GROUNDWATER MONITORING QUARTERLY REPORT
SECOND QUARTER 2003, APRIL THROUGH JUNE 2003
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

for

The Boeing Company
Canoga Park, California

by

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MASTER ACRONYM LIST

AL	action level
CCR	California Code of Regulations
CFOU	Chatsworth Formation Operable Unit
cis-1,2-DCE	cis-1,2-dichloroethene
DTSC	(California) Department of Toxic Substances Control
EPA	(United States) Environmental Protection Agency
FLUTe	Flexible Liner Underground Technologies, LLC
FSDF	Former Sodium Disposal Facility
GWRC	Groundwater Resources Consultants
LUFT	leaking underground fuel tank
MCL	maximum contaminant level
MDA	minimum detectable activity
MDL	method detection limit
mg/l	milligrams per liter
msl	mean sea level
NDMA	n-nitrosodimethylamine
ng/l	nanograms per liter
NPDES	National Pollutant Discharge Elimination System
NSGI	Near-Surface Groundwater Investigation
pCi/l	picoCuries per liter
PQL	practical quantitation limit
RMHF	Radioactive Materials Handling Facility
SAP	sampling and analysis plan
SDWA	Safe Drinking Water Act
SSFL	Santa Susana Field Laboratory
TCE	trichloroethene
trans-1,2-DCE	trans-1,2-dichloroethene
ug/l	micrograms per liter
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

1. INTRODUCTION

This report summarizes the groundwater monitoring and groundwater extraction/treatment activities conducted during April through June 2003 at The Boeing Company, Rocketdyne Propulsion & Power Santa Susana Field Laboratory (SSFL) located in Ventura County, California (Figure 1). This report is intended to fulfill the requirements of multiple regulatory programs at SSFL, which are addressed in the Post-Closure Permits prepared by the California Department of Toxic Substances Control (DTSC), and the Leaking Underground Fuel Tank (LUFT) monitoring program overseen by DTSC. Specific requirements include performance of detection monitoring, evaluation monitoring and interim corrective action monitoring as described in the Facility Post-Closure Permits, and per the requirements of Title 22, Article 6, Sections 66264.97 through 66264.99 of the California Code of Regulations (CCR).

Monitoring activities conducted during the quarter included:

- measurement of static water levels;
- collection and laboratory analysis of groundwater samples;
- measurement of groundwater extraction/treatment system water levels, pumping rates and volumes; and
- collection and laboratory analysis of water samples from treatment system influent and effluent.

Historic data were reported in the following documents:

- through the year 1999 in the *Annual Groundwater Monitoring Report, Santa Susana Field Laboratory, 1999, Boeing North American, Inc., Rocketdyne Propulsion & Power, Ventura County, California* (Groundwater Resources Consultants, Inc. (GWRC), February 28, 2000),
- year 2000 in the *Report on Annual Groundwater Monitoring, 2000, Santa Susana Field Laboratory, Ventura County, California* (Haley & Aldrich, 2001),
- year 2001 in the *Report on Annual Groundwater Monitoring, 2001, Santa Susana Field Laboratory, Ventura County, California* (Haley & Aldrich, 2002a) and *Report on Appendix IX Groundwater Monitoring, 2001, Santa Susana Field Laboratory, Ventura County, California* (Haley & Aldrich, 2002b),
- year 2002 in the *Report on Annual Groundwater Monitoring, 2002, Santa Susana Field Laboratory, Ventura County, California* (Haley & Aldrich, 2003a), and *Addendum to Report on Annual Groundwater Monitoring, 2002, Santa Susana Field Laboratory, Ventura County, California* (Haley & Aldrich, 2003b), and
- the first quarter 2003 in the *Groundwater Monitoring Quarterly Report, First Quarter 2003, January through March 2003, Santa Susana Field Laboratory, Ventura County, California* (Haley & Aldrich, 2003c).

The scope of this quarterly report includes the following as required per the Post-Closure Permits and CCR Title 22, Sections 66264.97 through 66264.99:

- A tabular summary of water level measurements;
- Discussion of the rates and direction of groundwater movement;
- A tabular summary of laboratory analyses of water samples;
- A tabular summary of groundwater extraction volumes and extraction well water levels and flow rates;

- A tabular summary of laboratory analyses of permitted treatment system influent and effluent water samples; and
- A groundwater elevation contour map of the Chatsworth Formation water table surface for May 2003.

Additional groundwater data were collected by Montgomery Watson Harza in 2003 as part of the Near-Surface Groundwater Investigation (NSGI), the investigation of seeps and springs, and the Chatsworth Formation Operable Unit Investigation (CFOU). These data have been, or will be, reported under separate cover and are not presented in this report.

1.1 Report Organization

Groundwater monitoring results, including analytical results and hydraulic head conditions, are presented in Section 2. Data for remedial systems are presented in Section 3.

2. GROUNDWATER MONITORING

This section presents a discussion of analytical results from the second quarter 2003 groundwater sampling event conducted at SSFL. Monitoring wells, located as shown in Figure 1, are sampled quarterly, semi-annually, or annually in accordance with the current Sampling and Analysis Plans (SAP) for the Facility (GWRC, 1995a, 1995b).

Additional subsurface investigation programs were conducted at SSFL during the quarter. As a result of these ongoing investigations, additional information on site geology and groundwater conditions is becoming available. To the extent possible, this new information is incorporated in this report.

Groundwater elevation contours for the first encountered water in the Chatsworth Formation, as determined from groundwater level measurements collected during the second quarter 2003 sampling event, are shown on Figure 2. Multi-port FLUTe sampling devices were installed in existing wells in the Former Sodium Disposal Facility (FSDF) and in the northeast corner of SSFL over the last two years. The elevation of first water in the multi-port devices varies from that previously observed in the open well bores. Accordingly, the actual elevation of first encountered groundwater probably differs from that shown in Figure 2.

The following subsections provide a review of groundwater levels, and groundwater quality results and trends. Well construction details are summarized in Table 1. Groundwater quality results and trends, as presented in Tables 7 through 16, are discussed in Section 2.2.

2.1 Groundwater Levels and Flow

Groundwater occurs at SSFL in the alluvium, weathered bedrock, and unweathered bedrock (GWRC, 1987; Montgomery Watson, 2000a). First-encountered groundwater exists under water table conditions and may be encountered in any of these media. For the purposes of this report, near-surface groundwater is defined as groundwater that is present in the alluvium and weathered bedrock, and groundwater that occurs below the weathered bedrock is referred to as Chatsworth Formation groundwater.

Near-surface groundwater has a limited areal extent at SSFL, typically occurring in narrow alluvial drainages (topographic lows) and broad alluvial valleys (e.g., Burro Flats in Area IV). Where near-surface groundwater exists, the near-surface and Chatsworth Formation groundwater are often times vertically continuous (i.e., not separated by a vadose zone). In this case, the separation of near-surface groundwater and Chatsworth Formation groundwater is a descriptive term only.

Based on data collected to date, perched groundwater may exist at a few locations within SSFL. At these locations, a vadose zone within the Chatsworth Formation may separate near-surface and Chatsworth Formation groundwater. Groundwater data collection and analysis is continuing and interpretations of existing hydrogeologic conditions will be modified as necessary based on the data collected.

2.1.1 Near-Surface Groundwater

The near-surface groundwater occurs in a thin layer of Quaternary alluvium distributed primarily in the Burro Flats area and along ephemeral drainages and the upper weathered portion of the Chatsworth Formation. The alluvium consists of unconsolidated sand, silt, and clay materials that have been eroded primarily from the surrounding Chatsworth and Martinez Formations.

The occurrence of near-surface groundwater is discontinuous at the Facility. Near-surface groundwater is present along ephemeral drainages and in the southern part of Burro Flats. Some portions of the alluvium and upper weathered Chatsworth Formation are saturated only during and immediately following the wet season.

Water level measurements were obtained from all 92 shallow groundwater wells during the second quarter 2003 (Table 6). Near-surface groundwater levels were generally higher during the second quarter 2003 than during the first quarter 2003. Water level elevations in the near-surface groundwater 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 wells.

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

2.1.2 Chatsworth Formation

The principal water bearing system at the Facility is the fractured Chatsworth Formation composed of poorly- to well-cemented, massive sandstone with interbeds of siltstone and claystone. Several structural features are apparent at the site including the Shear Zone, trending to the northeast through Area I, and several faults. These major features appear to compartmentalize groundwater flow as depicted on Figure 2 within groundwater units that have been delineated (Montgomery Watson, 2000a; MWH, 2002). As indicated above, studies currently in progress indicate several additional geologic features are present at SSFL which influence groundwater flow, including faults and shale beds. These features are not depicted on Figure 2, since they have not as yet been completely defined.

2.1.2.1 Groundwater Elevations and Flow Conditions

Water level measurements were obtained from all but 10 of the 126 Chatsworth Formation monitor wells during the second quarter 2003 (Table 6). Access to measure water levels was not available at wells with FLUTe systems installed. Discrete depth-interval water level data from FLUTe wells are presented at the end of Table 6. Of the 10 wells that

were not monitored, a water level could not be measured at one well (RD-45A) due to borehole collapse following FLUTe removal, sounder tubes missing from two wells (RD-04 and RD-39B) caused sounders to become tangled in pump cables, and seven FLUTe-equipped wells were either not equipped with dataloggers or the data were not available due to datalogger battery failure. Sounder tubes in RD-04 and RD-39B were repaired in early August 2003 prior to third quarter monitoring. Water levels from the shallowest well in each Chatsworth Formation cluster (or from individual Chatsworth Formation wells at non-cluster locations) obtained in May 2003 were used to prepare the water table contour map presented as Figure 2.

Chatsworth Formation water levels during the second quarter 2003 were generally higher than first quarter 2003 water levels. Locally, water levels increased in the northeastern portion of SSFL largely as the result of several of the Chatsworth Formation extraction wells being temporarily shut down while additional characterization studies continue. As noted above, recent field investigations have resulted in the installation of several multi-port sampling devices (FLUTes) in existing wells in the northeast portion and FSDF area of SSFL. The elevation of first water in the multi-port devices varies from that previously observed in the open well bores. Accordingly, the actual elevation of first encountered groundwater probably differs from that shown in Figure 2.

The determination of groundwater flow rates and direction are required per Title 22 Section 66264.97 of the California Code of Regulations. A groundwater table contour map is included in the quarterly report (Figure 2) to fulfill, in part, that requirement. A groundwater contour map is used in simple hydrogeologic settings to depict variations in the elevation of the water table surface, which can in turn be interpreted to reflect relative directions of groundwater flow. The groundwater elevation contours depicted in Figure 2 cannot be used to infer groundwater flow directions or rates of groundwater movement for the following reasons:

- Several hydraulically significant features such as fault zones and shale beds are present at SSFL and act as impediments to groundwater flow across them. Accordingly, while significant variations in the elevation of groundwater are present at SSFL, these differences do not necessarily indicate preferred directions of groundwater flow.

- The water level elevations depicted probably do not represent the elevation of the first occurrence of groundwater due to the relatively long open intervals of some of the monitoring wells. The water levels shown represent average heads over the screened or open interval.

- Groundwater flow directions and rates in fractured rock are influenced by the hydraulic conductivity of the bedrock matrix and possibly the orientation of structural features and stratigraphy.

Static depths to water in Chatsworth Formation wells measured during the second quarter 2003 ranged from above land surface at artesian wells RD-59B, RD-59C, RD-68A, and RD-68B to 503.28 feet at well RD-47. Water level elevations measured in Chatsworth Formation monitor wells during the quarter ranged from 1,315.05 feet above mean sea level (MSL) at well RD-59A to 1,894.72 feet above MSL at well RD-42 (Table 6). As site characterization studies continue, the rate and direction of groundwater flow in each groundwater unit may be further refined.

2.2 Groundwater Quality Results

The groundwater monitoring program at SSFL fulfills the requirements of multiple regulatory programs prescribed by the Post-Closure Permits (California DTSC, 1995), a Class 2 Permit Modification of the Post-Closure Permits (California DTSC, 2001), the LUFT program overseen by DTSC, and various characterization efforts conducted at SSFL. The Post-Closure Permit monitoring programs include the Evaluation Monitoring Program and Detection Monitoring Program. The Evaluation Monitoring Program requires semi-annual sampling of point of compliance wells, evaluation monitoring wells, and interim corrective action wells. Detection monitoring wells, including background wells, are sampled quarterly.

Per the groundwater monitoring program, groundwater samples were collected during the second quarter 2003 from shallow and Chatsworth Formation wells, and selected off-site wells and springs. This section summarizes the results of the routine quarterly groundwater monitoring program for the second quarter 2003.

Groundwater sample results from Facility wells are compared to various regulatory limits for discussion purposes. For those compounds or water quality constituents that have Maximum Contaminant Levels (MCLs) promulgated per the Safe Drinking Water Act (SDWA), the MCLs are used for purposes of comparison. Some constituents of concern do not have associated MCLs, but have California State Action Levels (ALs) that are used for purposes of comparison and discussion. Action levels are health-based advisory levels for chemicals in drinking water that are established for those chemicals for which there are no formal regulatory standards. Water purveyors are required to advise their customers of the presence of these compounds in drinking water when concentrations are at or above action levels. If concentrations of these compounds exceed ten times the action levels, water purveyors are required to remove the water source from their distribution system. In all cases, it is important to note that the groundwater beneath the SSFL Facility is not used to supply drinking water. All references to MCLs and ALs are for purposes of discussion only. In addition, reporting requirements in the Post-Closure Permits call for posting of all water quality results above method detection limits. These data are flagged to indicate the uncertainty associated with data reported at concentrations below the reporting limit.

Water quality results for the second quarter 2003 are tabulated in Tables 7 through 16. Historic water quality results through 1999 were included in the 1999 annual monitoring

report (GWRC, 2000). Water quality results for 2000, 2001, and 2002 were included in annual monitoring reports, the 2001 Appendix IX report, and the addendum to the 2002 report (Haley & Aldrich, 2001, 2002a, 2002b, 2003a, 2003b). Water quality results for 2003 were reported in the first quarter monitoring report (Haley & Aldrich, 2003c).

During the second quarter 2003 routine quarterly sampling, laboratory analyses were performed for the determination of volatile organic compounds (VOCs), fuel hydrocarbons, trace metals, semi-volatile organic compounds, perchlorate, gross alpha and beta, tritium, and gamma-emitting radionuclides. In addition to the routine sampling, a number of wells were monitored for constituents of concern and perchlorate as part of the Chatsworth Formation Operable Unit (CFOU) groundwater investigation (Table 15). A quality assurance summary of the monitoring program is presented in Appendix A.

As required by the existing Post-Closure Permits, seven point of compliance wells were monitored for the full list of Appendix IX constituents during the second quarter per the 2003 schedule (Table 2). Result analyses were subjected to a data validation process in accordance with guidance from the United States Environmental Protection Agency (USEPA) "National Functional Guidelines for Organic Data Review" (EPA540/R-99/008, October 1999), "National Functional Guidelines for Inorganic Data Review" (EPA540/R-94/00X, February 1994), and the EPA Method specific protocol criteria, where applicable. A summary of the data validation process is included in Appendix B.

2.2.1 Near-Surface Groundwater

Near-surface groundwater samples were collected from 20 shallow wells as part of the groundwater monitoring program in the second quarter 2003. All analytical results were within historic ranges (GWRC, 2000; Haley & Aldrich, 2001, 2002a, 2002b, 2003a, 2003b, 2003c), with exceptions noted below. Results for each well are summarized in Tables 7 through 16. Deviations from historic water quality results for analytes exceeding the practical quantitation limits (PQLs) are discussed below. Appendix IX analytical results for samples collected from shallow wells are reviewed in Section 2.2.3.

2.2.1.1 LUFT Program

LUFT program shallow wells that were dry or contained insufficient water for semi-annual sampling during the first quarter 2003 were rescheduled for monitoring during the second quarter. Shallow well RS-01 remained dry during the second quarter 2003. Sample results for groundwater collected from wells RS-30 and RS-31 during the second quarter 2003 were within historic ranges (Tables 7 and 9).

2.2.1.2 Evaluation Monitoring Program/Interim Corrective Action Program

Sampling of shallow evaluation monitoring wells and interim corrective action wells was conducted during the first quarter of 2003. Evaluation monitoring wells and interim corrective action wells that were dry or contained insufficient water for sampling during the first quarter were rescheduled for sampling during the second quarter 2003. Results for

interim corrective action wells ES-04, ES-05, ES-06, ES-11, ES-17, ES-32, and HAR-04 and evaluation monitoring wells SH-03, RS-11, and RS-19 are summarized in Table 7. All analytical results were within historic ranges, suggesting stable plumes.

2.2.1.3 Radiochemistry Analyses

In other monitoring, results of radiological analyses of near-surface groundwater samples collected from wells RS-11 and RS-18 during the second quarter 2003 were consistent with historic data. None of the gross alpha, gross beta, or tritium results exceeded the drinking water Maximum Contaminant Levels (MCLs) of 15 picoCuries per liter (pCi/l), 50 pCi/l, or 20,000 pCi/l (Table 13), respectively, except for the gross alpha result from RS-18. Gross alpha activity in the RS-18 sample, reported at 29.1 " 9.1 pCi/l, was consistent with past samples. Results of isotopic analyses indicate that naturally occurring uranium isotopes are present in groundwater samples collected from the SSFL Facility (Table 14). It is likely that the high gross alpha results from some Facility wells are associated with naturally occurring uranium.

The radiochemistry laboratory was able to meet the contract-required minimum detectable activity (MDA) for most radiochemical analyses. The contract-required MDAs are equal to or less than detection limits prescribed by CCR Title 22 for drinking water. For a number of samples, the contract-required MDAs could not be met for the following reasons:

- For the sample collected from well RS-18, the gross alpha and gross beta MDAs were greater than the required MDA. In each case, the positive result determined for the radioisotope exceeded both the required and obtained MDAs.

- Some gamma-emitting radioisotopes (eg., Pb-210, Ra-226, and Th-230) exceeded contract-required MDAs even after count times in excess of 3,100 minutes.

Groundwater sample results from the Facility wells are compared to drinking water MCLs for discussion purposes only. The groundwater beneath the SSFL Facility is not used for drinking water purposes.

Wells that were dry or contained insufficient water for radiochemistry sampling during the second quarter will be rescheduled for sampling during the third quarter 2003.

2.2.1.4 Other Monitoring

All other monitoring of near-surface groundwater quality during the second quarter 2003 yielded results consistent with historical data with the following exception:

- In a sample collected from well RS-19, perchlorate was reported below the PQL at an estimated concentration of 2.3 ug/l (Table 11). Perchlorate had not been detected in samples previously collected from this well. Duplicate and split perchlorate samples will be collected from RS-19 during the third quarter 2003.

As follow-up to the first quarter perchlorate result of 2.1 ug/l (Haley & Aldrich, 2003c), duplicate and split perchlorate samples were collected during the second quarter from well RS-25. Perchlorate was not detected in any of the RS-25 samples (Table 11).

Other shallow wells scheduled for monitoring during the second quarter that were either dry or contained insufficient groundwater for sampling will be rescheduled for sampling during the third quarter 2003.

2.2.2 Chatsworth Formation

Chatsworth Formation groundwater samples were collected from 59 Facility wells as part of the groundwater monitoring program during the second quarter of 2003. Some Chatsworth Formations wells were not sampled because they either were dry, contained insufficient water for sampling purposes, had equipment problems or malfunctions, or were inaccessible due to CFOU investigations or weather conditions. Wells that could not be sampled during the second quarter will be rescheduled for the third quarter 2003.

Quarterly sampling of the Chatsworth Formation detection monitoring wells and background wells was conducted during the second quarter 2003. As part of the northeast Area I and Area II CFOU groundwater investigation, selected Chatsworth Formation wells were sampled during the second quarter for constituents of concern.

Analytical results of Chatsworth Formation groundwater samples collected during the quarter are summarized in Tables 8 through 16. Overall, results were consistent with historic results (GWRC, 2000; Haley & Aldrich, 2001, 2002a, 2002b, 2003a, 2003b, 2003c), indicating stable plumes. Deviations from historic water quality results for analytes reported above the PQLs are discussed below. Appendix IX analytical results for samples collected from Chatsworth Formation wells are reviewed in Section 2.2.3.

Note: During the quarter, several samples were collected from multi-level FLUTes installed in Chatsworth Formation wells. Many of the discrete interval samples collected at the wells contained VOCs that were not consistent with groundwater samples collected from these wells according to standard procedures described in the Sampling and Analysis Plan. Benzene and related compounds present in samples collected from FLUTe ports are likely contaminants from FLUTe system components. These low level concentrations of toluene and benzene have been observed by investigators using FLUTe systems at other sites and are attributed to equipment components (Keller, personal communication, 2003).

2.2.2.1 LUFT Program

Semi-annual sampling of Chatsworth Formation wells monitored under the LUFT program occurred during the first quarter 2003 except at wells RD-36A and RD-53. When monitored during the second quarter 2003, well RD-36A was dry and groundwater samples could not be collected at well RD-53. The FLUTe system sampling equipment layout in well RD-53 and depth to water conditions prevented the collection of representative groundwater samples from RD-53. All LUFT program wells are scheduled for sampling in the third quarter 2003.

2.2.2.2 Detection Monitoring Program

Chatsworth Formation detection monitoring and background wells were sampled during the second quarter 2003. No VOCs were reported above the PQLs in water samples collected from detection monitoring and background wells with the following exception:

- Acetone was reported at 11 ug/l in the sample collected from background well RD-48B. Verification samples will be collected during the third quarter 2003 to determine if acetone is present in groundwater at RD-48B.

Prior to FLUTe installation, a groundwater sample collected from detection monitoring well RD-39A in April 2001 contained TCE at a concentration of 0.5 ug/l. Verification sampling has been scheduled at well RD-39A since that time, but the well has not contained sufficient water for sampling. RD-39A verification samples will be rescheduled for collection during the third quarter 2003.

TCE was not detected in the second quarter groundwater sample collected from background well RD-13. Since the fourth quarter of 2000, TCE had been detected in RD-13 groundwater and was attributed to field contamination from a temporary pump that was not properly decontaminated prior to installation (Haley & Aldrich, 2001).

2.2.2.3 Evaluation Monitoring Program/Interim Corrective Action Program

Sampling of Chatsworth Formation evaluation monitoring wells and interim corrective action wells was conducted during the first quarter of 2003. Wells that could not be sampled during the first quarter 2003 were monitored during the second quarter 2003. Results for these wells are summarized in Tables 8 through 16. All analytical results were within historic ranges (GWRC, 2000; Haley & Aldrich, 2001, 2002a, 2002b, 2003a, 2003b, 2003c) with the following exceptions:

- Concentrations of acetone, cis-1,2-dichloroethene (cis-1,2-DCE), TCE, and vinyl chloride in groundwater samples collected from

evaluation monitoring well RD-55A continued to decrease from fourth quarter 2002 concentrations:

Compound	Concentration (ug/l)			
	First Quarter 2001	Fourth Quarter 2002	First Quarter 2003	Second Quarter 2003
Acetone	4.2U	36,000	7.8U	4.5U / 4.5U*
cis-1,2-DCE	0.18U	810	84	27 / 20*
TCE	1.8	910	83	25 / 20*
Vinyl chloride	0.25U	42	5.4	6.4 / 4.4*

U = Not detected
* = Field duplicate

Concentration increases between the first quarter 2001 and the fourth quarter 2002 were accompanied by a groundwater decline of about 25 feet at RD-55A. From the fourth quarter 2002 to the second quarter 2003, the RD-55A groundwater level had increased by about 21 feet.

Acetone was not detected in second quarter samples collected from evaluation monitoring well RD-55B and interim corrective action well WS-09A.

2.2.2.4 Constituents of Concern Analyses

Per the Post-Closure Permits, Chatsworth Formation detection monitoring wells and background wells were originally sampled and analyzed for all constituents of concern in 1996. Background wells were sampled and analyzed again for constituents of concern in 1999. During 2000, all detection monitoring wells, background wells, and evaluation monitoring wells were sampled for constituents of concern (Haley & Aldrich, 2001).

As part of the on-going Chatsworth Formation Operable Unit (CFOU) Investigation, five Area I wells (RD-01, RD-02, RD-10, RD-44, and WS-05) and four Area II wells (RD-49A, RD-49B, RD-49C, and WS-06) have been sampled quarterly since 2001 for constituents of concern (Haley & Aldrich, 2002a, 2003a). Beginning in the third quarter 2002, three Area II wells (HAR-20, RD-04, and WS-09) were added to the quarterly constituent of concern monitoring. During the second quarter of 2003, all but one of the twelve CFOU wells were monitored for constituents of concern (Table 15). Well HAR-20 was dry when monitored.

Ammonia was not detected above the method detection limit (MDL) of 0.11 milligrams per liter (mg/l) in the second quarter 2003 groundwater samples. Where fluoride and nitrate were reported above the MDLs, the concentrations were below the federal drinking water primary MCL of 2.0 mg/l for fluoride and 10 mg/l for nitrate-nitrite as nitrogen. Formaldehyde

was not detected above the PQL during the second quarter. The California drinking water action level for formaldehyde is 100 ug/l.

N-nitrosodimethylamine (NDMA) was detected above the PQLs in samples collected from wells RD-02, RD-04, RD-49B, RD-49C, and WS-09 (Table 15). NDMA had been detected previously in each of these wells. The California drinking water action level of 0.01 ug/l for NDMA was exceeded in three samples: RD-04 contained 0.038 ug/l of NDMA, RD-49B contained 0.049 ug/l, and RD-49C contained 0.014 ug/l. These wells will next be monitored for NDMA during the third quarter 2003.

VOC concentrations in CFOU groundwater samples collected during the second quarter 2003 were within historic ranges with the following exception:

- Although detected in previous samples collected from WS-09 at concentrations ranging up to 2.1 ug/l, the 1,4-dioxane concentration of 3.71 ug/l in the second quarter WS-09 sample was above the California drinking water action level of 3 ug/l. WS-09 will next be monitored for 1,4-dioxane during the third quarter 2003. Action levels are health-based advisory levels for chemicals in drinking water that are established for those chemicals for which there are no formal regulatory standards. Water purveyors are required to advise their customers of the presence of these compounds in drinking water when concentrations are at or above action levels. If concentrations of these compounds exceed ten times the action levels, water purveyors are required to remove the water source from their distribution system. In all cases, it is important to note that the groundwater beneath the SSFL Facility is not used to supply drinking water. All references to MCLs and ALs are for purposes of discussion only.

2.2.2.5 Monitoring of Perimeter Wells and Private Off-site Wells

Perimeter wells near the site boundary were sampled during the second quarter of 2003 (Tables 8 through 16). None of the private off-site wells scheduled for second quarter monitoring were sampled because the wells were dry, needed repair, or were inaccessible. Analytical results for perimeter wells indicated that analytes were not detected above the PQLs in groundwater samples collected from perimeter wells, with the following exceptions:

- Discrete depth interval samples were collected from multi-level FLUTes installed in perimeter wells RD-22 and RD-57 (Table 8). Low levels of VOCs (including acetone, benzene, and toluene) were reported in the FLUTe samples. Many of these compounds were detected in FLUTe samples collected previously (Haley & Aldrich, 2002a, 2003a, 2003b, 2003c). These compounds have not

appeared in groundwater samples collected from these wells using standard procedures described in the Sampling and Analysis Plan. These low level concentrations of toluene and benzene have been observed by investigators using FLUTe systems at other sites and are attributed to equipment components (Keller, personal communication, 2003).

Trace metals and cyanide samples were collected during the second quarter 2003 from perimeter wells RD-22 and RD-57, located near the FSDF (Table 10). Results were within historic ranges with the following exceptions:

- The arsenic result for the sample collected from the FLUTe system installed in perimeter well RD-22 remained high compared to samples collected prior to 2003. Collected from FLUTe port 2 at a depth interval of approximately 330 to 430 feet, the second quarter sample contained 35 ug/l of arsenic – less than the first quarter result of 320 ug/l (Haley & Aldrich, 2003c) and less than the 50 ug/l drinking water MCL. Prior to 2003, arsenic had been detected at RD-22 once in 2001 at a concentration of 0.69 ug/l in groundwater collected following the standard procedures described in the Sampling and Analysis Plan.

- Although the manganese result for the sample collected from the FLUTe system installed in perimeter well RD-57 exceeded the secondary MCL, the result was comparable to historic groundwater samples. Manganese is a naturally occurring metal that is commonly present in groundwater in excess of the secondary MCL.

Perimeter wells will next be sampled during the third quarter 2003.

2.2.2.6 Radiochemistry Analyses

In other monitoring, results of radiological analyses of Chatsworth Formation groundwater samples collected during the second quarter 2003 were consistent with historic data (Haley & Aldrich, 2003a, 2003c).

None of the gross alpha results exceeded the drinking water MCL of 15 pCi/l except for results of samples collected from wells RD-29 and RD-34A (Table 13). Review of historic gross alpha results indicate that gross alpha activity from wells RD-29 and RD-34A periodically exceed the MCL. Results of historic isotopic uranium analyses for wells RD-29 and RD-34A and isotopic uranium analyses conducted during the second quarter 2003 (Table 14) indicated that naturally-occurring uranium and thorium isotopes are present in groundwater samples collected from these and other wells located at the SSFL Facility. The results of specific radioisotopes suggest that, in general, the slightly elevated concentrations of gross alpha activity observed in groundwater samples can be attributed

primarily to components of the naturally occurring uranium-238 decay series.

None of the gross beta or tritium results exceeded the drinking water MCLs of 50 pCi/l and 20,000 pCi/l (Table 13). Results of second quarter 2003 isotopic analyses indicate that naturally-occurring uranium isotopes are present in groundwater samples collected from the SSFL Facility (Table 14).

Split samples were collected from well RD-59A for the analysis of gross alpha, gross beta, tritium, and gamma-emitting radionuclides. Split sample results analyzed by Severn Trent Laboratories of Richland, Washington were consistent with results analyzed by primary laboratory Eberline Services of Richmond, California (Tables 13 and 14).

The radiochemistry laboratory was able to meet the contract-required minimum detectable activity (MDA) for most radiochemicals. The contract-required MDAs are equal to or less than detection limits prescribed by CCR Title 22 for drinking water. For a number of samples, the contract-required MDAs could not be met for the following reasons:

- Some of the gross alpha and gross beta MDAs were greater than the required MDA. In each case, the positive result determined for the radioisotope exceeded both the required and obtained MDAs.

- Some gamma-emitting radioisotopes (eg., Pb-210, Ra-226, and Th-234) exceeded contract-required MDAs even after count times in excess of 3,100 minutes.

- Isotopic thorium MDAs exceeded contract-required MDAs in the sample collected from well RD-34A.

Groundwater sample results from the Facility wells are compared to drinking water MCLs for discussion purposes only. The groundwater beneath the SSFL Facility is not used for drinking water purposes.

Wells that were dry or contained insufficient water for radiochemistry sampling during the second quarter will be rescheduled for sampling during the third quarter 2003.

2.2.2.7 Other Monitoring

Several Facility wells that are not monitored as part of the LUFT program, the interim corrective action, evaluation monitoring, detection monitoring, or point of compliance programs, or that are not perimeter wells, were sampled during the second quarter of 2003. In accordance with the 2003 annual monitoring schedule (Table 2), semi-annual groundwater samples that could not be collected during the first quarter from FSDF-area wells,

Radioactive Materials Handling Facility (RMHF)-area wells, Building 59-area wells, and other Facility wells were rescheduled for collection during the second quarter (Tables 8, 10, 11, 13, and 14). VOC, trace metal, perchlorate, and radiochemical results for these samples were within historic ranges (GWRC, 2000; Haley & Aldrich, 2001, 2002a, 2002b, 2003a, 2003b, 2003c) with the following exception:

- RD-34A groundwater contained 490 ug/l of iron in the second quarter 2003 sample (Table 10). Earlier iron concentrations from RD-34A ranged up to 75 ug/l (Haley & Aldrich, 2003a, 2003c). Iron is a naturally occurring metal that is commonly present in groundwater in excess of the 300 ug/l secondary drinking water MCL.

Perchlorate samples were collected from several Chatsworth Formation wells during the quarter (Table 11). Sample concentrations from the 18 Facility wells ranged from non-detected above the 0.8 ug/l MDL to 220 ug/l. The California action level for perchlorate is 4 ug/l. The second quarter 2003 perchlorate results were consistent with historical results.

2.2.3 Appendix IX Sampling

During the second quarter 2003, the seven point of compliance wells (shallow wells SH-04, RS-08, HAR-14, and HAR-15; and Chatsworth Formation wells HAR-07, HAR-16, and HAR-17) were sampled for Appendix IX constituents. Insufficient water conditions precluded the collection of a full suite of Appendix IX constituents at well HAR-16.

2.2.3.1 Data Validation

Results of the second quarter 2003 analyses were subjected to a data validation process in accordance with guidance from the United States Environmental Protection Agency (USEPA) "National Functional Guidelines for Organic Data Review" (EPA540/R-99/008, October 1999), "National Functional Guidelines for Inorganic Data Review" (EPA540/R-94/00X, February 1994), and the EPA Method specific protocol criteria, where applicable. A summary of the data validation process is included in Appendix B.

2.2.3.2 Analytical Results

Appendix IX analytical results are presented in Table 12. All Appendix IX analytical results for point of compliance wells were within historic ranges with the following exceptions:

- Antimony and sulfide were detected at 6.1 ug/l and 0.15 mg/l, respectively, in the sample collected from shallow well HAR-15. Although antimony has been detected in previous samples from HAR-15 in concentrations ranging up to 3.9 ug/l, the 6.1 ug/l

result exceeds the primary drinking water MCL of 6 ug/l. Sulfide has not been detected in previous samples collected from HAR-15. An MCL does not exist for sulfide. Under the current groundwater monitoring program, HAR-15 will next be sampled for inorganics during the second quarter 2004.

- Mercury was detected below the PQL, but above the MDL, at an estimated concentration of 0.000069 mg/l in the sample collected from shallow well SH-04. Mercury has not been detected in previous samples collected from this well. The primary drinking water MCL for mercury is 0.002 mg/l. Under the current groundwater monitoring program, SH-04 will next be sampled for mercury during the second quarter 2004.

- 1,4-Dioxane was detected for the first time at concentrations of 29 ug/l and 5.44 ug/l in samples collected from shallow well SH-04 and Chatsworth Formation well HAR-17, respectively. Detected once in 2001, 1,4-dioxane was reported at 43 ug/l in the composite sample collected from the FLUTe system installed in Chatsworth Formation well HAR-16. The California action level for 1,4-dioxane is 3 ug/l. Under the current groundwater monitoring program, these wells will next be sampled for 1,4-dioxane during the second quarter 2004.

- 1,2,3-Trichloropropane was detected between the PQL and MDL at an estimated concentration of 0.0094 ug/l in the sample collected from shallow well SH-04. This analyte had not been detected previously in SH-04 groundwater samples. The California action level for 1,2,3-trichloropropane is 0.005 ug/l. Verification samples will be collected from SH-04 during the third quarter 2003 to determine if 1,2,3-trichloropropane is present in groundwater at this well.

- NDMA was detected in shallow wells HAR-14, RS-08, and SH-04 and Chatsworth Formation wells HAR-07, HAR-16, and HAR-17 at concentrations ranging from 22 nanograms per liter (ng/l) to 18,000 ng/l. NDMA had been detected previously in groundwater samples collected from each of these wells. The California action level for NDMA is 10 ng/l.

Appendix IX compounds detected above the PQLs in point of compliance wells during the second quarter 2003 were already listed as constituents of concern; no new compounds were detected above the PQLs. 1,2,3-Trichloropropane was detected below the PQL, but above the primary drinking water MCL. Verification samples will be collected during the third quarter 2003 to determine if 1,2,3-trichloropropane is present in SH-04 groundwater. Per the Post-Closure Permits, the point of compliance wells are monitored annually for Appendix IX constituents and will next be sampled during the second quarter 2004.

2.2.4 Results of Second Quarter 2003 Verification Sampling

During the second quarter 2003, verification samples were collected from point of compliance well HAR-07. During the second quarter 2002, NDMA had been detected for the first time in HAR-07 groundwater at a concentration of 62 ng/l. Detection monitoring well RD-39A contained inadequate water for verification sampling during the quarter; this well will be rescheduled for monitoring during the third quarter 2003. Verification procedures include collecting primary and duplicate samples, a split sample, and a field blank at each well.

Verification results for the target wells and analytes are summarized below.

Well	Constituent(s)	Monitoring Program	Concentration (nanograms per liter)			
			Primary	Duplicate	Split	Field Blank
HAR-07	NDMA	Point of Compliance	55	51	54	0.50U
RD-39A	TCE	Detection	Dry			

U = Not detected

2.2.5 Proposed Third Quarter 2003 Groundwater Monitoring Schedule

Table 2 presents the 2003 groundwater monitoring schedule. Verification samples will be collected during the third quarter 2003 to determine if VOCs are present in groundwater at detection monitoring well RD-39A, background well RD-48B, and evaluation monitoring wells RD-55A and RD-55B. In addition, verification samples will be collected during the third quarter from point of compliance well SH-04 for the analysis of 1,2,3-trichloropropane. Duplicate and split perchlorate samples will be collected from well RS-19.

3. REMEDIAL SYSTEMS

3.1 Remedial Systems Activities

Remedial systems in operation at the Facility during the second quarter 2003 included one permitted air-stripping unit located at Delta. The STL-IV air-stripping unit has not operated since February 2003. The Bravo air-stripping unit was shut down in May 2002 as part of on-going site investigation activities by Montgomery Watson (2000b; Ogden, 2000). The Area I Road air-stripping unit and WS-5 Area UV/hydrogen peroxide system were shut off in late 2000 and did not operate during the reporting period. The Alfa air-stripping unit was turned off in March 2001, also to facilitate site investigation activities by MWH.

Of the 20 shallow and 12 Chatsworth Formation extraction wells at the Facility, one Chatsworth Formation well (WS-09A) was in operation during the second quarter of 2003. As part of the Near-Surface Groundwater Investigation (Ogden, 2000), all shallow extraction wells were inactive including areas along Area I Road, Area II Road, near APTF, in STL-IV, and at ECL. The remediation systems and their associated extraction wells are listed in Table 3.

Additionally, there are three interim extraction/remediation systems located in Area IV at RMHF, FSDF, and B/059. These systems treat pumped groundwater with granular activated carbon prior to discharge. The FSDF system also uses ion exchange resin in series to treat perchlorate-impacted groundwater prior to discharge. There are five Chatsworth Formation wells, one shallow well, one sump and one excavated pit associated with the interim systems.

All operating remedial systems are monitored monthly by EnviroSolve Corporation, which submits monthly reports listing routine operational data of all systems, including sample analytical data for treatment system influents and effluents. Monthly pumpage volumes and water quality results for the permitted groundwater remediation facilities are presented in Tables 3 and 4, respectively. Monthly water levels and flow rates of the extraction wells associated with the permitted systems are summarized in Table 5.

Surface water discharge is regulated by National Pollution Discharge Elimination System (NPDES) permit No. CA-0001309. Outfall 001 and Outfall 002 were each sampled during the second quarter of 2003. Discharge limits and results of water quality analyses of Outfall samples are presented in Tables 17 and 18.

3.1.1 Permitted Systems

The only permitted system in operation during the second quarter of 2003 was Delta. Total pumpage from all permitted systems during the reporting period was approximately 803,000 gallons. Monthly and cumulative pumpage volumes are listed by well in Table 3. Routine operational data for each permitted system are presented in monthly reports from EnviroSolve (2003a through 2003d).

Analytical results for trichloroethylene (TCE), cis-1,2-dichloroethylene (cis-1,2-DCE), and trans-1,2-dichloroethylene (trans-1,2-DCE) in the influent and effluent of the permitted

operational systems are presented in Table 4. No VOCs were detected in any primary or secondary effluent samples collected from the permitted systems during the reporting period.

Additionally during the second quarter, the Delta influent was sampled for perchlorate. Perchlorate was not detected in any of the samples collected during the second quarter (Table 4).

3.1.2 Interim Systems

The only interim system at the Facility consistently in operation during the second quarter 2003 was the B/059 de-watering system, consisting of extraction wells RD-24, RD-25 and RD-28. The RMHF system was inoperable during the second quarter awaiting replacement of the primary carbon vessel. The FSDF system was shut down during the second quarter as part of CFOU investigation activities occurring nearby. No VOCs were detected in any of the effluent samples collected from interim systems during the reporting period. The total pumpage from all interim systems during the quarter was approximately 132,400 gallons. Routine operational data for each interim system are presented in the monthly reports from EnviroSolve (2003a through 2003d).

4. REFERENCES

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TABLE 1

WELL CONSTRUCTION DATA
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

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 Wells										
SH-01	III	10	16	0 - 10.0	4	0 - 10.0	0 - 5.0	5.5 - 10.0	1772.84	12/11/84
SH-02	III	10.6	16	0 - 10.6	4	0 - 10.6	0 - 5.0	6.0 - 10.6	1762.76	12/11/84
SH-03	III	9.5	16	0 - 9.5	4	0 - 9.5	0 - 4.6	5.0 - 9.5	1762.53	12/12/84
SH-04	III	17	16	0 - 17.0	4	0 - 13.0	0 - 8.0	9.0 - 13.0	1765.08	12/12/84
SH-05	III	10.5	16	0 - 10.5	4	0 - 10.5	0 - 5.6	6.0 - 10.5	1762.97	12/13/84
SH-06	III	11.5	16	0 - 11.5	4	0 - 11.5	0 - 6.2	7.0 - 11.5	1776.99	12/17/84
SH-07	III	13.5	16	0 - 13.5	4	0 - 13.5	0 - 8.5	9.5 - 13.5	1775.11	01/16/85
SH-08	III	12	16	0 - 12.0	4	0 - 11.4	0 - 5.2	5.9 - 11.4	1763.25	01/17/85
SH-09	III	9	16	0 - 9.0	4	0 - 9.0	0 - 3.5	4.0 - 9.0	1761.19	01/18/85
SH-10	III	8	16	0 - 8.0	4	0 - 7.5	0 - 2.0	3.0 - 7.5	1757.69	01/18/85
SH-11	III	17.5	16	0 - 17.5	4	0 - 17.5	0 - 11.0	13.0 - 17.5	1756.00	01/16/85
RS-01	I	24.5	16	0 - 24.5	4	0 - 24.5	0 - 12.5	14.5 - 24.5	1878.60	06/08/85
RS-02	I	26	16	0 - 26.0	4	0 - 26.0	0 - 15.0	16.0 - 26.0	1901.28	06/08/85
RS-03	I	21	16	0 - 21.0	4	0 - 21.0	0 - 10.0	11.0 - 21.0	1834.22	06/08/85
RS-04	I	30	16	0 - 30.0	4	0 - 30.0	0 - 18.0	20.0 - 30.0	1826.56	06/08/85
RS-05	I	20	16	0 - 20.0	4	0 - 20.0	0 - 7.5	10.0 - 20.0	1783.73	06/07/85
RS-06	I	18	16	0 - 18.0	4	0 - 18.0	0 - 7.0	8.0 - 18.0	1757.43	06/07/85
RS-07	I	7.5	16	0 - 7.5	4	0 - 7.5	0 - 1.6	2.5 - 7.5	1731.37	06/07/85
RS-08	II	12.5	16	0 - 12.5	4	0 - 12.5	0 - 5.0	7.0 - 12.5	1820.47	06/09/85
RS-09	III	26.2	16	0 - 26.2	4	0 - 26.2	0 - 14.2	16.0 - 26.2	1735.52	09/11/85
RS-10	II	17	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	1727.48	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	16	0 - 16.0	4	0 - 16.0	0 - 5.0	6.0 - 16.0	1734.78	06/09/85
RS-15	III	12	16	0 - 12.0	4	0 - 12.0	0 - 4.5	5.0 - 12.0	1764.86	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	16	0 - 16.0	4	0 - 16.0	0 - 4.0	6.4 - 16.0	1766.52	06/10/85
RS-18	IV	13	16	0 - 13.0	4	0 - 13.0	0 - 6.0	7.5 - 13.0	1801.09	06/12/85

See last page of Table 1 for footnotes and explanations.

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			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
RS-19	I	15	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	1823.77	09/12/85
RS-21	II	29	16	0 - 29.0	4	0 - 24.6	0 - 3.5	14.5 - 24.6	1767.36	10/23/85
RS-22	II	31	16	0 - 31.0	4	0 - 31.0	0 - 4.0	21.0 - 31.0	1771.23	10/23/85
RS-23	IV	13	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	8	0 - 9.0	4	0 - 9.0	0 - 3.0	5.0 - 9.0	1804.78	08/02/88
RS-28	IV	19	8	0 - 19.0	4	0 - 19.0	0 - 9.0	14.0 - 19.0	1768.59	08/17/89
RS-29	II	38	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	12	0 - 23.0	4	0 - 21.0	0 - 9.0	10.5 - 21.0	1905.91	03/20/91
RS-31	I	18	12	0 - 18.0	4	0 - 17.5	0 - 6.0	7.0 - 17.5	1906.68	03/19/91
RS-32	I	18	12	0 - 18.0	4	0 - 17.0	0 - 6.0	6.5 - 17.0	1906.79	03/19/91
RS-54	IV	38	11-1/4	0 - 7.0	6-1/4	0 – 7.0	0 - 7.0		1836.32	08/09/93
			5-7/8	7.0 - 38.0	---	---		Open Hole		
ES-01	I	26	15	0 - 26.0	6	(v)1.3 - 25.5	0 - 6.0	15.5 - 25.5	1782.20	10/20/86
ES-02	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-03	I	27	15	0 - 27.0	6	(v)1.3 - 27.0	0 - 9.4	17.0 - 27.0	1783.39	10/21/86
ES-04	I	20	15	0 - 20.0	6	(v)1.4 - 20.0	0 - 4.0	5.8 - 20.0	1817.24	10/21/86
ES-05	I	19	15	0 - 19.0	6	(v)1.3 - 19.0	0 - 5.8	9.0 - 19.0	1818.13	10/21/86
ES-06	I	25	15	0 - 25.0	6	0 - 25.0	0 - 5.6	11.6 - 25.0	1825.41	11/04/86
ES-07	I	23.2	15	0 - 23.2	6	0 - 23.2	0 - 6.5	8.5 - 23.2	1826.53	11/05/86
ES-08	I	24.1	15	0 - 24.1	6	0.6 - 24.1	0 - 4.7	12.1 - 24.1	1826.60	11/05/86
ES-09	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	15	0 - 20.0	6	0 - 20.0	0 - 5.0	9.7 - 20.0	1829.46	11/05/86
ES-11	I	27	15	0 - 27.0	6	0 - 27.0	0 - 4.2	7.2 - 27.0	1835.07	11/06/86
ES-12	I	22.5	15	0 - 22.5	6	0 - 22.5	0 - 6.9	10.9 - 22.5	1838.19	11/06/86
ES-13	I	30	15	0 - 30.0	6	(v)1.2 - 23.6	0 - 3.1	6.0 - 23.6	1782.58	11/06/86
ES-14	III	24.6	15	0 - 24.6	6	0 - 23.5	0 - 9.4	12.9 - 23.5	1728.69	11/10/86

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			Diameter (inches)	Interval (feet)	Inside Diameter (inches)	Interval (feet)				
ES-15	III	24	15	0 - 24.0	6	0 - 24.0	0 -10.8	13.5 - 24.0	1730.21	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	15	0 - 28.0	6	0 - 28.0	0 - 7.9	10.4 - 28.0	1739.31	11/11/86
ES-18	II	35	15	0 - 35.0	6	0 - 26.9	0 - 9.1	12.9 - 26.9	1770.25	11/11/86
ES-19	II	33	15	0 - 33.0	6	0 - 26.3	0 - 6.3	10.3 - 26.3	1769.44	11/11/86
ES-20	II	35	15	0 - 35.0	6	0 - 23.0	0 - 3.5	9.8 - 23.0	1770.58	11/13/86
ES-21	II	35	12	0 - 35.0	6	0 - 35.0	0 - 2.2	15.8 - 35.0	1769.62	01/26/87
ES-22	II	35.5	12	0 - 35.5	6	0 - 35.5	0 - 5.2	17.5 - 35.5	1770.93	01/27/87
ES-23	III	20	12	0 - 20.0	6	0 - 20.0	0 - 2.4	10.6 - 20.0	1760.23	01/27/87
ES-24	III	30	12	0 - 30.0	6	0 - 30.0	0 -11.7	18.3 - 30.0	1728.67	01/28/87
ES-25	III	35	12	0 - 35.0	6	0 - 35.0	0 - 9.2	19.5 - 35.0	1737.78	01/28/87
ES-26	III	35	12	0 - 35.0	6	0 - 34.5	0 - 8.7	17.5 - 34.5	1748.01	01/28/87
ES-27	III	35	12	0 - 35.0	6	0 - 35.0	0 - 9.5	15.3 - 35.0	1740.67	01/28/87
ES-28	III	21	12	0 - 21.0	6	0 - 21.0	0 - 1.7	8.9 - 21.0	1759.15	01/28/87
ES-29	III	28	12	0 - 28.0	6	0 - 28.0	0 - 8.4	11.6 - 28.0	1760.47	01/29/87
ES-30	III	25	12	0 - 25.0	6	0 - 25.0	0 - 5.5	10.1 - 25.0	1759.51	01/29/87
ES-31	IV	25	12	0 - 25.0	6	0 - 25.0	0 - 9.7	11.6 - 25.0	1787.01	01/29/87
ES-32	III	25	12	0 - 25.0	6	0 - 21.5	0 - 4.6	7.5 - 21.5	1740.65	01/29/87
HAR-02	I	30	8	0 - 30.0	4	(v)1.1 - 30.0	0 - 6.2	15.4 - 30.0	1886.38	05/12/87
HAR-03	I	30	8	0 - 30.0	4	0 - 30.0	0 - 6.2	14.7 - 30.0	1875.48	05/13/87
HAR-04	I	29	8	0 - 29.0	4	0 - 29.0	0 - 6.4	12.1 - 29.0	1873.40	05/13/87
HAR-09	II	30.5	8	0 - 30.5	4	0 - 30.5	0 - 5.9	16.1 - 30.5	1820.62	05/16/87
HAR-11	II	31	8	0 - 31.0	4	0 - 31.0	0 - 5.0	11.2 - 31.0	1827.90	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
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	8	0 - 40.0	4	0 - 40.0	0 - 5.5	11.8 - 40.0	1797.02	05/19/87
HAR-15	II	40	8	0 - 40.0	4	0 - 40.0	0 - 5.0	10.2 - 40.0	1809.69	05/19/87
HAR-27	II	40	8	0 - 40.0	4	0 - 40.0	0 - 3.0	21 - 40.0	1719.39	06/14/87
HAR-28	II	40	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

See last page of Table 1 for footnotes and explanations.

