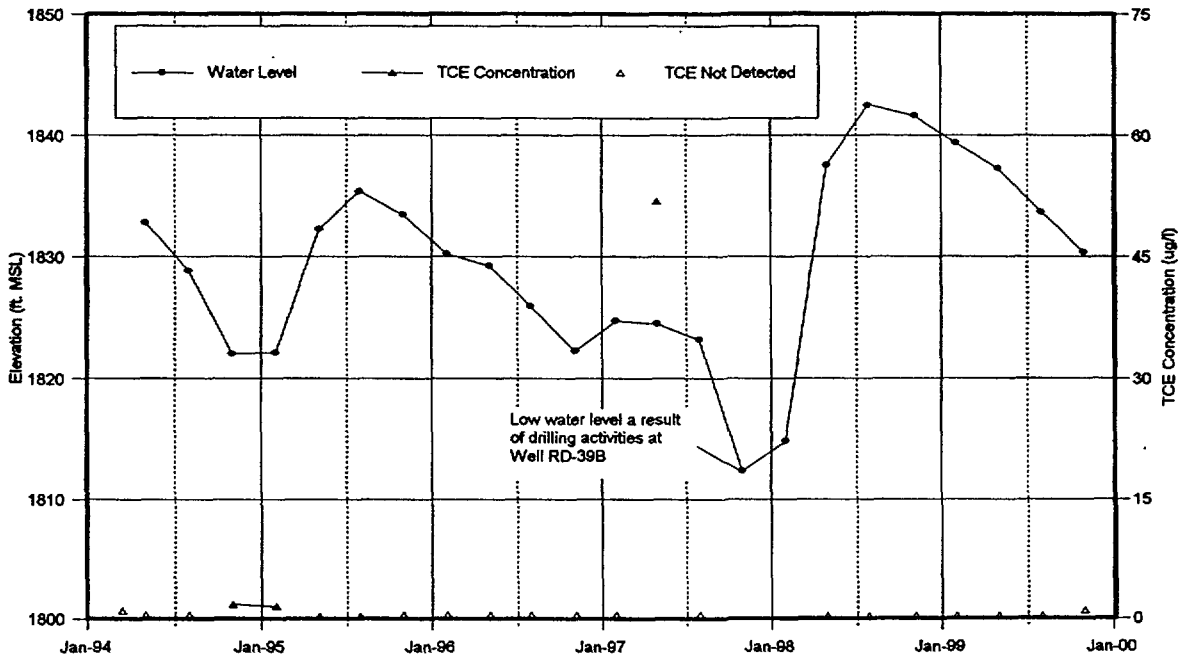
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-37

Figure A-82



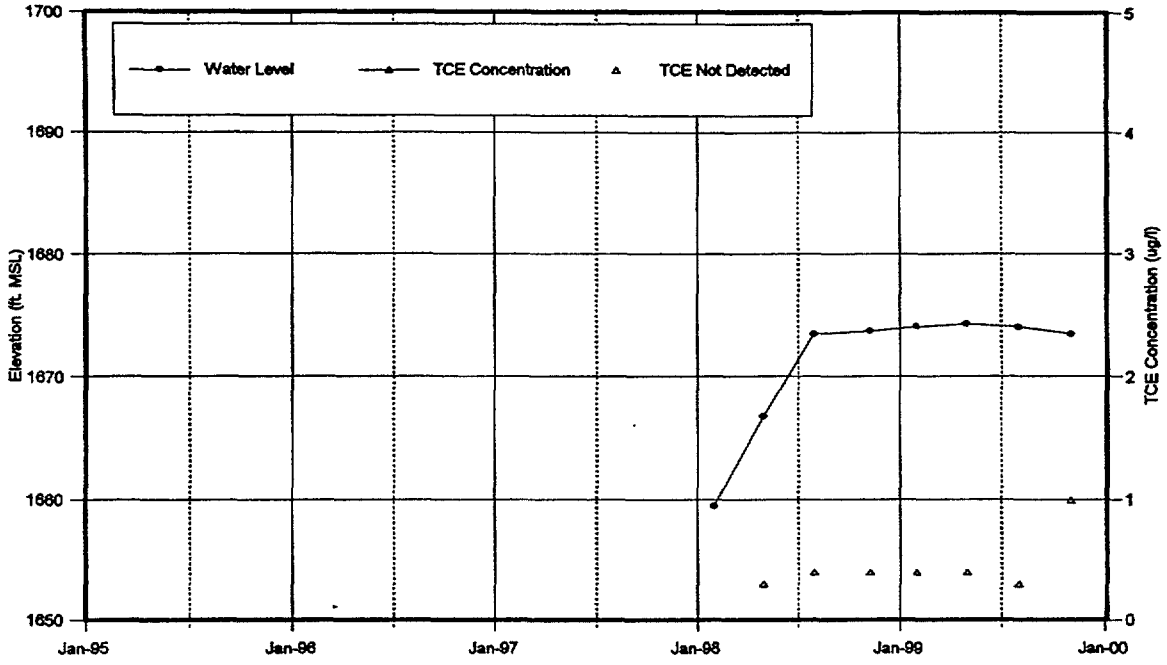
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-38A

Figure A-83



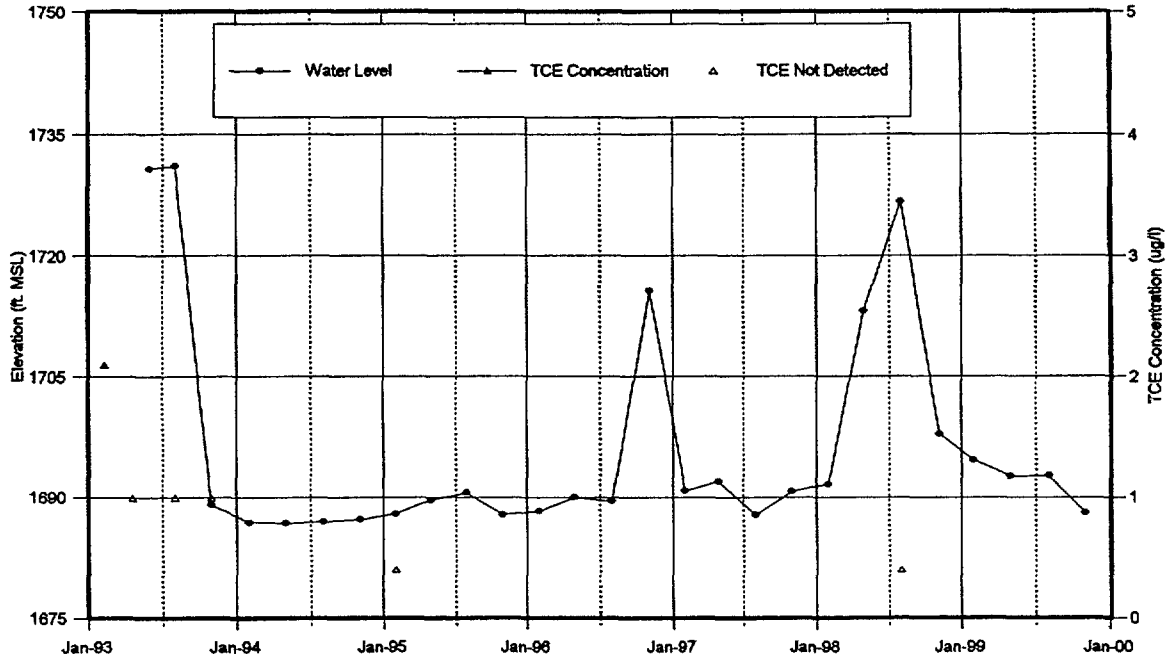
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-39A

Figure A-84



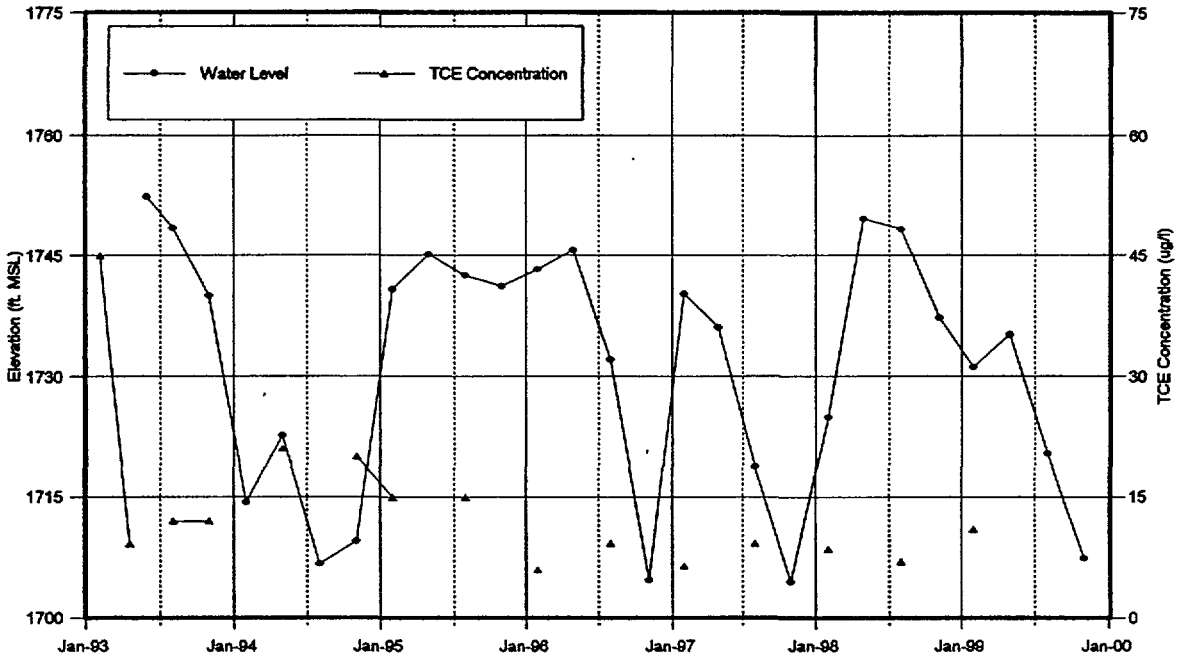
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-39B

Figure A-85



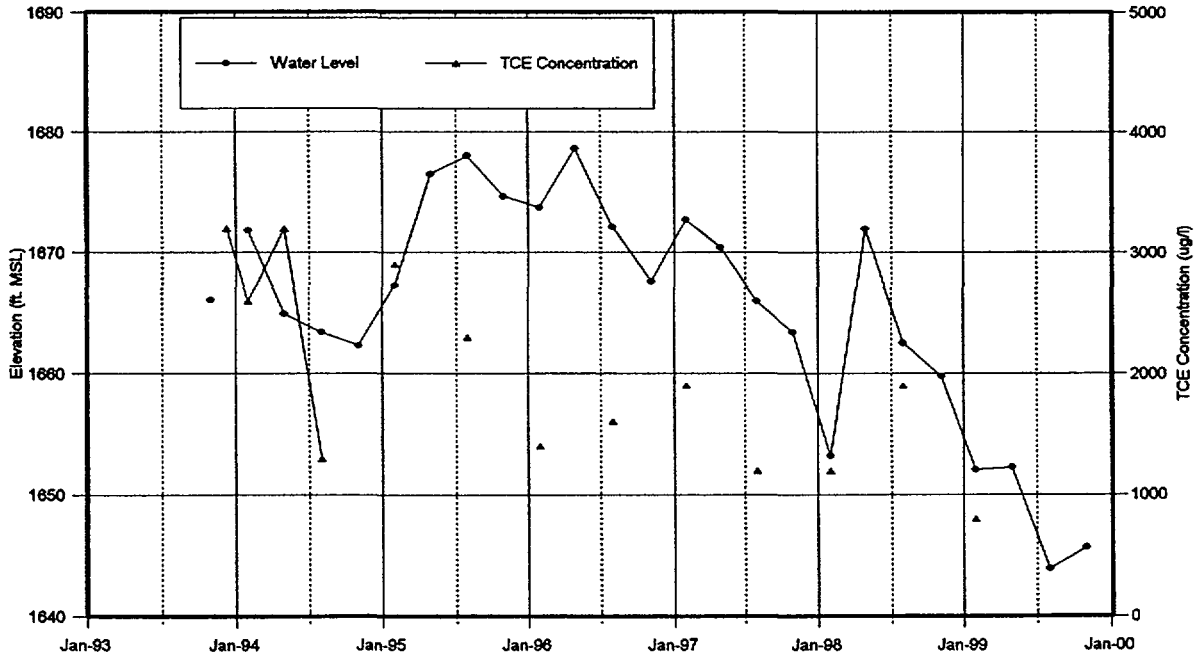
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-40

Figure A-86



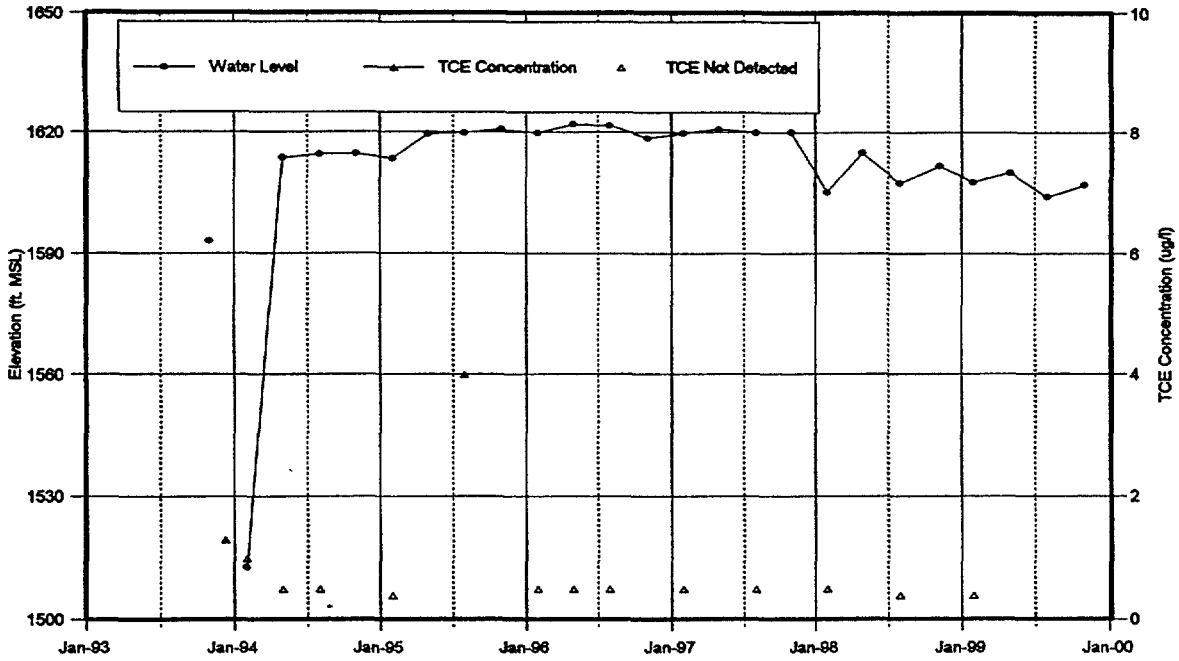
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-41A

Figure A-87



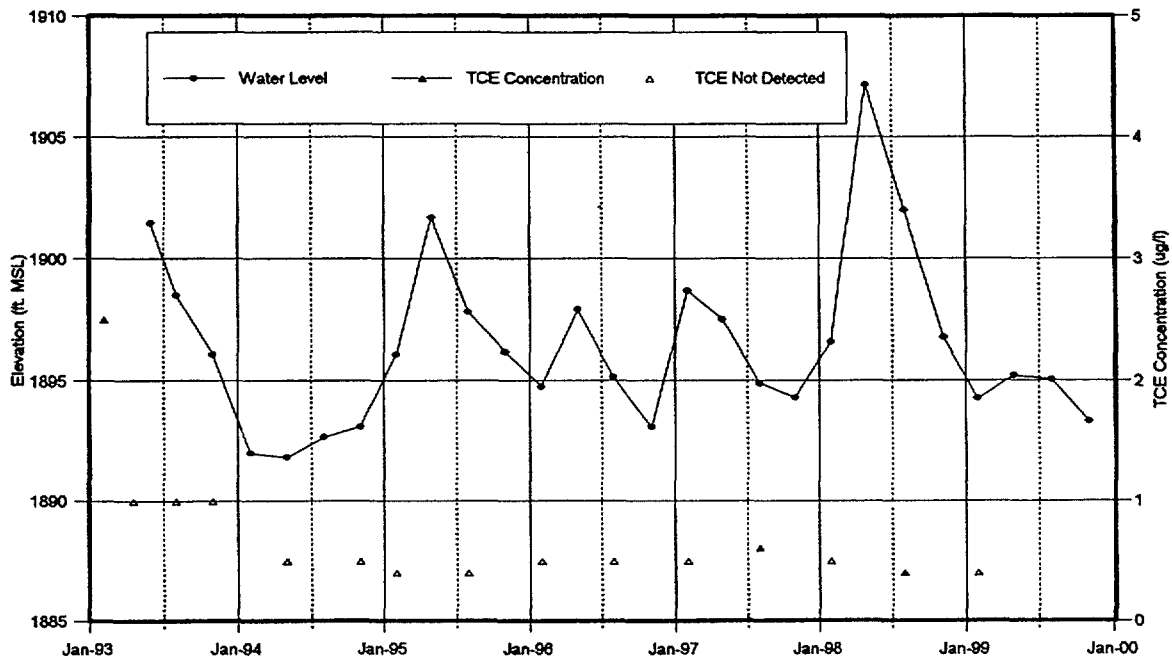
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-41B

Figure A-88



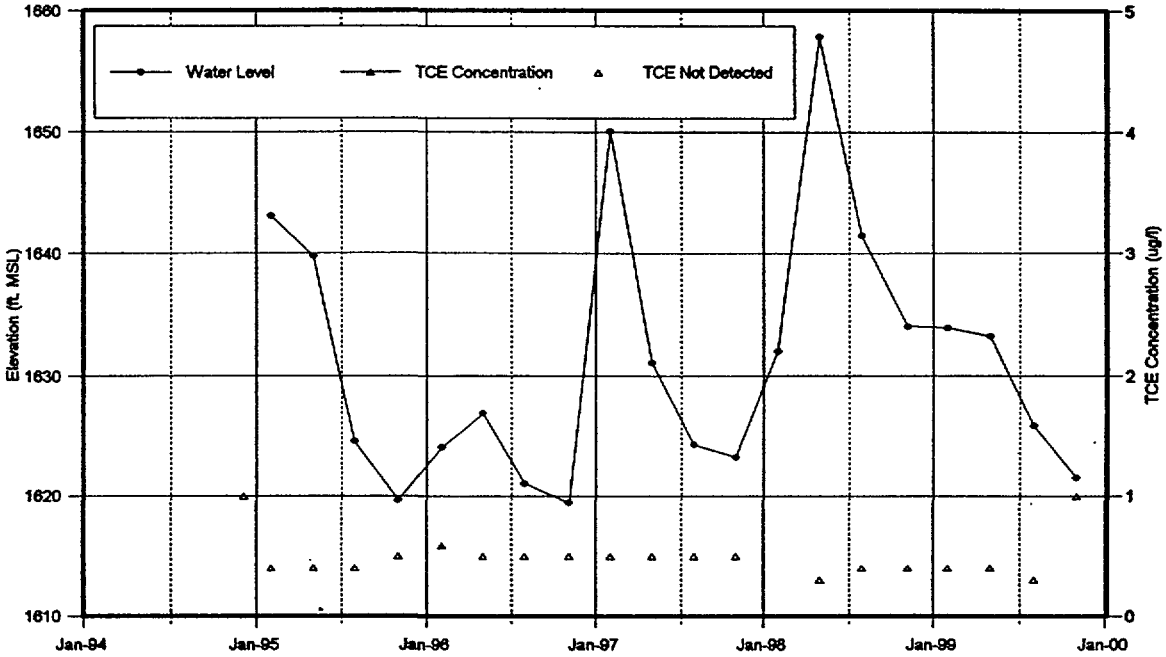
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-41C

Figure A-89



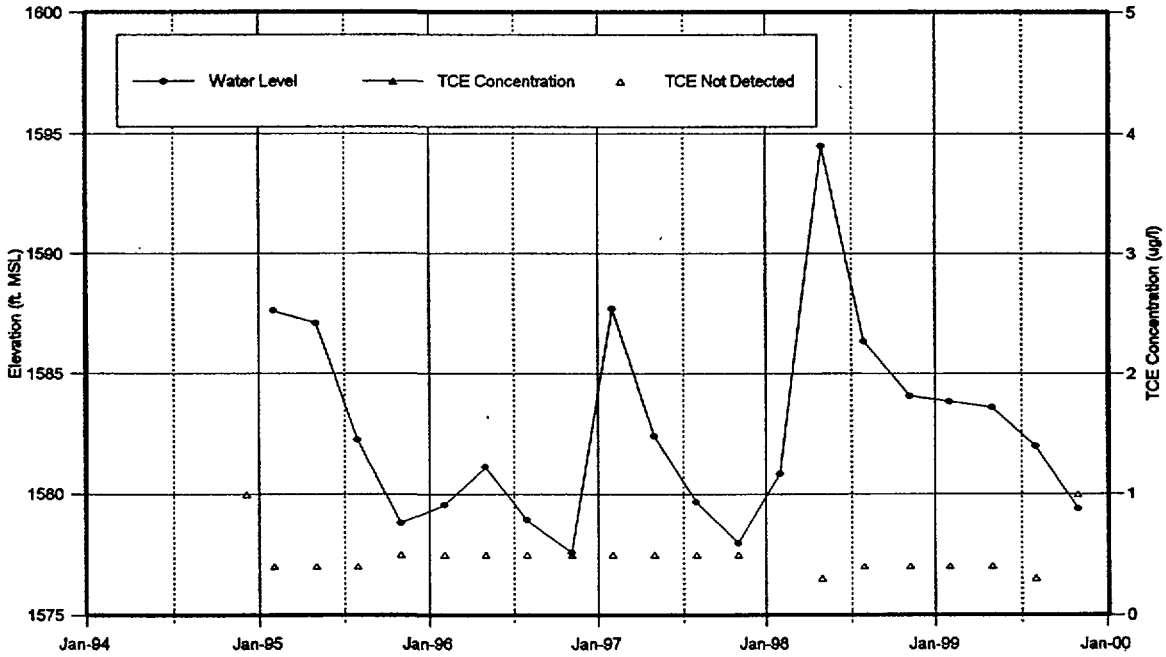
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-42

Figure A-90



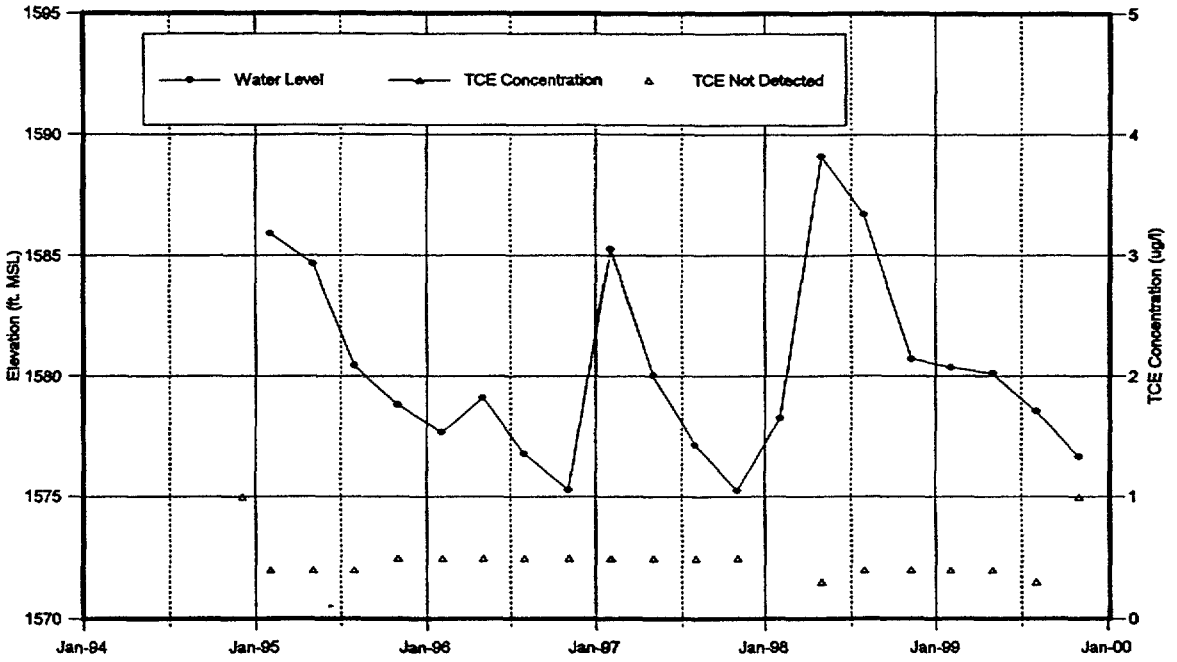
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-43A

Figure A-91



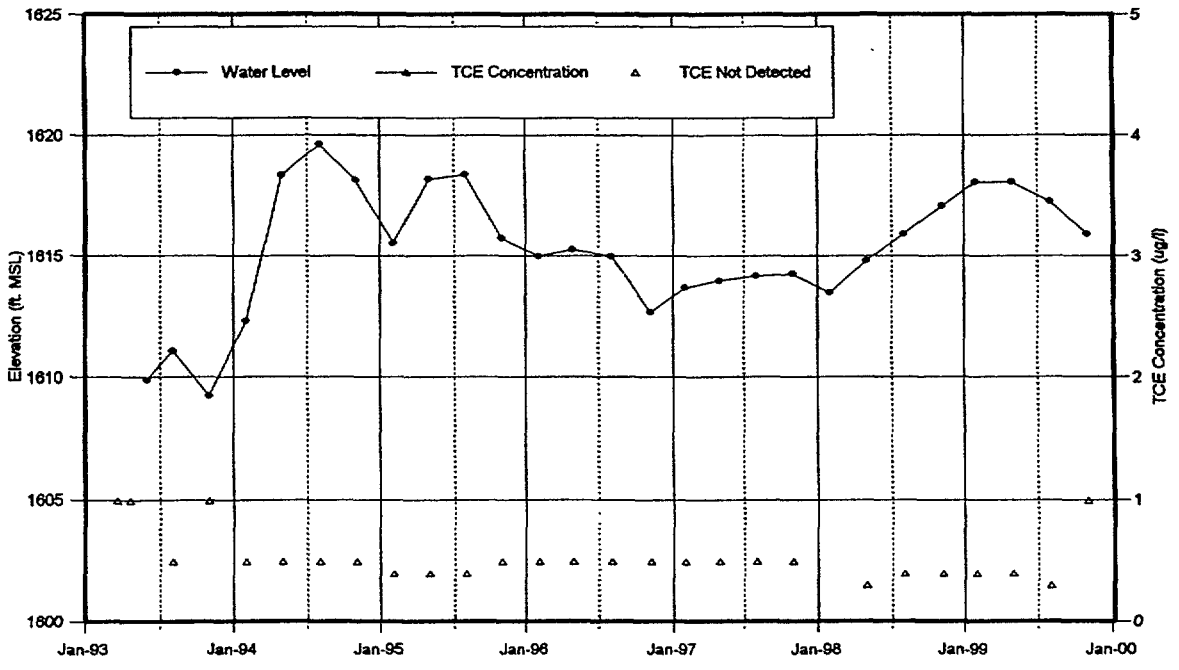
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-43B

Figure A-92



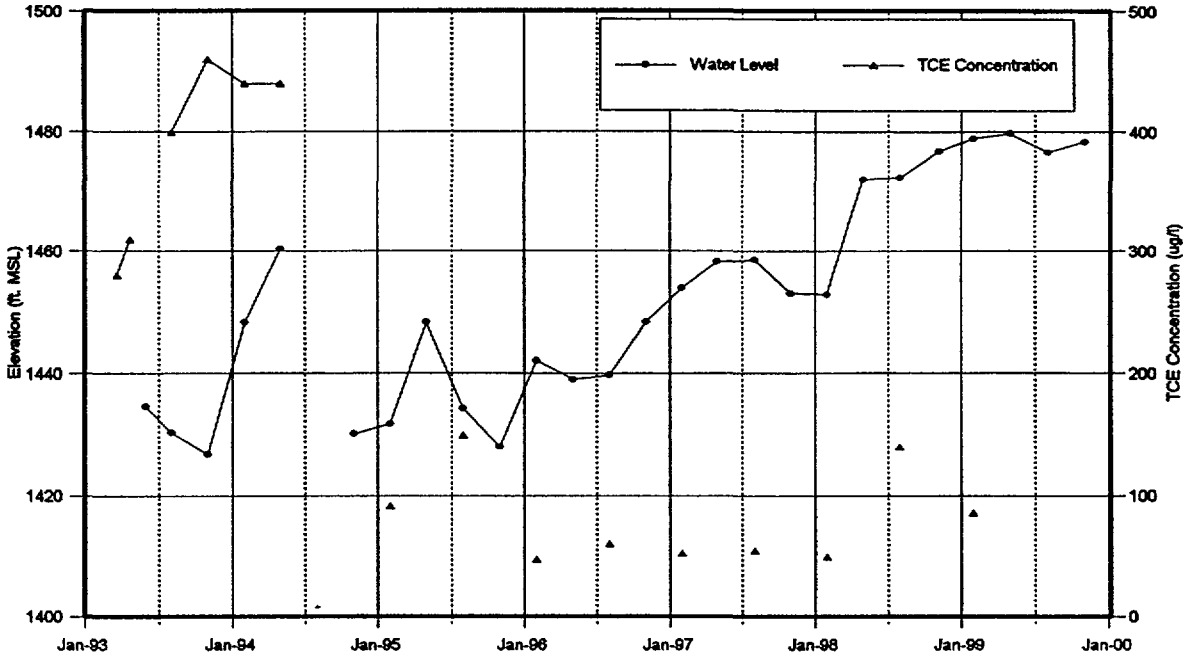
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-43C

Figure A-93



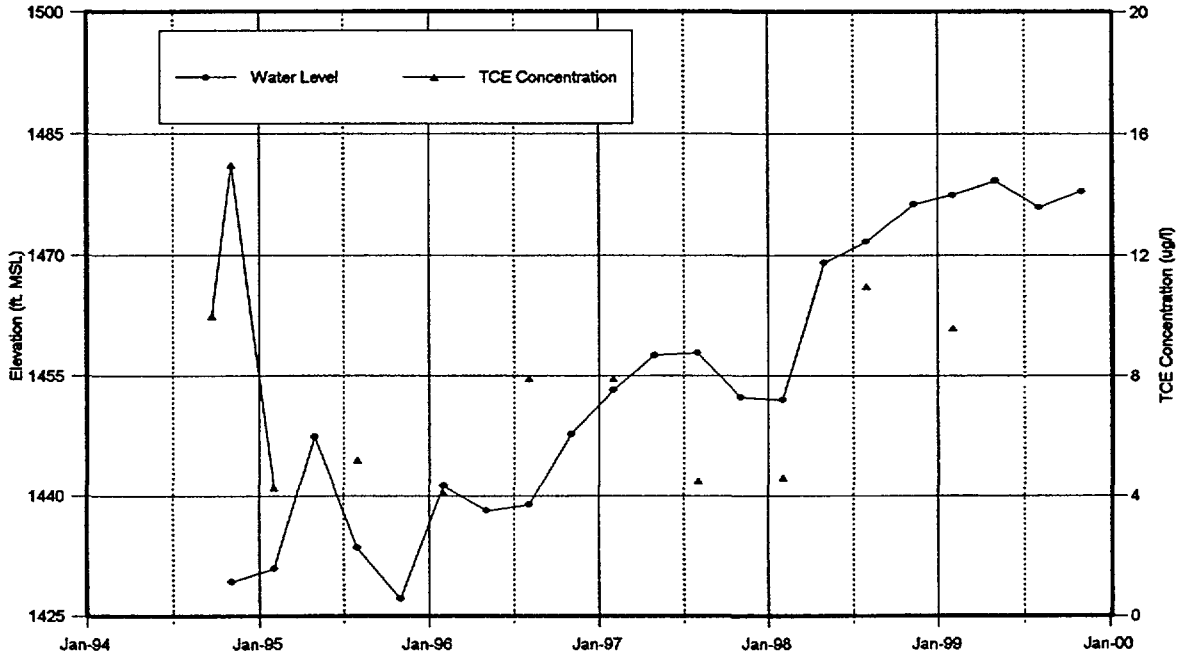
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-44

Figure A-94



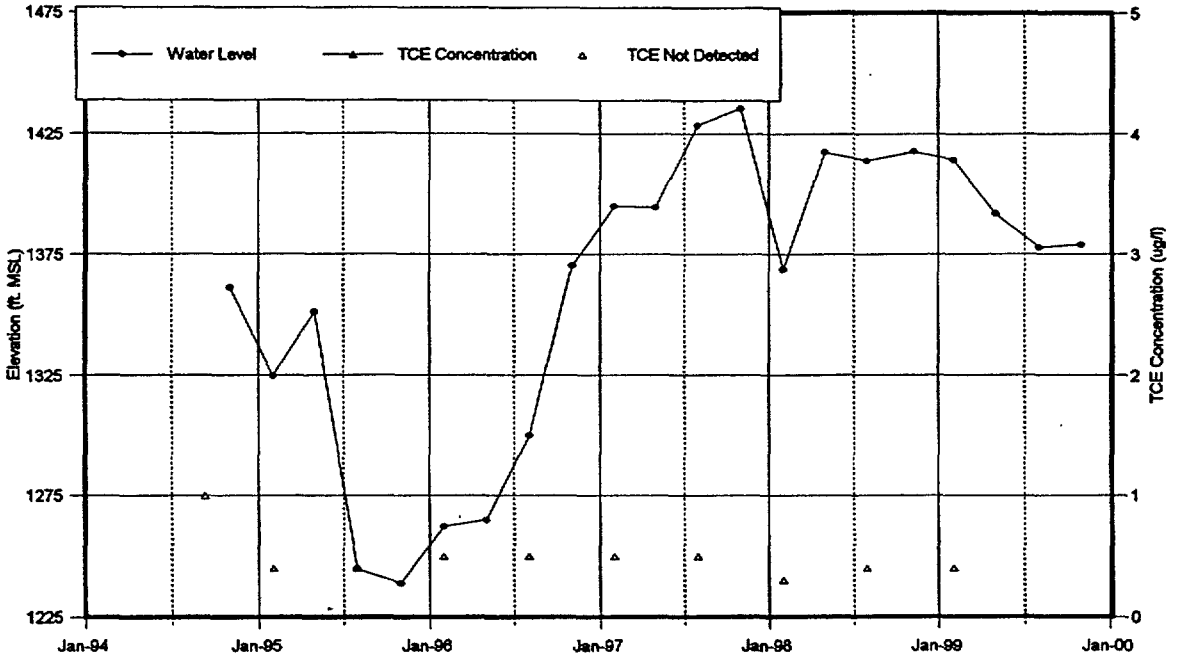
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-45A

Figure A-95



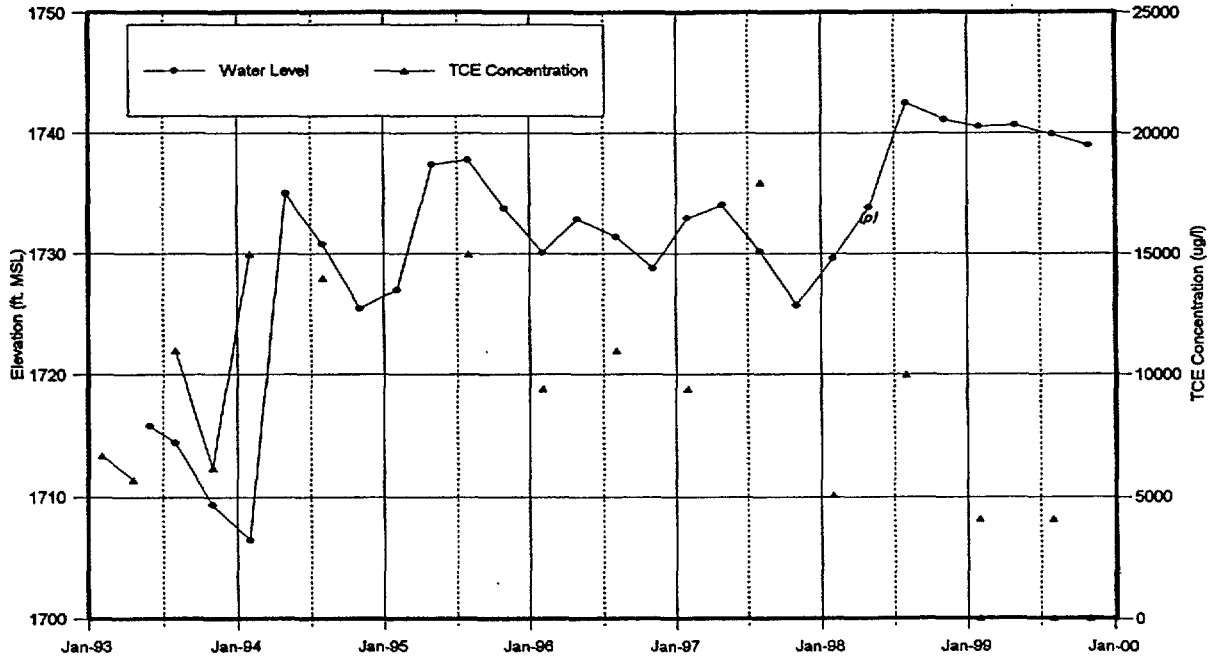
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-45B

Figure A-96



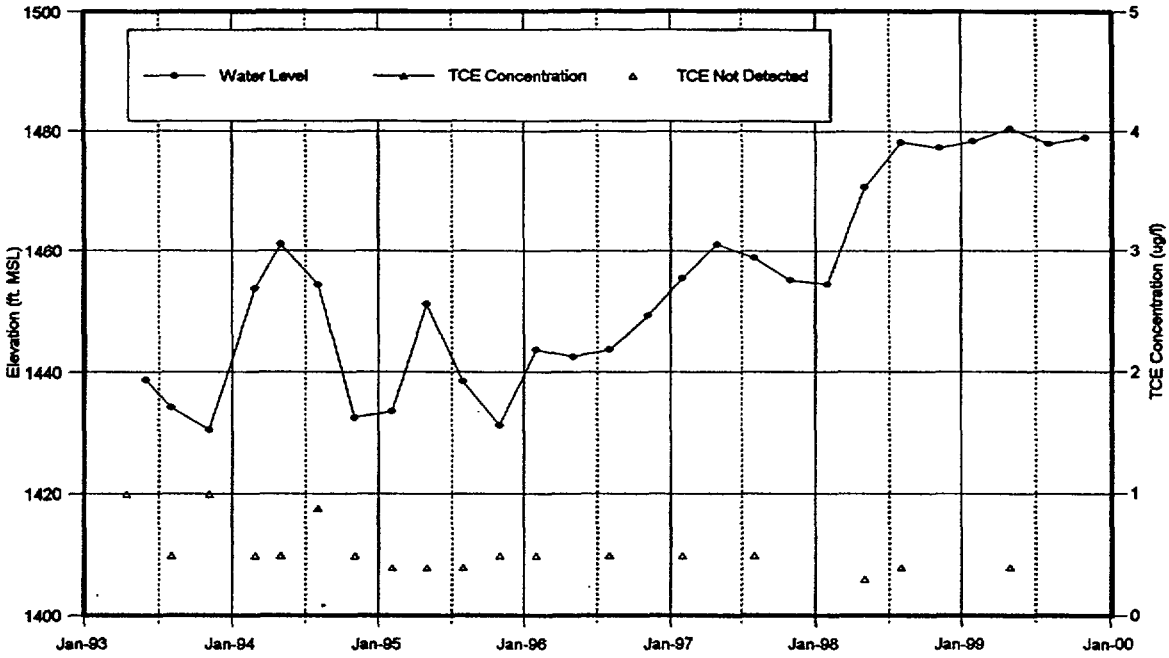
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-45C

Figure A-97



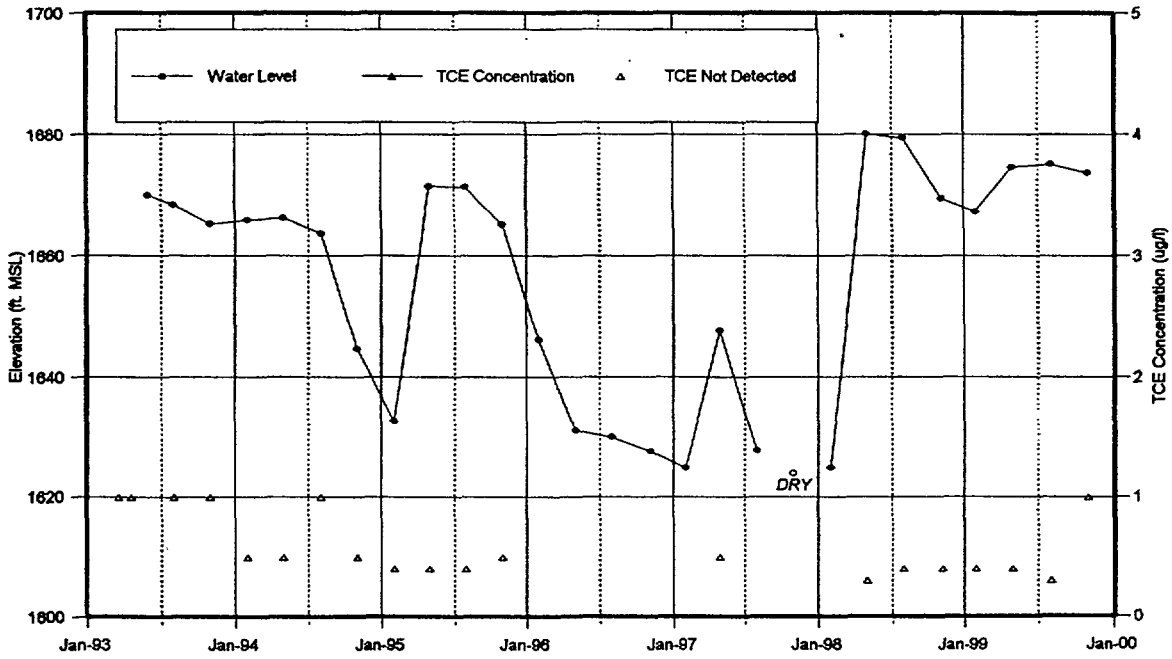
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-46A

Figure A-98



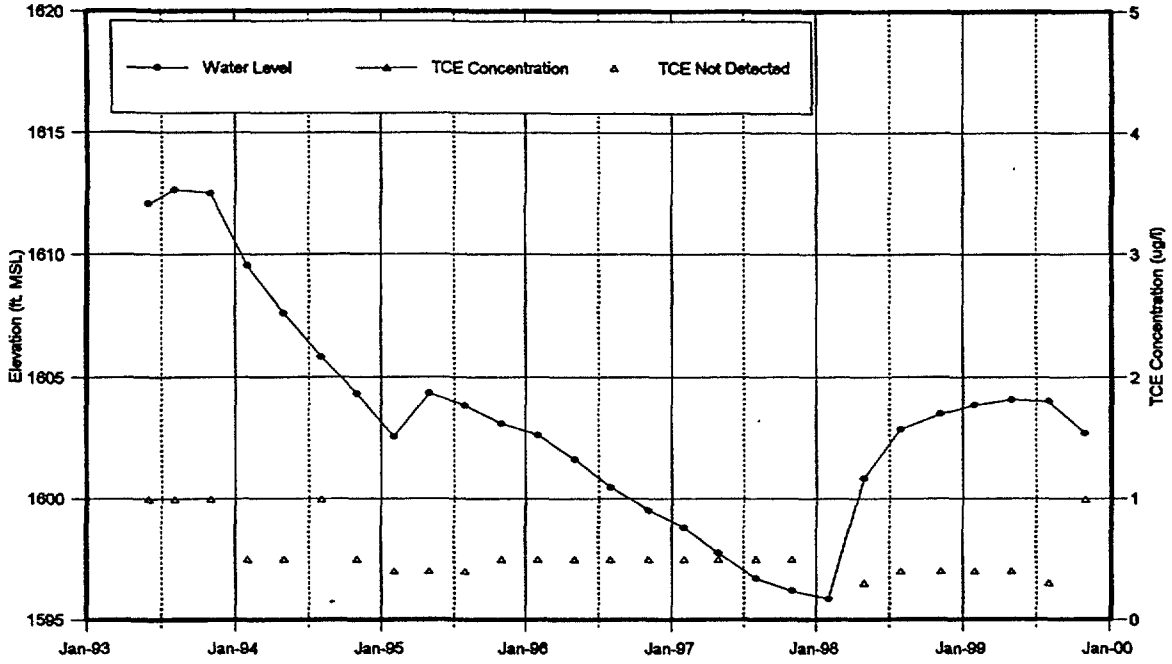
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-47

Figure A-99



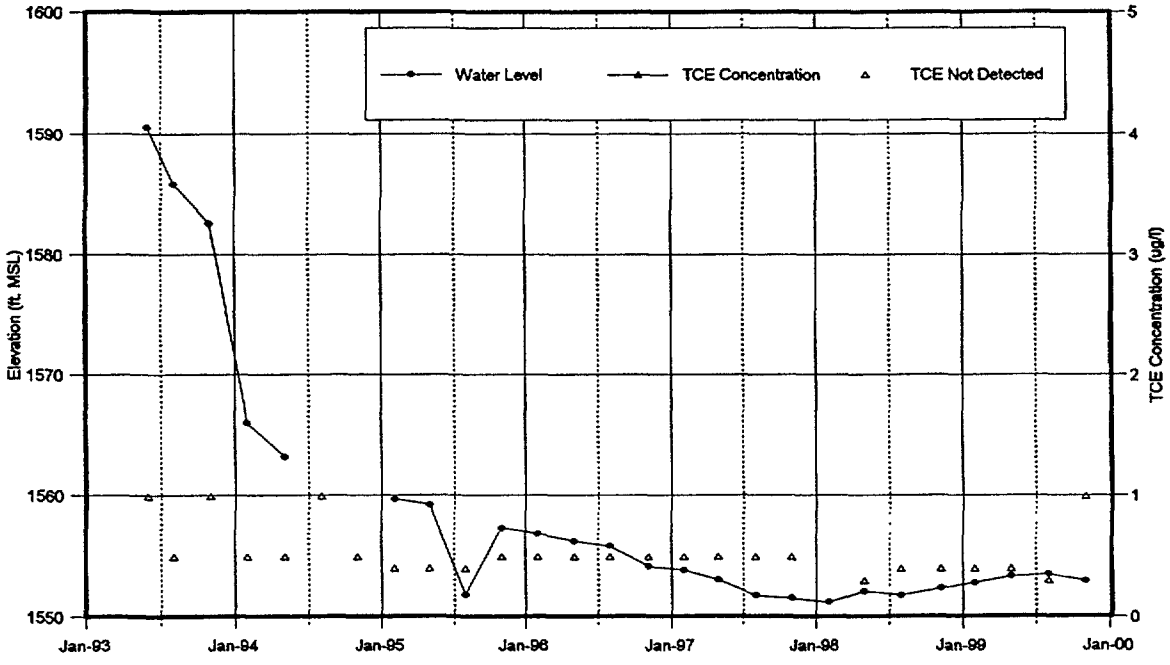
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-48A

