Tank 398 Vadose Zone Closure Report and Long-Term Groundwater Monitoring Plan

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Revision: 1

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Abbreviations and Acronyms

ASTM	American Society for Testing and Materials
BTEX	benzene, toluene, ethylbenzene, and total xylenes
cfu/mL	colony-forming unit per milliliter
EPA	U.S. Environmental Protection Agency
ft/ft	foot per foot
ft^2/min	square feet per minute
IRP	Installation Restoration Program
JP	jet propellant
kg/L	kilograms per liter
L/kg	liters per kilogram
MCAS	Marine Corps Air Station
MCL	maximum contaminant level
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MTBE	methyl tert-butyl ether
PID	photoionization detector
ppmv	parts per million by volume
PRG	primary remediation goals
PVC	polyvinyl chloride
SCAQMD	South Coast Air Quality Management District
scf/m	standard cubic feet per minute
SVE	soil vapor extraction
SWDIV	Southwest Division Naval Facilities Engineering Command
TPH	total petroleum hydrocarbons
TPHd	total petroleum hydrocarbons as diesel
TPHg	total petroleum hydrocarbons as gasoline
TRPH	total recoverable petroleum hydrocarbons
µg/L	micrograms per liter
°F	degrees Fahrenheit

Executive Summary

This report summarizes the results and findings of previous investigations and remediation activities at Tank 398 (site) at the Marine Corps Air Station (MCAS) El Toro, California. This report includes an evaluation of the data collected from routine groundwater monitoring, free product recovery, site investigations, soil vapor extraction treatment operations, and confirmation sampling activities. These data were compared with the corrective actions required for an unauthorized release from an underground storage tank, which are specified in Title 23, Division 3, Chapter 16, Article 11, §2722 of the California Code of Regulations. These data were also compared with the protocols developed by the American Society for Testing and Materials (ASTM) standard (ASTM E1943-98) and by the Air Force Center for Environmental Excellence for the evaluation of natural attenuation.

Based on the findings, no further action in the vadose zone is proposed. Natural attenuation is efficiently controlling the off-site migration of residual free product and total petroleum hydrocarbon (TPH)-impacted groundwater based on the findings presented in this report. Therefore, we also propose to implement a long-term groundwater monitoring program to monitor the progress of natural attenuation.

The site is located in the northeast section of the MCAS El Toro. Tank 398 was installed in 1960 and was used to store and dispense jet propellant (JP)-5 fuel. The tank and its associated piping were removed in 1993. The extent of JP-5 jet fuel in the vadose zone and in the groundwater was delineated in several site investigation reports. The quantity of JP-5 spilled or leaked is not known. Residual TPH was detected in the soil layer above the groundwater table (vadose zone), and free-floating product and dissolved-phase plume are present in the groundwater. During the period of record, the groundwater levels varied from 180 to 210 feet below ground surface.

Jet fuel contains trace amounts of benzene, which is a known human carcinogen and the primary risk driver at the site. JP-4, which is more volatile than JP-5, contains approximately 0.5 percent by weight of benzene. During a preliminary risk assessment, potential intake of groundwater from downgradient wells was the only identified potential exposure pathway of human receptors to the contamination. Potential surface exposure to the contaminated soil vapor was shown to be negligible mainly because benzene, toluene, ethylbenzene, and total xylenes were not detected in the upper 25 feet of subsurface soil.

Corrective actions that have been implemented since 1995 to remedy the JP-5-impacted soil and groundwater at the site have consisted of soil-vapor extraction (SVE) and treatment of vadose zone contamination, recovery of free-floating product, and natural attenuation of the dissolved-phase groundwater plume. To date, approximately 18,000 gallons of TPH were removed from the vadose zone using the SVE system and 10,000 gallons were recovered using an automatic free-product recovery system. The groundwater plume appears to be stable and has not migrated off-site. The stability of the plume is thought to be the result of both containment by stratigraphic boundaries and natural attenuation of the petroleum hydrocarbon compounds in groundwater.

The site is underlain by a complex stratigraphy composed of interlayered lithic units with low, moderate, and high permeability. The SVE and free-product recovery systems implemented thus far have reached their technical limitations due to the complex lithology of the site; future operation of the remediation system would no longer be cost-effective. The groundwater monitoring data indicate that natural attenuation is occurring and the extent of the free product and the dissolved-phase plume has been stable and remains on-site.

No further action in the vadose zone is recommended because of the technical limitations of the active remedial systems, the stable groundwater plume, and active natural attenuation process noted in the groundwater sampling results. However, semiannual groundwater monitoring of the residual free product and dissolved-phase groundwater plume is proposed. During the first five years of monitoring, parameters indicating the process of natural attenuation will also be monitored and reported on an annual basis. This monitoring program will be implemented until the free product is degraded and dissolved phase concentrations of BTEX constituents achieve "low risk" site cleanup criteria. It is also proposed that on-site groundwater extraction for any beneficial use be prohibited until the remedial goal is reached.