TABLE 1
WELL CONSTRUCTION DATA
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

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-30	II	35	8	0 - 35.0	4	0 - 35.0	0 - 6.5	14 - 35.0	1806.47	06/15/87
HAR-31	II	40	8	0 - 40.0	4	0 - 40.0	0 - 6.0	22 - 40.0	1812.45	06/15/87
HAR-32	III	40	8	0 - 40.0	4	0 - 40.0	0 - 6.0	21 - 40.0	1736.58	06/17/87
HAR-33	III	35	8	0 - 35.0	4	0 - 35.0	0 - 6.0	18 - 35.0	1744.66	06/17/87
HAR-34	III	23	8	0 - 23.0	4	0 - 23.0	0 - 3.0	9 - 23.0	1751.17	06/17/87
CHATSWORTH FORMATION										
RD-01	I	506	15	0 - 26.0	10-1/8	0 - 26.0	0 - 26.0		1935.89	01/09/86
			8-5/8	26.0 - 506.0	---	---		Open Hole		
RD-02	I	400	15	0 - 26.0	10-1/8	0 - 26.0	0 - 26.0		1873.92	01/16/86
			8-5/8	26.0 - 400.0	---	---		Open Hole		
RD-03	I	300	15	0 - 27.0	10-1/8	0 - 27.0	0 - 27.0		1743.50	01/10/86
			8-5/8	27.0 - 300.0	---	---		Open Hole		
RD-04	II	496	15	0 - 27.0	10-1/8	0 - 27.0	0 - 27.0		1883.85	01/22/86
			8-5/8	27.0 - 496.0	---	---		Open Hole		
RD-05A	UL-S	158	12-1/4	0 - 29.5	8-1/4	0 - 29.5	0 - 29.5		1704.66	02/17/93
			6-1/4	29.5 - 158.0	---	---		Open Hole		
RD-05B	UL-S	310	15	0 - 27.0	10-1/8	0 - 27.0	0 - 27.0		1705.89	05/20/93
			9-7/8	27.0 - 310.0	5	0 - 310.0	0 - 248.0	257.6 - 310.0		
RD-05C	UL-S	480	17-1/2	0 - 29.0	12-1/8	0 - 28.0	0 - 29.0		1705.25	06/27/94
			11-7/8	29.0 - 421.0	6-1/4	0 - 418.0	0 - 421.0			
			6-1/4	421.0 - 480.0	---	---		Open Hole		
RD-06	UL-S	260	15	0 - 27.0	10-1/8	0 - 27.0	0 - 27.0		1617.21	01/31/86
			9-7/8	27.0 - 136.0	6-1/4	0 - 140.0		70.0 - 140.0		
			8-5/8	136.0 - 260.0	---	---		Open Hole		
RD-07	IV	300	15	0 - 25.0	10-1/8	0 - 25.0	0 - 25.0		1812.82	01/08/86
			8-5/8	25.0 - 300.0	---	---		Open Hole		
RD-08	III	50	15	0 - 27.0	10-1/8	0 - 27.0	0 - 27.0		1763.38	01/29/86
			8-5/8	27.0 - 50.0	---	---		Open Hole		
RD-09	II	200	15	0 - 37.0	10-1/8	0 - 37.0	0 - 37.0		1768.20	01/28/86
			8-5/8	37.0 - 200.0	---	---		Open Hole		

See last page of Table 1 for footnotes and explanations.

TABLE 1
WELL CONSTRUCTION DATA
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

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-10	I	400	15	0 - 30.0	10-1/8	0 - 30.0	0 - 30.0		1904.43	05/07/86
			8-3/8	30.0 - 400.0	---	---		Open Hole		
RD-11	III	71	15	0 - 30.0	10-1/8	0 - 30.0	0 - 30.0		1762.65	10/23/86
			8-3/8	30.0 - 71.0	---	---		Open Hole		
RD-12	III	72	15	0 - 30.0	10-1/8	0 - 30.0	0 - 30.0		1762.62	10/23/86
			8-3/8	30.0 - 72.0	---	---		Open Hole		
RD-13	IV	160	12	0 - 30.0	8-1/4	0 - 30.0	0 - 30.0		1840.27	07/25/89
			6-1/2	30.0 - 160.0	---	---		Open Hole		
RD-14	IV	125	12	0 - 30.0	8-1/4	0 - 30.0	0 - 30.0		1824.29	07/27/89
			6-1/2	30.0 - 125.0	---	---		Open Hole		
RD-15	IV	152	12	0 - 30.0	8-1/4	0 - 30.0	0 - 30.0		1817.70	07/27/89
			6-1/2	30.0 - 152.0	---	---		Open Hole		
RD-16	IV	220	12	0 - 30.0	8-1/4	0 - 30.0	0 - 30.0		1808.99	08/15/89
			6-1/2	30.0 - 220.0	---	---		Open Hole		
RD-17	IV	125	12	0 - 30.0	8-1/4	0 - 30.0	0 - 30.0		1836.30	08/10/89
			6-1/2	30.0 - 125.0	---	---		Open Hole		
RD-18	IV	240	12	0 - 30.0	8-1/4	0 - 30.0	0 - 30.0		1839.49	07/28/89
			6-1/2	30.0 - 240.0	---	---		Open Hole		
RD-19	IV	135	12	0 - 30.0	8-1/4	0 - 30.0	0 - 30.0		1853.13	07/31/89
			6-1/2	30.0 - 135.0	---	---		Open Hole		
RD-20	IV	127	12	0 - 30.0	8-1/4	0 - 30.0	0 - 30.0		1819.72	07/27/89
			6-1/2	30.0 - 127.0	---	---		Open Hole		
RD-21	IV	175	12	0 - 30.0	8-1/4	0 - 30.0	0 - 30.0		1866.96	08/11/89
			6-1/2	30.0 - 175.0	---	---		Open Hole		
RD-22	IV	440	12	0 - 30.0	8-1/4	0 - 30.0	0 - 30.0		1853.41	08/15/89
			6-1/2	30.0 - 440.0	---	---		Open Hole		
RD-23	IV	440	12	0 - 30.0	8-1/4	0 - 30.0	0 - 30.0		1836.37	08/16/89
			6-1/2	30.0 - 440.0	---	---		Open Hole		
RD-24	IV	150	12	0 - 30.0	8-1/4	0 - 30.0	0 - 30.0		1809.93	08/09/89
			6-1/2	30.0 - 150.0	---	---		Open Hole		

See last page of Table 1 for footnotes and explanations.

TABLE 1
WELL CONSTRUCTION DATA
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

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-25	IV	175	12	0 - 30.0	8-1/4	0 - 30.0	0 - 30.0		1810.76	08/07/89
			6-1/2	30.0 - 175.0	---	---		Open Hole		
RD-26	II	160	12	0 - 30.0	8-1/4	0 - 30.0	0 - 30.0		1880.39	08/03/89
			6-1/2	30.0 - 160.0	---	---		Open Hole		
RD-27	IV	150	12	0 - 30.0	8-1/4	0 - 30.0	0 - 30.0		1841.67	08/10/89
			6-1/2	30.0 - 150.0	---	---		Open Hole		
RD-28	IV	150	12	0 - 30.0	8-1/4	0 - 30.0	0 - 30.0		1810.92	08/10/89
			6-1/2	30.0 - 150.0	---	---		Open Hole		
RD-29	IV	100	12	0 - 30.0	8-1/4	0 - 30.0	0 - 30.0		1806.29	08/10/89
			6-1/2	30.0 - 100.0	---	---		Open Hole		
RD-30	IV	75	12	0 - 30.0	8-1/4	0 - 30.0	0 - 30.0		1768.69	08/11/89
			6-1/2	30.0 - 75.0	---	---		Open Hole		
RD-31	I	175	12	0 - 30.0	8-1/4	0 - 30.0	0 - 30.0		1945.02	08/16/89
			6-1/2	30.0 - 175.0	---	---		Open Hole		
RD-32	OS	150	17-1/2	0 - 19.0	12-1/8	0 - 19.0	0 - 19.0		1808.47	02/09/94
			11-7/8	19.0 - 99.0	6-1/4	0 - 99.0	0 - 99.0			
			5-7/8	99.0 - 150.0	---	---		Open Hole		
RD-33A	UL-N	320	17-1/2	0 - 11.0	12-1/8	0 - 11.0	0 - 11.0		1792.97	09/27/91
			11	11.0 - 100.0	6-1/4	0 - 100.0	0 - 100.0			
			5-1/2	100.0 - 320.0	---	---		Open Hole		
RD-33B	UL-N	415	17-1/2	0 - 20.0	12-1/8	0 - 20.0	0 - 20.0		1793.21	09/27/91
			11	20.0 - 360.0	6-1/4	0 - 360.0	20.0 - 360.0			
			6-1/4	360.0 - 415.0	---	---		Open Hole		
RD-33C	UL-N	520	17-1/2	0 - 10.0	12-1/8	0 - 10.0	0 - 10.0		1793.54	09/21/91
			11	10.0 - 480.0	6-1/4	0 - 480.0	0 - 480.0			
			6-1/4	480.0 - 520.0	---	---		Open Hole		
RD-34A	UL-N	60	12-1/4	0 - 16.0	8-1/4	0 - 16.0	0 - 16.0		1761.83	07/25/91
			6-1/2	16.0 - 60.0	---	---		Open Hole		

See last page of Table 1 for footnotes and explanations.

TABLE 1
WELL CONSTRUCTION DATA
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

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-34B	UL-N	240	17-1/2	0 - 30.0	12-1/8	0 - 30.0	0 - 30.0		1762.51	08/11/91
			11	30.0 - 180.0	6-1/4	0 - 180.0	0 - 180.0			
			6-1/4	180.0 - 240.0	---	---		Open Hole		
RD-34C	UL-N	450	17-1/2	0 - 30.0	12-1/8	0 - 30.0	0 - 30.0		1762.60	08/10/91
			11	30.0 - 380.0	6-1/4	0 - 380.0	0 - 380.0			
			6-1/4	380.0 - 450.0	---	---		Open Hole		
RD-35A	I	110	12-1/4	0 - 19.5	8-1/4	0 - 19.5	0 - 19.5		1906.68	01/24/93
			6-1/4	19.5 - 110.0	4	0 - 105.5	0 - 30.0	65.0 - 105.5		
RD-35B	I	328	24	0 – 10	18	0 - 11	0 - 11		1905.65	01/18/99
			17-1/2	10 – 162	12	0 - 158	0 - 162			
			9-7/8	162 – 328	4	0 - 324	0 - 292	303 - 324		
			3	328 – 359	---	---	328 - 359			
RD-36A	OS	95	17-1/2	0 – 20.0	12-1/8	0 - 20.0	0 - 20.0		1913.09	01/14/94
			6-1/4	20.0 – 95.0	---	---		Open Hole		
RD-36B	OS	170	17-1/2	0 – 20.5	12-1/8	0 - 20.5	0 - 20.5		1915.26	03/13/94
			11-7/8	20.5 – 120.0	6-1/4	0 - 120.0	0 - 120.0			
			5-7/8	120.0 – 170.0	---	---		Open Hole		
RD-36C	OS	466	26	0 – 20.0	20	0 - 20.0	0 - 20.0		1913.82	04/23/94
			15	20.0 – 198.0	10-1/8	0 - 197.0	0 - 198.0			
			5-7/8	198.0 – 466.0	4	0 - 455.5	0 - 381.0	405.0 - 455.5		
RD-36D	OS	605	24-1/2	0 – 10	18	0 - 10	0 - 10		1920.08	09/10/97
			15	10 – 554	10	0 - 550	0 - 550			
			9-7/8	554 – 608	4	0 - 605	0 - 560	575 - 605		
RD-37	OS	400	17-1/2	0 – 38.0	12-1/8	0 - 38.0	0 - 38.0		1870.01	01/28/94
			11-7/8	38.0 – 260.0	4	0 - 377.0				
			7-7/8	260.0 – 400.0				272.0 - 377.0		
RD-38A	OS	120	17-1/2	0 – 20.0	12-1/8	0 - 20.0	0 - 20.0		1878.92	02/12/94
			6-1/2	20.0 – 120.0	---	---		Open Hole		

See last page of Table 1 for footnotes and explanations.

TABLE 1
WELL CONSTRUCTION DATA
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

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-38B	OS	370	24	0 - 6	18	0 - 6	0 - 6		1881.45	12/15/98
			17-1/2	6 - 170	12	0 - 161	0 - 170			
			11-7/8	170 - 279	6	0 - 277	0 - 279			
			5-1/2	279 - 370	---	---		Open Hole		
RD-39A	OS	159	17-1/2	0 – 20.0	12-1/8	0 - 20.0	0 - 20.0		1960.23	02/02/94
			6-1/2	20.0 – 159.0	---	---		Open Hole		
RD-39B	OS	477	24	0 – 12	16	0 - 12	0 - 12		1959.48	11/11/97
			15	12 – 213	10	0 - 210	0 - 213			
			9-1/2	213 – 477	4	0 – 470	0 – 424	440 - 470		
			6-1/2	477 – 500	---	---	477 – 500			
RD-40	II	300	12-1/4	0 - 19.5	8-1/4	0 - 19.5	0 - 19.5		1972.02	01/08/93
			6-1/4	19.5 - 300.0	---	---		Open Hole		
RD-41A	II	120	12-1/4	0 - 19.5	8-1/4	0 - 19.5	0 - 19.5		1774.48	01/10/93
			6-1/4	19.5 - 120.0	---	---		Open Hole		
RD-41B	II	390	17-1/2	0 - 19.5	12-1/8	0 - 19.5	0 - 19.5		1774.71	10/19/93
			11-7/8	19.5 - 340.0	6-1/4	0 - 336.0	0 - 340.0			
			5-7/8	340.0 - 390.0	---	---		Open Hole		
RD-41C	II	558	17-1/2	0 - 19.5	12-1/8	0 - 19.5	0 - 19.5		1773.73	10/05/93
			11-1/4	19.5 - 492.0	6-1/4	0 - 491.0	0 - 492.0			
			6-1/4	492.0 - 558.0	---	---		Open Hole		
RD-42	II	120	12-1/4	0 - 19.5	8-1/4	0 - 19.5	0 - 19.5		1945.46	01/09/93
			6-1/4	19.5 - 120.0	---	---		Open Hole		
RD-43A	OS	98	17-1/2	0 - 19.5	12-1/8	0 - 19.5	0 - 19.5		1680.16	09/09/94
			6-1/2	19.5 - 98.0	---	---		Open Hole		
RD-43B	OS	295	17-1/2	0 - 20.0	12-1/8	0 - 20.0	0 - 20.0		1680.21	10/25/94
			11-7/8	20.0 - 240.5	6-1/4	0 – 240.5	0 – 30.5			
			6-1/2	240.5 – 295.0	---	---	115.5 – 240.5	Open Hole		

See last page of Table 1 for footnotes and explanations.

TABLE 1
WELL CONSTRUCTION DATA
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

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-43C	OS	439.5	17-1/2	0 - 20.0	12-1/8	0 - 20.0	0 - 20.0		1679.31	10/10/94
			11-7/8	20.0 - 370.0	6-1/4	0 - 370.0	5.0 - 140.0			
			6-1/2	370.0 - 439.5	---	---	183.0 - 219.0	Open Hole		
							318.0 - 368.0			
RD-44	I	485	17-1/2	0 - 20.0	12-1/8	0 - 20.0	0 - 20.0		2035.92	03/13/93
			6-1/4	20.0 - 485.0	---	---		Open Hole		
RD-45A	I	480	17-1/2	0 - 19.5	12-1/8	0 - 19.5	0 - 19.5		1841.59	02/06/93
			6-1/2	19.5 - 480.0	---	---		Open Hole		
RD-45B	I	590	17-1/2	0 - 20.0	12-1/8	0 - 20.0	0 - 20.0		1840.09	09/11/94
			11-7/8	20.0 - 538.0	6-1/4	0 - 538.0	0 - 127.0			
			6-1/2	538.0 - 590.0	---	---	471.0 - 538.0	Open Hole		
RD-45C	I	798	24	0 - 20.0	16	0 - 19.0	0 - 20.0		1835.74	08/26/94
			11-7/8	20.0 - 750.0	6-1/4	0 - 750.0	0 - 135.0			
			6-1/4	750.0 - 798.0	---	---	483.0 - 540.0	Open Hole		
							590.0 - 750.0			
RD-46A	I	140	12-1/4	0 - 29.5	8-1/4	0 - 29.5	0 - 29.5		1805.80	01/13/93
			6-1/4	29.5 - 140.0	---	---		Open Hole		
RD-46B	I	328	24	0 - 20	18	0 - 20	0 - 20		1807.19	12/19/98
			17-1/2	20 - 193	12	0 - 190	0 - 193			
			9-7/8	193 - 328	4	0 - 325	0 - 281	293 - 325		
			3	328 - 366	---	---	328 - 366			
RD-47	I	710	17-1/2	0 - 19.0	12-1/8	0 - 19.0	0 - 19.0		2045.72	04/01/93
			6-1/2	19.0 - 710.0	---	---		Open Hole		
RD-48A	UL-S	110	12-1/4	0 - 20.0	8-1/4	0 - 20.0	0 - 20.0		1736.54	03/15/93
			6-1/2	20.0 - 110.0	---	---		Open Hole		
RD-48B	UL-S	248	17-1/2	0 - 29.5	12-1/8	0 - 29.5	0 - 29.5		1735.40	05/26/93
			11-1/4	29.5 - 200.0	6-1/4	0 - 200.0	0 - 198.5			
			6-1/4	200.0 - 248.0	---	---		Open Hole		

See last page of Table 1 for footnotes and explanations.

TABLE 1
WELL CONSTRUCTION DATA
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

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-48C	UL-S	438	17-1/2	0 - 30.0	12-1/8	0 - 30.0	0 - 30.0		1734.95	05/16/93
			11-1/4	30.0 - 371.0	6-1/4	0 - 371.0	0 - 371.0			
			6-1/4	371.0 - 438.0	---	---		Open Hole		
RD-49A	II	50	12-3/4	0 - 18.5	8-1/4	0 - 18.5	0 - 18.5		1867.25	06/08/93
			6-1/4	18.5 - 50.0	---	---		Open Hole		
RD-49B	II	298	17-1/2	0 - 20.0	12-1/8	0 - 20.0	0 - 20.0		1867.95	06/14/93
			11-7/8	20.0 - 250.0	6-1/4	0 - 250.0	0 - 250.0			
			5-7/8	250.0 - 298.0	---	---		Open Hole		
RD-49C	II	558	17-1/2	0 - 19.0	12-1/8	0 - 19.0	0 - 19.0		1869.45	07/07/93
			11-7/8	19.0 - 500.0	6-1/4	0 - 491.0	0 - 491.0			
			6-1/4	500.0 - 558.0	---	---		Open Hole		
RD-50	IV	195	12-3/4	0 - 18.5	8-1/4	0 - 18.5	0 - 18.5		1914.88	05/28/93
			6-1/4	18.5 - 195.0	---	---		Open Hole		
RD-51A	II	250	24	0 - 50.0	12-1/8	0 - 50.0	0 - 50.0		1832.51	07/11/91
			11-3/4	50.0 - 160.0	6-1/4	0 - 160.0	0 - 160.0			
			5-1/2	160.0 - 250.0	---	---		Open Hole		
RD-51B	II	370	24	0 - 48.0	12-1/8	0 - 48.0	0 - 48.0		1832.68	07/11/91
			11-3/4	48.0 - 300.0	6-1/4	0 - 300.0	0 - 300.0			
			5-1/2	300.0 - 370.0	---	---		Open Hole		
RD-51C	II	602	14	0 - 13.5	12-1/8	0 - 13.5	0 - 13.5		1831.65	07/09/91
			11-3/4	13.5 - 510.0	6-1/4	0 - 510.0	0 - 510.0			
			5-1/2	510.0 - 602.0	---	---		Open Hole		
RD-52A	I	137	12-1/4	0 - 19.5	8-1/4	0 - 19.5	0 - 19.5		1755.09	01/25/93
			6-1/2	19.5 - 137.0	---	---		Open Hole		
RD-52B	I	318	17-1/2	0 - 24.0	12-1/8	0 - 24.0	0 - 24.0		1712.15	12/06/93
			11-1/4	24.0 - 200.0	6-1/4	0 - 200.0	0 - 199.0			
			5-7/8	200.0 - 318.0	---	---		Open Hole		

See last page of Table 1 for footnotes and explanations.

TABLE 1
WELL CONSTRUCTION DATA
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

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-52C	I	678	17-1/2	0 - 20.0	12-1/8	0 - 20.0	0 - 20.0		1712.83	11/29/93
			11-7/8	20.0 - 450.0			0 - 620.0			
			11-1/4	450.0 - 620.0	6-1/4	0 - 620.0				
			6-1/4	620.0 - 678.0	---	---		Open Hole		
RD-53	I	159	14	0 - 20.0	12-1/8	0 - 20.0	0 - 20.0		1909.19	05/15/91
			12	20.0 - 77.0	6-1/4	0 - 77.0	0 - 77.0			
			5-1/2	77.0 - 159.0	---	---		Open Hole		
RD-54A	IV	278	17-1/2	0 - 19.0	12-1/8	0 - 19.0	0 - 19.0		1834.99	08/07/93
			11-1/4	19.0 - 119.0	6-1/4	0 - 119.0	0 - 119.0			
			5-7/8	119.0 - 278.0	---	---		Open Hole		
RD-54B	IV	437	17-1/2	0 - 19.0	12-1/8	0 - 19.0	0 - 19.0		1835.48	08/31/93
			11-1/4	19.0 - 379.0	6-1/4	0 - 379.0	0 - 379.0			
			5-7/8	379.0 - 437.0	---	---		Open Hole		
RD-54C	IV	638	17-1/2	0 - 20.0	12-1/8	0 - 20.0	0 - 20.0		1834.58	07/27/93
			11-1/4	20.0 - 558.0	6-1/4	0 - 557.0	0 - 557.0			
			6-1/4	558.0 - 638.0	---	---		Open Hole		
RD-55A	III	106	17-1/2	0 - 28.0	12-1/8	0 - 28.0	0 - 28.0		1756.87	02/19/93
			6-1/4	28.0 - 106.0	---	---		Open Hole		
RD-55B	III	250	17-1/2	0 - 20.0	12-1/8	0 - 20.0	0 - 20.0		1757.19	04/19/93
			11	20.0 - 199.5	6-1/4	0 - 199.5	0 - 199.5			
			5-7/8	199.5 - 250.0	---	---		Open Hole		
RD-56A	UL-N	397.5	17-1/2	0 - 20.5	12-1/8	0 - 20.5	0 - 20.5		1758.62	03/08/94
			6-1/2	20.5 - 397.5	---	---		Open Hole		
RD-56B	UL-N	463	22	0 - 10	16	0 - 10	0 -10		1761.83	07/24/97
			15	10 - 453	10	0 - 443	0 - 443			
			6-1/2	453 - 463	---	---		Open Hole		
RD-57	UL-N	419	17-1/2	0 - 19.5	12-1/8	0 - 19.5	0 - 19.5		1774.15	02/23/94
			6-1/2	19.5 - 419.0	---	---		Open Hole		
RD-58A	III	126	12-1/4	0 - 19.5	8-1/4	0 - 19.5	0 - 19.5		1756.11	02/01/93
			6-1/4	19.5 - 126.0	---	---		Open Hole		

See last page of Table 1 for footnotes and explanations.

TABLE 1
WELL CONSTRUCTION DATA
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

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-58B	III	268	17-1/2	0 - 20.0	12-1/8	0 - 20.0	0 - 20.0		1761.34	08/28/94
			11-7/8	20.0 - 220.0	6-1/4	0 - 220.0	0 - 220.0			
			6-1/2	220.0 - 268.0	---	---		Open Hole		
RD-58C	III	498	17-1/2	0 - 19.0	12-1/8	0 - 19.0	0 - 19.0		1759.59	08/09/94
			11-7/8	19.0 - 450.0	6-1/4	0 - 450.0	0 - 450.0			
			6-1/2	450.0 - 498.0	---	---		Open Hole		
RD-59A	OS	58	17-1/2	0 - 21.0	12-1/8	0 - 21.0	0 - 21.0		1340.50	05/19/94
			6-1/2	21.0 - 58.0	---	---		Open Hole		
RD-59B	OS	214	17-1/2	0 - 19.5	12-1/8	0 - 19.5	0 - 19.5		1342.49	07/02/94
			6-1/2	19.5 - 214.0	2	0 - 209.0	0 - 161.0	178.0 - 209.0		
RD-59C	OS	398	17-1/2	0 - 19.0	12-1/8	0 - 19.0	0 - 19.0		1345.41	07/02/94
			6-1/2	19.0 - 398.0	2	0 - 397.0	0 - 186.0			
							250.0 - 328.0	345.5 - 397.0		
RD-60	III	126	12-1/4	0 - 19.5	8-1/4	0 - 19.5	0 - 19.5		1870.40	01/21/93
			6-1/4	19.5 - 126.0	---	---		Open Hole		
RD-61	I	129	17-1/2	0 - 19.0	12-1/8	0 - 19.0	0 - 19.0		1843.88	04/26/94
			6-1/4	19.0 - 129.0	---	---		Open Hole		
RD-62	UL-S	238	17-1/2	0 - 20.7	12-1/8	0 - 20.7	0 - 19.5		1837.20	05/06/94
			6-1/2	20.7 - 238.0	---	---		Open Hole		
RD-63	IV	230	12-3/4	0 - 20.0	8-1/4	0 - 20.0	0 - 20.0		1764.85	05/10/94
			6-1/2	20.0 - 230.0	---	---		Open Hole		
RD-64	IV	398	12-1/4	0 - 19.0	8-1/4	0 - 19.0	0 - 19.0		1852.40	05/19/94
			6-1/2	19.0 - 398.0	---	---		Open Hole		
RD-65	IV	397	12-3/4	0 - 19.0	8-1/4	0 - 19.0	0 - 19.0		1819.14	08/14/94
			6-1/2	19.0 - 397.0	---	---		Open Hole		
RD-66	OS	225	22	0 - 19	12	0 - 19	0 - 19		1730.79	07/28/97
			6-1/2	19 - 225	---	---		Open Hole		
RD-67	UL-S	102	17-1/2	0 - 20	12	0 - 20	0 - 20		1901.71	09/19/97
			6-1/2	20 - 102	---	---		Open Hole		

See last page of Table 1 for footnotes and explanations.

TABLE 1
WELL CONSTRUCTION DATA
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

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-68A	OS	90	17-1/2	0 - 19	12	0 - 19	0 - 19		1307.64	06/05/97
			6-1/4	19 - 90	---	---		Open Hole		
RD-68B	OS	272	---	0 - 52	12	0 - 52	0 - 224	240-270	1312.44	06/11/97
			11-7/8	52 - 272	4	0 - 270				
RD-69	I	103	17-1/2	0 - 19	12	0 - 19	0 - 19		1831.28	06/16/97
			6-1/4	19 - 103	---	---		Open Hole		
RD-70	UL-N	278	17-1/2	0 - 19	12	0 - 19	0 - 19		1732.26	06/14/97
			6-1/2	19 - 278	---	---		Open Hole		
RD-71	OS	281	17-1/2	0 - 20	12	0 - 20	0 - 20		1740.02	07/27/97
			6-1/2	20 - 281	---	---		Open Hole		
RD-72	I	182	24	0 - 27	12	0 - 27	0 - 27		1907.25	12/23/97
			6-1/2	27 - 182	---	---		Open Hole		
RD-73	I	141	12	0 - 20	10	0 - 20	0 - 20		1901.60	07/19/95
			6	20 - 141	---	---		Open Hole		
RD-74	IV	101	17-1/2	0 - 30	12	0 - 30	0 - 30		1810.90	01/21/99
			6-1/2	30 - 101	---	---		Open Hole		
WS-04A	I	502	13	0 - 300.0	10-1/4	0 - 288.0	Unknown	96.0 - 288.0	1749.77	1953
			10	300.0 - 502.0	---	---		Open Hole		
WS-05	I	2304	>12-1/4	0 - 40.0	12	0 - 40.0	0 - 55.0		1830.20	1951
			12-1/4	40.0 - 2304.0	---	---		Open Hole		
WS-06	I	1440	30	0 - 6.0	12-1/8	0 - 450.0	0 - 6.0	306.0 - 450.0	1932.72	1953
			13	6.0 - 450.0	---	---				
			8-1/4	450.0 - 1440.0				Open Hole		
WS-07	IV	700	15	0 - 400.0	12-1/8	0 - 400.0	Unknown	216.0 - 400.0	1826.19	1954
			10	400.0 - 700.0	---	---		Open Hole		
WS-08	III	700	15	0 - 400.0	12-1/8	0 - 400.0	Unknown	192.0 - 400.0	1794.39	1954
			10	400.0 - 700.0	---	---		Open Hole		
WS-09	II	1800	30	0 - 17.0	12-1/8	0 - 17.0	0 - 14.0		1883.99	1955
			15	17.0 - 690.0	---	---				
			10	690.0 - 1800.0				Open Hole		

See last page of Table 1 for footnotes and explanations.

TABLE 1
WELL CONSTRUCTION DATA
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

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-09A	II	541	30	0 - 34.0	14	0 - 34.0	0 - 20.0		1646.00	1956
			15	34.0 - 541.0	12-1/8	0 - 541.0				
					8-1/4	0 - 539.0		20.0 - 539.0		
WS-09B	II	220	16	0 - 220.0	---	---	Unknown	Open Hole	1796.89	1956
WS-11	III	677	13	0 - 400.0	12-1/8	0 - 400.0	Unknown	200.0 - 400.0	1748.70	1956
			9	400.0 - 677.0	8-1/4	365.5 - 615.0		365.0 - 615.0		
								Open Hole		
WS-12	I	1768	15	0 - 408.0	14	0 - 375.0	Unknown		1705.98	1956
			12	408.0 - 1768.0	---	---		Open Hole		
WS-13	II	940	>13	0 - 750.0	12-1/8	0 - 750.0	0 - 15.0	22.0 - 750.0	1658.62	1957
			11-1/2	750.0 - 940.0	---	---		Open Hole		
WS-14	I	1272	>16	0 - 40.0	16	0 - 40.0	Unknown		1878.23	1957
			12-3/4	40.0 - 1272.0	---	---		Open Hole		
WS-SP	II	203	Unknown	0 - 203.0	6	0 - 203.0	Unknown	Unknown	1776.76	Unknown
HAR-01	I	110	15	0 - 30.0	10-1/8	0 - 30.0	0 - 30.0		1874.13	05/16/87
			8	30.0 - 110.0	---	---		Open Hole		
HAR-05	II	180	15	0 - 30.0	10-1/8	0 - 30.0	0 - 30.0		1812.65	05/16/87
			8	30.0 - 180.0	---	---		Open Hole		
HAR-06	II	160	15	0 - 30.0	10-1/8	0 - 30.0	0 - 30.0		1815.03	05/16/87
			8	30.0 - 160.0	---	---		Open Hole		
HAR-07	II	100	15	0 - 30.0	10-1/8	0 - 30.0	0 - 30.0		1728.38	05/20/87
			8	30.0 - 100.0	---	---		Open Hole		
HAR-08	II	130	15	0 - 30.0	10-1/8	0 - 30.0	0 - 30.0		1730.75	05/20/87
			8	30.0 - 130.0	---	---		Open Hole		
HAR-16	I	120	15	0 - 30.0	10-1/8	0 - 30.0	0 - 30.0		1872.31	05/20/87
			8	30.0 - 120.0	---	---		Open Hole		
HAR-17	II	100	15	0 - 30.0	10-1/8	0 - 30.0	0 - 30.0		1711.59	05/20/87
			8	30.0 - 100.0	---	---		Open Hole		
HAR-18	III	80	15	0 - 30.0	10-1/8	0 - 30.0	0 - 30.0		1749.41	05/20/87
			8	30.0 - 80.0	---	---		Open Hole		

See last page of Table 1 for footnotes and explanations.

TABLE 1
WELL CONSTRUCTION DATA
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

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	0 - 30.0	10-1/8	0 - 30.0	0 - 30.0		1833.42	06/17/87
			8	30.0 - 220.0	---	---		Open Hole		
HAR-20	II	230	15	0 - 30.0	10-1/8	0 - 30.0	0 - 30.0		1830.47	06/16/87
			8	30.0 - 230.0	---	---		Open Hole		
HAR-21	II	130	15	0 - 30.0	10-1/8	0 - 30.0	0 - 30.0		1821.30	06/18/87
			8	30.0 - 130.0	---	---		Open Hole		
HAR-22	II	90	15	0 - 30.0	10-1/8	0 - 30.0	0 - 30.0		1816.41	06/18/87
			8	30.0 - 90.0	---	---		Open Hole		
HAR-23	III	90	15	0 - 30.0	10-1/8	0 - 30.0	0 - 30.0		1805.87	06/18/87
			8	30.0 - 90.0	---	---		Open Hole		
HAR-24	I	110	15	0 - 30.0	10-1/8	0 - 30.0	0 - 30.0		1906.89	06/18/87
			8	30.0 - 110.0	---	---		Open Hole		
HAR-25	I	90	15	0 - 30.0	10-1/8	0 - 30.0	0 - 30.0		1889.75	06/18/87
			8	30.0 - 90.0	---	---		Open Hole		
HAR-26	III	90	15	0 - 30.0	10-1/8	0 - 30.0	0 - 30.0		1763.23	06/18/87
			8	30.0 - 90.0	---	---		Open Hole		
PRIVATE OFF-SITE WELLS AND SPRINGS										
OS-01	OS	288	Unknown	Unknown	10	0 - 52	Unknown		1310.34	Unknown
(converted to RD-68B)					---	---		Open Hole		
OS-02	OS	700	Unknown	Unknown	10	0 - 17	0 - 17		1237.01	03/18/59
					---	---		Open Hole		
OS-03	OS	100	Drilled with		8-1/4	0 - 59	0 - 30	30 - 60	1298.15	06/12/50
			cable tools		---	---		Open Hole		
OS-04	OS	Well Construction Data Unresolved or Not Available							1334.00	
OS-05	OS	Well Construction Data Unresolved or Not Available								
OS-08(S)	OS									
OS-10	OS	600	18	0 - 10	12-1/8	0 - 10	0 - 10		1016.97	12/54
			12	10 - 600	---	---		Open Hole		
OS-12(S)	OS									
OS-13(S)	OS									

See last page of Table 1 for footnotes and explanations.

TABLE 1
WELL CONSTRUCTION DATA
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

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-15	OS	218	Drilled with		8-1/4	0 - 40	0 - 40		1404.86	08/27/60
			cable tools		---	---		Open Hole		
OS-16	OS	Well Construction Data Unresolved or Not Available							1785.05	
OS-17	OS	425	Drilled with		0 – 25			1564.07		
			cable tools	---	---		Open Hole			
OS-21	OS	Well Construction Data Unresolved or Not Available							1900.39	
OS-24	OS	515	10	0 - 40	6-1/4	0 - 40	0 - 40		1947.30	12/02/87
			6	40 - 515	---	---		Open Hole		
OS-25	OS	515	10	0 - 36	6-1/4	0 - 36	0 - 36		2043.58	12/10/87
			6	36 - 515	---	---		Open Hole		
OS-26	OS	515	10	0 - 40	6-1/4	0 - 40	0 - 40		2080.58	11/16/87
			6	40 - 515	---	---		Open Hole		
OS-27	OS	477	10-1/4	0 - 30	10	0 - 5.5	0 - 30		2043.90	05/16/95
			6-1/8	30 - 477	6	0 - 30		Open Hole		

See last page of Table 1 for footnotes and explanations.

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.
UL-N	=	Undeveloped land north of Facility
UL-S	=	Undeveloped land south of Facility.
OS	=	Off-site

TABLE 2
2003 ANNUAL MONITORING SCHEDULE
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Area	Sponsor	ANALYTICAL METHODS				Monitoring Program
			First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
SHALLOW SH WELLS							
SH-1	III	R					
SH-2	III	R					
SH-3	III	R	8260		8260		Evaluation monitoring
SH-4	III	R		App IX		8260	Point of compliance
SH-5	III	R					
SH-6	III	R					
SH-7	III	R					
SH-8	III	R					
SH-9	III	R					
SH-10	III	R					
SH-11	III	R	8260 Perchlorate		8260		Evaluation monitoring
ECL French-drain	III	R	8260		8260		Interim corrective action
SHALLOW RS WELLS							
RS-1	I	N	8260 8015 Perchlorate		8260 8015		Evaluation monitoring B/351
RS-2	I	N	Perchlorate				
RS-3	I	R					
RS-4	I	N					
RS-5	I	N					
RS-6	I	R	Perchlorate				
RS-7	I	N	8260		8260		Evaluation monitoring
RS-8	II	N		App IX		8260	Point of compliance
RS-9	III	R					
RS-10	II	N	8260 Perchlorate		8260		Evaluation monitoring
RS-11	IV	D	8260 Perchlorate 900.0 901.1 906.0		8260		Evaluation monitoring
RS-12	III	R					
RS-13	II	N	8260 Perchlorate		8260		Evaluation monitoring
RS-14	III	R					
RS-15	III	N					
RS-16	IV	D	8260 Perchlorate 900.0 906.0				B/056 landfill
RS-17	III	R					

See last page of Table 2 for footnotes and explanations.

TABLE 2
2003 ANNUAL MONITORING SCHEDULE
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Area	Sponsor	ANALYTICAL METHODS				Monitoring Program
			First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RS-18	IV	D	8260 Perchlorate 900.0 901.1 906.0 TM U, Th		8260 900.0 901.1 906.0 U,Th		FSDF
RS-19	I	N	8260 Perchlorate		8260		Evaluation monitoring
RS-20	I	R					
RS-21	II	R	8260		8260		Evaluation monitoring
RS-22	II	R					
RS-23	IV	D	8260 8015 Perchlorate 900.0 901.1 906.0 U				
RS-24	IV	D	Perchlorate 900.0 901.1 906.0 U				
RS-25	IV	D	Perchlorate 900.0 901.1 906.0 U				
RS-27	IV	D	Perchlorate				
RS-28	IV	D	8260 Perchlorate 900.0 901.1 906.0				RMHF
RS-29	II	R					
RS-30	I	R	8260 8015 Perchlorate		8260 8015		B/351
RS-31	I	R	8260 8015		8260 8015		B/351
RS-32	I	R	8260 8015		8260 8015		B/351
RS-54	IV	D	8260 TM Perchlorate 900.0 901.1 906.0, U, Th		8260 TM Perchlorate 900.0 901.1 906.0, U, Th		FSDF

See last page of Table 2 for footnotes and explanations.

TABLE 2
2003 ANNUAL MONITORING SCHEDULE
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Area	Sponsor	ANALYTICAL METHODS				Monitoring Program
			First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
SHALLOW ES WELLS							
ES-1	I	R	8260		8260		Interim corrective action
ES-2	I	R	8260 Perchlorate				
ES-3	I	R	8260		8260		Interim corrective action
ES-4	I	R	8260		8260		Interim corrective action
ES-5	I	R	8260		8260		Interim corrective action
ES-6	I	R	8260		8260		Interim corrective action
ES-7	I	R	8260		8260		Interim corrective action
ES-8	I	R					
ES-9	I	R	8260 Perchlorate				
ES-10	I	R	8260 Perchlorate				
ES-11	I	R	8260		8260		Interim corrective action
ES-12	I	R	8260 Perchlorate				
ES-13	I	R					
ES-14	III	R	8260		8260		Interim corrective action
ES-15	III	R					
ES-16	III	R					
ES-17	III	R	8260		8260		Interim corrective action
ES-18	II	R					
ES-19	II	R					
ES-20	II	R					
ES-21	II	R	8260		8260		Interim corrective action
ES-22	II	R	8260		8260		Interim corrective action
ES-23	III	R	8260		8260		Interim corrective action
ES-24	III	R	8260 Perchlorate		8260		Interim corrective action
ES-25	III	R					
ES-26	III	R	8260		8260		Interim corrective action
ES-27	III	R	8260		8260		Interim corrective action
ES-28	III	R					
ES-29	III	R					
ES-30	III	R	8260		8260		Interim corrective action
ES-31	IV	D	8260 Perchlorate 900.0 901.1 906.0				
ES-32	III	R	8260		8260		Interim corrective action
SHALLOW HAR WELLS							
HAR-2	I	R					
HAR-3	I	R	8260		8260		Evaluation monitoring
HAR-4	I	R	8260				Interim corrective action
HAR-9	II	N					
HAR-11	II	N	8260 8015		8260		Evaluation monitoring

See last page of Table 2 for footnotes and explanations.

TABLE 2
2003 ANNUAL MONITORING SCHEDULE
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Area	Sponsor	ANALYTICAL METHODS				Monitoring Program
			First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
HAR-12	III	N					
HAR-13	II	N					
HAR-14	II	N		App IX		8260	Point of compliance
HAR-15	II	N		App IX		8260	Point of compliance
HAR-27	II	N	8260		8260		Evaluation monitoring
HAR-28	II	N					
HAR-29	II	R					
HAR-30	II	N					
HAR-31	II	N					
HAR-32	III	R					
HAR-33	III	R					
HAR-34	III	R					
CHATSWORTH FORMATION RD WELLS							
RD-1	I	R	8260 Perchlorate		8260 Perchlorate		Interim corrective action
RD-2	I	R	8260		8260		Interim corrective action
RD-3	I	N	8260		8260		Evaluation monitoring
RD-4	II	R	8260		8260		Interim corrective action
RD-5A	UL, S of Area II	N	8260		8260		Evaluation monitoring
RD-5B	UL, S of Area II	N	8260	8260	8260	8260	Detection monitoring
RD-5C	UL, S of Area II	N	8260	8260	8260	8260	Detection monitoring
RD-6	UL, S of Area II	N	8260	8260	8260	8260	Background
RD-7	IV	D	8260 900.0 901.1 906.0, U, Th		8260 900.0 906.0		B/056 landfill FLUTe sampling system
RD-8	III	R					
RD-9	II	R	8260		8260		Interim corrective action
RD-10	I	N	8260 Perchlorate		8260 Perchlorate		Evaluation monitoring FLUTe sampling system
RD-11	III	R					
RD-12	III	R					
RD-13	IV	D	8260	8260	8260	8260	Background
RD-14	IV	D	8260 Perchlorate				
RD-15	IV	D	8260 TM Perchlorate 900.0 901.1 906.0 U				
RD-16	IV	D	8260	8260	8260	8260	Detection monitoring

See last page of Table 2 for footnotes and explanations.

TABLE 2
2003 ANNUAL MONITORING SCHEDULE
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Area	Sponsor	ANALYTICAL METHODS				Monitoring Program
			First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RD-17	IV	D	8260 Perchlorate 900.0 901.1 906.0				RMHF
RD-18	IV	D	8260 Perchlorate	8260	8260	8260	Perimeter well
RD-19	IV	D	8260 Perchlorate	8260	8260	8260	Perimeter well
RD-20	IV	D	8260 Perchlorate				
RD-21	IV	D	8260 TM 900.0 901.1 906.0		8260 TM		FSDF FLUTe sampling system
RD-22	IV	D	8260, TM, CN 900.0 901.1 906.0	8260	8260	8260	FSDF Perimeter well
RD-23	IV	D	8260 TM 900.0 901.1 906.0		8260 TM		FSDF FLUTe sampling system
RD-24	IV	D	8260 Perchlorate 900.0 901.1 906.0		8260 900.0 901.1 906.0		B/059
RD-25	IV	D	8260 Perchlorate 900.0 901.1 906.0		8260 900.0 901.1 906.0		B/059
RD-26	II	N	8260 Perchlorate		8260		Evaluation monitoring
RD-27	IV	D	8260 Perchlorate 900.0 901.1 906.0		8260 900.0 901.1 906.0		RMHF
RD-28	IV	D	8260 Perchlorate 900.0 901.1 906.0, U, Th		8260 900.0 901.1 906.0		B/059

See last page of Table 2 for footnotes and explanations.

TABLE 2
2003 ANNUAL MONITORING SCHEDULE
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Area	Sponsor	ANALYTICAL METHODS				Monitoring Program
			First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RD-29	IV	D	8260 Perchlorate 900.0 901.1 906.0 U				
RD-30	IV	D	8260 Perchlorate 900.0 901.1 906.0		8260 900.0 901.1 906.0		RMHF
RD-31	I	N	8260 Perchlorate				FLUTe sampling system
RD-32	Off-site, NE of Area I	N	8260 8015	8260	8260 8015	8260	Detection monitoring B/351
RD-33A	UL, NW of Area IV	D	8260 TM CN 900.0 901.1 906.0		8260		FSDF FLUTe sampling system
RD-33B	UL, NW of Area IV	D	8260 TM CN 900.0 901.1 906.0	8260	8260 906.0	8260	FSDF Perimeter well
RD-33C	UL, NW of Area IV	D	8260 TM CN 900.0 901.1 906.0	8260	8260 906.0	8260	FSDF Perimeter well
RD-34A	UL, NW of Area IV	D	8260 TM CN 900.0 901.1 906.0, U, Th		8260 906.0		RMHF
RD-34B	UL, NW of Area IV	D	8260 TM CN 900.0 901.1 906.0		8260 906.0		RMHF

See last page of Table 2 for footnotes and explanations.

TABLE 2
2003 ANNUAL MONITORING SCHEDULE
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Area	Sponsor	ANALYTICAL METHODS				Monitoring Program
			First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RD-34C	UL, NW of Area IV	D	8260 TM CN 900.0 901.1 906.0		8260 906.0		RMHF
RD-35A	I	N	8260				
RD-35B	I	N	8260				
RD-36A	Off-site, NE of Area I	N	8260 8015		8260 8015		Evaluation monitoring B/351
RD-36B	Off-site, NE of Area I	N	8260 8015		8260 8015		Evaluation monitoring B/351
RD-36C	Off-site, NE of Area I	N	8260 8015		8260 8015		Evaluation monitoring B/351
RD-36D	Off-site, NE of Area I	N	8260 8015		8260 8015		B/351
RD-37	Off-site, NE of Area I	N	8260 8015	8260	8260 8015	8260	Detection monitoring B/351
RD-38A	Off-site, NE of Area I	N	8260 8015		8260 8015		Evaluation monitoring B/351
RD-38B	Off-site, NE of Area I	N	8260 8015	8260	8260 8015	8260	B/351
RD-39A	Off-site, NE of Area I	N	8260	8260	8260	8260	Detection monitoring
RD-39B	Off-site, NE of Area I	N	8260	8260	8260	8260	Perimeter well
RD-40	II	N	8260 Perchlorate		8260		Evaluation monitoring
RD-41A	II	N	8260 Perchlorate				
RD-41B	II	N	8260 Perchlorate				

See last page of Table 2 for footnotes and explanations.

TABLE 2
2003 ANNUAL MONITORING SCHEDULE
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Area	Sponsor	ANALYTICAL METHODS				Monitoring Program
			First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RD-41C	II	N	8260 Perchlorate				
RD-42	II	N	8260 Perchlorate				
RD-43A	Off-site, Near Area I	N	8260 Perchlorate	8260	8260	8260	Detection monitoring
RD-43B	Off-site, Near Area I	N	8260 Perchlorate	8260	8260	8260	Detection monitoring
RD-43C	Off-site, Near Area I	N	8260 Perchlorate	8260	8260	8260	Detection monitoring
RD-44	I	N	8260	8260	8260	8260	Detection monitoring
RD-45A	I	N	8260		8260		Evaluation monitoring
RD-45B	I	N	8260		8260		Evaluation monitoring
RD-45C	I	N	8260		8260		Evaluation monitoring
RD-46A	I	N	8260 Perchlorate		8260		Evaluation monitoring
RD-46B	I	N	8260		8260		
RD-47	I	N	8260 Perchlorate		8260		Evaluation monitoring
RD-48A	UL, SW of Area I	N	8260	8260	8260	8260	Background
RD-48B	UL, SW of Area I	N	8260	8260	8260	8260	Background
RD-48C	UL, SW of Area I	N	8260	8260	8260	8260	Background
RD-49A	II	N	8260				
RD-49B	II	N	8260				
RD-49C	II	N	8260				
RD-50	IV	D	8260 8015		8260		Perimeter well FLUTe sampling system
RD-51A	II	N	8260 Perchlorate		8260		Evaluation monitoring
RD-51B	II	N	8260 Perchlorate		8260		Evaluation monitoring
RD-51C	II	N	8260	8260	8260	8260	Detection monitoring
RD-52A	I	N	8260 Perchlorate		8260		Evaluation monitoring
RD-52B	I	N	8260 Perchlorate		8260		Evaluation monitoring
RD-52C	I	N	8260	8260	8260	8260	Detection monitoring
RD-53	I	N	8260 8015 Perchlorate		8260 8015		B/351 FLUTe sampling system

See last page of Table 2 for footnotes and explanations.

TABLE 2
2003 ANNUAL MONITORING SCHEDULE
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Area	Sponsor	ANALYTICAL METHODS				Monitoring Program
			First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RD-54A	IV	D	8260 TM 900.0 901.1 906.0, U, Th		8260 TM 906.0		FSDF FLUTe sampling system
RD-54B	IV	D	8260 TM 900.0 901.1 906.0		8260 TM 906.0		FSDF
RD-54C	IV	D	8260 TM 900.0 901.1 906.0		8260 TM 906.0		FSDF
RD-55A	III	N	8260 Perchlorate		8260		Evaluation monitoring
RD-55B	III	N	8260 Perchlorate		8260		Evaluation monitoring
RD-56A	UL, N of Area III	N	8260				
RD-56B	UL, N of Area III	N	8260	8260	8260 TM	8260	Perimeter well
RD-57	UL, NW of Area IV	D	8260 TM 900.0 901.1 906.0	8260	8260 906.0	8260	FSDF Perimeter well FLUTe sampling system
RD-58A	III	N	8260				Evaluation monitoring
RD-58B	III	N	8260	8260	8260	8260	Detection monitoring
RD-58C	III	N	8260		8260		Evaluation monitoring
RD-59A	Off-site, W of Area IV	D	8260 TM Perchlorate 900.0 901.1 906.0	8260 Perchlorate	8260 TM Perchlorate 906.0	8260 Perchlorate	FSDF & RMHF Perimeter well
RD-59B	Off-site, W of Area IV	D	8260 TM Perchlorate 900.0 901.1 906.0	8260	8260 TM Perchlorate 906.0	8260	FSDF & RMHF Perimeter well
RD-59C	Off-site, W of Area IV	D	8260 TM Perchlorate 900.0 901.1 906.0	8260	8260 TM Perchlorate 906.0	8260	FSDF & RMHF Perimeter well
RD-60	III	N	8260		8260		Evaluation monitoring

See last page of Table 2 for footnotes and explanations.

TABLE 2
2003 ANNUAL MONITORING SCHEDULE
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Area	Sponsor	ANALYTICAL METHODS				Monitoring Program
			First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
RD-61	I	N	8260	8260	8260	8260	Detection monitoring
RD-62	UL, S of Area I	N	8260	8260	8260	8260	Detection monitoring
RD-63	IV	D	8260 900.0 901.1 906.0		8260		RMHF Area IV extraction
RD-64	IV	D	8260 900.0 901.1 906.0 U				FSDF FLUTe sampling system
RD-65	IV	D	8260				FSDF FLUTe sampling system
RD-66	Off-site, NE of Area I	N	8260	8260	8260	8260	Perimeter well
RD-67	UL, S of Area IV	N	8260		8260		Perimeter well
RD-68A	Off-site, N of Area III	N	8260	8260	8260	8260	Perimeter well
RD-68B	Off-site, N of Area III	N	8260	8260	8260	8260	Perimeter well
RD-69	I	N	8260		8260		Perimeter well
RD-70	UL, N of Area II	N	8260	8260	8260	8260	Perimeter well
RD-71	Off-site, NE of Area I	N	8260	8260	8260	8260	Perimeter well
RD-72	I	N	8260				FLUTe sampling system
RD-73	I	R	8260 8015 Perchlorate				UT 37 FLUTe sampling system
RD-74	IV	D	8260	8260	8260	8260	B/056
CHATSWORTH FORMATION HAR WELLS							
HAR-1	I	R	Perchlorate				FLUTe sampling system
HAR-5	II	R	Perchlorate				
HAR-6	II	N	8260 Perchlorate				
HAR-7	II	R		App IX		8260	Point of compliance
HAR-8	II	N					
HAR-16	I	R		App IX		8260	Point of compliance FLUTe sampling system
HAR-17	II	R		App IX		8260	Point of compliance
HAR-18	III	R	8260		8260		Interim corrective action
HAR-19	II	R	8260				
HAR-20	II	N	8260				

See last page of Table 2 for footnotes and explanations.