Figure A-100



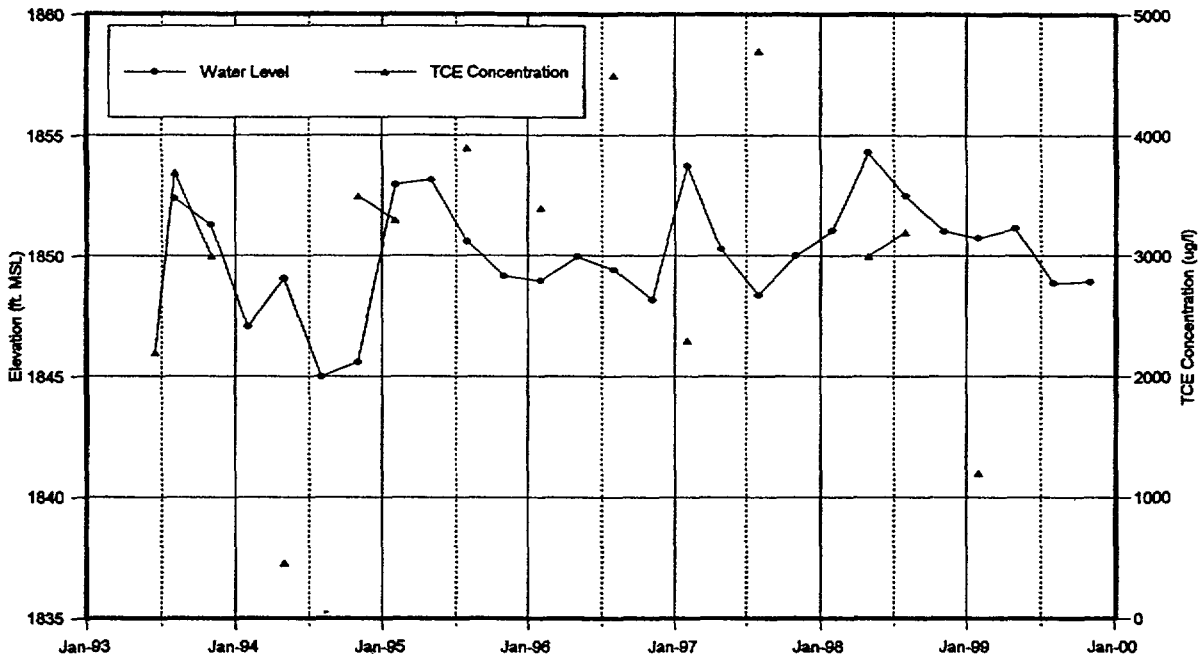
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-48B

Figure A-101



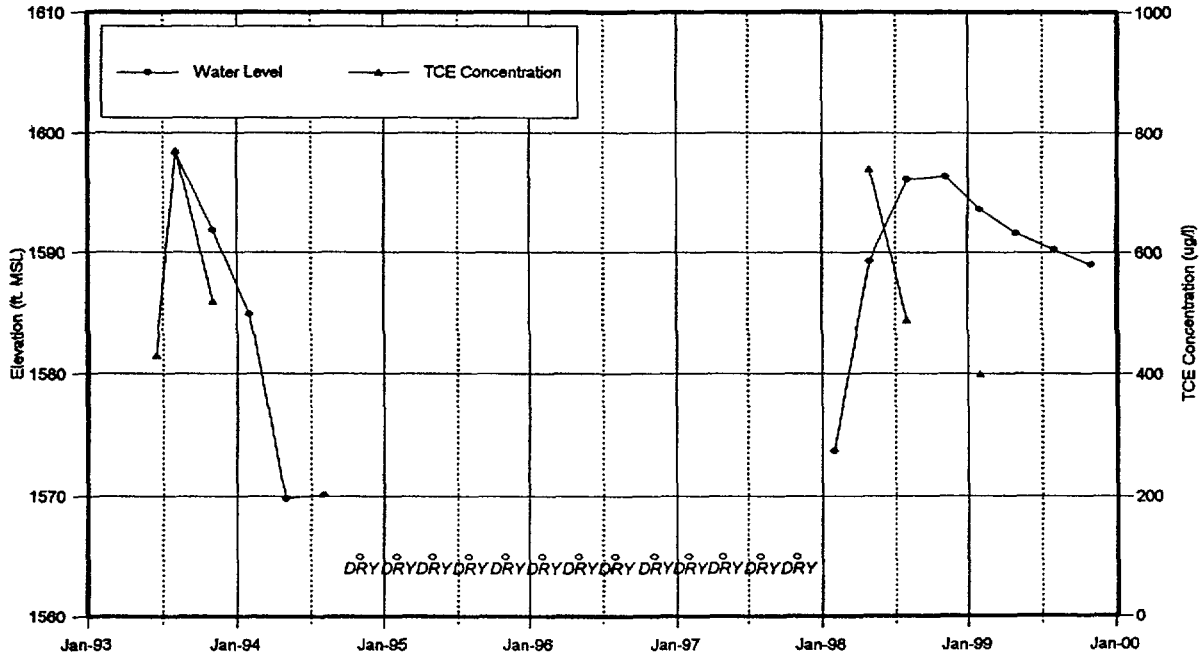
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-48C

Figure A-102



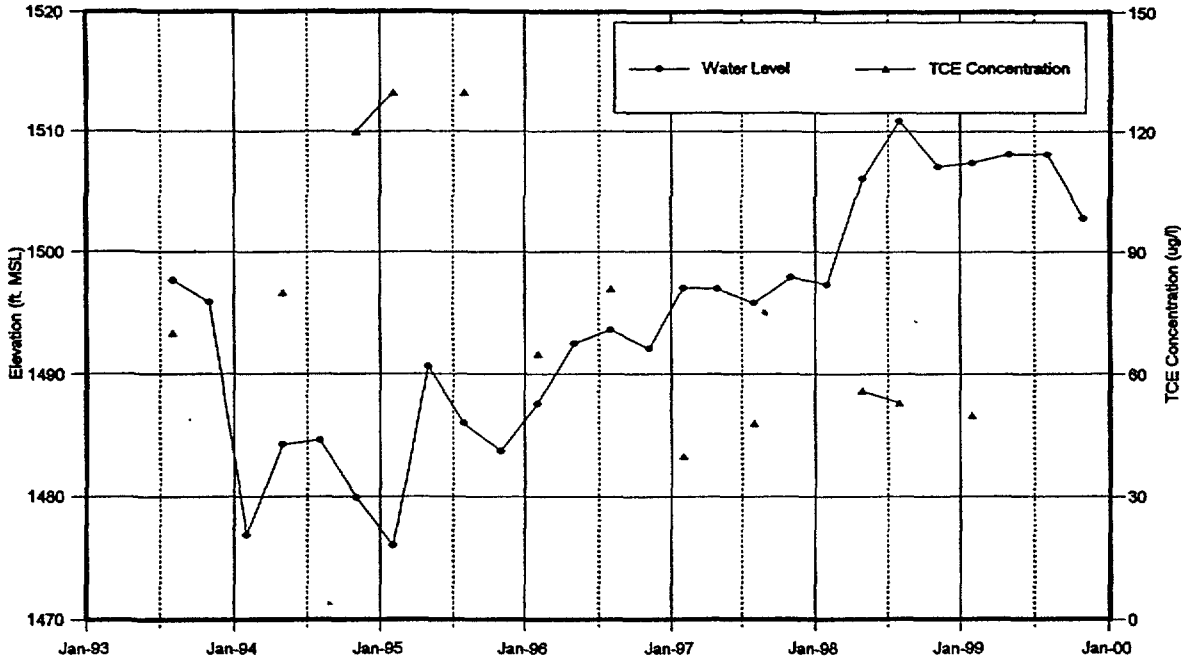
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-49A

Figure A-103



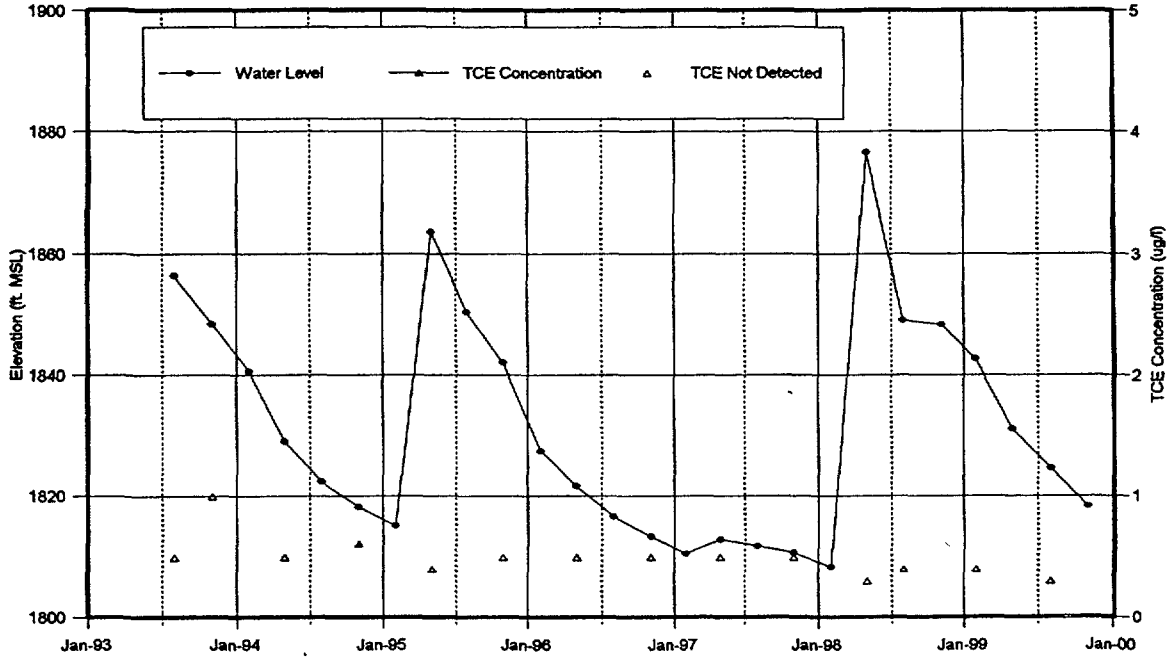
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-49B

Figure A-104



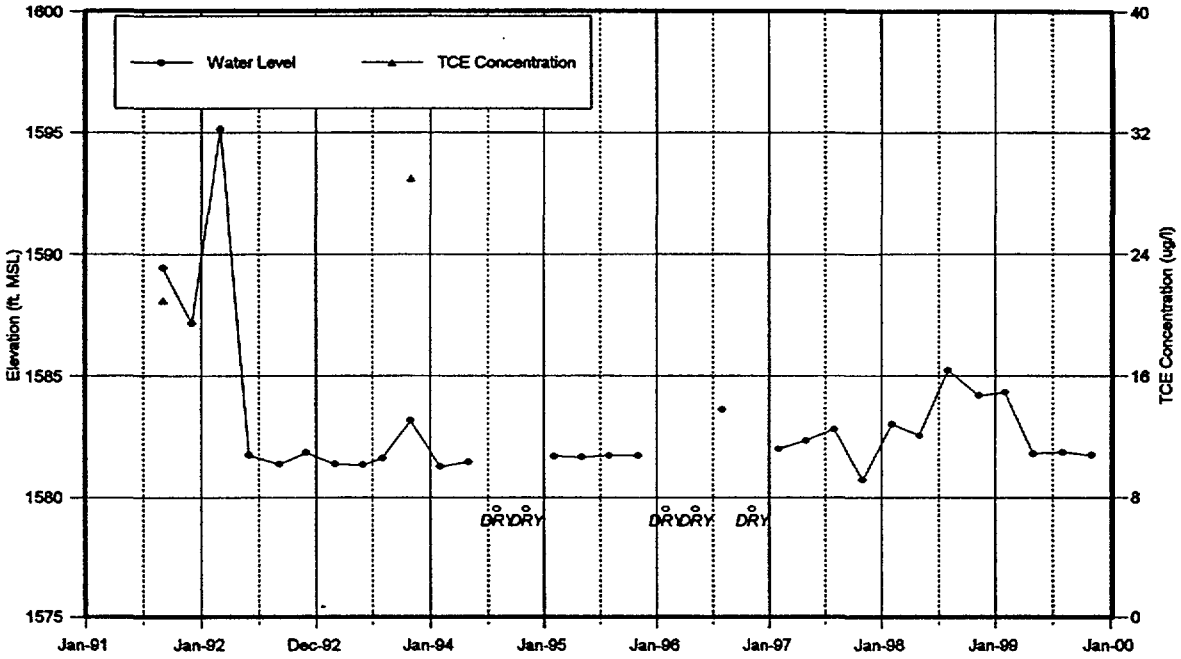
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-49C

Figure A-105



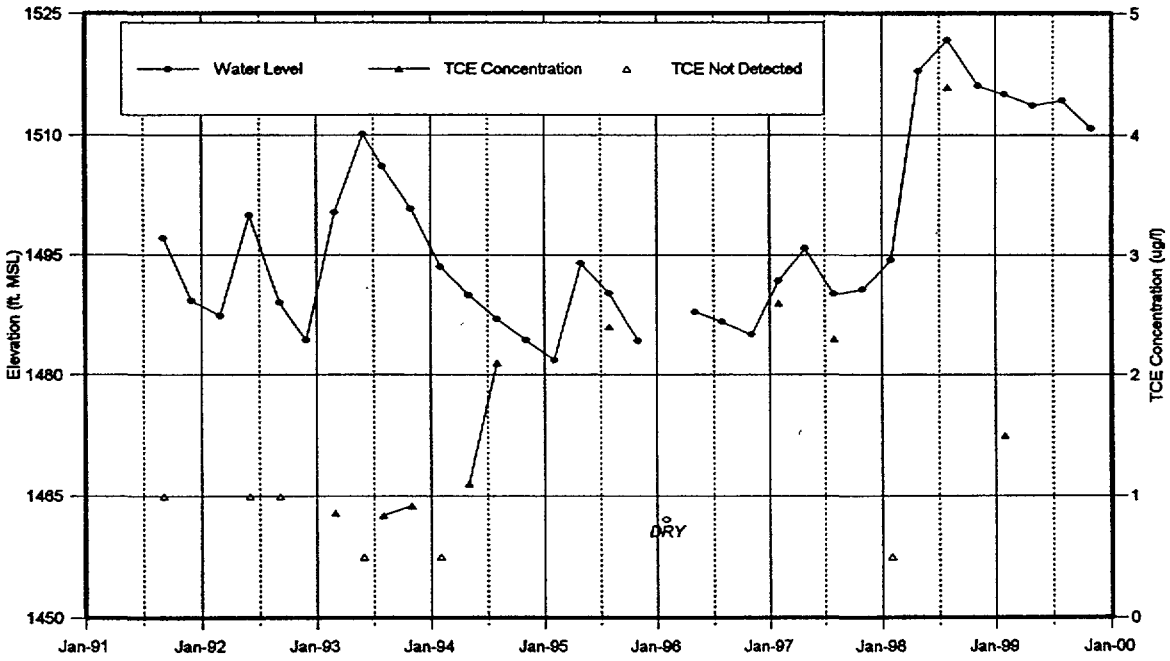
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-50

Figure A-106



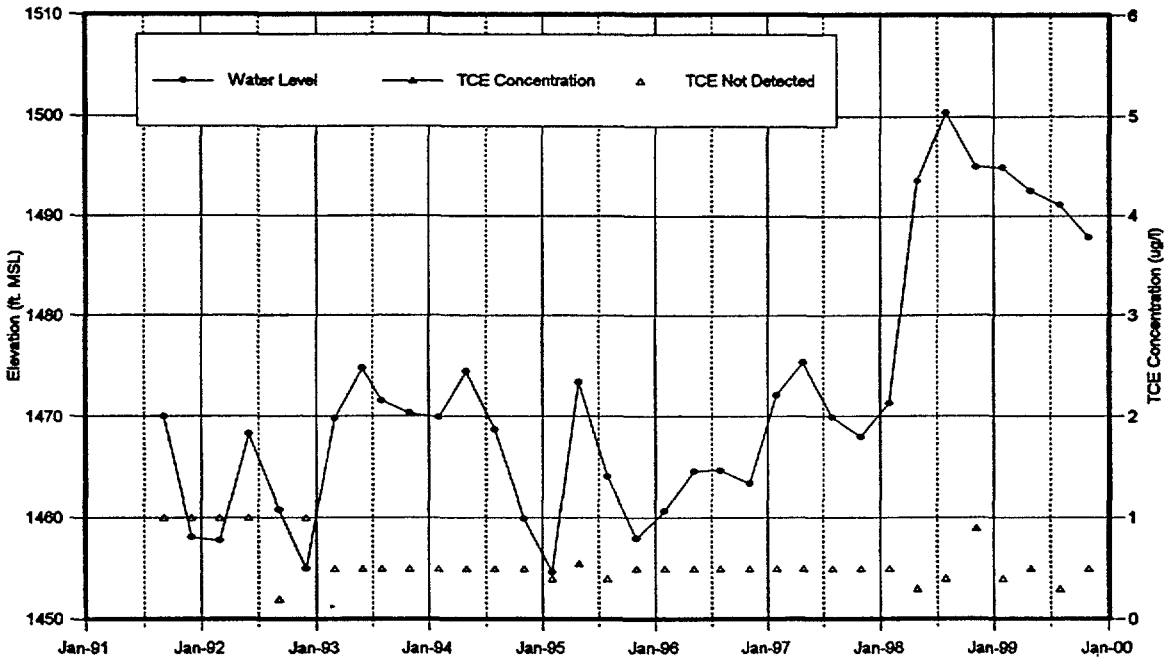
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-51A

Figure A-107



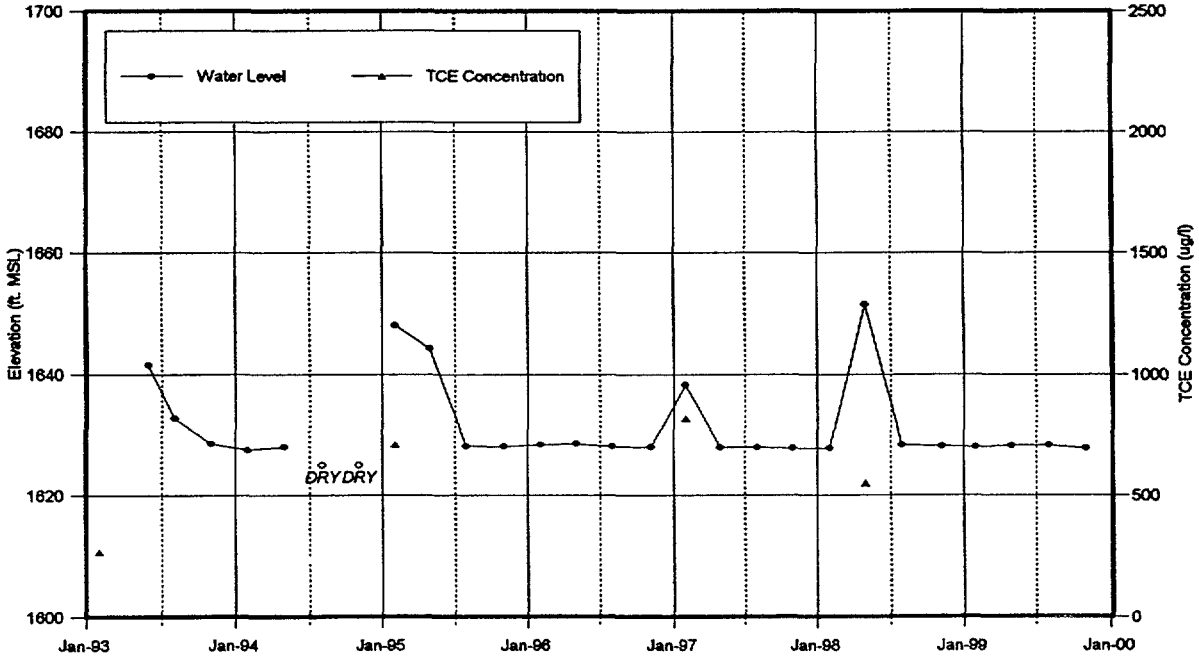
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-51B

Figure A-108



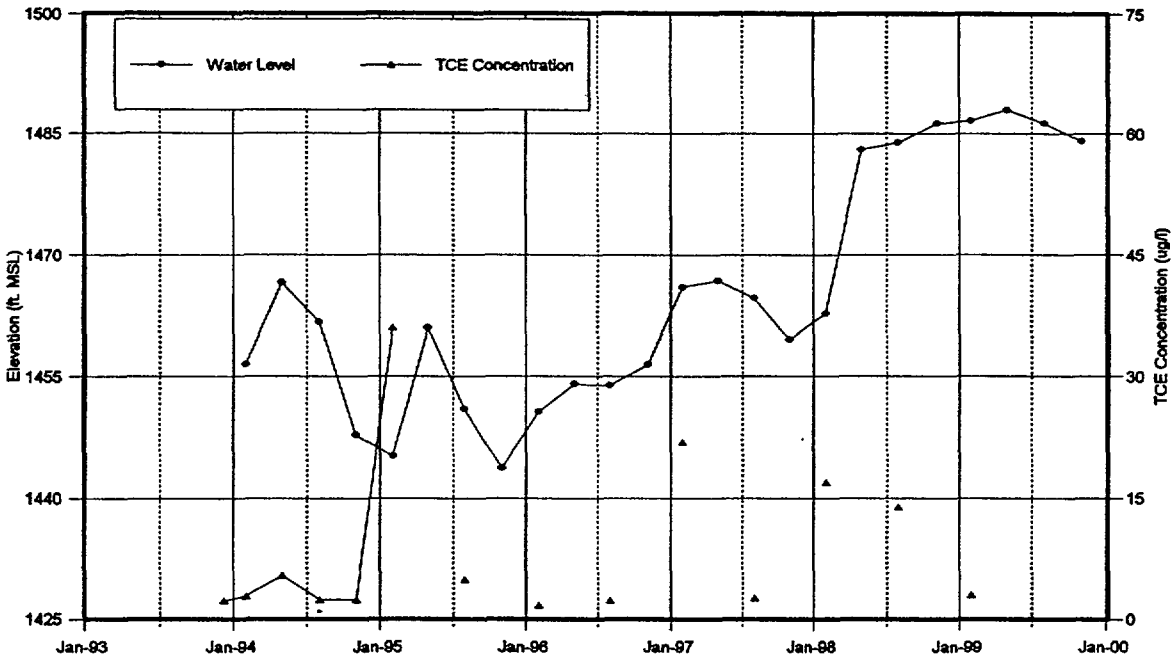
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-51C

Figure A-109



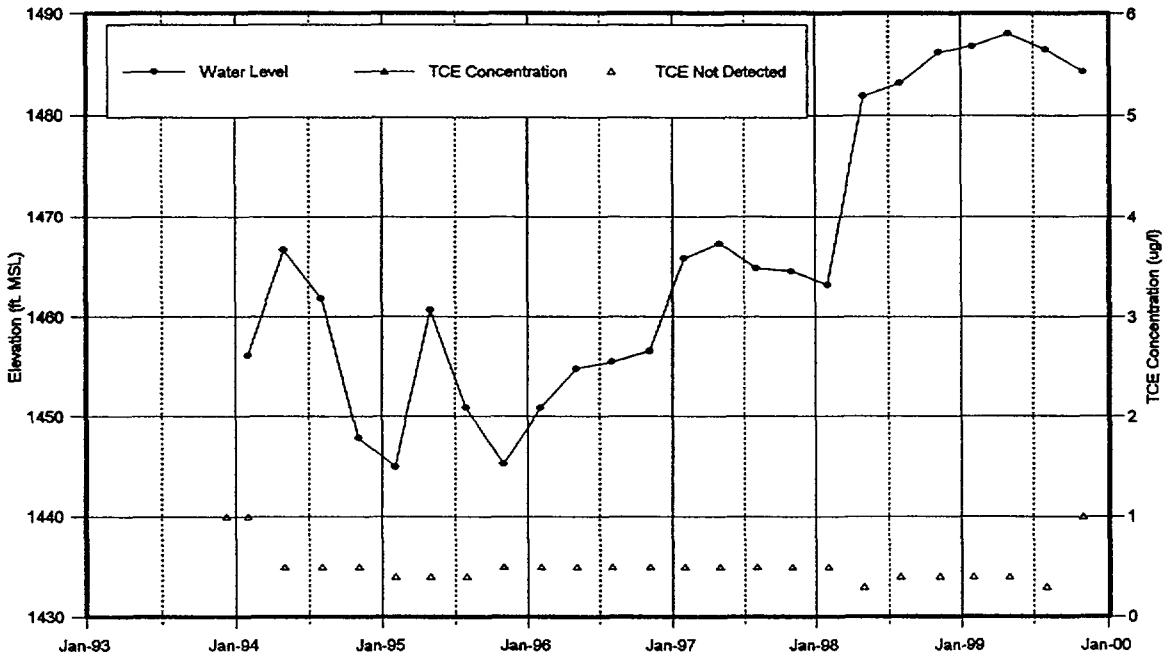
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-52A

Figure A-110



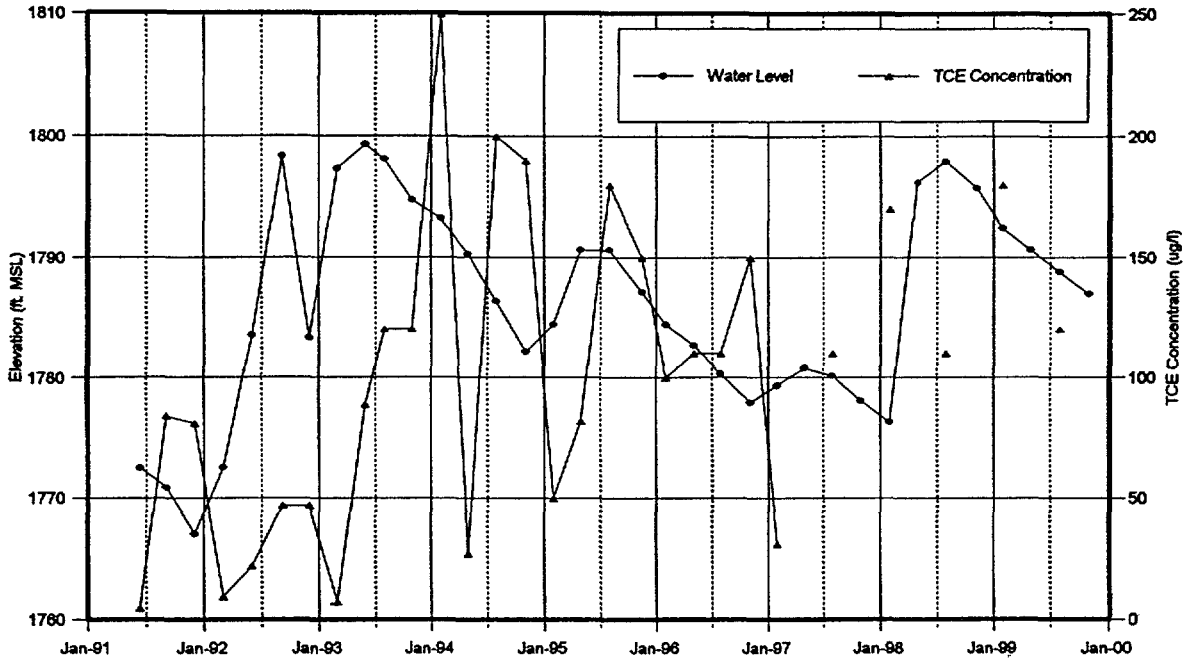
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-52B

Figure A-111



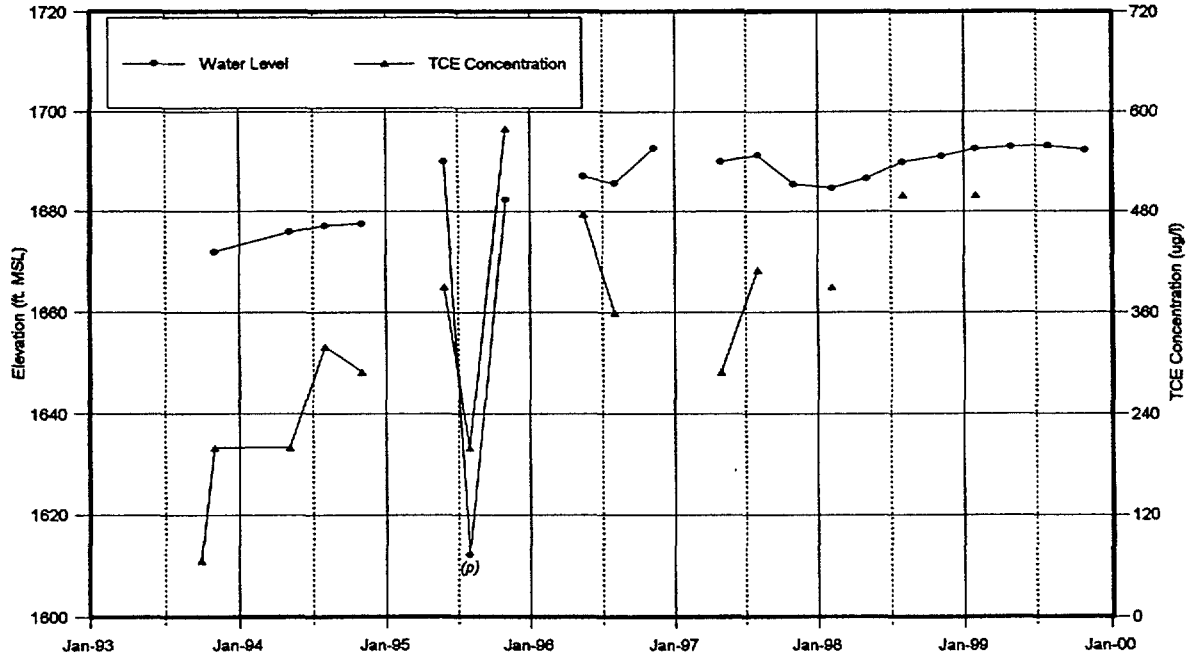
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-52C

Figure A-112



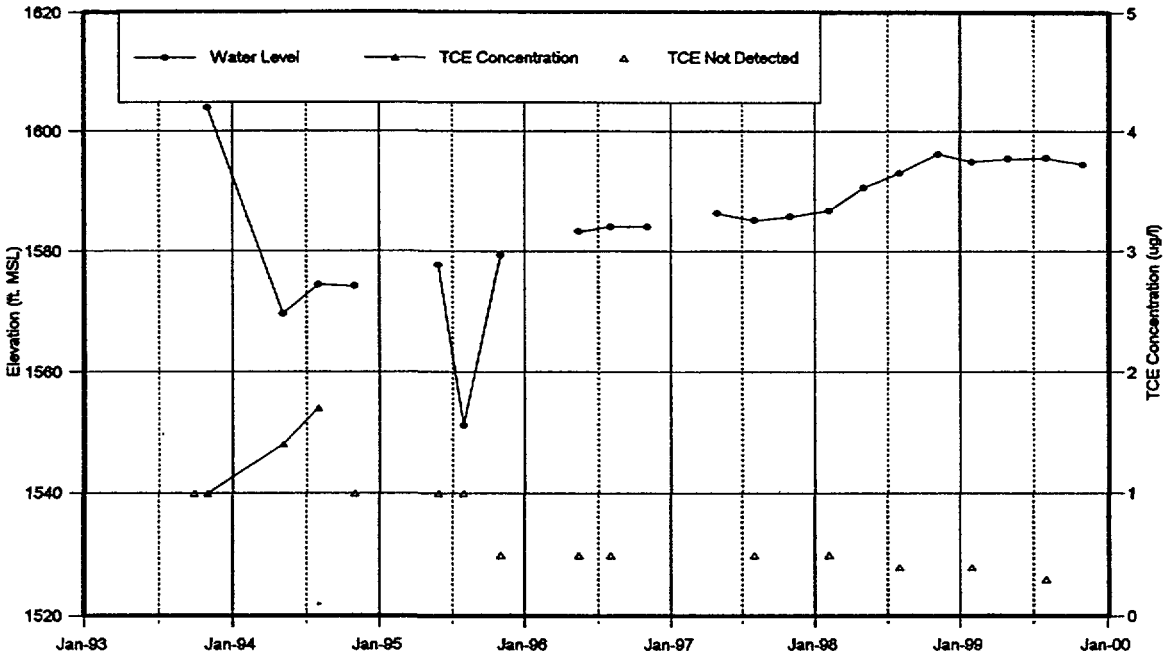
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-53

Figure A-113



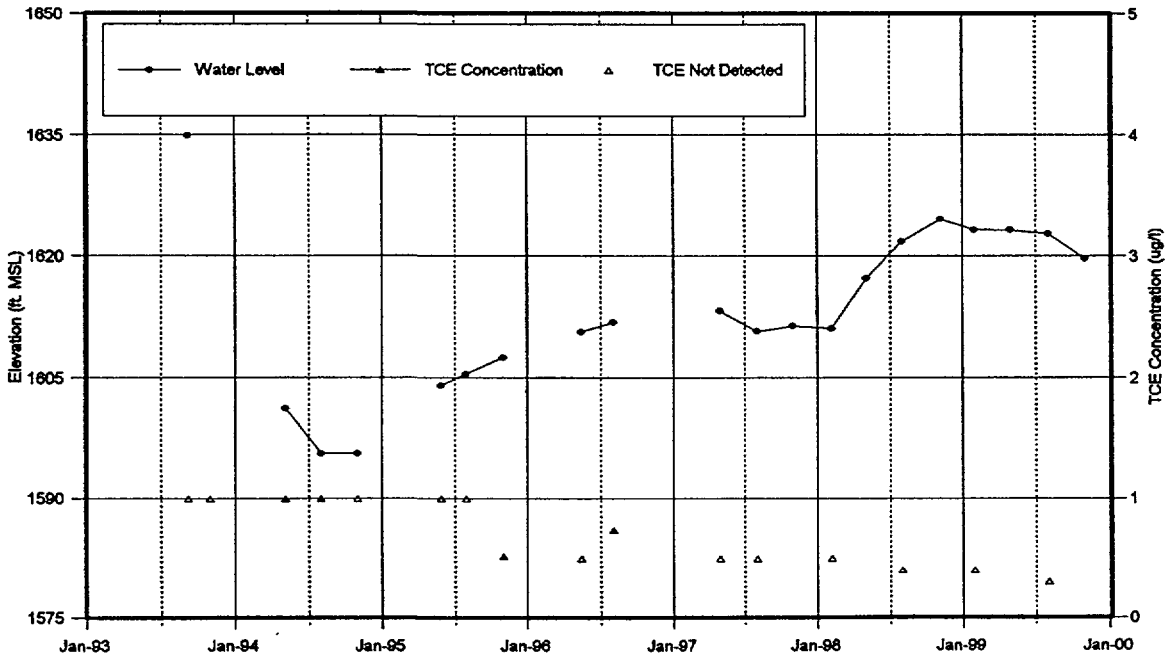
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-54A

Figure A-114



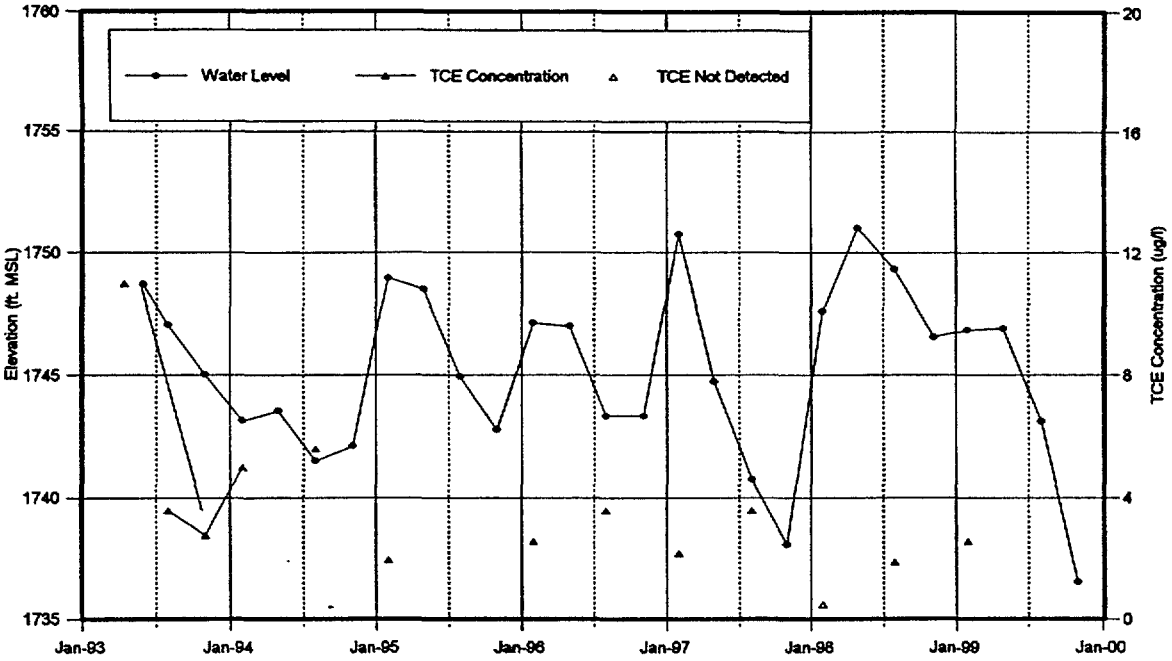
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-54B

Figure A-115



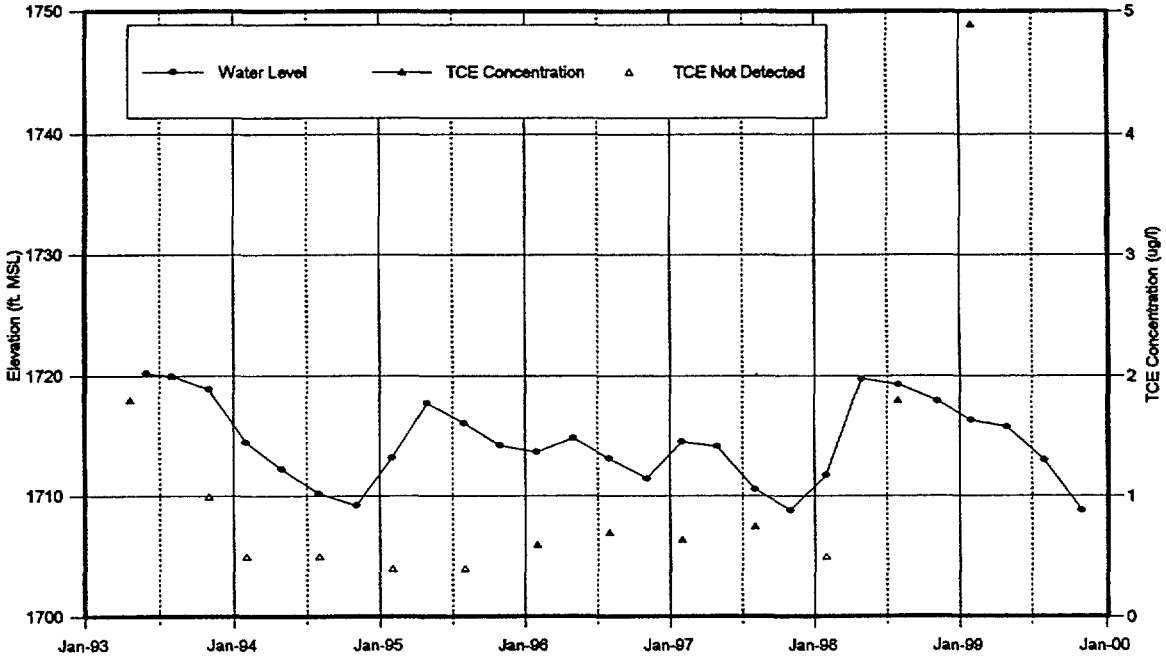
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-54C

Figure A-116



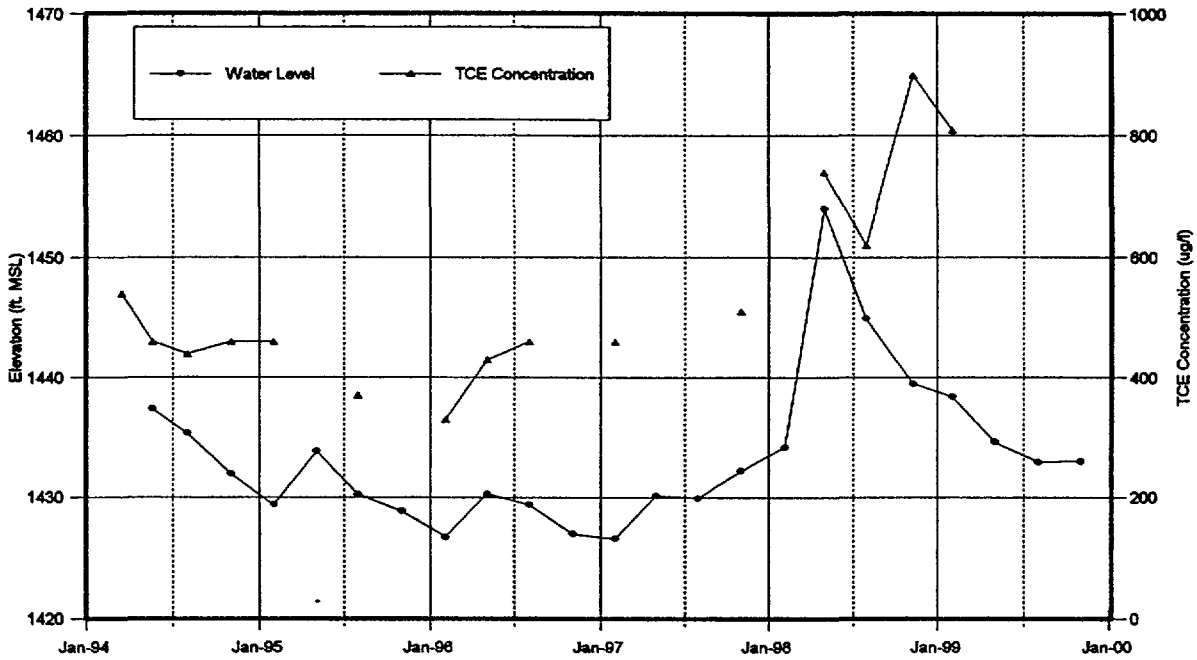
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-55A

Figure A-117



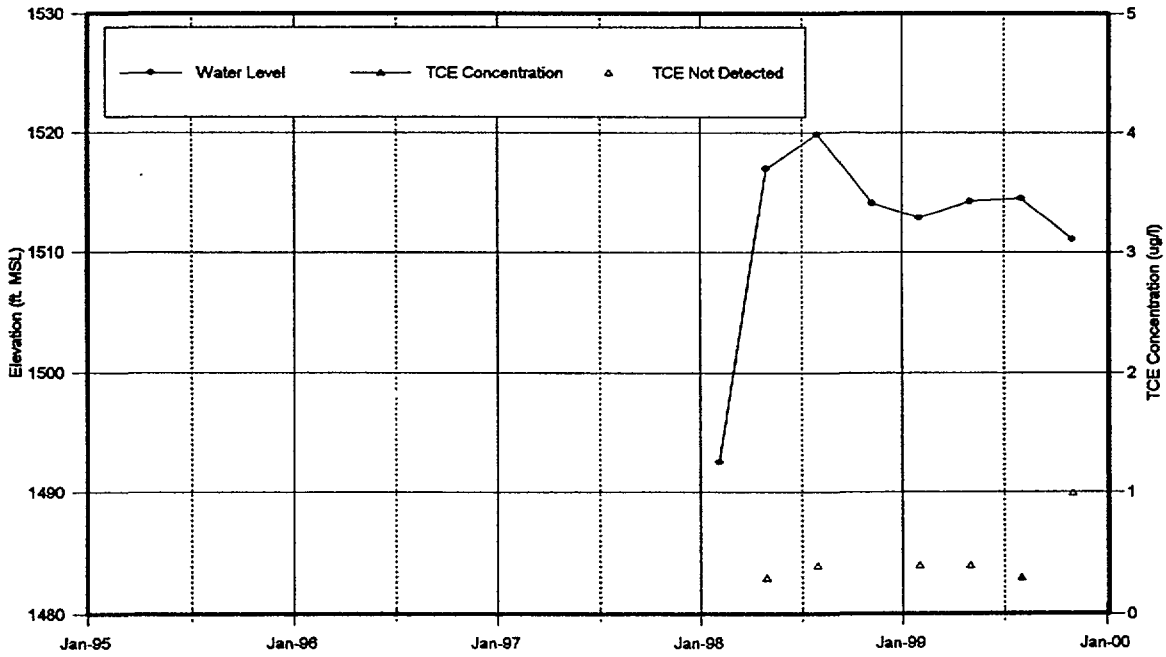
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-55B

Figure A-118



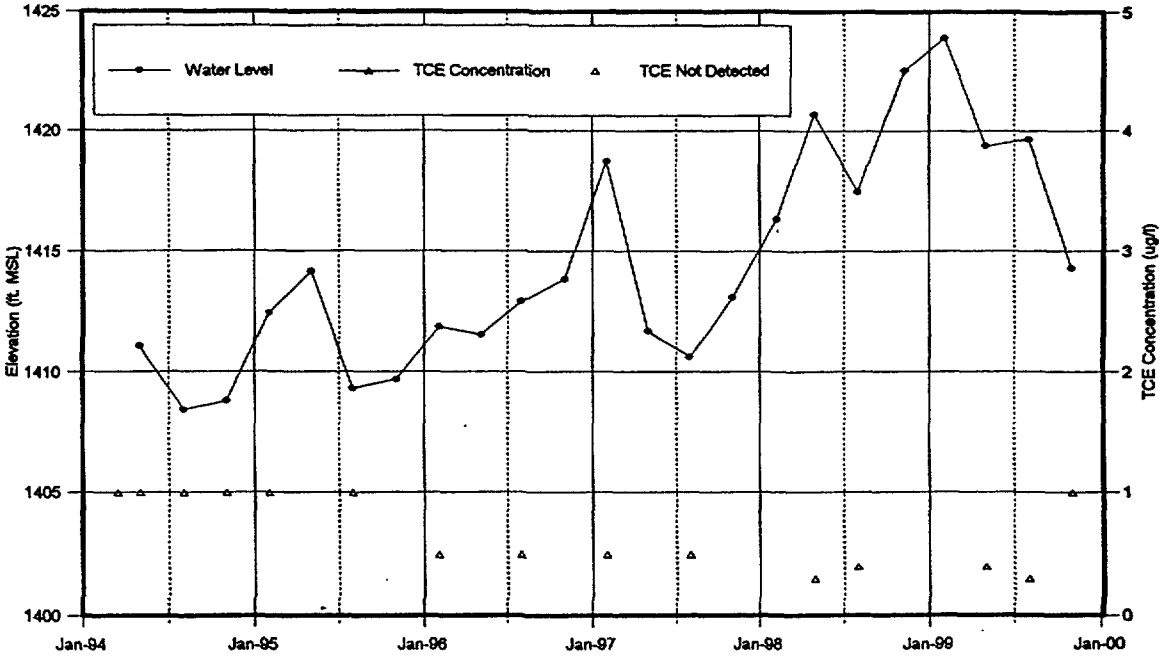
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-56A