Section 1
Introduction

This report summarizes findings and results of the previous investigations and remedial activities at the Tank 398 site (site) at the Marine Corps Air Station (MCAS) El Toro, California. IT Corporation (IT) subcontracted Accord Engineering, Inc., to prepare this report on behalf of the Southwest Division Naval Facilities Engineering Command (SWDIV) under the Remedial Action Contract No. N68711-93-D-1459, Delivery Order Number 0112. Based on these findings and results, no further action in the vadose zone is proposed. The groundwater monitoring data appears to show that the extent of the dissolved-phase plume and the free product plume is relatively stable. We also propose to implement a long-term groundwater monitoring program to monitor the progress of natural attenuation and the extent of the free product and dissolved phase plumes.

1.1 Site Location

MCAS El Toro is located approximately 45 miles southeast of Los Angeles and 1 mile north of the intersection of Interstate Highways 5 and 405. The site is located in the northeast section of MCAS El Toro (Figures 1-1 and 1-2).

1.2 Site Geology and Hydrogeology

MCAS El Toro is located in the Peninsular Ranges geomorphic province near the southern boundary of the Tustin Plain. The Tustin Plain is a broad coastal plain that encompasses an area of approximately 103 square miles in Orange County, California. Ground elevation at the site varies from 370 to 380 feet above mean sea level.

The geology underlying the site consists of an intricate sequence of interfingering lenses of slightly to moderately indurated alluvial deposits consisting of clays, silts, and sands, with some gravel and cobble lenses or channel fills. The geologic units are not laterally continuous. The sand and gravel channels in the saturated zone can provide higher permeability pathways for contaminants to migrate.

Drilling and monitoring records dating back to 1990 at the site indicate that the depth to groundwater has been from 180 to 210 feet below ground surface. Groundwater levels have risen since 1994 at an approximate rate of 2 feet per year. The shallow groundwater levels at the site were at approximately 183 to 194 feet of mean sea level based on the monitoring data in March 2000. Details of groundwater elevations and contour maps are discussed in the following sections.

Section 2
Site Assessment Activities

Previous activities at the site are discussed in the following section.

2.1 Site History

Tank 398 was installed in 1960 and was used to store and dispense jet propellant (JP)-5 jet fuel. The Tank 398 refueling facility consisted of one 108,000-gallon underground storage tank connected to the four fueling islands via a 14-inch-diameter underground pipeline (Figure 2-1).

2.2 Tank and Pipeline Removal

Integrity testing of Tank 398 and associated pipeline was performed from December 1988 to March 1989. A leak was detected in a 14-inch-diameter product distribution line, approximately 20 feet north of the vacuum pit (Figure 2-1). Also in the Tank 398 area, a sand-filled sump (or a dry well) historically was used to drain excess JP-5 prior to 1972. The leaking pipe and dry well appear to be the major sources contributing to soil and groundwater contamination at the site. Tank 398 with its associated piping was removed in 1993 (Southwest Division Naval Facilities Engineering Command, 1991).

2.3 Site Investigations

As part of a refueling system upgrade, a soil characterization study was conducted in the vicinity of Tank 398 in August 1988. Petroleum-hydrocarbon contamination was identified in the soil adjacent to the tank. A series of investigations, including soil borings and groundwater sampling, were subsequently conducted to assess the extent of contamination. Some of the borings were converted into groundwater monitoring wells.

In summary, 24 groundwater monitoring wells were installed at the site between 1990 and 1993. The wells were constructed of 4-inch or 6-inch-diameter Schedule 40 polyvinyl chloride (PVC) casing. The total depths of these wells ranged from 231 to 253 feet below ground surface. Screened intervals ranged from 25 to 50 feet in length, with the top of the screens predominantly set at approximately 200 feet below ground surface. Well construction information is provided in Table 2-1.

The previous soil boring locations are shown in Figures 2-1 and 2-2. The lithology and sampling results are illustrated in geologic cross-sections A-A' and B-B' in Figures 2-3 and 2-4, respectively. The locations of groundwater monitoring wells are shown in Figure 2-5. The results from each of the investigations are briefly summarized below.

Site Investigation in 1988 – Six shallow soil borings (B1 through B6 as shown in Figure 2-1) were drilled. Total recoverable petroleum hydrocarbon (TRPH) concentrations were detected in soil samples collected to a depth of at least 45 feet.

Site Investigation in 1989 (Southwest Division, Naval Facilities Engineering Command, 1991) – Fourteen soil borings were completed to depths of 82 to 242 feet (SB398-01 through SB398-10, SB398-12, SB398-13, SB398-03D, and SB398-06D as shown in Figure 2-2). Among the 14 soil borings, 7 were subsequently completed as groundwater monitoring wells (MW398-01 through MW398-06 and MW398-08, as shown in Figure 2-5). Relatively high concentrations of TPH and benzene, toluene, ethylbenzene, and total xylenes (BTEX) were detected in groundwater samples collected beneath and downgradient of Tank 398. Free product was detected in well MW398-02.

Site Investigation between November 1991 and February 1992 (Southwest Division, Naval Facilities Engineering Command, 1992) – Two soil borings (SB398-22 and SB398-23) were completed to depths of 90 to 100 feet. Eleven groundwater monitoring wells were also installed (MW398-09, MW398-10, MW-398-11, MW398-12, MW398-13, MW398-13D, MW398-14, MW398-15, MW398-16, MW398-17, and MW398-18 as shown in Figure 2-5). Samples taken from the drilled soil borings indicated residual TPH and BTEX concentrations were present in the interfingering lenses of fine-grade deposits.