TABLE 2
2003 ANNUAL MONITORING SCHEDULE
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Area	Sponsor	ANALYTICAL METHODS				Monitoring Program
			First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
HAR-21	II	R	8260 Perchlorate				
HAR-22	II	N	8260 Perchlorate		8260		Evaluation monitoring
HAR-23	III	R	8260 Perchlorate		8260		Evaluation monitoring
HAR-24	I	R	8260		8260		Evaluation monitoring FLUTe sampling system
HAR-25	I	N	8260 Perchlorate				
HAR-26	III	R	8260		8260		Evaluation monitoring
CHATSWORTH FORMATION WS WELLS							
WS-4A	I	N	8260	8260	8260	8260	Detection monitoring
WS-5	I	R	8260		8260		Interim corrective action
WS-6	I	R	8260		8260		Interim corrective action
WS-7	IV	D					
WS-8	III	R					
WS-9	II	R	8260		8260		Interim corrective action
WS-9A	II	R	8260		8260		Interim corrective action
WS-9B	II	R					
WS-11	III	R					
WS-12	I	R					
WS-13	II	R					
WS-14	I	R					
WS-SP	II	N					
OFF-SITE OS WELLS AND SPRINGS							
OS-2	Off-Site	R	8260 Perchlorate				
OS-3	Off-Site	R	Perchlorate				
OS-4	Off-Site	R	8260 Perchlorate				
OS-5	Off-Site	R	Perchlorate				
OS-8	Off-Site	N	8260 Perchlorate				
OS-10	Off-Site	R	Perchlorate				
OS-12	Off-Site	N	Perchlorate				
OS-13	Off-Site	N	8260 Perchlorate		8260		
OS-15	Off-Site	N	8260 Perchlorate				
OS-16	Off-Site	N	8260 Perchlorate		8260 Perchlorate		
OS-17	Off-Site	N	8260 Perchlorate		8260 Perchlorate		
OS-21	Off-Site	R	8260 Perchlorate				
OS-24	Off-Site	N	8260		8260		FLUTe sampling system
OS-25	Off-Site	N	8260 Perchlorate		8260		

See last page of Table 2 for footnotes and explanations.

TABLE 2
2003 ANNUAL MONITORING SCHEDULE
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Area	Sponsor	ANALYTICAL METHODS				Monitoring Program
			First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
OS-26	Off-Site	N	8260 Perchlorate		8260		
OS-27	Off-Site	N	8260 Perchlorate				

See last page of Table 2 for footnotes and explanations.

ANALYTICAL METHODS
2003 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.
CN	=	Cyanide, EPA method 9012.
TM	=	Trace metals, including antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium and zinc using EPA methods 6010 and 6020.
Perchlorate	=	EPA method 314.0.

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.
8290	=	EPA method 8290 for dioxins and furans.
Metals	=	EPA method 6020 series for metals.
CN	=	EPA method 9012 for cyanide.
Sulfide	=	EPA method 376.2 for sulfide.

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: tetrachloroethylen 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 CF 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-dichloroethan 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."

Area IV Monitoring
Area IV sampling schedule subject to revision.

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 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 concern in 1999. Background wells and detection monitoring wells were sampled for constituents of concern in 2000.

Notes:	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

FLUTe Sampling System
FLUTe sampling system - indicates wells that currently are, or will be, equipped with FLUTe multi-port sampling systems in 2003. Samples will be collected from the FLUTe multi-port sampling systems per the previously approved workplan(s).

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.

REFERENCES USED IN PREPARING
2003 MONITORING SCHEDULE

1 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.

2 ------ 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.

3 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 3

SUMMARY OF PERMITTED GROUNDWATER REMEDIATION FACILITIES
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Remediation System		Gallons x 1,000 Apr	May	Jun	Total Pumpage Second Quarter 2003	Total Pumpage to Date
Extraction Well(s)						
Delta ASU	WS-9A	292.1	496.0	15.0	803.1	398465.1
	HAR-7	0.0	0.0	0.0	0.0	4780.0
Alfa ASU	WS-6	0.0	0.0	0.0	0.0	510950.0
Bravo ASU	WS-9	0.0	0.0	0.0	0.0	62692.0
	RD-4	0.0	0.0	0.0	0.0	40486.0
	RD-9	0.0	0.0	0.0	0.0	5483.0
	ES-21	0.0	0.0	0.0	0.0	421.0
	ES-22	0.0	0.0	0.0	0.0	677.0
Area I Road	RD-1	0.0	0.0	0.0	0.0	79753.0
ASU	RD-2	0.0	0.0	0.0	0.0	71608.0
	ES-1	0.0	0.0	0.0	0.0	63.0
	ES-3	0.0	0.0	0.0	0.0	1127.0
	ES-4	0.0	0.0	0.0	0.0	497.0
	ES-5	0.0	0.0	0.0	0.0	310.0
	ES-6	0.0	0.0	0.0	0.0	899.0
	ES-7	0.0	0.0	0.0	0.0	56.0
WS-5 Area	WS-5	0.0	0.0	0.0	0.0	401812.0
UV/H_2O_2	ES-11	0.0	0.0	0.0	0.0	64.0
	HAR-4	0.0	0.0	0.0	0.0	755.0
	HAR-16	0.0	0.0	0.0	0.0	1028.1
STL-IV	ES-14	0.0	0.0	0.0	0.0	83.0
ASU	ES-17	0.0	0.0	0.0	0.0	334.0
	ES-23	0.0	0.0	0.0	0.0	140.0
	ES-24	0.0	0.0	0.0	0.0	119.0
	ES-26	0.0	0.0	0.0	0.0	2788.0
	ES-27	0.0	0.0	0.0	0.0	433.0
	ES-30	0.0	0.0	0.0	0.0	1916.0
	ES-32	0.0	0.0	0.0	0.0	35.0
	HAR-17	0.0	0.0	0.0	0.0	3133.0
	HAR-18	0.0	0.0	0.0	0.0	686.0
	ECL Sump	0.0	0.0	0.0	0.0	891.0
	ECL FD	0.0	0.0	0.0	0.0	2477.0
Total System		**292.1**	**496.0**	**15.0**	**803.1**	**1594961.2**

ASU = Air stripping unit UV/H_2O_2 = Ultraviolet light/peroxidation

NOTES: Remediation system monitoring conducted by EnviroSolve Corporation. Pumpage data and cumulative pumpage provided by EnviroSolve Corporation. Several extraction wells were inactive due to ongoing Shallow Zone Groundwater Investigation (Ogden, 2000) and Chatsworth Formation Operable Unit Investigation (Montgomery Watson, 2000b).

TABLE 4
SUMMARY OF WATER QUALITY RESULTS
FOR PERMITTED GROUNDWATER REMEDIATION FACILITIES
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Sample Location		Date Sampled	TCE (ug/l)	1,2-DCE (ug/l)		Perchlorate (ug/l)	SVOCs (ug/l)	VOCs Removed	
				cis	trans			By Quarter (lbs)	To Date (lbs)
Delta ASU	Influent	04/23/03	**6.5**	**2.1**	0.5 U	4 U	---		**1281.0**
		05/06/03	**0.65**	0.5 U	5.0 U	4 U	---		**1281.0**
		06/10/03	**53**	**20**	**0.72**	4 U	---	0.3	**1281.3**
	Primary Effluent	04/23/03	0.5 U	0.5 U	0.5 U				
		05/06/03	0.5 U	0.5 U	0.5 U				
		06/10/03	0.5 U	0.5 U	0.5 U				
	Secondary Effluent	04/23/03	0.5 U	0.5 U	0.5 U				
		05/06/03	0.5 U	0.5 U	0.5 U				
		06/10/03	0.5 U	0.5 U	0.5 U				
Alfa ASU	Influent	04/23/03	Not Operating*						**460.2**
		05/06/03							**460.2**
		06/10/03						0.0	**460.2**
	Primary Effluent	04/23/03	Not Operating*						
		05/06/03							
		06/10/03							
	Secondary Effluent	04/23/03	Not Operating*						
		05/06/03							
		06/10/03							
Bravo ASU	Influent	04/23/03	Not Operating*						**126.1**
		05/06/03							**126.1**
		06/04/03						0.0	**126.1**
	Primary Effluent	04/23/03	Not Operating*						
		05/06/03							
		06/04/03							
	Secondary Effluent	04/23/03	Not Operating*						
		05/06/03							
		06/04/03							
WS-5 UV/H_2O_2	Influent	04/23/03	Not Operating*						**225.0**
		05/06/03							**225.0**
		06/04/03						0.0	**225.0**
	Effluent	04/23/03	Not Operating*						
		05/06/03							
		06/04/03							
STL-IV ASU	Influent	04/23/03	Not Operating*						**81.6**
		05/06/03							**81.6**
		06/04/03						0.0	**81.6**
	Primary Effluent	04/23/03	Not Operating*						
		05/06/03							
		06/04/03							
	Secondary Effluent	04/23/03	Not Operating*						
		05/06/03							
		06/04/03							

See last page of Table 4 for footnotes and explanations.

TABLE 4
FOOTNOTES AND EXPLANATIONS

SVOCs	=	Semi-volatile organic compounds.
U	=	Not detected; numerical value is the reporting limit for that compound.
ND	=	None detected.
TCE	=	Trichloroethylene.
1,2-DCE	=	1,2-Dichloroethylene.
ug/l	=	Micrograms per liter.
lbs	=	Pounds.
ASU	=	Air stripping unit.
UV/H_2O_2	=	Ultraviolet light/ peroxidation.
(*)	=	Several extraction wells were inactive due to the ongoing Shallow Zone Groundwater Investigation (Ogden, 2000) and the Chatsworth Formation Operable Unit Investigation (Montgomery Watson, 2000b).
---	=	Not analyzed.

NOTES:
Samples analyzed for TCE and 1,2-DCE by EPA Method 8260B; perchlorate by modified EPA Method 300.0; and SVOCs by EPA Method 8270.
All GRF water quality samples were collected by EnviroSolve Corporation personnel and analyzed by Del Mar Analytical.

TABLE 5
EXTRACTION WELL WATER LEVELS AND FLOW RATES
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Treatment System	Extraction Well	Water Level Measurement Date	Measuring Point Elevation (ft, MSL)	Depth to Water (feet)	Water Level Elevation (ft, MSL)	Average Monthly Flow Rate (gpm)	Average Quarterly Flow Rate (gpm)	Footnotes
Alfa ASU	WS-06	04/08/03	1932.72	NA	---	0*		(1)
		04/29/03	1932.72	395.35	1537.37	0*		
		06/10/03	1932.72	421.61	1511.11	0*	0*	(1)
Area I Road ASU	ES-01	04/03/03	1782.20	21.17	1761.03	0*		(2)
		05/03/03	1782.20	19.71	1762.49	0*		(2)
		06/03/03	1782.20	19.21	1762.99	0*	0*	(2)
	ES-03	04/08/03	1783.39	DRY	---	0*		(1)
		05/06/03	1783.39	DRY	---	0*		(1)
		06/04/03	1783.39	DRY	---	0*	0*	(1)
	ES-04	04/08/03	1817.24	DRY	---	0*		(1)
		04/29/03	1817.24	9.62	1807.62	0*		
		06/04/03	1817.24	DRY	---	0*	0*	(1)
	ES-05	04/08/03	1818.13	DRY	---	0*		(1)
		04/29/03	1818.13	8.20	1809.93	0*		
		06/04/03	1818.13	DRY	---	0*	0*	(1)
	ES-06	04/03/03	1825.41	11.05	1814.36	0*		(2)
		05/03/03	1825.41	12.09	1813.32	0*		(2)
		06/03/03	1825.41	11.41	1814.00	0*	0*	(2)
	ES-07	04/08/03	1826.53	DRY	---	0*		(1)
		05/06/03	1826.53	DRY	---	0*		(1)
		06/04/03	1826.53	DRY	---	0*	0*	(1)
	RD-01	04/08/03	1935.89	200.93	1734.96	0*		(1)
		05/06/03	1935.89	201.33	1734.56	0*		(1)
		06/10/03	1935.89	200.74	1735.15	0*	0*	(1)
	RD-02	04/08/03	1873.92	171.43	1702.49	0*		(1)
		05/06/03	1873.92	170.79	1703.13	0*		(1)
		06/10/03	1873.92	172.36	1701.56	0*	0*	(1)

See last page of Table 5 for footnotes and explanations.

TABLE 5
EXTRACTION WELL WATER LEVELS AND FLOW RATES
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Treatment System	Extraction Well	Water Level Measurement Date	Measuring Point Elevation (ft, MSL)	Depth to Water (feet)	Water Level Elevation (ft, MSL)	Average Monthly Flow Rate (gpm)	Average Quarterly Flow Rate (gpm)	Footnotes
Bravo ASU	ES-21	04/03/03	1769.62	29.56	1740.06	0*		(2)
		05/03/03	1769.62	28.89	1740.73	0*		(2)
		06/03/03	1769.62	28.58	1741.04	0*	0*	(2)
	ES-22	04/08/03	1770.93	25.61	1745.32	0*		(1)
		05/06/03	1770.93	25.34	1745.59	0*		(1)
		06/04/03	1770.93	26.01	1744.92	0*	0*	(1)
	RD-04	04/08/03	1883.85	UTM	---	0*		(1)
		05/06/03	1883.85	UTM	---	0*		(1)
		06/04/03	1883.85	396.24	1487.61	0*	0*	(1)
	RD-09	04/08/03	1768.20	33.61	1734.59	0*		(1)
		05/06/03	1768.20	33.05	1735.15	0*		(1)
		06/10/03	1768.20	36.61	1731.59	0*	0*	(1)
	WS-09	04/08/03	1883.99	358.42	1525.57	0*		(1)
		05/06/03	1883.99	357.98	1526.01	0*		(1)
		06/04/03	1883.99	356.41	1527.58	0*	0*	(1)
Delta ASU	HAR-07	04/18/03	1728.38	76.94	1651.44	0*		(1)
		05/06/03	1728.38	75.32	1653.06	0*		(1)
		06/10/03	1728.38	52.84	1675.54	0*	0*	(1)
	WS-09A	04/08/03	1647.61	22.66	1624.95	6.80		(1)
		05/06/03	1647.61	38.43	1609.18	11.56		(1)
		06/04/03	1647.61	52.67	1594.94	0.43	6.2	(1)
STL-IV ASU	ECL FD	04/08/03	---	DRY	---	0*		(1)
		05/06/03	---	DRY	---	0*		(1)
		06/04/03	---	DRY	---	0*	0*	(1)
	ECL Sump	04/08/03	---	DRY	---	0*		(1)
		05/06/03	---	DRY	---	0*		(1)
		06/04/03	---	DRY	---	0*	0*	(1)
	ES-14	04/08/03	1728.69	DRY	---	0*		(1)
		05/06/03	1728.69	DRY	---	0*		(1)
		06/04/03	1728.69	DRY	---	0*	0*	(1)

See last page of Table 5 for footnotes and explanations.

TABLE 5
EXTRACTION WELL WATER LEVELS AND FLOW RATES
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Treatment System	Extraction Well	Water Level Measurement Date	Measuring Point Elevation (ft, MSL)	Depth to Water (feet)	Water Level Elevation (ft, MSL)	Average Monthly Flow Rate (gpm)	Average Quarterly Flow Rate (gpm)	Footnotes
STL-IV ASU cont'd	ES-17	04/08/03	1739.31	24.14	1715.17	0*		(1)
		05/06/03	1739.31	24.05	1715.26	0*		(1)
		06/04/03	1739.31	24.32	1723.61	0*	0*	(1)
	ES-23	04/08/03	1760.73	12.44	1748.29	0*		(1)
		05/06/03	1760.73	12.58	1748.15	0*		(1)
		06/04/03	1760.73	12.64	1748.09	0*	0*	(1)
	ES-24	04/03/03	1728.67	23.12	1705.55	0*		(2)
		05/03/03	1728.67	21.48	1707.19	0*		(2)
		06/03/03	1728.67	21.21	1707.46	0*	0*	(2)
	ES-26	04/08/03	1748.01	27.63	1720.38	0*		(1)
		05/06/03	1748.01	28.14	1719.87	0*		(1)
		06/04/03	1748.01	27.84	1720.17	0*	0*	(1)
	ES-27	04/08/03	1740.67	28.08	1712.59	0*		(1)
		05/06/03	1740.67	27.83	1712.84	0*		(1)
		06/04/03	1740.67	27.23	1724.37	0*	0*	(1)
	ES-30	04/08/03	1759.51	15.11	1744.40	0*		(1)
		05/06/03	1759.51	15.49	1744.02	0*		(1)
		06/04/03	1759.51	15.68	1749.21	0*	0*	(1)
	ES-32	04/08/03	1740.65	DRY	---	0*		(1)
		04/28/03	1740.65	11.53	1729.12	0*		
		06/04/03	1740.65	DRY	---	0*	0*	(1)
	HAR-17	04/08/03	1711.59	23.84	1632.59	0*		(1)
		05/06/03	1711.59	22.67	1688.92	0*		(1)
		06/04/03	1711.59	22.84	1688.75	0*	0*	(1)
	HAR-18	04/08/03	1749.41	29.02	1686.41	0*		(1)
		05/06/03	1749.41	29.12	1720.29	0*		(1)
		06/04/03	1749.41	28.87	1720.54	0*	0*	(1)
WS-05 UV/H2O2	ES-11	04/08/03	1835.07	DRY	---	0*		(1)
		04/29/03	1835.07	19.72	1815.35	0*		
		06/04/03	1835.07	DRY	---	0*	0*	(1)

See last page of Table 5 for footnotes and explanations.

TABLE 5
EXTRACTION WELL WATER LEVELS AND FLOW RATES
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Treatment System	Extraction Well	Water Level Measurement Date	Measuring Point Elevation (ft, MSL)	Depth to Water (feet)	Water Level Elevation (ft, MSL)	Average Monthly Flow Rate (gpm)	Average Quarterly Flow Rate (gpm)	Footnotes
WS-05	HAR-04	04/08/03	1873.40	21.30	1852.10	0*		(1)
UV/H2O2 -		04/29/03	1873.40	16.72	1856.68	0*		
cont'd		06/04/03	1873.40	UTM	---	0*	0*	(1)
	HAR-16	04/08/03	1872.31	NA**	---	0*		
		05/06/03	1872.31	NA**	---	0*		
		06/04/03	1872.31	NA**	---	0*	0*	
	WS-05	04/08/03	1830.20	287.40	1542.80	0*		(1)(C)
		05/06/03	1830.20	286.22	1543.98	0*		(1)(C)
		06/04/03	1830.20	285.96	1544.24	0*	0*	(1)(C)

See last page of Table 5 for footnotes and explanations.

(C)	=	Depth to water measured from top of casing. During the monitoring period, pumps had been removed from several wells to allow hydrogeologic testing.
(P)	=	Pumping water level.
NA	=	Not available. Well was not monitored or transducer was inoperable.
MSL	=	Mean sea level.
(---)	=	No data available/not applicable.
(1)	=	Water level measured by EnviroSolve Corporation.
(2)	=	Water level measured by Montgomery Watson.
(*)	=	Several extraction wells were inactive due to ongoing Shallow Zone Groundwater Investigation (Ogden, 2000) and the Chatsworth Formation Operable Unit Investigation (Montgomery Watson, 2000b).
(**)	=	Well is currently equipped with a FLUTe discrete interval monitoring system. See Table 6 for data.
ASU	=	Air stripping unit.
UV/H2O2	=	Ultraviolet light/ peroxidation.
UTM	=	Unable to measure.

TABLE 6
SUMMARY OF WATER LEVEL DATA
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	Date of Measurement	Reference Point Elevation (feet above MSL)	Depth to Water (feet)	Static Water Level Elevation (feet above MSL)	Footnotes
Shallow Wells					
SH-01	04/29/03	1772.84	DRY	---	
SH-02	04/29/03	1762.76	6.40	1756.36	
SH-03	04/28/03	1762.53	6.32	1756.21	
SH-04	04/28/03	1765.08	7.33	1757.75	
SH-05	04/29/03	1762.97	9.17	1753.80	
SH-06	04/29/03	1776.99	10.65	1766.34	
SH-07	04/29/03	1775.11	12.48	1762.63	
SH-08	04/29/03	1763.25	7.41	1755.84	
SH-09	04/29/03	1761.19	6.47	1754.72	
SH-10	04/29/03	1757.69	6.63	1751.06	
SH-11	04/29/03	1756.00	8.96	1747.04	
RS-01	04/30/03	1879.68	DRY	---	
RS-02	04/29/03	1901.08	DRY	---	
RS-03	04/29/03	1834.22	18.70	1815.52	
RS-04	04/29/03	1826.56	25.39	1801.17	
RS-05	04/29/03	1783.73	DRY	---	
RS-06	04/30/03	1757.43	18.81	1738.62	
RS-07	04/30/03	1732.27	3.69	1728.58	
RS-08	04/29/03	1821.57	8.01	1813.56	
RS-09	04/28/03	1735.52	24.38	1711.14	
RS-10	04/30/03	1762.08	8.78	1753.30	
RS-11	04/28/03	1790.39	17.48	1772.91	
RS-12	04/28/03	1727.48	DRY	---	
RS-13	04/28/03	1644.20	21.55	1622.65	
RS-14	04/28/03	1734.78	DRY	---	
RS-15	04/28/03	1764.86	7.49	1757.37	
RS-16	04/28/03	1811.05	DRY	---	
RS-17	04/28/03	1766.52	11.12	1755.40	
RS-18	04/28/03	1802.86	5.92	1796.94	
RS-19	04/30/03	1812.42	8.37	1804.05	
RS-20	04/29/03	1823.77	9.44	1814.33	
RS-21	04/29/03	1767.36	DRY	---	
RS-22	04/29/03	1771.23	30.18	1741.05	
RS-23	04/28/03	1887.25	DRY	---	
RS-24	04/28/03	1809.24	DRY	---	
RS-25	04/29/03	1862.71	13.62	1849.09	
RS-27	04/28/03	1804.78	DRY	---	
RS-28	04/30/03	1768.59	DRY	---	
RS-29	04/29/03	1833.09	DRY	---	
RS-30	04/28/03	1909.01	19.98	1889.03	
RS-31	04/28/03	1909.03	15.86	1893.17	
RS-32	04/28/03	1908.99	12.47	1896.52	
RS-54	04/28/03	1846.66	29.64	1817.02	
ES-01	05/03/03	1782.20	19.71	1762.49	(**)
ES-02	04/29/03	1814.60	DRY	---	
ES-03	05/06/03	1783.39	DRY	---	(*)

See last page of Table 6 for footnotes and explanations.

TABLE 6
SUMMARY OF WATER LEVEL DATA
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	Date of Measurement	Reference Point Elevation (feet above MSL)	Depth to Water (feet)	Static Water Level Elevation (feet above MSL)	Footnotes
Shallow Wells					
ES-04	04/29/03	1817.24	9.62	1807.62	
ES-05	04/29/03	1818.13	8.20	1809.93	
ES-06	05/03/03	1825.41	12.09	1813.32	(**)
ES-07	05/06/03	1826.53	DRY	---	(*)
ES-08	04/29/03	1826.60	DRY	---	
ES-09	04/29/03	1827.80	10.64	1817.16	
ES-10	04/29/03	1829.46	12.02	1817.44	
ES-11	04/29/03	1835.07	19.72	1815.35	
ES-12	04/29/03	1838.19	13.68	1824.51	
ES-13	04/29/03	1782.58	17.18	1765.40	
ES-14	05/06/03	1728.69	DRY	---	(*)
ES-15	04/28/03	1730.21	DRY	---	
ES-16	04/28/03	1737.90	24.26	1713.64	
ES-17	05/06/03	1739.31	24.05	1715.26	(*)
ES-18	04/29/03	1770.25	DRY	---	
ES-19	04/29/03	1769.44	DRY	---	
ES-20	04/29/03	1770.58	DRY	---	
ES-21	05/03/03	1769.62	28.89	1740.73	(**)
ES-22	05/06/03	1770.93	25.34	1745.59	(*)
ES-23	05/06/03	1760.73	12.58	1748.15	(*)
ES-24	05/03/03	1728.67	21.48	1707.19	(**)
ES-25	04/28/03	1737.78	DRY	---	
ES-26	05/06/03	1748.01	28.14	1719.87	(*)
ES-27	05/06/03	1740.67	27.83	1712.84	(*)
ES-28	04/28/03	1759.15	9.16	1749.99	
ES-29	04/28/03	1760.47	9.88	1750.59	
ES-30	05/06/03	1759.51	15.49	1744.02	(*)
ES-31	04/28/03	1787.01	13.11	1773.90	
ES-32	04/28/03	1740.65	11.53	1729.12	
HAR-02	05/02/03	1886.38	28.07	1858.31	
HAR-03	04/29/03	1875.48	16.88	1858.60	
HAR-04	04/29/03	1873.40	16.72	1856.68	(*)
HAR-09	04/29/03	1820.62	7.56	1813.06	
HAR-11	04/29/03	1827.90	10.24	1817.66	
HAR-12	04/29/03	1796.73	9.21	1787.52	
HAR-13	04/29/03	1801.18	13.75	1787.43	
HAR-14	04/29/03	1797.02	10.85	1786.17	
HAR-15	04/29/03	1809.69	14.06	1795.63	
HAR-27	04/30/03	1719.39	25.38	1694.01	
HAR-28	04/30/03	1720.17	24.05	1696.12	
HAR-29	04/30/03	1724.13	26.08	1698.05	
HAR-30	04/29/03	1806.47	13.49	1792.98	
HAR-31	04/29/03	1812.45	18.34	1794.11	
HAR-32	04/28/03	1736.58	19.37	1717.21	
HAR-33	04/28/03	1744.66	20.41	1724.25	
HAR-34	04/28/03	1751.17	18.63	1732.54	

See last page of Table 6 for footnotes and explanations.

TABLE 6
SUMMARY OF WATER LEVEL DATA
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	Date of Measurement	Reference Point Elevation (feet above MSL)	Depth to Water (feet)	Static Water Level Elevation (feet above MSL)	Footnotes
Chatsworth Formation Wells					
RD-01	05/06/03	1935.89	201.33	1734.56	(*)
RD-02	05/06/03	1873.92	170.79	1703.13	(*)
RD-03	04/30/03	1743.50	14.27	1729.23	
RD-04	04/29/03	1883.85			UTM
RD-05A	04/28/03	1704.66	91.85	1612.81	
RD-05B	04/28/03	1705.89	78.15	1627.74	
RD-05C	04/28/03	1705.25	62.77	1642.48	
RD-06	04/28/03	1617.21	48.95	1568.26	
RD-07	04/28/03	1812.82			(1)
RD-08	04/28/03	1763.38	8.80	1754.58	
RD-09	05/06/03	1768.20	33.05	1735.15	(*)
RD-10	04/29/03	1904.43			(1)
RD-11	04/29/03	1762.65	21.19	1741.46	
RD-12	04/29/03	1762.62	15.02	1747.60	
RD-13	04/28/03	1840.27	58.08	1782.19	
RD-14	04/29/03	1824.29	78.31	1745.98	
RD-15	04/29/03	1817.70	56.41	1761.29	
RD-16	04/28/03	1808.99	47.01	1761.98	
RD-17	04/29/03	1836.30	25.49	1810.81	
RD-18	04/29/03	1839.49	89.11	1750.38	
RD-19	04/29/03	1853.13	81.15	1771.98	
RD-20	04/28/03	1819.72	43.53	1776.19	
RD-21	05/01/03	1866.96			(1)
RD-22	04/28/03	1853.41			(1)
RD-23	05/01/03	1838.19			(1)
RD-24	05/06/03	1809.93	121.54	1688.39	(*) (P)
RD-25	05/06/03	1810.76	144.12	1666.64	(*) (P)
RD-26	05/02/03	1880.39	114.72	1765.67	
RD-27	05/14/03	1841.67	54.33	1787.34	
RD-28	05/06/03	1810.92	130.47	1680.45	(*) (P)
RD-29	04/28/03	1806.29	17.27	1789.02	
RD-30	04/30/03	1768.69	20.08	1748.61	
RD-31	05/01/03	1945.02			(1)
RD-32	04/28/03	1808.47	27.34	1781.13	
RD-33A	04/28/03	1792.97			(1)
RD-33B	04/28/03	1793.21	288.28	1504.93	
RD-33C	04/28/03	1793.54	289.04	1504.50	
RD-34A	04/30/03	1761.83	41.49	1720.34	
RD-34B	04/30/03	1762.51	50.70	1711.81	
RD-34C	04/30/03	1762.60	19.08	1743.52	
RD-35A	04/29/03	1906.68	86.41	1820.27	
RD-35B	04/29/03	1905.65	85.40	1820.25	
RD-36A	04/28/03	1913.09	DRY	---	(C)
RD-36B	04/28/03	1915.26	142.12	1773.14	(C)
RD-36C	04/28/03	1913.82	197.38	1716.44	(C)
RD-36D	04/28/03	1920.08	364.92	1555.16	(C)
RD-37	04/30/03	1870.01	325.61	1544.40	
RD-38A	05/02/03	1878.92	108.03	1770.89	

See last page of Table 6 for footnotes and explanations.

TABLE 6
SUMMARY OF WATER LEVEL DATA
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	Date of Measurement	Reference Point Elevation (feet above MSL)	Depth to Water (feet)	Static Water Level Elevation (feet above MSL)	Footnotes
Chatsworth Formation Wells					
RD-38B	04/28/03	1881.45	326.62	1554.83	
RD-39A	04/28/03	1960.23	152.33	1807.90	
RD-39B	04/28/03	1959.48			UTM
RD-40	04/30/03	1972.02	285.65	1686.37	
RD-41A	04/30/03	1774.48	25.59	1748.89	
RD-41B	04/30/03	1774.71	116.84	1657.87	
RD-41C	04/30/03	1773.73	144.00	1629.73	
RD-42	04/29/03	1945.46	50.74	1894.72	
RD-43A	04/28/03	1680.16	42.63	1637.53	
RD-43B	04/28/03	1680.21	92.59	1587.62	
RD-43C	04/28/03	1679.31	96.77	1582.54	
RD-44	04/30/03	2035.92	413.04	1622.88	
RD-45A	04/29/03	1841.59			UTM
RD-45B	04/29/03	1840.09	299.27	1540.82	
RD-45C	04/29/03	1835.74	296.05	1539.69	
RD-46A	04/30/03	1805.80	76.79	1729.01	
RD-46B	04/30/03	1807.19	73.87	1733.32	
RD-47	04/29/03	2045.72	503.28	1542.44	
RD-48A	04/28/03	1736.54	109.75	1626.79	
RD-48B	04/28/03	1735.40	135.23	1600.17	
RD-48C	04/28/03	1734.95	180.26	1554.69	
RD-49A	04/29/03	1867.25	17.28	1849.97	
RD-49B	04/29/03	1867.95	266.74	1601.21	
RD-49C	04/29/03	1869.45	320.35	1549.10	
RD-50	04/28/03	1914.88			(1)
RD-51A	04/29/03	1832.51	251.18	1581.33	
RD-51B	04/29/03	1832.68	297.76	1534.92	
RD-51C	04/29/03	1831.65	294.29	1537.36	
RD-52A	04/29/03	1755.09	125.07	1630.02	
RD-52B	04/29/03	1712.15	174.87	1537.28	
RD-52C	04/29/03	1712.83	175.27	1537.56	
RD-53	05/01/03	1909.19			(1)
RD-54A	04/28/03	1841.72			(1)
RD-54B	04/28/03	1842.54	250.01	1592.53	
RD-54C	04/28/03	1843.77	227.75	1616.02	
RD-55A	04/28/03	1756.87	22.55	1734.32	
RD-55B	04/28/03	1757.19	55.27	1701.92	
RD-56A	04/29/03	1758.62	326.97	1431.65	
RD-56B	04/29/03	1761.83	225.01	1536.82	
RD-57	04/28/03	1774.15			(1)
RD-58A	04/28/03	1756.11	88.72	1667.39	
RD-58B	04/28/03	1761.34	110.29	1651.05	
RD-58C	04/28/03	1759.59	125.76	1633.83	
RD-59A	05/15/03	1340.50	25.45	1315.05	
RD-59B	05/15/03	1342.49	0.00	1342.49	(A)
RD-59C	05/15/03	1345.41	0.00	1345.41	(A)
RD-60	04/29/03	1870.40	99.43	1770.97	

See last page of Table 6 for footnotes and explanations.

TABLE 6
SUMMARY OF WATER LEVEL DATA
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	Date of Measurement	Reference Point Elevation (feet above MSL)	Depth to Water (feet)	Static Water Level Elevation (feet above MSL)	Footnotes
Chatsworth Formation Wells					
RD-61	04/30/03	1843.88	109.69	1734.19	
RD-62	04/28/03	1837.20	210.60	1626.60	
RD-63	05/06/03	1764.85	41.38	1723.47	(*)
RD-64	04/28/03	1857.04			(1)
RD-65	04/28/03	1819.14			(1)
RD-66	04/28/03	1730.79	174.62	1556.17	
RD-67	04/28/03	1901.71	61.24	1840.47	
RD-68A	05/15/03	1307.64	0.00	1307.64	(A)
RD-68B	05/15/03	1312.44	0.00	1312.44	(A)
RD-69	04/29/03	1831.28	59.83	1771.45	
RD-70	04/29/03	1732.26	197.39	1534.87	
RD-71	04/28/03	1740.02	185.50	1554.52	(C)
RD-72	05/01/03	1907.25			(1)
RD-73	05/01/03	1901.60			(1)
RD-74	04/28/03	1810.90	46.79	1764.11	
HAR-01	05/01/03	1874.13			(1)
HAR-05	04/29/03	1812.65	20.11	1792.54	
HAR-06	04/29/03	1815.03	19.29	1795.74	
HAR-07	05/06/03	1728.38	75.32	1653.06	(*)
HAR-08	04/30/03	1730.75	35.08	1695.67	
HAR-16	04/30/03	1872.31			(1)
HAR-17	05/06/03	1711.59	22.67	1688.92	(*)
HAR-18	05/06/03	1749.41	29.12	1720.29	(*)
HAR-19	04/29/03	1833.42	DRY	---	
HAR-20	04/29/03	1830.47	DRY	---	
HAR-21	04/29/03	1821.30	7.53	1813.77	
HAR-22	04/29/03	1816.41	28.56	1787.85	
HAR-23	04/29/03	1805.87	19.18	1786.69	
HAR-24	05/01/03	1906.89			(1)
HAR-25	04/29/03	1889.75	68.07	1821.68	(C)
HAR-26	04/29/03	1763.23	16.78	1746.45	
WS-04A	04/29/03	1749.77	213.17	1536.60	
WS-05	05/06/03	1830.20	286.22	1543.98	(*)
WS-06	04/29/03	1932.72	395.35	1537.37	
WS-07	04/29/03	1826.19	65.81	1760.38	
WS-08	05/02/03	1794.39	175.81	1618.58	
WS-09	05/06/03	1883.99	357.98	1526.01	(*)
WS-09A	05/06/03	1647.61	38.43	1609.18	(*) (P)
WS-09B	04/29/03	1796.89	167.73	1629.16	
WS-11	04/28/03	1748.70	47.94	1700.76	
WS-12	04/29/03	1705.98	168.33	1537.65	
WS-13	04/29/03	1658.62	121.21	1537.41	
WS-14	04/29/03	1878.23	356.14	1522.09	
WS-SP	04/29/03	1766.76	27.78	1738.98	
OS-24	04/28/03	1947.30			(1)
OS-25	05/15/03	2043.58	DRY	---	
OS-26	05/02/03	2080.58	224.15	1856.43	

See last page of Table 6 for footnotes and explanations.

(*) = Water level measured by EnviroSolve Corporation.

(**) = Water level measured by Montgomery Watson Harza.

(A) = Artesian.

(C) = Depth to water measured from top of casing. During the monitoring period, pumps had been removed from several wells to allow hydrogeologic testing.

(ft btc) = Feet below top of casing.

(P) = Pumping water level.

MSL = Mean Sea Level.

NM = Not monitored.

UTM = Unable to measure.

(---) = No data available/not applicable.

A negative value in the Depth to Water column indicates the head above the reference point elevation.

(1) = FLUTe installed in well. Water level could not be measured. Water levels recorded by dataloggers at saturated ports were provided by Montgomery Watson Harza for the following wells:

Well	Date	Time	Port	Spacer Interval (ft btc)	Depth to Water (ft btc)
RD-07	04/30/03	No data available from datalogger 2nd quarter 2003			
RD-10	04/30/03	No datalogger installed 2nd quarter 2003			
RD-21	04/30/03	10:27	1	85-95	Dry
			2	105-115	91.249
			3	125-135	91.070
			4	145-155	92.510
			5	165-175	91.361
RD-22	04/30/03	8:29	1	310-320	298.174
			2	330-340	298.079
			3	350-360	298.360
			4	370-380	298.559
			5	390-400	298.760
			6	410-420	298.756
			7	430-440	---
RD-23	04/30/03	15:37	1	231-241	---
			2	251-261	---
			3	271-281	---
			4	291-301	---
			5	311-321	---
			6	331-341	---
			7	351-361	---
			8	371-381	---
			9	391-396	381.257

TABLE 6
FOOTNOTES AND EXPLANATIONS

Well	Date	Time	Port	Spacer Interval (ft btc)	Depth to Water (ft btc)
RD-31	04/30/03	10:55	3	88 - 98	---
			4	108 - 118	---
			5	128 - 138	125.196
			6	148 - 158	125.222
			7	168 - 178	124.707
RD-33A	05/12/03	15:02	1	211-221	208.962
			2	231-241	209.270
			3	251-261	209.540
			4	271-281	209.442
			5	291-301	209.492
			6	311-321	209.893
RD-50	4/30/03	14:51	1	106-116	106.893
			2	126-136	111.965
			3	146-156	---
			4	166-176	111.995
			5	186-196	112.100
RD-53	4/30/03	Batteries failed, no data available 2nd quarter 2003			
RD-57	4/30/03	9:12	1	228 - 238	---
			2	248 - 258	---
			3	268 - 278	---
			4	288 - 298	---
			5	308 - 318	---
			6	328 - 338	---
			7	348 - 358	---
			8	368 - 378	---
			9	388 - 398	346.458
			10	408 - 418	345.727
RD-64	4/30/03	Batteries failed, no data available 2nd quarter 2003			
RD-65	4/30/03	Hydraulic testing (MWH), no data available 2nd quarter 2003			
RD-72	4/30/03	15:29	2	65 - 75	---
			3	85 - 95	92.068
			4	105 - 115	92.831
			5	125 - 135	92.641
			6	145 - 155	91.510
			7	165 - 175	---
			8	185-195	89.535
RD-73	4/30/03	Batteries failed, no data available 2nd quarter 2003			
HAR-01	4/30/03	No data available from datalogger 2nd quarter 2003			
HAR-16	4/30/03	14:26	3	19 - 24	Dry
			4	29 - 34	Dry
			5	39 - 44	40.876
			6	49 - 54	45.201
			7	59 - 64	45.125
			8	69 - 74	45.427
			9	79 - 84	---
			10	89 - 94	45.925
			11	99-104	45.433
			12	109-114	48.395

TABLE 6
FOOTNOTES AND EXPLANATIONS

Well	Date	Time	Port	Spacer Interval (ft btc)	Depth to Water (ft btc)
HAR-24	4/30/03	11:40	1	37 - 42	Dry
			2	47 - 52	Dry
			3	57 - 62	Dry
			4	67 - 72	Dry
			5	77 - 82	Dry
			6	87 - 92	81.685
			7	97 - 102	81.689
			8	107 - 112	81.662
OS-24	4/30/03	No datalogger installed 2nd quarter 2003			

TABLE 7

SUMMARY OF RESULTS FOR VOLATILE ORGANIC COMPOUNDS
IN SHALLOW WELLS, SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	SH-03	SH-04	SH-04	RS-08	RS-08	RS-11	RS-11
FLUTe Sample Port	---	---	---	---	---	---	---
Sample Date	05/02/03	04/14/03	04/14/03	04/14/03	04/14/03	05/01/03	05/01/03
Sample Type	Primary	Primary	Split	Primary	Split	Primary	Dup
Sample Qualifier	---	---	---	pH	---	---	---
Compound (ug/l)							
1,1,1-Trichloroethane	8.3 J	4	4	0.3 U	0.2 U	0.3 U	0.3 U
1,1,2,2-Tetrachloroethane	2.9 U	0.58 U	0.4 U	0.29 U	0.4 U	0.29 U	0.29 U
1,1,2-Trichloroethane	3 U	0.6 U	0.2 U	0.3 U	0.2 U	0.3 U	0.3 U
1,1-Dichloroethane	43	14	12	0.27 U	0.2 U	0.27 U	0.27 U
1,1-Dichloroethene	9.1 J	5 J	4.3	0.32 U	0.3 U	0.32 U	0.32 U
1,2-Dichlorobenzene	3.2 U	0.64 U	0.2 U	0.32 U	0.2 U	0.32 U	0.32 U
1,2-Dichloroethane	360	6.2	7.3	0.28 U	0.2 U	0.28 U	0.28 U
1,2-Dichloropropane	3.5 U	0.7 U	0.4 U	0.35 U	0.4 U	0.35 U	0.35 U
1,3-Dichlorobenzene	3.5 U	0.7 U	0.2 U	0.35 U	0.2 U	0.35 U	0.35 U
1,4-Dichlorobenzene	3.7 U	0.74 U	0.2 U	0.37 U	0.2 U	0.37 U	0.37 U
1,4-Dioxane	---	29	---	0.07 U	---	---	---
2-Butanone (MEK)	38 U	7.6 U	7 U	3.8 U	7 U	3.8 U	3.8 U
2-Chloroethyl Vinyl Ether	---	0.3 U	0.3 U	0.3 U	0.3 U	---	---
2-Hexanone	25 U	5 U	0.7 U	2.5 U	0.7 U	2.5 U	2.5 U
4-Methyl-2-pentanone (MIBK)	25 U	5 U	0.2 U	2.5 U	0.2 U	2.5 U	2.5 U
Acetone	45 U	9 U	3 U	4.9 UJ	3 U	4.5 U	4.5 U
Benzene	2.8 U	0.56 U	0.1 U	0.28 U	0.1 U	0.28 U	0.28 U
Bromodichloromethane	3 U	0.6 U	0.1 U	0.3 U	0.1 U	0.3 U	0.3 U
Bromoform	2.5 U	0.5 U	0.4 U	0.25 U	0.4 U	0.25 U	0.25 U
Bromomethane	2 U	0.4 U	0.5 U	0.2 U	0.5 U	0.2 U	0.2 U
Carbon disulfide	3.3 U	0.66 U	0.2 U	0.33 U	0.2 U	0.33 U	0.33 U
Carbon tetrachloride	520	170	170	0.28 U	0.3 U	0.28 U	0.28 U
Chlorobenzene	3.6 U	0.72 U	0.1 U	0.36 U	0.1 U	0.36 U	0.36 U
Chloroethane	3.3 U	0.66 U	0.3 U	0.33 U	0.3 U	0.33 U	0.33 U
Chloroform	720	51	50	0.33 U	0.2 U	0.33 U	0.33 U
Chloromethane	1.4 U	0.28 U	0.4 U	0.14 U	0.4 U	0.14 U	0.14 U
cis-1,2-Dichloroethene	33	11	10	7.8	6.3	0.32 U	0.32 U
cis-1,3-Dichloropropene	2.2 U	0.44 U	0.2 U	0.22 U	0.2 U	0.22 U	0.22 U
Dibromochloromethane	2.8 U	0.56 U	0.2 U	0.28 U	0.2 U	0.28 U	0.28 U
Ethylbenzene	2.5 U	0.5 U	0.2 U	0.25 U	0.2 U	0.25 U	0.25 U
m,p-Xylenes	3.8 U	0.76 U	0.3 U	0.38 U	0.3 U	0.38 U	0.38 U
Methylene chloride	3.3 U	1.3 U	3 U	0.33 U	3 U	0.33 U	0.33 U
o-Xylene	2.4 U	0.48 U	0.2 U	0.24 U	0.2 U	0.24 U	0.24 U
Tetrachloroethene	20	13	16	0.32 U	0.2 U	0.32 U	0.32 U
Toluene	4.9 U	0.98 U	0.2 U	0.49 U	0.2 U	0.49 U	0.49 U
trans-1,2-Dichloroethene	2.7 U	0.54 U	0.2 U	0.91 J	0.75	0.27 U	0.27 U
trans-1,3-Dichloropropene	2.4 U	0.48 U	0.2 U	0.24 U	0.2 U	0.24 U	0.24 U
Trichloroethene	190	69	70	0.26 U	0.2 U	0.26 U	0.26 U
Trichlorofluoromethane	3.4 U	0.68 U	0.1 U	0.34 U	0.1 U	0.34 U	0.34 U
Trichlorotrifluoroethane (Freon 113)	130	---	54	---	0.2 U	1.2 U	1.2 U
Vinyl chloride	1.9 U	0.38 U	0.2 U	0.75 J	0.2 U	0.19 U	0.19 U
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Laboratory	DMA	DMA	AMA	DMA	AMA	DMA	DMA

See last page of Table 7 for footnotes and explanations.

TABLE 7
SUMMARY OF RESULTS FOR VOLATILE ORGANIC COMPOUNDS
IN SHALLOW WELLS, SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	RS-18	RS-19	RS-30	RS-31	ES-04	ES-05	ES-06
FLUTe Sample Port	---	---	---	---	---	---	---
Sample Date	05/02/03	05/01/03	05/01/03	05/01/03	05/14/03	05/14/03	05/14/03
Sample Type	Primary	Primary	Primary	Primary	Primary	Primary	Primary
Sample Qualifier	---	---	---	---	---	---	---
Compound (ug/l)							
1,1,1-Trichloroethane	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,1,2,2-Tetrachloroethane	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
1,1,2-Trichloroethane	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,1-Dichloroethane	0.3 J	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
1,1-Dichloroethene	0.61 J	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
1,2-Dichlorobenzene	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
1,2-Dichloroethane	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
1,2-Dichloropropane	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
1,3-Dichlorobenzene	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
1,4-Dichlorobenzene	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U
1,4-Dioxane	---	---	---	---	---	---	---
2-Butanone (MEK)	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
2-Chloroethyl Vinyl Ether	---	---	---	---	---	---	---
2-Hexanone	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
4-Methyl-2-pentanone (MIBK)	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Acetone	4.5 U	4.5 U	7.9 J	4.5 U	4.5 U	4.5 U	9.1 J,L
Benzene	0.28 U	0.28 U	4.8	0.28 U	0.28 U	0.28 U	0.28 U
Bromodichloromethane	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Bromoform	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Bromomethane	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Carbon disulfide	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Carbon tetrachloride	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
Chlorobenzene	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U
Chloroethane	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Chloroform	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Chloromethane	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.32 J
cis-1,2-Dichloroethene	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
cis-1,3-Dichloropropene	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
Dibromochloromethane	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
Ethylbenzene	0.25 U	0.25 U	36	0.25 U	0.25 U	0.25 U	0.25 U
m,p-Xylenes	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U
Methylene chloride	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
o-Xylene	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
Tetrachloroethene	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
Toluene	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U
trans-1,2-Dichloroethene	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
trans-1,3-Dichloropropene	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
Trichloroethene	17	1.5	0.26 U	0.26 U	0.26 U	0.26 U	10
Trichlorofluoromethane	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U
Trichlorotrifluoroethane (Freon 113)	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Vinyl chloride	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Laboratory	DMA	DMA	DMA	DMA	DMA	DMA	DMA

See last page of Table 7 for footnotes and explanations.

TABLE 7
SUMMARY OF RESULTS FOR VOLATILE ORGANIC COMPOUNDS
IN SHALLOW WELLS, SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	ES-09	ES-10	ES-11	ES-17	ES-32	HAR-04	HAR-14
FLUTe Sample Port	---	---	---	---	---	---	---
Sample Date	05/01/03	05/01/03	05/14/03	05/16/03	05/16/03	05/14/03	04/15/03
Sample Type	Primary	Primary	Primary	Primary	Primary	Primary	Primary
Sample Qualifier	---	---	---	---	---	---	---
Compound (ug/l)							
1,1,1-Trichloroethane	0.3 U	0.3 U	0.3 U	2.2 J	0.3 U	0.3 J	1.1 J
1,1,2,2-Tetrachloroethane	0.29 U	0.29 U	0.29 U	1.4 U	0.29 U	0.29 U	0.29 U
1,1,2-Trichloroethane	0.3 U	0.3 U	0.3 U	1.5 U	0.3 U	0.3 U	0.3 U
1,1-Dichloroethane	0.27 U	0.27 U	0.27 U	2.6 J	0.27 U	0.27 U	0.27 U
1,1-Dichloroethene	0.32 U	0.32 U	0.32 U	12	0.59 J	0.32 U	8.4
1,2-Dichlorobenzene	0.32 U	0.32 U	0.32 U	1.6 U	0.32 U	0.32 U	0.32 U
1,2-Dichloroethane	0.28 U	0.28 U	0.28 U	1.4 U	0.28 U	0.28 U	0.28 U
1,2-Dichloropropane	0.35 U	0.35 U	0.35 U	1.8 U	0.35 U	0.35 U	0.35 U
1,3-Dichlorobenzene	0.35 U	0.35 U	0.35 U	1.8 U	0.35 U	0.35 U	0.35 U
1,4-Dichlorobenzene	0.37 U	0.37 U	0.37 U	1.8 U	0.37 U	0.37 U	0.37 U
1,4-Dioxane	---	---	---	---	---	---	160
2-Butanone (MEK)	3.8 U	3.8 U	3.8 U	19 U	3.8 U	3.8 U	3.8 UJ
2-Chloroethyl Vinyl Ether	---	---	---	---	---	---	---
2-Hexanone	2.5 U	2.5 U	2.5 U	12 U	2.5 U	2.5 U	2.5 UJ
4-Methyl-2-pentanone (MIBK)	2.5 U	2.5 U	2.5 U	12 U	2.5 U	2.5 U	2.5 U
Acetone	4.5 U	4.5 U	6.1 J,L	22 U	4.7 J,L	4.9 J,L	4.5 UJ
Benzene	0.28 U	0.28 U	0.28 U	1.4 U	0.28 U	0.28 U	0.28 U
Bromodichloromethane	0.3 U	0.3 U	0.3 U	1.5 U	0.3 U	0.3 U	0.3 U
Bromoform	0.25 U	0.25 U	0.25 U	1.2 U	0.25 U	0.25 U	0.25 U
Bromomethane	0.2 U	0.2 U	0.2 U	1 U	0.2 U	0.2 U	0.2 U
Carbon disulfide	0.33 U	0.33 U	0.33 U	1.6 U	0.33 U	0.33 U	0.33 U
Carbon tetrachloride	0.28 U	0.28 U	0.28 U	1.4 U	0.28 U	0.28 U	1.7 J
Chlorobenzene	0.36 U	0.36 U	0.36 U	1.8 U	0.36 U	0.36 U	0.36 U
Chloroethane	0.33 U	0.33 U	0.33 U	1.6 U	0.33 U	0.33 U	0.33 U
Chloroform	0.33 U	0.33 U	0.33 U	1.6 U	0.33 U	0.33 U	2.6
Chloromethane	0.14 U	0.14 U	0.14 U	0.7 U	0.14 U	0.14 U	0.14 U
cis-1,2-Dichloroethene	0.32 U	0.32 U	0.32 U	190	8.3	0.32 U	0.32 U
cis-1,3-Dichloropropene	0.22 U	0.22 U	0.22 U	1.1 U	0.22 U	0.22 U	0.22 U
Dibromochloromethane	0.28 U	0.28 U	0.28 U	1.4 U	0.28 U	0.28 U	0.28 U
Ethylbenzene	0.25 U	0.25 U	0.25 U	1.2 U	0.25 U	0.25 U	0.25 U
m,p-Xylenes	0.38 U	0.38 U	0.38 U	1.9 U	0.38 U	0.38 U	0.38 U
Methylene chloride	0.33 U	0.33 U	0.33 U	1.6 U	0.33 U	0.33 U	0.33 U
o-Xylene	0.24 U	0.24 U	0.24 U	1.2 U	0.24 U	0.24 U	0.24 U
Tetrachloroethene	0.32 U	0.32 U	0.32 U	1.6 U	0.32 U	0.32 U	0.32 U
Toluene	0.49 U	0.49 U	0.49 U	2.4 U	0.49 U	0.49 U	0.49 U
trans-1,2-Dichloroethene	0.27 U	0.27 U	0.27 U	2.4 J	0.27 U	0.27 U	0.27 U
trans-1,3-Dichloropropene	0.24 U	0.24 U	0.24 U	1.2 U	0.24 U	0.24 U	0.24 U
Trichloroethene	0.26 U	0.26 U	6.3	530	40	27	4.6
Trichlorofluoromethane	0.34 U	0.34 U	0.34 U	1.7 U	0.34 U	0.34 U	0.34 U
Trichlorotrifluoroethane (Freon 113)	1.2 U	1.2 U	1.2 U	6400	150	1.2 U	---
Vinyl chloride	0.19 U	0.19 U	0.19 U	0.95 U	0.19 U	0.19 U	0.19 U
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Laboratory	DMA	DMA	DMA	DMA	DMA	DMA	DMA

See last page of Table 7 for footnotes and explanations.