Figure A-119



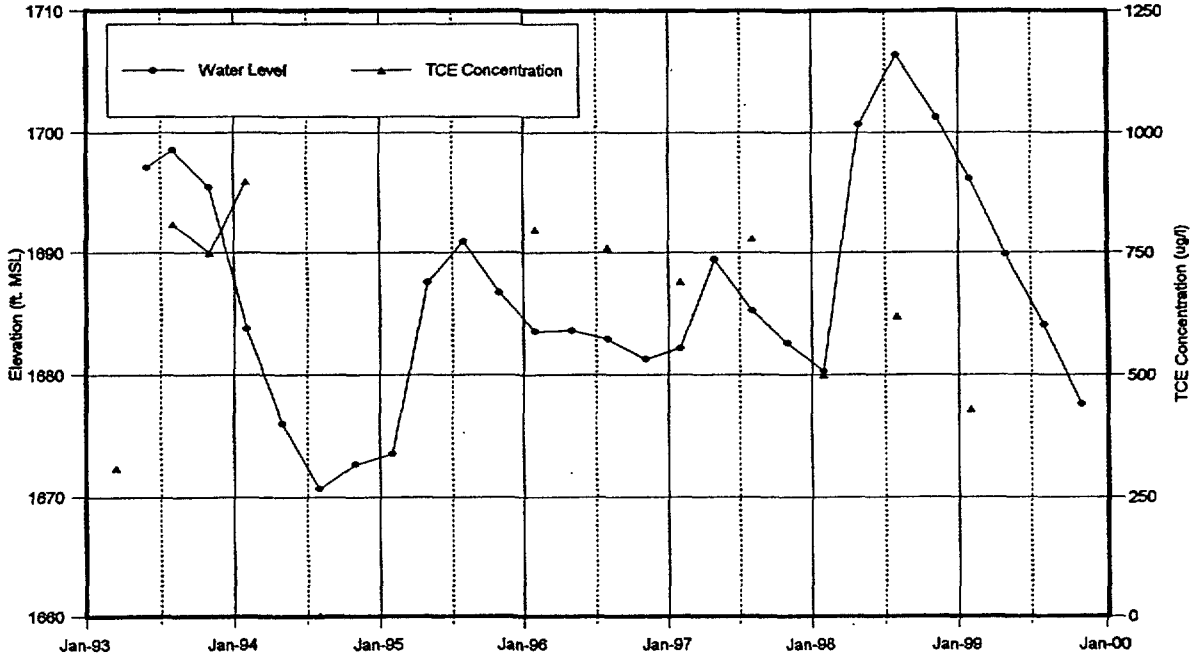
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-56B

Figure A-120



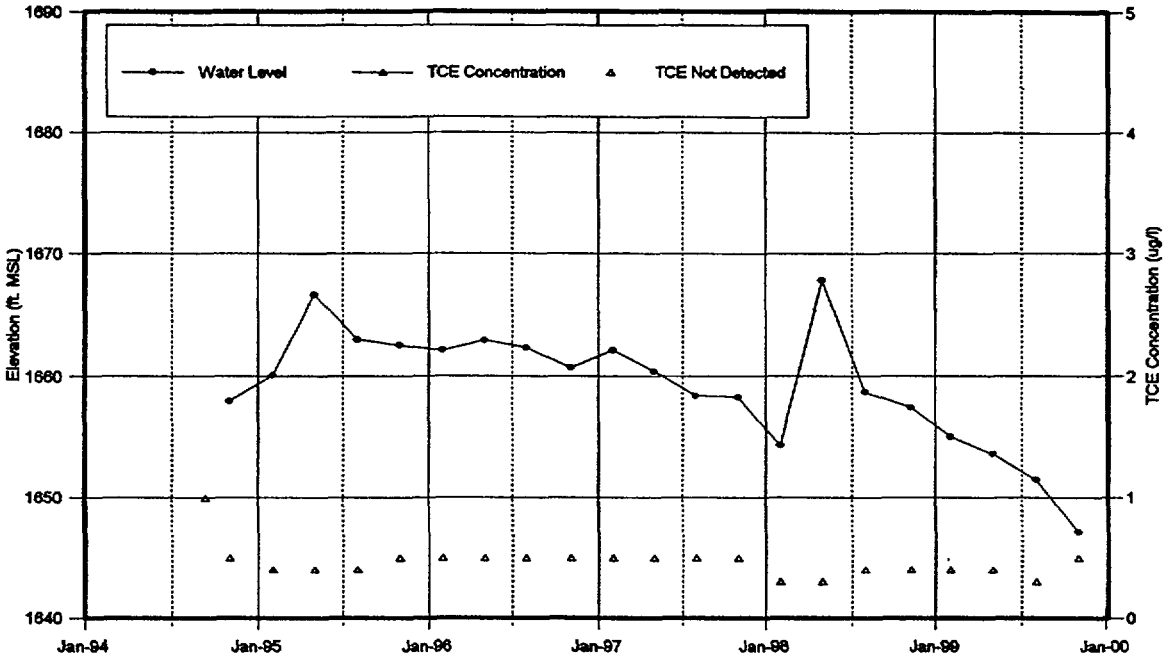
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-57

Figure A-121



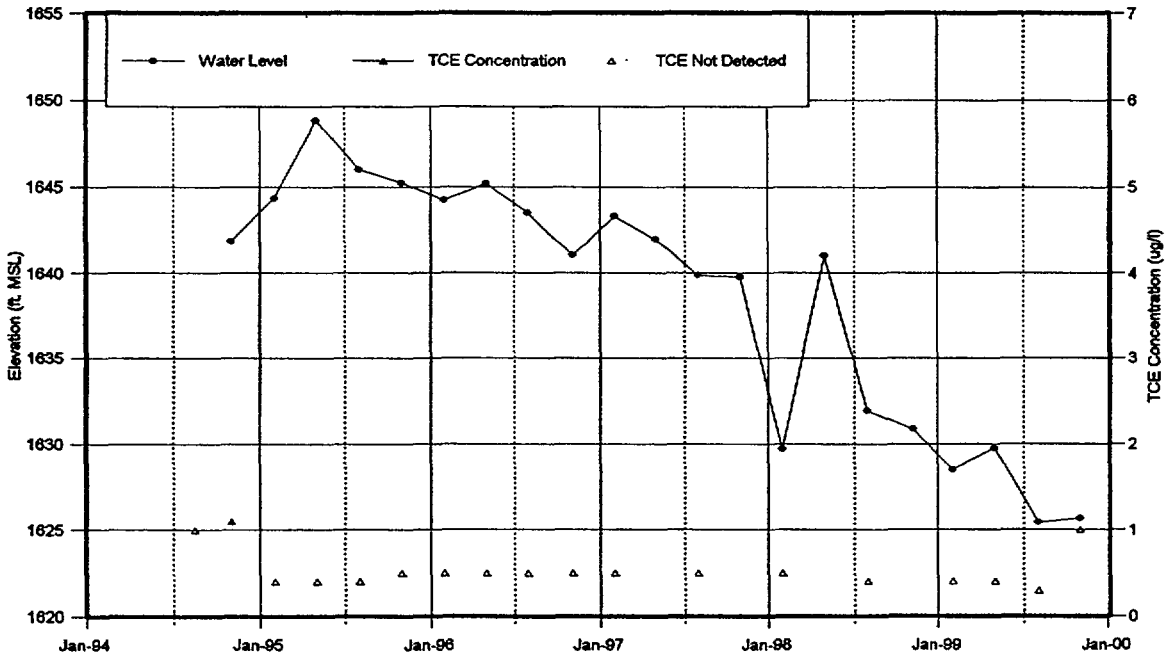
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-58A

Figure A-122



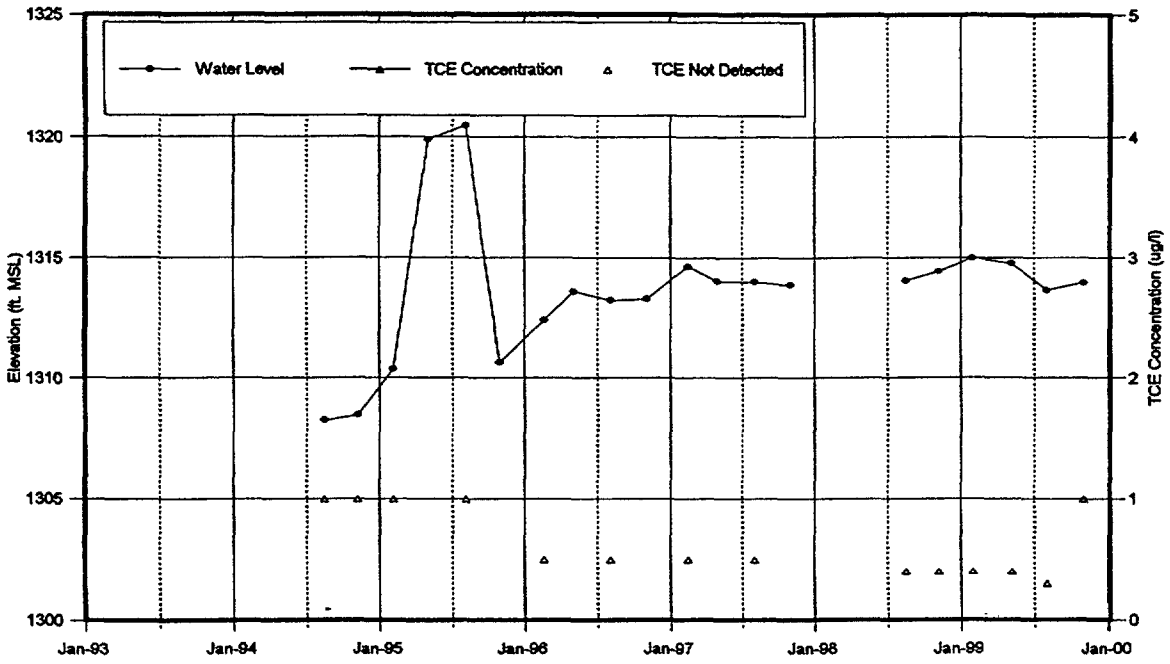
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-58B

Figure A-123



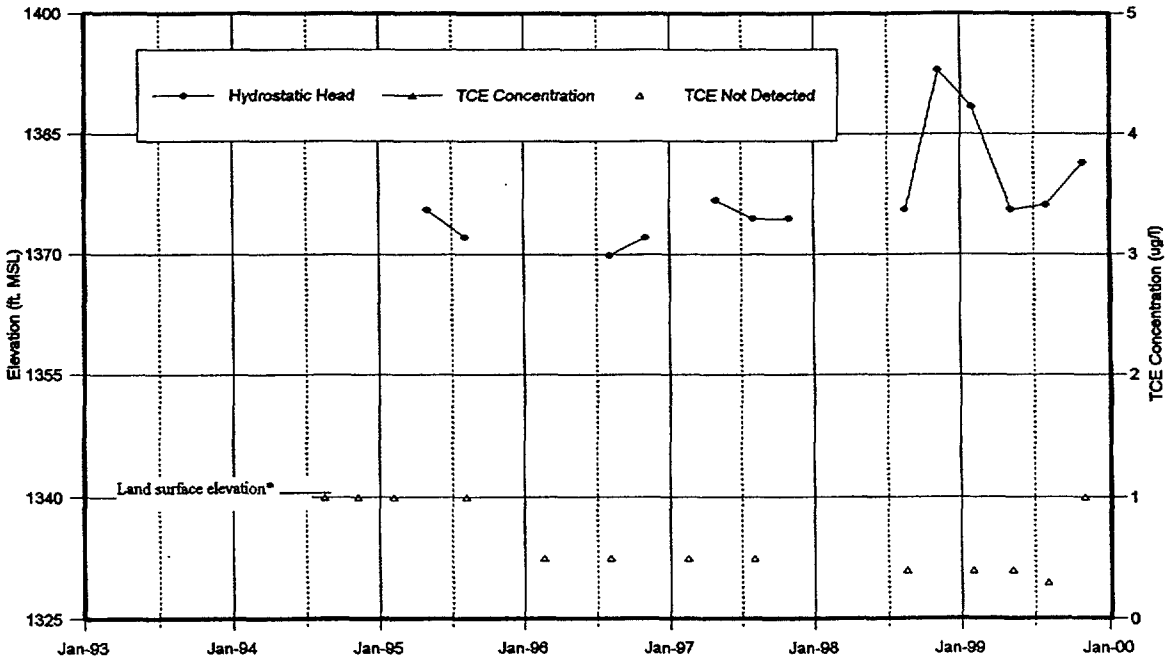
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-58C

Figure A-124



WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-59A

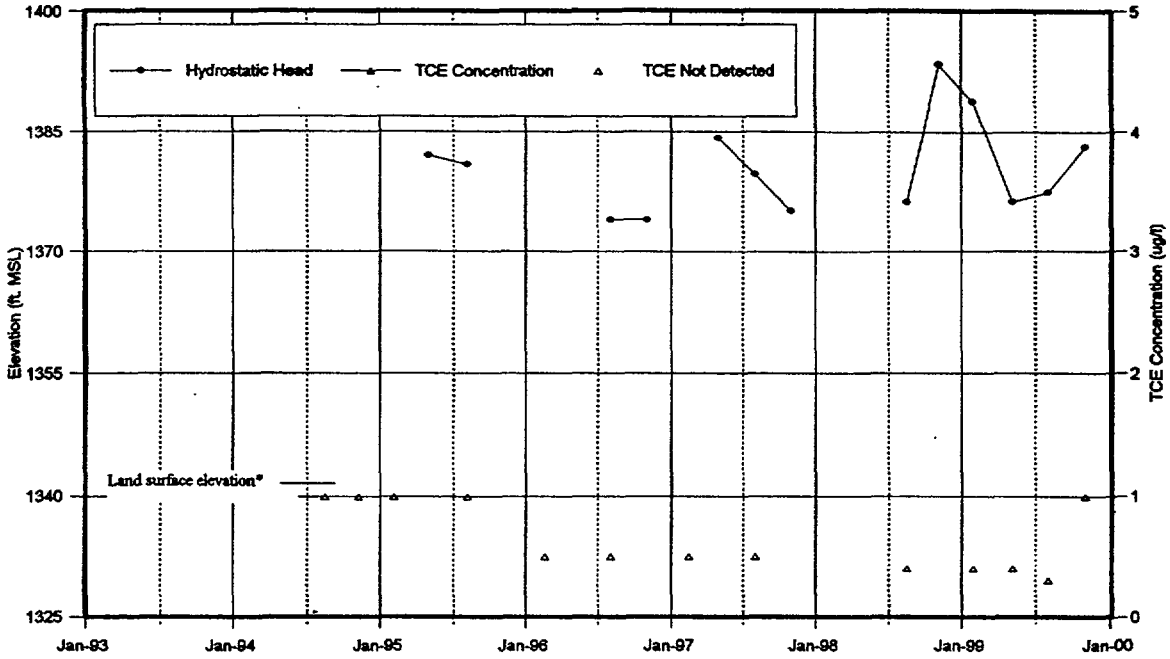
Figure A-125



WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-59B

Figure A-126

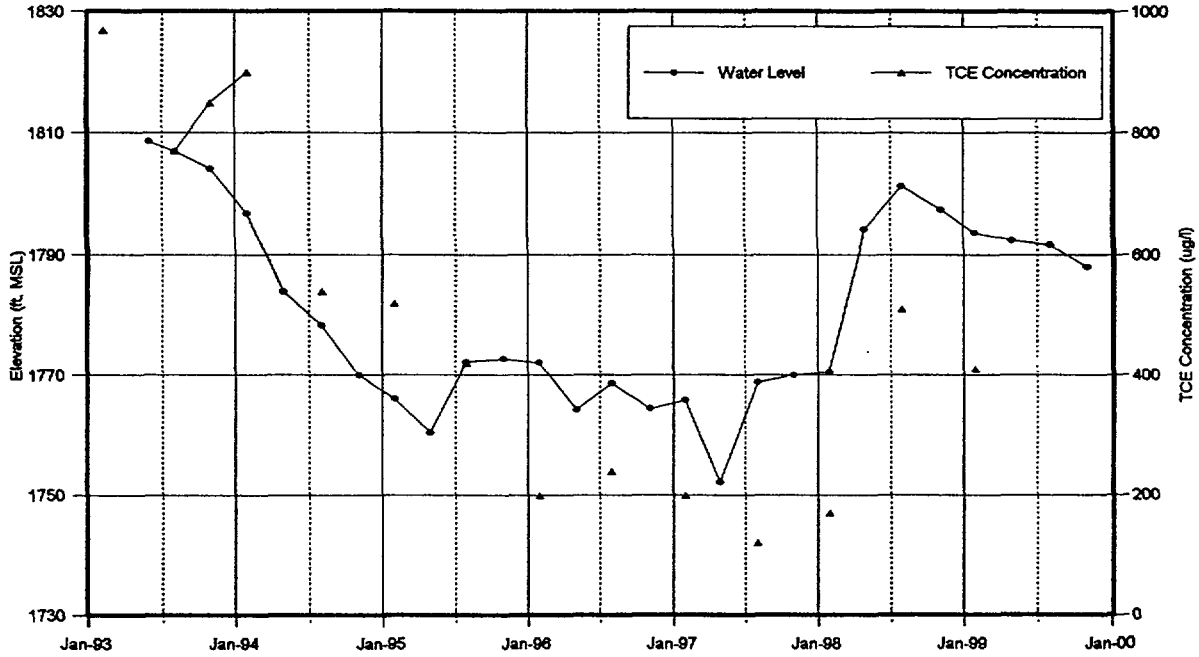
*Elevation approx.1340.5 feet MSL



WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-59C

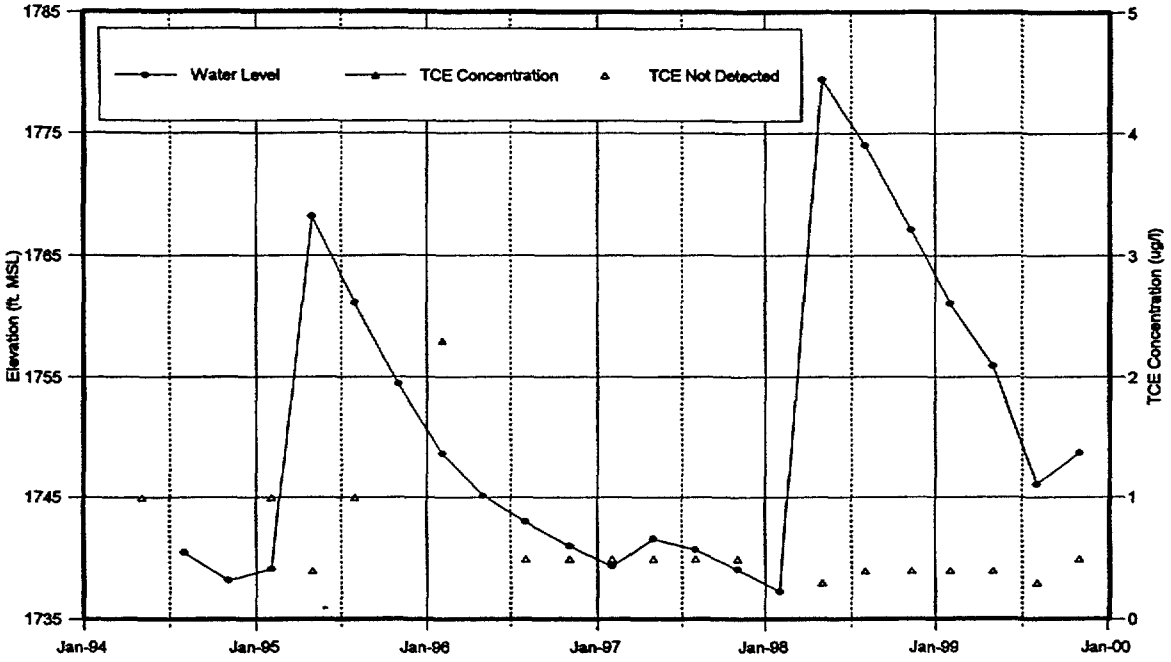
Figure A-127

*Elevation approx. 1342.5 feet MSL



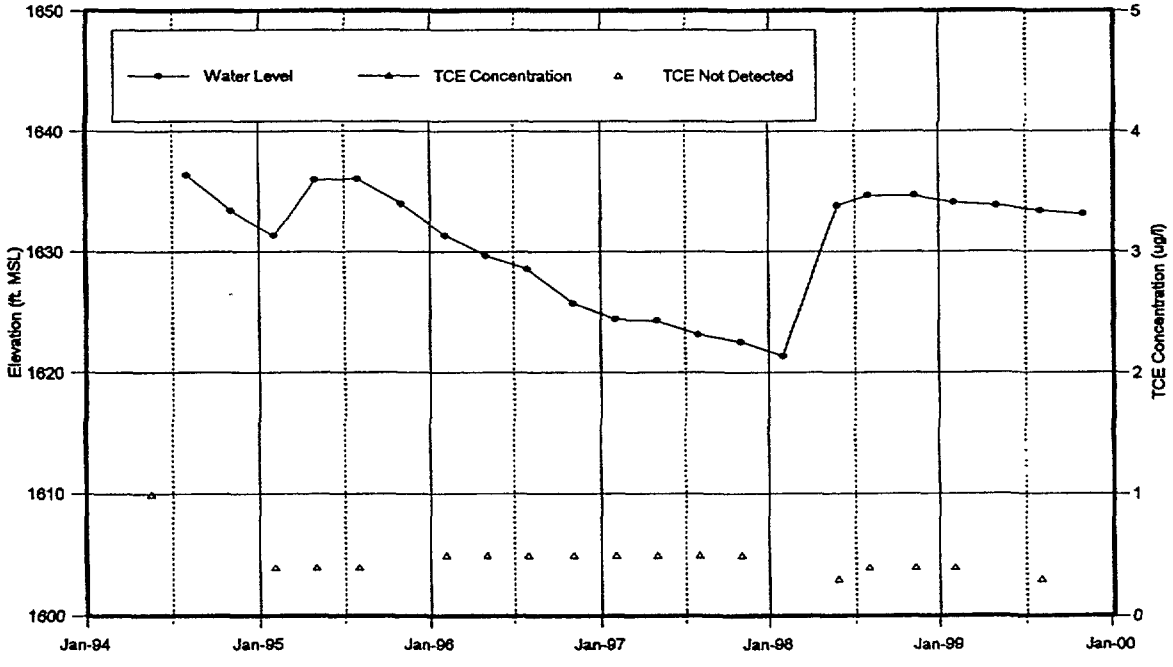
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-60

Figure A-128



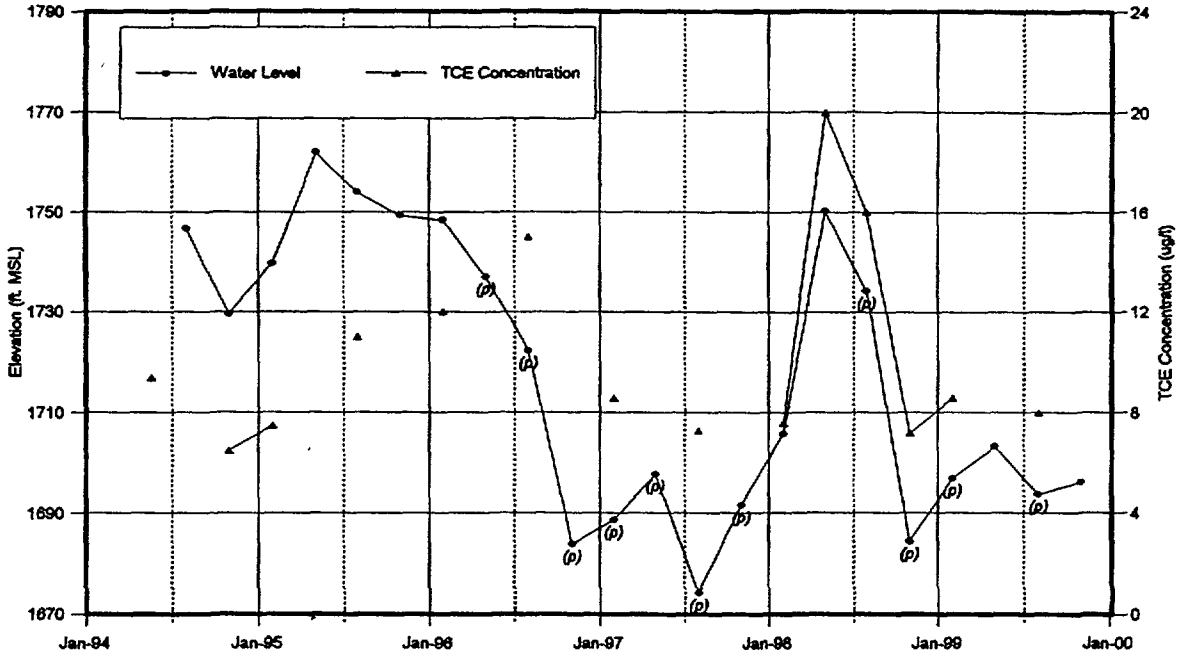
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-61

Figure A-129



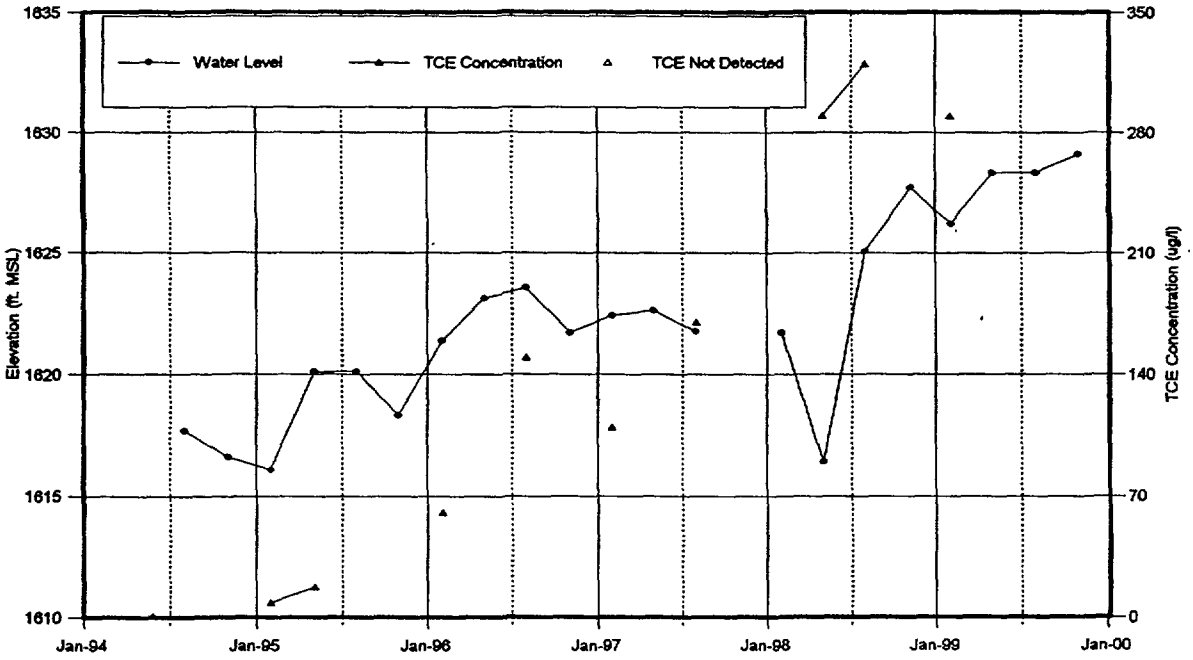
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-62

Figure A-130



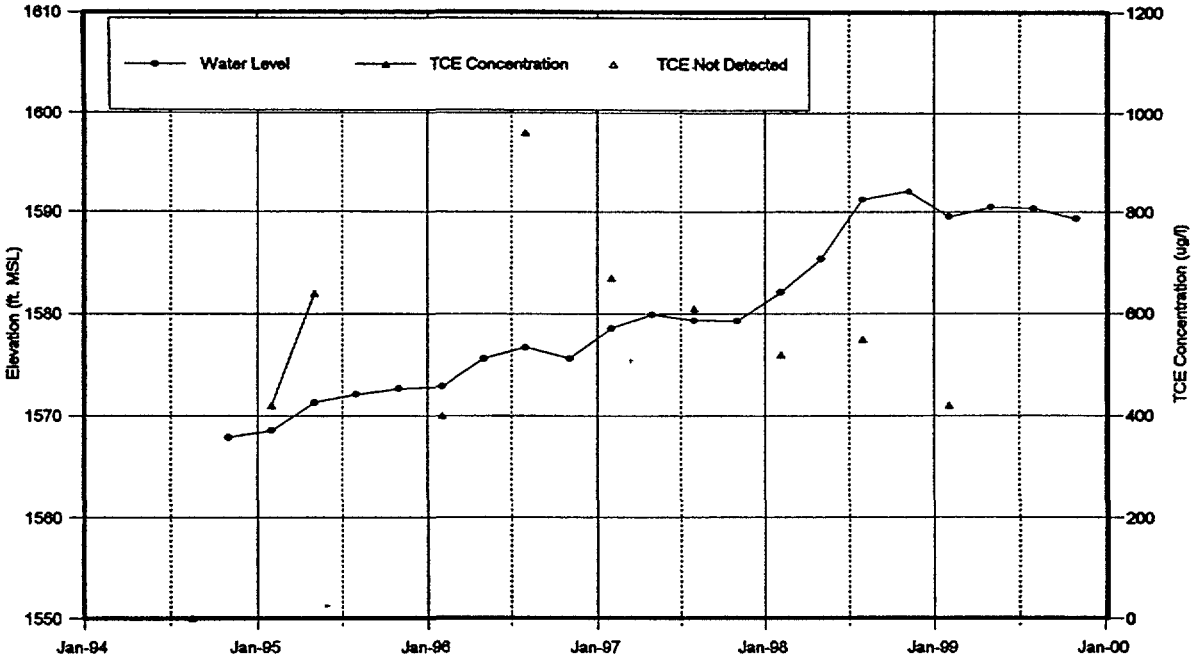
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-63

Figure A-131



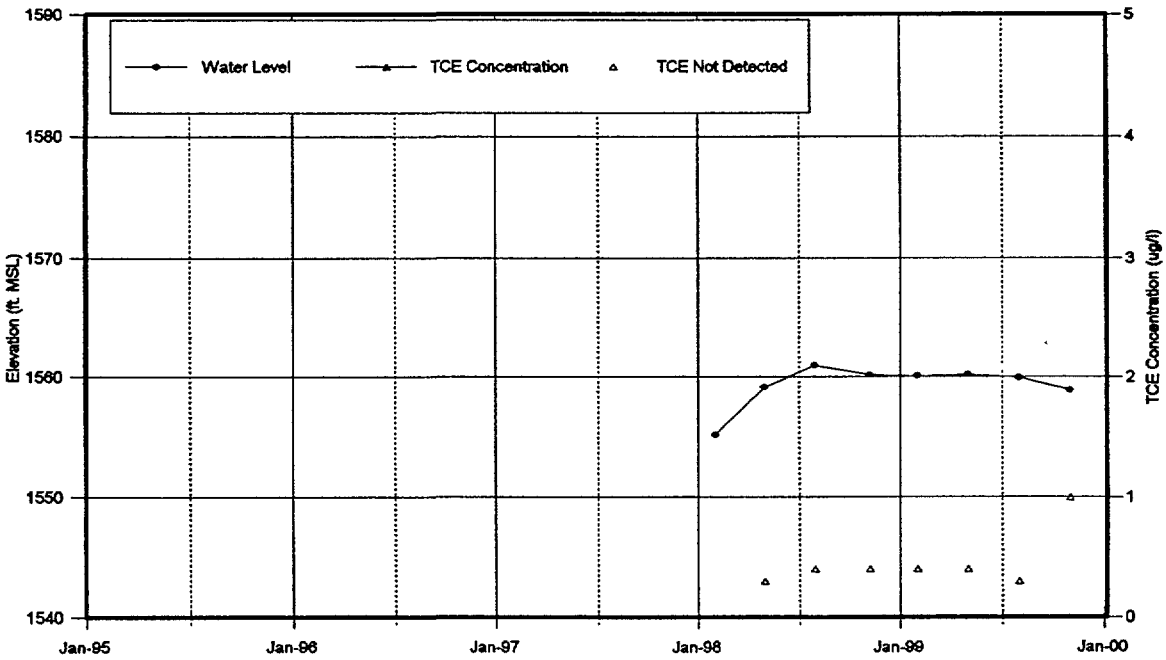
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-64

Figure A-132



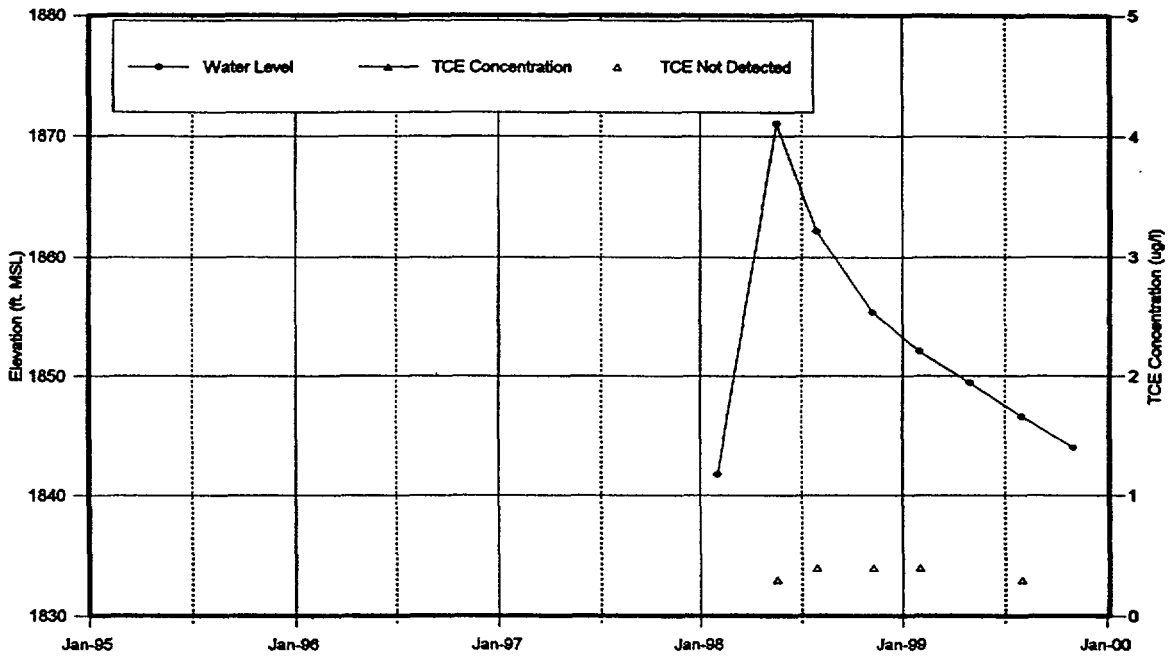
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-65

Figure A-133



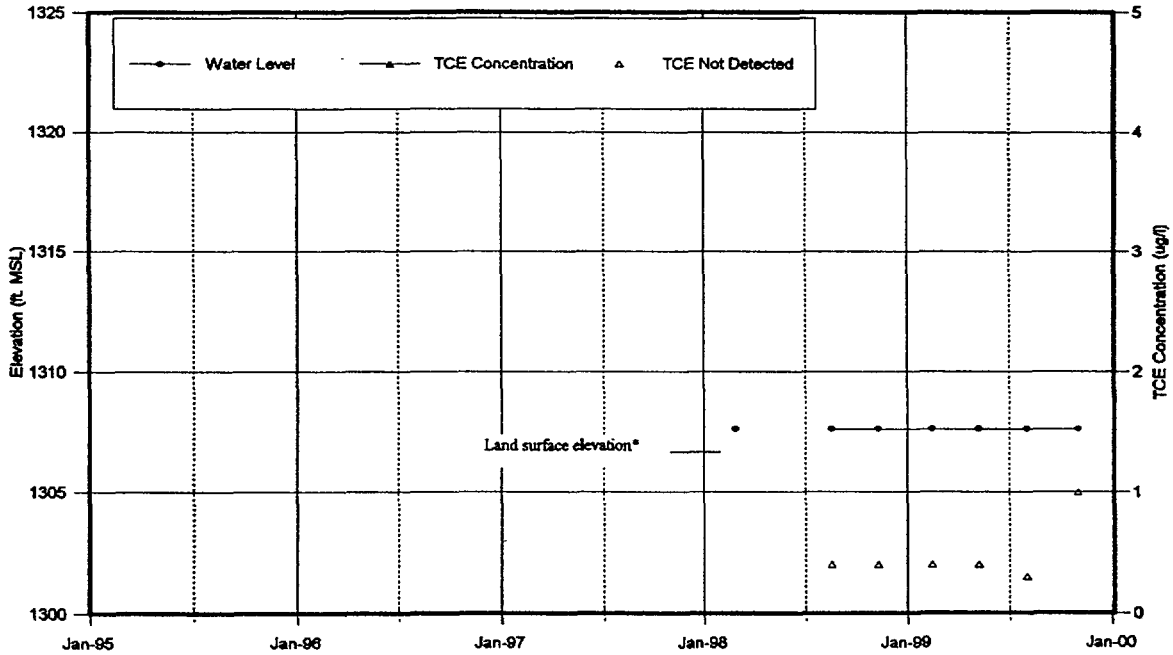
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-66

Figure A-134



WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-67

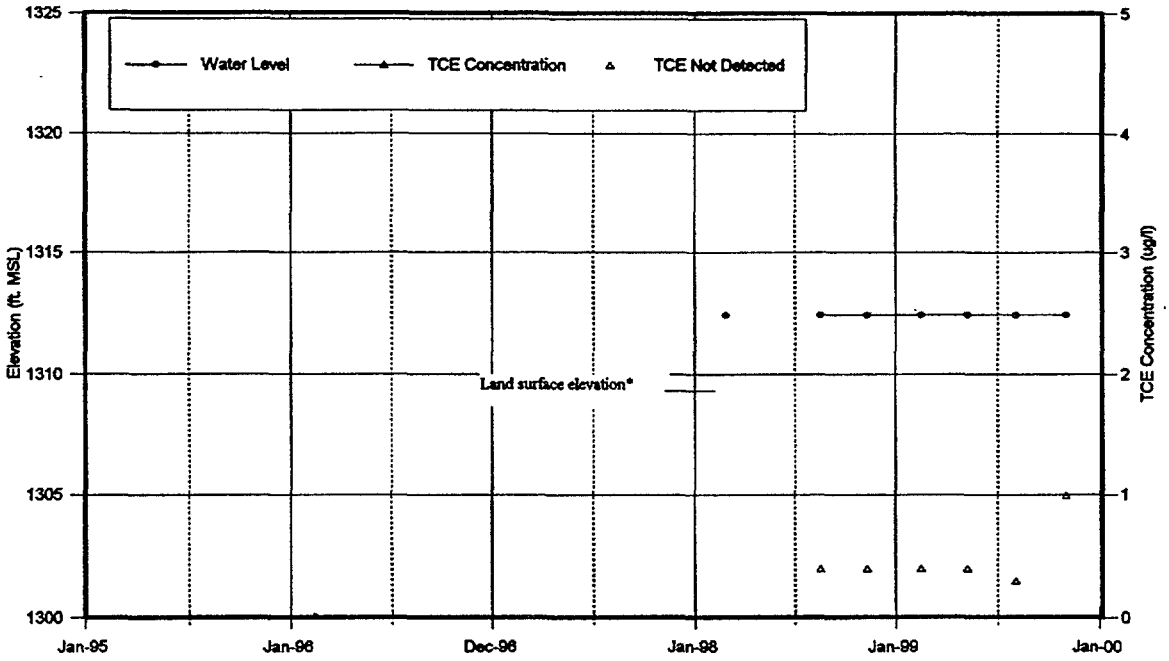
Figure A-135



WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-68A

*Elevation approx. 1306.4 feet MSL

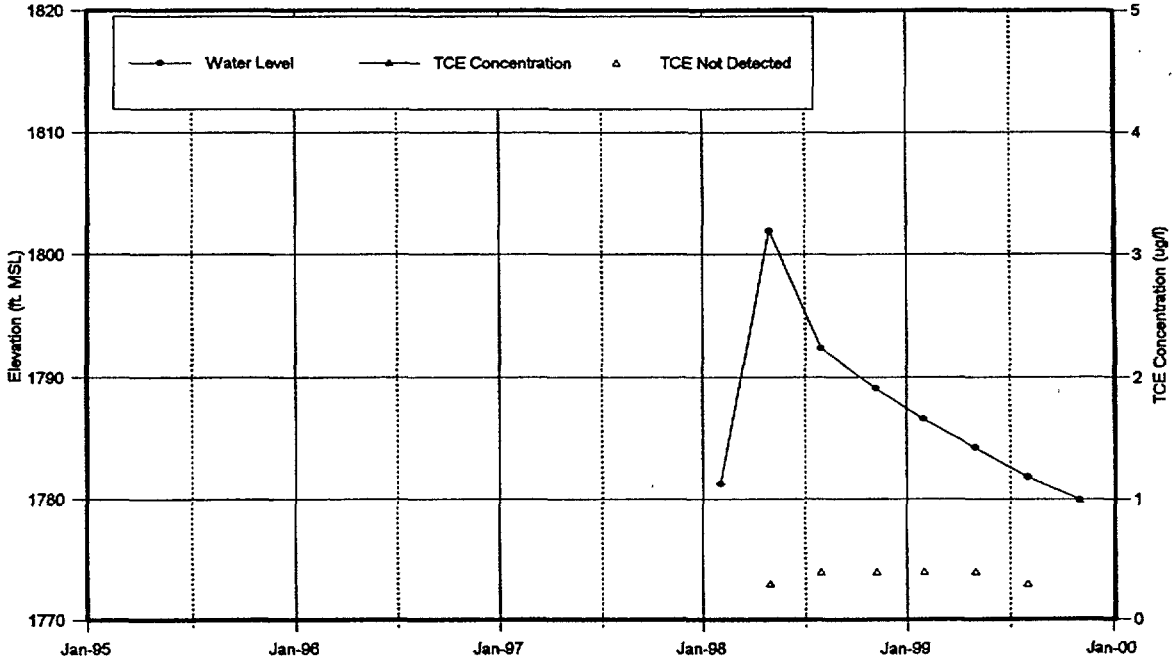
Figure A-136



*Elevation approx. 1309.2 feet MSL

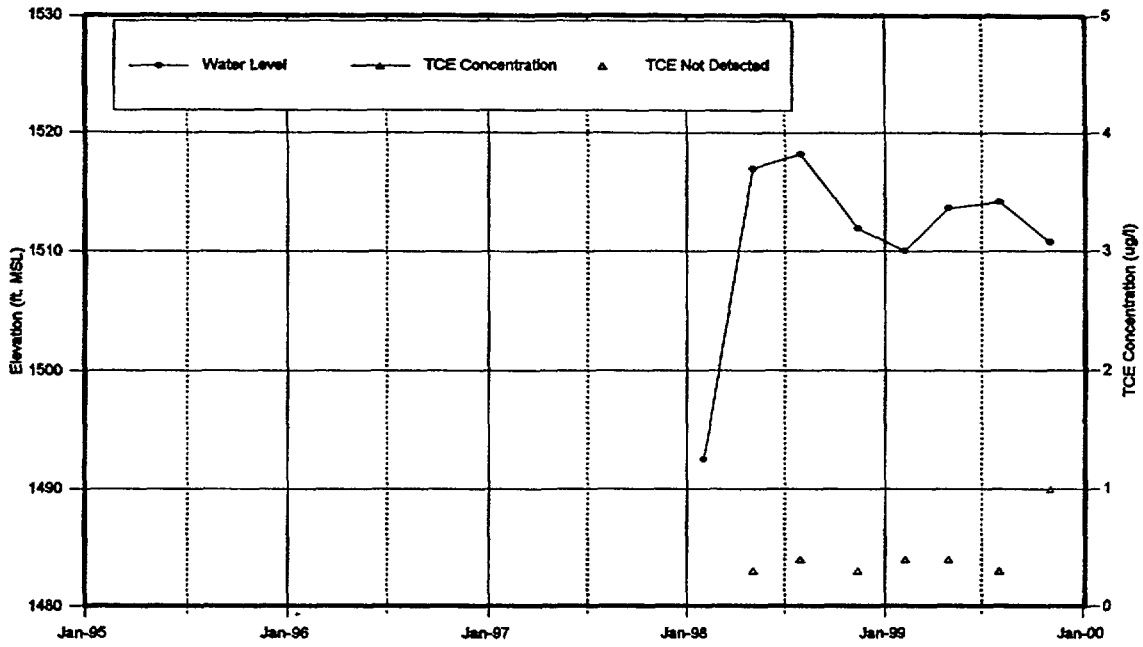
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-68B

Figure A-137



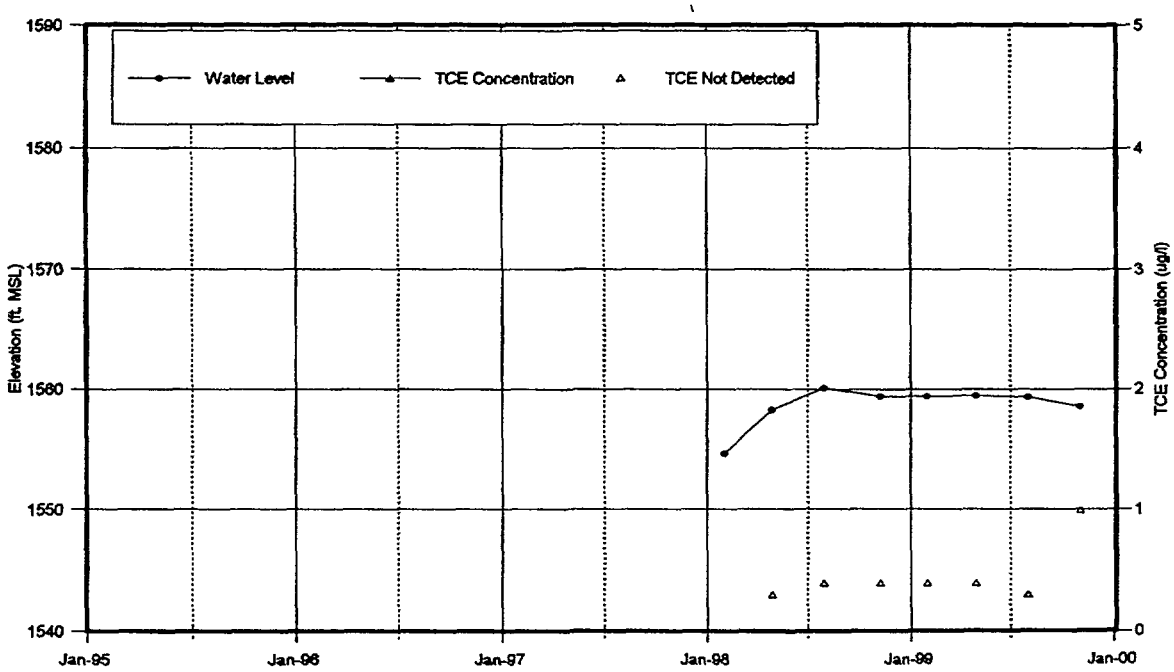
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-69