Aquifer Pump Test and Sand Channel Investigation in 1993 (Southwest Division, Naval Facilities Engineering Command, 1993a) – Six groundwater monitoring wells (MW398-19, MW398-20, MW398-21, MW398-25, MW398-26, and MW398-27 as shown in Figure 2-5) were installed. Groundwater flow direction was generally to the northwest at a gradient of 0.0085 foot per foot (ft/ft). Average transmissivity for the aquifer beneath the site was estimated at 0.3 square feet per minute (ft^2/min), and average storativity was estimated at 0.007. The average hydraulic conductivity was 12 feet per day (ft/day). The calculated average velocity of groundwater flow was 0.5 ft/day. Free-product plume was migrated along sand and gravel lenses at or above the water table and capillary fringe, which were in the northeasterly and southeasterly directions.

Continuous Groundwater Monitoring from January 1996 through August 1997 (Southwest Division, Naval Facilities Engineering Command, 1996, 1997a, 1997b, 1997d) – Groundwater samples were taken quarterly from January 1996 through April 1998 from selected monitoring wells at the site to assess the progress of natural attenuation and monitor the extent of groundwater contamination. The most recent groundwater sampling event was conducted in June 2000. The groundwater quality data from 1996 through 2000 are presented in Appendix A.

BTEX constituents were detected in the groundwater samples collected from most of the wells, except for MW398-21. Benzene was detected at least once in all the monitoring wells, except MW398-21. Detected benzene concentrations ranged from approximately 1 micrograms per liter (µg/L) to a maximum detected concentration of 2,200 µg/L in well ASMW-01. Toluene, ethylbenzene, and xylenes were detected in concentrations below the 1999 Region 9 primary remediation goals (PRGs).

Methyl tert-butyl ether (MTBE) was detected in the groundwater samples from monitoring wells MW398-01, 04, 05, 06, and 17. The maximum concentration detected was 19"J"µg/L in the groundwater sample from MW398 05 in March 1998. MTBE was not detected in concentrations equal to or above the California primary MCL (May 2000), 13 µg/L, in groundwater samples collected from any other well during the sampling program in June 2000. MTBE was detected in MW398-01, which is hydrologically upgradient of Tank 398 and the dry well. As a result of the upgradient detection, and the fact that fuels containing MTBE were not used at the site, the source is not thought to be Tank 398.

2.4 Extent of Petroleum Contamination

The previous site investigations indicate that residual TPH and BTEX were detected in the vadose zone and groundwater at the site. In addition, free-floating product of JP-5 was detected in certain groundwater monitoring wells. The distribution of petroleum contamination was discussed in two project status reports (Southwest Division, Naval Facilities Engineering Command, 1997e and 1998) and is briefly summarized below.

2.4.1 Extent of Vadose Zone Contamination

Prior to 1993, TPH as JP-5 presented in the vadose zone and extended to a depth of approximately 205 feet, where the capillary fringe was encountered. TPH concentrations ranged from 37,000 milligrams per kilogram (mg/kg) at a depth of 40 feet to 52,000 mg/kg at a depth of 200 feet. The relatively high TPH concentrations may represent free-phase liquid hydrocarbon retained above and within the fine lithologic units of silt and silty clay.

The 200-foot-thick vadose zone significantly affects the distribution and migration of hydrocarbons (primary free product) to the saturated zone. As shown in Figure 2-3, and Figure 2-4, free product migration is considered to be controlled by the site lithology. Free product migration traveled vertically downward in relatively permeable sand and gravel units and spread laterally in the less permeable silt and silty clay units. The highest relative hydrocarbon concentrations were found in these fine materials.

2.4.2 Extent of Free-Product Contamination

JP-5 fuel has migrated through the vadose zone forming a free-product layer on top of the groundwater table and an aqueous-phase dissolved plume. The thickness of the free product at the site has ranged from 0.1 foot to 12.3 feet, as shown in Figures 2-5 and 2-6. After 1998, the monitoring of free-product plume was ceased because most of the screens of groundwater monitoring wells were submerged due to the rising groundwater level since 1994. Wells with free product in the well bore, but with the screen submerged, are labeled FP-NM in Figures 2-5 and 2-6.

Free product located in a coarse-grain sand to gravel unit was interpreted to be a channel-fill structure. The plume shape was believed to be semiconstrained in the buried channel feature. Groundwater underlying the site has risen over 15 feet, causing the free product to also rise so that it is currently located in a low permeable silty zone, which also restricts its migration. The

product has retained its elongated shape, transecting the groundwater gradient approximately 30 degrees to the southwest.

2.4.3 Extent of Dissolved-Phase Contamination

The distributions of TPH and benzene concentrations in the groundwater are illustrated in Figures 2-5 through 2-7. As shown in the figures, the size of the dissolved-phase plume appears to be stable without significant evidence of off-site migration. The petroleum hydrocarbon-impacted groundwater did not extend beyond wells MW-13D and MW-12 in the downgradient direction and beyond wells MW27 and MW9 in the upgradient direction.