TABLE 7
SUMMARY OF RESULTS FOR VOLATILE ORGANIC COMPOUNDS
IN SHALLOW WELLS, SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	HAR-14	HAR-15
FLUTe Sample Port	---	---
Sample Date	04/15/03	04/15/03
Sample Type	Split	Primary
Sample Qualifier	---	---
Compound (ug/l)		
1,1,1-Trichloroethane	---	0.3 U
1,1,2,2-Tetrachloroethane	---	0.29 U
1,1,2-Trichloroethane	---	0.3 U
1,1-Dichloroethane	---	0.27 U
1,1-Dichloroethene	---	0.32 U
1,2-Dichlorobenzene	---	0.32 U
1,2-Dichloroethane	---	0.28 U
1,2-Dichloropropane	---	0.35 U
1,3-Dichlorobenzene	---	0.35 U
1,4-Dichlorobenzene	---	0.37 U
1,4-Dioxane	94	2.54 C
2-Butanone (MEK)	---	3.8 U
2-Chloroethyl Vinyl Ether	---	---
2-Hexanone	---	2.5 U
4-Methyl-2-pentanone (MIBK)	---	2.5 U
Acetone	---	4.8 U
Benzene	---	0.28 U
Bromodichloromethane	---	0.3 U
Bromoform	---	0.25 U
Bromomethane	---	0.2 U
Carbon disulfide	---	0.33 U
Carbon tetrachloride	---	0.28 UJ
Chlorobenzene	---	0.36 U
Chloroethane	---	0.33 U
Chloroform	---	0.33 U
Chloromethane	---	0.14 U
cis-1,2-Dichloroethene	---	0.32 U
cis-1,3-Dichloropropene	---	0.22 U
Dibromochloromethane	---	0.28 U
Ethylbenzene	---	0.25 U
m,p-Xylenes	---	0.38 U
Methylene chloride	---	0.33 U
o-Xylene	---	0.24 U
Tetrachloroethene	---	0.32 U
Toluene	---	0.49 U
trans-1,2-Dichloroethene	---	0.27 U
trans-1,3-Dichloropropene	---	0.24 U
Trichloroethene	---	0.26 U
Trichlorofluoromethane	---	0.34 U
Trichlorotrifluoroethane (Freon 113)	---	---
Vinyl chloride	---	0.19 U
Analytical Method	8260B	8260B
Laboratory	DMA	DMA

See last page of Table 7 for footnotes and explanations.

TABLE 7
FOOTNOTES AND EXPLANATIONS

AMA	=	American Analytics of Chatsworth, California.
DMA	=	Del Mar Analytical of Irvine, California.
(---)	=	Analysis not performed.
Primary	=	Primary sample.
Dup	=	Sample duplicate.
Split	=	Sample split.
ug/l	=	Micrograms per liter.
C	=	Possible carry-over contaminant.
J	=	Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL).
U	=	Not detected; numerical value represents the Method Detection Limit for that compound.
pH	=	pH of preserved sample did not meet the method preservation requirements.
UJ	=	Not detected. Estimated detection limit as a result of calibration verification recovery exceeding the upper acceptance limit.
L	=	Laboratory Contaminant.

Notes:

Low-level 1,4-dioxane analyses were performed on primary samples by Ceimic Corporation using modified EPA method 8260 SIM.

TABLE 8

SUMMARY OF RESULTS FOR VOLATILE ORGANIC COMPOUNDS
IN CHATSWORTH FORMATION WELLS, SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	RD-01	RD-02	RD-04	RD-04	RD-05B	RD-05B	RD-05C
FLUTe Sample Port	---	---	---	---	---	---	---
Sample Date	05/07/03	05/05/03	05/07/03	05/07/03	05/09/03	05/09/03	05/09/03
Sample Type	Primary	Primary	Primary	Split	Primary	Dup	Primary
Sample Qualifier	---	---	---	---	---	---	---
Compound (ug/l)							
1,1,1-Trichloroethane	3 U	1.5 U	0.3 U	---	0.3 U	0.3 U	0.3 U
1,1,2,2-Tetrachloroethane	2.9 U	1.4 U	0.29 U	---	0.29 U	0.29 U	0.29 U
1,1,2-Trichloroethane	3 U	1.5 U	0.3 U	---	0.3 U	0.3 U	0.3 U
1,1-Dichloroethane	2.7 U	1.4 U	0.27 U	---	0.27 U	0.27 U	0.27 U
1,1-Dichloroethene	3.2 U	1.6 U	0.32 U	---	0.32 U	0.32 U	0.32 U
1,2-Dichlorobenzene	3.2 U	1.6 U	0.32 U	---	0.32 U	0.32 U	0.32 U
1,2-Dichloroethane	2.8 U	1.4 U	0.28 U	---	0.28 U	0.28 U	0.28 U
1,2-Dichloropropane	3.5 U	1.8 U	0.35 U	---	0.35 U	0.35 U	0.35 U
1,3-Dichlorobenzene	3.5 U	1.8 U	0.35 U	---	0.35 U	0.35 U	0.35 U
1,4-Dichlorobenzene	3.7 U	1.8 U	0.37 U	---	0.37 U	0.37 U	0.37 U
1,4-Dioxane	2.67	2.32	0.331 U	0.45 U	---	---	---
2-Butanone (MEK)	38 U	19 U	3.8 U	---	3.8 U	3.8 U	3.8 U
2-Chloroethyl Vinyl Ether	---	---	---	---	---	---	---
2-Hexanone	25 U	12 U	2.5 U	---	2.5 U	2.5 U	2.5 U
4-Methyl-2-pentanone (MIBK)	25 U	12 U	2.5 U	---	2.5 U	2.5 U	2.5 U
Acetone	45 U	22 U	4.5 U	---	4.5 U	4.5 U	4.5 U
Benzene	2.8 U	1.4 U	0.28 U	---	0.28 U	0.28 U	0.28 U
Bromodichloromethane	3 U	1.5 U	0.3 U	---	0.3 U	0.3 U	0.3 U
Bromoform	2.5 U	1.2 U	0.25 U	---	0.25 U	0.25 U	0.25 U
Bromomethane	2 U	1 U	0.2 U	---	0.2 U	0.2 U	0.2 U
Carbon disulfide	3.3 U	1.6 U	0.33 U	---	0.33 U	0.33 U	0.33 U
Carbon tetrachloride	2.8 U	1.4 U	0.28 U	---	0.28 U	0.28 U	0.28 U
Chlorobenzene	3.6 U	1.8 U	0.36 U	---	0.36 U	0.36 U	0.36 U
Chloroethane	3.3 U	1.6 U	0.33 U	---	0.33 U	0.33 U	0.33 U
Chloroform	3.3 U	1.6 U	0.33 U	---	0.33 U	0.33 U	0.33 U
Chloromethane	1.4 U	0.7 U	0.14 U	---	0.14 U	0.14 U	0.14 U
cis-1,2-Dichloroethene	690	390	13	---	0.32 U	0.32 U	0.32 U
cis-1,3-Dichloropropene	2.2 U	1.1 U	0.22 U	---	0.22 U	0.22 U	0.22 U
Dibromochloromethane	2.8 U	1.4 U	0.28 U	---	0.28 U	0.28 U	0.28 U
Ethylbenzene	2.5 U	1.2 U	0.25 U	---	0.25 U	0.25 U	0.25 U
m,p-Xylenes	3.8 U	1.9 U	0.38 U	---	0.38 U	0.38 U	0.38 U
Methylene chloride	5.7 J	1.6 U	0.33 U	---	0.33 U	0.33 U	0.33 U
o-Xylene	2.4 U	1.2 U	0.24 U	---	0.24 U	0.24 U	0.24 U
Tetrachloroethene	3.2 U	1.6 U	0.32 U	---	0.32 U	0.32 U	0.32 U
Toluene	4.9 U	2.4 U	0.49 U	---	0.49 U	0.49 U	0.49 U
trans-1,2-Dichloroethene	23	24	0.28 J	---	0.27 U	0.27 U	0.27 U
trans-1,3-Dichloropropene	2.4 U	1.2 U	0.24 U	---	0.24 U	0.24 U	0.24 U
Trichloroethene	970	330	60	---	0.48 J	0.6 J	0.45 J
Trichlorofluoromethane	3.4 U	1.7 U	0.34 U	---	0.34 U	0.34 U	0.34 U
Trichlorotrifluoroethane (Freon 113)	12 U	6 U	1.2 U	---	1.2 U	1.2 U	1.2 U
Vinyl chloride	6	7.5	0.19 U	---	0.19 U	0.19 U	0.19 U
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Laboratory	DMA	DMA	DMA	DMA	DMA	DMA	DMA

See last page of Table 8 for footnotes and explanations.

TABLE 8
SUMMARY OF RESULTS FOR VOLATILE ORGANIC COMPOUNDS
IN CHATSWORTH FORMATION WELLS, SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	RD-06	RD-10	RD-13	RD-16	RD-16	RD-18	RD-19
FLUTe Sample Port	---	Comp	---	---	---	---	---
Sample Date	05/09/03	04/30/03	05/13/03	05/13/03	05/13/03	05/13/03	05/06/03
Sample Type	Primary	Primary	Primary	Primary	Split	Primary	Primary
Sample Qualifier	---	---	---	---	---	---	---
Compound (ug/l)							
1,1,1-Trichloroethane	0.3 U	0.3 U	0.3 U	0.3 U	0.2 U	0.3 U	0.3 U
1,1,2,2-Tetrachloroethane	0.29 U	0.29 U	0.29 U	0.29 U	0.4 U	0.29 U	0.29 U
1,1,2-Trichloroethane	0.3 U	0.3 U	0.3 U	0.3 U	0.2 U	0.3 U	0.3 U
1,1-Dichloroethane	0.27 U	0.27 U	0.27 U	0.27 U	0.2 U	0.27 U	0.27 U
1,1-Dichloroethene	0.32 U	0.32 U	0.32 U	0.32 U	0.3 U	0.32 U	0.32 U
1,2-Dichlorobenzene	0.32 U	0.32 U	0.32 U	0.32 U	0.2 U	0.32 U	0.32 U
1,2-Dichloroethane	0.28 U	0.28 U	0.28 U	0.28 U	0.2 U	0.28 U	0.28 U
1,2-Dichloropropane	0.35 U	0.35 U	0.35 U	0.35 U	0.4 U	0.35 U	0.35 U
1,3-Dichlorobenzene	0.35 U	0.35 U	0.35 U	0.35 U	0.2 U	0.35 U	0.35 U
1,4-Dichlorobenzene	0.37 U	0.37 U	0.37 U	0.37 U	0.2 U	0.37 U	0.37 U
1,4-Dioxane	---	0.07 U	---	---	---	---	---
2-Butanone (MEK)	3.8 U	3.8 U	3.8 U	3.8 U	7 U	3.8 U	3.8 U
2-Chloroethyl Vinyl Ether	---	---	---	---	0.3 U	---	---
2-Hexanone	2.5 U	2.5 U	2.5 U	2.5 U	0.7 U	2.5 U	2.5 U
4-Methyl-2-pentanone (MIBK)	2.5 U	2.5 U	2.5 U	2.5 U	0.2 U	2.5 U	2.5 U
Acetone	4.5 U	9.4 J,F	7.5 J,L	4.5 U	3 U	5.8 J,L	4.8 U
Benzene	0.28 U	0.28 U	0.28 U	0.28 U	0.1 U	0.28 U	0.28 U
Bromodichloromethane	0.3 U	0.3 U	0.3 U	0.3 U	0.1 U	0.3 U	0.3 U
Bromoform	0.25 U	0.25 U	0.25 U	0.25 U	0.4 U	0.25 U	0.25 U
Bromomethane	0.2 U	0.2 U	0.2 U	0.2 U	0.5 U	0.2 U	0.2 U
Carbon disulfide	0.33 U	0.33 U	0.33 U	0.33 U	0.2 U	0.33 U	0.33 U
Carbon tetrachloride	0.28 U	0.28 U	0.28 U	0.28 U	0.3 U	0.28 U	0.28 U
Chlorobenzene	0.36 U	0.39 J,F	0.36 U	0.36 U	0.1 U	0.36 U	0.36 U
Chloroethane	0.33 U	0.33 U	0.33 U	0.33 U	0.3 U	0.33 U	0.33 U
Chloroform	0.33 U	0.33 U	0.33 U	0.33 U	0.2 U	0.33 U	0.33 U
Chloromethane	0.14 U	0.14 U	0.14 U	0.14 U	0.4 U	0.28 J	0.14 U
cis-1,2-Dichloroethene	0.32 U	12	0.32 U	0.32 U	0.2 U	0.32 U	0.32 U
cis-1,3-Dichloropropene	0.22 U	0.22 U	0.22 U	0.22 U	0.2 U	0.22 U	0.22 U
Dibromochloromethane	0.28 U	0.28 U	0.28 U	0.28 U	0.2 U	0.28 U	0.28 U
Ethylbenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.2 U	0.25 U	0.25 U
m,p-Xylenes	0.38 U	0.38 U	0.38 U	0.38 U	0.3 U	0.38 U	0.38 U
Methylene chloride	0.33 U	0.33 U	0.33 U	0.33 U	3 U	0.33 U	0.33 U
o-Xylene	0.24 U	0.24 U	0.24 U	0.24 U	0.2 U	0.24 U	0.24 U
Tetrachloroethene	0.32 U	0.32 U	0.32 U	0.32 U	0.2 U	0.32 U	0.32 U
Toluene	0.49 U	0.49 U	0.49 U	0.49 U	0.2 U	0.49 U	0.49 U
trans-1,2-Dichloroethene	0.27 U	0.47 J,F	0.27 U	0.27 U	0.2 U	0.27 U	0.27 U
trans-1,3-Dichloropropene	0.24 U	0.24 U	0.24 U	0.24 U	0.2 U	0.24 U	0.24 U
Trichloroethene	0.26 U	4.9	0.26 U	0.26 U	0.2 U	0.26 U	0.26 U
Trichlorofluoromethane	0.34 U	0.34 U	0.34 U	0.34 U	0.1 U	0.34 U	0.34 U
Trichlorotrifluoroethane (Freon 113)	1.2 U	1.2 U	1.2 U	1.2 U	0.2 U	1.2 U	1.2 U
Vinyl chloride	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Laboratory	DMA	DMA	DMA	DMA	AMA	DMA	DMA

See last page of Table 8 for footnotes and explanations.

TABLE 8
SUMMARY OF RESULTS FOR VOLATILE ORGANIC COMPOUNDS
IN CHATSWORTH FORMATION WELLS, SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	RD-19	RD-22	RD-22	RD-26	RD-29	RD-32	RD-33B
FLUTe Sample Port	---	Z2	Z2	---	---	---	---
Sample Date	05/06/03	04/30/03	04/30/03	05/15/03	05/13/03	05/13/03	05/14/03
Sample Type	Dup	Primary	Dup	Primary	Primary	Primary	Primary
Sample Qualifier	---	---	---	---	---	---	---
Compound (ug/l)							
1,1,1-Trichloroethane	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,1,2,2-Tetrachloroethane	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
1,1,2-Trichloroethane	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,1-Dichloroethane	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
1,1-Dichloroethene	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
1,2-Dichlorobenzene	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
1,2-Dichloroethane	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
1,2-Dichloropropane	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
1,3-Dichlorobenzene	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
1,4-Dichlorobenzene	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U
1,4-Dioxane	---	---	---	---	---	---	---
2-Butanone (MEK)	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
2-Chloroethyl Vinyl Ether	---	---	---	---	---	---	---
2-Hexanone	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
4-Methyl-2-pentanone (MIBK)	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Acetone	5.7 U	8.7 J,F	16 F	4.5 U	8.2 J,L	5.7 J,L	6.5 J,L
Benzene	0.28 U	0.56 F	0.9 F	0.28 U	0.28 U	0.28 U	0.28 U
Bromodichloromethane	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Bromoform	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Bromomethane	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Carbon disulfide	0.33 U	0.33 U	0.33 U	0.33 U	1.8 J	0.33 U	0.33 U
Carbon tetrachloride	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
Chlorobenzene	0.36 U	0.36 U	0.42 J,F	0.36 U	0.36 U	0.36 U	0.36 U
Chloroethane	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Chloroform	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Chloromethane	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
cis-1,2-Dichloroethene	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
cis-1,3-Dichloropropene	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
Dibromochloromethane	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
Ethylbenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
m,p-Xylenes	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U
Methylene chloride	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
o-Xylene	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
Tetrachloroethene	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
Toluene	0.49 U	1.9 F	0.9 J,F	0.49 U	0.49 U	0.49 U	0.49 U
trans-1,2-Dichloroethene	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
trans-1,3-Dichloropropene	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
Trichloroethene	0.26 U	0.26 U	0.26 U	3.4	1.4	0.26 U	0.26 U
Trichlorofluoromethane	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U
Trichlorotrifluoroethane (Freon 113)	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Vinyl chloride	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Laboratory	DMA	DMA	DMA	DMA	DMA	DMA	DMA

See last page of Table 8 for footnotes and explanations.

TABLE 8
SUMMARY OF RESULTS FOR VOLATILE ORGANIC COMPOUNDS
IN CHATSWORTH FORMATION WELLS, SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	RD-33C	RD-34A	RD-37	RD-38B	RD-39B	RD-40	RD-40
FLUTe Sample Port	---	---	---	---	---	---	---
Sample Date	05/13/03	05/16/03	05/06/03	05/02/03	05/01/03	05/08/03	05/08/03
Sample Type	Primary	Primary	Primary	Primary	Primary	Primary	Dup
Sample Qualifier	---	---	---	---	---	---	---
Compound (ug/l)							
1,1,1-Trichloroethane	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,1,2,2-Tetrachloroethane	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
1,1,2-Trichloroethane	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,1-Dichloroethane	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
1,1-Dichloroethene	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
1,2-Dichlorobenzene	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
1,2-Dichloroethane	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
1,2-Dichloropropane	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
1,3-Dichlorobenzene	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
1,4-Dichlorobenzene	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U
1,4-Dioxane	---	---	---	---	---	---	---
2-Butanone (MEK)	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
2-Chloroethyl Vinyl Ether	---	---	---	---	---	---	---
2-Hexanone	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
4-Methyl-2-pentanone (MIBK)	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Acetone	8.6 J,L	5 J,L	4.7 J,L	4.5 U	4.5 U	8.4 J,L	6.6 J,L
Benzene	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
Bromodichloromethane	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Bromoform	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Bromomethane	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Carbon disulfide	0.33 U	0.59 J	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Carbon tetrachloride	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
Chlorobenzene	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U
Chloroethane	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Chloroform	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Chloromethane	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
cis-1,2-Dichloroethene	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
cis-1,3-Dichloropropene	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
Dibromochloromethane	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
Ethylbenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
m,p-Xylenes	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U
Methylene chloride	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
o-Xylene	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
Tetrachloroethene	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
Toluene	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U
trans-1,2-Dichloroethene	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
trans-1,3-Dichloropropene	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
Trichloroethene	0.26 U	1.4	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
Trichlorofluoromethane	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U
Trichlorotrifluoroethane (Freon 113)	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Vinyl chloride	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Laboratory	DMA	DMA	DMA	DMA	DMA	DMA	DMA

See last page of Table 8 for footnotes and explanations.

TABLE 8
SUMMARY OF RESULTS FOR VOLATILE ORGANIC COMPOUNDS
IN CHATSWORTH FORMATION WELLS, SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	RD-43A	RD-43B	RD-43C	RD-44	RD-48B	RD-48C	RD-49A
FLUTe Sample Port	---	---	---	---	---	---	---
Sample Date	05/02/03	05/01/03	05/02/03	05/06/03	05/15/03	05/13/03	05/07/03
Sample Type	Primary	Primary	Primary	Primary	Primary	Primary	Primary
Sample Qualifier	---	---	---	---	---	---	---
Compound (ug/l)							
1,1,1-Trichloroethane	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	30 U
1,1,2,2-Tetrachloroethane	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	29 U
1,1,2-Trichloroethane	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	30 U
1,1-Dichloroethane	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	27 U
1,1-Dichloroethene	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	32 U
1,2-Dichlorobenzene	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	32 U
1,2-Dichloroethane	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	28 U
1,2-Dichloropropane	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	35 U
1,3-Dichlorobenzene	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	35 U
1,4-Dichlorobenzene	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U	37 U
1,4-Dioxane	---	---	---	0.147 U	---	---	0.65 J
2-Butanone (MEK)	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	380 U
2-Chloroethyl Vinyl Ether	---	---	---	---	---	---	---
2-Hexanone	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	250 U
4-Methyl-2-pentanone (MIBK)	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	250 U
Acetone	4.5 U	4.5 U	4.5 U	4.5 U	11 S	4.5 U	450 U
Benzene	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	28 U
Bromodichloromethane	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	30 U
Bromoform	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	25 U
Bromomethane	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	20 U
Carbon disulfide	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	33 U
Carbon tetrachloride	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	28 U
Chlorobenzene	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	36 U
Chloroethane	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	33 U
Chloroform	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	33 U
Chloromethane	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	14 U
cis-1,2-Dichloroethene	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	2100
cis-1,3-Dichloropropene	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	22 U
Dibromochloromethane	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	28 U
Ethylbenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	25 U
m,p-Xylenes	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	38 U
Methylene chloride	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	55 J,L
o-Xylene	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	24 U
Tetrachloroethene	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	32 U
Toluene	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	49 U
trans-1,2-Dichloroethene	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	40 J
trans-1,3-Dichloropropene	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	24 U
Trichloroethene	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	4000
Trichlorofluoromethane	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	34 U
Trichlorotrifluoroethane (Freon 113)	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	120 U
Vinyl chloride	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	19 U
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Laboratory	DMA	DMA	DMA	DMA	DMA	DMA	DMA

See last page of Table 8 for footnotes and explanations.

TABLE 8
SUMMARY OF RESULTS FOR VOLATILE ORGANIC COMPOUNDS
IN CHATSWORTH FORMATION WELLS, SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	RD-49A	RD-49B	RD-49B	RD-49C	RD-51C	RD-52C	RD-52C
FLUTe Sample Port	---	---	---	---	---	---	---
Sample Date	05/07/03	05/06/03	05/06/03	05/06/03	05/08/03	05/14/03	05/14/03
Sample Type	Split	Primary	Split	Primary	Primary	Primary	Dup
Sample Qualifier	---	---	---	---	---	---	---
Compound (ug/l)							
1,1,1-Trichloroethane	---	0.6 U	---	0.3 U	0.3 U	0.3 U	0.3 U
1,1,2,2-Tetrachloroethane	---	0.58 U	---	0.29 U	0.29 U	0.29 U	0.29 U
1,1,2-Trichloroethane	---	0.6 U	---	0.3 U	0.3 U	0.3 U	0.3 U
1,1-Dichloroethane	---	0.54 U	---	0.27 U	0.27 U	0.27 U	0.27 U
1,1-Dichloroethene	---	0.64 U	---	0.32 U	0.32 U	0.32 U	0.32 U
1,2-Dichlorobenzene	---	0.64 U	---	0.32 U	0.32 U	0.32 U	0.32 U
1,2-Dichloroethane	---	0.56 U	---	0.28 U	0.28 U	0.28 U	0.28 U
1,2-Dichloropropane	---	0.7 U	---	0.35 U	0.35 U	0.35 U	0.35 U
1,3-Dichlorobenzene	---	0.7 U	---	0.35 U	0.35 U	0.35 U	0.35 U
1,4-Dichlorobenzene	---	0.74 U	---	0.37 U	0.37 U	0.37 U	0.37 U
1,4-Dioxane	0.73 U	2.76	2.4 U	1.08	---	---	---
2-Butanone (MEK)	---	7.6 U	---	3.8 U	3.8 U	3.8 U	3.8 U
2-Chloroethyl Vinyl Ether	---	---	---	---	---	---	---
2-Hexanone	---	5 U	---	2.5 U	2.5 U	2.5 U	2.5 U
4-Methyl-2-pentanone (MIBK)	---	5 U	---	2.5 U	2.5 U	2.5 U	2.5 U
Acetone	---	9 U	---	4.5 U	4.5 U	4.5 U	4.5 U
Benzene	---	0.56 U	---	0.28 U	0.28 U	0.28 U	0.28 U
Bromodichloromethane	---	0.6 U	---	0.3 U	0.3 U	0.3 U	0.3 U
Bromoform	---	0.5 U	---	0.25 U	0.25 U	0.25 U	0.25 U
Bromomethane	---	0.4 U	---	0.2 U	0.2 U	0.2 U	0.2 U
Carbon disulfide	---	0.66 U	---	0.33 U	0.33 U	0.33 U	0.33 U
Carbon tetrachloride	---	0.56 U	---	0.28 U	0.28 U	0.28 U	0.28 U
Chlorobenzene	---	0.72 U	---	0.36 U	0.36 U	0.36 U	0.36 U
Chloroethane	---	0.66 U	---	0.33 U	0.33 U	0.33 U	0.33 U
Chloroform	---	0.66 U	---	0.33 U	0.33 U	0.33 U	0.33 U
Chloromethane	---	0.28 U	---	0.14 U	0.14 U	0.14 U	0.14 U
cis-1,2-Dichloroethene	---	220	---	81	0.32 U	0.32 U	0.32 U
cis-1,3-Dichloropropene	---	0.44 U	---	0.22 U	0.22 U	0.22 U	0.22 U
Dibromochloromethane	---	0.56 U	---	0.28 U	0.28 U	0.28 U	0.28 U
Ethylbenzene	---	0.5 U	---	0.25 U	0.25 U	0.25 U	0.25 U
m,p-Xylenes	---	0.76 U	---	0.38 U	0.38 U	0.38 U	0.38 U
Methylene chloride	---	0.66 U	---	0.33 U	0.33 U	0.33 U	0.33 U
o-Xylene	---	0.48 U	---	0.24 U	0.24 U	0.24 U	0.24 U
Tetrachloroethene	---	0.64 U	---	0.32 U	0.32 U	0.32 U	0.32 U
Toluene	---	0.98 U	---	0.49 U	0.49 U	0.49 U	0.49 U
trans-1,2-Dichloroethene	---	11	---	2.9	0.27 U	0.27 U	0.27 U
trans-1,3-Dichloropropene	---	0.48 U	---	0.24 U	0.24 U	0.24 U	0.24 U
Trichloroethene	---	250	---	24	0.26 U	0.26 U	0.26 U
Trichlorofluoromethane	---	0.68 U	---	0.34 U	0.34 U	0.34 U	0.34 U
Trichlorotrifluoroethane (Freon 113)	---	2.4 U	---	1.2 U	1.2 U	1.2 U	1.2 U
Vinyl chloride	---	5.8	---	2.5	0.19 U	0.19 U	0.19 U
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Laboratory	DMA	DMA	DMA	DMA	DMA	DMA	DMA

See last page of Table 8 for footnotes and explanations.

TABLE 8

SUMMARY OF RESULTS FOR VOLATILE ORGANIC COMPOUNDS
IN CHATSWORTH FORMATION WELLS, SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	RD-55A	RD-55A	RD-55B	RD-55B	RD-57	RD-58B	RD-59A
FLUTe Sample Port	---	---	---	---	Z8	---	---
Sample Date	05/05/03	05/05/03	05/06/03	05/06/03	04/30/03	05/05/03	05/15/03
Sample Type	Primary	Dup	Primary	Dup	Primary	Primary	Primary
Sample Qualifier	---	---	---	---	---	---	---
Compound (ug/l)							
1,1,1-Trichloroethane	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,1,2,2-Tetrachloroethane	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
1,1,2-Trichloroethane	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,1-Dichloroethane	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
1,1-Dichloroethene	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
1,2-Dichlorobenzene	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
1,2-Dichloroethane	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
1,2-Dichloropropane	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
1,3-Dichlorobenzene	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
1,4-Dichlorobenzene	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U
1,4-Dioxane	---	---	---	---	---	---	---
2-Butanone (MEK)	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
2-Chloroethyl Vinyl Ether	---	---	---	---	---	---	---
2-Hexanone	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
4-Methyl-2-pentanone (MIBK)	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Acetone	4.5 U	4.5 U	4.5 U	4.5 U	7.4 U	4.5 U	4.7 J,L
Benzene	0.28 U	0.28 U	0.28 U	0.28 U	0.42 J,F	0.28 U	0.28 U
Bromodichloromethane	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Bromoform	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Bromomethane	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Carbon disulfide	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Carbon tetrachloride	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
Chlorobenzene	0.36 U	0.36 U	0.36 U	0.36 U	0.55 J,F	0.36 U	0.36 U
Chloroethane	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Chloroform	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Chloromethane	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
cis-1,2-Dichloroethene	27	20	9.5	6.2	0.32 U	0.32 U	0.32 U
cis-1,3-Dichloropropene	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
Dibromochloromethane	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
Ethylbenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
m,p-Xylenes	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U
Methylene chloride	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
o-Xylene	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
Tetrachloroethene	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
Toluene	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U
trans-1,2-Dichloroethene	1.4	0.94 J	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
trans-1,3-Dichloropropene	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
Trichloroethene	25	20	13	8.6	0.26 U	0.26 U	0.26 U
Trichlorofluoromethane	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U
Trichlorotrifluoroethane (Freon 113)	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Vinyl chloride	6.4	4.4	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Laboratory	DMA	DMA	DMA	DMA	DMA	DMA	DMA

See last page of Table 8 for footnotes and explanations.

TABLE 8

SUMMARY OF RESULTS FOR VOLATILE ORGANIC COMPOUNDS
IN CHATSWORTH FORMATION WELLS, SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	RD-59B	RD-59C	RD-60	RD-61	RD-62	RD-66	RD-66
FLUTe Sample Port	---	---	---	---	---	---	---
Sample Date	05/15/03	05/15/03	05/15/03	05/08/03	05/02/03	05/08/03	05/08/03
Sample Type	Primary	Primary	Primary	Primary	Primary	Primary	Dup
Sample Qualifier	---	---	---	---	---	---	---
Compound (ug/l)							
1,1,1-Trichloroethane	0.3 U	0.3 U	0.6 U	0.3 U	0.3 U	0.3 U	0.3 U
1,1,2,2-Tetrachloroethane	0.29 U	0.29 U	0.58 U	0.29 U	0.29 U	0.29 U	0.29 U
1,1,2-Trichloroethane	0.3 U	0.3 U	0.6 U	0.3 U	0.3 U	0.3 U	0.3 U
1,1-Dichloroethane	0.27 U	0.27 U	2.3	0.27 U	0.27 U	0.27 U	0.27 U
1,1-Dichloroethene	0.32 U	0.32 U	2.1	0.32 U	0.32 U	0.32 U	0.32 U
1,2-Dichlorobenzene	0.32 U	0.32 U	0.64 U	0.32 U	0.32 U	0.32 U	0.32 U
1,2-Dichloroethane	0.28 U	0.28 U	7.2	0.28 U	0.28 U	0.28 U	0.28 U
1,2-Dichloropropane	0.35 U	0.35 U	0.7 U	0.35 U	0.35 U	0.35 U	0.35 U
1,3-Dichlorobenzene	0.35 U	0.35 U	0.7 U	0.35 U	0.35 U	0.35 U	0.35 U
1,4-Dichlorobenzene	0.37 U	0.37 U	0.74 U	0.37 U	0.37 U	0.37 U	0.37 U
1,4-Dioxane	---	---	---	---	---	---	---
2-Butanone (MEK)	3.8 U	3.8 U	7.6 U	3.8 U	3.8 U	3.8 U	3.8 U
2-Chloroethyl Vinyl Ether	---	---	---	---	---	---	---
2-Hexanone	2.5 U	2.5 U	5 U	2.5 U	2.5 U	2.5 U	2.5 U
4-Methyl-2-pentanone (MIBK)	2.5 U	2.5 U	5 U	2.5 U	2.5 U	2.5 U	2.5 U
Acetone	4.5 U	4.5 U	9 U	6.2 J,L	6.5 U	4.5 U	4.5 U
Benzene	0.28 U	0.28 U	0.56 U	0.28 U	0.28 U	0.28 U	0.28 U
Bromodichloromethane	0.3 U	0.3 U	0.6 U	0.3 U	0.3 U	0.3 U	0.3 U
Bromoform	0.25 U	0.25 U	0.5 U	0.25 U	0.25 U	0.25 U	0.25 U
Bromomethane	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U
Carbon disulfide	0.33 U	0.33 U	0.66 U	0.33 U	0.33 U	0.33 U	0.33 U
Carbon tetrachloride	0.28 U	0.28 U	0.56 U	0.28 U	0.28 U	0.28 U	0.28 U
Chlorobenzene	0.36 U	0.36 U	0.72 U	0.36 U	0.36 U	0.36 U	0.36 U
Chloroethane	0.33 U	0.33 U	0.66 U	0.33 U	0.33 U	0.33 U	0.33 U
Chloroform	0.33 U	0.33 U	0.66 U	0.33 U	0.33 U	0.33 U	0.33 U
Chloromethane	0.14 U	0.14 U	0.28 U	0.14 U	0.29 J	0.14 U	0.14 U
cis-1,2-Dichloroethene	0.32 U	0.32 U	7.7	0.32 U	0.32 U	0.32 U	0.32 U
cis-1,3-Dichloropropene	0.22 U	0.22 U	0.44 U	0.22 U	0.22 U	0.22 U	0.22 U
Dibromochloromethane	0.28 U	0.28 U	0.56 U	0.28 U	0.28 U	0.28 U	0.28 U
Ethylbenzene	0.25 U	0.25 U	0.5 U	0.25 U	0.25 U	0.25 U	0.25 U
m,p-Xylenes	0.38 U	0.38 U	0.76 U	0.38 U	0.38 U	0.38 U	0.38 U
Methylene chloride	0.33 U	0.33 U	0.66 U	0.33 U	0.33 U	0.33 U	0.33 U
o-Xylene	0.24 U	0.24 U	0.48 U	0.24 U	0.24 U	0.24 U	0.24 U
Tetrachloroethene	0.32 U	0.32 U	0.64 U	0.32 U	0.32 U	0.32 U	0.32 U
Toluene	0.49 U	0.49 U	0.98 U	0.49 U	0.49 U	0.49 U	0.49 U
trans-1,2-Dichloroethene	0.27 U	0.27 U	0.54 U	0.27 U	0.27 U	0.27 U	0.27 U
trans-1,3-Dichloropropene	0.24 U	0.24 U	0.48 U	0.24 U	0.24 U	0.24 U	0.24 U
Trichloroethene	0.26 U	0.26 U	210	0.26 U	0.26 U	0.26 U	0.26 U
Trichlorofluoromethane	0.34 U	0.34 U	0.68 U	0.34 U	0.34 U	0.34 U	0.34 U
Trichlorotrifluoroethane (Freon 113)	1.2 U	1.2 U	2.4 U	1.2 U	1.2 U	1.2 U	1.2 U
Vinyl chloride	0.19 U	0.19 U	0.38 U	0.19 U	0.19 U	0.19 U	0.19 U
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Laboratory	DMA	DMA	DMA	DMA	DMA	DMA	DMA

See last page of Table 8 for footnotes and explanations.

TABLE 8
SUMMARY OF RESULTS FOR VOLATILE ORGANIC COMPOUNDS
IN CHATSWORTH FORMATION WELLS, SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	RD-68A	RD-68B	RD-70	RD-71	HAR-07	HAR-07	HAR-16
FLUTe Sample Port	---	---	---	---	---	---	Comp
Sample Date	05/15/03	05/15/03	05/01/03	05/08/03	04/16/03	04/16/03	04/17/03
Sample Type	Primary	Primary	Primary	Primary	Primary	Split	Primary
Sample Qualifier	---	---	---	---	---	---	---
Compound (ug/l)							
1,1,1-Trichloroethane	0.3 U	0.3 U	0.3 U	0.3 U	12 U	---	15 U
1,1,2,2-Tetrachloroethane	0.29 U	0.29 U	0.29 U	0.29 U	12 U	---	14 U
1,1,2-Trichloroethane	0.3 U	0.3 U	0.3 U	0.3 U	12 U	---	15 U
1,1-Dichloroethane	0.27 U	0.27 U	0.27 U	0.27 U	11 U	---	14 U
1,1-Dichloroethene	0.32 U	0.32 U	0.32 U	0.32 U	13 U	---	16 U
1,2-Dichlorobenzene	0.32 U	0.32 U	0.32 U	0.32 U	13 U	---	16 U
1,2-Dichloroethane	0.28 U	0.28 U	0.28 U	0.28 U	11 U	---	14 U
1,2-Dichloropropane	0.35 U	0.35 U	0.35 U	0.35 U	14 U	---	18 U
1,3-Dichlorobenzene	0.35 U	0.35 U	0.35 U	0.35 U	14 U	---	18 U
1,4-Dichlorobenzene	0.37 U	0.37 U	0.37 U	0.37 U	15 U	---	18 U
1,4-Dioxane	---	---	---	---	0.07 U	0.54 U	43
2-Butanone (MEK)	3.8 U	3.8 U	3.8 U	3.8 U	150 U	---	190 U
2-Chloroethyl Vinyl Ether	---	---	---	---	---	---	---
2-Hexanone	2.5 U	2.5 U	2.5 U	2.5 U	100 U	---	120 U
4-Methyl-2-pentanone (MIBK)	2.5 U	2.5 U	2.5 U	2.5 U	100 U	---	120 U
Acetone	4.5 U	4.5 U	5.2 J	4.5 U	180 U	---	220 U
Benzene	0.28 U	0.28 U	0.28 U	0.28 U	11 U	---	14 U
Bromodichloromethane	0.3 U	0.3 U	0.3 U	0.3 U	12 U	---	15 U
Bromoform	0.25 U	0.25 U	0.25 U	0.25 U	10 U	---	12 U
Bromomethane	0.2 U	0.2 U	0.2 U	0.2 U	8 U	---	10 U
Carbon disulfide	0.33 U	0.33 U	0.33 U	0.33 U	13 U	---	16 U
Carbon tetrachloride	0.28 U	0.28 U	0.28 U	0.28 U	11 U	---	14 U
Chlorobenzene	0.36 U	0.36 U	0.36 U	0.36 U	14 U	---	18 U
Chloroethane	0.33 U	0.33 U	0.33 U	0.33 U	13 U	---	16 U
Chloroform	0.33 U	0.33 U	0.33 U	0.33 U	13 U	---	16 U
Chloromethane	0.14 U	0.14 U	0.25 J	0.14 U	5.6 U	---	7 U
cis-1,2-Dichloroethene	0.32 U	0.32 U	0.32 U	0.32 U	2800	---	250
cis-1,3-Dichloropropene	0.22 U	0.22 U	0.22 U	0.22 U	8.8 U	---	11 U
Dibromochloromethane	0.28 U	0.28 U	0.28 U	0.28 U	11 U	---	14 U
Ethylbenzene	0.25 U	0.25 U	0.25 U	0.25 U	10 U	---	12 U
m,p-Xylenes	0.38 U	0.38 U	0.38 U	0.38 U	15 U	---	19 U
Methylene chloride	0.33 U	0.33 U	0.33 U	0.33 U	17 U	---	37 U
o-Xylene	0.24 U	0.24 U	0.24 U	0.24 U	9.6 U	---	12 U
Tetrachloroethene	0.32 U	0.32 U	0.32 U	0.32 U	13 U	---	16 U
Toluene	0.49 U	0.49 U	0.49 U	0.49 U	20 U	---	24 U
trans-1,2-Dichloroethene	0.27 U	0.27 U	0.27 U	0.27 U	99	---	14 U
trans-1,3-Dichloropropene	0.24 U	0.24 U	0.24 U	0.24 U	9.6 U	---	12 U
Trichloroethene	0.26 U	0.26 U	0.26 U	0.26 U	3300	---	2300
Trichlorofluoromethane	0.34 U	0.34 U	0.34 U	0.34 U	14 U	---	17 U
Trichlorotrifluoroethane (Freon 113)	1.2 U	1.2 U	1.2 U	1.2 U	---	---	---
Vinyl chloride	0.19 U	0.19 U	0.19 U	0.19 U	110 J	---	9.5 U
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Laboratory	DMA	DMA	DMA	DMA	DMA	DMA	DMA

See last page of Table 8 for footnotes and explanations.

TABLE 8
SUMMARY OF RESULTS FOR VOLATILE ORGANIC COMPOUNDS
IN CHATSWORTH FORMATION WELLS, SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	HAR-17	HAR-17	HAR-26	HAR-26	WS-04A	WS-04A	WS-05
FLUTe Sample Port	---	---	---	---	---	---	---
Sample Date	04/16/03	04/16/03	05/15/03	05/15/03	05/09/03	05/09/03	05/05/03
Sample Type	Primary	Dup	Primary	Dup	Primary	Dup	Primary
Sample Qualifier	---	---	---	---	---	---	---
Compound (ug/l)							
1,1,1-Trichloroethane	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,1,2,2-Tetrachloroethane	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
1,1,2-Trichloroethane	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,1-Dichloroethane	0.49 J	0.44 J	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
1,1-Dichloroethene	1.6 J	1.9 J	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
1,2-Dichlorobenzene	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
1,2-Dichloroethane	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
1,2-Dichloropropane	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
1,3-Dichlorobenzene	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
1,4-Dichlorobenzene	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U
1,4-Dioxane	5.44	---	---	---	---	---	2.38
2-Butanone (MEK)	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
2-Chloroethyl Vinyl Ether	---	---	---	---	---	---	---
2-Hexanone	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
4-Methyl-2-pentanone (MIBK)	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Acetone	4.6 J	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U
Benzene	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
Bromodichloromethane	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Bromoform	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Bromomethane	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Carbon disulfide	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Carbon tetrachloride	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
Chlorobenzene	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U
Chloroethane	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Chloroform	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Chloromethane	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
cis-1,2-Dichloroethene	20	18	0.32 U	0.32 U	0.32 U	0.32 U	2.6
cis-1,3-Dichloropropene	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
Dibromochloromethane	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
Ethylbenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
m,p-Xylenes	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U
Methylene chloride	0.62 U	0.38 UJ	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
o-Xylene	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
Tetrachloroethene	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
Toluene	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U	0.49 U
trans-1,2-Dichloroethene	1.7 J	1.1 J	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
trans-1,3-Dichloropropene	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
Trichloroethene	93 J	83	0.26 U	0.26 U	0.26 U	0.26 U	1.3
Trichlorofluoromethane	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U
Trichlorotrifluoroethane (Freon 113)	---	---	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Vinyl chloride	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Analytical Method	8260B	8260B	8260B	8260B	8260B	8260B	8260B
Laboratory	DMA	DMA	DMA	DMA	DMA	DMA	DMA

See last page of Table 8 for footnotes and explanations.

TABLE 8

SUMMARY OF RESULTS FOR VOLATILE ORGANIC COMPOUNDS
IN CHATSWORTH FORMATION WELLS, SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	WS-05	WS-06	WS-09	WS-09A
FLUTe Sample Port	---	---	---	---
Sample Date	05/05/03	05/07/03	05/07/03	05/01/03
Sample Type	Split	Primary	Primary	Primary
Sample Qualifier	---	---	---	---
Compound (ug/l)				
1,1,1-Trichloroethane	---	0.3 U	12 U	0.3 U
1,1,2,2-Tetrachloroethane	---	0.29 U	12 U	0.29 U
1,1,2-Trichloroethane	---	0.3 U	12 U	0.3 U
1,1-Dichloroethane	---	0.27 U	11 U	0.27 U
1,1-Dichloroethene	---	0.32 U	13 U	0.32 U
1,2-Dichlorobenzene	---	0.32 U	13 U	0.32 U
1,2-Dichloroethane	---	0.28 U	11 U	0.28 U
1,2-Dichloropropane	---	0.35 U	14 U	0.35 U
1,3-Dichlorobenzene	---	0.35 U	14 U	0.35 U
1,4-Dichlorobenzene	---	0.37 U	15 U	0.37 U
1,4-Dioxane	2.6 U	0.898 J	3.71	---
2-Butanone (MEK)	---	3.8 U	150 U	3.8 U
2-Chloroethyl Vinyl Ether	---	---	---	---
2-Hexanone	---	2.5 U	100 U	2.5 U
4-Methyl-2-pentanone (MIBK)	---	2.5 U	100 U	2.5 U
Acetone	---	4.5 U	180 U	4.5 U
Benzene	---	0.28 U	11 U	0.28 U
Bromodichloromethane	---	0.3 U	12 U	0.3 U
Bromoform	---	0.25 U	10 U	0.25 U
Bromomethane	---	0.2 U	8 U	0.2 U
Carbon disulfide	---	0.33 U	13 U	0.33 U
Carbon tetrachloride	---	0.28 U	11 U	0.28 U
Chlorobenzene	---	0.36 U	14 U	0.36 U
Chloroethane	---	0.33 U	13 U	0.33 U
Chloroform	---	0.33 U	13 U	0.33 U
Chloromethane	---	0.14 U	5.6 U	0.14 U
cis-1,2-Dichloroethene	---	36	410	4.4
cis-1,3-Dichloropropene	---	0.22 U	8.8 U	0.22 U
Dibromochloromethane	---	0.28 U	11 U	0.28 U
Ethylbenzene	---	0.25 U	10 U	0.25 U
m,p-Xylenes	---	0.38 U	15 U	0.38 U
Methylene chloride	---	0.33 U	13 U	0.33 U
o-Xylene	---	0.24 U	9.6 U	0.24 U
Tetrachloroethene	---	0.32 U	13 U	0.32 U
Toluene	---	0.49 U	20 U	0.49 U
trans-1,2-Dichloroethene	---	6.1	11 U	0.27 U
trans-1,3-Dichloropropene	---	0.24 U	9.6 U	0.24 U
Trichloroethene	---	2.8	7300	12
Trichlorofluoromethane	---	0.34 U	14 U	0.34 U
Trichlorotrifluoroethane (Freon 113)	---	1.2 U	48 U	1.2 U
Vinyl chloride	---	1.5	7.6 U	0.19 U
Analytical Method	8260B	8260B	8260B	8260B
Laboratory	DMA	DMA	DMA	DMA

See last page of Table 8 for footnotes and explanations.

TABLE 8
FOOTNOTES AND EXPLANATIONS

AMA	=	American Analytics of Chatsworth, California.
DMA	=	Del Mar Analytical of Irvine, California.
(---)	=	Analysis not performed.
Primary	=	Primary sample.
Dup	=	Sample duplicate.
Split	=	Sample split.
ug/l	=	Micrograms per liter.
F	=	Sampled through multi-level FLUTe ports. Footnoted results are not representative of historic groundwater samples, and may have been introduced in the FLUTe samples by compressed nitrogen gas, electrical tape and/or FLUTe components.
J	=	Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL).
L	=	Laboratory contaminant.
S	=	Suspect result.
U	=	Not detected; numerical value represents the Method Detection Limit for that compound.
Z	=	FLUTe sample port number.
Comp	=	Composite sample. The HAR-16 sample was composited at the laboratory from FLUTe ports 7 through 12. The RD-10 sample was composited at the laboratory from FLUTe ports 3, 6, and 9.

Notes:
* Low-level 1,4-dioxane analyses were performed by Ceimic Corporation using modified EPA method 8260 SIM.

TABLE 9

SUMMARY OF RESULTS FOR GASOLINE RANGE ORGANICS
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	Sample Date	EPA Method Number	Gasoline Range Organics (C6-C12) (micrograms per liter)	Laboratory
SHALLOW WELLS				
RS-30	05/01/03	8015	470	DMA
RS-31	05/01/03	8015	37 U	DMA

FOOTNOTES AND EXPLANATIONS:

U = Not detected; numerical value represents the Method Detection Limit for that compound.
DMA = Del Mar Analytical of Irvine, California.

TABLE 10

SUMMARY OF ANALYSES FOR TRACE METAL CONSTITUENTS AND CYANIDE
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier			RS-18	RD-22	RD-34A	RD-57
FLUTe Sample Port			--	Z2	---	Z8
Sample Date			05/02/03	06/02/03	05/16/03	04/30/03
Sample Type			Primary	Primary	Primary	Primary
Compound	Units	MCL				
Antimony	ug/l	6	5.4	---	0.54 U	1.1 J
Arsenic	ug/l	50	0.75 U	35	0.7 U	1.1 U
Barium	ug/l	1000	85	---	42	46
Beryllium	ug/l	4	0.11 U	---	0.078 U	0.11 U
Cadmium	ug/l	5	0.087 J	---	0.13 U	0.03 U
Chromium	ug/l	50	0.41 J	---	0.35 U	0.22 J
Cobalt	ug/l	NA	8.8	---	0.94 J	0.23 J
Copper	ug/l	1000 SMCL	1.8 J	---	3.7	0.38 J
Iron	ug/l	300 SMCL	4 U	---	490	79
Lead	ug/l	15 ECAL	0.13 J	---	0.65 J	0.13 U
Manganese	ug/l	50 SMCL	0.81 J	---	35	150
Mercury	mg/l	0.002	0.000063 U	---	0.000063 U	0.000063 U
Molybdenum	ug/l	NA	3.1	---	0.66 J	1.5
Nickel	ug/l	100	60	---	1.6	0.1 U
Selenium	ug/l	50	1.5 J	---	2.2	0.59 U
Silver	ug/l	100 SMCL	0.054 U	---	0.13 U	0.054 U
Thallium	ug/l	2	0.092 U	---	0.083 U	0.092 U
Total Cyanide	ug/l	150	---	---	0.0042 U	---
Vanadium	ug/l	50 ACAL	2.3	---	0.7 U	0.39 U
Zinc	ug/l	5000 SMCL	3.7 J	---	2400	2.2 J
Laboratory			DMA	DMA	DMA	DMA

See last page of Table 10 for footnotes and explanations.
See Table 12 for Appendix IX metals.