Figure A-138



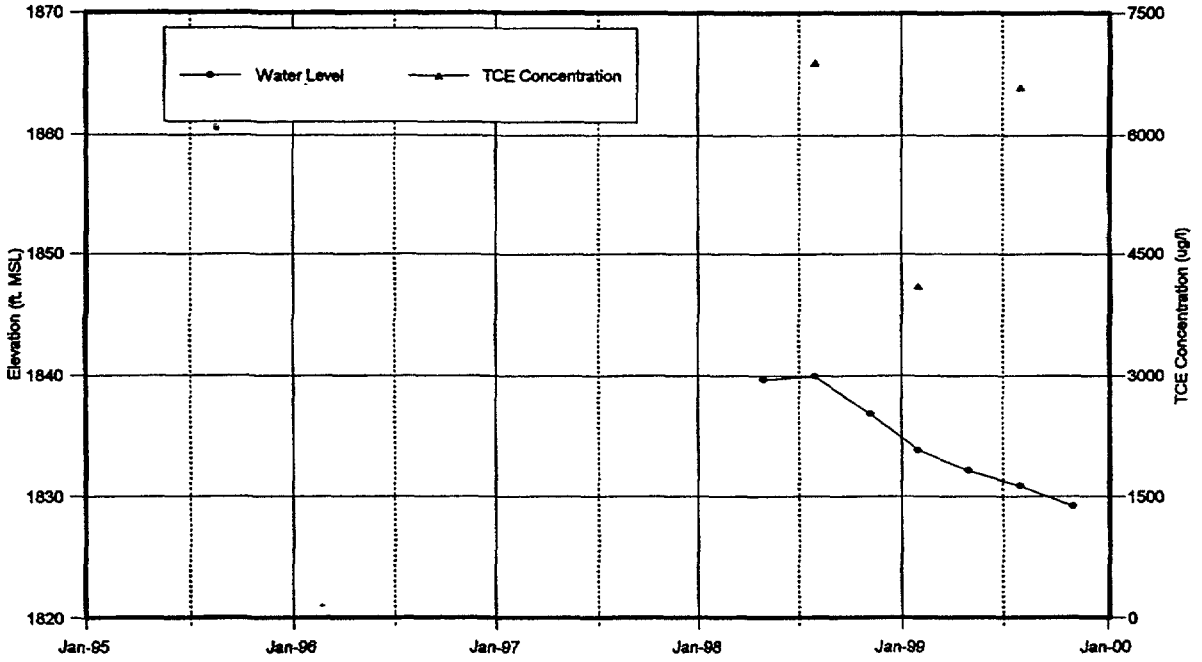
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-70

Figure A-139



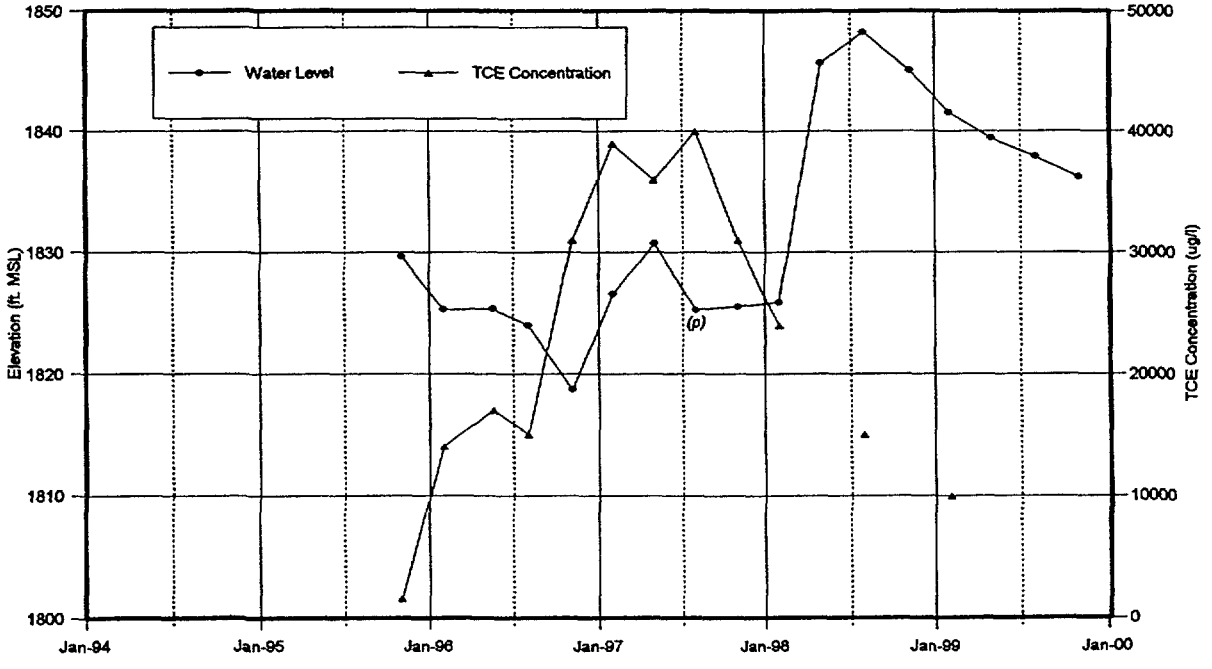
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-71

Figure A-140



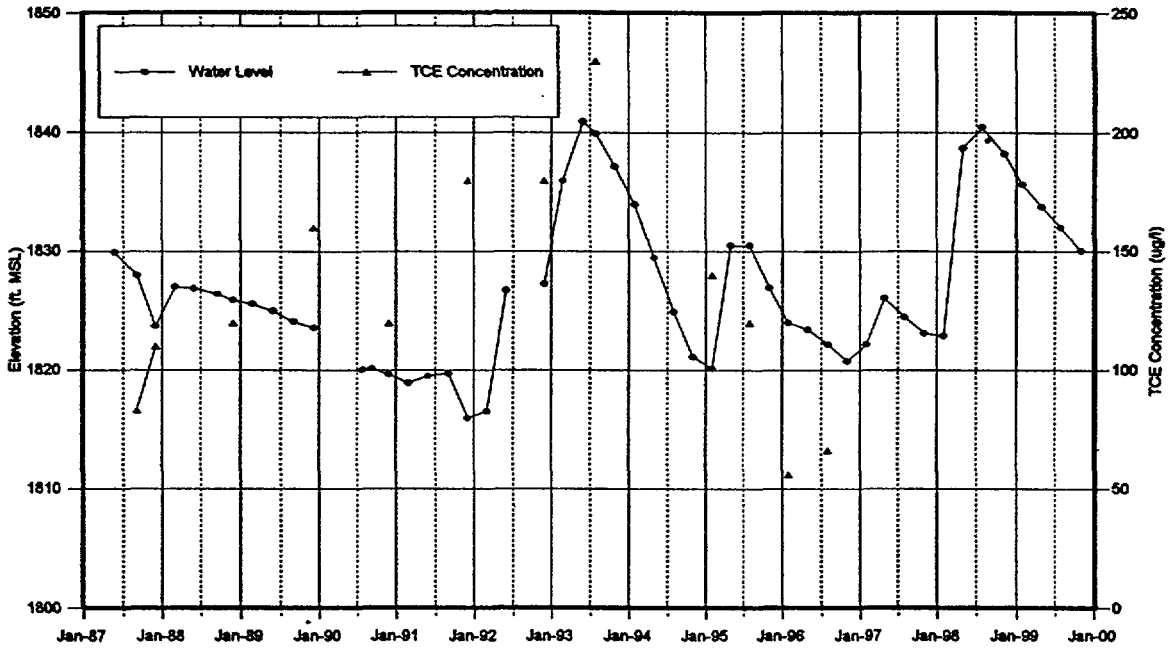
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-72

Figure A-141



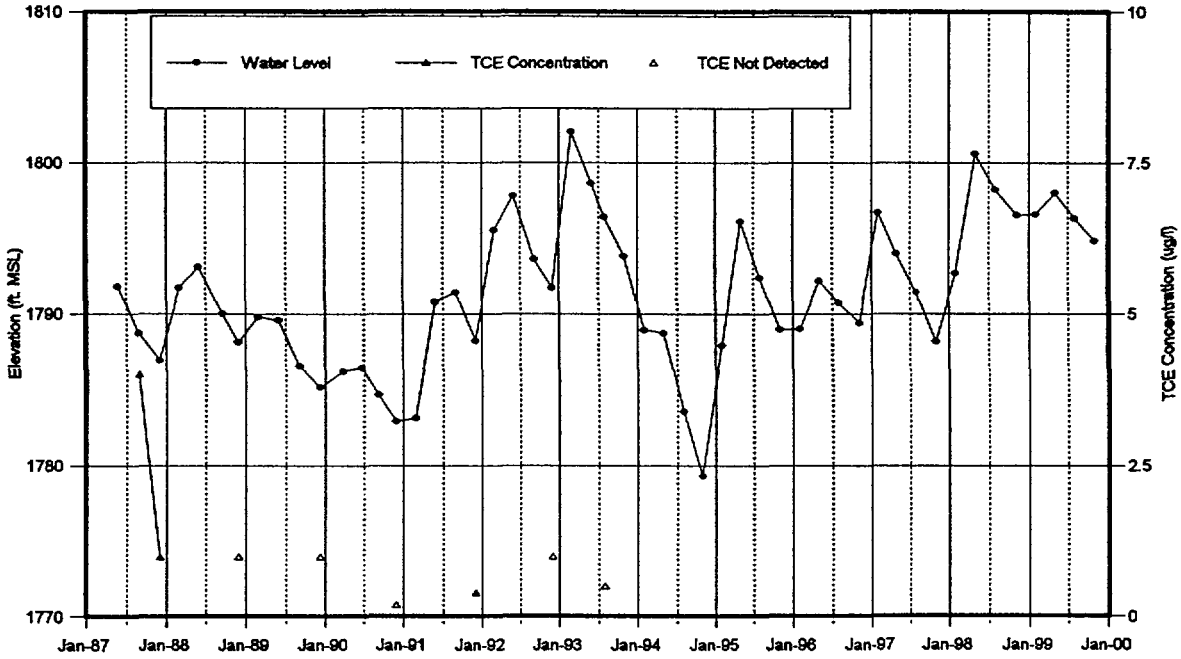
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well RD-73

Figure A-142



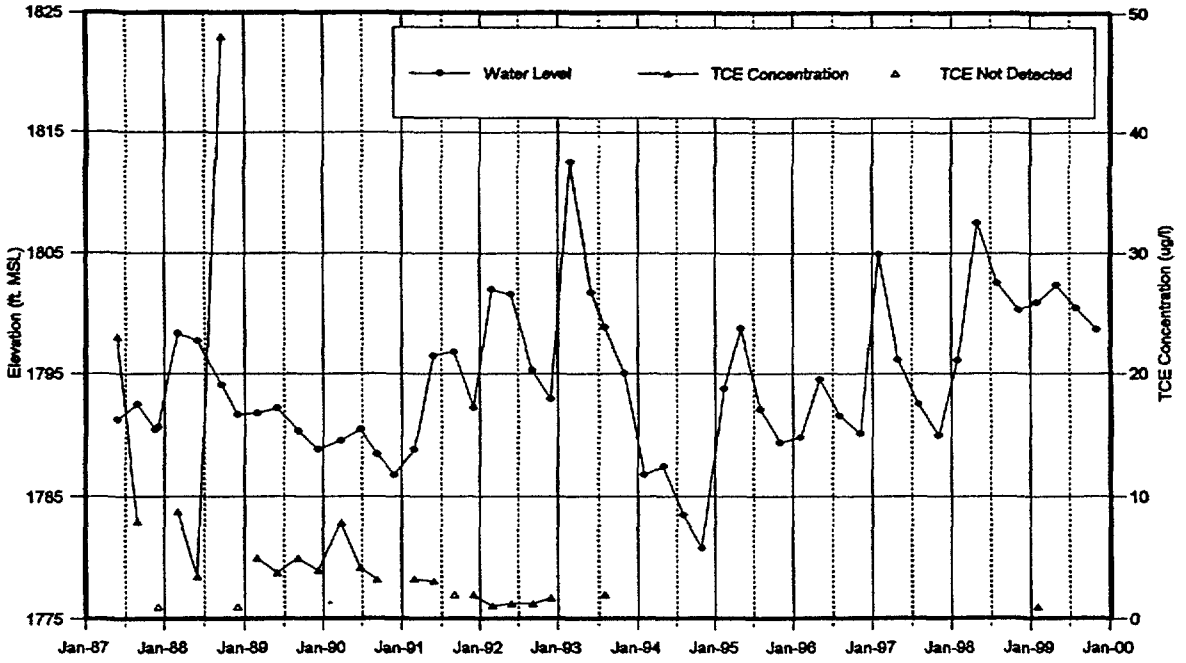
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well HAR-1

Figure A-143



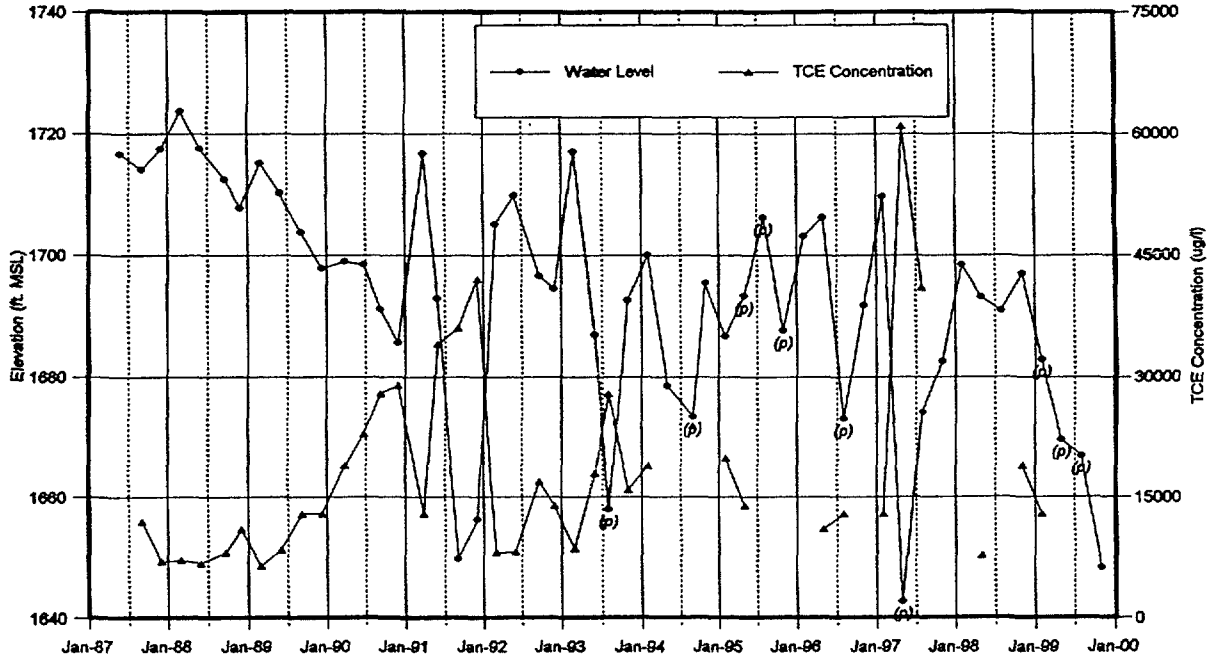
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well HAR-5

Figure A-144



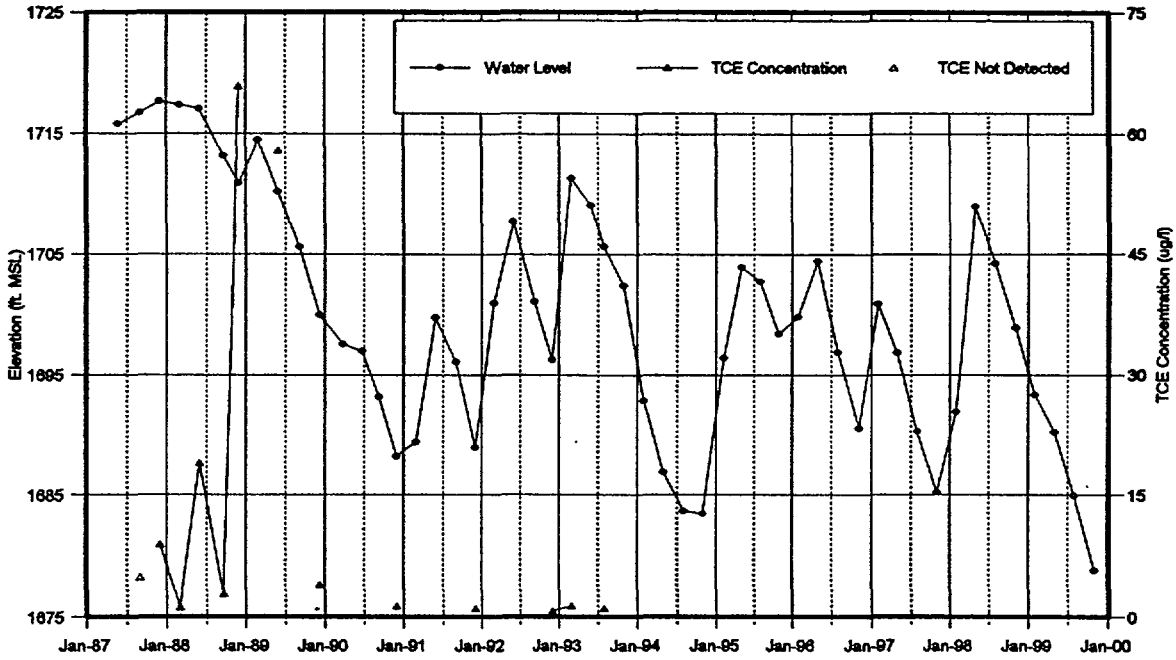
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well HAR-6

Figure A-145



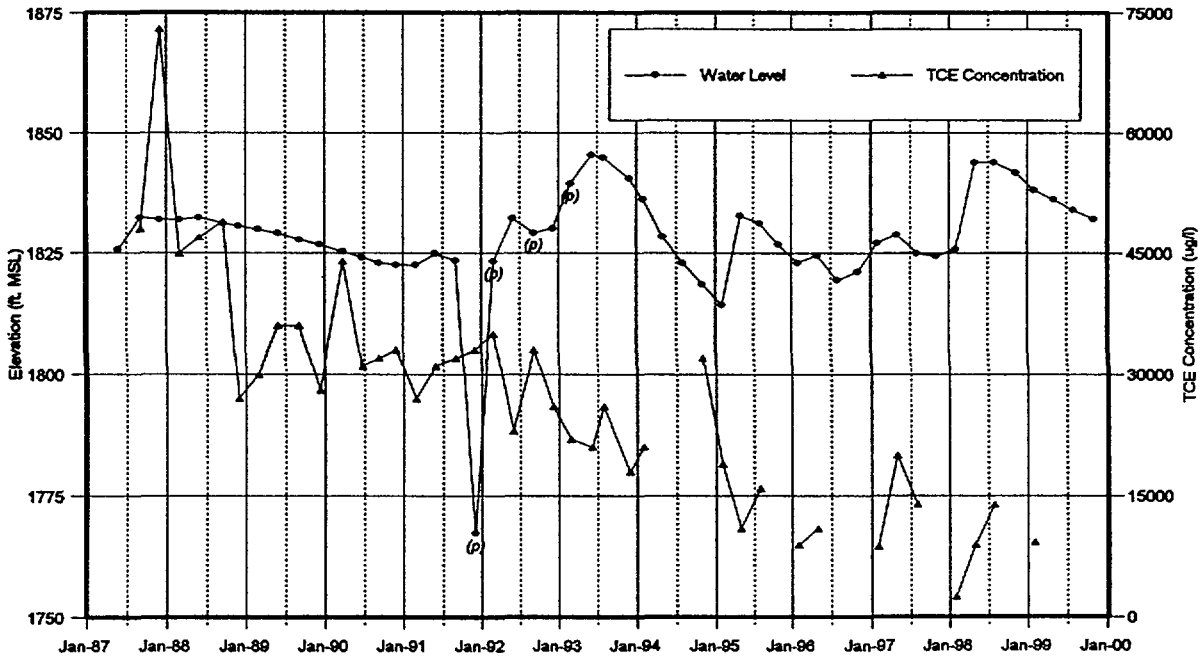
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well HAR-7

Figure A-146



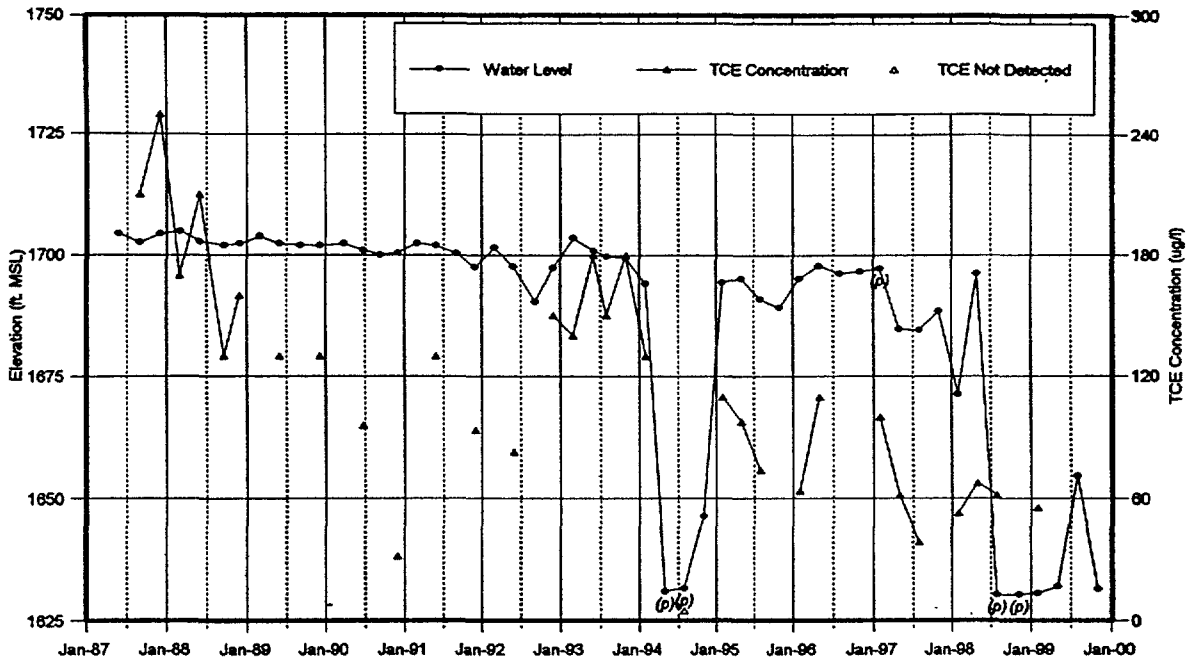
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well HAR-8

Figure A-147



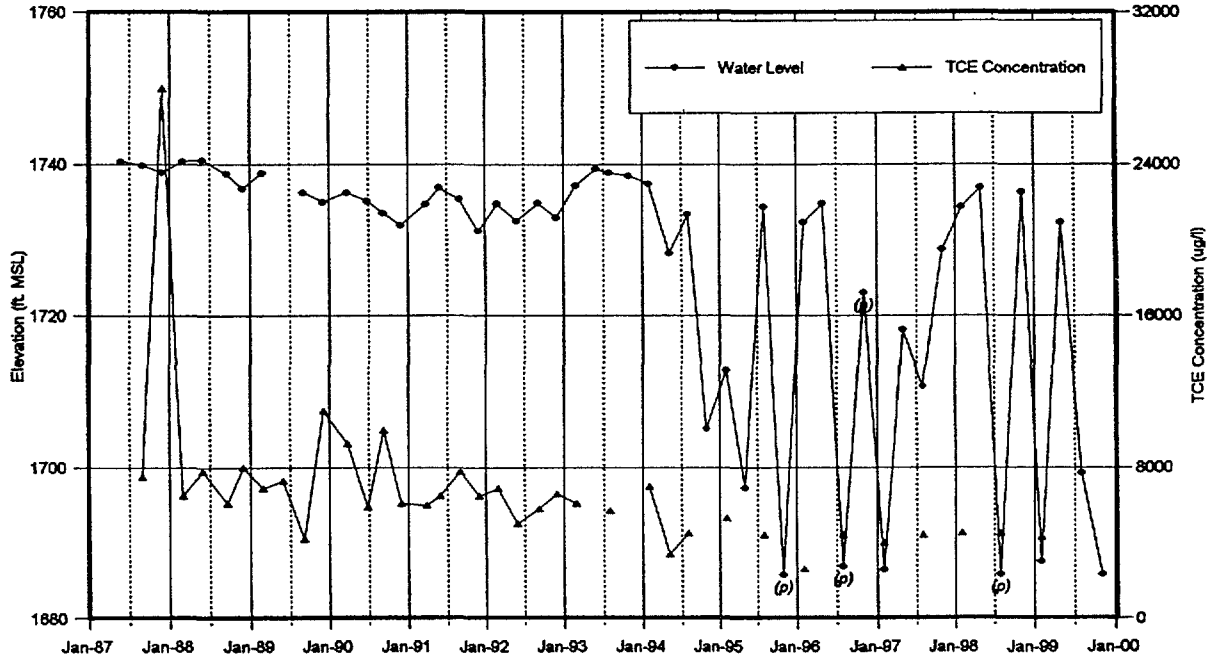
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well HAR-16

Figure A-148



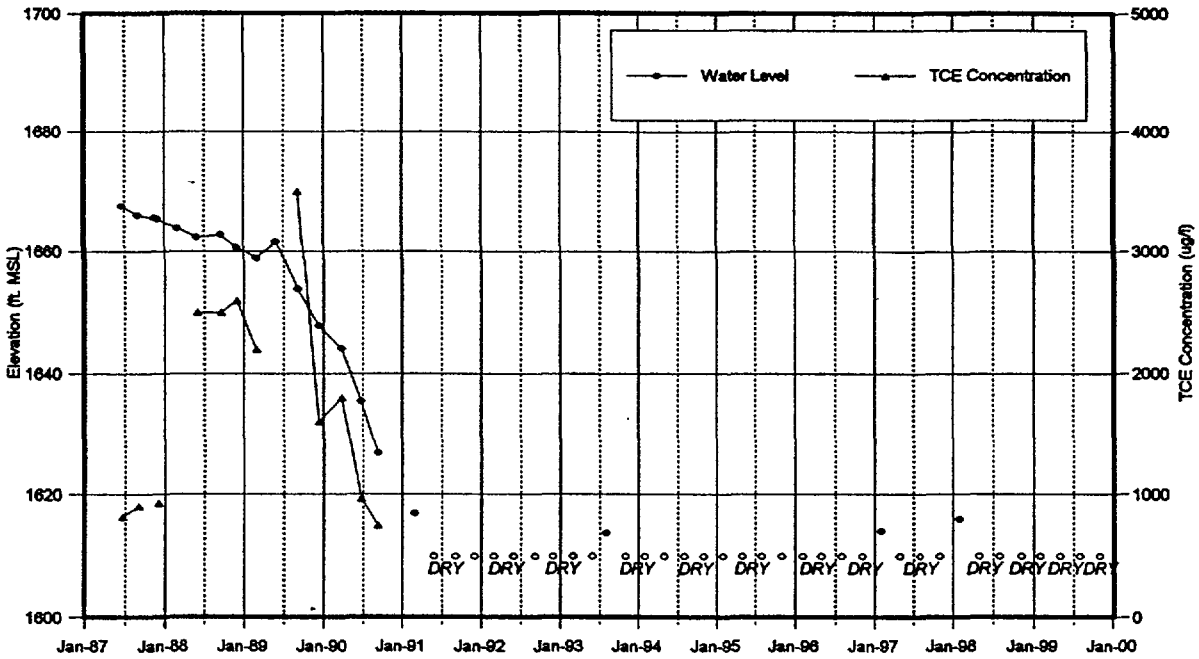
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well HAR-17

Figure A-149



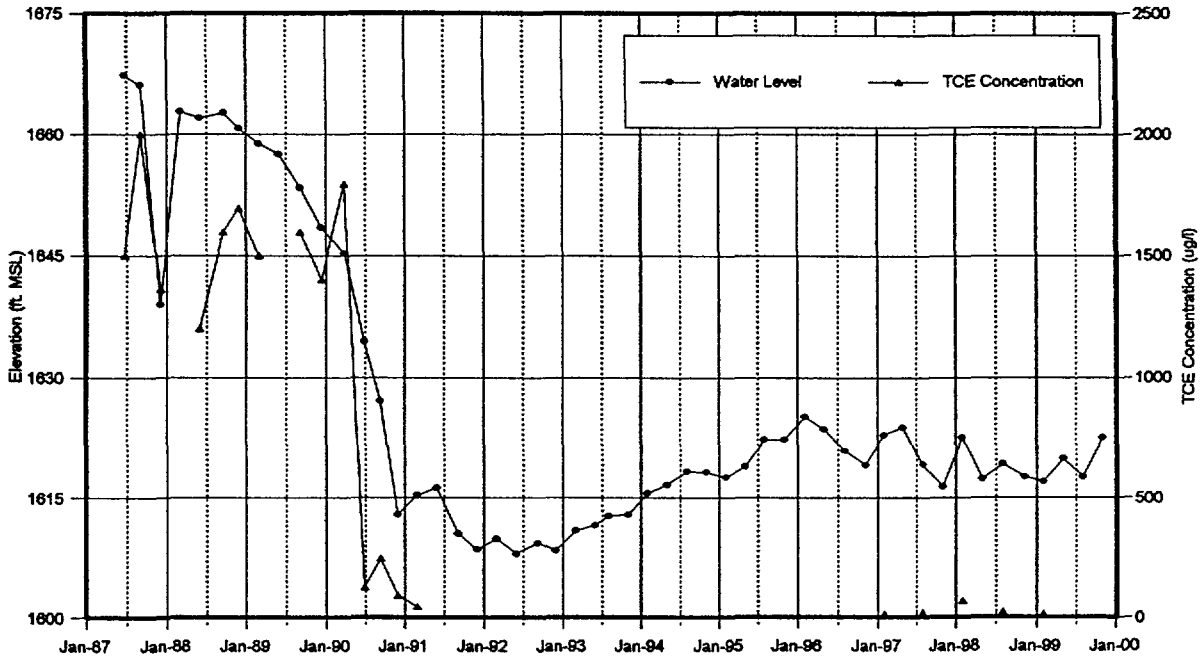
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well HAR-18

Figure A-150



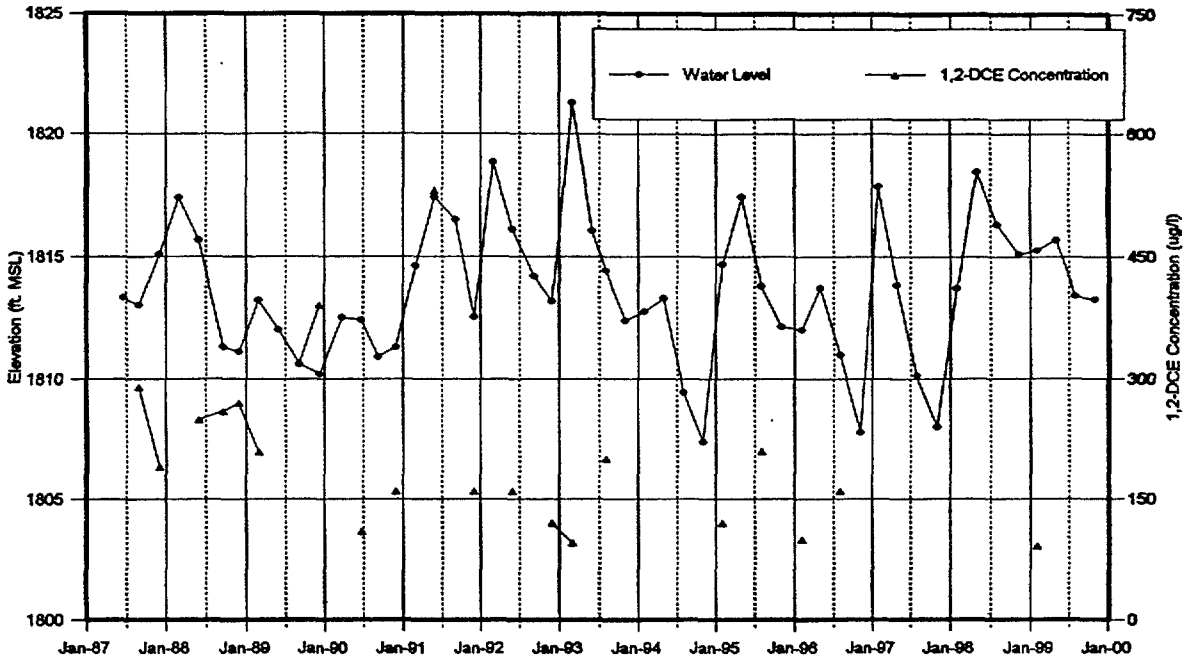
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well HAR-19

Figure A-151



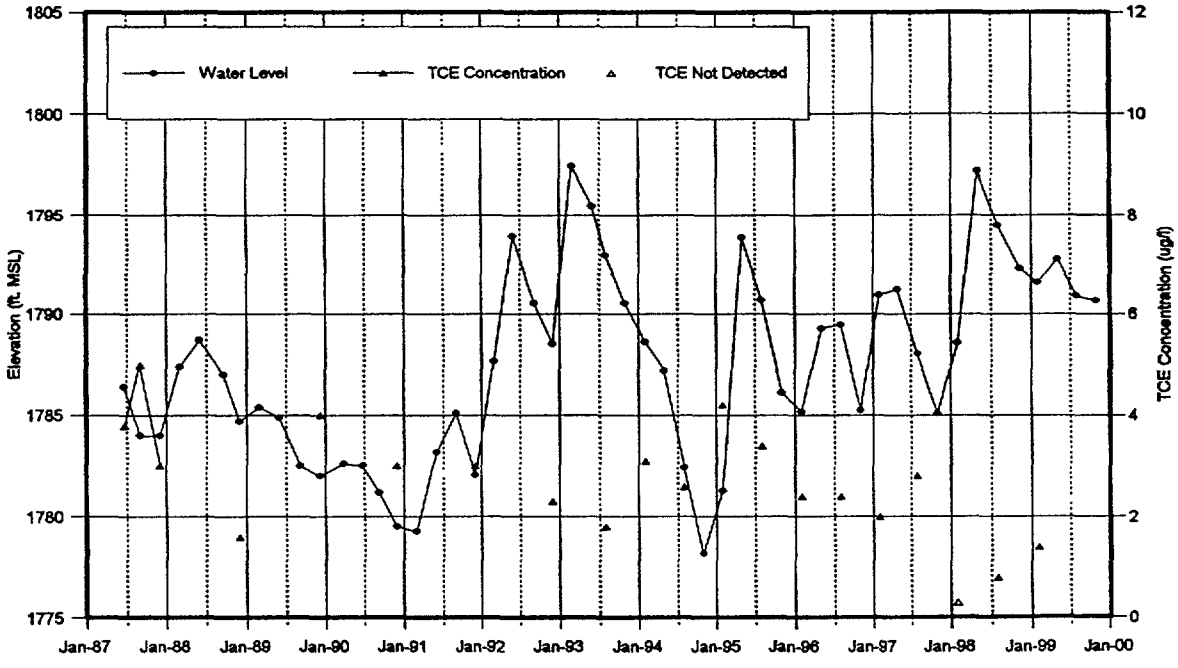
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well HAR-20

Figure A-152



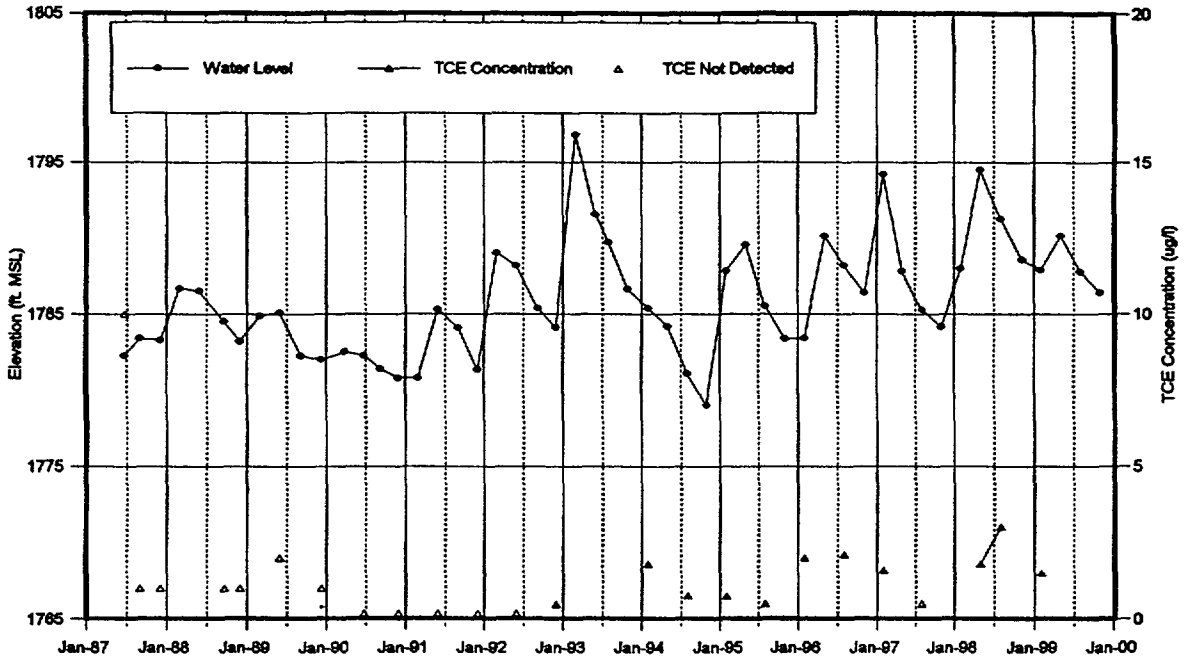
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well HAR-21

Figure A-153



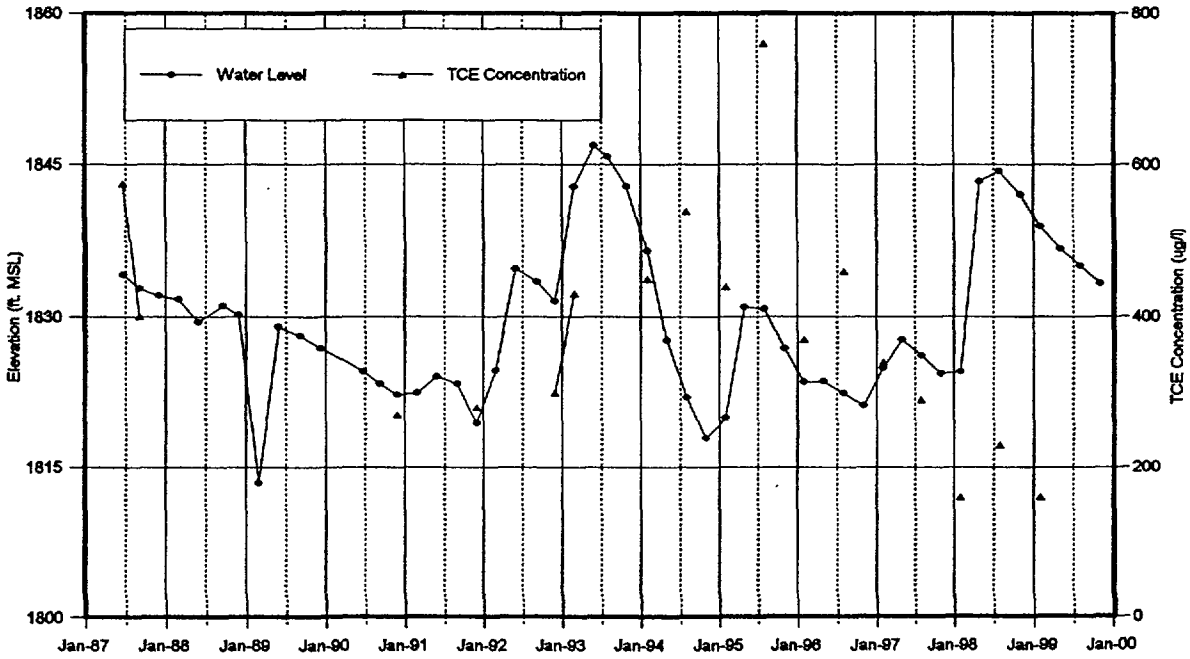
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well HAR-22

Figure A-154



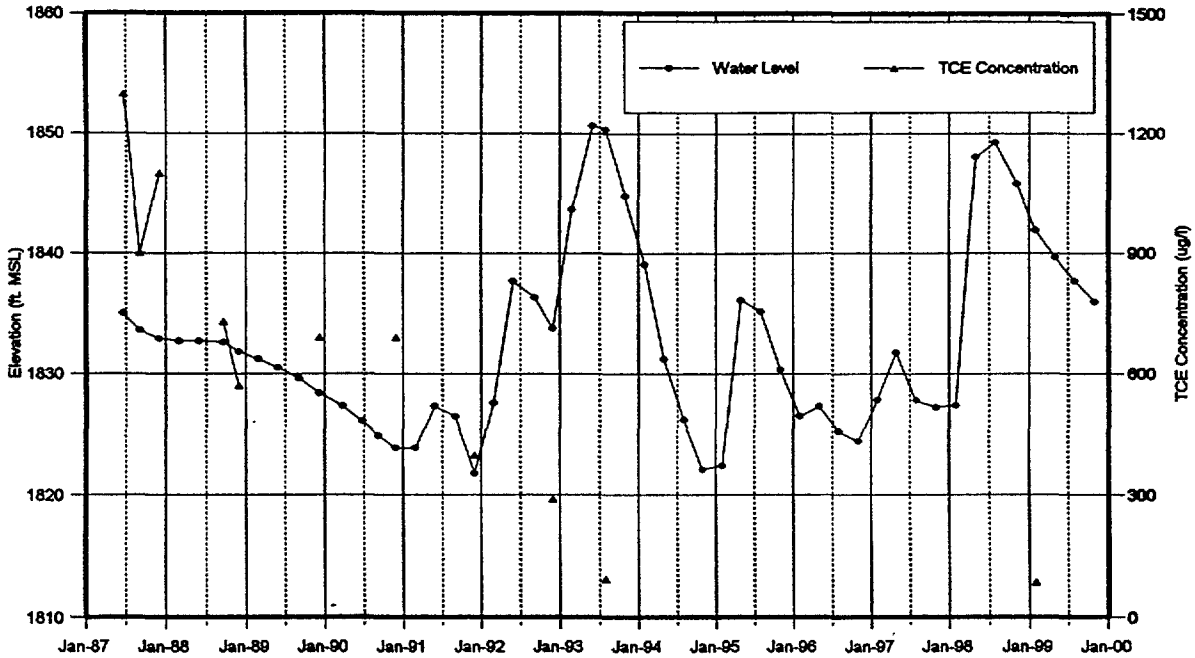
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well HAR-23

Figure A-155



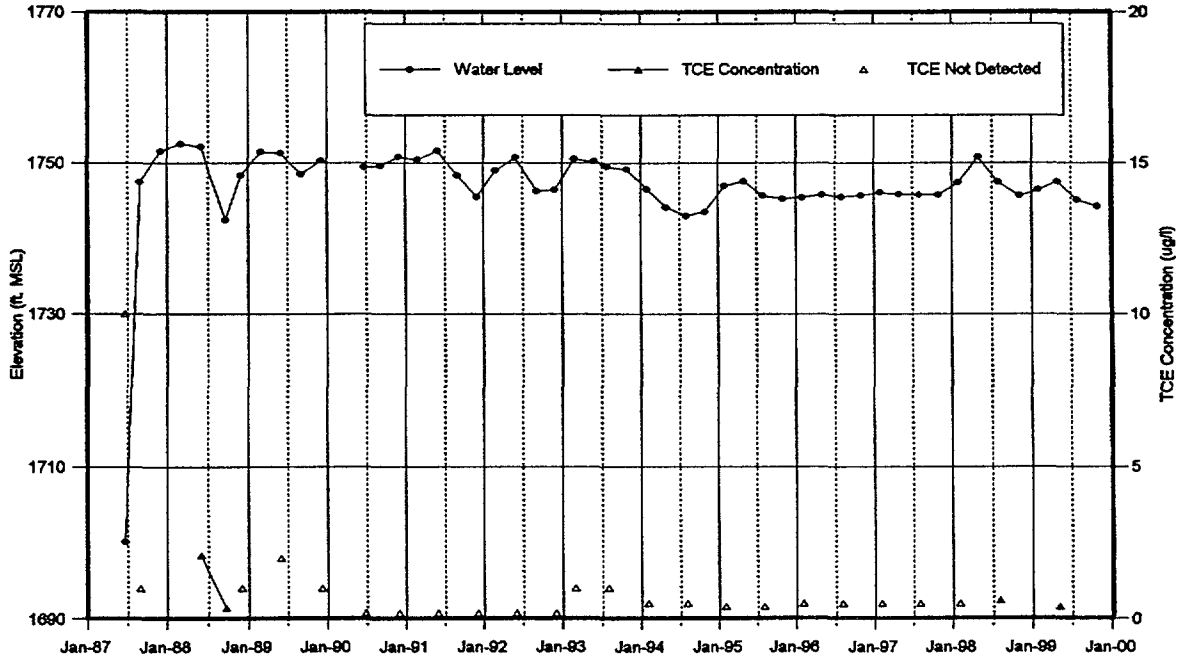
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well HAR-24

Figure A-156



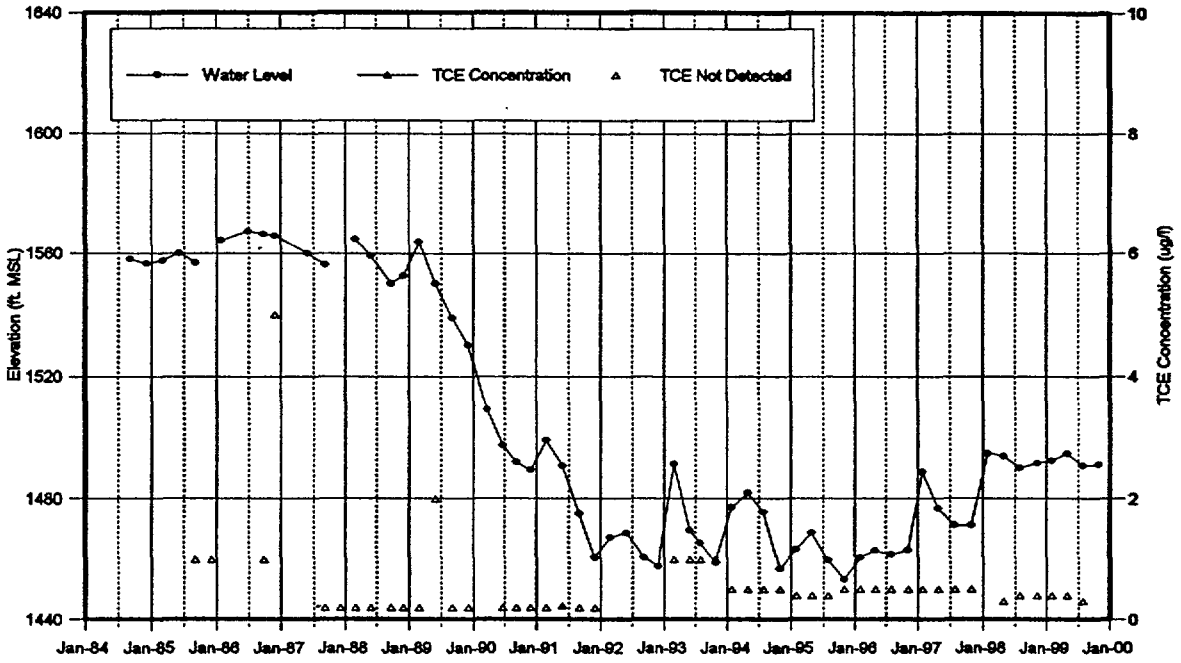
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well HAR-25