Groundwater samples were collected in June 2000 from the perimeter monitoring wells MW398 01, MW398 04, MW398 09, MW398 12, MW398 13 and 13D, MW398 17, MW398 21, and MW398 27, and submitted for laboratory analyses. Analysis of groundwater samples suggests that the analytes TPH as gasoline (TPHg) and benzene are more limited in areal extent and lower in concentration than in previous sampling events (Figure 2-7 and Appendix B). Benzene was detected in groundwater samples collected from two monitoring wells: MW398-01 (11 µg/L in the primary sample and 22 µg/L in the duplicate sample) and MW398-17 (21 µg/L). TPHg was detected in groundwater samples from MW398-01 (1.6 milligrams per liter [mg/L]) and MW398-04 (0.85 mg/L). The evaluation of the TPHg data indicates no significant change in these wells.

Groundwater level measurements and free-product gauging, conducted in March 2000, indicate that the free-product thickness measured in recovery well RW398 02 is 2.93 feet thick (Figure 2-7). The screen in this well is not submerged. Free-product thickness has decreased 6.7 feet, from 9.6 feet in 1997 to the current 2.9 feet.

Based on the extent of contamination discussed above, a site-specific conceptual model was developed to illustrate the suspected causes of contamination and the distribution of TPH in the subsurface (Figure 2-8). This model was used to assess the appropriate remedial technologies that were implemented at the site.

Section 3
Remedial Goals and Corrective Actions

Remedial goals and corrective actions are discussed in the following section.

3.1 Remedial Goals

A comprehensive remediation strategy was implemented at the site to remediate soil and groundwater contamination present since 1996. The following factors were considered during the development of remedial goals:

- The horizontal distance to the nearest two groundwater wells (TIC-55 and TIC-111) is approximately 1 mile. Well TIC-55 is located on the MCAS property near IRP Site 14, and the screened interval is from 300 to 497 feet below ground surface. Well TIC-111 is located adjacent to the northwest perimeter (off MCAS property) and the screened interval is from 200 to 750 feet below ground surface. The two wells are designated as active production wells for irrigation purposes. The water of the aquifer is designated for beneficial use, although the groundwater quality is impacted with high total dissolved solids, nitrate, and chlorinated organic compounds. The groundwater in the immediate vicinity of the plume is not used for human consumption, irrigation, or industrial processing.
- Free product presented in several low-permeability lenses in the vadose zone at a depth starting at approximately 25 feet below ground surface and extending to the groundwater table. BTEX were not detected in the upper 25 feet of the vadose zone.
- The calculated average velocity of groundwater flow was approximately 0.5 foot per day. The migration of dissolved-phase plume and free product appeared to be limited.

A preliminary risk assessment was conducted to evaluate the potential risks of exposure by human receptors (Southwest Division Naval Facilities Engineering Command, 1992). BTEX was identified as the four chemicals of concern. Because the chemicals of concern were not detected in the top 25 feet of soil, three potential exposure pathways were eliminated (dispersion in air via wind erosion or volatilization, direct contact with soil, and dispersion in surface water). The only identified pathway of potential exposure was dispersion in groundwater. In addition, any additional excavation or water extraction at the site could potentially expose receptors to the chemicals of concern.

The site is underlain by a complex stratigraphy composed of interlayered lithic units with low, moderate, and high permeability. As a result of the preliminary risk assessment and the complex lithology at the site, a phased approach of remediation was considered. In the first phase of remediation, the goal was established to remove as much free product and VOCs as is economically and technically practical using active systems. When the active remediation systems reach their technical limitations, an engineering evaluation will be conducted to assess whether natural attenuation is active at the site and can effectively control the off-site migration

of the residual contamination. If the evaluation results were positive, a semiannual groundwater monitoring program will be implemented to monitor the progress of natural attenuation of the residual free product and dissolved-phase groundwater plume. This monitoring program will be implemented until the free product is removed and the dissolved phase concentrations of BTEX achieve the "low risk" site cleanup criteria as proposed by Lawrence Livermore National Laboratory (LLNL) report (LLNL, October 1995) and the California Regional Water Quality Control Board, Santa Ana Region (RWQCB) (RWQCB, January 26, 1996). The proposed cleanup levels for low risk sites are:

Benzene	250 ppb
Toluene	300 ppb
Ethylbenzene	680 ppb
Xylene	1,750 ppb

It is also proposed that on-site groundwater extraction for any beneficial use be prohibited until the remedial goal is reached. If the evaluation results are negative, other remedial measures may be considered based on the engineering evaluation of effectiveness, implementability, and cost-benefit analysis.

In the first phase of remediation, a soil-vapor extraction system was implemented to remediate the VOCs in the vadose zone. An automated recovery system was installed to recover the floating product on the top of groundwater. A network of wells was implemented to monitor the progress of natural attenuation of the dissolved-phase groundwater plume. To date, approximately 18,000 gallons of TPH were removed from the vadose zone using the soil vapor extraction (SVE) system and 10,000 gallons recovered using an automatic free-product recovery system. However, the active systems have reached their technical limitations and are no longer cost-effective. In addition, the historical groundwater monitoring data indicate that natural attenuation is effectively controlling the migration of the dissolved-phase plume. An engineering evaluation was conducted according to the original remediation approaches and the evaluation results are presented below.