FOOTNOTES AND EXPLANATIONS

DMA	=	Del Mar Analytical of Irvine, California.
(---)	=	Analysis not performed.
Primary	=	Primary sample.
mg/l	=	Milligrams per liter.
ug/l	=	Micrograms per liter.
MCL	=	Maximum Contaminant Level, California primary drinking water standard (California Department of Health Services, 2003. http://www.dhs.ca.gov/ps/ddwem/publications/regulations/MCLrevisions6-12-03.pdf).
NA	=	Not available; no MCL promulgated.
J	=	Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL).
U	=	Not detected; numerical value represents the Method Detection Limit for that compound.
SMCL	=	Secondary drinking water MCL.
ECAL	=	Enforceable California Action Level to be met at a customer tap.
ACAL	=	Advisory California Action Level for unregulated chemical contaminants.
Z	=	FLUTe sample port number.

TABLE 11

SUMMARY OF PERCHLORATE RESULTS
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	Area	Sample Type	FLUTe Sample Port	FLUTe Sample Interval (feet below land surface)	Sample Date	Perchlorate (ug/l)	Laboratory
SHALLOW WELLS							
RS-11	IV	Primary	---	---	05/01/03	0.8 U	DMA
RS-18	IV	Primary	---	---	05/02/03	0.8 U	DMA
RS-19	I	Primary	---	---	05/01/03	2.3 J	DMA
RS-25	IV	Primary	---	---	05/01/03	0.8 U	DMA
RS-25	IV	Dup	---	---	05/01/03	0.8 U	DMA
RS-25	IV	Split	---	---	05/01/03	2 U	AMA
RS-30	I	Primary	---	---	05/01/03	0.8 U	DMA
ES-09	I	Primary	---	---	05/01/03	0.8 U	DMA
ES-10	I	Primary	---	---	05/01/03	0.8 U	DMA
CHATSWORTH FORMATION WELLS							
RD-01	I	Primary	---	---	05/07/03	0.8 U	DMA
RD-02	I	Primary	---	---	05/05/03	0.8 U	DMA
RD-04	II	Primary	---	---	05/07/03	0.8 U	DMA
RD-10(Comp)	I	Primary	3,6,9	Comp	04/30/03	220	DMA
RD-26	II	Primary	---	---	05/15/03	0.8 U	DMA
RD-29	IV	Primary	---	---	05/13/03	0.8 U	DMA
RD-40	II	Primary	---	---	05/08/03	0.8 U	DMA
RD-44	I	Primary	---	---	05/06/03	0.8 U	DMA
RD-49A	II	Primary	---	---	05/07/03	0.8 U	DMA
RD-49B	II	Primary	---	---	05/06/03	0.8 U	DMA
RD-49C	II	Primary	---	---	05/06/03	0.8 U	DMA
RD-59A	Off-site, W of Area IV	Primary	---	---	05/15/03	0.8 U	DMA
HAR-07	II	Primary	---	---	04/16/03	0.8 U	DMA
HAR-17	II	Primary	---	---	04/16/03	0.8 U	DMA
HAR-18	III	Primary	---	---	05/16/03	0.8 U	DMA
HAR-26	III	Primary	---	---	05/15/03	0.8 U	DMA
WS-05	I	Primary	---	---	05/05/03	0.8 U	DMA
WS-06	I	Primary	---	---	05/07/03	0.8 U	DMA
WS-09	II	Primary	---	---	05/07/03	0.8 U	DMA

See last page of Table 11 for footnotes and explanations.

ug/l	micrograms per liter.
J	Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL).
U	Not detected; numerical value is the Detection Limit.
AMA	American Analytics of Chatsworth, California.
DMA	Del Mar Analytical of Irvine, California.
Primary	Primary sample.
Dup	Sample duplicate.
Split	Sample split.
Comp	Composite sample. RD-10 sample was composited at the laboratory from FLUTe ports 3, 6, and 9.

FLUTe Sample Port	FLUTe Sample Interval (feet below land surface)
3	211-221
6	271-281
9	331-341

TABLE 12
SUMMARY OF ANALYSES FOR APPENDIX IX CONSTITUENTS,
SECOND QUARTER 2003
Boeing Santa Susana Field Laboratory
Ventura County, California

Inorganic Compounds									
Well Identifier			SH-04	RS-08	HAR-14	HAR-15	HAR-07	HAR-16	HAR-17
FLUTe Sample Port			---	---	---	---	---	Comp	---
Sample Date			04/14/03	04/14/03	04/15/03	04/15/03	04/16/03	04/17/03	04/16/03
Sample Type			Primary	Primary	Primary	Primary	Primary	Primary	Primary
Compound	Units	MCL							
Antimony	ug/l	6	1.5 J	3.3	0.6 U	6.1	3.2	---	1.3 J
Arsenic	ug/l	50	1.3	3	0.29 U	3.3 U	0.31 U	---	1.2 U
Barium	ug/l	1000	340	76	34	21	26	---	76
Beryllium	ug/l	4	0.29 J	0.11 U	0.11 U	0.11 U	0.11 U	---	0.11 U
Cadmium	ug/l	5	0.17 J	0.14 J	0.047 J	0.14 J	0.03 U	---	0.088 J
Chromium	ug/l	50	1.9	0.14 U	0.14 U	0.81 U	0.14 U	---	1.2 U
Cobalt	ug/l	NA	0.52 J	4.8	0.42 J	0.61 J	0.39 J	---	1.2
Copper	ug/l	1000 SMCL	3.8	2.3	0.58 J	1.9 J	1.4 J	---	5.6
Cyanide	mg/l	0.15	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U	0.0042 U
Lead	ug/l	15 ECAL	0.13 U	0.13 U	0.13 U	0.41 J	0.13 U	---	0.31 J
Mercury	mg/l	0.002	0.000069 J	0.000063 U	0.000063 U	0.000063 U	0.000063 U	---	0.000063 U
Nickel	ug/l	100	3.3	15	3.8	4.1	3	---	7.4
Selenium	ug/l	50	1.7 J	2.5	1.6 J	0.91 J	0.99 J	---	3.2
Silver	ug/l	100 SMCL	0.082 J	0.054 J	0.054 U	0.054 U	0.054 U	---	0.054 U
Sulfide	mg/l	NA	0.017 U	0.04 J	0.019 J	0.15	0.017 U	0.017 U	0.017 U
Thallium	ug/l	2	0.21 J	0.19 J	0.092 U	0.092 U	0.092 U	---	0.14 J
Tin	mg/l	NA	0.0024 U	0.0024 U	0.0024 U	0.0024 U	0.0024 U	---	0.0024 U
Vanadium	ug/l	50 ACAL	3.9	1	0.58 J	8.3	0.39 U	---	1
Zinc	ug/l	5000 SMCL	130	5 J	4.3 J	8.2 J	21	---	170
Laboratory			DMA	DMA	DMA	DMA	DMA	DMA	DMA

See last page of Table 12 for footnotes and explanations.

TABLE 12
SUMMARY OF ANALYSES FOR APPENDIX IX CONSTITUENTS,
SECOND QUARTER 2003
Boeing Santa Susana Field Laboratory
Ventura County, California

Pesticides and Herbicides									
Well Identifier			SH-04	RS-08	HAR-14	HAR-15	HAR-07	HAR-16	HAR-17
FLUTe Sample Port			---	---	---	---	---	Comp	---
Sample Date			04/14/03	04/14/03	04/15/03	04/15/03	04/16/03	04/17/03	04/16/03
Sample Type			Primary	Primary	Primary	Primary	Primary	Primary	Primary
Compound	Units	MCL							
Aldrin	ug/l	0.002 ACAL	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	---	0.012 U
alpha-BHC	ug/l	0.015 ACAL	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	---	0.017 U
beta-BHC	ug/l	0.025 ACAL	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	---	0.036 U
delta-BHC	ug/l	NA	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	---	0.015 U
Gamma-BHC (Lindane)	ug/l	0.2	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	---	0.015 U
Chlordane	ug/l	0.1	0.057 U	0.057 U	0.057 U	0.057 U	0.057 U	---	0.057 U
Chlorobenzilate	ug/l	NA	10 U	9.8 U	9.7 U	10 U	9.6 U	9.7 U	9.7 U
4,4'-DDD	ug/l	NA	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	---	0.013 U
4,4'-DDE	ug/l	NA	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	---	0.013 U
4,4'-DDT	ug/l	NA	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	---	0.019 U
Diallate	ug/l	NA	10 U	9.8 U	9.7 U	10 U	9.6 U	9.7 U	9.7 U
Dieldrin	ug/l	0.002 ACAL	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	---	0.012 U
Dinoseb	ug/l	7	0.79 UJ	0.78 UJ	0.77 UJ	0.8 UJ	0.75 U	---	0.75 UJ
Endosulfan-I	ug/l	NA	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	---	0.011 U
Endosulfan-II	ug/l	NA	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	---	0.037 U
Endosulfan sulfate	ug/l	NA	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	---	0.025 U
Endrin	ug/l	2	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	---	0.011 U
Endrin aldehyde	ug/l	NA	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	---	0.016 U
Heptachlor	ug/l	0.01	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	---	0.015 U
Heptachlor epoxide	ug/l	0.01	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	---	0.012 U
Isodrin	ug/l	NA	20 U	20 U	19 U	20 U	19 U	19 U	19 U
Kepone	ug/l	NA	200 U	200 U	190 U	200 U	190 U	190 U	190 U
Methoxychlor	ug/l	30	0.031 U	0.031 U	0.031 U	0.031 U	0.031 U	---	0.031 U
Aroclor 1016	ug/l	0.5(total)	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	---	0.19 U
Aroclor 1221	ug/l	0.5(total)	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	---	0.063 U
Aroclor 1232	ug/l	0.5(total)	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	---	0.13 U

See last page of Table 12 for footnotes and explanations.

TABLE 12
SUMMARY OF ANALYSES FOR APPENDIX IX CONSTITUENTS,
SECOND QUARTER 2003
Boeing Santa Susana Field Laboratory
Ventura County, California

Pesticides and Herbicides									
Well Identifier			SH-04	RS-08	HAR-14	HAR-15	HAR-07	HAR-16	HAR-17
FLUTe Sample Port			---	---	---	---	---	Comp	---
Sample Date			04/14/03	04/14/03	04/15/03	04/15/03	04/16/03	04/17/03	04/16/03
Sample Type			Primary	Primary	Primary	Primary	Primary	Primary	Primary
Compound	Units	MCL							
Aroclor 1242	ug/l	0.5(total)	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	---	0.21 U
Aroclor 1248	ug/l	0.5(total)	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	---	0.2 U
Aroclor 1254	ug/l	0.5(total)	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	---	0.1 U
Aroclor 1260	ug/l	0.5(total)	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	---	0.11 U
Toxaphene	ug/l	3	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	---	1.3 U
2,4-D	ug/l	70	0.25 UJ	0.25 UJ	0.25 UJ	0.26 UJ	0.24 U	---	0.24 UJ
2,4,5-T	ug/l	NA	0.13 UJ	0.13 UJ	0.13 UJ	0.14 UJ	0.13 U	---	0.13 UJ
2,4,5-TP (Silvex)	ug/l	50	0.15 U	0.14 U	0.14 U	0.15 U	0.14 U	---	0.14 U
2,3,7,8-TCDD TEQ	pg/l	0.03	2.7 U	3.9 U	2.7 U	6.3 U	10.2 U	---	12.6 U
Laboratory			DMA	DMA	DMA	DMA	DMA	DMA	DMA

See last page of Table 12 for footnotes and explanations.

TABLE 12
SUMMARY OF ANALYSES FOR APPENDIX IX CONSTITUENTS,
SECOND QUARTER 2003
Boeing Santa Susana Field Laboratory
Ventura County, California

Volatile Organic Compounds						
Well Identifier			SH-04	SH-04	RS-08	RS-08
FLUTe Sample Port			---	---	---	---
Sample Date			04/14/03	04/14/03	04/14/03	04/14/03
Sample Type			Primary	Split	Primary	Split
Sample Qualifier			---	---	pH	---
Compound	Units	MCL				
1,1,1,2-Tetrachloroethane	ug/l	NA	0.54 U	---	0.27 U	---
1,1,1-Trichloroethane	ug/l	200	4	4	0.3 U	0.2 U
1,1,2,2-Tetrachloroethane	ug/l	1	0.58 U	0.4 U	0.29 U	0.4 U
1,1,2-Trichloroethane	ug/l	5	0.6 U	0.2 U	0.3 U	0.2 U
1,1-Dichloroethane	ug/l	5	14	12	0.27 U	0.2 U
1,1-Dichloroethene	ug/l	6	5 J	4.3	0.32 U	0.3 U
1,2,3-Trichloropropane	ug/l	0.005 ACAL	0.0094 J	---	0.0019 U	---
1,2-Dibromo-3-chloropropane	ug/l	0.2	0.0018 U	---	0.0018 U	---
1,2-Dibromoethane	ug/l	0.05	0.0021 U	---	0.0021 U	---
1,2-Dichloroethane	ug/l	0.5	6.2	7.3	0.28 U	0.2 U
1,2-Dichloropropane	ug/l	5	0.7 U	0.4 U	0.35 U	0.4 U
1,4-Dioxane	ug/l	3 ACAL	29	---	0.07 U	---
2-Butanone	ug/l	NA	7.6 U	7 U	3.8 U	7 U
2-Hexanone	ug/l	NA	5 U	0.7 U	2.5 U	0.7 U
4-Methyl-2-pentanone	ug/l	120 ACAL	5 U	0.2 U	2.5 U	0.2 U
Acetone	ug/l	NA	9 U	3 U	4.9 UJ	3 U
Acetonitrile	ug/l	NA	5.6 U	---	5.6 U	---
Acrolein	ug/l	NA	4.6 U	---	4.6 U	---
Acrylonitrile	ug/l	NA	5.1 U	---	5.1 U	---
Allyl Chloride	ug/l	NA	0.35 UJ	---	0.35 UJ	---
Benzene	ug/l	1	0.56 U	0.1 U	0.28 U	0.1 U
Bromodichloromethane	ug/l	NA	0.6 U	0.1 U	0.3 U	0.1 U
Bromoform	ug/l	NA	0.5 U	0.4 U	0.25 U	0.4 U
Bromomethane	ug/l	NA	0.4 U	0.5 U	0.2 U	0.5 U
Carbon disulfide	ug/l	160 ACAL	0.66 U	0.2 U	0.33 U	0.2 U
Carbon tetrachloride	ug/l	0.5	170	170	0.28 U	0.3 U
Chlorobenzene	ug/l	70	0.72 U	0.1 U	0.36 U	0.1 U
Chloroethane	ug/l	NA	0.66 U	0.3 U	0.33 U	0.3 U
Chloroform	ug/l	NA	51	50	0.33 U	0.2 U
Chloromethane	ug/l	NA	0.28 U	0.4 U	0.14 U	0.4 U
Chloroprene	ug/l	NA	0.18 U	---	0.18 U	---
cis-1,2-Dichloroethene	ug/l	6	11	10	7.8	6.3
cis-1,3-Dichloropropene	ug/l	0.5(total)	0.44 U	0.2 U	0.22 U	0.2 U
Dibromochloromethane	ug/l	NA	0.56 U	0.2 U	0.28 U	0.2 U
Dibromomethane	ug/l	NA	0.72 U	---	0.36 U	---
Dichlorodifluoromethane	ug/l	1000 ACAL	2.2 U	---	1.1 U	---
Ethyl methacrylate	ug/l	NA	0.37 U	---	0.37 U	---
Ethylbenzene	ug/l	300	0.5 U	0.2 U	0.25 U	0.2 U
Iodomethane	ug/l	NA	1 U	---	1 U	---

See last page of Table 12 for footnotes and explanations.

TABLE 12
SUMMARY OF ANALYSES FOR APPENDIX IX CONSTITUENTS,
SECOND QUARTER 2003
Boeing Santa Susana Field Laboratory
Ventura County, California

Volatile Organic Compounds						
Well Identifier			SH-04	SH-04	RS-08	RS-08
FLUTe Sample Port			---	---	---	---
Sample Date			04/14/03	04/14/03	04/14/03	04/14/03
Sample Type			Primary	Split	Primary	Split
Sample Qualifier			---	---	pH	---
Compound	Units	MCL				
Isobutanol	ug/l	NA	8.4 U	---	8.4 U	---
m,p-Xylenes	ug/l	1750(total)	0.76 U	0.3 U	0.38 U	0.3 U
Methacrylonitrile	ug/l	NA	0.32 U	---	0.32 U	---
Methyl methacrylate	ug/l	NA	0.43 U	---	0.43 U	---
Methylene chloride	ug/l	5	1.3 U	3 U	0.33 U	3 U
o-Xylene	ug/l	1750(total)	0.48 U	0.2 U	0.24 U	0.2 U
Propionitrile	ug/l	NA	4.7 U	---	4.7 U	---
Styrene	ug/l	100	0.32 U	---	0.16 U	---
Tetrachloroethene	ug/l	5	13	16	0.32 U	0.2 U
Toluene	ug/l	150	0.98 U	0.2 U	0.49 U	0.2 U
trans-1,2-Dichloroethene	ug/l	10	0.54 U	0.2 U	0.91 J	0.75
trans-1,3-Dichloropropene	ug/l	0.5(total)	0.48 U	0.2 U	0.24 U	0.2 U
Trans-1,4-Dichloro-2-butene	ug/l	NA	1.1 U	---	1.1 U	---
Trichloroethene	ug/l	5	69	70	0.26 U	0.2 U
Trichlorofluoromethane	ug/l	150	0.68 U	0.1 U	0.34 U	0.1 U
Vinyl acetate	ug/l	NA	0.7 U	---	0.35 U	---
Vinyl chloride	ug/l	0.5	0.38 U	0.2 U	0.75 J	0.2 U
Laboratory			DMA	AMA	DMA	AMA

See last page of Table 12 for footnotes and explanations.

TABLE 12
SUMMARY OF ANALYSES FOR APPENDIX IX CONSTITUENTS,
SECOND QUARTER 2003
Boeing Santa Susana Field Laboratory
Ventura County, California

Volatile Organic Compounds						
Well Identifier			HAR-14	HAR-14	HAR-15	HAR-07
FLUTe Sample Port			---	---	---	---
Sample Date			04/15/03	04/15/03	04/15/03	04/16/03
Sample Type			Primary	Split	Primary	Primary
Sample Qualifier			---	---	---	---
Compound	Units	MCL				
1,1,1,2-Tetrachloroethane	ug/l	NA	0.27 U	---	0.27 U	11 U
1,1,1-Trichloroethane	ug/l	200	1.1 J	---	0.3 U	12 U
1,1,2,2-Tetrachloroethane	ug/l	1	0.29 U	---	0.29 U	12 U
1,1,2-Trichloroethane	ug/l	5	0.3 U	---	0.3 U	12 U
1,1-Dichloroethane	ug/l	5	0.27 U	---	0.27 U	11 U
1,1-Dichloroethene	ug/l	6	8.4	---	0.32 U	13 U
1,2,3-Trichloropropane	ug/l	0.005 ACAL	0.0019 U	---	0.0019 U	0.0019 U
1,2-Dibromo-3-chloropropane	ug/l	0.2	0.0018 U	---	0.0018 U	0.0018 U
1,2-Dibromoethane	ug/l	0.05	0.0021 U	---	0.0021 U	0.0021 U
1,2-Dichloroethane	ug/l	0.5	0.28 U	---	0.28 U	11 U
1,2-Dichloropropane	ug/l	5	0.35 U	---	0.35 U	14 U
1,4-Dioxane	ug/l	3 ACAL	160	94	2.54 C	0.07 U
2-Butanone	ug/l	NA	3.8 UJ	---	3.8 U	150 U
2-Hexanone	ug/l	NA	2.5 UJ	---	2.5 U	100 U
4-Methyl-2-pentanone	ug/l	120 ACAL	2.5 U	---	2.5 U	100 U
Acetone	ug/l	NA	4.5 UJ	---	4.8 U	180 U
Acetonitrile	ug/l	NA	5.6 U	---	5.6 U	220 U
Acrolein	ug/l	NA	4.6 U	---	4.6 U	4.6 U
Acrylonitrile	ug/l	NA	5.1 U	---	5.1 U	5.1 U
Allyl Chloride	ug/l	NA	0.35 UJ	---	0.35 UJ	14 UJ
Benzene	ug/l	1	0.28 U	---	0.28 U	11 U
Bromodichloromethane	ug/l	NA	0.3 U	---	0.3 U	12 U
Bromoform	ug/l	NA	0.25 U	---	0.25 U	10 U
Bromomethane	ug/l	NA	0.2 U	---	0.2 U	8 U
Carbon disulfide	ug/l	160 ACAL	0.33 U	---	0.33 U	13 U
Carbon tetrachloride	ug/l	0.5	1.7 J	---	0.28 UJ	11 U
Chlorobenzene	ug/l	70	0.36 U	---	0.36 U	14 U
Chloroethane	ug/l	NA	0.33 U	---	0.33 U	13 U
Chloroform	ug/l	NA	2.6	---	0.33 U	13 U
Chloromethane	ug/l	NA	0.14 U	---	0.14 U	5.6 U
Chloroprene	ug/l	NA	0.18 U	---	0.18 U	7.2 U
cis-1,2-Dichloroethene	ug/l	6	0.32 U	---	0.32 U	2800
cis-1,3-Dichloropropene	ug/l	0.5(total)	0.22 U	---	0.22 U	8.8 U
Dibromochloromethane	ug/l	NA	0.28 U	---	0.28 U	11 U
Dibromomethane	ug/l	NA	0.36 U	---	0.36 U	14 U
Dichlorodifluoromethane	ug/l	1000 ACAL	1.1 U	---	1.1 U	44 U
Ethyl methacrylate	ug/l	NA	0.37 U	---	0.37 U	9.6 U
Ethylbenzene	ug/l	300	0.25 U	---	0.25 U	10 U
Iodomethane	ug/l	NA	1 U	---	1 U	40 U

See last page of Table 12 for footnotes and explanations.

TABLE 12
SUMMARY OF ANALYSES FOR APPENDIX IX CONSTITUENTS,
SECOND QUARTER 2003
Boeing Santa Susana Field Laboratory
Ventura County, California

Volatile Organic Compounds						
Well Identifier			HAR-14	HAR-14	HAR-15	HAR-07
FLUTe Sample Port			---	---	---	---
Sample Date			04/15/03	04/15/03	04/15/03	04/16/03
Sample Type			Primary	Split	Primary	Primary
Sample Qualifier			---	---	---	---
Compound	Units	MCL				
Isobutanol	ug/l	NA	8.4 U	---	8.4 U	340 U
m,p-Xylenes	ug/l	1750(total)	0.38 U	---	0.38 U	15 U
Methacrylonitrile	ug/l	NA	0.32 U	---	0.32 U	13 U
Methyl methacrylate	ug/l	NA	0.43 U	---	0.43 U	17 U
Methylene chloride	ug/l	5	0.33 U	---	0.33 U	17 U
o-Xylene	ug/l	1750(total)	0.24 U	---	0.24 U	9.6 U
Propionitrile	ug/l	NA	4.7 U	---	4.7 U	190 U
Styrene	ug/l	100	0.16 U	---	0.16 U	6.4 U
Tetrachloroethene	ug/l	5	0.32 U	---	0.32 U	13 U
Toluene	ug/l	150	0.49 U	---	0.49 U	20 U
trans-1,2-Dichloroethene	ug/l	10	0.27 U	---	0.27 U	99
trans-1,3-Dichloropropene	ug/l	0.5(total)	0.24 U	---	0.24 U	9.6 U
Trans-1,4-Dichloro-2-butene	ug/l	NA	1.1 U	---	1.1 U	44 U
Trichloroethene	ug/l	5	4.6	---	0.26 U	3300
Trichlorofluoromethane	ug/l	150	0.34 U	---	0.34 U	14 U
Vinyl acetate	ug/l	NA	0.35 U	---	0.35 U	14 U
Vinyl chloride	ug/l	0.5	0.19 U	---	0.19 U	110 J
Laboratory			DMA	DMA	DMA	DMA

See last page of Table 12 for footnotes and explanations.

TABLE 12
SUMMARY OF ANALYSES FOR APPENDIX IX CONSTITUENTS,
SECOND QUARTER 2003
Boeing Santa Susana Field Laboratory
Ventura County, California

Volatile Organic Compounds						
Well Identifier			HAR-07	HAR-16	HAR-17	HAR-17
FLUTe Sample Port			---	Comp	---	---
Sample Date			04/16/03	04/17/03	04/16/03	04/16/03
Sample Type			Split	Primary	Primary	Dup
Sample Qualifier			---	---	---	---
Compound	Units	MCL				
1,1,1,2-Tetrachloroethane	ug/l	NA	---	14 U	0.27 U	0.27 U
1,1,1-Trichloroethane	ug/l	200	---	15 U	0.3 U	0.3 U
1,1,2,2-Tetrachloroethane	ug/l	1	---	14 U	0.29 U	0.29 U
1,1,2-Trichloroethane	ug/l	5	---	15 U	0.3 U	0.3 U
1,1-Dichloroethane	ug/l	5	---	14 U	0.49 J	0.44 J
1,1-Dichloroethene	ug/l	6	---	16 U	1.6 J	1.9 J
1,2,3-Trichloropropane	ug/l	0.005 ACAL	---	0.0019 U	0.0019 U	---
1,2-Dibromo-3-chloropropane	ug/l	0.2	---	0.0018 U	0.0018 U	---
1,2-Dibromoethane	ug/l	0.05	---	0.0021 U	0.0021 U	---
1,2-Dichloroethane	ug/l	0.5	---	14 U	0.28 U	0.28 U
1,2-Dichloropropane	ug/l	5	---	18 U	0.35 U	0.35 U
1,4-Dioxane	ug/l	3 ACAL	0.54 U	43	5.44	---
2-Butanone	ug/l	NA	---	190 U	3.8 U	3.8 U
2-Hexanone	ug/l	NA	---	120 U	2.5 U	2.5 U
4-Methyl-2-pentanone	ug/l	120 ACAL	---	120 U	2.5 U	2.5 U
Acetone	ug/l	NA	---	220 U	4.6 J	4.5 U
Acetonitrile	ug/l	NA	---	280 U	5.6 U	5.6 U
Acrolein	ug/l	NA	---	4.6 U	4.6 U	---
Acrylonitrile	ug/l	NA	---	5.1 U	5.1 U	---
Allyl Chloride	ug/l	NA	---	18 UJ	0.35 UJ	0.35 UJ
Benzene	ug/l	1	---	14 U	0.28 U	0.28 U
Bromodichloromethane	ug/l	NA	---	15 U	0.3 U	0.3 U
Bromoform	ug/l	NA	---	12 U	0.25 U	0.25 U
Bromomethane	ug/l	NA	---	10 U	0.2 U	0.2 U
Carbon disulfide	ug/l	160 ACAL	---	16 U	0.33 U	0.33 U
Carbon tetrachloride	ug/l	0.5	---	14 U	0.28 U	0.28 U
Chlorobenzene	ug/l	70	---	18 U	0.36 U	0.36 U
Chloroethane	ug/l	NA	---	16 U	0.33 U	0.33 U
Chloroform	ug/l	NA	---	16 U	0.33 U	0.33 U
Chloromethane	ug/l	NA	---	7 U	0.14 U	0.14 U
Chloroprene	ug/l	NA	---	9 U	0.18 U	0.18 U
cis-1,2-Dichloroethene	ug/l	6	---	250	20	18
cis-1,3-Dichloropropene	ug/l	0.5(total)	---	11 U	0.22 U	0.22 U
Dibromochloromethane	ug/l	NA	---	14 U	0.28 U	0.28 U
Dibromomethane	ug/l	NA	---	18 U	0.36 U	0.36 U
Dichlorodifluoromethane	ug/l	1000 ACAL	---	55 U	1.1 U	1.1 U
Ethyl methacrylate	ug/l	NA	---	9.7 U	0.37 U	0.37 U
Ethylbenzene	ug/l	300	---	12 U	0.25 U	0.25 U
Iodomethane	ug/l	NA	---	50 U	1 U	1 U

See last page of Table 12 for footnotes and explanations.

TABLE 12
SUMMARY OF ANALYSES FOR APPENDIX IX CONSTITUENTS,
SECOND QUARTER 2003
Boeing Santa Susana Field Laboratory
Ventura County, California

Volatile Organic Compounds						
Well Identifier			HAR-07	HAR-16	HAR-17	HAR-17
FLUTe Sample Port			---	Comp	---	---
Sample Date			04/16/03	04/17/03	04/16/03	04/16/03
Sample Type			Split	Primary	Primary	Dup
Sample Qualifier			---	---	---	---
Compound	Units	MCL				
Isobutanol	ug/l	NA	---	420 U	8.4 U	8.4 U
m,p-Xylenes	ug/l	1750(total)	---	19 U	0.38 U	0.38 U
Methacrylonitrile	ug/l	NA	---	16 U	0.32 U	0.32 U
Methyl methacrylate	ug/l	NA	---	22 U	0.43 U	0.43 U
Methylene chloride	ug/l	5	---	37 U	0.62 U	0.38 UJ
o-Xylene	ug/l	1750(total)	---	12 U	0.24 U	0.24 U
Propionitrile	ug/l	NA	---	240 U	4.7 U	4.7 U
Styrene	ug/l	100	---	8 U	0.16 U	0.16 U
Tetrachloroethene	ug/l	5	---	16 U	0.32 U	0.32 U
Toluene	ug/l	150	---	24 U	0.49 U	0.49 U
trans-1,2-Dichloroethene	ug/l	10	---	14 U	1.7 J	1.1 J
trans-1,3-Dichloropropene	ug/l	0.5(total)	---	12 U	0.24 U	0.24 U
Trans-1,4-Dichloro-2-butene	ug/l	NA	---	55 U	1.1 U	1.1 U
Trichloroethene	ug/l	5	---	2300	93 J	83
Trichlorofluoromethane	ug/l	150	---	17 U	0.34 U	0.34 U
Vinyl acetate	ug/l	NA	---	18 U	0.35 U	0.35 U
Vinyl chloride	ug/l	0.5	---	9.5 U	0.19 U	0.19 U
Laboratory			DMA	DMA	DMA	DMA

See last page of Table 12 for footnotes and explanations.

TABLE 12
SUMMARY OF ANALYSES FOR APPENDIX IX CONSTITUENTS,
SECOND QUARTER 2003
Boeing Santa Susana Field Laboratory
Ventura County, California

Semi-Volatile Organic Compounds						
Well Identifier			SH-04	RS-08	HAR-14	HAR-15
FLUTe Sample Port			---	---	---	---
Sample Date			04/14/03	04/14/03	04/15/03	04/15/03
Sample Type			Primary	Primary	Primary	Primary
Sample Qualifier			---	---	---	---
Compound	Units	MCL				
1,2,4,5-Tetrachlorobenzene	ug/l	NA	10 U	9.8 U	9.7 U	10 U
1,2,4-Trichlorobenzene	ug/l	70	3.4 U	3.4 U	3.3 U	3.4 U
1,2-Dichlorobenzene	ug/l	600	0.64 U	0.32 U	0.32 U	0.32 U
1,3,5-Trinitrobenzene	ug/l	NA	10 U	9.8 U	9.7 U	10 U
1,3-Dichlorobenzene	ug/l	600 ACAL	0.7 U	0.35 U	0.35 U	0.35 U
1,3-Dinitrobenzene	ug/l	NA	20 U	20 U	19 U	20 U
1,4-Dichlorobenzene	ug/l	5	0.74 U	0.37 U	0.37 U	0.37 U
1,4-Naphthoquinone	ug/l	NA	20 U	20 U	19 U	20 U
1,4-Phenylenediamine	ug/l	NA	50 U	49 U	49 U	50 U
1-Naphthylamine	ug/l	NA	10 U	9.8 U	9.7 U	10 U
2,3,4,6-Tetrachlorophenol	ug/l	NA	10 U	9.8 U	9.7 U	10 U
2,4,5-Trichlorophenol	ug/l	NA	4 U	3.9 U	3.8 U	4 U
2,4,6-Trichlorophenol	ug/l	NA	4.5 U	4.4 U	4.4 U	4.5 U
2,4-Dichlorophenol	ug/l	NA	4.8 U	4.7 U	4.6 U	4.8 U
2,4-Dimethylphenol	ug/l	100 ACAL	6 U	5.9 U	5.8 U	6 U
2,4-Dinitrophenol	ug/l	NA	1.3 U	1.3 U	1.2 U	1.3 U
2,4-Dinitrotoluene	ug/l	NA	1.3 U	1.3 U	1.2 U	1.3 U
2,6-Dichlorophenol	ug/l	NA	10 U	9.8 U	9.7 U	10 U
2,6-Dinitrotoluene	ug/l	NA	1.9 U	1.9 U	1.9 U	1.9 U
2-Acetylaminofluorene	ug/l	NA	20 U	20 U	19 U	20 U
2-Chloronaphthalene	ug/l	NA	3 U	3 U	2.9 U	3 U
2-Chlorophenol	ug/l	NA	4.9 U	4.8 U	4.8 U	4.9 U
2-Methylnaphthalene	ug/l	NA	3.5 U	3.4 U	3.4 U	3.5 U
2-Methylphenol	ug/l	NA	5.3 U	5.2 U	5.1 U	5.3 U
2-Naphthylamine	ug/l	NA	10 U	9.8 U	9.7 U	10 U
2-Nitroaniline	ug/l	NA	2.6 U	2.6 U	2.6 U	2.6 U
2-Nitrophenol	ug/l	NA	4.8 U	4.7 U	4.6 U	4.8 U
2-Picoline	ug/l	NA	10 U	9.8 U	9.7 U	10 U
3,3'-Dichlorobenzidine	ug/l	NA	5 U	4.9 U	4.9 U	5 U
3,3'-Dimethylbenzidine	ug/l	NA	10 U	9.8 U	9.7 U	10 U
3-Methylcholanthrene	ug/l	NA	10 U	9.8 U	9.7 U	10 U
3-Methylphenol	ug/l	NA	10 U	9.8 U	9.7 U	10 U
3-Nitroaniline	ug/l	NA	4 U	3.9 U	3.8 U	4 U
4-Aminobiphenyl	ug/l	NA	20 U	20 U	19 U	20 U
4-Bromophenyl phenyl ether	ug/l	NA	2.1 U	2 U	2 U	2.1 U
4-Chloro-3-methylphenol	ug/l	NA	4 U	4 U	3.9 U	4 U
4-Chloroaniline	ug/l	NA	2.9 U	2.8 U	2.8 U	2.9 U
4-Chlorophenyl phenyl ether	ug/l	NA	2.6 U	2.6 U	2.6 U	2.6 U
4-methylphenol	ug/l	NA	4.5 U	4.4 U	4.4 U	4.5 U
4-Nitroaniline	ug/l	NA	5 U	4.9 U	4.8 U	5 U
4-Nitrophenol	ug/l	NA	1.7 U	1.7 U	1.6 U	1.7 U
4-Nitroquinoline-1-oxide	ug/l	NA	50 U	49 U	49 U	50 U

See last page of Table 12 for footnotes and explanations.

TABLE 12
SUMMARY OF ANALYSES FOR APPENDIX IX CONSTITUENTS,
SECOND QUARTER 2003
Boeing Santa Susana Field Laboratory
Ventura County, California

Semi-Volatile Organic Compounds						
Well Identifier			SH-04	RS-08	HAR-14	HAR-15
FLUTe Sample Port			---	---	---	---
Sample Date			04/14/03	04/14/03	04/15/03	04/15/03
Sample Type			Primary	Primary	Primary	Primary
Sample Qualifier			---	---	---	---
Compound	Units	MCL				
4,6-Dinitro-2-methylphenol	ug/l	NA	2.2 U	2.2 U	2.1 U	2.2 U
5-Nitro-o-toluidine	ug/l	NA	10 U	9.8 U	9.7 U	10 U
7,12-Dimethylbenz(a)anthracene	ug/l	NA	10 U	9.8 U	9.7 U	10 U
Acenaphthene	ug/l	NA	2.6 U	2.6 U	2.6 U	2.6 U
Acenaphthylene	ug/l	NA	2.5 U	2.4 U	2.4 U	2.5 U
Acetophenone	ug/l	NA	10 U	9.8 U	9.7 U	10 U
Aniline	ug/l	NA	5 U	4.9 U	4.8 U	5 U
Anthracene	ug/l	NA	0.8 U	0.78 U	0.78 U	0.8 U
Aramite	ug/l	NA	200 U	200 U	190 U	200 U
Benzo (b+k) fluoranthene (total)	ug/l	NA	1.8 U	1.7 U	1.7 U	1.8 U
Benzo(a)anthracene	ug/l	NA	0.53 U	0.52 U	0.51 U	0.53 U
Benzo(a)pyrene	ug/l	0.2	0.97 U	0.95 U	0.94 U	0.97 U
Benzo(ghi)perylene	ug/l	NA	0.98 U	0.96 U	0.95 U	0.98 U
Benzyl Alcohol	ug/l	NA	3.1 U	3.1 U	3 U	3.1 U
Bis(2-Chloroethoxy)methane	ug/l	NA	3.6 U	3.6 U	3.5 U	3.6 U
Bis(2-chloroethyl)ether	ug/l	NA	3.6 U	3.5 U	3.5 U	3.6 U
Bis(2-chloroisopropyl)ether	ug/l	NA	4 U	4 U	3.9 U	4 U
Bis(2-Ethylhexyl) phthalate	ug/l	4	3.6 U	3.6 U	3.5 U	3.6 U
Butyl benzyl phthalate	ug/l	NA	0.91 U	0.89 U	0.88 U	0.91 U
Chrysene	ug/l	NA	0.96 U	0.94 U	0.93 U	0.96 U
Di-n-butyl phthalate	ug/l	NA	0.92 U	0.9 U	0.89 U	0.92 U
Di-n-octyl phthalate	ug/l	NA	0.93 U	0.91 U	0.9 U	0.93 U
Dibenz(a,h)anthracene	ug/l	NA	0.89 U	0.87 U	0.86 U	0.89 U
Dibenzofuran	ug/l	NA	2.5 U	2.5 U	2.5 U	2.5 U
Diethyl phthalate	ug/l	NA	1.2 U	1.2 U	1.2 U	1.2 U
Dimethoate	ug/l	1 ACAL	0.33 U	0.34 U	0.32 U	0.34 U
Dimethyl phthalate	ug/l	NA	1.9 U	1.8 U	1.8 U	1.9 U
Diphenylamine	ug/l	NA	10 U	9.8 U	9.7 U	10 U
Disulfoton	ug/l	NA	0.15 U	0.15 U	0.14 U	0.15 U
Ethyl methanesulfonate	ug/l	NA	20 U	20 U	19 U	20 U
Famphur	ug/l	NA	200 U	200 U	190 U	200 U
Fluoranthene	ug/l	NA	0.78 U	0.76 U	0.76 U	0.78 U
Fluorene	ug/l	NA	2.6 U	2.6 U	2.6 U	2.6 U
Hexachlorobenzene	ug/l	1	1.7 U	1.7 U	1.7 U	1.7 U
Hexachlorobutadiene	ug/l	NA	3.1 U	3.1 U	3 U	3.1 U
Hexachlorocyclopentadiene	ug/l	50	1.4 U	1.3 UJ	1.3 UJ	1.4 UJ
Hexachloroethane	ug/l	NA	2.4 U	2.3 U	2.3 U	2.4 U
Hexachlorophene	ug/l	NA	200 U	200 U	190 U	200 U
Hexachloropropene	ug/l	NA	10 U	9.8 U	9.7 U	10 U
Indeno(1,2,3-cd)pyrene	ug/l	NA	0.78 U	0.76 U	0.76 U	0.78 U
Isophorone	ug/l	NA	3.2 U	3.2 U	3.1 U	3.2 U
Isosafrole	ug/l	NA	10 U	9.8 U	9.7 U	10 U

See last page of Table 12 for footnotes and explanations.

TABLE 12
SUMMARY OF ANALYSES FOR APPENDIX IX CONSTITUENTS,
SECOND QUARTER 2003
Boeing Santa Susana Field Laboratory
Ventura County, California

Semi-Volatile Organic Compounds						
Well Identifier			SH-04	RS-08	HAR-14	HAR-15
FLUTe Sample Port			---	---	---	---
Sample Date			04/14/03	04/14/03	04/15/03	04/15/03
Sample Type			Primary	Primary	Primary	Primary
Sample Qualifier			---	---	---	---
Compound	Units	MCL				
Methapyrilene	ug/l	NA	100 U	98 U	97 U	100 U
Methyl methanesulfonate	ug/l	NA	10 U	9.8 U	9.7 U	10 U
N-Nitrosodi-n-butylamine	ug/l	NA	10 U	9.8 U	9.7 U	10 U
N-Nitrosodi-n-propylamine	ug/l	NA	3.7 U	3.6 U	3.6 U	3.7 U
N-Nitrosodiethylamine	ug/l	NA	20 U	20 U	19 U	20 U
N-Nitrosodimethylamine	ng/l	10 ACAL	280	22	1300 J	0.5 U
N-Nitrosodiphenylamine	ug/l	NA	2.8 U	2.7 U	2.7 U	2.8 U
N-Nitrosomethylethylamine	ug/l	NA	10 U	9.8 U	9.7 U	10 U
N-Nitrosomorpholine	ug/l	NA	10 U	9.8 U	9.7 U	10 U
N-Nitrosopiperidine	ug/l	NA	20 U	20 U	19 U	20 U
N-Nitrosopyrrolidine	ug/l	NA	40 U	39 U	39 U	40 U
Naphthalene	ug/l	170 ACAL	3.8 U	3.7 U	3.7 U	3.8 U
Nitrobenzene	ug/l	NA	3.3 U	3.2 U	3.2 U	3.3 U
O,O,O-Triethylphosphorothioate	ug/l	NA	10 U	9.8 U	9.7 U	10 U
o-Toluidine	ug/l	NA	10 U	9.8 U	9.7 U	10 U
p-Dimethylaminoazobenzene	ug/l	NA	10 U	9.8 U	9.7 U	10 U
Parathion-ethyl	ug/l	40 ACAL	0.15 U	0.16 U	0.14 U	0.15 U
Parathion-methyl	ug/l	2 ACAL	0.13 U	0.13 U	0.12 U	0.13 U
Pentachlorobenzene	ug/l	NA	10 U	9.8 U	9.7 U	10 U
Pentachloroethane	ug/l	NA	10 U	9.8 U	9.7 U	10 U
Pentachloronitrobenzene	ug/l	20 ACAL	20 U	20 U	19 U	20 U
Pentachlorophenol	ug/l	1	0.165 U	0.165 U	0.165 U	0.165 U
Phenacetin	ug/l	NA	20 U	20 U	19 U	20 U
Phenanthrene	ug/l	NA	1.4 U	1.4 U	1.4 U	1.4 U
Phenol	ug/l	4200 ACAL	4 U	3.9 U	3.9 U	4 U
a,a-Dimethylphenethylamine	ug/l	NA	10 U	9.8 U	9.7 U	10 U
Phorate	ug/l	NA	0.14 U	0.14 U	0.13 U	0.14 U
Pronamide	ug/l	NA	10 U	9.8 U	9.7 U	10 U
Pyrene	ug/l	NA	0.72 U	0.71 U	0.7 U	0.72 U
Pyridine	ug/l	NA	2.1 U	2 U	2 U	2.1 U
Safrole	ug/l	NA	10 U	9.8 U	9.7 U	10 U
Sulfotepp	ug/l	NA	0.46 U	0.47 U	0.44 U	0.47 U
Thionazin	ug/l	NA	20 UJ	20 UJ	19 U	20 UJ
Laboratory			DMA	DMA	DMA	DMA

See last page of Table 12 for footnotes and explanations.

TABLE 12
SUMMARY OF ANALYSES FOR APPENDIX IX CONSTITUENTS,
SECOND QUARTER 2003
Boeing Santa Susana Field Laboratory
Ventura County, California

Semi-Volatile Organic Compounds						
Well Identifier			HAR-07	HAR-07	HAR-07	HAR-16
FLUTe Sample Port			---	---	---	Comp
Sample Date			04/16/03	04/16/03	04/16/03	04/17/03
Sample Type			Primary	Dup	Split	Primary
Sample Qualifier			---	---	---	---
Compound	Units	MCL				
1,2,4,5-Tetrachlorobenzene	ug/l	NA	9.6 U	---	---	9.7 U
1,2,4-Trichlorobenzene	ug/l	70	3.3 U	---	---	3.3 U
1,2-Dichlorobenzene	ug/l	600	3.3 U	---	---	3.3 U
1,3,5-Trinitrobenzene	ug/l	NA	9.6 U	---	---	9.7 U
1,3-Dichlorobenzene	ug/l	600 ACAL	3 U	---	---	3 U
1,3-Dinitrobenzene	ug/l	NA	19 U	---	---	19 U
1,4-Dichlorobenzene	ug/l	5	3.1 U	---	---	3.1 U
1,4-Naphthoquinone	ug/l	NA	19 U	---	---	19 U
1,4-Phenylenediamine	ug/l	NA	48 U	---	---	49 U
1-Naphthylamine	ug/l	NA	9.6 U	---	---	9.7 U
2,3,4,6-Tetrachlorophenol	ug/l	NA	9.6 U	---	---	9.7 U
2,4,5-Trichlorophenol	ug/l	NA	3.8 U	---	---	3.8 U
2,4,6-Trichlorophenol	ug/l	NA	4.3 U	---	---	4.4 U
2,4-Dichlorophenol	ug/l	NA	4.6 U	---	---	4.6 U
2,4-Dimethylphenol	ug/l	100 ACAL	5.8 U	---	---	5.8 U
2,4-Dinitrophenol	ug/l	NA	1.2 U	---	---	1.2 U
2,4-Dinitrotoluene	ug/l	NA	1.2 U	---	---	1.2 U
2,6-Dichlorophenol	ug/l	NA	9.6 U	---	---	9.7 U
2,6-Dinitrotoluene	ug/l	NA	1.8 U	---	---	1.9 U
2-Acetylaminofluorene	ug/l	NA	19 U	---	---	19 U
2-Chloronaphthalene	ug/l	NA	2.9 U	---	---	2.9 U
2-Chlorophenol	ug/l	NA	4.7 U	---	---	4.8 U
2-Methylnaphthalene	ug/l	NA	3.4 U	---	---	3.4 U
2-Methylphenol	ug/l	NA	5.1 U	---	---	5.1 U
2-Naphthylamine	ug/l	NA	9.6 U	---	---	9.7 U
2-Nitroaniline	ug/l	NA	2.5 U	---	---	2.6 U
2-Nitrophenol	ug/l	NA	4.6 U	---	---	4.6 U
2-Picoline	ug/l	NA	9.6 U	---	---	9.7 U
3,3'-Dichlorobenzidine	ug/l	NA	4.8 U	---	---	4.9 U
3,3'-Dimethylbenzidine	ug/l	NA	9.6 U	---	---	9.7 U
3-Methylcholanthrene	ug/l	NA	9.6 U	---	---	9.7 U
3-Methylphenol	ug/l	NA	9.6 U	---	---	9.7 U
3-Nitroaniline	ug/l	NA	3.8 U	---	---	3.8 U
4-Aminobiphenyl	ug/l	NA	19 U	---	---	19 U
4-Bromophenyl phenyl ether	ug/l	NA	2 U	---	---	2 U
4-Chloro-3-methylphenol	ug/l	NA	3.9 U	---	---	3.9 U
4-Chloroaniline	ug/l	NA	2.8 U	---	---	2.8 U
4-Chlorophenyl phenyl ether	ug/l	NA	2.5 U	---	---	2.6 U
4-methylphenol	ug/l	NA	4.3 U	---	---	4.4 U
4-Nitroaniline	ug/l	NA	4.8 U	---	---	4.8 U
4-Nitrophenol	ug/l	NA	1.6 U	---	---	1.6 U
4-Nitroquinoline-1-oxide	ug/l	NA	48 U	---	---	49 U

See last page of Table 12 for footnotes and explanations.

TABLE 12
SUMMARY OF ANALYSES FOR APPENDIX IX CONSTITUENTS,
SECOND QUARTER 2003
Boeing Santa Susana Field Laboratory
Ventura County, California

Semi-Volatile Organic Compounds						
Well Identifier			HAR-07	HAR-07	HAR-07	HAR-16
FLUTe Sample Port			---	---	---	Comp
Sample Date			04/16/03	04/16/03	04/16/03	04/17/03
Sample Type			Primary	Dup	Split	Primary
Sample Qualifier			---	---	---	---
Compound	Units	MCL				
4,6-Dinitro-2-methylphenol	ug/l	NA	2.1 U	---	---	2.1 U
5-Nitro-o-toluidine	ug/l	NA	9.6 U	---	---	9.7 U
7,12-Dimethylbenz(a)anthracene	ug/l	NA	9.6 U	---	---	9.7 U
Acenaphthene	ug/l	NA	2.5 U	---	---	2.6 U
Acenaphthylene	ug/l	NA	2.4 U	---	---	2.4 U
Acetophenone	ug/l	NA	9.6 U	---	---	9.7 U
Aniline	ug/l	NA	4.8 U	---	---	4.8 U
Anthracene	ug/l	NA	0.77 U	---	---	0.78 U
Aramite	ug/l	NA	190 U	---	---	190 U
Benzo (b+k) fluoranthene (total)	ug/l	NA	1.7 UJ	---	---	1.7 U
Benzo(a)anthracene	ug/l	NA	0.51 U	---	---	0.51 U
Benzo(a)pyrene	ug/l	0.2	0.93 U	---	---	0.94 U
Benzo(ghi)perylene	ug/l	NA	0.94 U	---	---	0.95 U
Benzyl Alcohol	ug/l	NA	3 U	---	---	3 U
Bis(2-Chloroethoxy)methane	ug/l	NA	3.5 U	---	---	3.5 U
Bis(2-chloroethyl)ether	ug/l	NA	3.5 UJ	---	---	3.5 U
Bis(2-chloroisopropyl)ether	ug/l	NA	3.9 U	---	---	3.9 U
Bis(2-Ethylhexyl) phthalate	ug/l	4	3.5 U	---	---	3.5 U
Butyl benzyl phthalate	ug/l	NA	0.88 U	---	---	0.88 U
Chrysene	ug/l	NA	0.92 U	---	---	0.93 U
Di-n-butyl phthalate	ug/l	NA	0.88 U	---	---	0.89 U
Di-n-octyl phthalate	ug/l	NA	0.89 UJ	---	---	0.9 U
Dibenz(a,h)anthracene	ug/l	NA	0.86 U	---	---	0.86 U
Dibenzofuran	ug/l	NA	2.4 U	---	---	2.5 U
Diethyl phthalate	ug/l	NA	1.2 U	---	---	1.2 U
Dimethoate	ug/l	1 ACAL	0.32 U	---	---	19 U
Dimethyl phthalate	ug/l	NA	1.8 U	---	---	1.8 U
Diphenylamine	ug/l	NA	9.6 U	---	---	9.7 U
Disulfoton	ug/l	NA	0.14 U	---	---	---
Ethyl methanesulfonate	ug/l	NA	19 U	---	---	19 U
Famphur	ug/l	NA	190 U	---	---	190 U
Fluoranthene	ug/l	NA	0.75 U	---	---	0.76 U
Fluorene	ug/l	NA	2.5 U	---	---	2.6 U
Hexachlorobenzene	ug/l	1	1.7 U	---	---	1.7 U
Hexachlorobutadiene	ug/l	NA	3 U	---	---	3 U
Hexachlorocyclopentadiene	ug/l	50	1.3 UJ	---	---	1.3 U
Hexachloroethane	ug/l	NA	2.3 U	---	---	2.3 U
Hexachlorophene	ug/l	NA	190 U	---	---	190 U
Hexachloropropene	ug/l	NA	9.6 U	---	---	9.7 U
Indeno(1,2,3-cd)pyrene	ug/l	NA	0.75 U	---	---	0.76 U
Isophorone	ug/l	NA	3.1 U	---	---	3.1 U
Isosafrole	ug/l	NA	9.6 U	---	---	9.7 U

See last page of Table 12 for footnotes and explanations.