Figure A-157



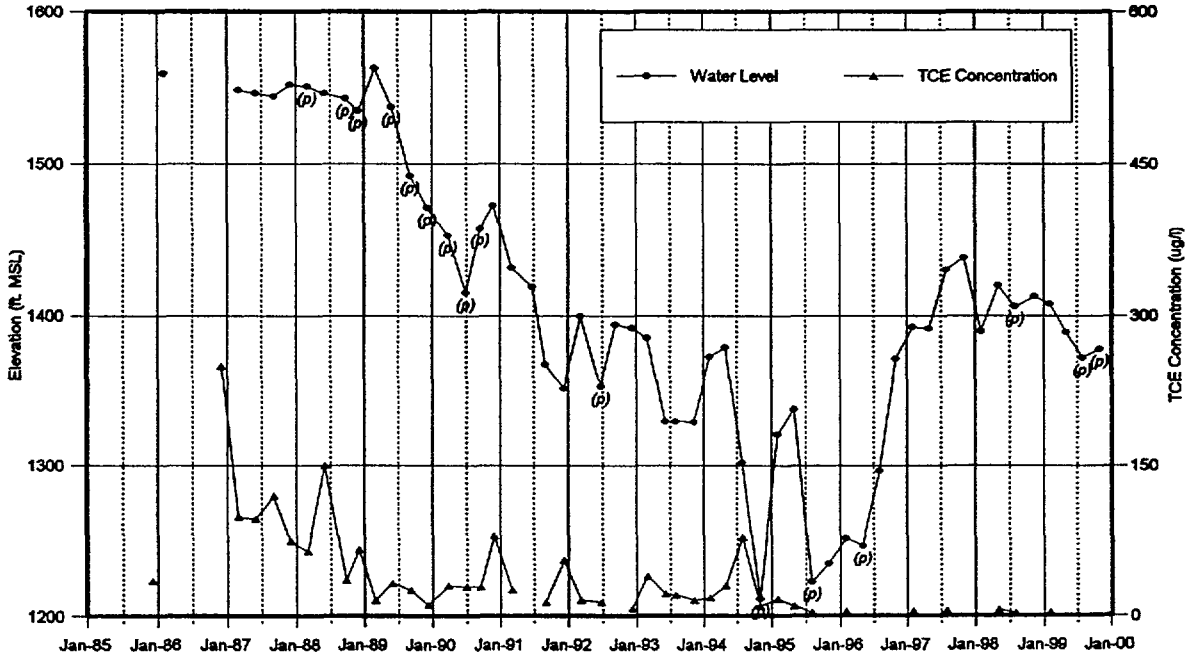
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well HAR-26

Figure A-158



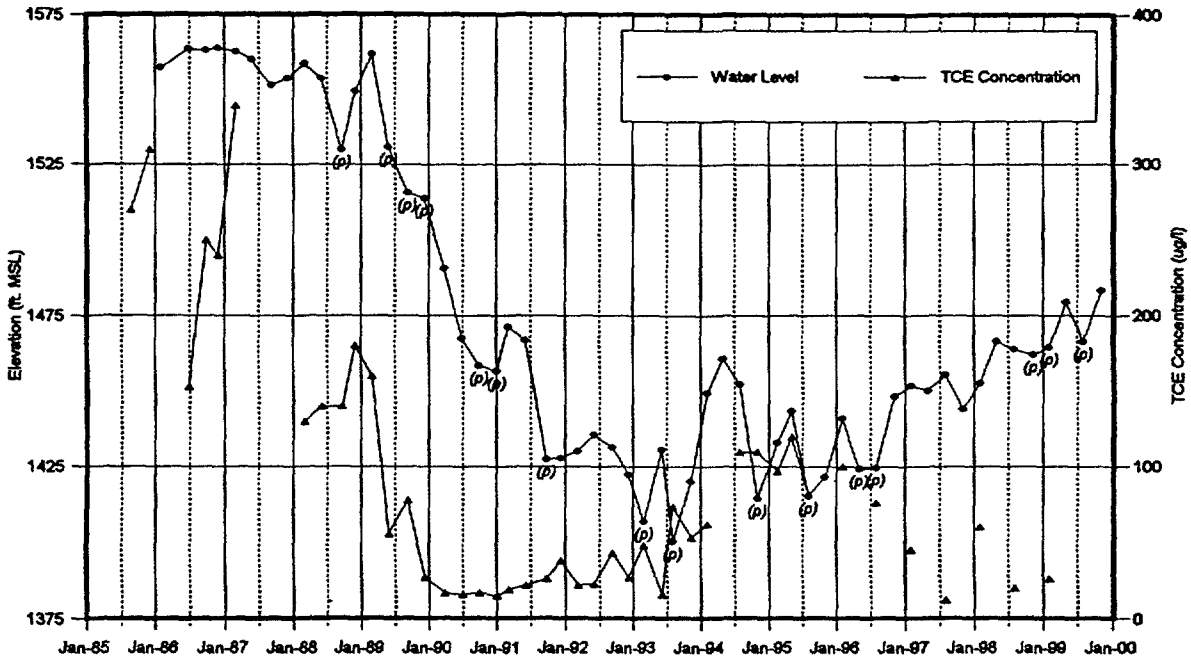
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well WS-4A

Figure A-159



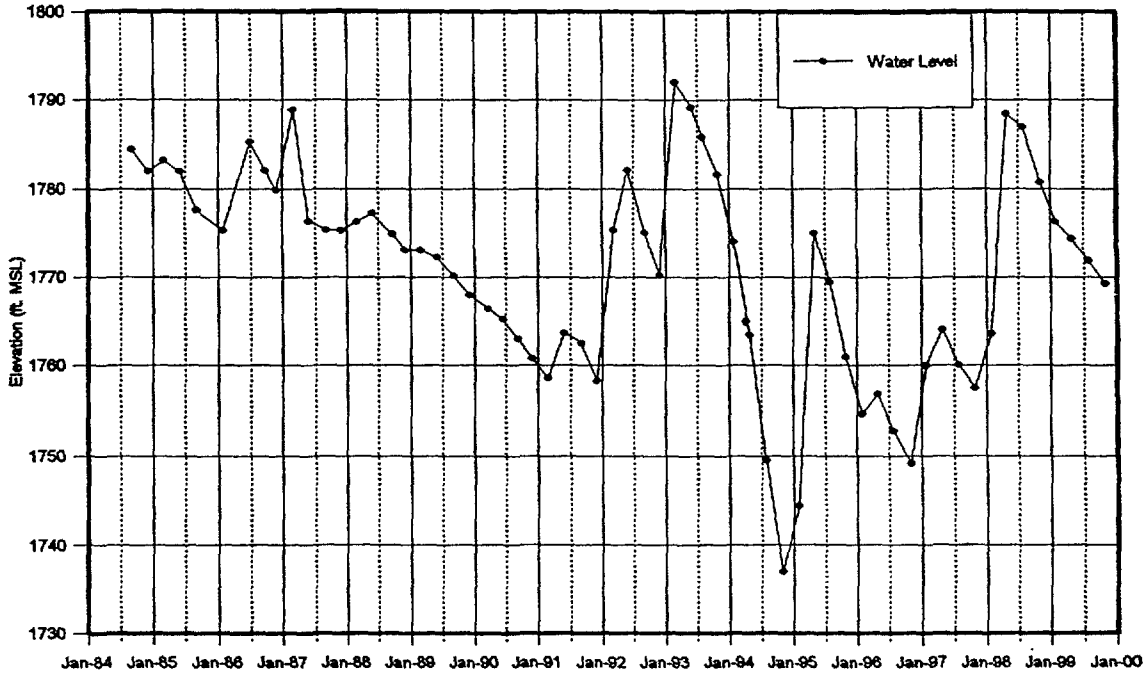
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well WS-5

Figure A-160



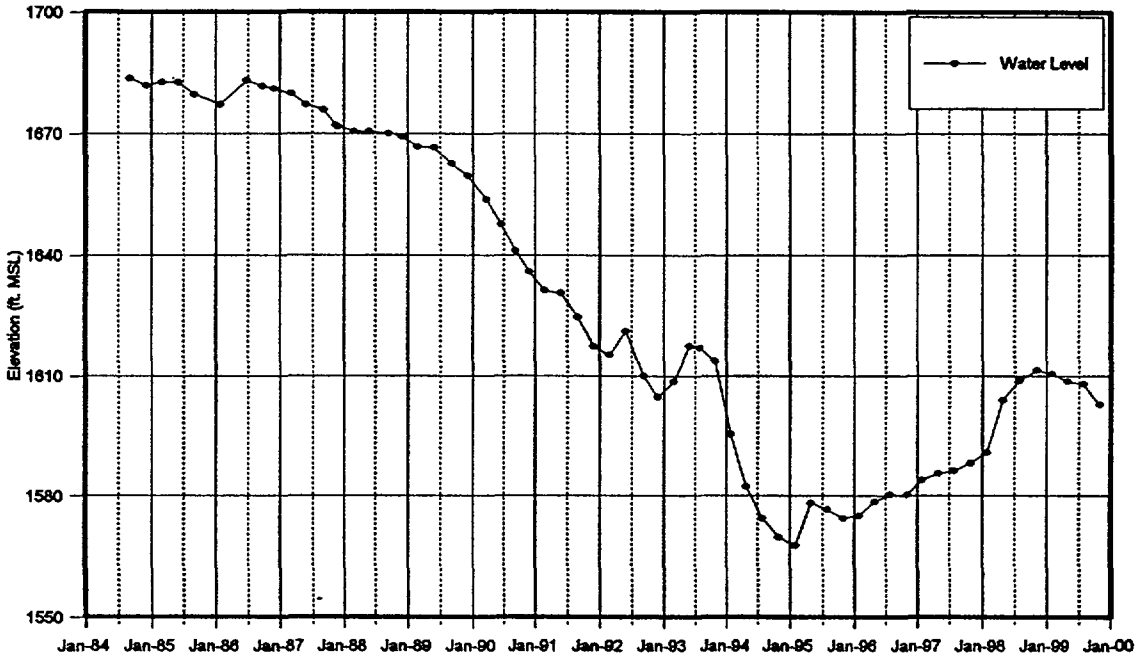
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well WS-6

Figure A-161



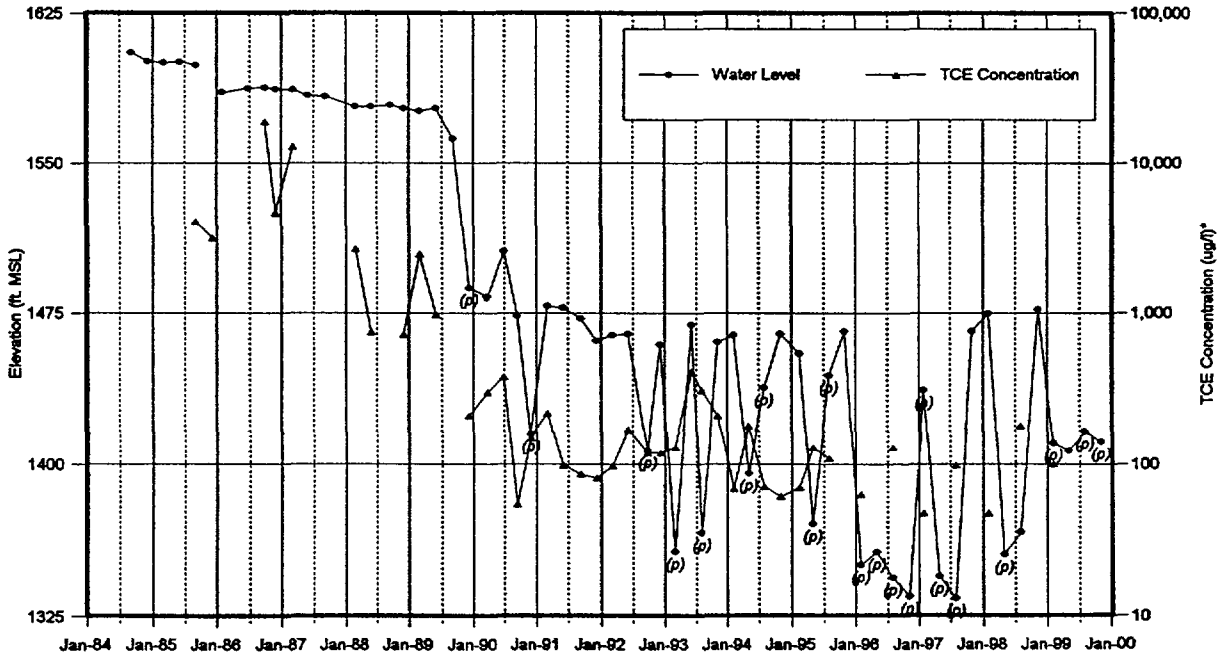
WATER LEVEL HYDROGRAPH
Chatsworth Formation Well WS-7

Figure A-162



WATER LEVEL HYDROGRAPH
Chatsworth Formation Well WS-8

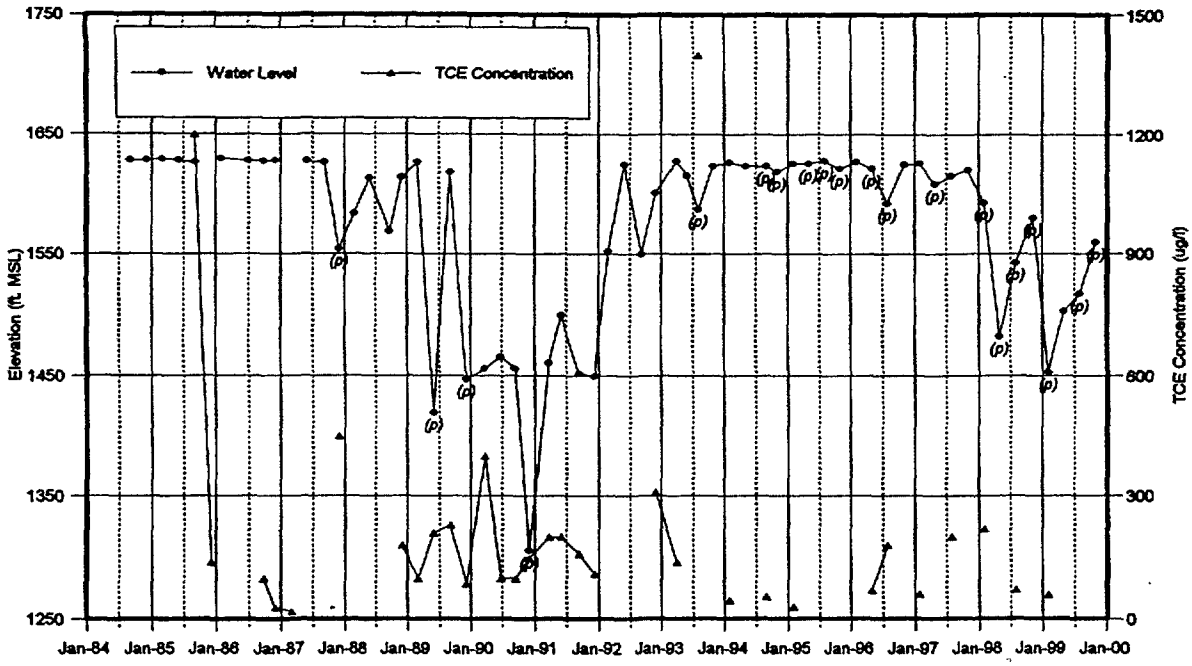
Figure A-163



WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well WS-9

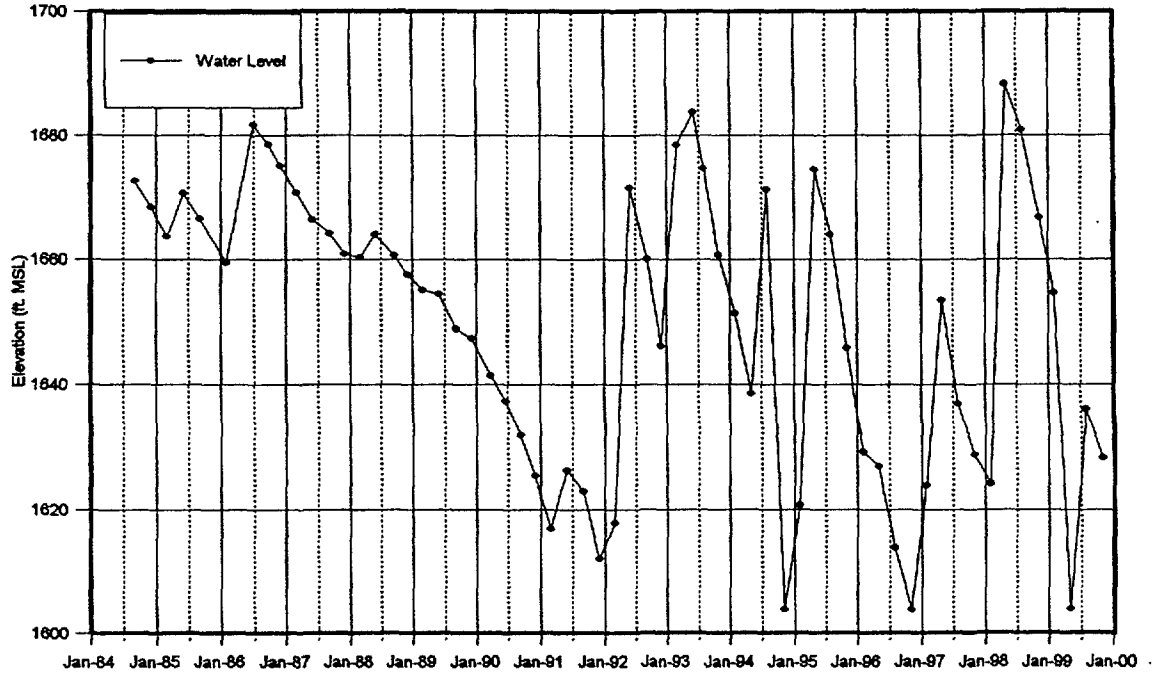
*Note: Scale is logarithmic

Figure A-164



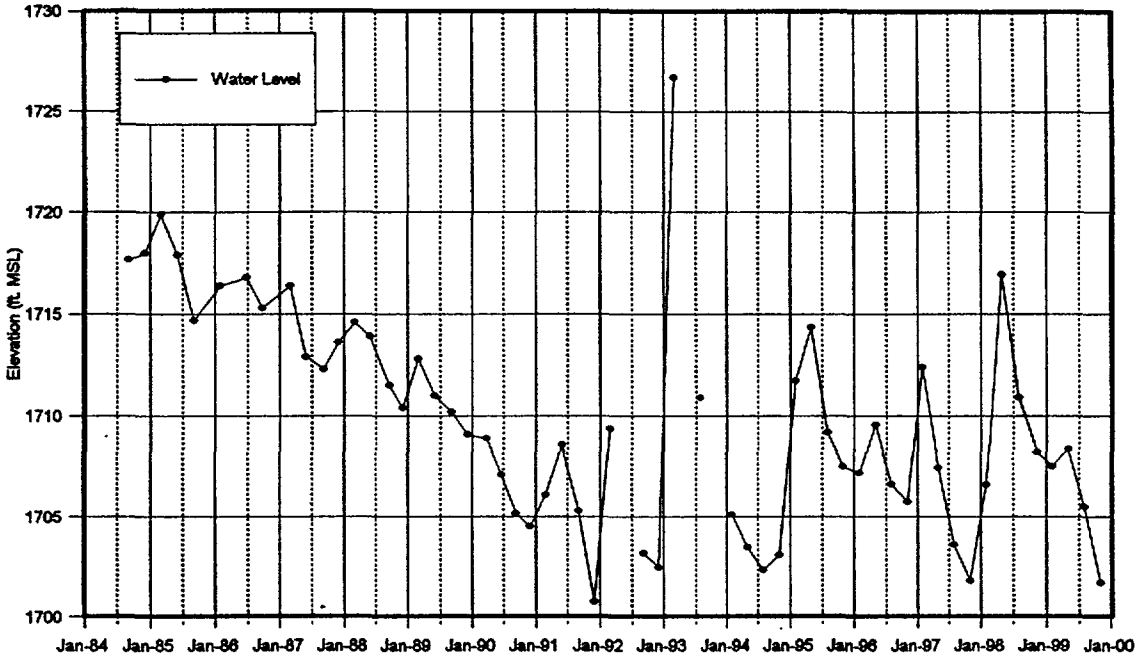
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well WS-9A

Figure A-165



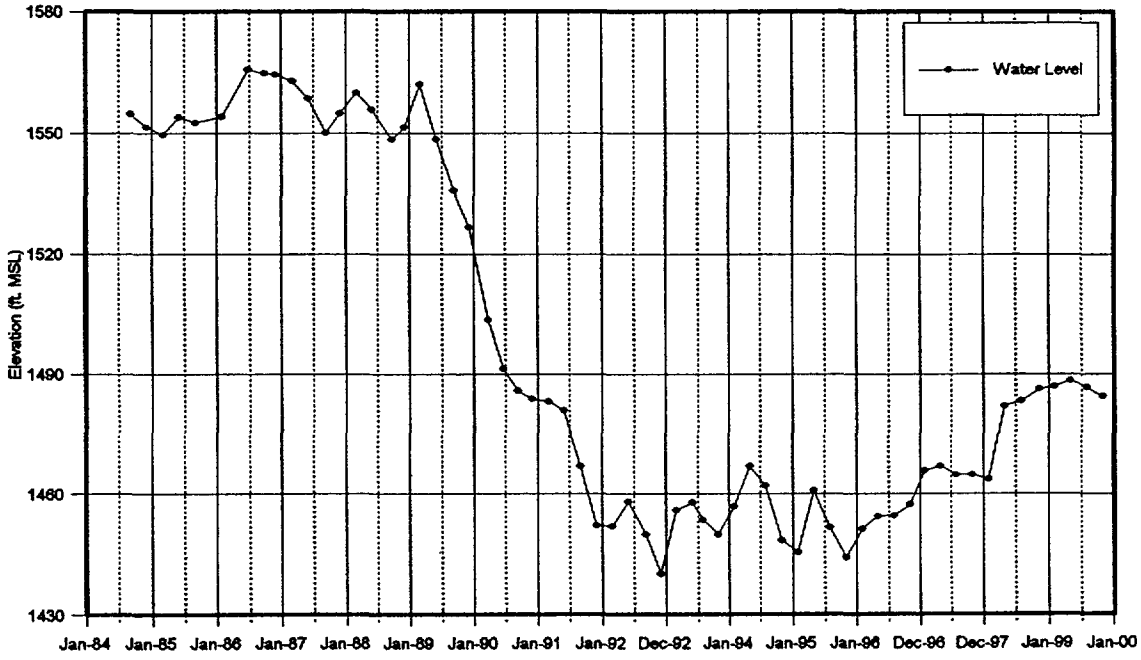
WATER LEVEL HYDROGRAPH
Chatsworth Formation Well WS-9B

Figure A-166



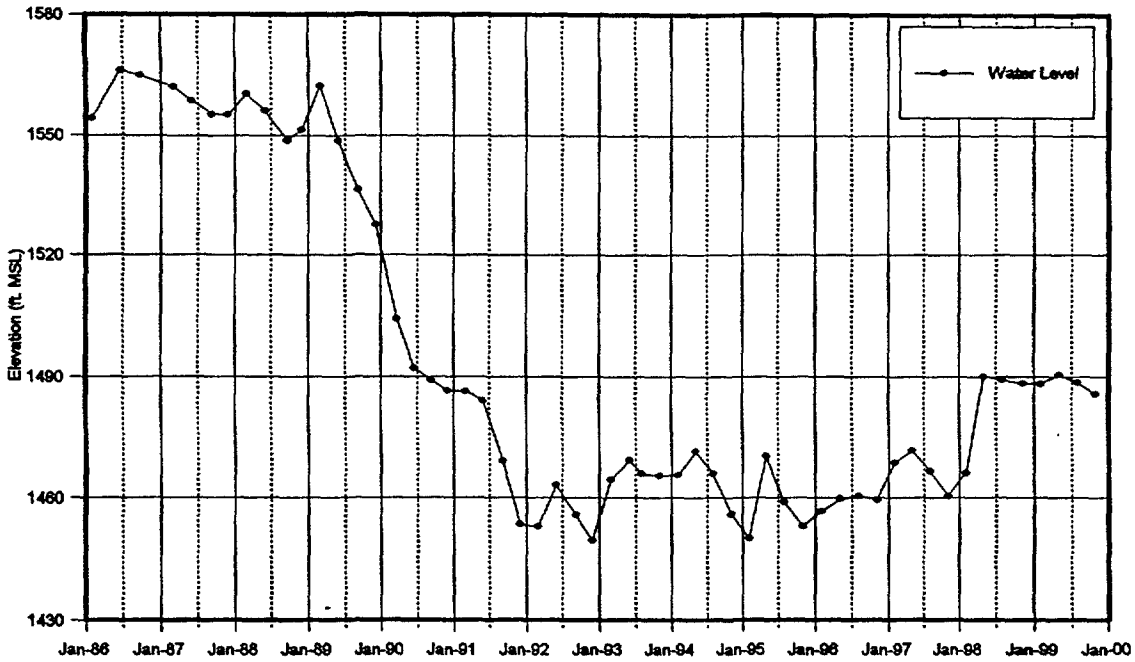
WATER LEVEL HYDROGRAPH
Chatsworth Formation Well WS-11

Figure A-167



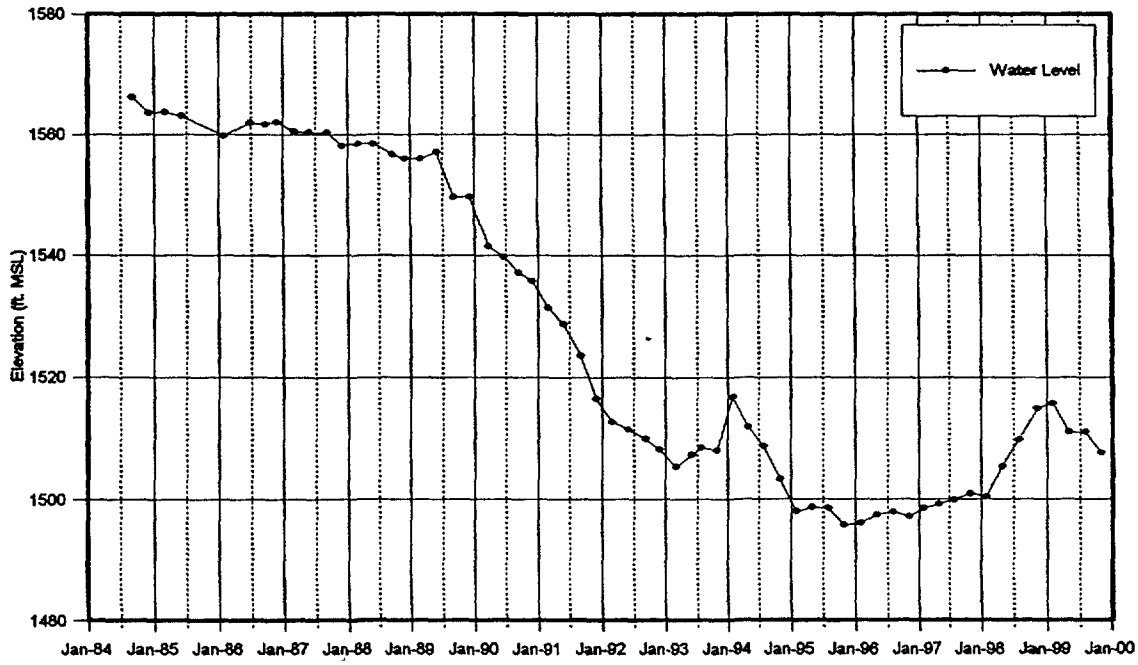
WATER LEVEL HYDROGRAPH
Chatsworth Formation Well WS-12

Figure A-168



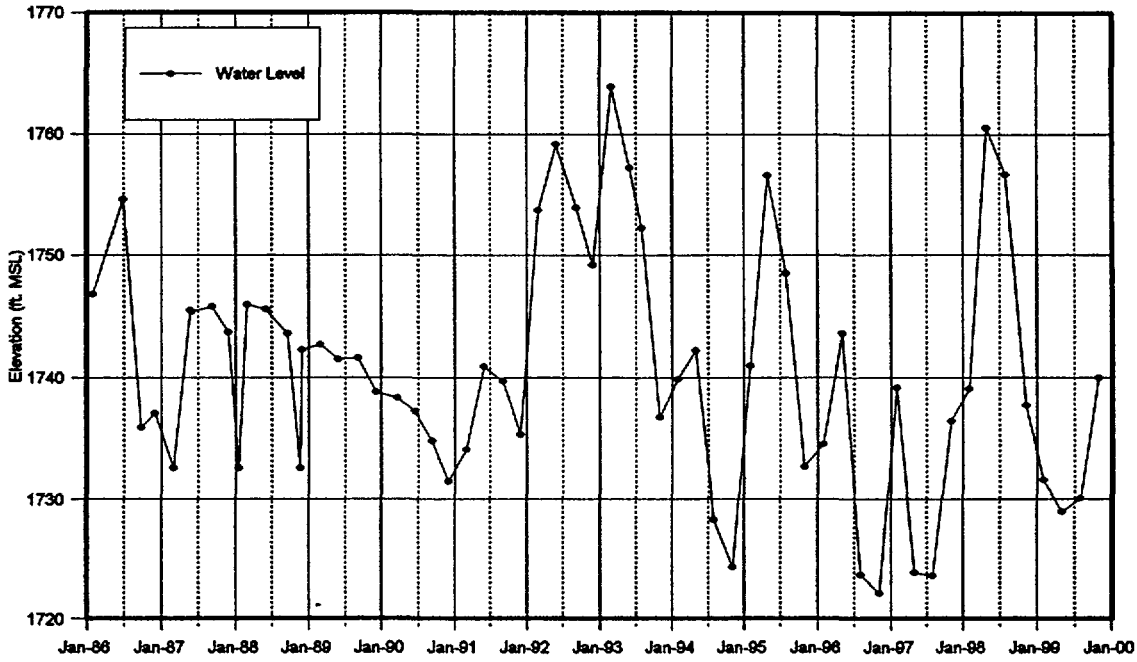
WATER LEVEL HYDROGRAPH
Chatsworth Formation Well WS-13

Figure A-169



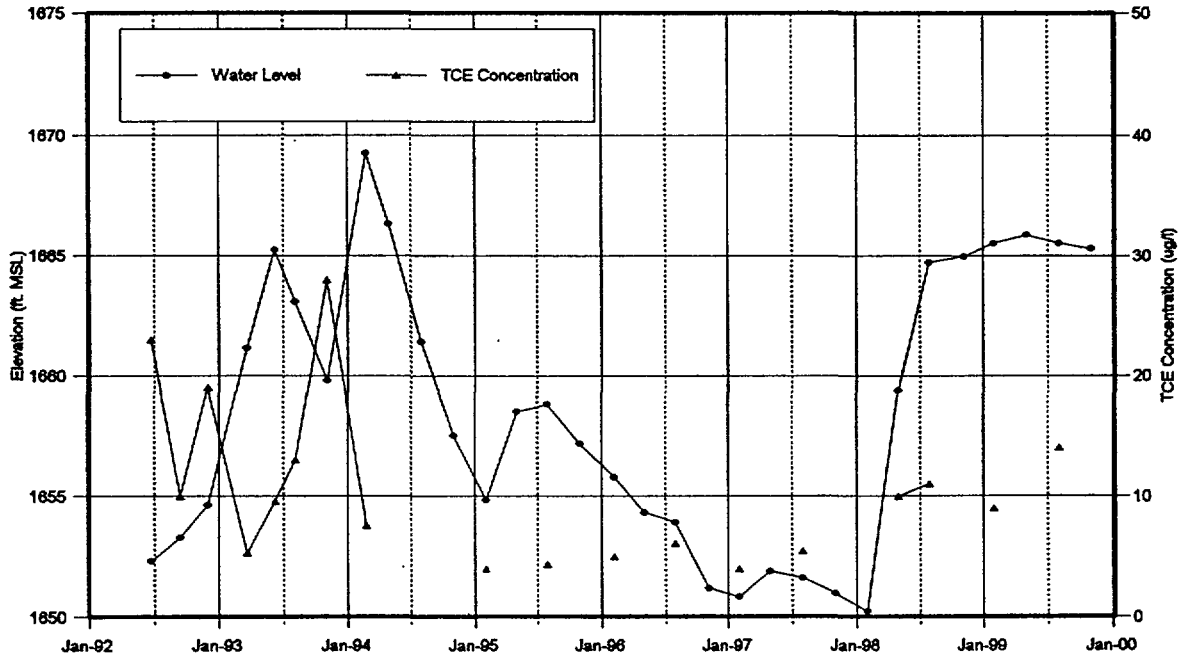
WATER LEVEL HYDROGRAPH
Chatsworth Formation Well WS-14

Figure A-170



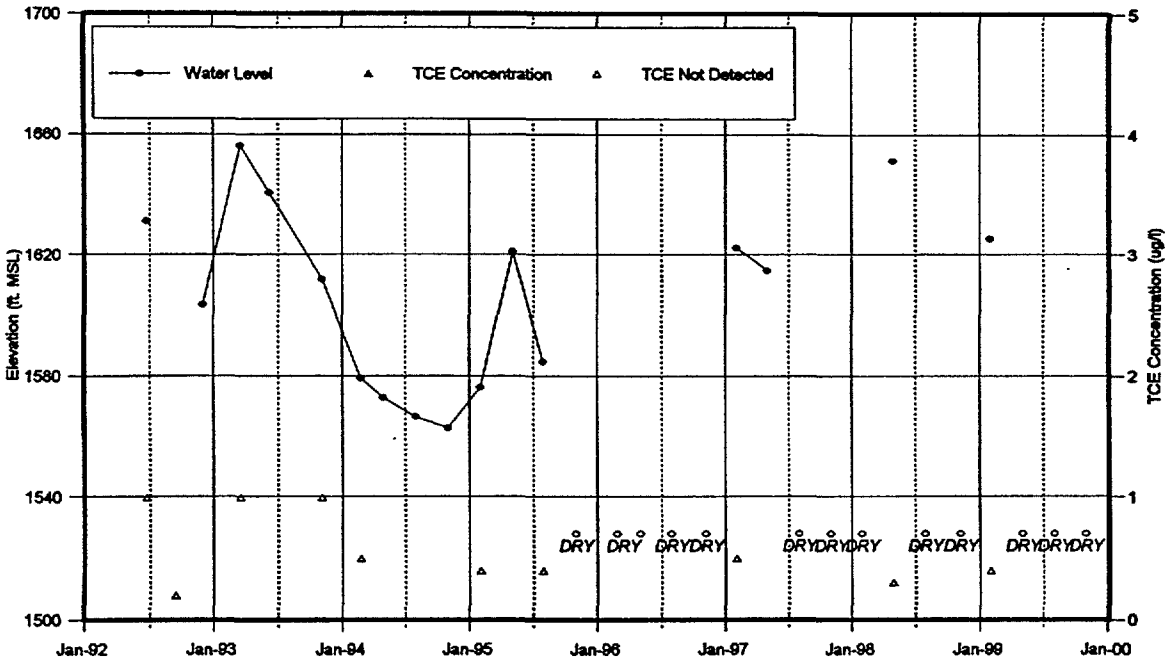
WATER LEVEL HYDROGRAPH
Chatsworth Formation Well WS-SP

Figure A-171



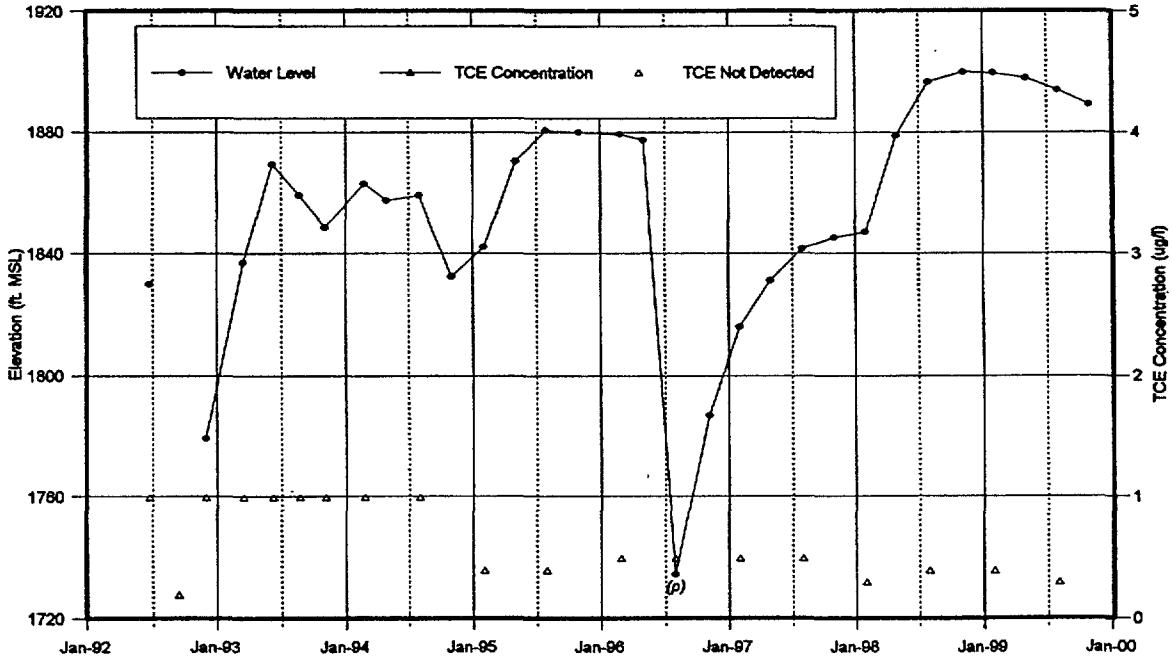
WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well OS-24

Figure A-172



WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well OS-25

Figure A-173



WATER LEVEL & WATER QUALITY HYDROGRAPH
Chatsworth Formation Well OS-26

Figure A-174

APPENDIX B

GROUNDWATER MONITORING SCHEDULE

APPENDIX B

GROUNDWATER MONITORING SCHEDULE

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B-2 SUMMARY OF SAMPLING AND ANALYSES FOR WELLS AND SPRINGS, QUARTERLY GROUNDWATER MONITORING PROGRAM, 1999

B-3 2000 ANNUAL MONITORING SCHEDULE

APPENDIX B

GROUNDWATER MONITORING SCHEDULE

GROUNDWATER MONITORING IN 1999

The groundwater monitoring schedule for 1999 was initially presented in the 1998 Annual Groundwater Monitoring Report (Groundwater Resources Consultants, Inc., *Annual Groundwater Monitoring Report, Santa Susana Field Laboratory, 1998, Boeing North American, Inc., Rocketdyne Propulsion & Power, Ventura County, California*, February 24, 1999). The proposed 1999 schedule (**Table B-1**) was subsequently modified and expanded during each sampling period in response to new data collected each quarter. **Table B-2** presents a summary of the actual analytical program conducted on the quarterly groundwater samples in 1999. The actual program varies from the proposed schedule due to groundwater level changes and requested additions to the monitoring schedule.

2000 GROUNDWATER MONITORING SCHEDULE

The 2000 schedule (**Table B-3**) reflects the programs in place to address numerous regulatory programs at the SSFL Facility, including surface impoundment closure, underground storage tank monitoring, evaluation monitoring, point of compliance monitoring, detection monitoring, background wells and interim corrective measures. The schedule also contains wells to be monitored as part of the general site characterization.

TABLE B-1

1999 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
SHALLOW ZONE SH WELLS						
SH-1	III	perchlorate				
SH-2	III					
SH-3	III	8260				Evaluation monitoring
SH-4	III	Appendix IX				Point of compliance
SH-5	III					
SH-6	III					
SH-7	III	perchlorate				
SH-8	III	perchlorate				
SH-9	III					
SH-10	III					
SH-11	III	8260 perchlorate				Evaluation monitoring
ECL French-drain	III	8260				Interim corrective action
SHALLOW ZONE RS WELLS						
RS-1	I	8260 8015 perchlorate		8260 8015		B/351 site; Evaluation monitoring
RS-2	I	perchlorate				
RS-3	I					
RS-4	I					
RS-5	I					
RS-6	I	perchlorate				
RS-7	I	8260				Evaluation monitoring
RS-8	II	Appendix IX				Point of compliance
RS-9	III	TM perchlorate				
RS-10	II	8260 perchlorate				Evaluation monitoring

See last page of Table B-1 for footnotes and explanations

TABLE B-1

1999 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RS-11	IV	8260 perchlorate 900.0 901.1 906.0				Evaluation monitoring
RS-12	III	TM				
RS-13	II	8260 perchlorate				Evaluation monitoring
RS-14	III					
RS-15	III					
RS-16	IV	8260 perchlorate 900.0 906.0				B/056 landfill
RS-17	III					
RS-18	IV	8260 perchlorate 900.0 901.1 906.0 TM U, Th		8260 900.0 901.1 906.0 U, Th		FSDF
RS-19	I	8260 perchlorate				Evaluation monitoring
RS-20	I	perchlorate				
RS-21	II	8260				Evaluation monitoring
RS-22	II					
RS-23	IV	8260 8015 perchlorate				
RS-24	IV	perchlorate				
RS-25	IV	perchlorate				
RS-27	IV	perchlorate				

See last page of Table B-1 for footnotes and explanations

TABLE B-1

1999 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RS-28	IV	8260 perchlorate 900.0 901.1 906.0				RMHF
RS-29	II	perchlorate				
RS-30	I	8260 8015 perchlorate		8260 8015		B/351 site
RS-31	I	8260 8015		8260 8015		B/351 site
RS-32	I	8260 8015		8260 8015		B/351 site
RS-54	IV	8260 TM, perchlorate 900.0 901.1 906.0, U, Th		8260 TM, perchlorate 900.0 901.1 906.0, U, Th		FSDF
SHALLOW ZONE ES WELLS						
ES-1	I	8260				Interim corrective action
ES-2	I	8260 perchlorate				
ES-3	I	8260				Interim corrective action
ES-4	I	8260				Interim corrective action
ES-5	I	8260				Interim corrective action
ES-6	I	8260				Interim corrective action
ES-7	I	8260				Interim corrective action
ES-8	I	perchlorate				
ES-9	I	8260 perchlorate				

See last page of Table B-1 for footnotes and explanations

TABLE B-1

1999 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
ES-10	I	8260 perchlorate				
ES-11	I	8260 TM				Interim corrective action
ES-12	I	8260 perchlorate				
ES-13	I	perchlorate				
ES-14	III	8260				Interim corrective action
ES-15	III					
ES-16	III	TM				
ES-17	III	8260				Interim corrective action
ES-18	II	perchlorate				
ES-19	II	perchlorate				
ES-20	II	perchlorate				
ES-21	II	8260				Interim corrective action
ES-22	II	8260				Interim corrective action
ES-23	III	8260				Interim corrective action
ES-24	III	8260, TM, perchlorate				Interim corrective action
ES-25	III	perchlorate				
ES-26	III	8260, TM				Interim corrective action
ES-27	III	8260				Interim corrective action
ES-28	III	TM				
ES-29	III	TM				
ES-30	III	8260				Interim corrective action

See last page of Table B-1 for footnotes and explanations

TABLE B-1

1999 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
ES-31	IV	8260 perchlorate 900.0 901.1 906.0				
ES-32	III	8260				Interim corrective action
SHALLOW ZONE HAR WELLS						
HAR-2	I					
HAR-3	I	8260				Evaluation monitoring
HAR-4	I	8260				Interim corrective action
HAR-9	II					
HAR-11	II	8260, 8015				Evaluation monitoring
HAR-12	III					
HAR-13	II	perchlorate				
HAR-14	II	Appendix IX				Point of compliance
HAR-15	II	Appendix IX				Point of compliance
HAR-27	II	8260, TM				Evaluation monitoring
HAR-28	II	TM				
HAR-29	II	TM perchlorate				
HAR-30	II	perchlorate				
HAR-31	II					
HAR-32	III					
HAR-33	III					
HAR-34	III					
CHATSWORTH FORMATION RD WELLS						
RD-1	I	8260, TM				Interim corrective action
RD-2	I	8260, TM, 8015				Interim corrective action

See last page of Table B-1 for footnotes and explanations

TABLE B-1

1999 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RD-3	I	8260				Evaluation monitoring
RD-4	II	8260				Interim corrective action
RD-5A	UL, S of Area II	8260	8260	8260	8260	Detection monitoring
RD-5B	UL, S of Area II	8260	8260	8260	8260	Detection monitoring
RD-5C	UL, S of Area II	8260	8260	8260	8260	Detection monitoring
RD-6	UL, S of Area II	8260, pH, EC, TOC, TOX, Cl, Fe, Mn, phenols, Na, SO_4	8260, F, formaldehyde, ammonia, NO_3, 1,4-dioxane, 8270	8260, pH, EC, TOC, TOX	8260, turbidity	Background
RD-7	IV	8260, perchlorate 900.0 901.1 906.0, U, Th		8260, 900.0 906.0		B/056 landfill
RD-8	III	8260, 8015 perchlorate				
RD-9	II	8260				Interim corrective action
RD-10	I	8260, TM		8260		Evaluation monitoring
RD-11	III	8260, 8015				
RD-12	III	8260, 8015 perchlorate				
RD-13	IV	8260, pH, EC, TOC, TOX, Cl, Fe, Mn, phenols, Na, SO_4,	8260, F, formaldehyde, ammonia, NO_3, 1,4-dioxane, 8270	8260 pH, EC, TOC, TOX	8260	Background
RD-14	IV	8260 perchlorate				

See last page of Table B-1 for footnotes and explanations

TABLE B-1

1999 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RD-15	IV	8260, TM perchlorate				
RD-16	IV	8260				
RD-17	IV	8260 perchlorate 900.0 901.1 906.0				RMHF
RD-18	IV	8260 perchlorate	8260	8260	8260	Detection monitoring
RD-19	IV	8260 perchlorate	8260	8260	8260	Detection monitoring
RD-20	IV	8260 perchlorate				
RD-21	IV	8260 TM, Cr^{+6} perchlorate 900.0 901.1 906.0		8260, TM		FSDF
RD-22	IV	8260 TM, 900.0 901.1 906.0	8260	8260	8260	FSDF; Detection monitoring
RD-23	IV	8260, TM, 900.0 901.1 906.0		8260, TM		FSDF
RD-24	IV	8260 perchlorate 900.0 901.1 906.0		8260 900.0 901.1 906.0		B/059