3.2 Soil-Vapor-Extraction

An SVE system was implemented to remediate the TPH contamination in the vadose zone at the site. The SVE system used vertical wells to remove vapor-phase VOCs from the subsurface and conveyed the extracted vapor through a network of piping to an aboveground system for treatment. A thermal/catalytic oxidizer unit was used to oxidize the VOCs in the extracted vapor before discharge to the atmosphere.

The locations of SVE wells are shown in Figure 3-1. The vapor extraction wells are constructed of 2-inch or 4-inch-diameter PVC or stainless steel wire-wrapped screen with a screen slot size of 0.020 inch and PVC blank casing. Monitoring well MW398-18 is a 6-inch-diameter well that was also connected to the SVE system. The maximum depth of these wells is approximately 244 feet below ground surface, with screened intervals ranging from 30 to 244 feet below ground surface. Table 3-1 provides a detailed specification of these wells. Details of the system design and performance are described below.

3.2.1 *Vapor Extraction Pilot Test*

An SVE pilot test was conducted in 1993 using three vapor extraction wells (SVE398-22, SVE398-23, and SVE398-24). Based on the pilot test data (Southwest Division, Naval Facilities Engineering Command, 1993b), a radius of vacuum influence of 28 feet was used to design and construct a full-scale SVE system in 1996.

3.2.2 *Full-Scale Vapor Extraction and Treatment System*

The full-scale system constructed in 1996 included an additional eight vapor extraction wells (SVE398-18, SVE398-27, SVE398-28/29/30, SVE398-31, and SVE398-32/33). Wells SVE398-28/29/30 and SVE398-32/33 are nested wells with multiple well casings installed into a single borehole.

The aboveground treatment system consisting of a vacuum blower, moisture knockout pot, a thermal/catalytic oxidizer unit, and associated control sensors and instruments, extracted and treated the soil vapor before discharge to the atmosphere. Two thermal/catalytic units were used for this project and one was rated at 500 standard cubic feet per minute (scfm) vapor flow rate and another at 400 scfm at a maximum vacuum of 110 inches of water column. The system was operated under air discharge permits (Permit No. F01210, and F8226) issued by the South Coast Air Quality Management District (SCAQMD).

The oxidizer unit was initially operated under the thermal mode, which combusted the vapor in a combustion chamber at 1,450 degrees Fahrenheit (°F). The system was switched to the catalytic mode, which oxidized the VOCs in a catalyst chamber at 750°F, when the VOC concentrations in the extracted vapor were reduced to below approximately 3,500 parts per million by volume (ppmv). Propane was used as supplementary fuel to operate the system. The propane was supplied from an on-site 1,000-gallon tank.

3.2.3 *System Performance*

The SVE system was operated from September 1996 to February 1999 and removed approximately 18,000 gallons, or 124,000 pounds, of petroleum hydrocarbons. (Details of the operation data and engineering evaluation information can be found in two reference documents: Southwest Division, Naval Facilities Engineering Command, 1997c, 1998). A table of SVE operation data is attached in Appendix B. The concentration changes of benzene and TPH in the SVE inlet are illustrated in Figure 3-2.

The vacuum measured at each operating extraction well has ranged from 25 to 80 inches of water. Vapor flow rates at the wells ranged from 3 to 171 scfm. Inlet vapor flow rates to the oxidizer ranged from 432 to 471 scfm. Tedlar bag samples were taken periodically from the inlet of the thermal treatment unit and the discharge and were analyzed in stationary laboratories to evaluate the remedial progress and the system efficiency. Concentrations of TPH and benzene at the inlet of the SVE system, determined by the Tedlar-bag sampling and U.S. Environmental Protection Agency (EPA) TO-3 testing results, are illustrated in Figure 3-2.

The inlet TPH concentrations were maintained at approximately 10 mg/L (or 10,000 µg/L) due to the presence of free-phase liquid hydrocarbon retained within the fine lithologic units of silt

and silty clay in the vadose zone. However, based on the carbon-chain analysis data of the Tedlar bag samples, the molecular weight of the hydrocarbons in the extracted vapor increased from 105 to 130 during the operational period from September 1996 to July 1998. This information indicates that the light-end of hydrocarbons was efficiently removed by the SVE system. The changes in benzene concentrations, as shown in Figure 3-2, also reflect this fact. The benzene concentrations showed a trend of significant reduction from the initial 181 µg/L in October 1996 to 0.2 µg/L in October 1998. The benzene concentrations rebounded to 3.2 µg/L in November 1998 because the system operation was ceased approximately for 3 weeks for system repair and maintenance. Based on the operational data, we can conclude that the SVE system has successfully removed the volatile portion of the residual hydrocarbons from the vadose zone, especially benzene.

The costs incurred for the operation of the SVE system included the costs for SVE equipment rental, supplemental fuel, sampling, maintenance parts, field labor, and office engineering. As a result of the reduced amount volatile organic compounds that can be extracted from the subsurface, the unit cost of system operation has increased and is no longer cost-effective. The causes for the increase of unit cost are mainly because more supplementary fuel was required for the thermal treatment unit.