TABLE 12
SUMMARY OF ANALYSES FOR APPENDIX IX CONSTITUENTS,
SECOND QUARTER 2003
Boeing Santa Susana Field Laboratory
Ventura County, California

Semi-Volatile Organic Compounds						
Well Identifier			HAR-07	HAR-07	HAR-07	HAR-16
FLUTe Sample Port			---	---	---	Comp
Sample Date			04/16/03	04/16/03	04/16/03	04/17/03
Sample Type			Primary	Dup	Split	Primary
Sample Qualifier			---	---	---	---
Compound	Units	MCL				
Methapyrilene	ug/l	NA	96 U	---	---	97 U
Methyl methanesulfonate	ug/l	NA	9.6 U	---	---	9.7 U
N-Nitrosodi-n-butylamine	ug/l	NA	9.6 U	---	---	9.7 U
N-Nitrosodi-n-propylamine	ug/l	NA	3.5 U	---	---	3.6 U
N-Nitrosodiethylamine	ug/l	NA	19 U	---	---	19 U
N-Nitrosodimethylamine	ng/l	10 ACAL	55	51	54	18000 J
N-Nitrosodiphenylamine	ug/l	NA	2.6 U	---	---	2.7 U
N-Nitrosomethylethylamine	ug/l	NA	9.6 U	---	---	9.7 U
N-Nitrosomorpholine	ug/l	NA	9.6 U	---	---	9.7 U
N-Nitrosopiperidine	ug/l	NA	19 U	---	---	19 U
N-Nitrosopyrrolidine	ug/l	NA	38 U	---	---	39 U
Naphthalene	ug/l	170 ACAL	3.7 U	---	---	3.7 U
Nitrobenzene	ug/l	NA	3.2 U	---	---	3.2 U
O,O,O-Triethylphosphorothioate	ug/l	NA	9.6 U	---	---	9.7 U
o-Toluidine	ug/l	NA	9.6 U	---	---	9.7 U
p-Dimethylaminoazobenzene	ug/l	NA	9.6 U	---	---	9.7 U
Parathion-ethyl	ug/l	40 ACAL	0.14 U	---	---	---
Parathion-methyl	ug/l	2 ACAL	0.12 U	---	---	---
Pentachlorobenzene	ug/l	NA	9.6 U	---	---	9.7 U
Pentachloroethane	ug/l	NA	9.6 U	---	---	9.7 U
Pentachloronitrobenzene	ug/l	20 ACAL	19 U	---	---	19 U
Pentachlorophenol	ug/l	1	0.165 U	---	---	2 U
Phenacetin	ug/l	NA	19 U	---	---	19 U
Phenanthrene	ug/l	NA	1.4 U	---	---	1.4 U
Phenol	ug/l	4200 ACAL	3.8 U	---	---	3.9 U
a,a-Dimethylphenethylamine	ug/l	NA	9.6 U	---	---	9.7 U
Phorate	ug/l	NA	0.13 U	---	---	---
Pronamide	ug/l	NA	9.6 U	---	---	9.7 U
Pyrene	ug/l	NA	0.69 U	---	---	0.7 U
Pyridine	ug/l	NA	2 U	---	---	2 U
Safrole	ug/l	NA	9.6 U	---	---	9.7 U
Sulfotepp	ug/l	NA	0.44 U	---	---	---
Thionazin	ug/l	NA	19 UJ	---	---	19 U
Laboratory			DMA	Weck	DMA	DMA

See last page of Table 12 for footnotes and explanations.

TABLE 12
SUMMARY OF ANALYSES FOR APPENDIX IX CONSTITUENTS,
SECOND QUARTER 2003
Boeing Santa Susana Field Laboratory
Ventura County, California

Semi-Volatile Organic Compounds				
Well Identifier			HAR-17	HAR-17
FLUTe Sample Port			---	---
Sample Date			04/16/03	04/16/03
Sample Type			Primary	Dup
Sample Qualifier			---	---
Compound	Units	MCL		
1,2,4,5-Tetrachlorobenzene	ug/l	NA	9.7 U	---
1,2,4-Trichlorobenzene	ug/l	70	3.3 U	---
1,2-Dichlorobenzene	ug/l	600	0.32 U	0.32 U
1,3,5-Trinitrobenzene	ug/l	NA	9.7 U	---
1,3-Dichlorobenzene	ug/l	600 ACAL	0.35 U	0.35 U
1,3-Dinitrobenzene	ug/l	NA	19 U	---
1,4-Dichlorobenzene	ug/l	5	0.37 U	0.37 U
1,4-Naphthoquinone	ug/l	NA	19 U	---
1,4-Phenylenediamine	ug/l	NA	49 U	---
1-Naphthylamine	ug/l	NA	9.7 U	---
2,3,4,6-Tetrachlorophenol	ug/l	NA	9.7 U	---
2,4,5-Trichlorophenol	ug/l	NA	3.8 U	---
2,4,6-Trichlorophenol	ug/l	NA	4.4 U	---
2,4-Dichlorophenol	ug/l	NA	4.6 U	---
2,4-Dimethylphenol	ug/l	100 ACAL	5.8 U	---
2,4-Dinitrophenol	ug/l	NA	1.2 U	---
2,4-Dinitrotoluene	ug/l	NA	1.2 U	---
2,6-Dichlorophenol	ug/l	NA	9.7 U	---
2,6-Dinitrotoluene	ug/l	NA	1.9 U	---
2-Acetylaminofluorene	ug/l	NA	19 U	---
2-Chloronaphthalene	ug/l	NA	2.9 U	---
2-Chlorophenol	ug/l	NA	4.8 U	---
2-Methylnaphthalene	ug/l	NA	3.4 U	---
2-Methylphenol	ug/l	NA	5.1 U	---
2-Naphthylamine	ug/l	NA	9.7 U	---
2-Nitroaniline	ug/l	NA	2.6 U	---
2-Nitrophenol	ug/l	NA	4.6 U	---
2-Picoline	ug/l	NA	9.7 U	---
3,3'-Dichlorobenzidine	ug/l	NA	4.9 U	---
3,3'-Dimethylbenzidine	ug/l	NA	9.7 U	---
3-Methylcholanthrene	ug/l	NA	9.7 U	---
3-Methylphenol	ug/l	NA	9.7 U	---
3-Nitroaniline	ug/l	NA	3.8 U	---
4-Aminobiphenyl	ug/l	NA	19 U	---
4-Bromophenyl phenyl ether	ug/l	NA	2 U	---
4-Chloro-3-methylphenol	ug/l	NA	3.9 U	---
4-Chloroaniline	ug/l	NA	2.8 U	---
4-Chlorophenyl phenyl ether	ug/l	NA	2.6 U	---
4-methylphenol	ug/l	NA	4.4 U	---
4-Nitroaniline	ug/l	NA	4.8 U	---
4-Nitrophenol	ug/l	NA	1.6 U	---
4-Nitroquinoline-1-oxide	ug/l	NA	49 U	---

See last page of Table 12 for footnotes and explanations.

TABLE 12
SUMMARY OF ANALYSES FOR APPENDIX IX CONSTITUENTS,
SECOND QUARTER 2003
Boeing Santa Susana Field Laboratory
Ventura County, California

Semi-Volatile Organic Compounds				
Well Identifier			HAR-17	HAR-17
FLUTe Sample Port			---	---
Sample Date			04/16/03	04/16/03
Sample Type			Primary	Dup
Sample Qualifier			---	---
Compound	Units	MCL		
4,6-Dinitro-2-methylphenol	ug/l	NA	2.1 U	---
5-Nitro-o-toluidine	ug/l	NA	9.7 U	---
7,12-Dimethylbenz(a)anthracene	ug/l	NA	9.7 U	---
Acenaphthene	ug/l	NA	2.6 U	---
Acenaphthylene	ug/l	NA	2.4 U	---
Acetophenone	ug/l	NA	9.7 U	---
Aniline	ug/l	NA	4.8 U	---
Anthracene	ug/l	NA	0.78 U	---
Aramite	ug/l	NA	190 U	---
Benzo (b+k) fluoranthene (total)	ug/l	NA	1.7 UJ	---
Benzo(a)anthracene	ug/l	NA	0.51 U	---
Benzo(a)pyrene	ug/l	0.2	0.94 U	---
Benzo(ghi)perylene	ug/l	NA	0.95 U	---
Benzyl Alcohol	ug/l	NA	3 U	---
Bis(2-Chloroethoxy)methane	ug/l	NA	3.5 U	---
Bis(2-chloroethyl)ether	ug/l	NA	3.5 UJ	---
Bis(2-chloroisopropyl)ether	ug/l	NA	3.9 U	---
Bis(2-Ethylhexyl) phthalate	ug/l	4	3.5 UJ	---
Butyl benzyl phthalate	ug/l	NA	0.88 U	---
Chrysene	ug/l	NA	0.93 U	---
Di-n-butyl phthalate	ug/l	NA	0.89 U	---
Di-n-octyl phthalate	ug/l	NA	0.9 UJ	---
Dibenz(a,h)anthracene	ug/l	NA	0.86 U	---
Dibenzofuran	ug/l	NA	2.5 U	---
Diethyl phthalate	ug/l	NA	1.2 U	---
Dimethoate	ug/l	1 ACAL	0.32 U	---
Dimethyl phthalate	ug/l	NA	1.8 U	---
Diphenylamine	ug/l	NA	9.7 U	---
Disulfoton	ug/l	NA	0.14 U	---
Ethyl methanesulfonate	ug/l	NA	19 U	---
Famphur	ug/l	NA	190 U	---
Fluoranthene	ug/l	NA	0.76 U	---
Fluorene	ug/l	NA	2.6 U	---
Hexachlorobenzene	ug/l	1	1.7 U	---
Hexachlorobutadiene	ug/l	NA	3 U	---
Hexachlorocyclopentadiene	ug/l	50	1.3 UJ	---
Hexachloroethane	ug/l	NA	2.3 U	---
Hexachlorophene	ug/l	NA	190 U	---
Hexachloropropene	ug/l	NA	9.7 U	---
Indeno(1,2,3-cd)pyrene	ug/l	NA	0.76 U	---
Isophorone	ug/l	NA	3.1 U	---
Isosafrole	ug/l	NA	9.7 U	---

See last page of Table 12 for footnotes and explanations.

TABLE 12
SUMMARY OF ANALYSES FOR APPENDIX IX CONSTITUENTS,
SECOND QUARTER 2003
Boeing Santa Susana Field Laboratory
Ventura County, California

Semi-Volatile Organic Compounds				
Well Identifier			HAR-17	HAR-17
FLUTe Sample Port			---	---
Sample Date			04/16/03	04/16/03
Sample Type			Primary	Dup
Sample Qualifier			---	---
Compound	Units	MCL		
Methapyrilene	ug/l	NA	97 U	---
Methyl methanesulfonate	ug/l	NA	9.7 U	---
N-Nitrosodi-n-butylamine	ug/l	NA	9.7 U	---
N-Nitrosodi-n-propylamine	ug/l	NA	3.6 U	---
N-Nitrosodiethylamine	ug/l	NA	19 U	---
N-Nitrosodimethylamine	ng/l	10 ACAL	33	---
N-Nitrosodiphenylamine	ug/l	NA	2.7 U	---
N-Nitrosomethylethylamine	ug/l	NA	9.7 U	---
N-Nitrosomorpholine	ug/l	NA	9.7 U	---
N-Nitrosopiperidine	ug/l	NA	19 U	---
N-Nitrosopyrrolidine	ug/l	NA	39 U	---
Naphthalene	ug/l	170 ACAL	3.7 U	---
Nitrobenzene	ug/l	NA	3.2 U	---
O,O,O-Triethylphosphorothioate	ug/l	NA	9.7 U	---
o-Toluidine	ug/l	NA	9.7 U	---
p-Dimethylaminoazobenzene	ug/l	NA	9.7 U	---
Parathion-ethyl	ug/l	40 ACAL	0.14 U	---
Parathion-methyl	ug/l	2 ACAL	0.12 U	---
Pentachlorobenzene	ug/l	NA	9.7 U	---
Pentachloroethane	ug/l	NA	9.7 U	---
Pentachloronitrobenzene	ug/l	20 ACAL	19 U	---
Pentachlorophenol	ug/l	1	0.165 U	---
Phenacetin	ug/l	NA	19 U	---
Phenanthrene	ug/l	NA	1.4 U	---
Phenol	ug/l	4200 ACAL	3.9 U	---
a,a-Dimethylphenethylamine	ug/l	NA	9.7 U	---
Phorate	ug/l	NA	0.13 U	---
Pronamide	ug/l	NA	9.7 U	---
Pyrene	ug/l	NA	0.7 U	---
Pyridine	ug/l	NA	2 U	---
Safrole	ug/l	NA	9.7 U	---
Sulfotepp	ug/l	NA	0.44 U	---
Thionazin	ug/l	NA	19 U	---
Laboratory			DMA	DMA

See last page of Table 12 for footnotes and explanations.

FOOTNOTES AND EXPLANATIONS

AMA	=	American Analytics of Chatsworth, California.
DMA	=	Del Mar Analytical of Irvine, California.
Weck	=	Weck Laboratories of City of Industry, California.
(---)	=	Analysis not performed.
Primary	=	Primary sample.
Dup	=	Duplicate sample.
Split	=	Split sample.
mg/l	=	Milligrams per liter.
ug/l	=	Micrograms per liter.
ng/l	=	Nanograms per liter.
pg/l	=	Picograms per liter.
MCL	=	Maximum Contaminant Level, California primary drinking water standard (California Department of Health Services, 2003. http://www.dhs.ca.gov/ps/ddwem/publications/regulations/MCLrevisions6-12-03.pdf).
SMCL	=	Secondary drinking water MCL.
ECAL	=	Enforceable California Action Level to be met at a customer tap.
ACAL	=	Advisory California Action Level for unregulated chemical contaminants.
NA	=	Not available; no MCL promulgated.
C	=	Possible carry-over contaminant.
J	=	Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL).
U	=	Not detected; numerical value represents the Method Detection Limit for that compound.
UJ	=	Not detected. Estimated detection limit as a result of calibration verification recovery exceeding the upper acceptance limit.
Comp	=	Composite sample. The HAR-16 sample was composited at the laboratory from FLUTe ports 7 through 12.
TEQ	=	Toxicity equivalent.
pH	=	VOC samples, pH of preserved sample did not meet the method preservation requirements.

Notes:
Low-level 1,4-dioxane analyses were performed by Ceimic Corporation using modified EPA method 8260 SIM.

Low-level N-nitrosodimethylamine analyses were performed by Weck Laboratories using modified EPA method 1625.

TABLE 13
SUMMARY OF ANALYSES FOR GROSS ALPHA, GROSS BETA, AND TRITIUM ACTIVITIES
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	FLUTe Sample Port	Sample Type	Sample Date	EPA Method Number	Radionuclide	Result (pCi/l) Activity	Error	MDA
Shallow Wells								
RS-11		Primary	05/01/03	900.0	Gross Alpha	1.65 U	1.8	2.83
			05/01/03	900.0	Gross Beta	0.692 U	2.3	3.89
			05/01/03	906.0	Tritium	17.6 U	100	172
RS-18		Primary	05/02/03	900.0	Gross Alpha	29.1	9.1	4.92
			05/02/03	900.0	Gross Beta	17.8	6.0	6.32
			05/02/03	906.0	Tritium	68.7 U	110	177
Chatsworth Formation Wells								
RD-27		Primary	05/14/03	900.0	Gross Alpha	4.43	2.5	2.45
			05/14/03	900.0	Gross Beta	7.41	3.0	3.88
RD-29		Primary	05/13/03	900.0	Gross Alpha	16.1	5.5	3.04
			05/13/03	900.0	Gross Beta	9.76	4.1	5.16
			05/13/03	906.0	Tritium	-12.4 U	100	174
RD-34A		Primary	05/16/03	900.0	Gross Alpha	18.5	7.0	5.31
			05/16/03	900.0	Gross Beta	12.1	5.1	6.32
			05/16/03	906.0	Tritium	2420	300	175
RD-57	8	Primary	04/30/03	900.0	Gross Alpha	3.06	1.9	2.18
			04/30/03	900.0	Gross Beta	6.07	2.2	2.63
			04/30/03	906.0	Tritium	18.8 U	99	167
RD-59A		Primary	05/15/03	900.0	Gross Alpha	3.55	2.0	2.54
			05/15/03	900.0	Gross Beta	7.58	2.8	3.36
			05/15/03	906.0	Tritium	29.7 U	100	171
RD-59A		Split	05/15/03	900.0	Gross Alpha	3.53	1.9	2.54
			05/15/03	900.0	Gross Beta	14	3.9	5.48
			05/15/03	906.0	Tritium	-12.3 U	51.5	110

Primary sample analyses were performed by Eberline Services of Richmond, California.
Split sample analyses were performed by Severn Trent Laboratories of Richland, Washington.

Results are presented as the activity plus or minus the error. Any activity is reported by the laboratory.
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.
pCi/l = PicoCuries per liter.
U = The result is less than the MDA.
Primary = Primary sample.
Split = Sample split.

TABLE 14

SUMMARY OF ANALYSES FOR GAMMA-EMITTING RADIONUCLIDES, SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	RS-11		RS-18		RD-27		RD-29	
FLUTe Sample Port	---		---		---		---	
Sample Date	05/01/03		05/02/03		05/14/03		05/13/03	
Sample Type	Primary		Primary		Primary		Primary	
Radionuclides (pCi/l)	Result	MDA	Result	MDA	Result	MDA	Result	MDA
Gamma-Emitting								
Actinium-228	ND	5.61	ND	7.57	ND	5.67	ND	7
Bismuth-212	ND	8.51	ND	11.9	ND	8.75	ND	11.1
Bismuth-214	ND	2.49	ND	3.53	ND	2.64	ND	3.36
Cesium-134	ND	1.58	ND	1.97	ND	2.83	ND	1.88
Cesium-137	ND	1.17	ND	1.76	ND	1.25	ND	1.56
Cobalt-57	ND	0.84	ND	0.978	ND	0.892	ND	0.918
Cobalt-60	ND	1.48	ND	1.84	ND	1.53	ND	1.88
Lead-210	ND	261	ND	90.1	ND	238	ND	102
Lead-212	ND	1.78	ND	2.33	ND	1.9	ND	2.04
Lead-214	ND	2.36	ND	3.09	ND	2.58	ND	2.99
Potassium-40	ND	30.4	ND	44.9	ND	30.1	ND	42.2
Radium-226	ND	17.1	ND	32.5	ND	18.8	ND	22.2
Thallium-208	ND	1.24	ND	1.66	ND	1.28	ND	1.57
Thorium-234	ND	34.7	ND	25.4	ND	37.6	ND	24.1
Uranium-235	ND	6.58	ND	8.43	ND	7.2	ND	7.2
Isotopic Uranium and Thorium								
Thorium-228	---	---	-0.009U +/- 0.037	0.074	---	---	---	---
Thorium-230	---	---	0.018U +/- 0.046	0.104	---	---	---	---
Thorium-232	---	---	0.005U +/- 0.009	0.035	---	---	---	---
Uranium-233/234	---	---	20.3 +/- 1.2	0.076	---	---	8.74 +/- 0.55	0.049
Uranium-235	---	---	1.05 +/- 0.12	0.021	---	---	0.366 +/- 0.069	0.021
Uranium-238	---	---	19.3 +/- 1.1	0.073	---	---	8.21 +/- 0.52	0.047

See last page of Table 14 for footnotes and explanations.

TABLE 14

SUMMARY OF ANALYSES FOR GAMMA-EMITTING RADIONUCLIDES, SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	RD-34A		RD-57		RD-59A		RD-59A Split	
FLUTe Sample Port	---		8		---		---	
Sample Date	05/16/03		04/30/03		05/15/03		05/15/03	
Sample Type	Primary		Primary		Primary		Split	
Radionuclides (pCi/l)	Result	MDA	Result	MDA	Result	MDA	Result	MDA
Gamma-Emitting								
Actinium-228	ND	4.11	ND	5.26	ND	6.54	ND	-6.51
Bismuth-212	ND	7.08	ND	8.85	ND	11.9	ND	6.01
Bismuth-214	ND	1.88	ND	2.6	ND	4.7	ND	-4.74
Cesium-134	ND	1.26	ND	3.63	ND	2.26	ND	-0.257
Cesium-137	ND	0.908	ND	1.25	ND	1.42	ND	-0.205
Cobalt-57	ND	0.496	ND	0.901	ND	1.24	ND	-2.07
Cobalt-60	ND	1.05	ND	1.58	ND	1.47	ND	0.652
Lead-210	ND	53.4	ND	301	ND	395	ND	---
Lead-212	ND	1.45	ND	1.86	ND	2.32	ND	-1.68
Lead-214	ND	1.71	ND	2.48	ND	2.98	ND	-2.91
Potassium-40	ND	11.2	ND	30.9	ND	30.6	ND	-119
Radium-226	ND	23.2	ND	18.1	ND	24.2	ND	---
Thallium-208	ND	0.985	ND	1.28	ND	1.55	ND	-1.96
Thorium-234	ND	25.4	ND	36.4	ND	54.3	ND	208
Uranium-235	ND	4.68	ND	6.22	ND	9.36	ND	8.1
Isotopic Uranium and Thorium								
Thorium-228	0.017U +/- 0.058	0.111	---	---	---	---	---	---
Thorium-230	0.058U +/- 0.058	0.126	---	---	---	---	---	---
Thorium-232	0.006U +/- 0.023	0.045	---	---	---	---	---	---
Uranium-233/234	8.23 +/- 0.62	0.09	---	---	---	---	---	---
Uranium-235	0.362 +/- 0.098	0.057	---	---	---	---	---	---
Uranium-238	8.52 +/- 0.64	0.079	---	---	---	---	---	---

See last page of Table 14 for footnotes and explanations.

TABLE 14
FOOTNOTES AND EXPLANATIONS

Detected concentrations are presented as the activity plus or minus the error.

Non-detectable results are presented as “ND” with the minimum detectable activity (MDA).

Analyses were performed by Eberline Services of Richmond, California.

Split sample analyses were performed by Severn Trent Laboratories of Richland, Washington.

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

Samples are filtered and acidified in the field.

(---) = Analysis not performed.

pCi/l = PicoCuries per liter.

Primary = Primary sample.

Split = Sample split.

TABLE 15
SUMMARY OF ANALYSES FOR CONSTITUENTS OF CONCERN AND PERCHLORATE
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier		RD-01	RD-02	RD-04	RD-04	RD-10	RD-44	RD-49A	RD-49A	RD-49B	RD-49B	RD-49C	WS-05	WS-05
FLUTe Sample Port		---	---	---	---	Comp	---	---	---	---	---	---	---	---
Sample Date		05/07/03	05/05/03	05/07/03	05/07/03	04/30/03	05/06/03	05/07/03	05/07/03	05/06/03	05/06/03	05/06/03	05/05/03	05/05/03
Sample Type		Primary	Primary	Primary	Split	Primary	Primary	Primary	Split	Primary	Split	Primary	Primary	Split
Sample Qualifier	Units	---	---	---	---	---	---	---	---	---	---	---	---	---
ORGANIC CONSTITUENTS and PERCHLORATE														
1,1,1-Trichloroethane	ug/l	3 U	1.5 U	0.3 U	---	0.3 U	0.3 U	30 U	---	0.6 U	---	0.3 U	0.3 U	---
1,1,2-Trichloroethane	ug/l	3 U	1.5 U	0.3 U	---	0.3 U	0.3 U	30 U	---	0.6 U	---	0.3 U	0.3 U	---
1,1-Dichloroethane	ug/l	2.7 U	1.4 U	0.27 U	---	0.27 U	0.27 U	27 U	---	0.54 U	---	0.27 U	0.27 U	---
1,1-Dichloroethene	ug/l	3.2 U	1.6 U	0.32 U	---	0.32 U	0.32 U	32 U	---	0.64 U	---	0.32 U	0.32 U	---
1,2-Dichloroethane	ug/l	2.8 U	1.4 U	0.28 U	---	0.28 U	0.28 U	28 U	---	0.56 U	---	0.28 U	0.28 U	---
1,3-Dinitrobenzene	ug/l	8.4 U	8.4 U	8.4 U	---	8.4 U	8.4 U	8.4 U	---	8.4 U	---	8.4 U	8.4 U	---
1,4-Dioxane	ug/l	2.67	2.32	0.331 U	0.45 U	0.07 U	0.147 U	0.65 J	0.73 U	2.76	2.4 U	1.08	2.38	2.6 U
2-Butanone	ug/l	38 U	19 U	3.8 U	---	3.8 U	3.8 U	380 U	---	7.6 U	---	3.8 U	3.8 U	---
Acetone	ug/l	45 U	22 U	4.5 U	---	9.4 J,F	4.5 U	450 U	---	9 U	---	4.5 U	4.5 U	---
Benzene	ug/l	2.8 U	1.4 U	0.28 U	---	0.28 U	0.28 U	28 U	---	0.56 U	---	0.28 U	0.28 U	---
Carbon tetrachloride	ug/l	2.8 U	1.4 U	0.28 U	---	0.28 U	0.28 U	28 U	---	0.56 U	---	0.28 U	0.28 U	---
Chloroform	ug/l	3.3 U	1.6 U	0.33 U	---	0.33 U	0.33 U	33 U	---	0.66 U	---	0.33 U	0.33 U	---
cis-1,2-Dichloroethene	ug/l	690	390	13	---	12	0.32 U	2100	---	220	---	81	2.6	---
Ethylbenzene	ug/l	2.5 U	1.2 U	0.25 U	---	0.25 U	0.25 U	25 U	---	0.5 U	---	0.25 U	0.25 U	---
m,p-Xylenes	ug/l	3.8 U	1.9 U	0.38 U	---	0.38 U	0.38 U	38 U	---	0.76 U	---	0.38 U	0.38 U	---
Methylene chloride	ug/l	5.7 J	1.6 U	0.33 U	---	0.33 U	0.33 U	55 J,L	---	0.66 U	---	0.33 U	0.33 U	---
n-Nitrosodimethylamine	ug/l	0.0007 U	0.0062	0.038	---	0.0007 U	0.0007 U	0.0018 J	---	0.049	---	0.014	0.0007 U	---
Nitrobenzene	ug/l	9.6 U	9.6 U	9.6 U	---	9.6 U	9.6 U	9.6 U	---	9.6 U	---	9.6 U	9.6 U	---
o-Xylene	ug/l	2.4 U	1.2 U	0.24 U	---	0.24 U	0.24 U	24 U	---	0.48 U	---	0.24 U	0.24 U	---
Perchlorate	ug/l	0.8 U	0.8 U	0.8 U	---	220	0.8 U	0.8 U	---	0.8 U	---	0.8 U	0.8 U	---
Tetrachloroethene	ug/l	3.2 U	1.6 U	0.32 U	---	0.32 U	0.32 U	32 U	---	0.64 U	---	0.32 U	0.32 U	---
Toluene	ug/l	4.9 U	2.4 U	0.49 U	---	0.49 U	0.49 U	49 U	---	0.98 U	---	0.49 U	0.49 U	---
trans-1,2-Dichloroethene	ug/l	23	24	0.28 J	---	0.47 J,F	0.27 U	40 J	---	11	---	2.9	0.27 U	---
Trichloroethene	ug/l	970	330	60	---	4.9	0.26 U	4000	---	250	---	24	1.3	---
Trichlorofluoromethane	ug/l	3.4 U	1.7 U	0.34 U	---	0.34 U	0.34 U	34 U	---	0.68 U	---	0.34 U	0.34 U	---
Trichlorotrifluoroethane (Freon 113)	ug/l	12 U	6 U	1.2 U	---	1.2 U	1.2 U	120 U	---	2.4 U	---	1.2 U	1.2 U	---
Vinyl chloride	ug/l	6	7.5	0.19 U	---	0.19 U	0.19 U	19 U	---	5.8	---	2.5	0.19 U	---
NATURALLY OCCURRING CONSTITUENTS														
Ammonia-N	mg/l	0.11 U	---	0.11 U	---	0.11 U	0.11 U	0.11 U	---	0.11 U	---	0.11 U	---	---
Fluoride	mg/l	0.44 J	0.4 J	0.45 J	---	0.31 J	0.45 J	0.57 J	---	0.28 J	---	0.33 J	0.31 J	---
Formaldehyde	ug/l	21 J,L	20 U	20 U	---	20 U	20 U	20 U	---	20 U	---	20 U	20 U	---
Nitrate-N	mg/l	0.17	0.072 U	0.14 U	---	0.28	0.072 U	0.14 U	---	0.072 U	---	0.072 U	0.072 U	---
LABORATORY		DMA	DMA	DMA	DMA	DMA	DMA	DMA	DMA	DMA	DMA	DMA	DMA	DMA

See last page of Table 15 for footnotes and explanations.

TABLE 15
SUMMARY OF ANALYSES FOR CONSTITUI
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATC
VENTURA COUNTY, CALIFORNIA

Well Identifier		WS-06	WS-09
FLUTe Sample Port		---	---
Sample Date		05/07/03	05/07/03
Sample Type		Primary	Primary
Sample Qualifier	Units	---	---
ORGANIC CONSTITUENTS and PERCHLORATE			
1,1,1-Trichloroethane	ug/l	0.3 U	12 U
1,1,2-Trichloroethane	ug/l	0.3 U	12 U
1,1-Dichloroethane	ug/l	0.27 U	11 U
1,1-Dichloroethene	ug/l	0.32 U	13 U
1,2-Dichloroethane	ug/l	0.28 U	11 U
1,3-Dinitrobenzene	ug/l	8.4 U	8.4 U
1,4-Dioxane	ug/l	0.898 J	3.71
2-Butanone	ug/l	3.8 U	150 U
Acetone	ug/l	4.5 U	180 U
Benzene	ug/l	0.28 U	11 U
Carbon tetrachloride	ug/l	0.28 U	11 U
Chloroform	ug/l	0.33 U	13 U
cis-1,2-Dichloroethene	ug/l	36	410
Ethylbenzene	ug/l	0.25 U	10 U
m,p-Xylenes	ug/l	0.38 U	15 U
Methylene chloride	ug/l	0.33 U	13 U
n-Nitrosodimethylamine	ug/l	0.0007 U	0.003
Nitrobenzene	ug/l	9.6 U	9.6 U
o-Xylene	ug/l	0.24 U	9.6 U
Perchlorate	ug/l	0.8 U	0.8 U
Tetrachloroethene	ug/l	0.32 U	13 U
Toluene	ug/l	0.49 U	20 U
trans-1,2-Dichloroethene	ug/l	6.1	11 U
Trichloroethene	ug/l	2.8	7300
Trichlorofluoromethane	ug/l	0.34 U	14 U
Trichlorotrifluoroethane (Freon 113)	ug/l	1.2 U	48 U
Vinyl chloride	ug/l	1.5	7.6 U
NATURALLY OCCURRING CONSTITUENTS			
Ammonia-N	mg/l	0.11 U	0.11 U
Fluoride	mg/l	0.31 J	0.35 J
Formaldehyde	ug/l	22 J	21 J,L
Nitrate-N	mg/l	0.072 U	0.072 U
LABORATORY		DMA	DMA

See last page of Table 15 for footnotes and explanations.

AmA	=	American Analytics of Chatsworth, California.
Ceimic	=	Ceimic Corporation of Narragansett, Rhode Island.
DMA	=	Del Mar Analytical of Irvine, California.
Weck	=	Weck Laboratories of City of Industry, California.
(---)	=	Analysis not performed.
Comp	=	Composite sample. Third quarter RD-10 sample was composited at the laboratory from FLUTe ports 3, 6, and 9. HAR-16 sample was composited at the laboratory from FLUTe ports 7 through 12.
Primary	=	Primary sample.
Dup	=	Sample duplicate.
Split	=	Split sample.
mg/l	=	Milligrams per liter.
ug/l	=	Micrograms per liter.
ng/l	=	Nanograms per liter.
F	=	Sampled through multi-level FLUTe ports. Footnoted results are not representative of historic groundwater samples, and may have been introduced in the FLUTe samples by compressed nitrogen gas, electrical tape and/or FLUTe components.
J	=	Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL).
L	=	Laboratory contaminant.
U	=	Not detected; numerical value represents the Method Detection Limit for that compound.
UJ	=	Not detected. Estimated detection limit as a result of calibration verification recovery exceeding the upper acceptance limit.

Note:
Low-level 1,4-dioxane analyses were performed on primary samples by Ceimic Corporation using modified EPA method 8260 SIM.

Low-level N-nitrosodimethylamine analyses were performed by Weck Laboratories using modified EPA method 1625.

TABLE 16
SUMMARY OF ANALYSES FOR SEMI-VOLATILE ORGANIC CONSTITUENTS
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	SH-04	RS-08	HAR-14	HAR-15	RD-01	RD-02	RD-04	RD-10
FLUTe Sample Port	---	---	---	---	---	---	---	Comp
Sample Date	04/14/03	04/14/03	04/15/03	04/15/03	05/07/03	05/05/03	05/07/03	04/30/03
Sample Type	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary
Compound (ug/l)								
1,2,4-Trichlorobenzene	3.4 U	3.4 U	3.3 U	3.4 U	7.9 U	7.9 U	7.9 U	7.9 U
1,2-Dichlorobenzene	0.64 U	3.3 U	0.32 U	0.32 U	3.2 U	1.6 U	0.32 U	7 U
1,2-Diphenylhydrazine/Azobenzene	---	---	---	---	8.8 U	8.8 U	8.8 U	8.8 U
1,3-Dichlorobenzene	0.7 U	3 U	0.35 U	0.35 U	3.5 U	1.8 U	0.35 U	6.8 U
1,3-Dinitrobenzene	20 U	20 U	19 U	20 U	8.4 U	8.4 U	8.4 U	8.4 U
1,4-Dichlorobenzene	0.74 U	3.1 U	0.37 U	0.37 U	3.7 U	1.8 U	0.37 U	7.8 U
2,4,6-Trichlorophenol	4.5 U	4.4 U	4.4 U	4.5 U	6.5 U	6.5 U	6.5 U	6.5 U
2,4-Dichlorophenol	4.8 U	4.7 U	4.6 U	4.8 U	7.6 U	7.6 U	7.6 U	7.6 U
2,4-Dimethylphenol	6 U	5.9 U	5.8 U	6 U	7.5 U	7.5 U	7.5 U	7.5 U
2,4-Dinitrophenol	1.3 U	1.3 U	1.2 U	1.3 U	4.4 U	4.4 U	4.4 U	4.4 U
2,4-Dinitrotoluene	1.3 U	1.3 U	1.2 U	1.3 U	9.7 U	9.7 U	9.7 U	9.7 U
2,6-Dinitrotoluene	1.9 U	1.9 U	1.9 U	1.9 U	9.3 U	9.3 U	9.3 U	9.3 U
2-Chloronaphthalene	3 U	3 U	2.9 U	3 U	7.4 U	7.4 U	7.4 U	7.4 U
2-Chlorophenol	4.9 U	4.8 U	4.8 U	4.9 U	7.7 U	7.7 U	7.7 U	7.7 U
2-Methylnaphthalene	3.5 U	3.4 U	3.4 U	3.5 U	---	---	---	---
2-Methylphenol	5.3 U	5.2 U	5.1 U	5.3 U	---	---	---	---
2-Nitrophenol	4.8 U	4.7 U	4.6 U	4.8 U	9.5 U	9.5 U	9.5 U	9.5 U
3,3-Dichlorobenzidine	5 U	4.9 U	4.9 U	5 U	8.3 U	8.3 U	8.3 U	8.3 U
4,6-Dinitro-2-methylphenol	2.2 U	2.2 U	2.1 U	2.2 U	---	---	---	---
4-Bromophenyl phenyl ether	2.1 U	2 U	2 U	2.1 U	8.7 U	8.7 U	8.7 U	8.7 U
4-Chloro-3-methylphenol	4 U	4 U	3.9 U	4 U	---	---	---	---
4-Chlorophenyl phenyl ether	2.6 U	2.6 U	2.6 U	2.6 U	7.2 U	7.2 U	7.2 U	7.2 U
4-Methylphenol	4.5 U	4.4 U	4.4 U	4.5 U	---	---	---	---
4-Nitrophenol	1.7 U	1.7 U	1.6 U	1.7 U	9.9 U	9.9 U	9.9 U	9.9 U
Acenaphthene	2.6 U	2.6 U	2.6 U	2.6 U	7.1 U	7.1 U	7.1 U	7.1 U
Acenaphthylene	2.5 U	2.4 U	2.4 U	2.5 U	8.1 U	8.1 U	8.1 U	8.1 U
Anthracene	0.8 U	0.78 U	0.78 U	0.8 U	9 U	9 U	9 U	9 U
Benzidine	---	---	---	---	6.1 U	6.1 U	6.1 U	6.1 R
Benzo(b+k)fluoranthene(total)	1.8 U	1.7 U	1.7 U	1.8 U	---	---	---	---
Benzo(a)anthracene	0.53 U	0.52 U	0.51 U	0.53 U	9.7 U	9.7 U	9.7 U	9.7 U
Benzo(a)pyrene	0.97 U	0.95 U	0.94 U	0.97 U	7.7 U	7.7 U	7.7 U	7.7 U
Benzo(b)fluoranthene	---	---	---	---	6.2 U	6.2 U	6.2 U	6.2 U
Benzo(g,h,i)perylene	0.98 U	0.96 U	0.95 U	0.98 U	9 U	9 U	9 U	9 U
Benzo(k)fluoranthene	---	---	---	---	9.2 U	9.2 U	9.2 U	9.2 U
Bis(2-chloroethoxy)methane	3.6 U	3.6 U	3.5 U	3.6 U	8.1 U	8.1 U	8.1 U	8.1 U
Bis(2-chloroethyl)ether	3.6 U	3.5 U	3.5 U	3.6 U	---	---	---	---
Bis(2-chloroisopropyl)ether	4 U	4 U	3.9 U	4 U	8.2 U	8.2 U	8.2 U	8.2 U
Bis(2-ethylhexyl)phthalate	3.6 U	3.6 U	3.5 U	3.6 U	30 U	30 U	30 U	30 U
Butyl benzyl phthalate	0.91 U	0.89 U	0.88 U	0.91 U	9.2 U	9.2 U	9.2 U	9.2 U
Chrysene	0.96 U	0.94 U	0.93 U	0.96 U	7.6 U	7.6 U	7.6 U	7.6 U
Di-n-butyl phthalate	0.92 U	0.9 U	0.89 U	0.92 U	12 U	12 U	12 U	12 U
Di-n-octyl phthalate	0.93 U	0.91 U	0.9 U	0.93 U	11 U	11 U	11 U	11 U
Dibenz(a,h)anthracene	0.89 U	0.87 U	0.86 U	0.89 U	7.8 U	7.8 U	7.8 U	7.8 U
Diethyl phthalate	1.2 U	1.2 U	1.2 U	1.2 U	7.5 U	7.5 UJ	7.5 U	7.5 UJ
Dimethyl phthalate	1.9 U	1.8 U	1.8 U	1.9 U	7 U	7 U	7 U	7 U
Fluoranthene	0.78 U	0.76 U	0.76 U	0.78 U	7.8 U	7.8 U	7.8 U	7.8 U
Fluorene	2.6 U	2.6 U	2.6 U	2.6 U	6.9 U	6.9 U	6.9 U	6.9 U
Hexachlorobenzene	1.7 U	1.7 U	1.7 U	1.7 U	8.8 U	8.8 U	8.8 U	8.8 U
Hexachlorobutadiene	3.1 U	3.1 U	3 U	3.1 U	5.7 U	5.7 U	5.7 U	5.7 U
Hexachloroethane	2.4 U	2.3 U	2.3 U	2.4 U	8.7 U	8.7 U	8.7 U	8.7 U

See last page of Table 16 for footnotes and explanations.

TABLE 16
SUMMARY OF ANALYSES FOR SEMI-VOLATILE ORGANIC CONSTITUENTS
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	SH-04	RS-08	HAR-14	HAR-15	RD-01	RD-02	RD-04	RD-10
FLUTe Sample Port	---	---	---	---	---	---	---	Comp
Sample Date	04/14/03	04/14/03	04/15/03	04/15/03	05/07/03	05/05/03	05/07/03	04/30/03
Sample Type	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary
Compound (ug/l)								
Indeno(1,2,3-cd)pyrene	0.78 U	0.76 U	0.76 U	0.78 U	9 U	9 U	9 U	9 U
Isophorone	3.2 U	3.2 U	3.1 U	3.2 U	7.9 U	7.9 U	7.9 U	7.9 U
N-Nitroso-di-n-propylamine	3.7 U	3.6 U	3.6 U	3.7 U	9 U	9 U	9 U	9 U
N-Nitrosodimethylamine	---	---	2.3 U	---	9.4 U	9.4 U	9.4 U	9.4 U
N-Nitrosodiphenylamine	2.8 U	2.7 U	2.7 U	2.8 U	4.4 U	4.4 U	4.4 U	4.4 U
Naphthalene	3.8 U	3.7 U	3.7 U	3.8 U	7.3 U	7.3 U	7.3 U	7.3 U
Nitrobenzene	3.3 U	3.2 U	3.2 U	3.3 U	9.6 U	9.6 U	9.6 U	9.6 U
Pentachlorophenol	0.165 U	0.165 U	0.165 U	0.165 U	---	---	---	---
Phenanthrene	1.4 U	1.4 U	1.4 U	1.4 U	9 U	9 U	9 U	9 U
Phenol	4 U	3.9 U	3.9 U	4 U	7.6 U	7.6 U	7.6 U	7.6 U
Laboratory	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C
Method	DMA	DMA	DMA	DMA	DMA	DMA	DMA	DMA

See last page of Table 16 for footnotes and explanations.

TABLE 16
SUMMARY OF ANALYSES FOR SEMI-VOLATILE ORGANIC CONSTITUENTS
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	RD-44	RD-49A	RD-49B	RD-49C	HAR-07	HAR-16	HAR-17	WS-05
FLUTe Sample Port	---	---	---	---	---	Comp	---	---
Sample Date	05/06/03	05/07/03	05/06/03	05/06/03	04/16/03	04/17/03	04/16/03	05/05/03
Sample Type	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary
Compound (ug/l)								
1,2,4-Trichlorobenzene	7.9 U	7.9 U	7.9 U	7.9 U	3.3 U	3.3 U	3.3 U	7.9 U
1,2-Dichlorobenzene	0.32 U	7 U	0.64 U	0.32 U	3.3 U	3.3 U	0.32 U	0.32 U
1,2-Diphenylhydrazine/Azobenzene	8.8 U	8.8 U	8.8 U	8.8 U	---	---	---	8.8 U
1,3-Dichlorobenzene	0.35 U	6.8 U	0.7 U	0.35 U	3 U	3 U	0.35 U	0.35 U
1,3-Dinitrobenzene	8.4 U	8.4 U	8.4 U	8.4 U	19 U	19 U	19 U	8.4 U
1,4-Dichlorobenzene	0.37 U	7.8 U	0.74 U	0.37 U	3.1 U	3.1 U	0.37 U	0.37 U
2,4,6-Trichlorophenol	6.5 U	6.5 U	6.5 U	6.5 U	4.3 U	4.4 U	4.4 U	6.5 U
2,4-Dichlorophenol	7.6 U	7.6 U	7.6 U	7.6 U	4.6 U	4.6 U	4.6 U	7.6 U
2,4-Dimethylphenol	7.5 U	7.5 U	7.5 U	7.5 U	5.8 U	5.8 U	5.8 U	7.5 U
2,4-Dinitrophenol	4.4 U	4.4 U	4.4 U	4.4 U	1.2 U	1.2 U	1.2 U	4.4 U
2,4-Dinitrotoluene	9.7 U	9.7 U	9.7 U	9.7 U	1.2 U	1.2 U	1.2 U	9.7 U
2,6-Dinitrotoluene	9.3 U	9.3 U	9.3 U	9.3 U	1.8 U	1.9 U	1.9 U	9.3 U
2-Chloronaphthalene	7.4 U	7.4 U	7.4 U	7.4 U	2.9 U	2.9 U	2.9 U	7.4 U
2-Chlorophenol	7.7 U	7.7 U	7.7 U	7.7 U	4.7 U	4.8 U	4.8 U	7.7 U
2-Methylnaphthalene	---	---	---	---	3.4 U	3.4 U	3.4 U	---
2-Methylphenol	---	---	---	---	5.1 U	5.1 U	5.1 U	---
2-Nitrophenol	9.5 U	9.5 U	9.5 U	9.5 U	4.6 U	4.6 U	4.6 U	9.5 U
3,3-Dichlorobenzidine	8.3 U	8.3 U	8.3 U	8.3 U	4.8 U	4.9 U	4.9 U	8.3 U
4,6-Dinitro-2-methylphenol	---	---	---	---	2.1 U	2.1 U	2.1 U	---
4-Bromophenyl phenyl ether	8.7 U	8.7 U	8.7 U	8.7 U	2 U	2 U	2 U	8.7 U
4-Chloro-3-methylphenol	---	---	---	---	3.9 U	3.9 U	3.9 U	---
4-Chlorophenyl phenyl ether	7.2 U	7.2 U	7.2 U	7.2 U	2.5 U	2.6 U	2.6 U	7.2 U
4-Methylphenol	---	---	---	---	4.3 U	4.4 U	4.4 U	---
4-Nitrophenol	9.9 U	9.9 U	9.9 U	9.9 U	1.6 U	1.6 U	1.6 U	9.9 U
Acenaphthene	7.1 U	7.1 U	7.1 U	7.1 U	2.5 U	2.6 U	2.6 U	7.1 U
Acenaphthylene	8.1 U	8.1 U	8.1 U	8.1 U	2.4 U	2.4 U	2.4 U	8.1 U
Anthracene	9 U	9 U	9 U	9 U	0.77 U	0.78 U	0.78 U	9 U
Benzidine	6.1 U	6.1 U	6.1 U	6.1 U	---	---	---	6.1 U
Benzo(b+k)fluoranthene(total)	---	---	---	---	1.7 UJ	---	1.7 UJ	---
Benzo(a)anthracene	9.7 U	9.7 U	9.7 U	9.7 U	0.51 U	0.51 U	0.51 U	9.7 U
Benzo(a)pyrene	7.7 U	7.7 U	7.7 U	7.7 U	0.93 U	0.94 U	0.94 U	7.7 U
Benzo(b)fluoranthene	6.2 U	6.2 U	6.2 U	6.2 U	---	---	---	6.2 U
Benzo(g,h,i)perylene	9 U	9 U	9 U	9 U	0.94 U	0.95 U	0.95 U	9 U
Benzo(k)fluoranthene	9.2 U	9.2 U	9.2 U	9.2 U	---	---	---	9.2 U
Bis(2-chloroethoxy)methane	8.1 U	8.1 U	8.1 U	8.1 U	3.5 U	3.5 U	3.5 U	8.1 U
Bis(2-chloroethyl)ether	---	---	---	---	3.5 UJ	3.5 U	3.5 UJ	---
Bis(2-chloroisopropyl)ether	8.2 U	8.2 U	8.2 U	8.2 U	3.9 U	3.9 U	3.9 U	8.2 U
Bis(2-ethylhexyl)phthalate	30 U	30 U	30 U	30 U	3.5 U	3.5 U	3.5 UJ	30 U
Butyl benzyl phthalate	9.2 U	9.2 U	9.2 U	9.2 U	0.88 U	0.88 U	0.88 U	9.2 U
Chrysene	7.6 U	7.6 U	7.6 U	7.6 U	0.92 U	0.93 U	0.93 U	7.6 U
Di-n-butyl phthalate	12 U	12 U	12 U	12 U	0.88 U	0.89 U	0.89 U	12 U
Di-n-octyl phthalate	11 U	11 U	11 U	11 U	0.89 UJ	0.9 U	0.9 UJ	11 U
Dibenz(a,h)anthracene	7.8 U	7.8 U	7.8 U	7.8 U	0.86 U	0.86 U	0.86 U	7.8 U
Diethyl phthalate	7.5 UJ	7.5 U	7.5 UJ	7.5 U	1.2 U	1.2 U	1.2 U	7.5 UJ
Dimethyl phthalate	7 U	7 U	7 U	7 U	1.8 U	1.8 U	1.8 U	7 U
Fluoranthene	7.8 U	7.8 U	7.8 U	7.8 U	0.75 U	0.76 U	0.76 U	7.8 U
Fluorene	6.9 U	6.9 U	6.9 U	6.9 U	2.5 U	2.6 U	2.6 U	6.9 U
Hexachlorobenzene	8.8 U	8.8 U	8.8 U	8.8 U	1.7 U	1.7 U	1.7 U	8.8 U
Hexachlorobutadiene	5.7 U	5.7 U	5.7 U	5.7 U	3 U	3 U	3 U	5.7 U
Hexachloroethane	8.7 U	8.7 U	8.7 U	8.7 U	2.3 U	2.3 U	2.3 U	8.7 U

See last page of Table 16 for footnotes and explanations.

TABLE 16
SUMMARY OF ANALYSES FOR SEMI-VOLATILE ORGANIC CONSTITUENTS
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	RD-44	RD-49A	RD-49B	RD-49C	HAR-07	HAR-16	HAR-17	WS-05
FLUTe Sample Port	---	---	---	---	---	Comp	---	---
Sample Date	05/06/03	05/07/03	05/06/03	05/06/03	04/16/03	04/17/03	04/16/03	05/05/03
Sample Type	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary
Compound (ug/l)								
Indeno(1,2,3-cd)pyrene	9 U	9 U	9 U	9 U	0.75 U	0.76 U	0.76 U	9 U
Isophorone	7.9 U	7.9 U	7.9 U	7.9 U	3.1 U	3.1 U	3.1 U	7.9 U
N-Nitroso-di-n-propylamine	9 U	9 U	9 U	9 U	3.5 U	3.6 U	3.6 U	9 U
N-Nitrosodimethylamine	9.4 U	9.4 U	9.4 U	9.4 U	---	26	2.3 U	9.4 U
N-Nitrosodiphenylamine	4.4 U	4.4 U	4.4 U	4.4 U	2.6 U	2.7 U	2.7 U	4.4 U
Naphthalene	7.3 U	7.3 U	7.3 U	7.3 U	3.7 U	3.7 U	3.7 U	7.3 U
Nitrobenzene	9.6 U	9.6 U	9.6 U	9.6 U	3.2 U	3.2 U	3.2 U	9.6 U
Pentachlorophenol	---	---	---	---	0.165 U	---	0.165 U	---
Phenanthrene	9 U	9 U	9 U	9 U	1.4 U	1.4 U	1.4 U	9 U
Phenol	7.6 U	7.6 U	7.6 U	7.6 U	3.8 U	3.9 U	3.9 U	7.6 U
Laboratory	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C
Method	DMA	DMA	DMA	DMA	DMA	DMA	DMA	DMA

See last page of Table 16 for footnotes and explanations.