See last page of Table B-1 for footnotes and explanations

TABLE B-1

1999 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RD-25	IV	8260 perchlorate 900.0 901.1 906.0		8260, 900.0 901.1 906.0		B/059
RD-26	II	8260 perchlorate				Evaluation monitoring
RD-27	IV	8260 perchlorate 900.0 901.1 906.0		8260 900.0 901.1 906.0		RMHF
RD-28	IV	8260 perchlorate 900.0 901.1 906.0, U, Th		8260 900.0 901.1 906.0		B/059
RD-29	IV	8260 perchlorate				
RD-30	IV	8260 perchlorate 900.0 901.1 906.0		8260, 900.0 901.1 906.0		RMHF
RD-31	I	8260, TM				
RD-32	Off-site, NE of Area I	8260 8015	8260	8260 8015	8260	B/351; Detection monitoring
RD-33A	UL, NW of Area IV	8260 TM, CN 900.0 901.1 906.0		8260,		FSDF; Evaluation monitoring
RD-33B	UL, NW of Area IV	8260 TM, CN 900.0 901.1 906.0	8260	8260 906.0	8260	FSDF; Detection monitoring

See last page of Table B-1 for footnotes and explanations

TABLE B-1

1999 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RD-33C	UL, NW of Area IV	8260 TM, CN 900.0 901.1 906.0	8260	8260 906.0	8260	FSDF; Detection monitoring
RD-34A	UL, NW of Area IV	8260 TM, CN 900.0 901.1 906.0, U, Th		8260 906.0		RMHF
RD-34B	UL, NW of Area IV	8260 TM, CN 900.0 901.1 906.0		8260 906.0		RMHF
RD-34C	UL, NW of Area IV	8260 TM, CN 900.0 901.1 906.0		8260 906.0		RMHF
RD-35A	I	8260, TM				
RD-35B	I	8260				
RD-36A	Off-site, NE of Area I	8260 8015		8260 8015		B/351; Evaluation monitoring
RD-36B	Off-site, NE of Area I	8260 8015		8260 8015		B/351; Evaluation monitoring
RD-36C	Off-site, NE of Area I	8260 8015		8260 8015		B/351; Evaluation monitoring
RD-36D	Off-site, NE of Area I	8260 8015		8260 8015		B/351; Evaluation monitoring
RD-37	Off-site, NE of Area I	8260 8015	8260	8260 8015	8260	B/351; Detection monitoring

See last page of Table B-1 for footnotes and explanations

TABLE B-1

1999 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RD-38A	Off-site, NE of Area I	8260 8015		8260 8015		B/351; Evaluation monitoring
RD-38B	Off-site, NE of Area I	8260 8270, TM, Common ions, TDS, EC, pH, 900.0 901.1 906.0	8260	8260	8260	Evaluation monitoring
RD-39A	Off-site, NE of Area I	8260	8260	8260	8260	Detection monitoring
RD-39B	Off-site, NE of Area I	8260	8260	8260	8260	Detection monitoring
RD-40	II	8260 perchlorate		8260		Detection monitoring
RD-41A	II	8260, 8015 perchlorate				
RD-41B	II	8260, 8015 perchlorate				
RD-41C	II	8260, 8015 perchlorate				
RD-42	II	8260 perchlorate				
RD-43A	Off-site, near Area I	8260	8260	8260	8260	Detection monitoring
RD-43B	Off-site, near Area I	8260	8260	8260	8260	Detection monitoring
RD-43C	Off-site, near Area I	8260	8260	8260	8260	Detection monitoring
RD-44	I	8260	8260	8260	8260	Detection monitoring
RD-45A	I	8260, TM				Evaluation monitoring

See last page of Table B-1 for footnotes and explanations

TABLE B-1

1999 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RD-45B	I	8260, TM				Evaluation monitoring
RD-45C	I	8260, TM				Evaluation monitoring
RD-46A	I	8260, 8270 perchlorate		8260		Evaluation monitoring
RD-46B	I	8260, 8270, TM, Common ions, TDS, EC, pH, 900.0 901.1 906.0 perchlorate		8260		Evaluation monitoring
RD-47	I	8260 TM perchlorate				Evaluation monitoring
RD-48A	UL, SW of Area I	8260, pH, EC, TOC, TOX, Cl, Fe, Mn, phenols, Na, SO_4	8260 , F, formaldehyde, ammonia, NO_3, 1,4-dioxane, 8270	8260, pH, EC, TOC, TOX	8260	Background
RD-48B	UL, SW of Area I	8260, pH, EC, TOC, TOX, Cl, Fe, Mn, phenols, Na, SO_4	8260 , F, formaldehyde, ammonia, NO_3, 1,4-dioxane, 8270	8260, pH, EC, TOC, TOX	8260	Background
RD-48C	UL, SW of Area I	8260, pH, EC, TOC, TOX, Cl, Fe, Mn, phenols, Na, SO_4	8260, F, formaldehyde, ammonia, NO_3, 1,4-dioxane, 8270	8260 pH, EC, TOC, TOX	8260	Background
RD-49A	II	8260				
RD-49B	II	8260				
RD-49C	II	8260				
RD-50	IV	8260, 8015		8260		Detection monitoring

See last page of Table B-1 for footnotes and explanations

TABLE B-1

1999 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RD-51A	II	8260, TM perchlorate				Evaluation monitoring
RD-51B	II	8260, TM perchlorate				Evaluation monitoring
RD-51C	II	8260, TM	8260	8260	8260	Detection monitoring
RD-52A	I	8260, TM perchlorate				Evaluation monitoring
RD-52B	I	8260, TM perchlorate				Evaluation monitoring
RD-52C	I	8260, TM	8260	8260	8260	Detection monitoring
RD-53	I	8260, 8015, perchlorate		8260, 8015,		B/351 site
RD-54A	IV	8260, TM, perchlorate 900.0 901.1 906.0, U, Th		8260, TM, 906.0		FSDF
RD-54B	IV	8260, TM, perchlorate 900.0 901.1 906.0		8260, TM, 906.0		FSDF
RD-54C	IV	8260, TM, perchlorate 900.0 901.1 906.0		8260, TM, 906.0		FSDF
RD-55A	III	8260 perchlorate				Evaluation monitoring
RD-55B	III	8260 perchlorate				Evaluation monitoring
RD-56A	UL, N of Area III	8260, TM				
RD-56B	UL, N of Area III	8260, TM	8260	8260, TM	8260	Detection monitoring

See last page of Table B-1 for footnotes and explanations

TABLE B-1

1999 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RD-57	UL, NW of Area IV	8260, TM, 900.0 901.1 906.0	8260	8260 906.0	8260	FSDF; Detection monitoring
RD-58A	III	8260				Evaluation monitoring
RD-58B	III	8260	8260	8260	8260	Detection monitoring
RD-58C	III	8260	8260	8260	8260	Evaluation monitoring
RD-59A	Off-site, W of Area IV	8260 TM perchlorate 900.0 901.1 906.0	8260 perchlorate	8260 TM perchlorate 906.0	8260 perchlorate	FSDF & RMHF; Detection monitoring
RD-59B	Off-site, W of Area IV	8260 TM perchlorate 900.0 901.1 906.0	8260	8260 TM perchlorate 906.0	8260	FSDF & RMHF Detection monitoring
RD-59C	Off-site, W of Area IV	8260 TM perchlorate 900.0 901.1 906.0	8260	8260 TM perchlorate 906.0	8260	FSDF & RMHF; Detection monitoring
RD-60	III	8260, 8015				Evaluation monitoring
RD-61	I	8260	8260	8260	8260	Detection monitoring
RD-62	UL, S of Area I	8260		8260		Detection monitoring
RD-63	IV	8260 900.0 901.1 906.0		8260		RMHF Area IV extraction
RD-64	IV	8260				
RD-65	IV	8260				

See last page of Table B-1 for footnotes and explanations

TABLE B-1

1999 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RD-66	Off-site, NE of Area I	8260	8260	8260	8260	Detection monitoring well
RD-67	UL, S of Area IV	8260		8260		Detection monitoring well
RD-68A	Off-site, N of Area III	8260	8260	8260	8260	Detection monitoring well
RD-68B	Off-site, N of Area III	8260	8260	8260	8260	Detection monitoring well
RD-69	I	8260		8260		Detection monitoring well
RD-70	UL, N of Area II	8260	8260	8260	8260	Detection monitoring well
RD-71	Off-site, NE of Area I	8260	8260	8260	8260	Detection monitoring well
RD-72	I	8260, TM				
RD-73	I	8260 8015 perchlorate				B/324 underground storage tank
CHATSWORTH FORMATION HAR WELLS						
HAR-1	I	perchlorate				
HAR-5	II	perchlorate				
HAR-6	II	8260 perchlorate				
HAR-7	II	8260 Appendix IX				Point of compliance
HAR-8	II	TM perchlorate				
HAR-16	I	Appendix IX perchlorate				Point of compliance
HAR-17	II	Appendix IX				Point of compliance

See last page of Table B-1 for footnotes and explanations

TABLE B-1

1999 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
HAR-18	III	8260				Interim corrective action
HAR-19	II	8260, 8015				
HAR-20	II	8260				
HAR-21	II	8260 perchlorate				
HAR-22	II	8260 perchlorate				Evaluation monitoring
HAR-23	III	8260 perchlorate				Evaluation monitoring
HAR-24	I	8260, TM, perchlorate				Evaluation monitoring
HAR-25	I	8260 perchlorate				
HAR-26	III	8260				Evaluation monitoring
CHATSWORTH FORMATION WS WELLS						
WS-4A	I	8260, TM		8260		Detection monitoring
WS-5	I	8260				Interim corrective action
WS-6	I	8260				Interim corrective action
WS-7	IV					
WS-8	III					
WS-9	II	8260				Interim corrective action
WS-9A	II	8260				Interim corrective action
WS-9B	II	8260 perchlorate				
WS-11	III					
WS-12	I					
WS-13	II					
WS-14	I					

See last page of Table B-1 for footnotes and explanations

TABLE B-1

1999 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
WS-SP	II					
OFF-SITE OS WELLS AND SPRINGS						
OS-2	Off-Site	8260 perchlorate				
OS-3	Off-Site	perchlorate				
OS-4	Off-Site	8260 perchlorate				
OS-5	Off-Site	perchlorate				
OS-8	Off-Site	8260 perchlorate				
OS-10	Off-Site	perchlorate				
OS-12	Off-Site	perchlorate				
OS-13	Off-Site	8260 perchlorate		8260		
OS-15	Off-Site	8260 perchlorate				
OS-16	Off-Site	8260 perchlorate		8260		
OS-17	Off-Site	8260 perchlorate		8260 perchlorate		
OS-21	Off-Site	8260 perchlorate				
OS-24	Off-Site	8260		8260		
OS-25	Off-Site	8260 perchlorate		8260		
OS-26	Off-Site	8260 perchlorate		8260		
OS-27	Off-Site	8260 perchlorate				

See last page of Table B-1 for footnotes and explanations

TABLE B-1
ATTACHMENT A
ANALYTICAL METHODS
1999 MONITORING SCHEDULE

Analytes/EPA Methodology

8260	=	EPA method 8260 for volatile organic compounds (most recent version).
8270	=	EPA method 8270 for base/neutral and acid organic compounds.
8015	=	EPA method 8015 modified for fuel hydrocarbons.
pH	=	EPA method 150.1 or 9040.
EC	=	specific conductance, EPA method 120.1.
Phenols	=	EPA method 8270 (acid extractable portion only).
TOC	=	total organic carbon, EPA method 415.1.
TOX	=	total organic halogens, EPA method 9020.
CN	=	Cyanide, EPA method 9010 or 335.2.
TM	=	Trace metals, including antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium and zinc using EPA methods 6010B, 7470A, and 7740. For samples from wells RD-38B and RD-46B, additional trace metals include iron and manganese.
Perchlorate	=	EPA method 300M, modified by the State of California for determination of perchlorate by ion chromatography with suppressed conductivity detection.
Common Ions	=	*Chloride, carbonate, bicarbonate, fluoride, nitrate, sulfate, calcium,* magnesium, potassium, and sodium using EPA method 300 and 6010 series.
TDS	=	Total dissolved solids, EPA method 160.1.

Appendix IX

Note: The laboratory uses the most current methods which may be updated from methods listed in Appendix IX (Code of Federal Regulations, Title 40, Part 264, Appendix IX, Ground-water Monitoring List).

8081	=	EPA method 8081 for pesticides.
8082	=	EPA method 8082 for PCBs.
8141A	=	EPA method 8141A for organophosphorus pesticides.
8151A	=	EPA method 8151A for herbicides.
8260	=	EPA method 8260 for expanded list of volatile organic compounds.
8270	=	EPA method 8270 for base/neutral and acid organic compounds.
1613A	=	EPA method 1613A for dioxins and furans.
Metals	=	EPA method 6010 and 7000 series for total metals.
CN	=	EPA method 9010 for cyanide.
Sulfide	=	EPA method 376.2 for sulfide.

TABLE B-1
ATTACHMENT A
(continued)

Radiochemical Parameters

900.0	=	EPA method 900.0 for gross alpha and beta radioactivity
901.1	=	EPA method 901.1 for gamma-emitting radionuclides
906.0	=	EPA method 906.0 for tritium
U	=	EPA method 907.0 for isotopic uranium
Th	=	EPA method 907.0 for isotopic thorium

Note: An equivalent or superior in-house laboratory procedure will be considered acceptable for EPA methodology. Lab will use the most current promulgated version of each EPA method.

Evaluation Monitoring

Evaluation monitoring wells, including the point of compliance wells, will be sampled at least annually for EPA method 8260, which will detect the constituents specified in **Table 5** of the post-closure permit: tetrachloroethylene, trichloroethylene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethylene, 1,1-dichloroethane, 1,2-dichloroethane, vinyl chloride, carbon tetrachloride, methylene chloride, chloroform, methyl ethyl ketone, benzene, toluene, xylenes, and ethylbenzene.

Point of compliance wells also will be sampled every other year for a full suite of Appendix IX parameters. The sampling schedule will be 1993, 1995, 1997...etc., for all wells. The analytical parameters are listed in 40 CFR 264, Appendix IX. During off-years, wells will be sampled for a modified Appendix IX list annually (standard list of constituents for EPA methods 8260 and 8270, plus 1,4-dioxane, nitrobenzene, 1,3-dinitrobenzene, and N-nitrosodimethylamine).

Detection Monitoring

Detection monitoring wells will be sampled quarterly for EPA method 8260, which will detect the constituents specified in **Table 6** of the post-closure permit: tetrachloroethylene, trichloroethylene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethylene, 1,1-dichloroethane, 1,2-dichloroethane, vinyl chloride, carbon tetrachloride, methylene chloride, and chloroform.

Interim Corrective Action Monitoring

All extraction wells will be included in the interim corrective action monitoring. These wells will be sampled annually for EPA method 8260, which will detect the constituents specified in **Table 5** of the post-closure permit. The constituents are listed above under "Evaluation Monitoring."

TABLE B-1
ATTACHMENT A
(continued)

Area IV Monitoring

Area IV sampling schedule subject to revision with contract renewal.

Note:	U	=	Isotopic uranium, to be analyzed using EPA method 907.0
	Th	=	Isotopic thorium, to be analyzed using EPA method 907.0.

Background Monitoring

The five background wells will be sampled twice per year for the parameters used as indicators of groundwater contamination (pH, specific conductance, total organic carbon and total organic halogens) and annually for parameters establishing groundwater quality (chloride, iron, manganese, phenols, sodium, and sulfate) per 40 CFR 265.92, plus quarterly for the expanded list of monitoring parameters (EPA method 8260) specified in Table 5 of the post-closure permit.

Background wells are sampled every five years for the constituents of concern (**Table 3** of the post closure permit) on a schedule that will follow 1994, 1999, ... etc. The background wells and the detection monitoring wells were all sampled for constituents of concern in 1996.

Notes:	pH	=	EPA method 150.1 or 9040
	EC	=	specific conductance, EPA method 120.1
	TOC	=	total organic carbon, EPA method 415.1
	TOX	=	total organic halogens, EPA method 9020
	Cl	=	chloride, EPA method 300.0
	Fe	=	iron, EPA method 6010
	Mn	=	manganese, EPA method 6010
	phenols	=	EPA method 8270 (acid extractables only) or 8040
	Na	=	sodium, EPA method 6010
	SO_4	=	sulfate, EPA method 300.0
	F	=	fluoride, EPA method 340.2
	8270	=	EPA method 8270 for acid and base/neutral semi-volatile compounds, including N-nitrosodimethylamine (NDMA), nitrobenzene, and 1,3-dinitrobenzene
	Ammonia	=	Ammonia, EPA method 350.2
	Formaldehyde	=	Formaldehyde, EPA method 8315
	NO_3	=	Nitrate, EPA method 353.2
	1,4-dioxane	=	1,4-dioxane, EPA method 8260 for volatile organic compounds

Underground Storage Tank Monitoring (Buildings 324 and 351)

Wells in the vicinity of the former underground storage tanks at Building 351 will be sampled during the first and third quarters for fuel-related compounds and volatile organics using EPA methods 8260 and 8015. These samples are to be submitted under a separate chain-of-custody

TABLE B-1
ATTACHMENT A
(continued)

form. Reports will be prepared twice; once covering the first and second quarters, and once covering the third and fourth quarters.

Well RD-73, near the Building 324 former underground storage tank, will be sampled twice annually for EPA methods 8260 and 8015.

Laboratory Services

Laboratories will be certified by the State of California for the appropriate analytical methods.

During sampling, the field parameters of turbidity, pH, temperature and specific conductance will be measured.

TABLE B-1
ATTACHMENT B

REFERENCES USED IN PREPARING 1999 MONITORING SCHEDULE

California Department of Toxic Substances Control, 1994. Correspondence to Rocketdyne Environmental Protection Department, ***Request for Modification of Analytical Parameters for Appendix IX Sampling - EPA ID Numbers CAD093365435 and CA18000900100 - Santa Susana Field Laboratory (SSFL) Rocketdyne Division Facility, Santa Susana, California***. September 13, 1994.

------- 1995. ***Hazardous Waste Facility Post-Closure Permit, Regional Permit No. PC-94/95-3-02 and PC-94/95-3-03***. Permits for Areas I and III and Area II, effective May 11, 1995. 22 California Code of Regulations, Chapter 15, Article 6.

40 CFR 264. Code of Federal Regulations, Title 40, Part 264, Appendix IX, ***Groundwater Monitoring List*** and Part 265, §265.92, ***Sampling and Analysis***.

TABLE B-2

SUMMARY OF SAMPLING AND ANALYSES FOR WELLS AND SPRINGS
QUARTERLY GROUNDWATER MONITORING PROGRAM, 1999

IDENTIFIER	DATE SAMPLED	ANALYSES PERFORMED
SHALLOW ZONE SH WELLS		
SH-1	02-07-99	Perchlorate
SH-3	02-07-99	8260
SH-4	02-08-99	Appendix IX
SH-7	02-07-99	Perchlorate
SH-8	02-07-99	Perchlorate
SH-11	02-07-99	8260, Perchlorate
	02-07-99**	Perchlorate
ECL French-drain	02-11-99	8260
	02-11-99*	8260
SHALLOW ZONE RS WELLS		
RS-1	02-17-99	8260, 8015, Perchlorate
	08-06-99	8260, 8015
RS-6	02-17-99	Perchlorate
RS-7	02-17-99	8260
RS-8	02-07-99	Appendix IX
RS-9	02-18-99	TM, Perchlorate
RS-11	02-06-99	8260, Perchlorate, 900.0, 901.1, 906.0
	02-06-99**	8260
RS-13	02-18-99	8260, Perchlorate
RS-18	05-12-99	8260, TM, Perchlorate, 900.0, 901.1, 906.0
	05-12-99**	8260
RS-20	02-17-99	Perchlorate
RS-21	02-10-99	8260
	08-18-99	Perchlorate
RS-22	08-18-99	Perchlorate
RS-30	02-17-99	8260, 8015, Perchlorate
RS-31	02-17-99	8260, 8015
	08-06-99	8260, 8015
RS-32	02-17-99	8260, 8015
	08-06-99	8260, 8015, Perchlorate
	08-06-99*	8260, 8015

See last page of Table B-2 for footnotes and explanations.

TABLE B-2

SUMMARY OF SAMPLING AND ANALYSES FOR WELLS AND SPRINGS
QUARTERLY GROUNDWATER MONITORING PROGRAM, 1999

IDENTIFIER	DATE SAMPLED	ANALYSES PERFORMED
RS-54	02-02-99	8260, TM, Perchlorate, 900.0, 901.1, 906.0, Th, U
	02-02-99**	TM
	08-18-99	8260, TM, Perchlorate, 900.0, 901.1, 906.0, Th, U
SHALLOW ZONE ES WELLS		
ES-1	05-07-99	8260
	08-06-99	Perchlorate
ES-3	05-06-99	8260
ES-5	05-07-99	8260
ES-6	02-10-99	8260
ES-7	08-05-99	8260
ES-11	02-19-99	8260, TM
ES-12	05-14-99	8260, Perchlorate
	05-14-99*	Perchlorate
ES-13	02-17-99	Perchlorate
ES-14	02-18-99	8260
ES-16	02-18-99	TM
ES-18	02-10-99	Perchlorate
ES-19	02-10-99	Perchlorate
ES-20	02-10-99	Perchlorate
ES-21	02-10-99	8260
	02-10-99*	8260
ES-22	02-10-99	8260
ES-23	02-11-99	8260
ES-24	02-18-99	8260, TM, Perchlorate
ES-26	02-07-99	8260, TM
ES-27	02-07-99	8260
ES-28	02-18-99	TM
ES-29	02-18-99	TM
ES-30	02-11-99	8260
ES-31	02-06-99	8260, Perchlorate, 900.0, 901.1, 906.0
ES-32	02-07-99	8260

See last page of Table B-2 for footnotes and explanations.

TABLE B-2

SUMMARY OF SAMPLING AND ANALYSES FOR WELLS AND SPRINGS
QUARTERLY GROUNDWATER MONITORING PROGRAM, 1999

IDENTIFIER	DATE SAMPLED	ANALYSES PERFORMED
SHALLOW ZONE HAR WELLS		
HAR-3	02-17-99	8260
HAR-4	02-17-99	8260
HAR-11	02-07-99	8260, 8015
HAR-13	02-09-99	Perchlorate
HAR-14	02-09-99	Appendix IX
	02-09-99*	8270, N-nitrosodimethylamine
	02-09-99**	8270
HAR-15	02-09-99	Appendix IX
HAR-27	02-09-99	8260, TM
	08-18-99	Perchlorate
HAR-28	02-09-99	TM
HAR-29	02-09-99	TM, Perchlorate
HAR-30	02-09-99	Perchlorate
CHATSWORTH FORMATION RD WELLS		
RD-1	02-20-99	8260, TM
RD-2	02-18-99	8260, 8015, TM
RD-3	02-09-99	8260
RD-4	05-11-99	8260
RD-5A	02-04-99	8260
	05-11-99	8260
	08-10-99	8260
	11-06-99	8260
	11-06-99**	8260
RD-5B	02-04-99	8260
	05-11-99	8260
	08-09-99	8260
	11-05-99	8260
RD-5C	02-03-99	8260
	02-03-99*	8260
	05-13-99	8260
	05-13-99*	8260

See last page of Table B-2 for footnotes and explanations.

TABLE B-2

SUMMARY OF SAMPLING AND ANALYSES FOR WELLS AND SPRINGS
QUARTERLY GROUNDWATER MONITORING PROGRAM, 1999

IDENTIFIER	DATE SAMPLED	ANALYSES PERFORMED
RD-5C (cont'd)	08-10-99	8260
	11-06-99	8260
RD-6	02-04-99	8260, Phenols, pH, EC, Cl, SO_4, Fe, Mn, Na, TOC, TOX
	05-12-99	8260, 8270, 1,4-Dioxane, NO_3, F, NH_3, Formaldehyde
	08-11-99	8260, pH, EC, TOC, TOX
	11-09-99	8260
RD-7	02-06-99	8260, Perchlorate, 900.0, 901.1, 906.0, Th, U
	08-19-99	8260, 900.0, 906.0
	08-19-99*	8260
RD-8	02-10-99	8260, 8015, Perchlorate
RD-9	02-10-99	8260
RD-10	02-20-99	8260, TM
	08-16-99	8260
RD-11	02-10-99	8260, 8015
RD-12	02-10-99	8260, 8015, Perchlorate
	02-10-99*	Perchlorate
RD-13	02-07-99	8260, Phenols, pH, EC, Cl, SO_4, Fe, Mn, Na, TOC, TOX
	05-13-99	8260, 8270, 1,4-Dioxane, NO_3, F, NH_3, Formaldehyde
	08-12-99	8260, pH, EC, TOC, TOX
	11-05-99	8260
RD-14	02-09-99	8260, Perchlorate
RD-15	05-14-99	8260, TM, Perchlorate
	05-14-99*	TM
RD-16	02-08-99	8260
RD-17	02-08-99	8260, Perchlorate, 900.0, 901.1, 906.0
RD-18	02-17-99	8260, Perchlorate
	05-10-99	8260
	08-13-99	8260
	11-08-99	8260
	11-08-99**	8260
RD-19	02-17-99	8260, Perchlorate
	05-13-99	8260

See last page of Table B-2 for footnotes and explanations.

TABLE B-2

SUMMARY OF SAMPLING AND ANALYSES FOR WELLS AND SPRINGS
QUARTERLY GROUNDWATER MONITORING PROGRAM, 1999

IDENTIFIER	DATE SAMPLED	ANALYSES PERFORMED
RD-19 (cont'd)	08-13-99	8260
	11-08-99	8260
RD-20	02-15-99	8260, Perchlorate
RD-21	02-16-99	8260, TM, Cr^{6+}, Perchlorate, 900.0, 901.1, 906.0
	02-16-99**	8260, TM
	08-05-99	8260, TM
RD-22	02-17-99	8260, TM, 900.0, 901.1, 906.0
	05-13-99	8260
	08-12-99	8260
	11-08-99	8260
	11-08-99*	8260
RD-23	02-08-99	8260, TM, 900.0, 901.1, 906.0
	08-18-99	8260, TM
	11-08-99	8260
	11-08-99*	8260
RD-24	02-02-99	8260, Perchlorate, 900.0, 901.1, 906.0
	02-02-99**	Perchlorate
	08-04-99	8260
	08-04-99*	8260
	08-11-99	900.0, 901.1, 906.0
RD-25	02-16-99	8260, Perchlorate, 900.0, 901.1, 906.0
	08-19-99	8260, 900.0, 901.1, 906.0
RD-26	02-09-99	8260, Perchlorate
RD-27	02-16-99	8260, Perchlorate, 900.0, 901.1, 906.0
	08-17-99	8260, 900.0, 901.1, 906.0
RD-28	02-16-99	8260, Perchlorate, 900.0, 901.1, 906.0, Th, U
	08-19-99	8260, 900.0, 901.1
	11-03-99	906.0
RD-29	02-07-99	8260, Perchlorate
RD-30	02-05-99	8260, Perchlorate, 900.0, 901.1, 906.0
RD-31	02-16-99	8260, TM
RD-32	02-06-99	8260, 8015
	05-10-99	8260

See last page of Table B-2 for footnotes and explanations.

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TABLE B-2

SUMMARY OF SAMPLING AND ANALYSES FOR WELLS AND SPRINGS
QUARTERLY GROUNDWATER MONITORING PROGRAM, 1999

IDENTIFIER	DATE SAMPLED	ANALYSES PERFORMED
RD-32 (cont'd)	08-10-99	8260, 8015
	08-10-99*	8260
	11-04-99	8260
RD-33A	02-03-99	8260, TM, CN, 900.0, 901.1, 906.0
	08-11-99	8260
	08-11-99**	8260
RD-33B	02-03-99	8260, TM, CN, 900.0, 901.1, 906.0
	05-13-99	8260
	08-11-99	8260, 906.0
	11-06-99	8260
RD-33C	02-03-99	8260, TM, CN, 900.0, 901.1, 906.0
	05-13-99	8260
	08-11-99	8260, 906.0
	08-11-99*	8260
	11-04-99	8260
RD-34B	02-04-99	8260, TM, CN, 900.0, 901.1, 906.0
	08-11-99	8260, 906.0
RD-34C	02-04-99	8260, TM, CN, 900.0, 901.1, 906.0
	08-12-99	8260, 906.0
RD-35A	08-16-99	8260, TM
RD-35B	02-05-99	8260
	02-05-99*	8260
	05-07-99	8260, 8270, TM, Common Ions, 900.0, 901.1, 906.0
	05-07-99*	8260
	05-07-99**	8260
	08-18-99	Perchlorate, 900.0, Th, U
RD-36A	02-18-99	8260, 8015
	08-10-99	8260, 8015
RD-36B	02-16-99	8260, 8015
	08-09-99	8260, 8015
	08-09-99**	8260
RD-36C	02-18-99	8260, 8015
	08-10-99	8260, 8015

See last page of Table B-2 for footnotes and explanations.

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TABLE B-2

SUMMARY OF SAMPLING AND ANALYSES FOR WELLS AND SPRINGS
QUARTERLY GROUNDWATER MONITORING PROGRAM, 1999

IDENTIFIER	DATE SAMPLED	ANALYSES PERFORMED
RD-36D	02-16-99	8260, 8015
	02-16-99**	8260
	08-09-99	8260, 8015
RD-37	02-05-99	8260, 8015
	05-10-99	8260
	08-16-99	8260, 8015
	11-09-99	8260, 8015
	11-09-99*	8015
RD-38A	02-17-99	8260, 8015
	08-18-99	8260, 8015
RD-38B	02-17-99	8260, 8270, TM, Common Ions, 900.0, 901.1, 906.0
	02-17-99*	8260
	02-17-99**	8260
	05-05-99	8260
	05-05-99*	8260
	05-05-99**	8260
	08-17-99	8260, 8015, Perchlorate
	08-17-99*	8260
	08-17-99**	8260
	11-06-99	8260
RD-39A	02-15-99	8260
	05-05-99	8260
	08-10-99	8260
	11-08-99	8260
RD-39B	02-15-99	8260
	05-05-99	8260
	08-10-99	8260
	11-08-99	8260
RD-41A	02-16-99	8260, 8015, Perchlorate
RD-41B	02-16-99	8260, 8015, Perchlorate
RD-41C	02-16-99	8260, 8015, Perchlorate
RD-42	02-17-99	8260, Perchlorate
	02-17-99*	Perchlorate

See last page of Table B-2 for footnotes and explanations.

TABLE B-2

SUMMARY OF SAMPLING AND ANALYSES FOR WELLS AND SPRINGS QUARTERLY GROUNDWATER MONITORING PROGRAM, 1999

IDENTIFIER	DATE SAMPLED	ANALYSES PERFORMED
RD-43A	02-06-99	8260
	05-06-99	8260
	08-05-99	8260
	11-04-99	8260
RD-43B	02-06-99	8260
	05-06-99	8260
	08-05-99	8260
	08-05-99*	8260
	11-04-99	8260
	11-04-99*	8260
RD-43C	02-06-99	8260
	05-06-99	8260
	08-05-99	8260
	11-04-99	8260
RD-44	02-02-99	8260
	05-11-99	8260
	08-05-99	8260
	11-08-99	8260
RD-45A	02-05-99	8260, TM
	02-05-99*	8260
RD-45B	02-05-99	8260, TM
RD-45C	02-05-99	8260, TM
RD-46A	02-15-99	8260, 8270, Perchlorate
	02-15-99**	8260
	08-17-99	8260
RD-46B	02-15-99	8260, 8270, TM, Common Ions, Perchlorate, 900.0, 901.1, 906.0
	02-15-99*	8260
	08-17-99	8260
	08-17-99*	8260
	11-08-99	8260
	11-08-99*	8260
RD-47	05-14-99	8260, TM, Perchlorate

See last page of Table B-2 for footnotes and explanations.

TABLE B-2

SUMMARY OF SAMPLING AND ANALYSES FOR WELLS AND SPRINGS
QUARTERLY GROUNDWATER MONITORING PROGRAM, 1999

IDENTIFIER	DATE SAMPLED	ANALYSES PERFORMED
RD-48A	02-04-99	8260, Phenols, pH, EC, Cl, SO_4, Fe, Mn, Na, TOC, TOX
	05-12-99	8260, 8270, 1,4-Dioxane, NO_3, F, NH_3, Formaldehyde
	08-12-99	8260, pH, EC, TOC, TOX
	11-07-99	8260
RD-48B	02-04-99	8260, Phenols, pH, EC, Cl, SO_4, Fe, Mn, Na, TOC, TOX
	05-13-99	8260, 8270, 1,4-Dioxane, NO_3, F, NH_3, Formaldehyde
	08-12-99	8260, pH, EC, TOC, TOX
	11-08-99	8260
RD-48C	02-04-99	8260, Phenols, pH, EC, Cl, SO_4, Fe, Mn, Na, TOC, TOX
	05-12-99	8260, 8270, 1,4-Dioxane, NO_3, F, NH_3, Formaldehyde
	08-12-99	8260, pH, EC, TOC, TOX
	11-08-99	8260
RD-49A	02-07-99	8260
RD-49B	02-07-99	8260
RD-49C	02-07-99	8260
RD-50	02-16-99	8260, 8015
	08-06-99	8260
RD-51B	02-17-99	8260, TM, Perchlorate
	02-17-99*	8260
RD-51C	02-10-99	8260, TM
	02-10-99*	8260
	05-06-99	8260
	05-06-99*	8260
	08-05-99	8260
	11-08-99	8260
	11-08-99**	8260
RD-52B	02-05-99	8260, TM, Perchlorate
RD-52C	02-05-99	8260, TM
	05-11-99	8260
	08-11-99	8260
	08-11-99*	8260
	11-06-99	8260

See last page of Table B-2 for footnotes and explanations.

TABLE B-2

SUMMARY OF SAMPLING AND ANALYSES FOR WELLS AND SPRINGS
QUARTERLY GROUNDWATER MONITORING PROGRAM, 1999

IDENTIFIER	DATE SAMPLED	ANALYSES PERFORMED
RD-53	02-17-99	8260, 8015, Perchlorate
	08-10-99	8260, 8015
RD-54A	02-08-99	8260, TM, Perchlorate, 900.0, 901.1, 906.0, Th, U
	08-18-99	8260, TM, 906.0
RD-54B	02-08-99	8260, TM, Perchlorate, 900.0, 901.1, 906.0
	08-18-99	8260, TM, 906.0
RD-54C	02-09-99	8260, TM, Perchlorate, 900.0, 901.1, 906.0
	08-18-99	8260, TM, 906.0
RD-55A	02-06-99	8260, Perchlorate
RD-55B	02-07-99	8260, Perchlorate
RD-56A	02-04-99	8260, TM
	02-04-99*	TM
	02-04-99**	TM
RD-56B	02-04-99	8260, TM
	05-12-99	8260
	08-13-99	8260, TM
	11-07-99	8260
	11-07-99*	8260
RD-57	05-13-99	8260, TM, 900.0, 901.1, 906.0
	08-11-99	8260, 906.0
	11-06-99	8260
RD-58A	02-07-99	8260
RD-58B	02-07-99	8260
	05-12-99	8260
	08-13-99	8260
	11-06-99	8260
	11-06-99**	8260
RD-58C	02-06-99	8260
	05-12-99	8260
	08-16-99	8260, Perchlorate
	08-16-99*	8260
	11-07-99	8260

See last page of Table B-2 for footnotes and explanations.

TABLE B-2

SUMMARY OF SAMPLING AND ANALYSES FOR WELLS AND SPRINGS
QUARTERLY GROUNDWATER MONITORING PROGRAM, 1999

IDENTIFIER	DATE SAMPLED	ANALYSES PERFORMED
RD-59A	02-16-99	8260, TM, Perchlorate, 900.0, 901.1, 906.0
	02-16-99*	8260
	02-16-99**	Perchlorate
	05-10-99	8260, Perchlorate
	05-10-99**	Perchlorate
	08-06-99	8260, TM, Perchlorate, 906.0
	11-06-99	8260, Perchlorate
RD-59B	02-16-99	8260, TM, Perchlorate, 900.0, 901.1, 906.0
	05-10-99	8260
	08-06-99	8260, TM, Perchlorate, 906.0
	11-06-99	8260
RD-59C	02-16-99	8260, TM, Perchlorate, 900.0, 901.1, 906.0
	05-10-99	8260
	08-06-99	8260, TM, Perchlorate, 906.0
	11-06-99	8260
RD-60	02-06-99	8260, 8015
RD-61	02-16-99	8260
	05-12-99	8260
	08-13-99	8260
	11-05-99	8260
	11-05-99**	8260
RD-62	02-04-99	8260
	08-12-99	8260
RD-63	02-02-99	8260, 900.0, 901.1, 906.0
	08-12-99	8260
RD-64	02-09-99	8260
RD-65	02-09-99	8260
RD-66	02-04-99	8260
	05-07-99	8260
	08-05-99	8260
	11-05-99	8260
RD-67	02-04-99	8260
	08-04-99	8260

See last page of Table B-2 for footnotes and explanations.

TABLE B-2

SUMMARY OF SAMPLING AND ANALYSES FOR WELLS AND SPRINGS
QUARTERLY GROUNDWATER MONITORING PROGRAM, 1999

IDENTIFIER	DATE SAMPLED	ANALYSES PERFORMED
RD-68A	02-16-99	8260
	05-10-99	8260
	08-06-99	8260
	08-06-99*	8260
	11-06-99	8260
RD-68B	02-16-99	8260
	05-10-99	8260
	08-06-99	8260
	11-06-99	8260
RD-69	02-04-99	8260
	05-12-99	8260
	08-17-99	8260
	11-09-99	8260
	11-09-99*	8260
RD-70	02-15-99	8260
	05-11-99	8260
	08-12-99	8260
	08-12-99*	8260
	11-07-99	8260
RD-71	02-04-99	8260
	05-07-99	8260
	08-05-99	8260
	11-05-99	8260
RD-72	02-09-99	8260, TM
	02-09-99**	TM
	08-17-99	8260, 8015
RD-73	02-04-99	8260, 8015, Perchlorate
RD-74	05-13-99	8260, 8270, TM, Common Ions, 900.0, 901.1, 906.0
	05-13-99*	8260
	05-13-99**	8260
	08-19-99	8260, TM, Perchlorate
	08-19-99*	TM

See last page of Table B-2 for footnotes and explanations.

TABLE B-2

SUMMARY OF SAMPLING AND ANALYSES FOR WELLS AND SPRINGS
QUARTERLY GROUNDWATER MONITORING PROGRAM, 1999

IDENTIFIER	DATE SAMPLED	ANALYSES PERFORMED
CHATSWORTH FORMATION HAR WELLS		
HAR-1	02-16-99	Perchlorate
HAR-5	05-14-99	Perchlorate
HAR-6	02-09-99	8260, Perchlorate
HAR-7	02-08-99	Appendix IX
HAR-8	02-09-99	TM, Perchlorate
HAR-16	02-08-99	Appendix IX, Perchlorate
	02-08-99*	Perchlorate
HAR-17	02-08-99	Appendix IX
	02-08-99*	8260
	02-08-99**	8260
HAR-18	02-07-99	8260
HAR-20	02-07-99	8260
HAR-21	02-07-99	8260, Perchlorate
HAR-22	02-09-99	8260, Perchlorate
HAR-23	02-09-99	8260, Perchlorate
HAR-24	02-17-99	8260, TM, Perchlorate
	02-17-99**	8260
HAR-25	02-17-99	8260, Perchlorate
	02-17-99*	Perchlorate
HAR-26	05-13-99	8260
CHATSWORTH FORMATION WS WELLS		
WS-4A	02-06-99	8260, Perchlorate
	02-06-99**	8260
	05-13-99	8260, TM
	08-11-99	8260
WS-5	02-10-99	8260
WS-6	02-15-99	8260
WS-9	02-18-99	8260
WS-9A	02-18-99	8260
WS-9B	02-06-99	8260, Perchlorate

See last page of Table B-2 for footnotes and explanations.

TABLE B-2

SUMMARY OF SAMPLING AND ANALYSES FOR WELLS AND SPRINGS
QUARTERLY GROUNDWATER MONITORING PROGRAM, 1999

IDENTIFIER	DATE SAMPLED	ANALYSES PERFORMED
OFF-SITE PRIVATE WELLS AND SPRINGS		
OS-02	02-16-99	8260, Perchlorate
OS-03	02-16-99	Perchlorate
OS-04	02-16-99	8260, Perchlorate
OS-05	02-16-99	Perchlorate
OS-08	02-16-99	8260, Perchlorate
OS-10	02-16-99	Perchlorate
OS-12	02-08-99	Perchlorate
OS-15	02-09-99	8260, Perchlorate
OS-16	02-09-99	8260, Perchlorate
	08-13-99	8260
OS-17	02-18-99	8260, Perchlorate
	08-13-99	8260, Perchlorate
OS-21	02-10-99	8260, Perchlorate
OS-24	02-18-99	8260
	08-10-99	8260
OS-25	02-19-99	8260, Perchlorate
OS-26	02-19-99	8260, Perchlorate
	08-17-99	8260
OS-27	02-17-99	8260, Perchlorate
	02-17-99**	8260

See last page of Table B-2 for footnotes and explanations.

TABLE B-2
FOOTNOTES AND EXPLANATIONS

(*) Duplicate sample.
(**) Split sample.

BACKGROUND WELL ANALYSES

8260	EPA method 8260 for non-halogenated volatile organics, including 1,4-dioxane
8270	EPA method 8270 for base/neutral and acid organics
Phenols	EPA method 8270 (acid extractables only)
pH	EPA method 150.1
EC	Specific conductance, EPA method 120.1
TOC	Total organic carbon, EPA method 415.1
TOX	Total organic halogens, EPA method 9020
Cl	Chloride, EPA method 300.0
Fe	Iron, EPA method 6010
Mn	Manganese, EPA method 6010
Na	Sodium, EPA method 6010
SO_4	Sulfate, EPA method 300.0
NO_3	Nitrate, EPA method 300.0
Ammonia	EPA method 350.3 for ammonia as nitrogen
Fluoride	EPA method 340.2
Formaldehyde	ASTM method D-19

EPA METHODS

8015	EPA method 8015 modified for fuel hydrocarbons
8260	EPA method 8260 for volatile organic compounds (GC/MS). Laboratory uses most current promulgated version (e.g., 8260A, 8260B)
TM	Trace metals using EPA methods 6010, 7060, 7470, and 7740
Cr^{6+}	EPA method SM 3500-Cr D for hexavalent chromium
CN	Cyanide, EPA method 335.2
Common Ions	Common ions using EPA methods 120.1, 150.1, 160.1, 300.0, 340.2, SM 2320B, 6010, and 7610
Perchlorate	EPA method 300M, modified by the State of California for determination of perchlorate by ion chromatography with suppressed conductivity detection

RADIOCHEMICAL PARAMETERS

900.0	EPA method 900.0 for gross alpha and beta radioactivity
901.1	EPA method 901.1 for gamma-emitting radionuclides
906.0	EPA method 906.0 for tritium (liquid scintillation)
U	Isotopic uranium, EPA method 907.0
Th	Isotopic thorium, EPA method 907.0

TABLE B-2
FOOTNOTES AND EXPLANATIONS
(continued)

APPENDIX IX CONSTITUENTS

Point of compliance wells are sampled every other year for a full suite of Appendix IX parameters. The sampling schedule will be 1993, 1995, 1997, etc. The laboratory uses the most current methods which may be updated from methods listed in Appendix IX (Code of Federal Regulations, Title 40, Part 264, Appendix IX, Ground-water Monitoring List).

APPENDIX IX analyses include:

- EPA method 8260 for volatile organic compounds
- EPA method 8270 for base/neutral and acid organic compounds
- EPA method 8081 for organochlorine pesticides
- EPA method 8082 for polychlorinated biphenyls (PCBs)
- EPA method 8141 for organophosphorous pesticides
- EPA method 8151 for chlorinated herbicides
- EPA method 200.8 for total metals (Sb, Ba, Be, Cd, Cr, Co, Cu, Pb, Ni, Ag, Tl, Sn, V, Zn)
- EPA method 7060 for total arsenic
- EPA method 7470 for total mercury
- EPA method 7740 for total selenium
- EPA method 335.2 for total cyanide
- EPA method 376.2 for total sulfide
- Selected Ion Monitoring (SIM) for N-nitrosodimethylamine
- EPA method 1613A for dioxins and furans

MODIFIED APP IX CONSTITUENTS

Point of compliance wells are sampled every other year for a modified Appendix IX list of parameters. The sampling schedule will be 1996, 1998, 2000, etc.