3.3 Free-Product Recovery

A product recovery pilot test was conducted in 1991 using well MW398-02 (Southwest Division, Naval Facilities Engineering Command, 1993c). The field data indicated that the factors controlling free product migration were more related to the type of sediments at the water table than to groundwater gradient. A sand channel encountered in MW398-01, 02, and 18 appeared to be a preferential flow path.

A full-scale automated removal system, including two additional wells (RW398-01 and 02), was designed and installed based on the pilot testing data. (Southwest Division, Naval Facilities Engineering Command, 1995). The system consisted of pneumatic pumps installed in selected wells and a system of steel pipes to transport fluids from the well to a 4,000-gallon aboveground tank. Product recovery pumps were installed at different times in a total of nine wells (MW398-02, 04, 10, 18, 19, 25, and 26, and RW398-01 and 02). Manual bailing of free product occurred, on occasion, in each of the nine wells, and in wells MW398-01 and MW-398-03.

Operation of the free-product removal system began on December 1995. Bio-fouling and buildup of slimy bio-film in the pump intakes resulted in a limited removal of free product. These conditions led to the temporary removal of the pump in February 1996 and the subsequent manual bailing of free product from specific wells. A well rehabilitation program was conducted from October to December 1996 in six selected wells (MW398-01, 02, 10, 18, and 19 and RW398-01) to remove the biologic buildup from the well screens (Southwest Division, Naval Facilities Engineering Command, 1997e). The product recovery rates increased significantly after well rehabilitation. Approximately 10,000 gallons, or 69,000 pounds, of free product have been removed to date. Details of recovery data are presented in Appendix C.

3.4 Natural Attenuation of Groundwater

Groundwater sampling and analysis were conducted on a routine basis on selected monitoring wells that did not contain measurable free product. The monitoring was conducted from November 1995 through June 2000 (Southwest Division, Naval Facilities Engineering Command, 1997d, 1997e, 1997f). The monitoring data are summarized in Appendix D. The review of historical monitoring data indicates that natural attenuation has been occurring since 1995, the first year having available groundwater monitoring data.

The evidence of natural attenuation was evaluated based on a guide for remediation by natural attenuation at petroleum release sites developed by American Society for Testing and Materials (ASTM Standard E1943-98) in 1998 (American Society for Testing and Materials, 1998). The guide suggests the demonstration of natural attenuation may include primary, secondary, and additional lines of evidence:

- *Primary Lines of Evidence* – including contaminant data is used to define the plume as shrinking, stable, or expanding.
- *Secondary Lines of Evidence* – including geochemical indicators of naturally occurring biodegradation and estimates of natural attenuation rate.
- *Additional Lines of Evidence* – including modeling, estimates of assimilative capacity (to estimate the mass of BTEX degraded), and microbiological studies.

For sites that have sufficient historical monitoring data, primary lines of evidence will often be adequate to demonstrate natural attenuation. In the Tank 398 site, all three lines of evidence of natural attenuation were noted based on the data collected from the groundwater monitoring events, the well rehabilitation program, and an air sparging pilot test. Details of the evidence are discussed below.

3.4.1 Primary Lines of Evidence

Monitoring data for the dissolved hydrocarbon plume typically included collection of groundwater samples for laboratory analysis of TPH as gasoline, TPH as diesel, TPH as JP-5, BTEX, and MTBE. The concentration changes of TPH as diesel and benzene from 1996 to 2000 are illustrated in Figures 3-3 and 3-4, respectively. As shown in the figures, the dissolved-phase plume has essentially remained the same size.

The plume migration rate could be estimated based on the following equation:

$$Vc = \frac{Vx}{1 + \rho K_d / n} = \frac{Vx}{R}$$

Where

Vc = Average velocity of contaminant parallel to groundwater flow

Vx = Average linear groundwater velocity parallel to groundwater flow

ρ = Bulk density of soil, 1.6 kg/L for sand (Table C.3.2, Air Force Center for Environmental Excellence, Technology Transfer Division, 1995)

K_d = Distribution coefficient, an indicator of tendency of a chemical to be sorbed to the solid phase in a solid-liquid system

n = Total porosity of soil, average 0.4 for sand (Table C.3.2, Air Force Center for Environmental Excellence, Technology Transfer Division, 1995)

R = Coefficient of retardation

The average linear groundwater velocity, Vx, can be estimated based on the following equation:

$$Vx = -\frac{K}{n}\frac{\partial h}{\partial l}$$

Where

K = Hydraulic conductivity, 12 ft/day based on the pumping test data (Southwest Division, Naval Facilities Engineering Command, 1993d)

$\partial h/\partial l$ = Hydraulic gradient, 0.0085 feet per foot (ft/ft) (Southwest Division, Naval Facilities Engineering Command, 1993d)

The derived site-specific hydraulic conductivity of 12 ft/day falls in the range for silty sand to clean sand (Table 2.3, Freeze and Cherry, 1979). The distribution coefficient can be estimated based on the following equation:

$$K_d = K_{oc} f_{oc}$$

Where

K_{oc} = Adsorption coefficient expressed on an organic carbon basis

foc = Mass fraction of organic carbon in soil, approximately 0.1 percent for sandy soil (Southwest Division, Naval Facilities Engineering Command, 1993d)

Based on these two equations, the average velocity of BTEX migration can be calculated as in the following table:

Compound	K_{oc}(L/kg)	f_{oc}	ρ (kg/L)	N	R	Vx(ft/yr)	Vc(ft/yr)
Benzene	*79*	*0.0010*	1.6	0.4	1.32	93.08	70.73
Toluene	*190*	*0.0010*	1.6	0.4	1.76	93.08	52.88
Ethylbenzene	468	*0.0010*	1.6	0.4	2.87	93.08	32.41
m-xylene	405	*0.0010*	1.6	0.4	2.62	93.08	35.52
o-xylene	422	*0.0010*	1.6	0.4	2.69	93.08	34.63
p-xylene	357	*0.0010*	1.6	0.4	2.43	93.08	38.33

Source: (Tables C.3.2, C.3.3, and C3.4, Air Force Center for Environmental Excellence, Technology Transfer Division, 1995)

ft/yr - feet per year
kg/L - kilograms per liter
L/kg - liters per kilogram

As shown in the calculations, benzene would migrate the fastest among the BTEX compounds, which is one of reasons that was selected as the indicator for our discussions in this report. The distance from the dry well, the suspected source of contamination, to the downgradient wells, MW398-12 and 13, is approximately 320 and 500 feet, respectively. Assuming the leaking fuel reached the groundwater in 1989 (the first available investigation data), the benzene plume would migrate approximately 750 feet downgradient. However, the groundwater monitoring data since 1996 indicate that TPH and BTEX were below the laboratory detection limits in wells MW398-12 and 13. The results of this engineering calculation demonstrates that natural attenuation has been occurring and is effectively retarding the migration of the dissolved-phase plume.

3.4.2 Secondary Lines of Evidence

The indicators of naturally occurring biodegradation include the following (American Society for Testing and Materials, 1998):

Indicator	Concentration Trend During Biodegradation	Indicator	Concentration Trend During Biodegradation
Dissolved Oxygen	Decrease	Oxidation/Reduction Potential	Decrease
pH	6-8	Manganese	Increase
Temperature	N/A	Alkalinity	Increase
Conductivity	Increase	Methane	Increase
Nitrate	Decrease (denitrification)	Carbon Dioxide	Increase
Sulfate	Decrease (sulfate reduction)	Ferrous Iron	Increase (Iron III reduction)

Dissolved oxygen concentrations define aerobic versus anaerobic conditions. Oxidation/reduction potential identifies oxidizing versus reducing conditions in groundwater. Nitrate and sulfate may serve as electron acceptors after dissolved oxygen is consumed. Carbon dioxide, methane, ferrous iron, manganese, and alkalinity are the products of aerobic or anaerobic biodegradation of petroleum hydrocarbons.

Microorganisms transform organic molecules, such as TPH and BTEX, and obtain carbon and energy from these substrates for survival, growth, and reproduction. Dissolved oxygen in the groundwater will be consumed first in a process called aerobic respiration. In the aerobic respiration process, oxygen molecules serve as electron acceptors to bind with the electrons generated from the food breakdown process. In the absence or near absence of dissolved oxygen and in the order presented, nitrate, manganese, ferric iron, sulfate, or carbon dioxide may serve, if available, as electron acceptors in a process called anaerobic respiration. The biodegradation process can be explained as the following reaction:

Organic Contaminants	+	Electron Acceptors	Heterotrophic Bacteria →	Metabolic Byproducts	+	Final Products

Geochemical data were also collected in several rounds of sampling from May 1996 to January 1997 and in April 2000 (Appendix D). Data of dissolved oxygen, ferrous iron, carbon dioxide, and methane were not available. However, the results of nitrate, manganese, total iron, sulfate, and alkalinity indicate the evidence of natural attenuation. The concentration changes of these natural attenuation indicators in 1996, 1997, and 2000 are illustrated in Figures 3-5 through 3-7, respectively.

The changes of nitrate, manganese, and sulfate were significant to demonstrate the evidence of natural attenuation. As shown in the figures, the background concentrations of nitrate were approximately 5 to 10 mg/L. The nitrate concentrations in the contaminated area were below the laboratory detection limit of 0.5 mg/L. The manganese data also indicated similar results. The background concentrations of manganese were approximately 10.6 to 17.5 mg/L, while the levels in the contaminated area were approximately 376 to 1,180 mg/L. These results demonstrate that anaerobic respiration occurred after the depletion of dissolved oxygen. Both nitrate and manganese, the next two sources of electron acceptors for microorganisms, were also depleted within the contaminated plume.

Sulfate is the next available electron acceptor after depletion of nitrate, manganese, and iron in anaerobic biodegradation. As shown in the figures, the background concentrations in both the upgradient and downgradient wells, away from the plume, were in the range of 117 to 158 mg/L in May 1996, 125 to 225 mg/L in April 1997, and 138 to 169 mg/L in July 2000. The sulfate concentrations in the contaminated plume area were in the range of 32 to 100 mg/L in May 1996, 13 to 68 mg/L in April 1997, and 32 to 58 in July 2000. These data demonstrate that sulfate is currently the available source of electron acceptors for natural attenuation.

A similar trend of increasing alkalinity concentrations in the contaminated plume can also be found in the historical groundwater monitoring data. In addition, the data of total iron concentrations also indicate a trend of accumulation within the plume area.