TABLE 16
SUMMARY OF ANALYSES FOR SEMI-VOLATILE ORGANIC CONSTITUENTS
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	WS-06	WS-09
FLUTe Sample Port	---	---
Sample Date	05/07/03	05/07/03
Sample Type	Primary	Primary
Compound (ug/l)		
1,2,4-Trichlorobenzene	7.9 U	7.9 U
1,2-Dichlorobenzene	0.32 U	7 U
1,2-Diphenylhydrazine/Azobenzene	8.8 U	8.8 U
1,3-Dichlorobenzene	0.35 U	6.8 U
1,3-Dinitrobenzene	8.4 U	8.4 U
1,4-Dichlorobenzene	0.37 U	7.8 U
2,4,6-Trichlorophenol	6.5 U	6.5 U
2,4-Dichlorophenol	7.6 U	7.6 U
2,4-Dimethylphenol	7.5 U	7.5 U
2,4-Dinitrophenol	4.4 U	4.4 U
2,4-Dinitrotoluene	9.7 U	9.7 U
2,6-Dinitrotoluene	9.3 U	9.3 U
2-Chloronaphthalene	7.4 U	7.4 U
2-Chlorophenol	7.7 U	7.7 U
2-Methylnaphthalene	---	---
2-Methylphenol	---	---
2-Nitrophenol	9.5 U	9.5 U
3,3-Dichlorobenzidine	8.3 U	8.3 U
4,6-Dinitro-2-methylphenol	---	---
4-Bromophenyl phenyl ether	8.7 U	8.7 U
4-Chloro-3-methylphenol	---	---
4-Chlorophenyl phenyl ether	7.2 U	7.2 U
4-Methylphenol	---	---
4-Nitrophenol	9.9 U	9.9 U
Acenaphthene	7.1 U	7.1 U
Acenaphthylene	8.1 U	8.1 U
Anthracene	9 U	9 U
Benzidine	6.1 U	6.1 U
Benzo(b+k)fluoranthene(total)	---	---
Benzo(a)anthracene	9.7 U	9.7 U
Benzo(a)pyrene	7.7 U	7.7 U
Benzo(b)fluoranthene	6.2 U	6.2 U
Benzo(g,h,i)perylene	9 U	9 U
Benzo(k)fluoranthene	9.2 U	9.2 U
Bis(2-chloroethoxy)methane	8.1 U	8.1 U
Bis(2-chloroethyl)ether	---	---
Bis(2-chloroisopropyl)ether	8.2 U	8.2 U
Bis(2-ethylhexyl)phthalate	30 U	30 U
Butyl benzyl phthalate	9.2 U	9.2 U
Chrysene	7.6 U	7.6 U
Di-n-butyl phthalate	12 U	12 U
Di-n-octyl phthalate	11 U	11 U
Dibenz(a,h)anthracene	7.8 U	7.8 U
Diethyl phthalate	7.5 U	7.5 U
Dimethyl phthalate	7 U	7 U
Fluoranthene	7.8 U	7.8 U
Fluorene	6.9 U	6.9 U
Hexachlorobenzene	8.8 U	8.8 U
Hexachlorobutadiene	5.7 U	5.7 U
Hexachloroethane	8.7 U	8.7 U

See last page of Table 16 for footnotes and explanations.

TABLE 16
SUMMARY OF ANALYSES FOR SEMI-VOLATILE ORGANIC CONSTITUENTS
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well Identifier	WS-06	WS-09
FLUTe Sample Port	---	---
Sample Date	05/07/03	05/07/03
Sample Type	Primary	Primary
Compound (ug/l)		
Indeno(1,2,3-cd)pyrene	9 U	9 U
Isophorone	7.9 U	7.9 U
N-Nitroso-di-n-propylamine	9 U	9 U
N-Nitrosodimethylamine	9.4 U	9.4 U
N-Nitrosodiphenylamine	4.4 U	4.4 U
Naphthalene	7.3 U	7.3 U
Nitrobenzene	9.6 U	9.6 U
Pentachlorophenol	---	---
Phenanthrene	9 U	9 U
Phenol	7.6 U	7.6 U
Laboratory	8270C	8270C
Method	DMA	DMA

See last page of Table 16 for footnotes and explanations.

TABLE 16
FOOTNOTES AND EXPLANATIONS

DMA	=	Del Mar Analytical of Irvine, California.
(---)	=	Analysis not performed.
Comp	=	Composite sample. RD-10 samples were composited from FLUTe ports 3, 6, and 9. HAR-16 samples were composited from FLUTe ports 7 through 12.
Primary	=	Primary sample.
ug/l	=	Micrograms per liter.
U	=	Not detected; numerical value represents the Method Detection Limit for that compound.
UJ	=	Not detected. Estimated detection limit as a result of calibration verification recovery exceeding the upper acceptance limit.
J	=	Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL).
R	=	The analyte result was rejected; presence or absence of the analyte cannot be verified.

TABLE 17
NPDES PERMIT CA0001309 OUTFALL - 001
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

PARAMETER	UNITS	EFFLUENT LIMITS A=DAILY MAX. B=MONTHLY AVG. (A / B)	05/03/03
BOD5 20C	mg/l	30 / 20	3.7
CHLORIDE	mg/l	150 / -	12
CONDUCTIVITY	umhos/cm	- - -	22
DETERGENTS (as MBAS)	mg/l	0.5 / -	2.0
FLUORIDE	mg/l	1.6 / -	<0.5
NITRITE AND NITRATE (AS NITROGEN)	mg/l	8 / -	0.58
OIL AND GREASE	mg/l	15 / 10	<5
PERCHLORATE	ug/l	- - -	<4
pH	pH Units	6 TO 9	7.0
RAINFALL	Inches	- - -	2.43
SETTLEABLE SOLIDS	ml/l	0.3 / 0.1	<0.1
SULFATE	mg/l	300 / -	39
TEMPERATURE	Deg. F	NTE > 100	54.5
TOTAL CYANIDE	ug/l	22 / 5.2	<4.2
TOTAL DISSOLVED SOLIDS	mg/l	950 / -	220
TOTAL HARDNESS (CaCO3)	mg/l	- - -	66
TOTAL ORGANIC CARBON	ug/l	- - -	12000
TOTAL RESIDUAL CHLORINE	mg/l	0.1 / -	<0.1
TOTAL SUSPENDED SOLIDS	mg/l	45 / 15	240
TURBIDITY	NTU	- - -	420
VOLUME DISCHARGED	MGD	178 MGD	0.03
RADIOACTIVITY			
GROSS ALPHA	pCi/l	15 / -	7.4 +/-2.4
GROSS BETA	pCi/l	50 / -	3.99 +/-0.87
STRONTIUM-90	pCi/l	8 / -	0.09 +/-0.19
TOTAL COMBINED RADIUM-226 & RADIUM 228(1)	pCi/l	5 / -	[1]NA
TRITIUM	pCi/l	20,000 / -	324 +/-265
METALS			
ANTIMONY	ug/l	6 / -	<2
ARSENIC	ug/l	50 / -	<1
BARIUM	mg/l	1 / -	0.020
BERYLLIUM	ug/l	4 / -	<0.5
BORON	mg/l	1 / -	<0.05
CADMIUM	ug/l	3.7 / 1	<1
CHROMIUM	ug/l	15 / 10	<1
COPPER	ug/l	17 / 11	3.9
IRON	mg/l	0.3 / -	0.18
LEAD	ug/l	65 / 2.5	<1
MANGANESE	ug/l	50 / -	31
MERCURY (EXPRESSED AS DISSOLVED)	ug/l	2.1 / -	<0.2
MERCURY (EXPRESSED AS TOTAL RECOVERABLE)	ug/l	- / 2	<0.2
NICKEL	ug/l	100 / -	1.5
SELENIUM (EXPRESSED AS TOTAL RECOVERABLE)	ug/l	20 / 5	<2
SILVER	ug/l	3.4 / -	<1
THALLIUM	ug/l	2 / -	<1
ZINC	ug/l	110 / 100	<20
ORGANICS			
Benzene	ug/l	1 / -	<1

TABLE 17
NPDES PERMIT CA0001309 OUTFALL - 001
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

PARAMETER	UNITS	EFFLUENT LIMITS A=DAILY MAX. B=MONTHLY AVG. (A / B)	05/03/03
Carbon Tetrachloride	ug/l	0.5 / -	<0.5
Chloroform	ug/l	100 / -	<2
1,1-Dichloroethane	ug/l	5 / -	<2
1,2-Dichloroethane	ug/l	0.5 / -	<0.5
1,1-Dichloroethene	ug/l	6 / -	<5
Ethylbenzene	ug/l	680 / -	<2
Tetrachloroethene	ug/l	5 / -	<2
Toluene	ug/l	150 / -	<2
Xylenes (Total)	ug/l	1750 / -	<4
1,1,1-Trichloroethane	ug/l	200 / -	<2
1,1,2-Trichloroethane	ug/l	5 / -	<2
Trichloroethene	ug/l	5 / -	<2
Trichlorofluoromethane	ug/l	150 / -	<5
Vinyl chloride	ug/l	0.5 / -	<0.5
ADDITIONAL QUARTERLY MONITORING			
2,3,7,8-TCDD	pg/l	- - -	<10
1,1,2,2-Tetrachloroethane	ug/l	- - -	<2
1,2,4-Trichlorobenzene	ug/l	- - -	<10
1,2-Dichlorobenzene	ug/l	- - -	<2
1,2-Dichloropropane	ug/l	- - -	<2
1,2-Diphenylhydrazine/Azobenzene	ug/l	- - -	<20
1,3-Dichlorobenzene	ug/l	- - -	<2
1,4-Dichlorobenzene	ug/l	- - -	<2
2,4,6-Trichlorophenol	ug/l	- - -	<20
2,4-Dichlorophenol	ug/l	- - -	<10
2,4-Dimethylphenol	ug/l	- - -	<20
2,4-Dinitrophenol	ug/l	- - -	<20
2,4-Dinitrotoluene	ug/l	- - -	<10
2,6-Dinitrotoluene	ug/l	- - -	<10
2-Chloroethylvinylether	ug/l	- - -	<5
2-Chloronaphthalene	ug/l	- - -	<10
2-Chlorophenol	ug/l	- - -	<10
2-Methyl-4,6-dinitrophenol	ug/l	- - -	<20
2-Nitrophenol	ug/l	- - -	<10
3,3-Dichlorobenzidine	ug/l	- - -	<20
4,4'-DDD	ug/l	- - -	<0.1
4,4'-DDE	ug/l	- - -	<0.1
4,4'-DDT	ug/l	- - -	<0.1
4-Bromophenylphenylether	ug/l	- - -	<10
4-Chlorophenylphenylether	ug/l	- - -	<10
4-Chloro-3-methylphenol	ug/l	- - -	<20
4-Nitrophenol	ug/l	- - -	<20
Acenaphthene	ug/l	- - -	<10
Acenaphthylene	ug/l	- - -	<10
Acrolein	ug/l	- - -	<50
Acrylonitrile	ug/l	- - -	<50
ACUTE TOXICITY (Fathead Minnow 96hr % Survival Bioassay)	% Survival	70% MINIMUM	100
Aldrin	ug/l	- - -	<0.1
alpha-BHC	ug/l	- - -	<0.1

TABLE 17
NPDES PERMIT CA0001309 OUTFALL - 001
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

PARAMETER	UNITS	EFFLUENT LIMITS A=DAILY MAX. B=MONTHLY AVG. (A / B)	05/03/03
Anthracene	ug/l	- - -	<10
Aroclor-1016	ug/l	- - -	<1
Aroclor-1221	ug/l	- - -	<1
Aroclor-1232	ug/l	- - -	<1
Aroclor-1242	ug/l	- - -	<1
Aroclor-1248	ug/l	- - -	<1
Aroclor-1254	ug/l	- - -	<1
Aroclor-1260	ug/l	- - -	<1
Benzidine	ug/l	- - -	<20
Benzo(a)anthracene	ug/l	- - -	<10
Benzo(a)pyrene	ug/l	- - -	<10
Benzo(b)fluoranthene	ug/l	- - -	<10
Benzo(g,h,I)perylene	ug/l	- - -	<10
Benzo(k)fluoranthene	ug/l	- - -	<10
beta-BHC	ug/l	- - -	<0.1
bis (2-Chloroethyl) ether	ug/l	- - -	<10
bis (2-Ethylhexyl) Phthalate	ug/l	- - -	<50
bis(2-Chloroethoxy) methane	ug/l	- - -	<10
bis(2-Chloroisopropyl) ether	ug/l	- - -	<10
Bromodichloromethane	ug/l	- - -	<2
Bromoform	ug/l	- - -	<5
Bromomethane	ug/l	- - -	<5
Butylbenzylphthalate	ug/l	- - -	<20
Chlordane	ug/l	- - -	<1
Chlorobenzene	ug/l	- - -	<2
Chloroethane	ug/l	- - -	<5
Chloromethane	ug/l	- - -	<5
CHRONIC TOXICITY (Ceriodaphnia Survival & Reproduction)	TUc	1	1
Chrysene	ug/l	- - -	<10
cis-1,3-Dichloropropene	ug/l	- - -	<2
delta-BHC	ug/l	- - -	<0.2
Dibenzo(a,h)anthracene	ug/l	- - -	<20
Dibromochloromethane	ug/l	- - -	<2
Dieldrin	ug/l	- - -	<0.1
Diethylphthalate	ug/l	- - -	<10
Dimethylphthalate	ug/l	- - -	<10
Di-n-butylphthalate	ug/l	- - -	<20
Di-n-octylphthalate	ug/l	- - -	<20
Endosulfan I	ug/l	- - -	<0.1
Endosulfan II	ug/l	- - -	<0.1
Endosulfan sulfate	ug/l	- - -	<0.2
Endrin	ug/l	- - -	<0.1
Endrin aldehyde	ug/l	- - -	<0.1
Fluoranthene	ug/l	- - -	<10
Fluorene	ug/l	- - -	<10
Heptachlor	ug/l	- - -	<0.1
Heptachlor epoxide	ug/l	- - -	<0.1
Hexachlorobenzene	ug/l	- - -	<10
Hexachlorobutadiene	ug/l	- - -	<10
Hexachlorocyclopentadiene	ug/l	- - -	<20

TABLE 17
NPDES PERMIT CA0001309 OUTFALL - 001
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

PARAMETER	UNITS	EFFLUENT LIMITS A=DAILY MAX. B=MONTHLY AVG. (A / B)	05/03/03
Hexachloroethane	ug/l	- - -	<10
Indeno(1,2,3-cd)pyrene	ug/l	- - -	<20
Isophorone	ug/l	- - -	<10
Lindane (gamma-BHC)	ug/l	- - -	<0.1
Methylene Chloride	ug/l	- - -	<5
Naphthalene	ug/l	- - -	<10
Nitrobenzene	ug/l	- - -	<20
n-Nitrosodimethylamine	ug/l	- - -	<20
n-Nitroso-di-n-propylamine	ug/l	- - -	<10
n-Nitrosodiphenylamine	ug/l	- - -	<10
Pentachlorophenol	ug/l	- - -	<20
Phenanthrene	ug/l	- - -	<10
Phenol	ug/l	- - -	<10
Pyrene	ug/l	- - -	<10
Toxaphene	ug/l	- - -	<5
trans-1,2-Dichloroethene	ug/l	- - -	<2
trans-1,3-Dichloropropene	ug/l	- - -	<2

FOOTNOTES AND EXPLANATIONS:
(---) = Not applicable for these parameters.
NA = Not analyzed per permit; [(1)](Not required unless gross alpha > 5 pCi/l).
< = Not detected; numerical value represents the Reporting Limit for the parameter.
mg/l = milligrams per liter.
umhos/cm = micromhos per centimeter.
ug/l = micrograms per liter.
ml/l = milliliters per liter.
NTU = Nephelometric turbidity unit.
MGD = millions gallons per day.
pCi/l = picoCuries per liter.
pg/l = picograms per liter.
TUc = Chronic toxicity unit.

TABLE 18

NPDES PERMIT CA0001309 OUTFALL - 002
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

PARAMETER	UNITS	EFFLUENT LIMITS A=DAILY MAX. B=MONTHLY AVG. (A / B)	04/14/03	05/03/03
BOD5 20C	mg/l	30 / 20	3.1	3.8
CHLORIDE	mg/l	150 / -	29	29
CONDUCTIVITY	umhos/cm	- - -	600	450
DETERGENTS (as MBAS)	mg/l	0.5 / -	<0.1	0.13
FLUORIDE	mg/l	1.6 / -	<0.5	<0.5
NITRITE AND NITRATE (AS NITROGEN)	mg/l	8 / -	<0.15	0.20
OIL AND GREASE	mg/l	15 / 10	<5	<5
PERCHLORATE	ug/l	- - -	<4	<4
pH	pH Units	6 TO 9	7.9	7.6
RAINFALL	Inches	- - -	1.72	2.43
SETTLEABLE SOLIDS	ml/l	0.3 / 0.1	<0.1	0.10
SULFATE	mg/l	300 / -	130	83
TEMPERATURE	Deg. F	NTE > 100	57	57.0
TOTAL CYANIDE	ug/l	22 / 5.2	<4.2	<4.2
TOTAL DISSOLVED SOLIDS	mg/l	950 / -	390	440
TOTAL HARDNESS (CaCO3)	mg/l	- - -	200	140
TOTAL ORGANIC CARBON	ug/l	- - -	13000	12000
TOTAL RESIDUAL CHLORINE	mg/l	0.1 / -	<0.1	<0.1
TOTAL SUSPENDED SOLIDS	mg/l	45 / 15	12	59
TURBIDITY	NTU	- - -	15	59
VOLUME DISCHARGED	MGD	178 MGD	0.46	0.11
RADIOACTIVITY				
GROSS ALPHA	pCi/l	15 / -	3.21 +/-0.99	3.72 +/-1.85
GROSS BETA	pCi/l	50 / -	2.56 +/-0.88	3.11 +/-0.81
STRONTIUM-90	pCi/l	8 / -	0.32 +/-0.46	0 +/-2
TOTAL COMBINED RADIUM-226 & RADIUM 228(1)	pCi/l	5 / -	[1]NA	[1]NA
TRITIUM	pCi/l	20,000 / -	0 +/-200	749 +/-277
METALS				
ANTIMONY	ug/l	6 / -	<2	<2
ARSENIC	ug/l	50 / -	<1	<1
BARIUM	mg/l	1 / -	0.036	0.023
BERYLLIUM	ug/l	4 / -	<0.5	<0.5
BORON	mg/l	1 / -	0.11	0.076
CADMIUM	ug/l	3.7 / 1	<1	<1
CHROMIUM	ug/l	15 / 10	<1	<1
COPPER	ug/l	17 / 11	2.1	2.4
IRON	mg/l	0.3 / -	<0.01	0.080
LEAD	ug/l	65 / 2.5	<1	<1
MANGANESE	ug/l	50 / -	4.2	8.4
MERCURY (EXPRESSED AS DISSOLVED)	ug/l	2.1 / -	<0.2	<0.2
MERCURY (EXPRESSED AS TOTAL RECOVERABLE)	ug/l	- / 2	<0.2	<0.2
NICKEL	ug/l	100 / -	3.9	<1
SELENIUM (EXPRESSED AS TOTAL RECOVERABLE)	ug/l	20 / 5	<2	<2
SILVER	ug/l	3.4 / -	<1	<1
THALLIUM	ug/l	2 / -	<1	<1
ZINC	ug/l	110 / 100	<20	<20
ORGANICS				
Benzene	ug/l	1 / -	<1	<1
Carbon Tetrachloride	ug/l	0.5 / -	<0.5	<0.5
Chloroform	ug/l	100 / -	<2	<2
1,1-Dichloroethane	ug/l	5 / -	<2	<2
1,2-Dichloroethane	ug/l	0.5 / -	<0.5	<0.5
1,1-Dichloroethene	ug/l	6 / -	<5	<5

TABLE 18
NPDES PERMIT CA0001309 OUTFALL - 002
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

PARAMETER	UNITS	EFFLUENT LIMITS A=DAILY MAX. B=MONTHLY AVG. (A / B)	04/14/03	05/03/03
Ethylbenzene	ug/l	680 / -	<2	<2
Tetrachloroethene	ug/l	5 / -	<2	<2
Toluene	ug/l	150 / -	<2	<2
Xylenes (Total)	ug/l	1750 / -	<4	<4
1,1,1-Trichloroethane	ug/l	200 / -	<2	<2
1,1,2-Trichloroethane	ug/l	5 / -	<2	<2
Trichloroethene	ug/l	5 / -	<2	<2
Trichlorofluoromethane	ug/l	150 / -	<5	<5
Vinyl chloride	ug/l	0.5 / -	<0.5	<0.5
ADDITIONAL QUARTERLY MONITORING				
2,3,7,8-TCDD	pg/l	- - -	<10	NA
1,1,2,2-Tetrachloroethane	ug/l	- - -	<2	NA
1,2,4-Trichlorobenzene	ug/l	- - -	<10	NA
1,2-Dichlorobenzene	ug/l	- - -	<2	NA
1,2-Dichloropropane	ug/l	- - -	<2	NA
1,2-Diphenylhydrazine/Azobenzene	ug/l	- - -	<20	NA
1,3-Dichlorobenzene	ug/l	- - -	<2	NA
1,4-Dichlorobenzene	ug/l	- - -	<2	NA
2,4,6-Trichlorophenol	ug/l	- - -	<20	NA
2,4-Dichlorophenol	ug/l	- - -	<10	NA
2,4-Dimethylphenol	ug/l	- - -	<20	NA
2,4-Dinitrophenol	ug/l	- - -	<20	NA
2,4-Dinitrotoluene	ug/l	- - -	<10	NA
2,6-Dinitrotoluene	ug/l	- - -	<10	NA
2-Chloroethylvinylether	ug/l	- - -	<5	NA
2-Chloronaphthalene	ug/l	- - -	<10	NA
2-Chlorophenol	ug/l	- - -	<10	NA
2-Methyl-4,6-dinitrophenol	ug/l	- - -	<20	NA
2-Nitrophenol	ug/l	- - -	<10	NA
3,3-Dichlorobenzidine	ug/l	- - -	<20	NA
4,4'-DDD	ug/l	- - -	<0.1	NA
4,4'-DDE	ug/l	- - -	<0.1	NA
4,4'-DDT	ug/l	- - -	<0.1	NA
4-Bromophenylphenylether	ug/l	- - -	<10	NA
4-Chlorophenylphenylether	ug/l	- - -	<10	NA
4-Chloro-3-methylphenol	ug/l	- - -	<20	NA
4-Nitrophenol	ug/l	- - -	<20	NA
Acenaphthene	ug/l	- - -	<10	NA
Acenaphthylene	ug/l	- - -	<10	NA
Acrolein	ug/l	- - -	<50	NA
Acrylonitrile	ug/l	- - -	<50	NA
ACUTE TOXICITY (Fathead Minnow 96hr % Survival Bioassay)	% Survival	70% MINIMUM	100	NA
Aldrin	ug/l	- - -	<0.1	NA
alpha-BHC	ug/l	- - -	<0.1	NA
Anthracene	ug/l	- - -	<10	NA
Aroclor-1016	ug/l	- - -	<1	NA
Aroclor-1221	ug/l	- - -	<1	NA
Aroclor-1232	ug/l	- - -	<1	NA
Aroclor-1242	ug/l	- - -	<1	NA
Aroclor-1248	ug/l	- - -	<1	NA
Aroclor-1254	ug/l	- - -	<1	NA
Aroclor-1260	ug/l	- - -	<1	NA
Benzidine	ug/l	- - -	<20	NA
Benzo(a)anthracene	ug/l	- - -	<10	NA

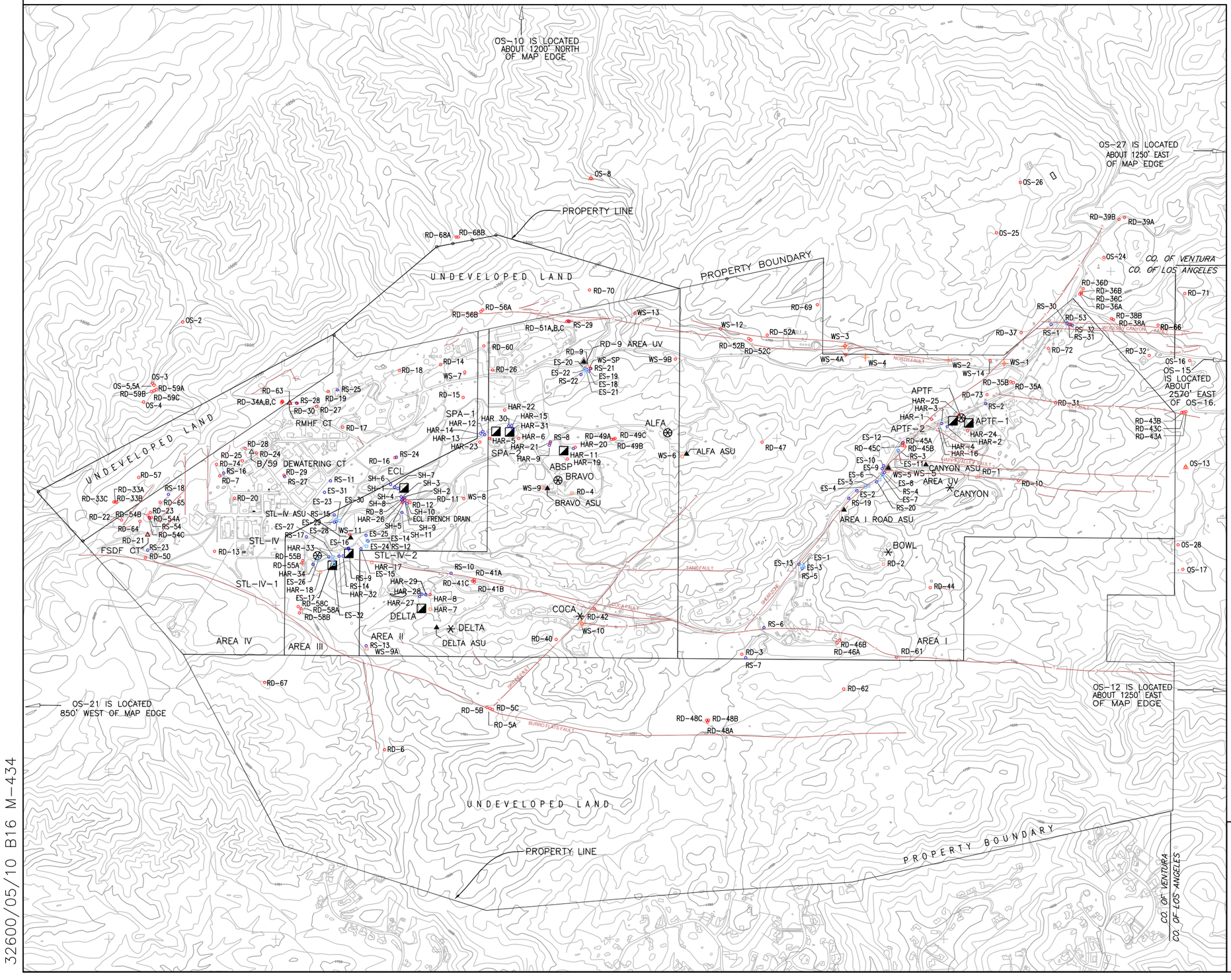
TABLE 18
NPDES PERMIT CA0001309 OUTFALL - 002
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

PARAMETER	UNITS	EFFLUENT LIMITS A=DAILY MAX. B=MONTHLY AVG. (A / B)	04/14/03	05/03/03
Benzo(a)pyrene	ug/l	- - -	<10	NA
Benzo(b)fluoranthene	ug/l	- - -	<10	NA
Benzo(g,h,I)perylene	ug/l	- - -	<10	NA
Benzo(k)fluoranthene	ug/l	- - -	<10	NA
beta-BHC	ug/l	- - -	<0.1	NA
bis (2-Chloroethyl) ether	ug/l	- - -	<10	NA
bis (2-Ethylhexyl) Phthalate	ug/l	- - -	<50	NA
bis(2-Chloroethoxy) methane	ug/l	- - -	<10	NA
bis(2-Chloroisopropyl) ether	ug/l	- - -	<10	NA
Bromodichloromethane	ug/l	- - -	<2	NA
Bromoform	ug/l	- - -	<5	NA
Bromomethane	ug/l	- - -	<5	NA
Butylbenzylphthalate	ug/l	- - -	<20	NA
Chlordane	ug/l	- - -	<1	NA
Chlorobenzene	ug/l	- - -	<2	NA
Chloroethane	ug/l	- - -	<5	NA
Chloromethane	ug/l	- - -	<5	NA
CHRONIC TOXICITY (Ceriodaphnia Survival & Reproduction)	TUc	1	1	NA
Chrysene	ug/l	- - -	<10	NA
cis-1,3-Dichloropropene	ug/l	- - -	<2	NA
delta-BHC	ug/l	- - -	<0.2	NA
Dibenzo(a,h)anthracene	ug/l	- - -	<20	NA
Dibromochloromethane	ug/l	- - -	<2	NA
Dieldrin	ug/l	- - -	<0.1	NA
Diethylphthalate	ug/l	- - -	<10	NA
Dimethylphthalate	ug/l	- - -	<10	NA
Di-n-butylphthalate	ug/l	- - -	<20	NA
Di-n-octylphthalate	ug/l	- - -	<20	NA
Endosulfan I	ug/l	- - -	<0.1	NA
Endosulfan II	ug/l	- - -	<0.1	NA
Endosulfan sulfate	ug/l	- - -	<0.2	NA
Endrin	ug/l	- - -	<0.1	NA
Endrin aldehyde	ug/l	- - -	<0.1	NA
Fluoranthene	ug/l	- - -	<10	NA
Fluorene	ug/l	- - -	<10	NA
Heptachlor	ug/l	- - -	<0.1	NA
Heptachlor epoxide	ug/l	- - -	<0.1	NA
Hexachlorobenzene	ug/l	- - -	<10	NA
Hexachlorobutadiene	ug/l	- - -	<10	NA
Hexachlorocyclopentadiene	ug/l	- - -	<20	NA
Hexachloroethane	ug/l	- - -	<10	NA
Indeno(1,2,3-cd)pyrene	ug/l	- - -	<20	NA
Isophorone	ug/l	- - -	<10	NA
Lindane (gamma-BHC)	ug/l	- - -	<0.1	NA
Methylene Chloride	ug/l	- - -	<5	NA
Naphthalene	ug/l	- - -	<10	NA
Nitrobenzene	ug/l	- - -	<20	NA
n-Nitrosodimethylamine	ug/l	- - -	<20	NA
n-Nitroso-di-n-propylamine	ug/l	- - -	<10	NA
n-Nitrosodiphenylamine	ug/l	- - -	<10	NA
Pentachlorophenol	ug/l	- - -	<20	NA
Phenanthrene	ug/l	- - -	<10	NA
Phenol	ug/l	- - -	<10	NA
Pyrene	ug/l	- - -	<10	NA
Toxaphene	ug/l	- - -	<5	NA

TABLE 18
NPDES PERMIT CA0001309 OUTFALL - 002
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

PARAMETER	UNITS	EFFLUENT LIMITS A=DAILY MAX. B=MONTHLY AVG. (A / B)	04/14/03	05/03/03
trans-1,2-Dichloroethene	ug/l	- - -	<2	NA
trans-1,3-Dichloropropene	ug/l	- - -	<2	NA

FOOTNOTES AND EXPLANATIONS:
(---) = Not applicable for these parameters.
NA = Not analyzed per permit; [(1)](Not required unless gross alpha > 5 pCi/l).
< = Not detected; numerical value represents the Reporting Limit for the parameter.
mg/l = milligrams per liter.
umhos/cm = micromhos per centimeter.
ug/l = micrograms per liter.
ml/l = milliliters per liter.
NTU = Nephelometric turbidity unit.
MGD = millions gallons per day.
pCi/l = picoCuries per liter.
pg/l = picograms per liter.
TUc = chronic toxicity unit.



E X P L A N A T I O N

- FAULT OR SHEAR ZONE – DASHED FOR APPROXIMATE LOCATION, QUERIED WHERE UNCERTAIN
- CHATSWORTH FORMATION WELL
- SHALLOW WELL
- SPRING
- ABANDONED WELL
- ACTIVE TEST STAND
- FORMER OR INACTIVE TEST STAND
- RCRA IMPOUNDMENT
- CHATSWORTH FORMATION EXTRACTION WELL
- SHALLOW EXTRACTION WELL
- INTERIM CARBON TREATMENT SYSTEM (CT)
- PERMITTED GROUNDWATER TREATMENT SYSTEM – AIR STRIPPING UNIT (ASU)
- PERMITTED GROUNDWATER TREATMENT SYSTEM – UV/H2O2(UV)

NOTES:
RMHF=RADIOACTIVE MATERIALS HANDLING FACILITY
FSDF=FORMER SODIUM DISPOSAL FACILITY
THE RMHF AND FSDF EXTRACTION SYSTEMS ARE OPERATING AS INTERIM TREATMENT SYSTEMS

- N -

0 1500 3000

SCALE IN FEET

Quarterly Groundwater Monitoring Report, Second Quarter 2003

HALEY & ALDRICH

UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS

THE BOEING COMPANY
ROCKETDYNE PROPULSION & POWER
SANTA SUSANA FIELD LABORATORY

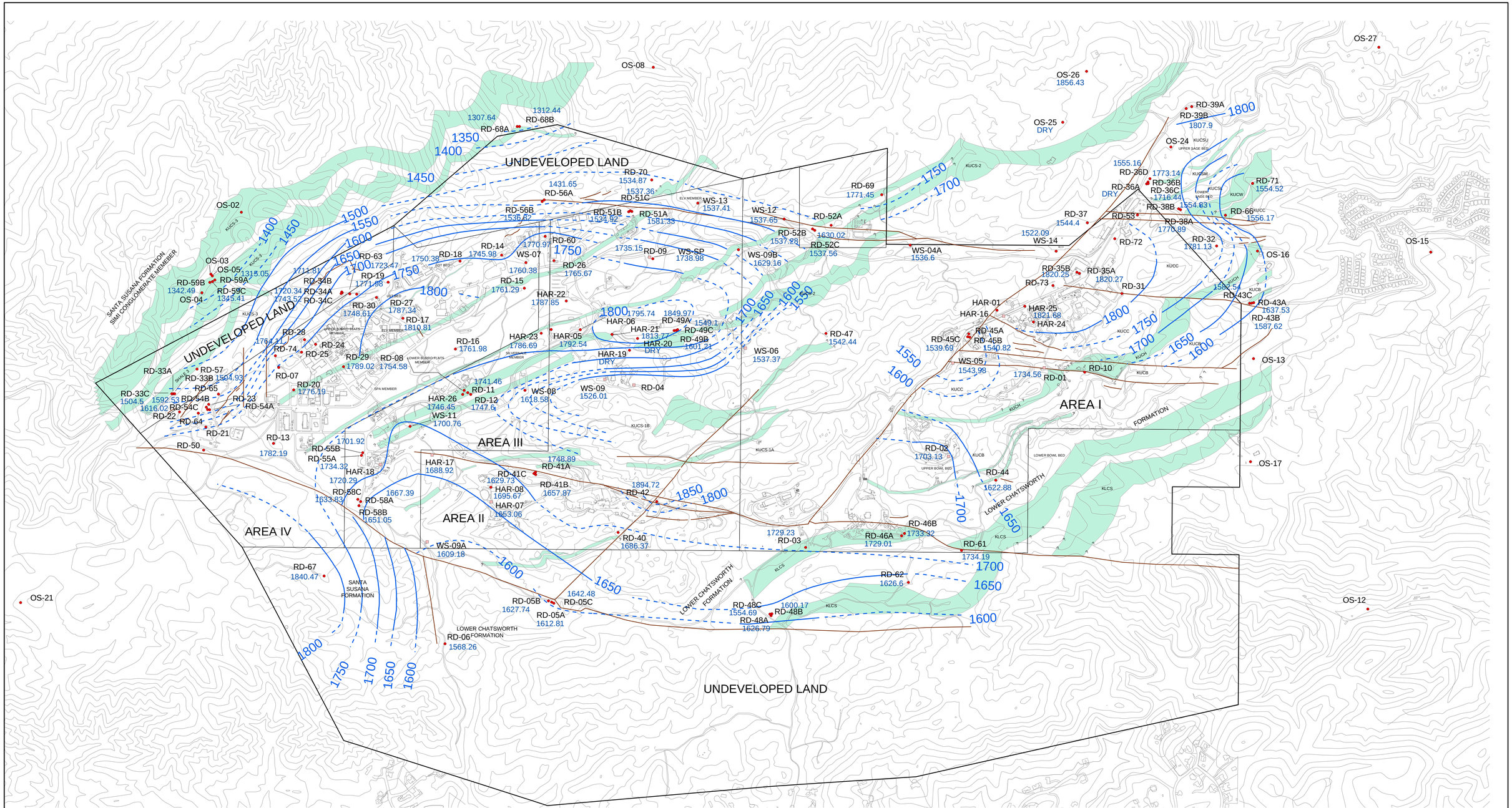
LOCATIONS OF WELLS, SPRINGS AND GROUNDWATER RECLAMATION SYSTEM COMPONENTS

SCALE: AS SHOWN

AUGUST 2003

32600/05/10 B16 M-434

FIGURE 1



Legend

- Chatsworth Monitoring Well
- Chatsworth Extraction Well
- Fault and/or Shear Zone
- Property Boundary Line
- 1740.41 Elevation of Static Water Level, in feet above Mean Sea Level. Measured May 2003.
- Contour of Equal Water Level Elevation, in feet above Mean Sea Level. Contour interval 50 feet. Dashed where inferred.

KUCC Geologic Unit

Marker Bed

KLCS Geologic Unit

Legend for geology: Refer to Figure 3, Geologic Map, in Haley & Aldrich's "Report on the Annual Groundwater Monitoring, 2002, Santa Susana Field Laboratory, Ventura County, California," February 28, 2003.

Geology provided by Montgomery Watson Harza. "Geologic Characterization of the Eastern Portion of SSFL, Technical Memorandum," February 22, 2002.

Water level elevations are provided for illustrative purposes only and are not intended to infer groundwater flow conditions. The lateral direction of groundwater movement cannot be ascertained from the contour lines because of stratigraphic and structural properties of the bedrock.

Contours are based on measured water levels in conventional wells. Actual water levels in the subsurface will vary from those shown.

N

0 650 1,300 2,600 Feet

HALEY & ALDRICH

UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS

THE BOEING COMPANY
ROCKETDYNE PROPULSION & POWER
SANTA SUSANA FIELD LABORATORY

WATER LEVEL ELEVATION CONTOUR MAP - MAY 2003

SCALE AS SHOWN AUGUST 2003

FIGURE 2

326000/5/10 M434 40_SSFL_2003

APPENDIX A

Quality Assurance Assessment

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1. OVERVIEW

Field and laboratory data were reviewed according to procedures outlined in the *Groundwater Monitoring, Quality Assurance Project Plan, Santa Susana Field Laboratory* (Groundwater Resources Consultants, Inc., 1995) following each quarterly groundwater sampling event during 2003. Results of the review are discussed in the following sections. The analytical results for these samples were subjected to a data validation process summarized in 3.2.3 of this appendix.

2. INTRODUCTION

2.1 Quality Assurance/Quality Control Procedures

Following the second quarter 2003 groundwater sampling event, field and laboratory data were reviewed according to procedures outlined in the *Groundwater Monitoring, Quality Assurance Project Plan, Santa Susana Field Laboratory* (Groundwater Resources Consultants, Inc., 1995). As the project develops, it is anticipated that the quality assurance assessment conducted by Haley & Aldrich following each quarterly event will be modified. The current procedures included reviewing field forms and documentation and evaluating whether field data were complete. Analytical data were reviewed by the laboratory for precision, accuracy, representativeness, and comparability as part of its standard QA/QC program. QA/QC data were submitted as part of the laboratory QA/QC package. Analytical data also were reviewed by Haley & Aldrich for data representativeness, reproducibility, completeness, erroneous data, and discrepancies. Del Mar Analytical of Irvine, California served as the primary laboratory for all analyses except 1,4-dioxance which was analyzed by Ceimic Corporation of Narragansett, Rhode Island. The primary radiochemistry laboratory was Eberline Services of Richmond, California. Split radiochemistry samples were analyzed by Severn Trent Laboratories of Richland, Washington. Split samples were analyzed by American Analytics of Chatsworth, California. Haley & Aldrich field and analytical data reviews are summarized below.

Completeness values presented in this summary were calculated using the following equation:

$$C = \left[1 - \frac{\text{number of incomplete results}}{\text{total number requested}} \right] \times 100$$

The values shown in parentheses in this summary are simply percentages and are not completeness values. The percentages are provided as a quick reference.

3. QA/QC EVALUATION

3.1 Field Data

3.1.1 Pre-Sampling Water Levels

During the sampling event, 234 wells were scheduled for water level monitoring and 227 wells were monitored during the second quarter (97%). Out of the 227 wells monitored, water level measurements were obtained for 197 wells during the second quarter. Water levels were not obtained from the other wells because the wells were dry or inaccessible.

Based upon the number of monitoring attempts versus the scheduled number, the completeness value was 97% for the second quarter.

3.1.2 Groundwater Sample Collection

During the second quarter sampling event, the number of wells scheduled for sampling was 117 wells. Of the wells scheduled for sampling, 79 wells were sampled (68%). Samples were not collected at a number of wells because the wells were dry or contained inadequate water for sampling purposes, the wells were inaccessible, or the well equipment malfunctioned.

Based upon the number of sampleable wells versus the schedule, the field completeness value for water sample collection was 68%.

3.1.3 QA/QC Sample Collection

Duplicate samples, split samples, field blanks, and trip blanks comprise the QA/QC sample collection program. The QA/QC target for duplicate samples is 10% of sampled wells. Split samples are collected from wells requiring verification sampling and from randomly selected wells, and typically comprise 5% of all sampled wells. Field blanks are collected each day that volatile organic samples are collected. Trip blanks are included with each shipment of VOC samples. Three field blanks and two trip blanks were not collected due to sampler oversight.

Results of QA/QC sample collection during the second quarter 2003 are summarized below.

QA/QC Sample Type	Second Quarter
Percent of samples duplicated	10
Percent of samples split	8
Field blank completeness value	81
Trip blank completeness value	86

3.1.4 Water Quality Parameter Measurements

Each water quality parameter (pH, temperature, electrical conductivity, and turbidity) is measured at least three times before sample collection except at wells that function as extraction wells and thus are already pumping prior to the quarterly sampling event; wells that bail or pump dry prior to purging three well volumes; at private wells; at artesian wells; at flowing springs; and at wells equipped with multi-level FLUTe systems. Water quality parameters were measured at least once at all wells sampled during the second quarter 2003. Field parameters were not measured according to established protocols at one well due to sampler oversight. The completeness values for field parameters measured at least three times prior to sample collection was 99%.

3.2 Analytical Data

3.2.1 Comparison with Historical Water Quality Data

There were some instances where analyte concentrations had increased or decreased in groundwater samples collected during the second quarter 2003, but most values were within the range of historic data. During each quarter, the laboratories were requested to confirm suspect results. Verification sampling was scheduled at two wells during the quarter; verification results confirmed the presence of N-nitrosodimethylamine at well HAR-07. A summary of unusual results is included in Section 2.2 of this report.

3.2.2 Lab Performance Comparison

Results of the split samples are presented in Table A-1. Relative percent differences (RPDs) were calculated for each compound detected by both laboratories and for compounds detected at concentrations exceeding the product of five times the method detection limit times the dilution factor. RPD values calculated for second quarter 2003 split samples ranged from 0% to 52%.

3.2.3 Field Duplicate Sample Precision

Water quality data were precise as indicated by the RPDs of field duplicate samples. RPDs ranged from 8% to 42% (Table A-2). Two of the RPDs exceeded the laboratory RPD limit of 40% for VOC analyses by EPA Method 8260B.

3.2.4 Data Representativeness, Reproducibility, and Completeness

Data representativeness, reproducibility, and completeness of second quarter 2003 results were evaluated by verifying that:

- all locations were sampled as scheduled,
- samples were properly collected and preserved (if required),

- procedures to maintain the integrity of samples during shipment were followed,
- sample dilutions were properly conducted,
- chain-of-custody records were complete when submitted or changed appropriately, and
- laboratory QA/QC data were obtained for each sample submitted.

All locations were sampled as scheduled except at locations where wells contained insufficient water volume, where equipment problems were encountered, or where wells were inaccessible during the quarter. All samples were preserved (where necessary) and shipped following acceptable procedures. Samples from wells with TCE concentrations exceeding 3,000 µg/l were segregated during storage and shipment.

A few chain-of-custody (COC) forms were not completed satisfactorily. Because the laboratories were notified of the deficiencies immediately following sample submission, all samples submitted were identified correctly and analyzed according to the monitoring schedule. Field personnel were informed of the custody form deficiencies and provided an example of a completed custody form.

All samples were received appropriately, identified correctly, and analyzed according to the monitoring schedule.

3.2.5 Data Useability Summary

Analytical results for 79 groundwater samples, 18 trip blank samples, 14 field blank samples, and site specific matrix spike and matrix spike duplicate samples (MS/MSD) were reviewed to evaluate the data useability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA540/R-99/008, October 1999), **National Functional Guidelines for Inorganic Data Review** (EPA540/7-02, July 2002) and the EPA Method specific protocol criteria, where applicable. Except for Appendix IX samples, this section pertains to the groundwater samples collected by Haley & Aldrich personnel during the second quarter 2003. A data useability summary report of the Appendix IX samples is provided in Appendix B of this report.

The following items/criteria applicable to the QA/QC data and sample analysis data listed above were reviewed:

- Chain of Custody Procedures
- Analytical Holding Time Compliance
- Method Blank, Trip Blank, and Field Blank Sample Analyses
- Surrogate Compound Recoveries
- Laboratory Control Sample Analyses
- Matrix Spike Sample Analyses
- Sample Data Reporting Procedures

- Laboratory Data Qualification Procedures

3.2.5.1 Chain of Custody Procedures

External chain of custody documentation was completed by Haley & Aldrich personnel during the performance of sampling activities conducted at SSFL. The external COC documents were completed appropriately upon sample transfer to the primary analytical laboratory personnel (Del Mar Analytical, Ceimic Corporation, Eberline Services, Severn Trent Laboratories, and American Analytics).

Del Mar Analytical performed the analysis of volatile organic compounds (VOCs) by EPA Method 8260B, 1,4-dioxane by modified EPA Method 8260 SIM, fuel hydrocarbons by EPA Method 8015M, semi-volatile organic compounds (SVOCs) by EPA Method 8270C, perchlorate by EPA Method 314.0, formaldehyde by EPA Method 8315, ammonia by EPA Method 350.2, cyanide by EPA Method 9012, nitrate and fluoride by EPA Method 300.0, and elemental constituents by EPA Methods 6020/7470. Subcontractor laboratory facilities included Weck Laboratories for the analysis of n-Nitrosodimethylamine (NDMA) by EPA Method 1625M. Ceimic Corporation was contracted directly by Haley & Aldrich to conduct the analysis of 1,4-dioxane primary samples in accordance with EPA Method 8260 SIM. Eberline Services was contracted directly by Haley & Aldrich to conduct radiochemical analyses: gross alpha and gross beta by EPA Method 900.0, gamma-emitting radionuclides by EPA Method 901.1, tritium by EPA Method 906.0, and uranium and thorium isotopes by EPA Method 907.0. Severn Trent Laboratories was contracted directly by Haley & Aldrich to analyze split radiochemistry samples for gross alpha and beta by EPA Method 900.0, gamma by EPA Method 901.1, and tritium by EPA Method 906.0. American Analytics analyzed split VOC samples by EPA Method 8260B and split perchlorate samples by EPA Method 314.0.

A review of the COC documents indicate that the sample custody remained intact through the analytical process and the reported results are representative of the samples collected at SSFL. The external COC documents are provided with each laboratory report.

No corrective action is recommended.

3.2.5.2 Holding Time Compliance

Maximum allowable holding times as prescribed by the USEPA, “Test Methods for Evaluating Solid Waste”, SW-846, 3rd Edition, Update III, 1996 were applied to the evaluation of each project sample. Holding time compliance was measured from the time of sample collection to the time of sample preparation or analysis. Each project sample was initially analyzed within the maximum allowable holding.

3.2.5.3 Blank Sample Analyses

Trip blank samples were provided by Del Mar Analytical and Ceimic Corporation and accompanied the project sample containers to and from the project site to assess possible field/container contamination. Trip blank samples were analyzed by Del Mar Analytical for VOCs only and by Ceimic Corporation for 1,4-dioxane only. Method blank samples were prepared by the analytical laboratories and analyzed concurrently with the project samples to assess possible laboratory contamination. Field blank samples were prepared at sampled wells using de-ionized water provided by Del Mar Analytical. Several target compounds were detected in associated field blank and trip blank samples and in method blank samples prepared and analyzed with the project samples. Table A-3 provides a list of the target compounds detected in the project trip blanks, field blanks, and/or method blank samples which required corrective action, the associated project samples, and the recommended corrective action for the presentation of the sample analysis results. Target compounds detected in blank samples that did not require corrective action are not included in the table.

In accordance with cited USEPA guidelines, positive VOC sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone), or 5 times (5X) the amount for other target compounds. The following samples were qualified with a "U" flag as a result of detection in blank samples: groundwater samples WS-05 (split), RD-19 (primary & duplicate), RD-57 (Z8), RD-62, RD-04 (split), RD-49A (split), RD-49B (split), RD-04, and RD-44; trip blank samples RD-02_050503_05 and RD-49B_050603_05; and spiked sample RD-20(A)_050503_06.

Arsenic was detected in method blank samples prepared and analyzed concurrently with the project samples: RS-18 and RD-57(Z8). These results were flagged with "B" by the laboratory indicating that the concentration of the analyte within the sample was less than 10 times the amount detected in the associated method blank. For these samples, the reported analyte result was flagged with a "U" indicating that the concentration of the analyte detected in the sample was most likely due to laboratory contamination and was not indicative of the field sample conditions.

Volatile fuel hydrocarbons were detected in the method blank sample prepared and analyzed with project sample RS-31. These results were flagged by the laboratory with "B" indicating that the concentration of the analyte within the sample was less than or equal to 5 times (5X) the amount for the target compound. For these samples, the reported analyte result was flagged with a "U" indicating that the concentration of the analyte detected in the sample was most likely due to laboratory contamination and was not indicative of the field sample conditions.

3.2.5.4 Surrogate Compound Recoveries

Surrogate compounds were added to each sample prior to analysis to confirm the efficiency of the purge and trap sample preparation procedure by EPA Method 8260B and the extraction and concentration process by EPA Method 8270C. The surrogate compound recovery calculated in percentage is presented on each report for the project sample analyses. The calculated recovery of surrogate compounds for each sample fell within method specific acceptance criteria without exception. Based on the reported recovery performance of the surrogate compounds, no additional qualification of the reported results is recommended.

3.2.5.5 Laboratory Control Sample (LCS/LCSD) Analyses

Analytical precision and accuracy was evaluated based on laboratory control sample (LCS) analysis performed concurrently with the project samples. LCS analyses included the addition of a known amount of each target analyte into lab pure water using a traceable reference material independent of the instrument calibration materials. LCS samples were analyzed to confirm the precision and accuracy of the analytical system calibration.