Modified Appendix IX analyses include:

- EPA method 8260
- EPA method 8270
- 1,4-dioxane

TABLE B-3

2000 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
SHALLOW ZONE SH WELLS						
SH-1	III					
SH-2	III					
SH-3	III	8260				Evaluation monitoring
SH-4	III		Appendix IX			Point of compliance
SH-5	III					
SH-6	III					
SH-7	III					
SH-8	III					
SH-9	III					
SH-10	III					
SH-11	III	8260 perchlorate				Evaluation monitoring
ECL French-drain	III	8260				Interim corrective action
SHALLOW ZONE RS WELLS						
RS-1	I	8260 8015 perchlorate		8260 8015		B/351 site; Evaluation monitoring
RS-2	I	perchlorate				
RS-3	I					
RS-4	I					
RS-5	I					
RS-6	I	perchlorate				
RS-7	I	8260				Evaluation monitoring
RS-8	II		Appendix IX			Point of compliance
RS-9	III					
RS-10	II	8260 perchlorate				Evaluation monitoring

See last page of Table B-3 for footnotes and explanations

TABLE B-3

2000 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RS-11	IV	8260 perchlorate 900.0 901.1 906.0				Evaluation monitoring
RS-12	III					
RS-13	II	8260 perchlorate				Evaluation monitoring
RS-14	III					
RS-15	III					
RS-16	IV	8260 perchlorate 900.0 906.0				B/056 landfill
RS-17	III					
RS-18	IV	8260 perchlorate 900.0 901.1 906.0 TM U, Th		8260 900.0 901.1 906.0 U, Th		FSDF
RS-19	I	8260 perchlorate				Evaluation monitoring
RS-20	I					
RS-21	II	8260				Evaluation monitoring
RS-22	II					
RS-23	IV	8260 8015 perchlorate				
RS-24	IV	perchlorate				
RS-25	IV	perchlorate				
RS-27	IV	perchlorate				

See last page of Table B-3 for footnotes and explanations

TABLE B-3

2000 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RS-28	IV	8260 perchlorate 900.0 901.1 906.0				RMHF
RS-29	II					
RS-30	I	8260 8015 perchlorate		8260 8015		B/351 site
RS-31	I	8260 8015		8260 8015		B/351 site
RS-32	I	8260 8015		8260 8015		B/351 site
RS-54	IV	8260 TM, perchlorate 900.0 901.1 906.0, U, Th		8260 TM, perchlorate 900.0 901.1 906.0, U, Th		FSDF
SHALLOW ZONE ES WELLS						
ES-1	I	8260				Interim corrective action
ES-2	I	8260 perchlorate				
ES-3	I	8260				Interim corrective action
ES-4	I	8260				Interim corrective action
ES-5	I	8260				Interim corrective action
ES-6	I	8260				Interim corrective action
ES-7	I	8260				Interim corrective action
ES-8	I					
ES-9	I	8260 perchlorate				

See last page of Table B-3 for footnotes and explanations

TABLE B-3

2000 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
ES-10	I	8260 perchlorate				
ES-11	I	8260 TM				Interim corrective action
ES-12	I	8260 perchlorate				
ES-13	I					
ES-14	III	8260				Interim corrective action
ES-15	III					
ES-16	III					
ES-17	III	8260				Interim corrective action
ES-18	II					
ES-19	II					
ES-20	II					
ES-21	II	8260				Interim corrective action
ES-22	II	8260				Interim corrective action
ES-23	III	8260				Interim corrective action
ES-24	III	8260, perchlorate				Interim corrective action
ES-25	III					
ES-26	III	8260, TM				Interim corrective action
ES-27	III	8260				Interim corrective action
ES-28	III					
ES-29	III					
ES-30	III	8260				Interim corrective action

See last page of Table B-3 for footnotes and explanations

TABLE B-3

2000 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
ES-31	IV	8260 perchlorate 900.0 901.1 906.0				
ES-32	III	8260				Interim corrective action
SHALLOW ZONE HAR WELLS						
HAR-2	I					
HAR-3	I	8260				Evaluation monitoring
HAR-4	I	8260				Interim corrective action
HAR-9	II					
HAR-11	II	8260, 8015				Evaluation monitoring
HAR-12	III					
HAR-13	II					
HAR-14	II		Appendix IX			Point of compliance
HAR-15	II		Appendix IX			Point of compliance
HAR-27	II	8260				Evaluation monitoring
HAR-28	II					
HAR-29	II					
HAR-30	II					
HAR-31	II					
HAR-32	III					
HAR-33	III					
HAR-34	III					
CHATSWORTH FORMATION RD WELLS						
RD-1	I	8260				Interim corrective action
RD-2	I	8260, TM				Interim corrective action
RD-3	I	8260				Evaluation monitoring

See last page of Table B-3 for footnotes and explanations

TABLE B-3

2000 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RD-4	II	8260				Interim corrective action
RD-5A	UL, S of Area II	8260	8260	8260	8260	Evaluation monitoring
RD-5B	UL, S of Area II	8260	8260	8260	8260	Detection monitoring
RD-5C	UL, S of Area II	8260	8260	8260	8260	Detection monitoring
RD-6	UL, S of Area II	8260	8260	8260	8260	Background
RD-7	IV	8260, perchlorate 900.0 901.1 906.0, U, Th		8260, 900.0 906.0		B/056 landfill
RD-8	III					
RD-9	II	8260				Interim corrective action
RD-10	I	8260		8260		Evaluation monitoring
RD-11	III					
RD-12	III					
RD-13	IV	8260	8260	8260	8260	Background
RD-14	IV	8260 perchlorate				
RD-15	IV	8260, TM perchlorate				
RD-16	IV	8260				Detection monitoring
RD-17	IV	8260 perchlorate 900.0 901.1 906.0				RMHF
RD-18	IV	8260 perchlorate	8260	8260	8260	

See last page of Table B-3 for footnotes and explanations

TABLE B-3

2000 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RD-19	IV	8260 perchlorate	8260	8260	8260	
RD-20	IV	8260 perchlorate				
RD-21	IV	8260 TM, Cr^{+6} perchlorate 900.0 901.1 906.0		8260, TM		FSDF
RD-22	IV	8260 TM, 900.0 901.1 906.0	8260	8260	8260	FSDF
RD-23	IV	8260, TM, 900.0 901.1 906.0		8260, TM		FSDF
RD-24	IV	8260 perchlorate 900.0 901.1 906.0		8260 900.0 901.1 906.0		B/059
RD-25	IV	8260 perchlorate 900.0 901.1 906.0		8260, 900.0 901.1 906.0		B/059
RD-26	II	8260 perchlorate				Evaluation monitoring
RD-27	IV	8260 perchlorate 900.0 901.1 906.0		8260 900.0 901.1 906.0		RMHF

See last page of Table B-3 for footnotes and explanations

TABLE B-3

2000 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RD-28	IV	8260 perchlorate 900.0 901.1 906.0, U, Th		8260 900.0 901.1 906.0		B/059
RD-29	IV	8260 perchlorate				
RD-30	IV	8260 perchlorate 900.0 901.1 906.0		8260, 900.0 901.1 906.0		RMHF
RD-31	I	8260				
RD-32	Off-site, NE of Area I	8260 8015	8260	8260 8015	8260	B/351; Detection monitoring
RD-33A	UL, NW of Area IV	8260 TM, CN 900.0 901.1 906.0		8260,		FSDF; Evaluation monitoring
RD-33B	UL, NW of Area IV	8260 TM, CN 900.0 901.1 906.0	8260	8260 906.0	8260	FSDF; Detection monitoring
RD-33C	UL, NW of Area IV	8260 TM, CN 900.0 901.1 906.0	8260	8260 906.0	8260	FSDF
RD-34A	UL, NW of Area IV	8260 TM, CN 900.0 901.1 906.0, U, Th		8260 906.0		RMHF

See last page of Table B-3 for footnotes and explanations

TABLE B-3

2000 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RD-34B	UL, NW of Area IV	8260 TM, CN 900.0 901.1 906.0		8260 906.0		RMHF
RD-34C	UL, NW of Area IV	8260 TM, CN 900.0 901.1 906.0		8260 906.0		RMHF
RD-35A	I	8260				
RD-35B	I	8260				
RD-36A	Off-site, NE of Area I	8260 8015		8260 8015		B/351; Evaluation monitoring
RD-36B	Off-site, NE of Area I	8260 8015		8260 8015		B/351; Evaluation monitoring
RD-36C	Off-site, NE of Area I	8260 8015		8260 8015		B/351; Evaluation monitoring
RD-36D	Off-site, NE of Area I	8260 8015		8260 8015		B/351
RD-37	Off-site, NE of Area I	8260 8015	8260	8260 8015	8260	B/351; Detection monitoring
RD-38A	Off-site, NE of Area I	8260 8015		8260 8015		B/351; Evaluation monitoring
RD-38B	Off-site, NE of Area I	8260 8015	8260	8260	8260	B/351
RD-39A	Off-site, NE of Area I	8260	8260	8260	8260	Detection monitoring

See last page of Table B-3 for footnotes and explanations

TABLE B-3

2000 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RD-39B	Off-site, NE of Area I	8260	8260	8260	8260	
RD-40	II	8260 perchlorate		8260		
RD-41A	II	8260, perchlorate				
RD-41B	II	8260, perchlorate				
RD-41C	II	8260, perchlorate				
RD-42	II	8260 perchlorate				
RD-43A	Off-site, near Area I	8260	8260	8260	8260	Detection monitoring
RD-43B	Off-site, near Area I	8260	8260	8260	8260	Detection monitoring
RD-43C	Off-site, near Area I	8260	8260	8260	8260	Detection monitoring
RD-44	I	8260	8260	8260	8260	Detection monitoring
RD-45A	I	8260				Evaluation monitoring
RD-45B	I	8260				Evaluation monitoring
RD-45C	I	8260				Evaluation monitoring
RD-46A	I	8260, perchlorate		8260		Evaluation monitoring
RD-46B	I	8260		8260		
RD-47	I	8260 TM perchlorate				Evaluation monitoring
RD-48A	UL, SW of Area I	8260	8260	8260	8260	Background
RD-48B	UL, SW of Area I	8260	8260	8260	8260	Background

See last page of Table B-3 for footnotes and explanations

TABLE B-3

2000 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RD-48C	UL, SW of Area I	8260	8260	8260	8260	Background
RD-49A	II	8260				
RD-49B	II	8260				
RD-49C	II	8260				
RD-50	IV	8260, 8015		8260		
RD-51A	II	8260, perchlorate				Evaluation monitoring
RD-51B	II	8260, perchlorate				Evaluation monitoring
RD-51C	II	8260,	8260	8260	8260	Detection monitoring
RD-52A	I	8260, perchlorate				Evaluation monitoring
RD-52B	I	8260, perchlorate				Evaluation monitoring
RD-52C	I	8260	8260	8260	8260	Detection monitoring
RD-53	I	8260, 8015, perchlorate		8260, 8015,		B/351 site
RD-54A	IV	8260, TM, perchlorate 900.0 901.1 906.0, U, Th		8260, TM, 906.0		FSDF
RD-54B	IV	8260, TM, perchlorate 900.0 901.1 906.0		8260, TM, 906.0		FSDF
RD-54C	IV	8260, TM, perchlorate 900.0 901.1 906.0		8260, TM, 906.0		FSDF
RD-55A	III	8260 perchlorate				Evaluation monitoring

See last page of Table B-3 for footnotes and explanations

TABLE B-3

2000 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RD-55B	III	8260 perchlorate				Evaluation monitoring
RD-56A	UL, N of Area III	8260				
RD-56B	UL, N of Area III	8260	8260	8260, TM	8260	
RD-57	UL, NW of Area IV	8260, TM, 900.0 901.1 906.0	8260	8260 906.0	8260	FSDF
RD-58A	III	8260				Evaluation monitoring
RD-58B	III	8260	8260	8260	8260	Detection monitoring
RD-58C	III	8260	8260	8260	8260	Evaluation monitoring
RD-59A	Off-site, W of Area IV	8260 TM perchlorate 900.0 901.1 906.0	8260 perchlorate	8260 TM perchlorate 906.0	8260 perchlorate	FSDF & RMHF
RD-59B	Off-site, W of Area IV	8260 TM perchlorate 900.0 901.1 906.0	8260	8260 TM perchlorate 906.0	8260	FSDF & RMHF
RD-59C	Off-site, W of Area IV	8260 TM perchlorate 900.0 901.1 906.0	8260	8260 TM perchlorate 906.0	8260	FSDF & RMHF
RD-60	III	8260				Evaluation monitoring
RD-61	I	8260	8260	8260	8260	Detection monitoring
RD-62	UL, S of Area I	8260		8260		Detection monitoring

See last page of Table B-3 for footnotes and explanations

TABLE B-3

2000 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RD-63	IV	8260 900.0 901.1 906.0		8260		RMHF Area IV extraction
RD-64	IV	8260				
RD-65	IV	8260				
RD-66	Off-site, NE of Area I	8260	8260	8260	8260	
RD-67	UL, S of Area IV	8260		8260		
RD-68A	Off-site, N of Area III	8260	8260	8260	8260	
RD-68B	Off-site, N of Area III	8260	8260	8260	8260	
RD-69	I	8260		8260		
RD-70	UL, N of Area II	8260	8260	8260	8260	
RD-71	Off-site, NE of Area I	8260	8260	8260	8260	
RD-72	I	8260				B/351
RD-73	I	8260 8015 perchlorate				B/324 underground storage tank
RD-74	IV	8260	8260	8260	8260	
CHATSWORTH FORMATION HAR WELLS						
HAR-1	I	perchlorate				
HAR-5	II	perchlorate				
HAR-6	II	8260 perchlorate				
HAR-7	II	8260	Appendix IX			Point of compliance
HAR-8	II					

See last page of Table B-3 for footnotes and explanations

TABLE B-3

2000 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
HAR-16	I	perchlorate	Appendix IX			Point of compliance
HAR-17	II		Appendix IX			Point of compliance
HAR-18	III	8260				Interim corrective action
HAR-19	II	8260				
HAR-20	II	8260				
HAR-21	II	8260 perchlorate				
HAR-22	II	8260 perchlorate				Evaluation monitoring
HAR-23	III	8260 perchlorate				Evaluation monitoring
HAR-24	I	8260, perchlorate				Evaluation monitoring
HAR-25	I	8260 perchlorate				
HAR-26	III	8260				Evaluation monitoring
CHATSWORTH FORMATION WS WELLS						
WS-4A	I	8260		8260		Detection monitoring
WS-5	I	8260				Interim corrective action
WS-6	I	8260				Interim corrective action
WS-7	IV					
WS-8	III					
WS-9	II	8260				Interim corrective action
WS-9A	II	8260				Interim corrective action
WS-9B	II	8260 perchlorate				
WS-11	III					
WS-12	I					

See last page of Table B-3 for footnotes and explanations

TABLE B-3

2000 ANNUAL MONITORING SCHEDULE

WELL ID	AREA	ANALYTICAL METHODS				JUSTIFICATION/ COMMENTS
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
WS-13	II					
WS-14	I					
WS-SP	II					
OFF-SITE OS WELLS AND SPRINGS						
OS-2	Off-Site	8260 perchlorate				
OS-3	Off-Site	perchlorate				
OS-4	Off-Site	8260 perchlorate				
OS-5	Off-Site	perchlorate				
OS-8	Off-Site	8260 perchlorate				
OS-10	Off-Site	perchlorate				
OS-12	Off-Site	perchlorate				
OS-13	Off-Site	8260 perchlorate		8260		
OS-15	Off-Site	8260 perchlorate				
OS-16	Off-Site	8260 perchlorate		8260		
OS-17	Off-Site	8260 perchlorate		8260 perchlorate		
OS-21	Off-Site	8260 perchlorate				
OS-24	Off-Site	8260		8260		
OS-25	Off-Site	8260 perchlorate		8260		
OS-26	Off-Site	8260 perchlorate		8260		
OS-27	Off-Site	8260 perchlorate				

See last page of Table B-3 for footnotes and explanations

TABLE B-3
ATTACHMENT A
ANALYTICAL METHODS
2000 MONITORING SCHEDULE

Analytes/EPA Methodology

8260	=	EPA method 8260 for volatile organic compounds (most recent version).
8270	=	EPA method 8270 for base/neutral and acid organic compounds.
8015	=	EPA method 8015 modified for fuel hydrocarbons.
pH	=	EPA method 150.1 or 9040.
EC	=	specific conductance, EPA method 120.1.
Phenols	=	EPA method 8270 (acid extractable portion only).
TOC	=	total organic carbon, EPA method 415.1.
TOX	=	total organic halogens, EPA method 9020.
CN	=	Cyanide, EPA method 9010 or 335.2.
TM	=	Trace metals, including antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium and zinc using EPA methods 6010B, 7470A, and 7740. For samples from wells RD-38B and RD-46B, additional trace metals include iron and manganese.
Perchlorate	=	EPA method 300M, modified by the State of California for determination of perchlorate by ion chromatography with suppressed conductivity detection.
Common Ions	=	Chloride, carbonate, bicarbonate, fluoride, nitrate, sulfate, calcium, magnesium, potassium, and sodium using EPA method 300 and 6010 series.
TDS	=	Total dissolved solids, EPA method 160.1.

Appendix IX

Note: The laboratory uses the most current methods which may be updated from methods listed in Appendix IX (Code of Federal Regulations, Title 40, Part 264, Appendix IX, Ground-water Monitoring List).

8081	=	EPA method 8081 for pesticides.
8082	=	EPA method 8082 for PCBs.
8141A	=	EPA method 8141A for organophosphorus pesticides.
8151A	=	EPA method 8151A for herbicides.
8260	=	EPA method 8260 for expanded list of volatile organic compounds.
8270	=	EPA method 8270 for base/neutral and acid organic compounds.
1613A	=	EPA method 1613A for dioxins and furans.
Metals	=	EPA method 6010 and 7000 series for total metals.
CN	=	EPA method 9010 for cyanide.
Sulfide	=	EPA method 376.2 for sulfide.

TABLE B-3
ATTACHMENT A
(continued)

Radiochemical Parameters

900.0	=	EPA method 900.0 for gross alpha and beta radioactivity
901.1	=	EPA method 901.1 for gamma-emitting radionuclides
906.0	=	EPA method 906.0 for tritium
U	=	EPA method 907.0 for isotopic uranium
Th	=	EPA method 907.0 for isotopic thorium

Note: An equivalent or superior in-house laboratory procedure will be considered acceptable for EPA methodology. Lab will use the most current promulgated version of each EPA method.

Evaluation Monitoring

Evaluation monitoring wells, including the point of compliance wells, will be sampled at least annually for EPA method 8260, which will detect the constituents specified in **Table 5** of the post-closure permit: tetrachloroethylene, trichloroethylene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethylene, 1,1-dichloroethane, 1,2-dichloroethane, vinyl chloride, carbon tetrachloride, methylene chloride, chloroform, methyl ethyl ketone, benzene, toluene, xylenes, and ethylbenzene.

Point of compliance wells also will be sampled every other year for a full suite of Appendix IX parameters. The sampling schedule will be 1993, 1995, 1997...etc., for all wells. The analytical parameters are listed in 40 CFR 264, Appendix IX. During off-years, wells will be sampled for a modified Appendix IX list annually (standard list of constituents for EPA methods 8260 and 8270, plus 1,4-dioxane, nitrobenzene, 1,3-dinitrobenzene, and N-nitrosodimethylamine).

Detection Monitoring

Detection monitoring wells will be sampled quarterly for EPA method 8260, which will detect the constituents specified in **Table 6** of the post-closure permit: tetrachloroethylene, trichloroethylene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethylene, 1,1-dichloroethane, 1,2-dichloroethane, vinyl chloride, carbon tetrachloride, methylene chloride, and chloroform.

Interim Corrective Action Monitoring

All extraction wells will be included in the interim corrective action monitoring. These wells will be sampled annually for EPA method 8260, which will detect the constituents specified in **Table 5** of the post-closure permit. The constituents are listed above under "Evaluation Monitoring."

TABLE B-3
ATTACHMENT A
(continued)

Area IV Monitoring

Area IV sampling schedule subject to revision with contract renewal.

Note:	U	=	Isotopic uranium, to be analyzed using EPA method 907.0
	Th	=	Isotopic thorium, to be analyzed using EPA method 907.0.

Background Monitoring

The five background wells will be sampled twice per year for the parameters used as indicators of groundwater contamination (pH, specific conductance, total organic carbon and total organic halogens) and annually for parameters establishing groundwater quality (chloride, iron, manganese, phenols, sodium, and sulfate) per 40 CFR 265.92, plus quarterly for the expanded list of monitoring parameters (EPA method 8260) specified in **Table 5** of the post-closure permit.

Background wells are sampled every five years for the constituents of concern (**Table 3** of the post closure permit) on a schedule that will follow 1994, 1999, ... etc. The background wells and the detection monitoring wells were all sampled for constituents of concern in 1996. The background wells were sampled again for constituents of concern in 1999.

Notes:	pH	=	EPA method 150.1 or 9040
	EC	=	specific conductance, EPA method 120.1
	TOC	=	total organic carbon, EPA method 415.1
	TOX	=	total organic halogens, EPA method 9020
	Cl	=	chloride, EPA method 300.0
	Fe	=	iron, EPA method 6010
	Mn	=	manganese, EPA method 6010
	phenols	=	EPA method 8270 (acid extractables only) or 8040
	Na	=	sodium, EPA method 6010
	SO_4	=	sulfate, EPA method 300.0
	F	=	fluoride, EPA method 340.2
	8270	=	EPA method 8270 for acid and base/neutral semi-volatile compounds, including N-nitrosodimethylamine (NDMA), nitrobenzene, and 1,3-dinitrobenzene
	Ammonia	=	Ammonia, EPA method 350.2
	Formaldehyde	=	Formaldehyde, EPA method 8315
	NO_3	=	Nitrate, EPA method 353.2
	1,4-dioxane	=	1,4-dioxane, EPA method 8260 for volatile organic compounds

Underground Storage Tank Monitoring (Buildings 324 and 351)

Wells in the vicinity of the former underground storage tanks at Building 351 will be sampled during the first and third quarters for fuel-related compounds and volatile organics using EPA methods 8260 and 8015. These samples are to be submitted under a separate chain-of-custody

TABLE B-3
ATTACHMENT A
(continued)

form. Reports will be prepared twice; once covering the first and second quarters, and once covering the third and fourth quarters.

Well RD-73, near the Building 324 former underground storage tank, will be sampled twice annually for EPA methods 8260 and 8015.

Laboratory Services

Laboratories will be certified by the State of California for the appropriate analytical methods.

During sampling, the field parameters of turbidity, pH, temperature and specific conductance will be measured.

TABLE B-3
ATTACHMENT B

REFERENCES USED IN PREPARING 2000 MONITORING SCHEDULE

California Department of Toxic Substances Control, 1994. Correspondence to Rocketdyne Environmental Protection Department, ***Request for Modification of Analytical Parameters for Appendix IX Sampling - EPA ID Numbers CAD093365435 and CA18000900100 - Santa Susana Field Laboratory (SSFL) Rocketdyne Division Facility, Santa Susana, California***. September 13, 1994.

------- 1995. ***Hazardous Waste Facility Post-Closure Permit, Regional Permit No. PC-94/95-3-02 and PC-94/95-3-03***. Permits for Areas I and III and Area II, effective May 11, 1995. 22 California Code of Regulations, Chapter 15, Article 6.

40 CFR 264. Code of Federal Regulations, Title 40, Part 264, Appendix IX, ***Groundwater Monitoring List*** and Part 265, §265.92, ***Sampling and Analysis***.

PARTIALLY SCANNED
OVERSIZE ITEM (S)

See Document # 2017057
for partially scanned image(s).

For complete version of oversize document(s),
see paper copy.

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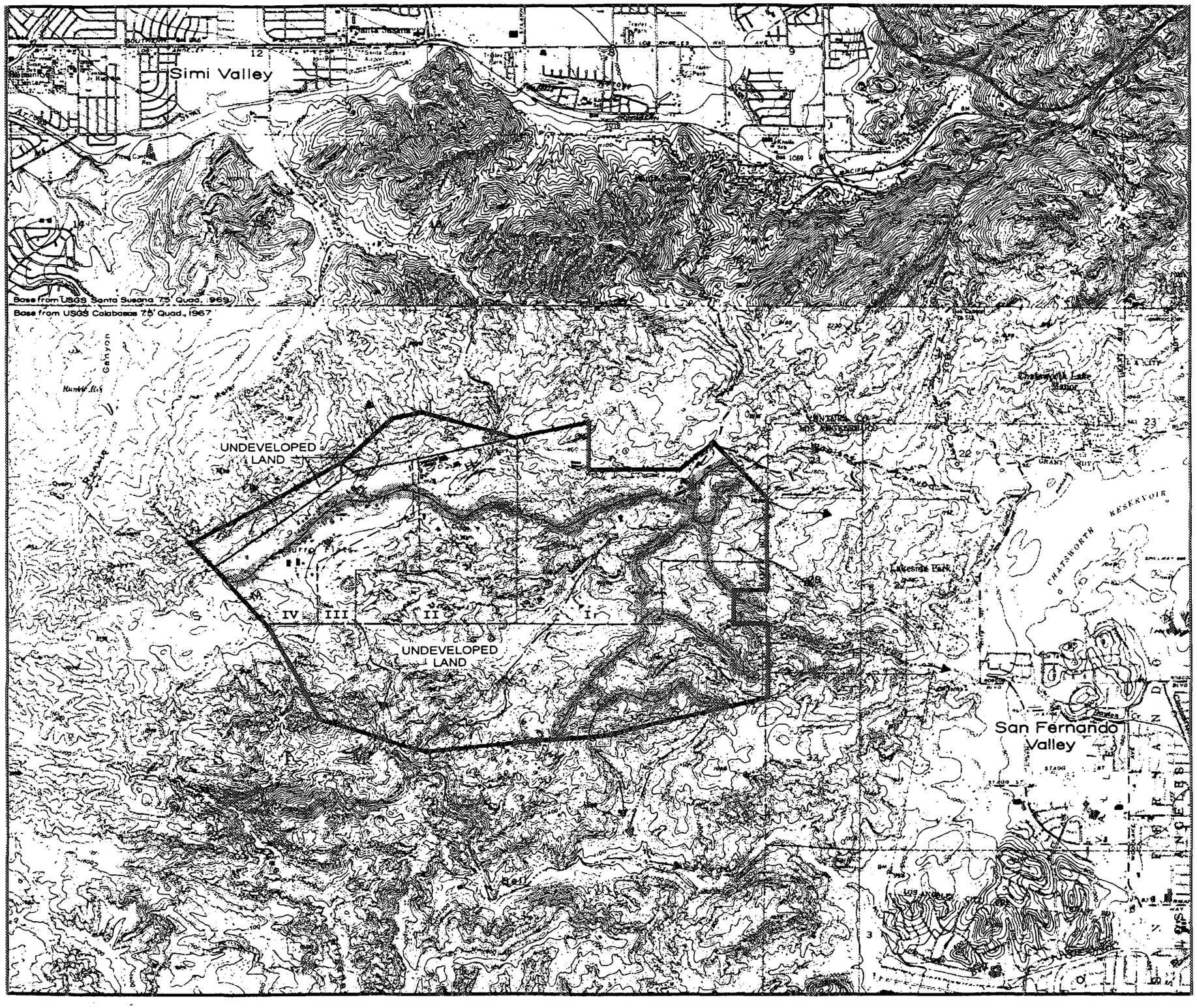


EXPLANATION

SSFL PROPERTY BOUNDARY

SSFL AREA BOUNDARY

SURFACE DRAINAGE DIRECTION

SURFACE WATER DIVIDE

N

FEET

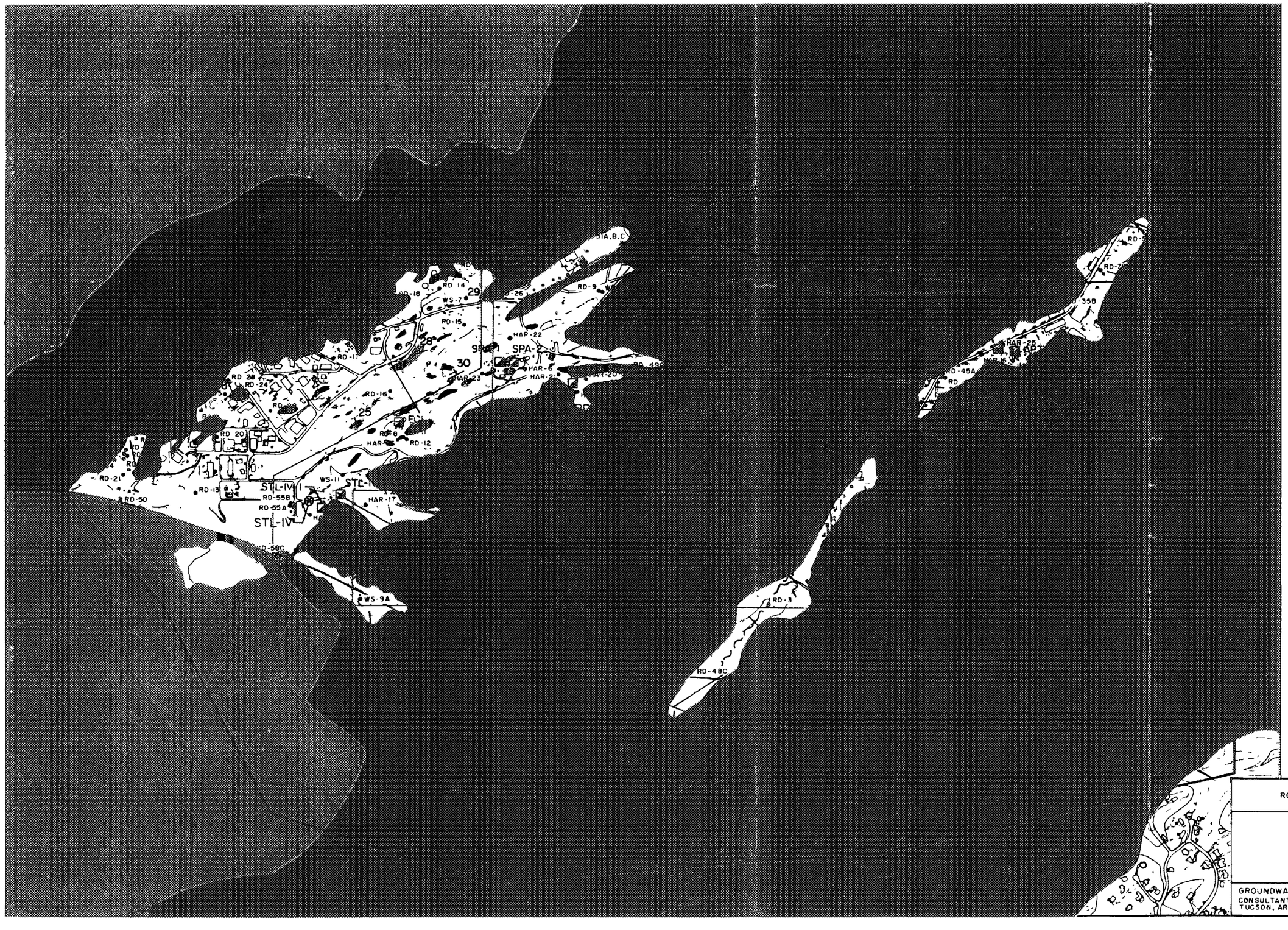
0 2000 4000

1999 Annual Groundwater Monitoring Report

BOEING NORTH AMERICAN, INC.
ROCKETDYNE PROPULSION & POWER
SANTA SUSANA FIELD LABORATORY

FACILITY LOCATION MAP

GROUNDWATER RESOURCES CONSULTANTS, INC.
CONSULTANTS IN HYDROGEOLOGY
TUCSON, ARIZONA 8640M - 412 FIGURE 1



E X P L A N A T I O N

FRACTURE LINEAMENTS BASED ON AERIAL PHOTO AND TOPOGRAPHIC DRAINAGE PATTERNS

SHEAR ZONE

RD-1 CHATSWORTH FORMATION WELL

OS-8 SPRING

ACTIVE TEST STAND

FORMER OR INACTIVE TEST STAND

RCRA IMPOUNDMENT

QUATERNARY

Qal — QUATERNARY ALLUVIUM
UNCONSOLIDATED MIXTURE OF SAND, SILT AND CLAY

UNCONFORMITY

TERTIARY

Tt — TOPANGA FORMATION
BEDDED MARINE SANDSTONE AND CONGLOMERATE

MARTINEZ FORMATION
FOSSILIFEROUS MARINE SANDSTONES AND SILTSTONES

UNCONFORMITY

CRETACEOUS

CHATSWORTH FORMATION
MARINE SANDSTONE WITH INTERBEDDED SILTSTONES AND CLAYSTONE AND MINOR CONGLOMERITIC BEDS

28 STRIKE AND DIP OF BEDS

Reference: Sage (1971)

FEET
0 500 1000

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BOEING NORTH AMERICAN, INC
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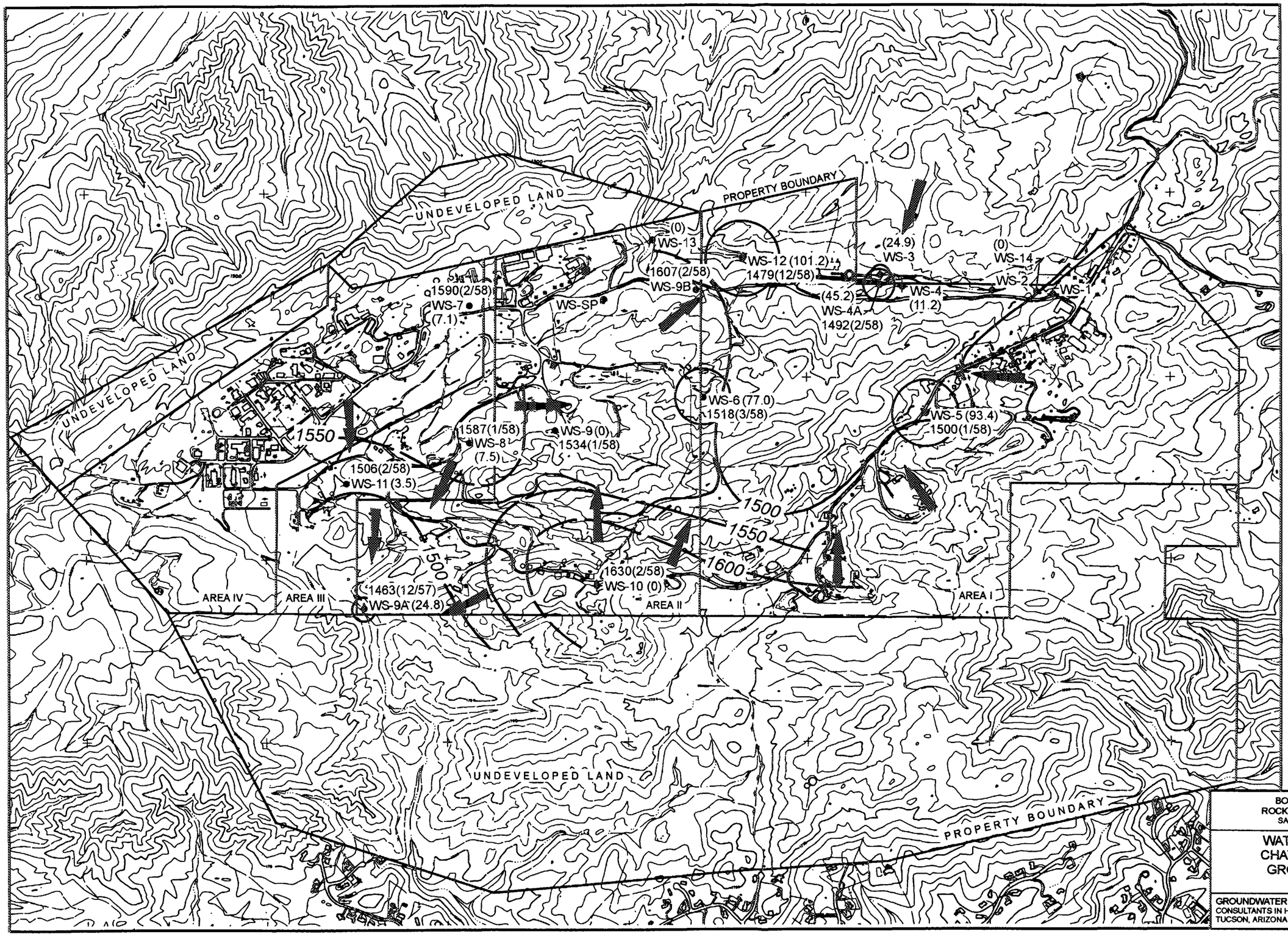
SANTA SUSANA FIELD LABORATORY

GEOLOGIC MAP

GROUNDWATER RESOURCES CONSULTANTS, INC
CONSULTANTS IN HYDROGEOLOGY
TUCSON, ARIZONA 8640M 412 FIGURE 3



EXPLANATION

WS-5 — WATER SUPPLY WELL

WS-1 — ABANDONED WELL

WS-9A — WELL IDENTIFIER

(24.8) — TOTAL PUMPAGE IN MILLIONS OF GALLONS, FROM ACTIVATION THROUGH 1957

1463(12/57) — DATE OF WATER LEVEL MEASUREMENT; WATER LEVEL ELEVATION, FEET (MSL)

0 50 100 — PUMPAGE DIAGRAM (TOTAL PUMPAGE FOR PERIOD 1949-1957) SCALE: 0.35 INCH = 100 MILLION GALLONS

1550 — CONTOUR LINE OF EQUAL WATER LEVEL ELEVATION IN FEET MSL

APPARENT DIRECTION OF GROUNDWATER FLOW

NOTE: PUMPAGE OF GROUNDWATER AT SSFL COMMENCED IN LATE 1949.

N

FEET

0 500 1000

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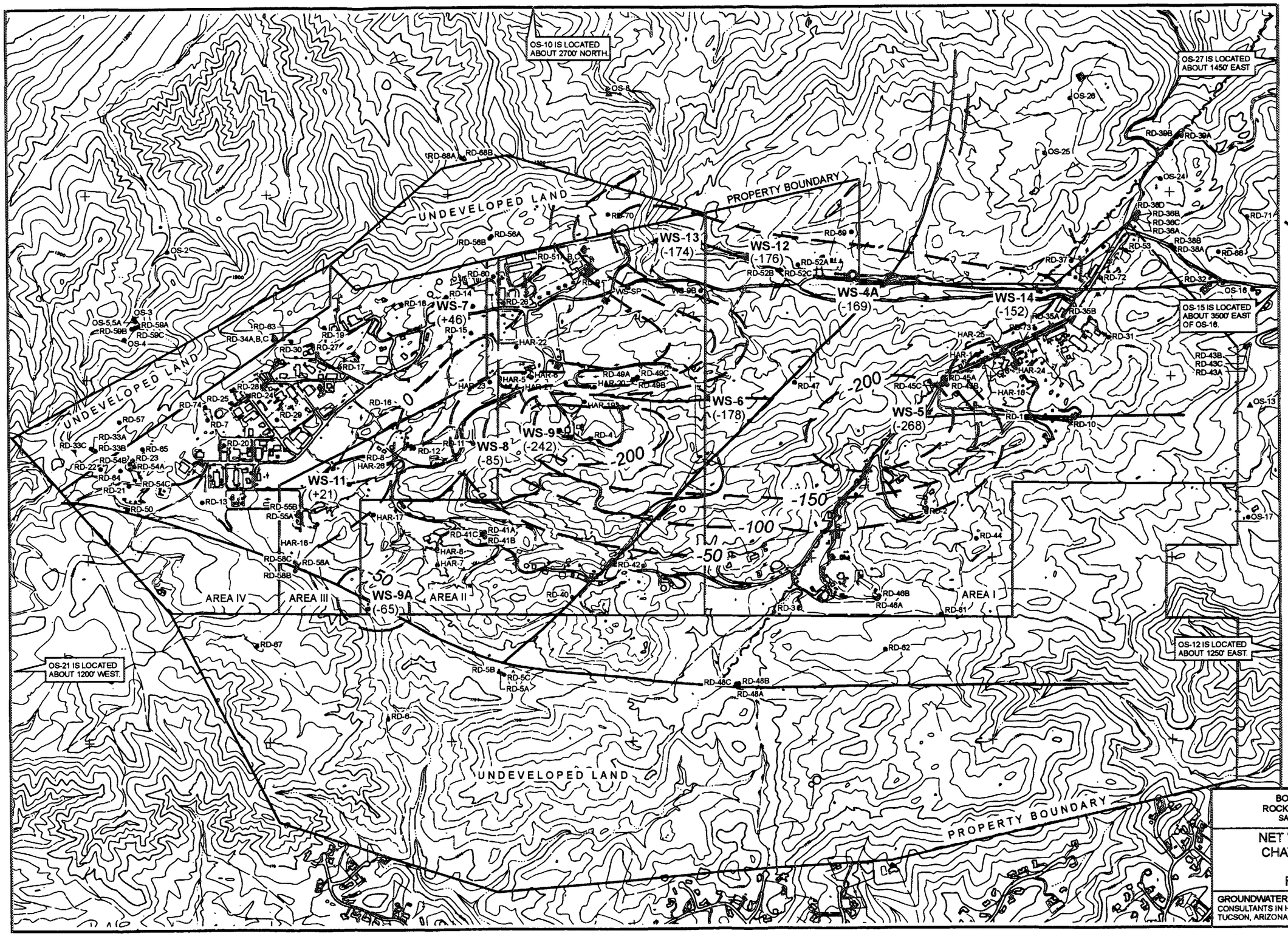
SANTA SUSANA FIELD LABORATORY

WATER LEVEL CONTOURS CHATSWORTH FORMATION GROUNDWATER SYSTEM 1957 TO 1958

GROUNDWATER RESOURCES CONSULTANTS, INC.
CONSULTANTS IN HYDROGEOLOGY
TUCSON, ARIZONA 8840M - 412 FIGURE 4



EXPLANATION

FAULT, FRACTURE OR JOINT

NOTE: ONLY KEY FEATURES ARE SHOWN FOR REFERENCE

SHEAR ZONE

CHATSWORTH FORMATION WELL

SPRING

WS-5 WELL IDENTIFIER

(-268) CHANGE IN WATER LEVEL, IN FEET, FROM 1954 TO 1999

-150 CONTOUR OF EQUAL WATER LEVEL DECLINE OR INCREASE, IN FEET, BASED ON WS WELL DATA

N

FEET

0 500 1000

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NET WATER LEVEL CHANGE
CHATSWORTH FORMATION
WS WELLS
FROM 1954 TO 1999

GROUNDWATER RESOURCES CONSULTANTS, INC.
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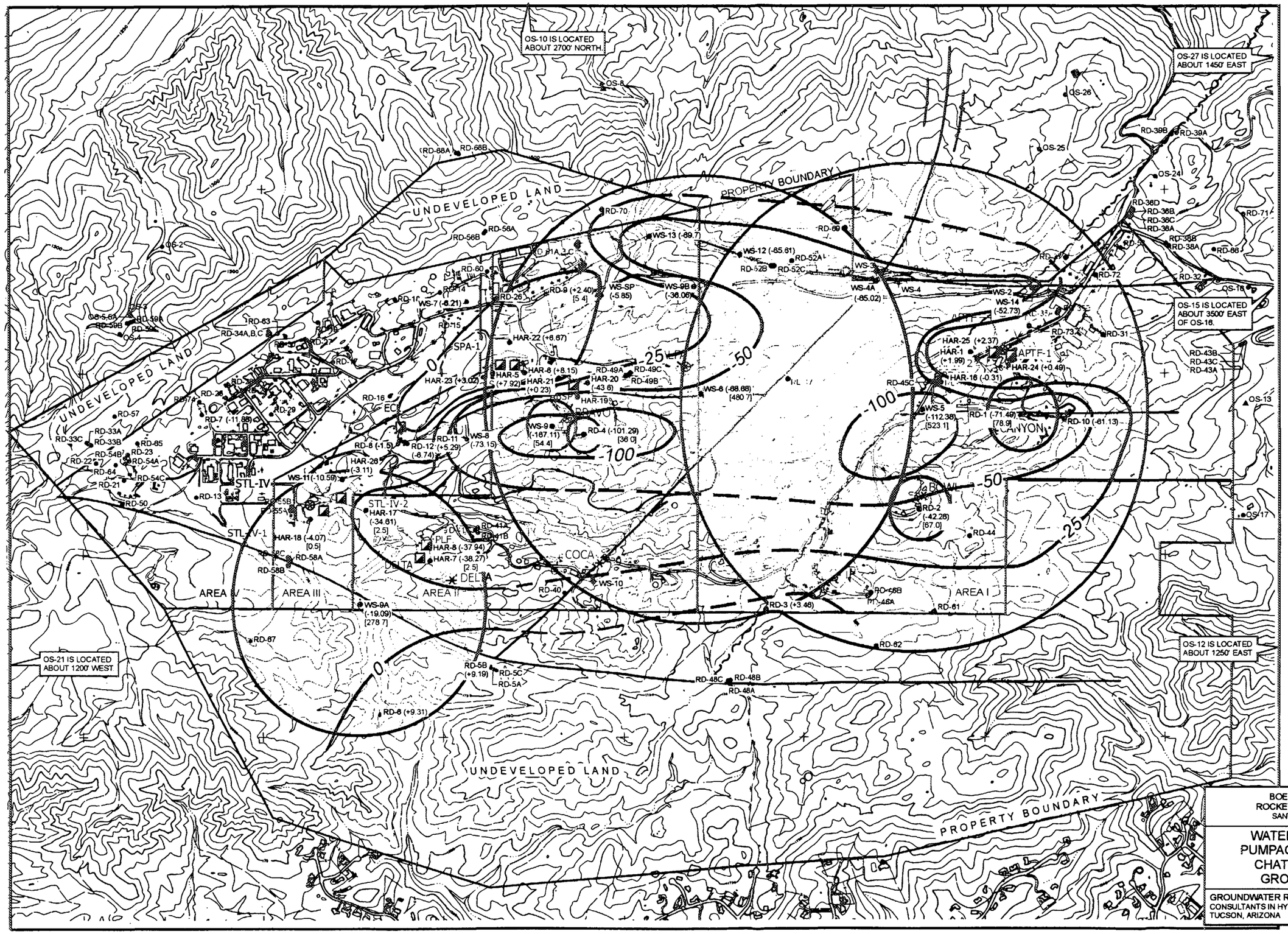
TUCSON, ARIZONA 8640M - 412 FIGURE 5



EXPLANATION

FAULT, FRACTURE OR JOINT

SHEAR ZONE

CHATSWORTH FORMATION WELL

SPRING

0 100 PUMPAGE DIAGRAM SCALE: 1/2" = 100 MILLION GALLONS

RD-2 [67.0] EXTRACTION/TREATMENT SYSTEM WELL PUMPAGE IN MILLIONS OF GALLONS, FALL 1987 TO NOVEMBER 1999

-50 CONTOUR OF EQUAL WATER DECLINE, IN FEET. FALL 1987 TO NOVEMBER 1999

RD-10 (-61.13) WATER LEVEL CHANGE (+/-) FROM 1987 TO 1999

N

FEET

0 500 1000

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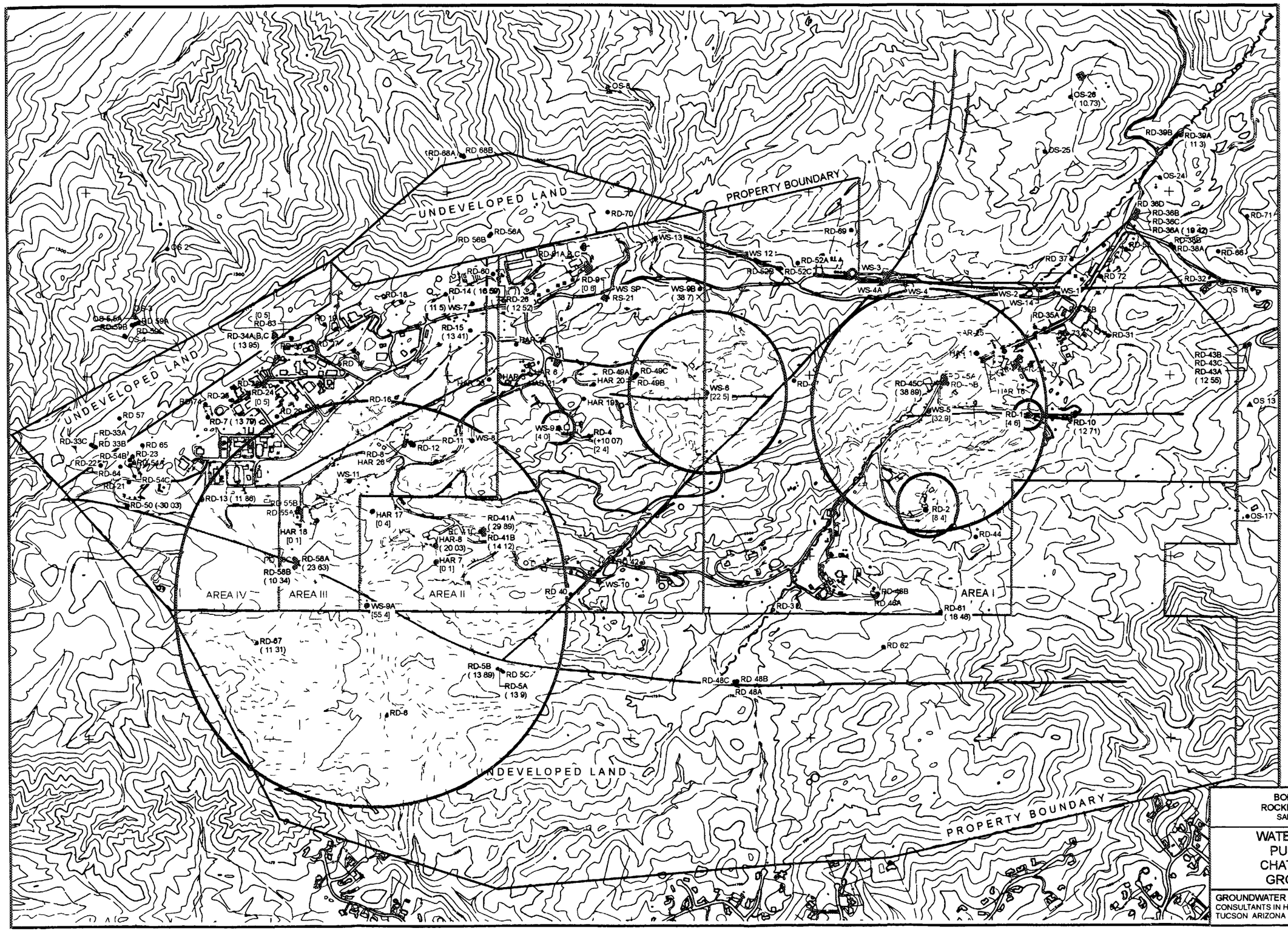
SANTA SUSANA FIELD LABORATORY

WATER LEVEL DECLINE AND PUMPAGE, 1987 THROUGH 1999 CHATSWORTH FORMATION GROUNDWATER SYSTEM

GROUNDWATER RESOURCES CONSULTANTS, INC.
CONSULTANTS IN HYDROGEOLOGY
TUCSON, ARIZONA 8840M-412 FIGURE 6



EXPLANATION

FAULT FRACTURE OR JOINT

SHEAR ZONE

CHATSWORTH FORMATION WELL

SPRING

RD-4 (+10 07) — WELL IDENTIFIER; WATER LEVEL RISE, IN FEET FROM NOV 1998 TO NOV 1999

WS-9B (38 7) — WATER LEVEL DECLINE IN FEET FROM NOV 1998 TO NOV 1999

0 — 25
PUMPAGE DIAGRAM SCALE. 1" = 25 MILLION GALLONS

WS-6 [22 5] — EXTRACTION/TREATMENT SYSTEM WELL PUMPAGE IN MILLIONS OF GALLONS IN 1999

NOTE ACTUAL WATER LEVEL CHANGES ARE LISTED AT THOSE WELLS WHERE THE CHANGE EXCEEDS 10 FEET

N

FEET
0 500 1000

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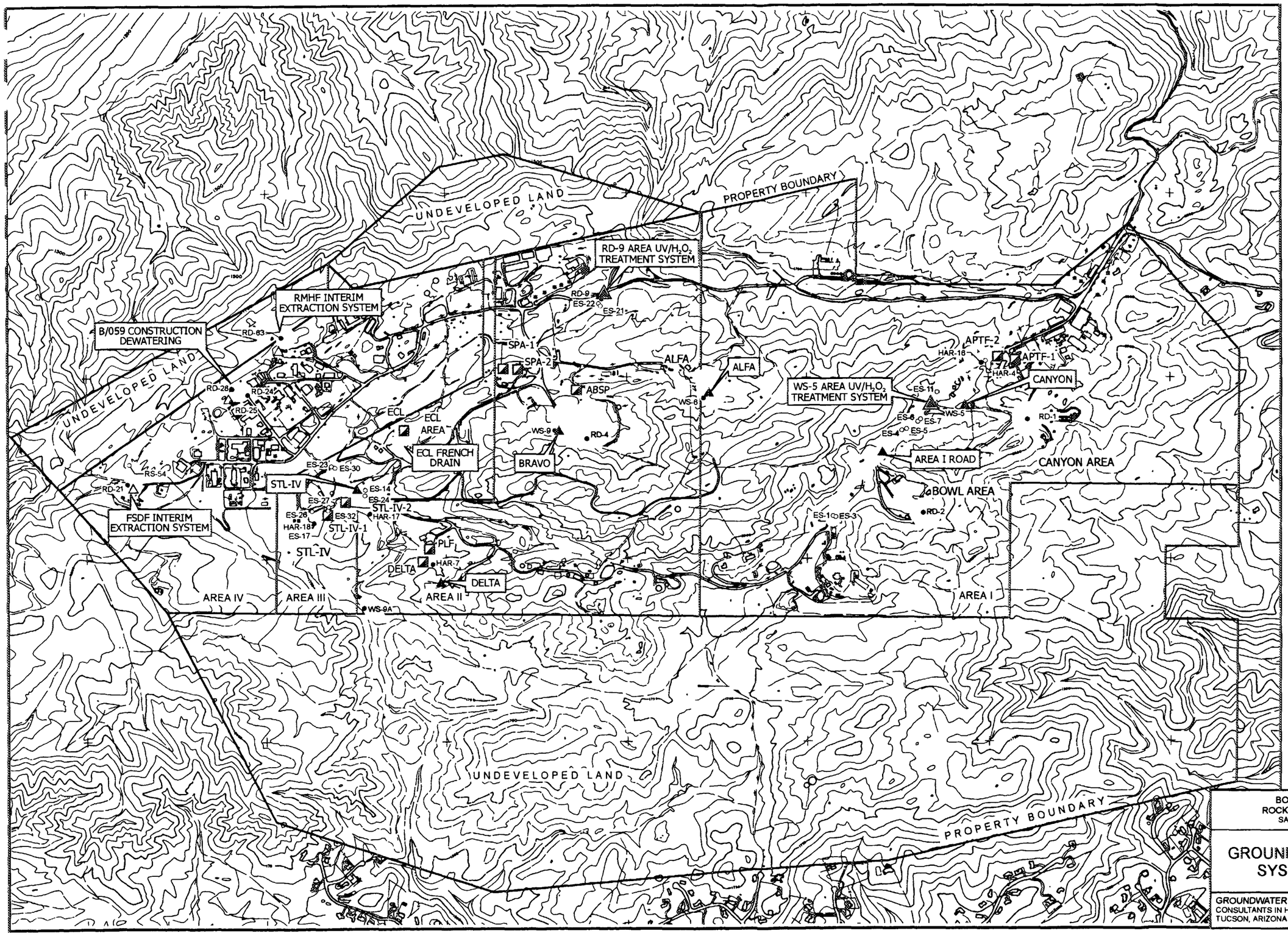
WATER LEVEL CHANGE AND PUMPAGE DURING 1999 CHATSWORTH FORMATION GROUNDWATER SYSTEM

GROUNDWATER RESOURCES CONSULTANTS, INC
CONSULTANTS IN HYDROGEOLOGY
TUCSON ARIZONA 8640M-412 FIGURE 7



EXPLANATION

- ● CHATSWORTH FORMATION EXTRACTION WELL
- ○ SHALLOW ZONE EXTRACTION WELL
- LOCATION OF RCRA SURFACE IMPOUNDMENT
- ▲ PERMITTED GROUNDWATER TREATMENT SYSTEM-PACKED TOWER AERATION
- PERMITTED GROUNDWATER TREATMENT SYSTEM-UV/H_2O_2
- TARGET AREA
- △ INTERIM CARBON TREATMENT (CT)

NOTES

RMHF = RADIOACTIVE MATERIALS HANDLING FACILITY

FSDF = FORMER SODIUM DISPOSAL FACILITY

THE RMHF, FSDF AND THE B/059 DEWATERING EXTRACTION SYSTEMS ARE OPERATING AS INTERIM TREATMENT SYSTEMS

N

FEET

0 500 1000

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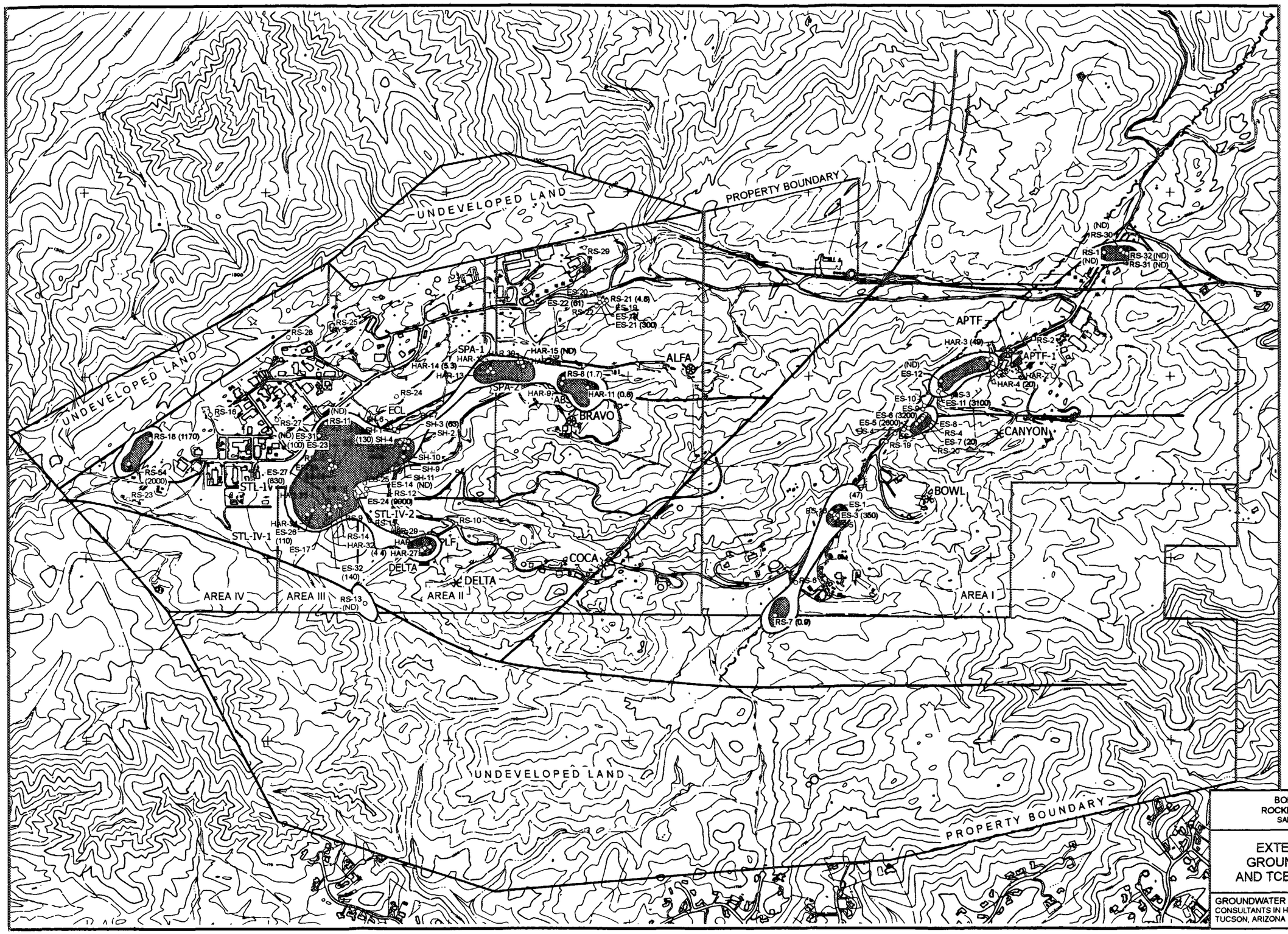
GROUNDWATER RECLAMATION SYSTEM COMPONENTS

GROUNDWATER RESOURCES CONSULTANTS, INC
CONSULTANTS IN HYDROGEOLOGY
TUCSON, ARIZONA 8640M - 412 FIGURE 8



EXPLANATION

FAULT, FRACTURE OR JOINT

SHEAR ZONE

SHALLOW ZONE WELL

SPRING

ABANDONED WELL

ACTIVE TEST STAND

FORMER OR INACTIVE TEST STAND

RCRA IMPOUNDMENT

SH-4 (150) WELL IDENTIFIER HIGHEST TCE CONCENTRATION (IN MICROGRAMS/LITER) REPORTED FOR A SAMPLE FROM THAT WELL DURING 1999. (ND) = NONE DETECTED

APPROXIMATE AREA IN WHICH SHALLOW ZONE GROUNDWATER WAS PRESENT IN NOVEMBER 1999.

APPROXIMATE AREA IN WHICH SHALLOW ZONE GROUNDWATER WAS PRESENT IN FEBRUARY 1999.

NOTE: 1999 WATER LEVEL DATA INDICATED THAT THE GREATEST EXTENT OF SHALLOW ZONE GROUNDWATER OCCURRED DURING FEBRUARY 1999.

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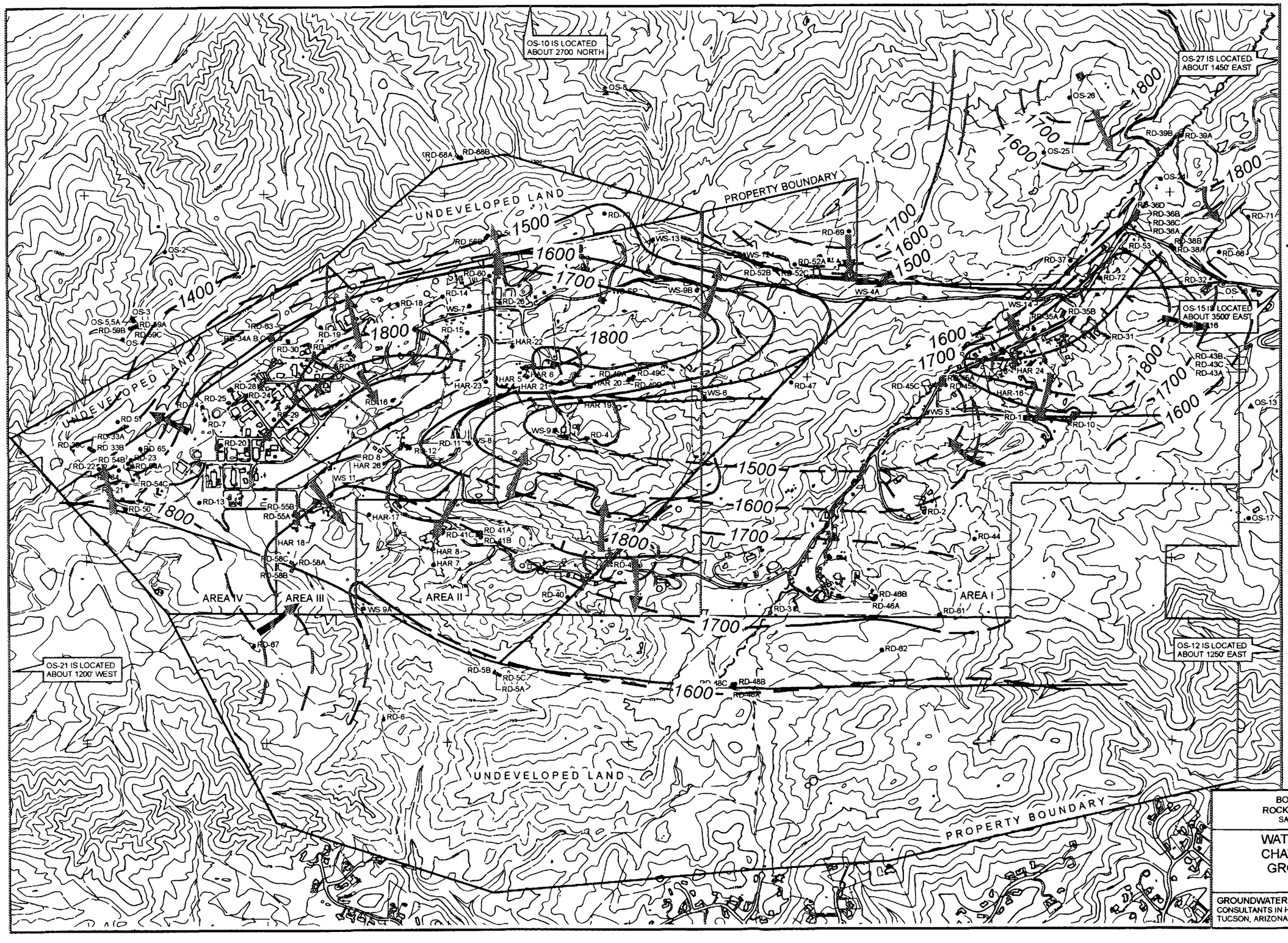
EXTENT OF SHALLOW ZONE GROUNDWATER OCCURRENCE AND TCE CONCENTRATIONS - 1999

GROUNDWATER RESOURCES CONSULTANTS, INC.
CONSULTANTS IN HYDROGEOLOGY
TUCSON, ARIZONA 8640M-412 FIGURE 9



EXPLANATION

FAULT FRACTURE OR JOINT

SHEAR ZONE

CHATSWORTH FORMATION WELL

SPRING

OS-16 OFF-SITE WELL

RD-66 WELL IDENTIFIER

1700 CONTOUR OF EQUAL WATER LEVEL ELEVATION, IN FEET ABOVE MEAN SEA LEVEL, CHATSWORTH FORMATION (CONTOUR INTERVAL 100 FEET DASHED WHERE INFERRED) CONTOURS BASED ON 11/99 DATA.

APPARENT DIRECTION OF LATERAL GROUNDWATER MOVEMENT

APPROXIMATE LOCATION OF GROUNDWATER DIVIDE

NOTE A-ZONE ELEVATIONS WERE UTILIZED FOR DEVELOPMENT OF THE GROUNDWATER LEVEL ELEVATION CONTOURS

N

FEET

0 500 1000

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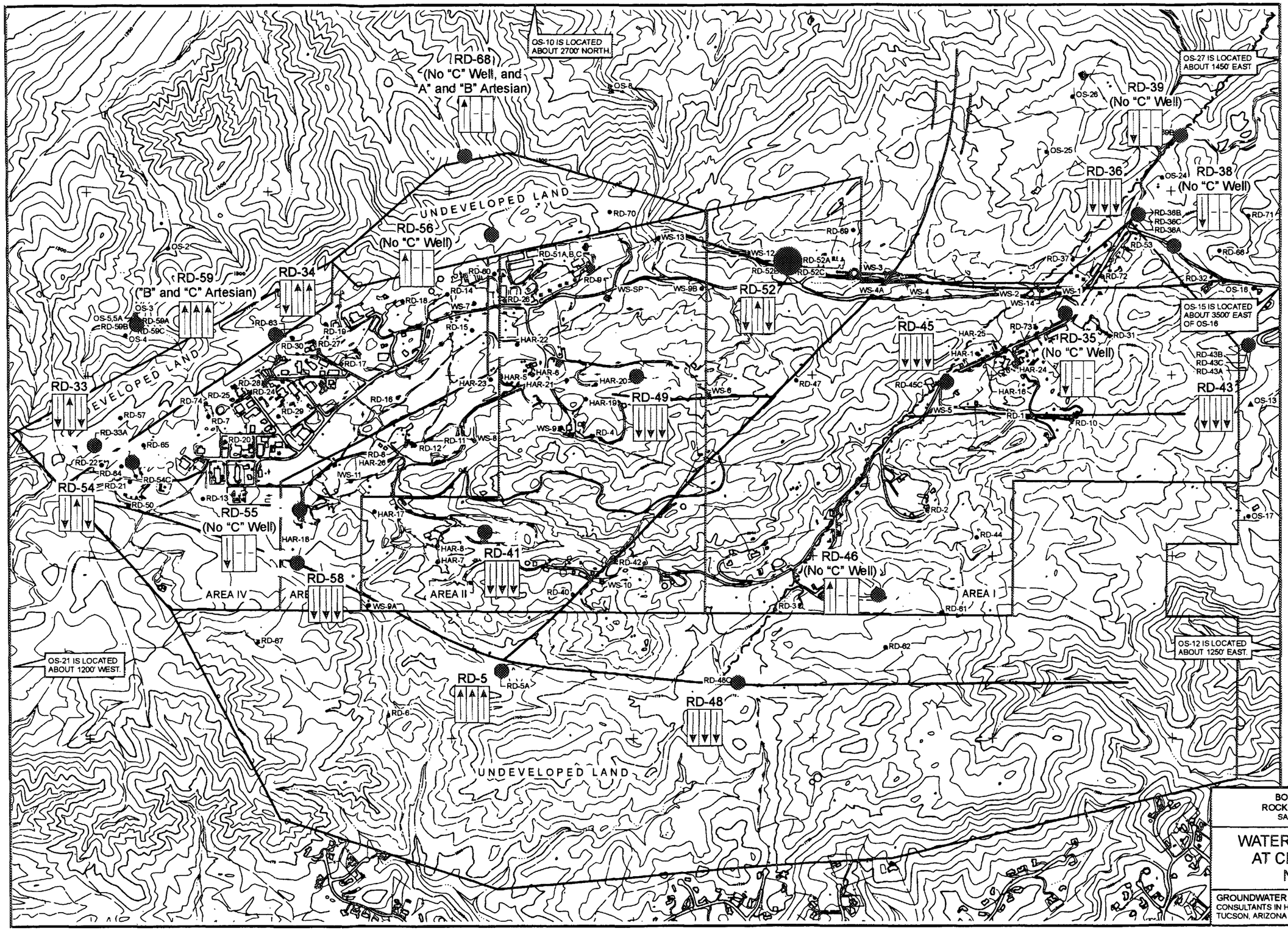
WATER LEVEL ELEVATIONS CHATSWORTH FORMATION GROUNDWATER SYSTEM NOVEMBER 1999

GROUNDWATER RESOURCES CONSULTANTS, INC.
CONSULTANTS IN HYDROGEOLOGY
TUCSON, ARIZONA 8840M-412 FIGURE 10



EXPLANATION

FAULT, FRACTURE OR JOINT

SHEAR ZONE

CHATSWORTH FORMATION WELL

SPRING

RD-34 CLUSTER SITE IDENTIFIER

DIRECTION OF HYDRAULIC GRADIENT BETWEEN A AND C ZONES.
DIRECTION OF HYDRAULIC GRADIENT BETWEEN B AND C ZONES
DIRECTION OF HYDRAULIC GRADIENT BETWEEN A AND C ZONES.

(–) NO DATA / NOT APPLICABLE

NOTE: BASED ON NOVEMBER 1999 DATA. ALTHOUGH WATER LEVEL DIFFERENCES CANNOT BE CALCULATED FOR COMPARISONS IN WHICH ONE WELL IS ARTESIAN, THE DIRECTION OF THE HYDRAULIC GRADIENT CAN BE DETERMINED BY COMPARING THE ARTESIAN WELL MEASURING POINT ELEVATION TO THE NON-ARTESIAN WELL WATER LEVEL ELEVATION.

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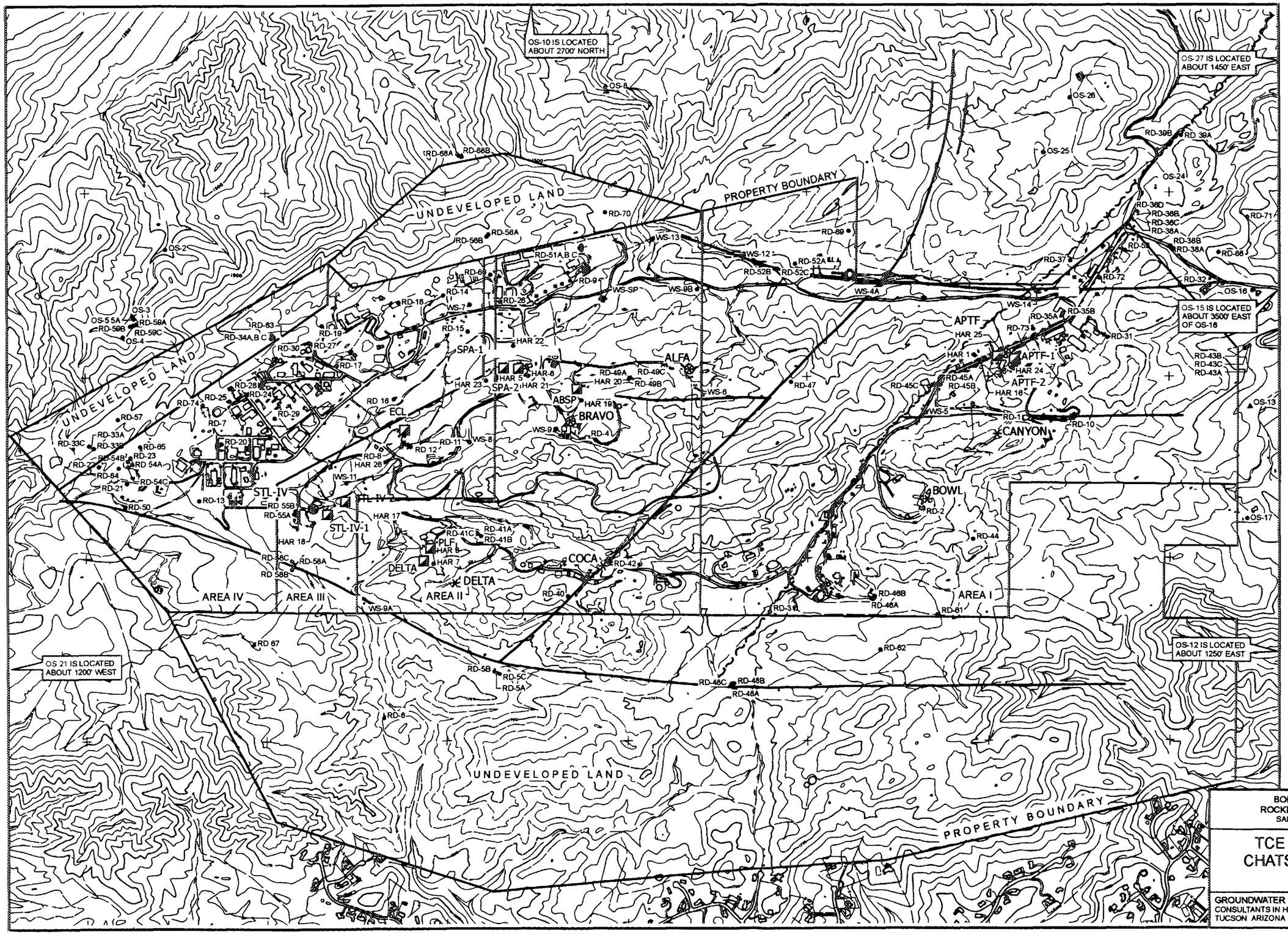
WATER LEVEL DIFFERENCES AT CLUSTER WELL SITES NOVEMBER 1999

GROUNDWATER RESOURCES CONSULTANTS, INC.
CONSULTANTS IN HYDROGEOLOGY
TUCSON, ARIZONA 8640M-412 FIGURE 11



EXPLANATION

- FAULT FRACTURE OR JOINT
- SHEAR ZONE
- CHATSWORTH FORMATION WELL
- SPRING
- ACTIVE TEST STAND
- FORMER OR INACTIVE TEST STAND
- RCRA IMPOUNDMENT
- WELL NOT SAMPLED IN 1999
- TRICHLOROETHYLENE (TCE) CONCENTRATION LESS THAN 5 MICROGRAMS PER LITER OR NON-DETECTED
- TCE CONCENTRATION ≥ 5 MICROGRAMS PER LITER AND < 100 MICROGRAMS PER LITER
- TCE CONCENTRATION ≥ 100 MICROGRAMS PER LITER.

NOTES BASED ON MOST RECENT 1999 DATA, USING HIGHEST TCE CONCENTRATION AT CLUSTER WELLS

THE MAXIMUM CONTAMINANT LEVEL (MCL) FOR TCE IS 5 MICROGRAMS PER LITER.

N

FEET

0 500 1000

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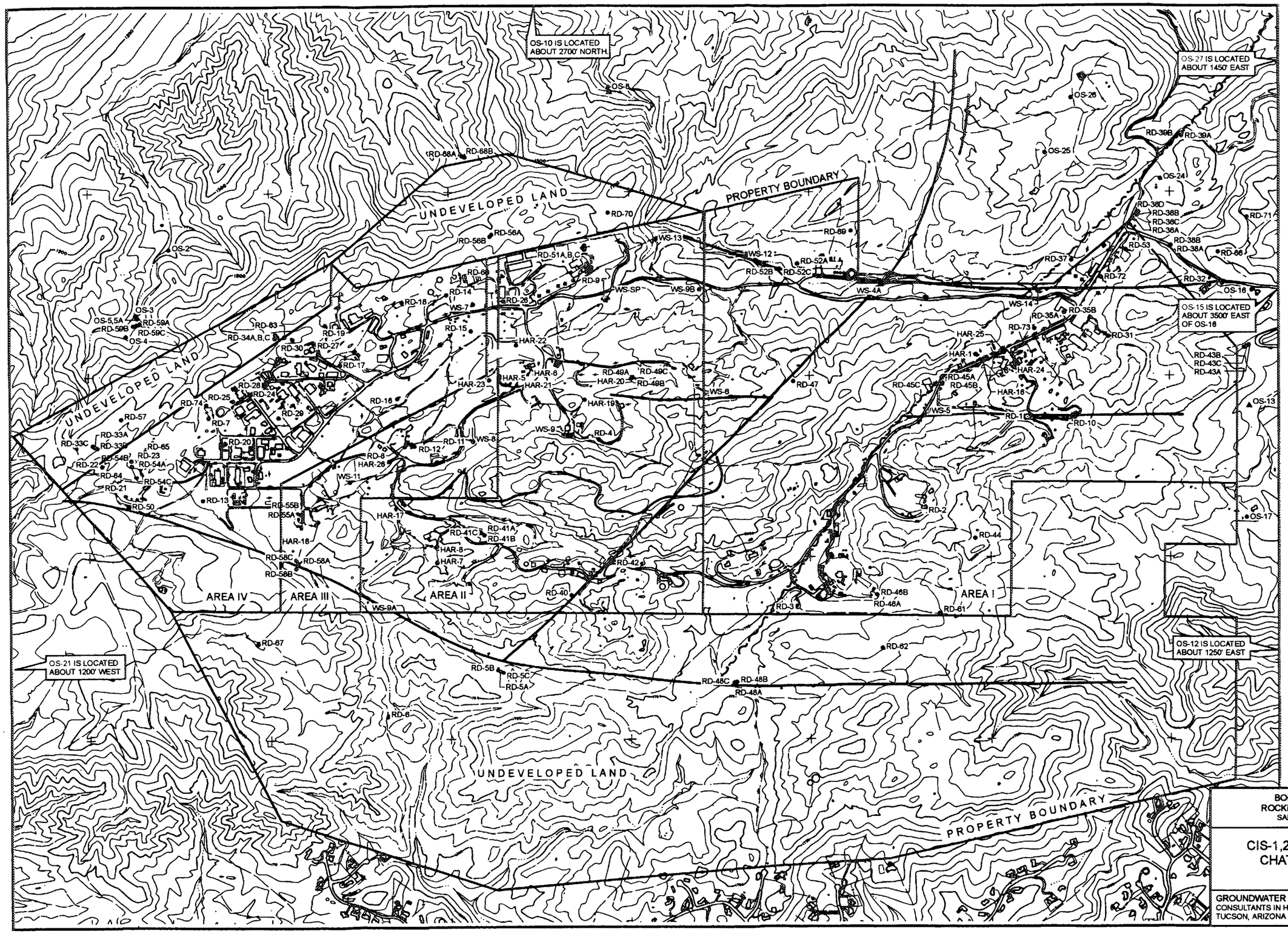
TCE IN GROUNDWATER CHATSWORTH FORMATION 1999

GROUNDWATER RESOURCES CONSULTANTS, INC
CONSULTANTS IN HYDROGEOLOGY
TUCSON ARIZONA 8640M 412 FIGURE 12



EXPLANATION

FAULT, FRACTURE OR JOINT

SHEAR ZONE

CHATSWORTH FORMATION WELL

SPRING

WELL NOT SAMPLED IN 1999.

CIS-1,2-DICHLOROETHYLENE (DCE) CONCENTRATION < 6 MICROGRAMS PER LITER OR NON-DETECTED.

CIS-1,2-DCE CONCENTRATION ≥ 6 MICROGRAMS PER LITER AND < 100 MICROGRAMS PER LITER.

CIS-1,2-DCE CONCENTRATION ≥ 100 MICROGRAMS PER LITER.

NOTES. BASED ON MOST RECENT 1999 DATA. USED HIGHEST CONCENTRATION AT CLUSTER WELLS.

THE MAXIMUM CONTAMINANT LEVEL (MCL) FOR CIS-1,2-DCE IS 6 MICROGRAMS PER LITER.

N

FEET

0 500 1000

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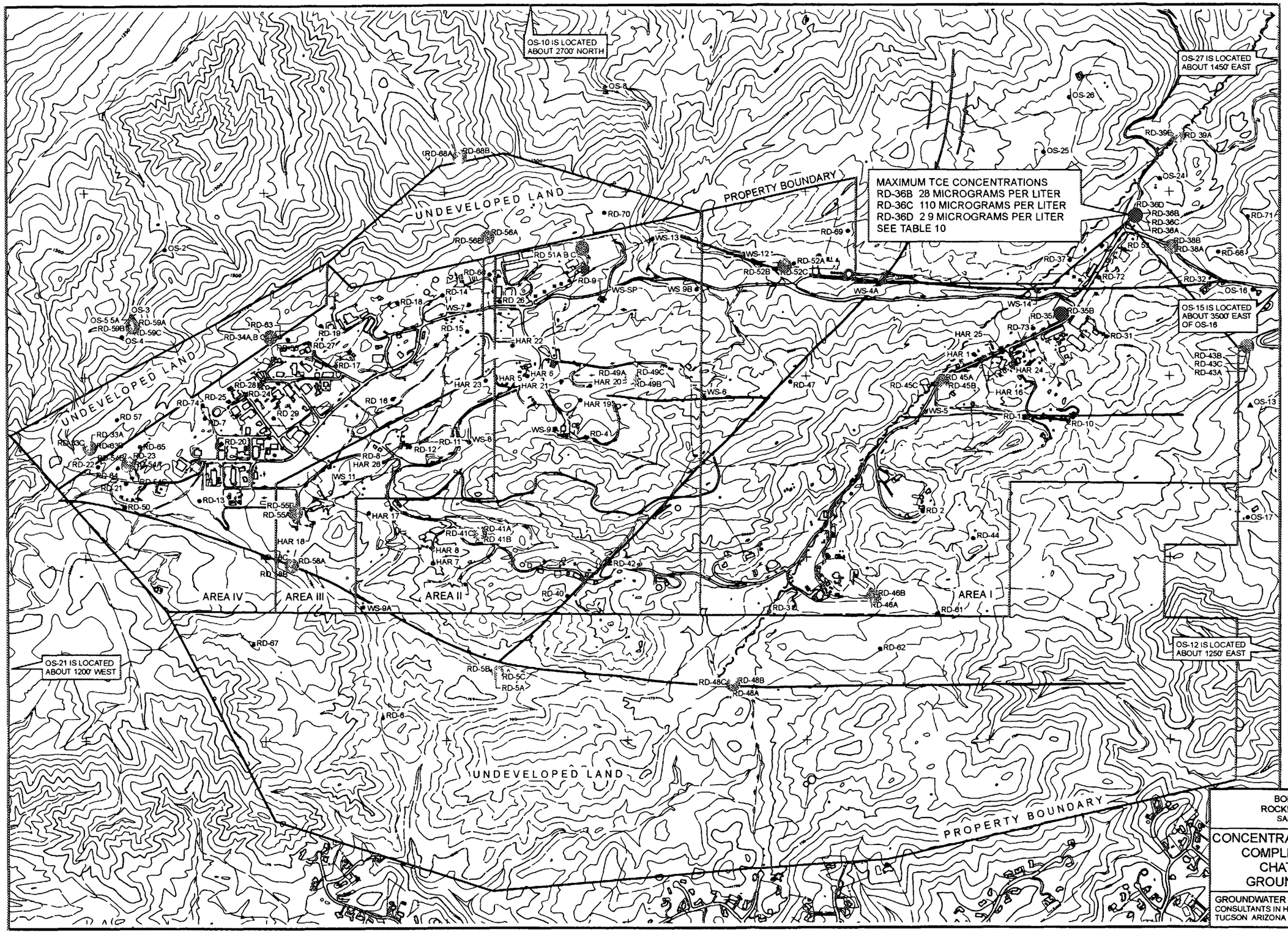
CIS-1,2-DCE IN GROUNDWATER
CHATSWORTH FORMATION
1999

GROUNDWATER RESOURCES CONSULTANTS, INC.
CONSULTANTS IN HYDROGEOLOGY
TUCSON, ARIZONA 8640M - 412 FIGURE 13



EXPLANATION

FAULT FRACTURE OR JOINT

SHEAR ZONE

CHATSWORTH FORMATION WELL

SPRING

TCE CONCENTRATION IN DEEPEST CLUSTER WELL LESS THAN 5 MICROGRAMS PER LITER

TCE CONCENTRATION IN DEEPEST CLUSTER WELL BETWEEN 5 AND LESS THAN 10 MICROGRAMS PER LITER

TCE CONCENTRATION IN DEEPEST CLUSTER WELL ≥100 MICROGRAMS PER LITER

NOTES LATERAL EXTENT BASED ON MOST RECENT 1999 DATA FOR CHATSWORTH FORMATION WELLS CONSTRUCTED IN GENERALLY THE A ZONE

THE MAXIMUM CONTAMINANT LEVEL (MCL) FOR TCE IS 5 MICROGRAMS PER LITER.

NOTE VERTICAL DATA SHOWN BASED ON B & C ZONE COMPLETIONS AT EACH CLUSTER SITE WHETHER THERE ARE TWO THREE OR FOUR WELLS AT THE CLUSTER BASED ON HIGHEST TCE CONCENTRATION DETECTED IN 1999

N

FEET

0 500 1000

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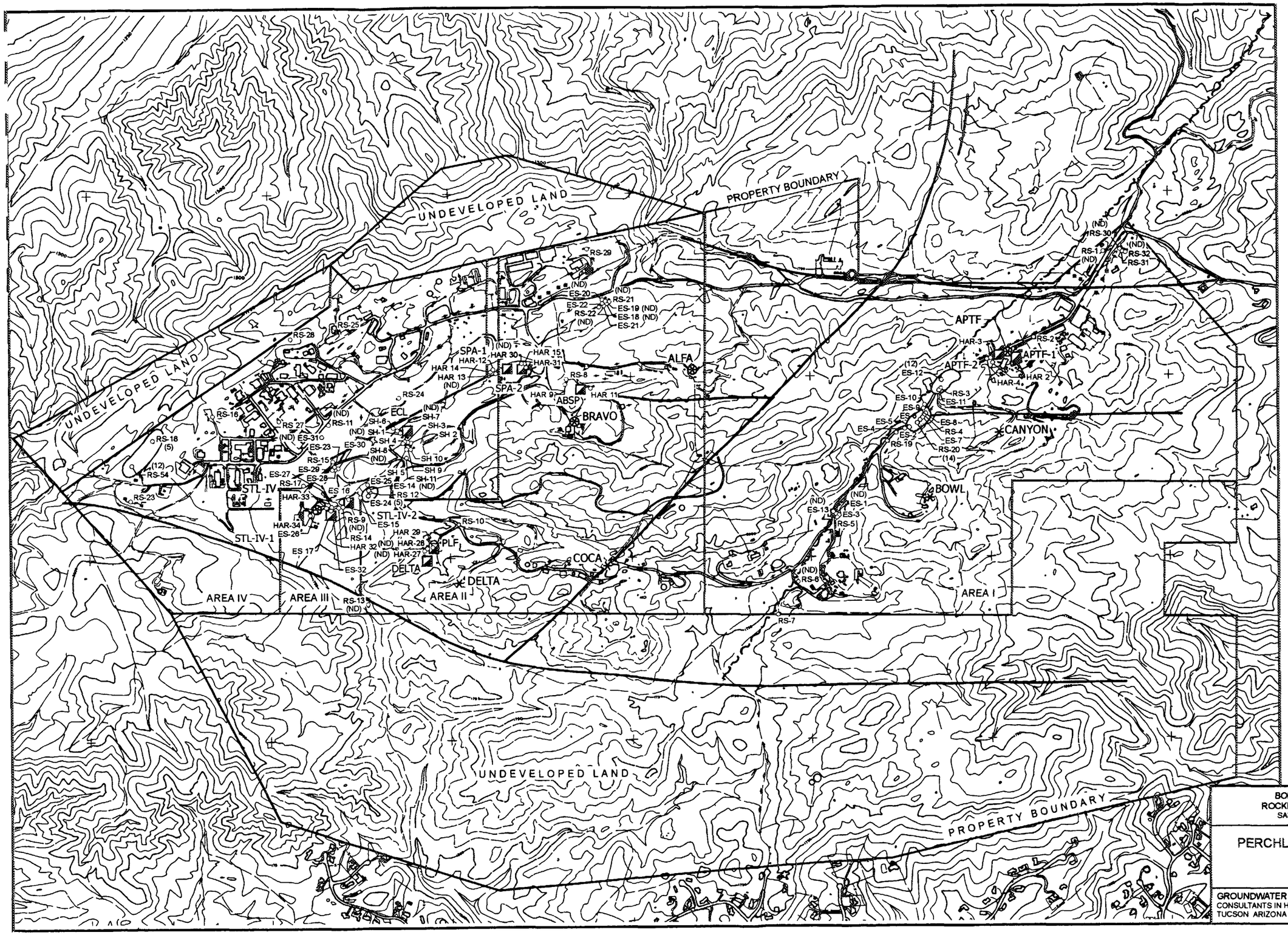
CONCENTRATIONS OF TCE AT B & C ZONE COMPLETIONS, CLUSTER WELLS CHATSWORTH FORMATION GROUNDWATER SYSTEM - 1999

GROUNDWATER RESOURCES CONSULTANTS, INC
CONSULTANTS IN HYDROGEOLOGY
TUCSON ARIZONA 8640M 412 FIGURE 14



EXPLANATION

———	FAULT FRACTURE OR JOINT
~~	SHEAR ZONE
○	SHALLOW ZONE WELL
▲	SPRING
⊗	ACTIVE TEST STAND
✱	FORMER OR INACTIVE TEST STAND
◪	RCRA IMPOUNDMENT
RS-1 (ND)	WELL IDENTIFICATION PERCHLORATE NOT DETECTED ABOVE DETECTION LIMIT OF 4 ug/l
RS-20 (14)	WELL IDENTIFICATION PERCHLORATE CONCENTRATION IN ug/l
◯	APPROXIMATE LATERAL EXTENT OF PERCHLORATE IN SHALLOW ZONE GROUNDWATER IN CONCENTRATIONS OF 4 TO <18 ug/l

ACTION LEVEL FOR PERCHLORATE IS 18ug/l

NOTES BASED ON MOST RECENT 1999 DATA SEE TABLE 16 FOR HISTORIC PERCHLORATE DATA.

N

FEET

0 500 1000

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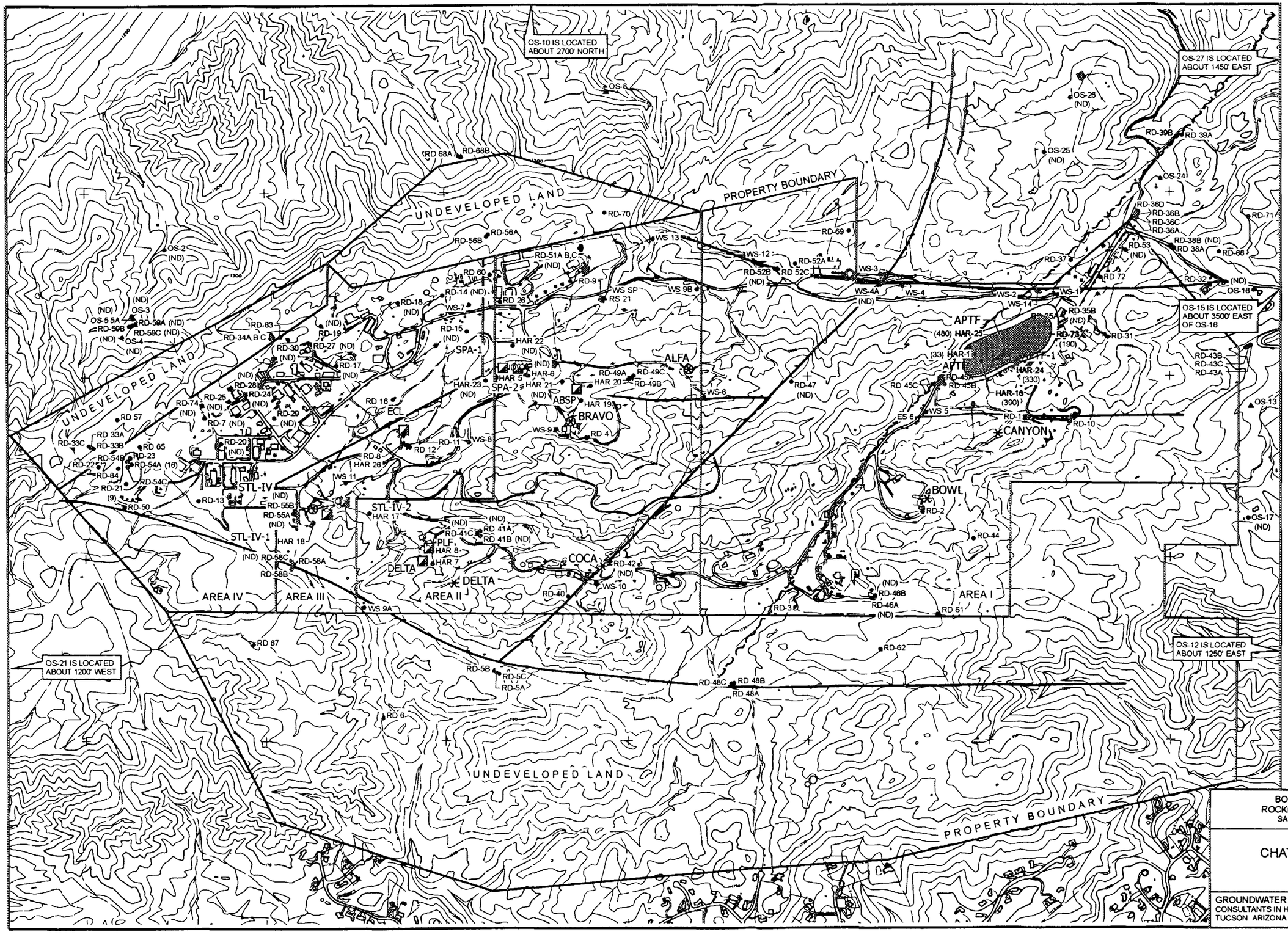
PERCHLORATE IN SHALLOW ZONE GROUNDWATER 1999

GROUNDWATER RESOURCES CONSULTANTS, INC
CONSULTANTS IN HYDROGEOLOGY
TUCSON ARIZONA 8640M-412 FIGURE 15



EXPLANATION

- FAULT FRACTURE OR JOINT
- SHEAR ZONE
- CHATSWORTH FORMATION WELL
- SPRING
- ABANDONED WELL
- ACTIVE TEST STAND
- FORMER OR INACTIVE TEST STAND
- RCRA IMPOUNDMENT
- RD-53 (ND) — WELL IDENTIFICATION PERCHLORATE NOT DETECTED ABOVE DETECTION LIMIT OF 4 ug/l.
- RD-21 (9) — WELL IDENTIFICATION PERCHLORATE CONCENTRATION IN ug/l
- APPROXIMATE LATERAL EXTENT OF PERCHLORATE IN CHATSWORTH FORMATION GROUNDWATER IN CONCENTRATIONS OF 4 TO <18 ug/l
- RD-73 (190) — WELL IDENTIFICATION PERCHLORATE CONCENTRATION IN ug/l
- APPROXIMATE LATERAL EXTENT OF PERCHLORATE IN CHATSWORTH FORMATION GROUNDWATER IN CONCENTRATIONS >18 ug/l

ACTION LEVEL FOR PERCHLORATE IS 18ug/l

NOTE BASED ON MOST RECENT 1999 DATA SEE TABLE 16 FOR HISTORIC PERCHLORATE DATA

FEET
0 500 1000

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PERCHLORATE IN CHATSWORTH FORMATION GROUNDWATER 1999

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CONSULTANTS IN HYDROGEOLOGY
TUCSON ARIZONA 8640M-412 FIGURE 16