The percent recovery calculated for each target analyte fell within laboratory specific criteria indicating that the analyses were conducted with acceptable analytical accuracy and precision with one exception (Table A-4). Sample RD-10 (Comp) had a LCS percent recovery below the percent recovery criteria for benzidine. Reported as non-detected in the RD-10 (Comp) sample, the benzidine result was qualified with an “R” indicating that the result was rejected because the presence or absence of the analyte could not be verified.

3.2.5.6 Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

Analytical precision and accuracy were evaluated based on the matrix spike and matrix spike duplicate analyses performed on the project samples within each sample delivery group (SDG). After the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability of the analytical systems to identify these compounds within the sample matrix. Due to limitation of sample volume, some SDGs contained reports of MS/MSD analyses performed on sample matrices from non-project related samples. However, the analysis of these samples concurrently with the project samples provides valuable information on the accuracy of the analyses performed.

MS/MSD sample analyses performed on project field samples fell within method and/or laboratory derived QA/QC criteria. Although some MS/MSDs from non-project related samples fell outside the QA/QC criteria, no qualification of project data is recommended.

3.2.5.7 Calibration Verification Recovery

The calibration verification percent recovery was greater than the upper acceptance limit in one target compound, diethyl phthalate (Table A-5). For the affected field samples RD-49B, RD-02, RD-44, WS-05 and RD-10(Comp), diethyl phthalate was reported as non-detected and was qualified with a "UJ" indicating that the reported sample quantitation limit is approximate.

3.2.5.8 Sample Data Reporting

Sample data were reported in summary reports containing laboratory specific data qualifiers. The reporting limit values for the dilution analyses were adjusted for the level of dilution performed. When an analysis was performed without dilution, the reporting limit was based on the most recent method detection limit study conducted by the contract laboratory. Values presented for target compounds detected at concentrations below the reporting limit but above the MDL were flagged with a "J" as estimated values. Generally, MDL studies were performed within 180 days of the project sample analyses conducted without exception. No corrective action is recommended.

3.2.5.9 Data Qualifiers

The use of the data qualifiers is intended to aid data users in their interpretation of the sample results. Laboratory specific data qualifiers were assigned by the laboratories to the reported results in accordance with each laboratory's standard operating procedures. However, the data qualifiers used by Del Mar Analytical do not correspond with standard USEPA guidance as referenced in this document. As such, the data qualifiers recommended above in accordance with the USEPA guidelines should preclude the use of the laboratory specific qualifiers so that comparability of the reported results can be achieved if future analyses are performed at other laboratory facilities.

The results presented in each report were found to be compliant with the data quality objectives (DQOs) for the project and useable, with the few exceptions noted above. Based on our review, the data useability is compliant with a completeness goal of greater than 95%.

TABLE A-1

SUMMARY OF SECOND QUARTER 2003 SPLIT SAMPLE RESULTS
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Date	Method	Constituent	Primary Sample Result (ug/l)	Split Sample Result (ug/l)	RPD
Shallow Wells						
RS-08	04/14/03	8260B	cis-1,2-Dichloroethene	7.8	6.3	21
			trans-1,2-Dichloroethene	0.91 J	0.75	NA
			Vinyl chloride	0.75 J	0.2 U	---
RS-25	05/01/03	314.0	Perchlorate	Not detected		
SH-04	04/14/03	8260B	1,1,1-Trichloroethane	4	4	NA
			1,1-Dichloroethane	14	12	15
			1,1-Dichloroethene	5 J	4.3	NA
			1,2-Dichloroethane	6.2	7.3	16
			Carbon tetrachloride	170	170	0
			Chloroform	51	50	2
			cis-1,2-Dichloroethene	11	10	10
			Tetrachloroethene	13	16	21
			Trichloroethene	69	70	1
Chatsworth Formation Wells						
RD-04	05/07/03	8260SIM	1,4-Dioxane	Not detected		
RD-16	05/13/03	8260B	VOCs	None detected		
RD-49A	05/07/03	8260SIM	1,4-Dioxane	0.65 J	0.73 U	---
RD-49B	05/06/03	8260SIM	1,4-Dioxane	2.76	2.4 U	---
RD-59A	05/15/03	900.0	Gross Alpha	3.55 +/- 2.0	3.53 +/- 1.94	NA
		900.0	Gross Beta	7.58 +/- 2.8	14 +/- 3.88	NA
		906.0	Tritium	Not detected		
		901.1	Gamma	None detected		
WS-05	05/05/03	8260SIM	1,4-Dioxane	2.38	2.6 U	---
HAR-07	04/16/03	8260SIM	1,4-Dioxane	Not detected		
HAR-07	04/16/03	1625M	N-Nitrosodimethylamine	0.055	0.054	2
HAR-14	04/15/03	8260SIM	1,4-Dioxane	160	94	52

See last page of Table A-1 for footnotes and explanations.

1625M	=	EPA method 1625 for n-nitrosodimethylamine.
8260B	=	EPA method 8260 for volatile organic compounds.
8260SIM	=	EPA method 8260SIM for 1,4-dioxane.
314.0	=	EPA method 8260 for perchlorate.
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.
ug/l	=	Micrograms per liter.
(---)	=	Not applicable. Constituent detected in only one sample.
RPD	=	Relative percent difference. RPDs were calculated only if the detected concentration exceeded the product of five times the method detection limit times the dilution factor.
NA	=	Not applicable. An RPD calculation is not valid since at least one of the laboratories reported a detected concentration less than the product of five times the method detection limit times the dilution factor.
Primary lab	=	Del Mar Analytical of Irvine, California. Primary laboratory for 1,4-dioxane was Ceimic Corp. of Narragansett, Rhode Island. Primary laboratory for N-nitrosodimethylamine was Weck Laboratories of City of Industry, California.
Split lab	=	American Analytics of Chatsworth, California. For 1,4-dioxane and N-nitrosodimethylamine, the split lab was Del Mar Analytical of Irvine, California. For methods 900.0, 901.1 and 906.0, the split lab was Severn Trent Laboratories of Richland, Washington.
J	=	Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL).
U	=	Not detected; numerical value represents the Method Detection Limit for that compound.

TABLE A-2

SUMMARY OF SECOND QUARTER 2003 DUPLICATE SAMPLE RESULTS
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Date	Method	Constituent	Primary Sample Result (ug/l)	Duplicate Sample Result (ug/l)	RPD
Shallow Zone						
RS-11	05/01/03	8260B	VOCs	None detected		
RS-25	05/01/03	314.0	Perchlorate	Not detected		
Chatsworth Formation						
RD-05B	05/09/03	8260B	Trichloroethene	0.48 J	0.6 J	NA
RD-19	05/06/03	8260B	VOCs	None detected		
RD-22(Z2)	04/30/03	8260B	Acetone	8.7 J,F	16 F	NA
			Benzene	0.56 F	0.9 F	NA
			Chlorobenzene	0.36 U	0.42 J, F	---
			Toluene	1.9 F	0.9 J,F	NA
RD-40	05/08/03	8260B	Acetone	8.4 J,L	6.6 J,L	NA
RD-52C	05/14/03	8260B	VOCs	None detected		
RD-55A	05/05/03	8260B	cis-1,2-Dichloroethene	27	20	30
			trans-1,2-Dichloroethene	1.4	0.94 J	NA
			Trichloroethene	25	20	22
			Vinyl Chloride	6.4	4.4	37
RD-55B	05/06/03	8260B	cis-1,2-Dichloroethene	9.5	6.2	42
			Trichloroethene	13	8.6	41
RD-66	05/08/03	8260B	VOCs	None detected		
HAR-07	04/16/03	1625M	N-Nitrosodimethylamine	0.055	0.051	8
HAR-17	04/16/03	8260B	Acetone	4.6 J	4.5 U	---
			1,1-Dichloroethane	0.49 J	0.44 J	NA
			1,1-Dichloroethene	1.6 J	1.9 J	17
			cis-1,2-Dichloroethene	20	18	11
			trans-1,2-Dichloroethene	1.7 J	1.1 J	NA
			Trichloroethene	93 J	83	11
HAR-26	05/15/03	8260B	VOCs	None detected		
WS-04A	05/09/03	8260B	VOCs	None detected		

See last page of Table A-2 for footnotes and explanations.

TABLE A-2
FOOTNOTES AND EXPLANATIONS

1625M	=	EPA method 1625 for N-nitrosodimethylamine.
8260SIM	=	EPA method 8260SIM for 1,4-dioxane.
8260B	=	EPA method 8260 for volatile organic compounds.
314.0	=	EPA method 8260 for perchlorate.
ug/l	=	Micrograms per liter.
(---)	=	Not applicable. Constituent detected in only one sample.
RPD	=	Relative percent difference. RPDs were calculated only if the detected concentration exceeded the product of five times the method detection limit times the dilution factor.
NA	=	Not applicable. An RPD calculation is not valid since at least one of the laboratories reported a detected concentration less than the product of five times the method detection limit times the dilution factor.
Primary lab	=	Del Mar Analytical of Irvine, California for EPA Method 8260B and Ceimic Corporation of Narragansett, Rhode Island for EPA Method 8260SIM.
J	=	Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL).
U	=	Not detected; numerical value represents the Method Detection Limit for that compound.
F	=	Sampled through multi-level FLUTe ports. Footnoted results are not representative of historic groundwater samples, and may have been introduced in the FLUTe samples by compressed nitrogen gas, electrical tape and/or FLUTe components.
L	=	Laboratory contaminant.
Z	=	FLUTe sample port number.

TABLE A-3
DATA QUALIFICATION OF NON-APPENDIX IX SAMPLES DUE TO BLANK SAMPLE CONTAMINATION, SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Blank Sample Identification	Blank Sample Type	Target Compound(s) Detected in the Blank	Concentration (ug/l)	Flag Associated Field Sample results with a "U" if less than or equal to this value (ug/l)	Affected Field Samples
Volatile Organic Compounds					
3E10008-BLK1	Method Blank	1,4-Dioxane	1.29 J	5.45	WS-05 (split)
RD-19_050603_04	Field blank	Acetone	6.4 J	64	RD-19 (primary & duplicate)
RD-57(Z8)_043003_04	Field blank	Acetone	7.4 J	74	RD-57(Z8)
RD-62_050203_04	Field blank	Acetone	6.9 J	69	RD-62
3E11006-BLK1	Method Blank	1,4-Dioxane	1.59 J	7.95	RD-20(A)_050503_06 (spike)
3E15018-BLK1	Method Blank	Methylene Chloride	0.330 J	3.3	RD-49B_050603_05 (trip blank)
3E14016-BLK1	Method Blank	1,4-Dioxane	0.620 J	3.1	RD-04 (split), RD-49A (split), RD-49B (split)
RD-02_050503_05	Trip blank	1,4-Dioxane	0.086 J	0.43	RD-04, RD-44
V170508-B1	Method Blank	1,4-Dioxane	0.13 J	0.65	RD-04, RD-44, RD-02_050503_05 (trip blank)
Trace Metals					
3E07049-BLK1	Method Blank	Arsenic	0.309 J	3.09	RS-18, RD-57(Z8)
Volatile Fuel Hydrocarbons					
3E05001-BLK1	Method Blank	Volatile Fuel Hydrocarbons(C6-C12)	14.3	71.5	RS-31

EXPLANATION:
ug/l = micrograms per liter
J = Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL).
U = Not detected; numerical value represents the Method Detection Limit for that compound.
Z = FLUTe sample port number.

TABLE A-4
DATA QUALIFICATION OF NON-APPENDIX IX SAMPLES DUE TO LCS/LCSD, MS/MSD RECOVERY EXCEEDANCE, SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

LCS/LCSD, MS/MSD Sample Identification	Sample Type	Target Compound(s) Outside of Recovery Limits	% Recovery Criteria	% Recovery	Affected Field Samples	Qualification: If % Recovery is less than the lower acceptance limit, the associated target analyte is qualified "J" for positive results and "R" for non-detects. If % Recovery is greater than the upper acceptance limit, the associated target analyte is qualified "J" for positive results and not qualified for non-detects.
Semi-Volatile Organic Compounds						
3E02041-BS1	LCS	Benzidine	15-180	<15	RD-10(Comp)	R

EXPLANATION:
LCS = Laboratory control standard.
LCSD = Laboratory control standard duplicate.
MS = Matrix spike.
MSD = Matrix spike duplicate.

TABLE A-5

DATA QUALIFICATION OF NON-APPENDIX IX SAMPLES DUE TO CALIBRATION VERIFICATION RECOVERY EXCEEDANCE
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Target Compound(s)	Batch	Calibration Verification Recovery Above Method Control Limit?	Affected Field Samples	If calibration verification % recovery is greater than the upper acceptance limit, qualify associated target analyte positive results as "J" and non-detects as "UJ".
Semi-Volatile Organic Compounds				
Diethyl phthalate	3E07066	Yes	RD-49B	UJ
			RD-44	UJ
			RD-02	UJ
			WS-05	UJ
Diethyl phthalate	3E02041	Yes	RD-10(Comp)	UJ

EXPLANATION:
UJ = Not detected. Estimated detection limit as a result of calibration verification recovery exceeding the upper acceptance limit.

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Field and laboratory data were reviewed according to procedures outlined in the *Groundwater Monitoring, Quality Assurance Project Plan, Santa Susana Field Laboratory* (Groundwater Resources Consultants, Inc., 1995) following each quarterly groundwater sampling event during 2003. Results of the review are discussed in the following sections. The analytical results for these samples were subjected to a data validation process summarized in 3.2.3 of this appendix.

2. INTRODUCTION

2.1 Quality Assurance/Quality Control Procedures

Following the second quarter 2003 groundwater sampling event, field and laboratory data were reviewed according to procedures outlined in the *Groundwater Monitoring, Quality Assurance Project Plan, Santa Susana Field Laboratory* (Groundwater Resources Consultants, Inc., 1995). As the project develops, it is anticipated that the quality assurance assessment conducted by Haley & Aldrich following each quarterly event will be modified. The current procedures included reviewing field forms and documentation and evaluating whether field data were complete. Analytical data were reviewed by the laboratory for precision, accuracy, representativeness, and comparability as part of its standard QA/QC program. QA/QC data were submitted as part of the laboratory QA/QC package. Analytical data also were reviewed by Haley & Aldrich for data representativeness, reproducibility, completeness, erroneous data, and discrepancies. Del Mar Analytical of Irvine, California served as the primary laboratory for all analyses except 1,4-dioxance which was analyzed by Ceimic Corporation of Narragansett, Rhode Island. The primary radiochemistry laboratory was Eberline Services of Richmond, California. Split radiochemistry samples were analyzed by Severn Trent Laboratories of Richland, Washington. Split samples were analyzed by American Analytics of Chatsworth, California. Haley & Aldrich field and analytical data reviews are summarized below.

Completeness values presented in this summary were calculated using the following equation:

$$C = \left[1 - \frac{\text{number of incomplete results}}{\text{total number requested}} \right] \times 100$$

The values shown in parentheses in this summary are simply percentages and are not completeness values. The percentages are provided as a quick reference.

3. QA/QC EVALUATION

3.1 Field Data

3.1.1 Pre-Sampling Water Levels

During the sampling event, 234 wells were scheduled for water level monitoring and 227 wells were monitored during the second quarter (97%). Out of the 227 wells monitored, water level measurements were obtained for 197 wells during the second quarter. Water levels were not obtained from the other wells because the wells were dry or inaccessible.

Based upon the number of monitoring attempts versus the scheduled number, the completeness value was 97% for the second quarter.

3.1.2 Groundwater Sample Collection

During the second quarter sampling event, the number of wells scheduled for sampling was 117 wells. Of the wells scheduled for sampling, 79 wells were sampled (68%). Samples were not collected at a number of wells because the wells were dry or contained inadequate water for sampling purposes, the wells were inaccessible, or the well equipment malfunctioned.

Based upon the number of sampleable wells versus the schedule, the field completeness value for water sample collection was 68%.

3.1.3 QA/QC Sample Collection

Duplicate samples, split samples, field blanks, and trip blanks comprise the QA/QC sample collection program. The QA/QC target for duplicate samples is 10% of sampled wells. Split samples are collected from wells requiring verification sampling and from randomly selected wells, and typically comprise 5% of all sampled wells. Field blanks are collected each day that volatile organic samples are collected. Trip blanks are included with each shipment of VOC samples. Three field blanks and two trip blanks were not collected due to sampler oversight.

Results of QA/QC sample collection during the second quarter 2003 are summarized below.

QA/QC Sample Type	Second Quarter
Percent of samples duplicated	10
Percent of samples split	8
Field blank completeness value	81
Trip blank completeness value	86

3.1.4 Water Quality Parameter Measurements

Each water quality parameter (pH, temperature, electrical conductivity, and turbidity) is measured at least three times before sample collection except at wells that function as extraction wells and thus are already pumping prior to the quarterly sampling event; wells that bail or pump dry prior to purging three well volumes; at private wells; at artesian wells; at flowing springs; and at wells equipped with multi-level FLUTe systems. Water quality parameters were measured at least once at all wells sampled during the second quarter 2003. Field parameters were not measured according to established protocols at one well due to sampler oversight. The completeness values for field parameters measured at least three times prior to sample collection was 99%.

3.2 Analytical Data

3.2.1 Comparison with Historical Water Quality Data

There were some instances where analyte concentrations had increased or decreased in groundwater samples collected during the second quarter 2003, but most values were within the range of historic data. During each quarter, the laboratories were requested to confirm suspect results. Verification sampling was scheduled at two wells during the quarter; verification results confirmed the presence of N-nitrosodimethylamine at well HAR-07. A summary of unusual results is included in Section 2.2 of this report.

3.2.2 Lab Performance Comparison

Results of the split samples are presented in Table A-1. Relative percent differences (RPDs) were calculated for each compound detected by both laboratories and for compounds detected at concentrations exceeding the product of five times the method detection limit times the dilution factor. RPD values calculated for second quarter 2003 split samples ranged from 0% to 52%.

3.2.3 Field Duplicate Sample Precision

Water quality data were precise as indicated by the RPDs of field duplicate samples. RPDs ranged from 8% to 42% (Table A-2). Two of the RPDs exceeded the laboratory RPD limit of 40% for VOC analyses by EPA Method 8260B.

3.2.4 Data Representativeness, Reproducibility, and Completeness

Data representativeness, reproducibility, and completeness of second quarter 2003 results were evaluated by verifying that:

- all locations were sampled as scheduled,
- samples were properly collected and preserved (if required),

- procedures to maintain the integrity of samples during shipment were followed,
- sample dilutions were properly conducted,
- chain-of-custody records were complete when submitted or changed appropriately, and
- laboratory QA/QC data were obtained for each sample submitted.

All locations were sampled as scheduled except at locations where wells contained insufficient water volume, where equipment problems were encountered, or where wells were inaccessible during the quarter. All samples were preserved (where necessary) and shipped following acceptable procedures. Samples from wells with TCE concentrations exceeding 3,000 µg/l were segregated during storage and shipment.

A few chain-of-custody (COC) forms were not completed satisfactorily. Because the laboratories were notified of the deficiencies immediately following sample submission, all samples submitted were identified correctly and analyzed according to the monitoring schedule. Field personnel were informed of the custody form deficiencies and provided an example of a completed custody form.

All samples were received appropriately, identified correctly, and analyzed according to the monitoring schedule.

3.2.5 Data Useability Summary

Analytical results for 79 groundwater samples, 18 trip blank samples, 14 field blank samples, and site specific matrix spike and matrix spike duplicate samples (MS/MSD) were reviewed to evaluate the data useability. These data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA540/R-99/008, October 1999), **National Functional Guidelines for Inorganic Data Review** (EPA540/7-02, July 2002) and the EPA Method specific protocol criteria, where applicable. Except for Appendix IX samples, this section pertains to the groundwater samples collected by Haley & Aldrich personnel during the second quarter 2003. A data useability summary report of the Appendix IX samples is provided in Appendix B of this report.

The following items/criteria applicable to the QA/QC data and sample analysis data listed above were reviewed:

- Chain of Custody Procedures
- Analytical Holding Time Compliance
- Method Blank, Trip Blank, and Field Blank Sample Analyses
- Surrogate Compound Recoveries
- Laboratory Control Sample Analyses
- Matrix Spike Sample Analyses
- Sample Data Reporting Procedures

- Laboratory Data Qualification Procedures

3.2.5.1 Chain of Custody Procedures

External chain of custody documentation was completed by Haley & Aldrich personnel during the performance of sampling activities conducted at SSFL. The external COC documents were completed appropriately upon sample transfer to the primary analytical laboratory personnel (Del Mar Analytical, Ceimic Corporation, Eberline Services, Severn Trent Laboratories, and American Analytics).

Del Mar Analytical performed the analysis of volatile organic compounds (VOCs) by EPA Method 8260B, 1,4-dioxane by modified EPA Method 8260 SIM, fuel hydrocarbons by EPA Method 8015M, semi-volatile organic compounds (SVOCs) by EPA Method 8270C, perchlorate by EPA Method 314.0, formaldehyde by EPA Method 8315, ammonia by EPA Method 350.2, cyanide by EPA Method 9012, nitrate and fluoride by EPA Method 300.0, and elemental constituents by EPA Methods 6020/7470. Subcontractor laboratory facilities included Weck Laboratories for the analysis of n-Nitrosodimethylamine (NDMA) by EPA Method 1625M. Ceimic Corporation was contracted directly by Haley & Aldrich to conduct the analysis of 1,4-dioxane primary samples in accordance with EPA Method 8260 SIM. Eberline Services was contracted directly by Haley & Aldrich to conduct radiochemical analyses: gross alpha and gross beta by EPA Method 900.0, gamma-emitting radionuclides by EPA Method 901.1, tritium by EPA Method 906.0, and uranium and thorium isotopes by EPA Method 907.0. Severn Trent Laboratories was contracted directly by Haley & Aldrich to analyze split radiochemistry samples for gross alpha and beta by EPA Method 900.0, gamma by EPA Method 901.1, and tritium by EPA Method 906.0. American Analytics analyzed split VOC samples by EPA Method 8260B and split perchlorate samples by EPA Method 314.0.

A review of the COC documents indicate that the sample custody remained intact through the analytical process and the reported results are representative of the samples collected at SSFL. The external COC documents are provided with each laboratory report.

No corrective action is recommended.

3.2.5.2 Holding Time Compliance

Maximum allowable holding times as prescribed by the USEPA, “Test Methods for Evaluating Solid Waste”, SW-846, 3rd Edition, Update III, 1996 were applied to the evaluation of each project sample. Holding time compliance was measured from the time of sample collection to the time of sample preparation or analysis. Each project sample was initially analyzed within the maximum allowable holding.

3.2.5.3 Blank Sample Analyses

Trip blank samples were provided by Del Mar Analytical and Ceimic Corporation and accompanied the project sample containers to and from the project site to assess possible field/container contamination. Trip blank samples were analyzed by Del Mar Analytical for VOCs only and by Ceimic Corporation for 1,4-dioxane only. Method blank samples were prepared by the analytical laboratories and analyzed concurrently with the project samples to assess possible laboratory contamination. Field blank samples were prepared at sampled wells using de-ionized water provided by Del Mar Analytical. Several target compounds were detected in associated field blank and trip blank samples and in method blank samples prepared and analyzed with the project samples. Table A-3 provides a list of the target compounds detected in the project trip blanks, field blanks, and/or method blank samples which required corrective action, the associated project samples, and the recommended corrective action for the presentation of the sample analysis results. Target compounds detected in blank samples that did not require corrective action are not included in the table.

In accordance with cited USEPA guidelines, positive VOC sample results should be reported unless the concentration of the compound in the project sample is less than or equal to 10 times (10X) the amount in any blank for the common laboratory contaminants (methylene chloride, acetone, 2-butanone), or 5 times (5X) the amount for other target compounds. The following samples were qualified with a "U" flag as a result of detection in blank samples: groundwater samples WS-05 (split), RD-19 (primary & duplicate), RD-57 (Z8), RD-62, RD-04 (split), RD-49A (split), RD-49B (split), RD-04, and RD-44; trip blank samples RD-02_050503_05 and RD-49B_050603_05; and spiked sample RD-20(A)_050503_06.

Arsenic was detected in method blank samples prepared and analyzed concurrently with the project samples: RS-18 and RD-57(Z8). These results were flagged with "B" by the laboratory indicating that the concentration of the analyte within the sample was less than 10 times the amount detected in the associated method blank. For these samples, the reported analyte result was flagged with a "U" indicating that the concentration of the analyte detected in the sample was most likely due to laboratory contamination and was not indicative of the field sample conditions.

Volatile fuel hydrocarbons were detected in the method blank sample prepared and analyzed with project sample RS-31. These results were flagged by the laboratory with "B" indicating that the concentration of the analyte within the sample was less than or equal to 5 times (5X) the amount for the target compound. For these samples, the reported analyte result was flagged with a "U" indicating that the concentration of the analyte detected in the sample was most likely due to laboratory contamination and was not indicative of the field sample conditions.

3.2.5.4 Surrogate Compound Recoveries

Surrogate compounds were added to each sample prior to analysis to confirm the efficiency of the purge and trap sample preparation procedure by EPA Method 8260B and the extraction and concentration process by EPA Method 8270C. The surrogate compound recovery calculated in percentage is presented on each report for the project sample analyses. The calculated recovery of surrogate compounds for each sample fell within method specific acceptance criteria without exception. Based on the reported recovery performance of the surrogate compounds, no additional qualification of the reported results is recommended.

3.2.5.5 Laboratory Control Sample (LCS/LCSD) Analyses

Analytical precision and accuracy was evaluated based on laboratory control sample (LCS) analysis performed concurrently with the project samples. LCS analyses included the addition of a known amount of each target analyte into lab pure water using a traceable reference material independent of the instrument calibration materials. LCS samples were analyzed to confirm the precision and accuracy of the analytical system calibration.

The percent recovery calculated for each target analyte fell within laboratory specific criteria indicating that the analyses were conducted with acceptable analytical accuracy and precision with one exception (Table A-4). Sample RD-10 (Comp) had a LCS percent recovery below the percent recovery criteria for benzidine. Reported as non-detected in the RD-10 (Comp) sample, the benzidine result was qualified with an “R” indicating that the result was rejected because the presence or absence of the analyte could not be verified.

3.2.5.6 Matrix Spike/Matrix Spike Duplicate (MS/MSD) Sample Analyses

Analytical precision and accuracy were evaluated based on the matrix spike and matrix spike duplicate analyses performed on the project samples within each sample delivery group (SDG). After the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability of the analytical systems to identify these compounds within the sample matrix. Due to limitation of sample volume, some SDGs contained reports of MS/MSD analyses performed on sample matrices from non-project related samples. However, the analysis of these samples concurrently with the project samples provides valuable information on the accuracy of the analyses performed.

MS/MSD sample analyses performed on project field samples fell within method and/or laboratory derived QA/QC criteria. Although some MS/MSDs from non-project related samples fell outside the QA/QC criteria, no qualification of project data is recommended.

3.2.5.7 Calibration Verification Recovery

The calibration verification percent recovery was greater than the upper acceptance limit in one target compound, diethyl phthalate (Table A-5). For the affected field samples RD-49B, RD-02, RD-44, WS-05 and RD-10(Comp), diethyl phthalate was reported as non-detected and was qualified with a "UJ" indicating that the reported sample quantitation limit is approximate.

3.2.5.8 Sample Data Reporting

Sample data were reported in summary reports containing laboratory specific data qualifiers. The reporting limit values for the dilution analyses were adjusted for the level of dilution performed. When an analysis was performed without dilution, the reporting limit was based on the most recent method detection limit study conducted by the contract laboratory. Values presented for target compounds detected at concentrations below the reporting limit but above the MDL were flagged with a "J" as estimated values. Generally, MDL studies were performed within 180 days of the project sample analyses conducted without exception. No corrective action is recommended.

3.2.5.9 Data Qualifiers

The use of the data qualifiers is intended to aid data users in their interpretation of the sample results. Laboratory specific data qualifiers were assigned by the laboratories to the reported results in accordance with each laboratory's standard operating procedures. However, the data qualifiers used by Del Mar Analytical do not correspond with standard USEPA guidance as referenced in this document. As such, the data qualifiers recommended above in accordance with the USEPA guidelines should preclude the use of the laboratory specific qualifiers so that comparability of the reported results can be achieved if future analyses are performed at other laboratory facilities.

The results presented in each report were found to be compliant with the data quality objectives (DQOs) for the project and useable, with the few exceptions noted above. Based on our review, the data useability is compliant with a completeness goal of greater than 95%.

TABLE A-1

SUMMARY OF SECOND QUARTER 2003 SPLIT SAMPLE RESULTS
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Date	Method	Constituent	Primary Sample Result (ug/l)	Split Sample Result (ug/l)	RPD
Shallow Wells						
RS-08	04/14/03	8260B	cis-1,2-Dichloroethene	7.8	6.3	21
			trans-1,2-Dichloroethene	0.91 J	0.75	NA
			Vinyl chloride	0.75 J	0.2 U	---
RS-25	05/01/03	314.0	Perchlorate	Not detected		
SH-04	04/14/03	8260B	1,1,1-Trichloroethane	4	4	NA
			1,1-Dichloroethane	14	12	15
			1,1-Dichloroethene	5 J	4.3	NA
			1,2-Dichloroethane	6.2	7.3	16
			Carbon tetrachloride	170	170	0
			Chloroform	51	50	2
			cis-1,2-Dichloroethene	11	10	10
			Tetrachloroethene	13	16	21
			Trichloroethene	69	70	1
Chatsworth Formation Wells						
RD-04	05/07/03	8260SIM	1,4-Dioxane	Not detected		
RD-16	05/13/03	8260B	VOCs	None detected		
RD-49A	05/07/03	8260SIM	1,4-Dioxane	0.65 J	0.73 U	---
RD-49B	05/06/03	8260SIM	1,4-Dioxane	2.76	2.4 U	---
RD-59A	05/15/03	900.0	Gross Alpha	3.55 +/- 2.0	3.53 +/- 1.94	NA
		900.0	Gross Beta	7.58 +/- 2.8	14 +/- 3.88	NA
		906.0	Tritium	Not detected		
		901.1	Gamma	None detected		
WS-05	05/05/03	8260SIM	1,4-Dioxane	2.38	2.6 U	---
HAR-07	04/16/03	8260SIM	1,4-Dioxane	Not detected		
HAR-07	04/16/03	1625M	N-Nitrosodimethylamine	0.055	0.054	2
HAR-14	04/15/03	8260SIM	1,4-Dioxane	160	94	52

See last page of Table A-1 for footnotes and explanations.

1625M	=	EPA method 1625 for n-nitrosodimethylamine.
8260B	=	EPA method 8260 for volatile organic compounds.
8260SIM	=	EPA method 8260SIM for 1,4-dioxane.
314.0	=	EPA method 8260 for perchlorate.
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.
ug/l	=	Micrograms per liter.
(---)	=	Not applicable. Constituent detected in only one sample.
RPD	=	Relative percent difference. RPDs were calculated only if the detected concentration exceeded the product of five times the method detection limit times the dilution factor.
NA	=	Not applicable. An RPD calculation is not valid since at least one of the laboratories reported a detected concentration less than the product of five times the method detection limit times the dilution factor.
Primary lab	=	Del Mar Analytical of Irvine, California. Primary laboratory for 1,4-dioxane was Ceimic Corp. of Narragansett, Rhode Island. Primary laboratory for N-nitrosodimethylamine was Weck Laboratories of City of Industry, California.
Split lab	=	American Analytics of Chatsworth, California. For 1,4-dioxane and N-nitrosodimethylamine, the split lab was Del Mar Analytical of Irvine, California. For methods 900.0, 901.1 and 906.0, the split lab was Severn Trent Laboratories of Richland, Washington.
J	=	Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL).
U	=	Not detected; numerical value represents the Method Detection Limit for that compound.

TABLE A-2

SUMMARY OF SECOND QUARTER 2003 DUPLICATE SAMPLE RESULTS
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Well ID	Date	Method	Constituent	Primary Sample Result (ug/l)	Duplicate Sample Result (ug/l)	RPD
Shallow Zone						
RS-11	05/01/03	8260B	VOCs	None detected		
RS-25	05/01/03	314.0	Perchlorate	Not detected		
Chatsworth Formation						
RD-05B	05/09/03	8260B	Trichloroethene	0.48 J	0.6 J	NA
RD-19	05/06/03	8260B	VOCs	None detected		
RD-22(Z2)	04/30/03	8260B	Acetone	8.7 J,F	16 F	NA
			Benzene	0.56 F	0.9 F	NA
			Chlorobenzene	0.36 U	0.42 J, F	---
			Toluene	1.9 F	0.9 J,F	NA
RD-40	05/08/03	8260B	Acetone	8.4 J,L	6.6 J,L	NA
RD-52C	05/14/03	8260B	VOCs	None detected		
RD-55A	05/05/03	8260B	cis-1,2-Dichloroethene	27	20	30
			trans-1,2-Dichloroethene	1.4	0.94 J	NA
			Trichloroethene	25	20	22
			Vinyl Chloride	6.4	4.4	37
RD-55B	05/06/03	8260B	cis-1,2-Dichloroethene	9.5	6.2	42
			Trichloroethene	13	8.6	41
RD-66	05/08/03	8260B	VOCs	None detected		
HAR-07	04/16/03	1625M	N-Nitrosodimethylamine	0.055	0.051	8
HAR-17	04/16/03	8260B	Acetone	4.6 J	4.5 U	---
			1,1-Dichloroethane	0.49 J	0.44 J	NA
			1,1-Dichloroethene	1.6 J	1.9 J	17
			cis-1,2-Dichloroethene	20	18	11
			trans-1,2-Dichloroethene	1.7 J	1.1 J	NA
			Trichloroethene	93 J	83	11
HAR-26	05/15/03	8260B	VOCs	None detected		
WS-04A	05/09/03	8260B	VOCs	None detected		

See last page of Table A-2 for footnotes and explanations.

TABLE A-2
FOOTNOTES AND EXPLANATIONS

1625M	=	EPA method 1625 for N-nitrosodimethylamine.
8260SIM	=	EPA method 8260SIM for 1,4-dioxane.
8260B	=	EPA method 8260 for volatile organic compounds.
314.0	=	EPA method 8260 for perchlorate.
ug/l	=	Micrograms per liter.
(---)	=	Not applicable. Constituent detected in only one sample.
RPD	=	Relative percent difference. RPDs were calculated only if the detected concentration exceeded the product of five times the method detection limit times the dilution factor.
NA	=	Not applicable. An RPD calculation is not valid since at least one of the laboratories reported a detected concentration less than the product of five times the method detection limit times the dilution factor.
Primary lab	=	Del Mar Analytical of Irvine, California for EPA Method 8260B and Ceimic Corporation of Narragansett, Rhode Island for EPA Method 8260SIM.
J	=	Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL).
U	=	Not detected; numerical value represents the Method Detection Limit for that compound.
F	=	Sampled through multi-level FLUTe ports. Footnoted results are not representative of historic groundwater samples, and may have been introduced in the FLUTe samples by compressed nitrogen gas, electrical tape and/or FLUTe components.
L	=	Laboratory contaminant.
Z	=	FLUTe sample port number.

TABLE A-3
DATA QUALIFICATION OF NON-APPENDIX IX SAMPLES DUE TO BLANK SAMPLE CONTAMINATION, SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Blank Sample Identification	Blank Sample Type	Target Compound(s) Detected in the Blank	Concentration (ug/l)	Flag Associated Field Sample results with a "U" if less than or equal to this value (ug/l)	Affected Field Samples
Volatile Organic Compounds					
3E10008-BLK1	Method Blank	1,4-Dioxane	1.29 J	5.45	WS-05 (split)
RD-19_050603_04	Field blank	Acetone	6.4 J	64	RD-19 (primary & duplicate)
RD-57(Z8)_043003_04	Field blank	Acetone	7.4 J	74	RD-57(Z8)
RD-62_050203_04	Field blank	Acetone	6.9 J	69	RD-62
3E11006-BLK1	Method Blank	1,4-Dioxane	1.59 J	7.95	RD-20(A)_050503_06 (spike)
3E15018-BLK1	Method Blank	Methylene Chloride	0.330 J	3.3	RD-49B_050603_05 (trip blank)
3E14016-BLK1	Method Blank	1,4-Dioxane	0.620 J	3.1	RD-04 (split), RD-49A (split), RD-49B (split)
RD-02_050503_05	Trip blank	1,4-Dioxane	0.086 J	0.43	RD-04, RD-44
V170508-B1	Method Blank	1,4-Dioxane	0.13 J	0.65	RD-04, RD-44, RD-02_050503_05 (trip blank)
Trace Metals					
3E07049-BLK1	Method Blank	Arsenic	0.309 J	3.09	RS-18, RD-57(Z8)
Volatile Fuel Hydrocarbons					
3E05001-BLK1	Method Blank	Volatile Fuel Hydrocarbons(C6-C12)	14.3	71.5	RS-31

EXPLANATION:
ug/l = micrograms per liter
J = Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL).
U = Not detected; numerical value represents the Method Detection Limit for that compound.
Z = FLUTe sample port number.

TABLE A-4
DATA QUALIFICATION OF NON-APPENDIX IX SAMPLES DUE TO LCS/LCSD, MS/MSD RECOVERY EXCEEDANCE, SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

LCS/LCSD, MS/MSD Sample Identification	Sample Type	Target Compound(s) Outside of Recovery Limits	% Recovery Criteria	% Recovery	Affected Field Samples	Qualification: If % Recovery is less than the lower acceptance limit, the associated target analyte is qualified "J" for positive results and "R" for non-detects. If % Recovery is greater than the upper acceptance limit, the associated target analyte is qualified "J" for positive results and not qualified for non-detects.
Semi-Volatile Organic Compounds						
3E02041-BS1	LCS	Benzidine	15-180	<15	RD-10(Comp)	R

EXPLANATION:
LCS = Laboratory control standard.
LCSD = Laboratory control standard duplicate.
MS = Matrix spike.
MSD = Matrix spike duplicate.

TABLE A-5

DATA QUALIFICATION OF NON-APPENDIX IX SAMPLES DUE TO CALIBRATION VERIFICATION RECOVERY EXCEEDANCE
SECOND QUARTER 2003
BOEING SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Target Compound(s)	Batch	Calibration Verification Recovery Above Method Control Limit?	Affected Field Samples	If calibration verification % recovery is greater than the upper acceptance limit, qualify associated target analyte positive results as "J" and non-detects as "UJ".
Semi-Volatile Organic Compounds				
Diethyl phthalate	3E07066	Yes	RD-49B	UJ
			RD-44	UJ
			RD-02	UJ
			WS-05	UJ
Diethyl phthalate	3E02041	Yes	RD-10(Comp)	UJ

EXPLANATION:
UJ = Not detected. Estimated detection limit as a result of calibration verification recovery exceeding the upper acceptance limit.

APPENDIX B

Data Useability Summary Report

DATA USEABILITY SUMMARY REPORT

Appendix IX Parameter Analyses – April 2003 Sampling Events
Santa Susana Field Laboratory, Ventura County, California
Analytical Laboratory: Del Mar Analytical, Irvine, CA
Report # IMD0808, IMD0858, IMD0958, IMD1033

This data useability summary report presents the findings of the review for the environmental analysis of seven groundwater samples, four trip blank samples, four field blanks, and site specific matrix spike and matrix spike duplicate samples (MS/MSD) from the Santa Susana Field Laboratory (SSFL) in April 2003. These data were evaluated in accordance with guidance from the United States Environmental Protection Agency (USEPA) **National Functional Guidelines for Organic Data Review** (EPA540/R-99/008, October 1999), **National Functional Guidelines for Inorganic Data Review** (EPA540/R-01/008, July 2002) and the respective EPA Method specific protocol criteria, where applicable. This report pertains to the groundwater samples collected by Haley & Aldrich personnel from 14 through 17 April 2003.

The following items/criteria applicable to the QA/QC data and sample analysis data listed above were reviewed:

- Chain of Custody Procedures
- Analytical Holding Time Compliance
- Method and Trip Blank Sample Analyses
- GC/MS and ICP-MS Instrument Performance
- Initial Instrument Calibration Procedures
- Continuing Calibration Verification Procedures
- Surrogate Compound Recoveries
- Laboratory Control Sample Analyses
- Matrix Spike Sample Analyses
- Internal Standard Compound Recoveries
- Sample Data Reporting Procedures
- Laboratory Data Qualification Procedures

Chain of Custody Procedures

External chain of custody documentation was completed by Haley & Aldrich personnel during the performance of sampling activities conducted at SSFL. The external COC documents were completed appropriately upon sample transfer to the primary analytical laboratory personnel (Del Mar Analytical, Irvine, CA). Internal COC documents were produced by Del Mar Analytical and traceable through the execution of the sample analyses within the Irvine, CA facility, and at the subcontractor laboratory facilities engaged to complete specialty analyses prescribed by the Sampling and Analysis Plan (SAP). Del Mar performed the analysis of volatile organic compounds (VOCs) by EPA Method 8260B; 1,2-dibromoethane, 1,2-dibromo-3-chloropropane, and 1,2,3-trichloropropane by EPA Method 504.1; organochlorine pesticides and polychlorinated biphenyls by EPA Methods 8081 and 8082, respectively; elemental constituents by EPA Methods 6010/6020/7470A, total cyanide by EPA Method 9014, and sulfide by EPA Method 376.2.

Ceimic Corporation, Narragansett, RI was contracted directly by Haley & Aldrich for the analysis of 1,4-dioxane by modified EPA Method 8260 SIM.

Subcontractor laboratory facilities to Del Mar Analytical included:

- Sequoia Analytical, Morgan Hill, CA for the analysis of organophosphorus pesticides by EPA Method 8141 and organochlorine herbicides by EPA Method 8151;
- Sequoia Analytical, Petaluma, CA for the analysis of semi-volatile organic compounds by EPA Method 8270C;
- Triangle Laboratories, Inc., Durham, NC for the analysis of polychlorinated dibenzo dioxins/furans by EPA Method 8290;
- Weck Laboratories for the analysis of n-Nitrosodimethylamine (NDMA) by EPA Method 1625M; and
- North Creek Analytical, Bothell, WA for the analysis of pentachlorophenol by modified EPA Method 8270.

A review of the COC documents indicate that the sample custody remained intact through the analytical process and the reported results are representative of the samples analyzed. The external and internal COC documents are provided with each laboratory report. No corrective action is recommended.

Holding Time Compliance

Maximum allowable holding times as prescribed by the USEPA, "Test Methods for Evaluating Solid Waste", SW-846, 3rd Edition, Update III, 1996 were applied to the evaluation of each project sample. Holding time compliance was measured from the time of sample collection to the time of sample preparation or analysis.

Each project sample was analyzed within the maximum allowable holding time without exception. No corrective action is recommended.

Blank Sample Analyses

Trip blank samples were provided by Del Mar Analytical and accompanied the project sample containers to and from the project site to assess possible field/container contamination. Trip blank samples were analyzed by Del Mar Analytical for VOCs only. Field blank samples were prepared at the sampled well using de-ionized water provided by Del Mar Analytical. Method blank samples were prepared by the analytical laboratories and analyzed concurrently with the project samples to assess possible laboratory contamination. Several target compounds were detected in associated method, field and trip blank samples prepared and analyzed concurrently with the project samples.

The following table provides a list of the target compounds detected in the project trip, field, and/or method blank sample, the associated project samples, and the recommended corrective action for the presentation of the sample analysis results.

Blank Sample Identification	Target Compound(s) Detected in the Blank	Concentration (ug/l)	Associated Field Samples	Flag Associated Field Sample results with a "U" if less than or equal to this value (ug/L)
SH-04-04 (Field Blank)	Methylene Chloride	6000	SH-04	60000
HAR-14-05 (Trip Blank)	Acetone	6.6	HAR-14, HAR-15	66
HAR-15-04 (Field Blank)	Methylene Chloride	4500	HAR-15	45000
HAR-07-05 (Trip Blank)	1,2-Dichloroethane Methylene Chloride	0.28 1.1	HAR-07-01 HAR-17-01 HAR-17-02 HAR-17-04	1.4 11
HAR-17-04 (Field Blank)	Methylene Chloride	260000	HAR-17-01 HAR-17-02	2600000
3D23008-BLK1	Methylene Chloride	0.84	HAR-07-01 HAR-16 Comp HAR-17-01 HAR-17-02 HAR-17-04	8.4
3040587-BLK1	Bis(2-ethylhexyl) phthalate	34.7	HAR-07, HAR-16 Comp, HAR-17	350
3D21043-BLK1	Antimony Arsenic Chromium	0.181 0.469 0.19	HAR-07, HAR-17 HAR-07, HAR-17 HAR-15	0.9 2.34 1.0
3D18060-BLK1	Antimony	0.133	HAR-14, SH-04, RS-08	0.665
3D24017-BLK1	1,4-Dioxane	0.81	HAR-07-03 HAR-14-03	4.05
3D22047-BLK1	n-Nitrosodimethylamine	0.00076	HAR-07-03	0.0038
3D24029-BLK1	1,2-Dibromo-3-chloropropane	0.00187	HAR-16 Comp	0.00935
TO31859	Octachloro-p-dibenzodioxin 1,2,3,4,7,8-Hexachloro-p-dibenzofuran Octachloro-p-dibenzofuran	0.0117 0.0022 0.0072	RS-08, SH-04, HAR-14, HAR-15	0.117 0.022 0.072

GC/MS and ICP-MS Instrument Performance Checks

All performance checks of GC/MS and ICP-MS instruments used in the analysis of the project samples in accordance with EPA Methods 8260B, modified 8260 SIM, 8270C, 8290, and 6020 fell within method specific criteria without exception. No corrective action is warranted.

Instrument Calibration Procedures

Instrument calibration procedures for the analysis of project samples were consistent with the guidelines prescribed by the USEPA method specific calibration protocols with the following exceptions:

During the analysis of volatile organics, the continuing calibration standards for the following target compounds exhibited a percent difference (%D) greater than the accepted EPA guidance criteria of 25%.

Date	Compound	Affected Samples	Qualifier
4/17/03	Carbon Tetrachloride	HAR-14, HAR-15	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
4/17/03	Allyl Chloride	SH-04, RS-08, HAR-14, HAR-15, HAR-07, HAR-17	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
4/17/03	2-Butanone	HAR-14, HAR-15	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
4/17/03	2-Hexanone	HAR-14, HAR-15	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
4/17/03	Acetone	HAR-14	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
4/23/03	Propionitrile	HAR-07	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

During the analysis of semi-volatile organics, the continuing calibration standards for the following target compounds exhibited a percent difference (%D) greater than the accepted EPA guidance criteria of 25%:

Date	Compound	Affected Samples	Qualifier
4/29/03	Benzo (b+k) fluoranthene (total)	HAR-07, HAR-17	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
4/29/03	Bis(2-chloroethyl)ether	HAR-07, HAR-17	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
4/29/03	Di-n-octyl phthalate	HAR-07, HAR-17	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
4/29/03	Hexachlorocyclopentadiene	HAR-07, HAR-17, HAR-14, HAR-15	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

During the analysis of chlorinated pesticides, the continuing calibration verification standards for the following target compounds exhibited a %D greater than the accepted EPA guidance criteria of 20%:

Date	Compound	Affected Samples	Qualifier
4/22/03 11:49	2,4-D, 2,4,5-T, Dinoseb	HAR-14, HAR-15, HAR-17, SH-04, RS-08	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
4/22/03 21:01	Thionazin	HAR-14, HAR-15, HAR-7, HAR-17, SH-04, RS-08	
4/22/03 11:49	Dalapon, 2,4-DB, MCPA	HAR-14, HAR-15, HAR-17, SH-04, RS-08	These compounds were non-detects, are not Appendix IX compounds, and are not reported. No corrective action is required.

Surrogate Compound Recoveries

Surrogate compounds were added to each sample prior to analysis to confirm the efficiency of the purge and trap sample preparation procedure by EPA Methods 8260B and modified 8260 SIM, and the extraction and concentration process by EPA Methods 8270C, 8270 Mod, 8081A, 8082, 8141, 8151A, 504.1 and 1625M. The surrogate compound recovery calculated in percentage is presented on each report for the project sample analyses. The calculated recovery of surrogate compounds for each sample fell within method specific acceptance criteria without exception.

Based on the reported recovery performance of the surrogate compounds, no additional qualification of the reported results is recommended.

Laboratory Control Sample (LCS/LCSD) Analyses

Analytical precision and accuracy was evaluated based on laboratory control sample (LCS) analysis performed concurrently with the project samples. LCS analyses included the addition of a known amount of each target analyte into lab pure water using a traceable reference material independent of the instrument calibration materials. LCS samples were analyzed to confirm the precision and accuracy of the analytical system calibration.

The percent recovery calculated for each target analyte fell within laboratory specific criteria with the following exceptions.

LCS Sample ID		%R Criteria	%R	Corrective Action
GCMS34 BS1 4/18/03	Acetone	40-110	188	Flag non-detect results "UJ" and detects "J" as estimated values.
	2-Butanone	40-110	154	
	2-Hexanone	40-110	146	
GCMS BS1/BSD 4/24/03	Benzidine	60-140	26 / 32	
	Hexachlorocyclopentadiene	60-140	7.4 / 7.9	

The data for the remaining analytes indicate that the analyses were conducted with acceptable analytical accuracy and precision. No additional qualification of the data presented for the project samples is recommended.

Matrix Spike/ Matrix Spike Duplicate (MS/MSD) Sample Analyses

Analytical precision and accuracy were evaluated based on the matrix spike and matrix spike duplicate analyses performed on the project samples within each sample delivery group (SDG). After the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability of the analytical systems to identify these compounds within the sample matrix. Due to limitation of sample volume, some SDGs contained reports of MS/MSD analyses performed on sample matrices from non-project related samples. However, the analysis of these samples concurrently with the project samples provides some valuable information on the accuracy of the analyses performed.

MS/MSD sample analyses performed on project field samples fell within method and/or laboratory derived QA/QC criteria without exception. No additional qualification of the data presented for the project samples is warranted.

Internal Standard (IS) Compound Recoveries

Internal Standard compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, modified 8260 SIM, and 8270C to quantify the amount of the target compounds detected within each sample matrix. The calculated response of each IS compound fell within the QA/QC criteria of +100% and –50% of the corresponding continuing calibration verification standard without exception. No qualification of the data is recommended.

Sample Data Reporting

Sample data were reported in summary reports containing laboratory specific data qualifiers. When an analysis was performed without dilution the reporting limit was based on the most recent method detection limit (MDL) study conducted by the laboratory. A review of the adjusted reporting limits indicate that when these reporting limit (RLs) values were presented for sample dilution analyses, the RLs were adjusted for the level of dilution performed.

Data Qualifiers

The use of the data qualifiers is intended to aid the data user in the interpretation of the sample results. Laboratory specific data qualifiers were assigned by Del Mar Analytical to the reported results in accordance with the laboratory's standard operating procedures. The data qualifiers used do not correspond with the USEPA guidance referenced in this document. For example, values presented for target compounds detected at concentrations below the reporting limit but above the MDL were flagged with a "B" for inorganic parameters.

As such, the data qualifiers recommended above in accordance with the USEPA National Functional Guidelines guidelines should preclude the use of the laboratory specific qualifiers so that comparability of the reported results can be achieved if future analyses are performed at other laboratory facilities.

Summary of Data Validation Findings

The results presented in each report were found to be compliant with the data quality objectives (DQOs) for the project and useable, with the few exceptions noted above. Based on our review, the data useability is compliant with a completeness goal of greater than 95%.

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