It is difficult to estimate the total mass of petroleum hydrocarbons that has been biodegraded at the site because some of the factors could not be accurately estimated, such as the rate of free product dissolved into groundwater and the surface contact area between the dissolved-phase plume and clean groundwater. However, the data demonstrate that the size of free product and dissolved-phase plume has reached a steady state without further expansion, thus indicating the migration rate of petroleum hydrocarbons is equivalent to the biodegradation rate at the plume boundary. The rate of biodegradation at the plume boundary can be estimated as noted in the following table:

Electron Acceptor	Background Concentration (mg/L)	Concentration in Core of Plume (mg/L)	BTEX Degraded by Natural Attenuation (mg/L)[a]
Dissolved Oxygen	7[b]	0.2[b]	2.2
Nitrate	8[c]	0[c]	1.7
Iron (II)[d]	0.043[c]	3.92[c]	0.2
Manganese	0.015[c]	0.75[c]	0.04
Sulfate	150[b]	35[c]	24
Total			28.1

a. From a mass balance standpoint, the potential mass of BTEX biodegraded by respiration is given by:

$$BTEX_{bio} = A\,(O_b - O_m)$$

where:

$BTEX_{bio}$ = Reduction in BTEX concentrations via natural attenuation (mg/L)

A = mg/L BTEX biodegraded per mg/L of electron acceptor consumed according to the stoichiometry; A = 0.32 for dissolved oxygen, 0.21 for nitrate, -0.06 for manganese, -0.05 for iron (II), and 0.21 for sulfate (Table B.5.5, Air Force Center for Environmental Excellence, Technology Transfer Division, 1995)

O_b = Background concentration of electron acceptor (mg/L)

O_m = Measured concentration of electron acceptor in the core of plume (mg/L)

b. July 2000 groundwater monitoring data

c. April 1997 groundwater monitoring data

d. Ferrous iron concentrations were assumed based on total iron concentrations in Appendix C:

The above table demonstrates that approximately 28 mg/L of BTEX will be biodegraded due to the supply of electron acceptors from the surrounding non-impacted groundwater. The amount of BTEX biodegraded could be estimated as described below.

For a conservative estimate, the supply of the electron acceptors only occurs at the upgradient interface of the plume and fresh groundwater in a vertical cross-sectional area of 300 feet wide by 20 feet deep (estimated based on the benzene plume and geochemical figures). Groundwater flow direction was generally to the northwest at a gradient of 0.0085 ft/ft. The average hydraulic conductivity was 12 ft/day (Southwest Division, Naval Facilities Engineering Command, 1993d). The groundwater flow rate at the interface can be calculated based on Darcy's Law:

$$Q = -K\,(dh/dl)\,A = 612\ cf/day = 1.73 \times 10^4\ L/day$$

where:

Q	=	Groundwater flow rate
K	=	Hydraulic conductivity (12 ft/day)
dh/dl	=	Hydraulic gradient (-0.0085 ft/ft)
A	=	Upgradient cross-sectional area perpendicular to the groundwater flow (300 ft x 20 ft)

The amount of BTEX biodegraded would be

$$M = Q\ BTEX_{bio} = (1.73 \times 10^4\ L/day)(28\ mg/L) = 4.85 \times 10^5\ mg/day = 1.1\ lb/day$$

3.4.3 Additional Lines of Evidence

Heterotroph is the microorganism that utilizes organic compounds for its energy and carbon requirements. The levels of heterotrophic bacterial population in the groundwater samples were determined during a well rehabilitation program and one round of groundwater sampling. The sampling results are summarized in Table 3-2. The levels of heterotrophic bacterial (bacteria that uses organic carbon as an energy source) population were in the order of 10^5 to 10^8 colony-forming unit per milliliter of groundwater (cfu/mL) in wells RW398-01 and 02, MW398-01, 02, 10, and 19 (Southwest Division, Naval Facilities Engineering Command, 1997g). In addition, bacteria counts of groundwater samples were conducted in the December 1997 monitoring event. The levels of heterotrophic bacteria population were in the order of 10^2 to 10^3 cfu/mL in the upgradient and downgradient wells (MW398-09, 12, 13D, and 27), away from the dissolved-phase plume (Appendix B). The levels of heterotrophic bacteria population within the plume are approximately 100 to 1,000 times higher than those outside of the plume, which provides direct evidence of natural biodegradation of TPH in the groundwater.

Section 4
Confirmatory Soil Sampling

Confirmatory soil sampling was conducted in January 2000 and in June 2000 to provide a basis to assess current conditions in the vadose zone and evaluate the effectiveness of SVE remediation in the vadose zone. The initial confirmatory sample borings CB398 01, CB398 02, CB398 03, CB398 10, CB398 11, CB398 28, were implemented to sample the vadose zone from approximately 40 feet below ground surface to the groundwater table (approximately 180 feet). These data were intended to evaluate the potential for residual contaminant concentrations to impact groundwater quality. Appendix D presents the geologic logs and Appendix E contains the analytical reports.

The shallow confirmatory soil borings, SCB 01, SCB 02, SCB 03, SCB 10, SCB 11, SCB 27, SCB 28, and HP1, were implemented to collect soil samples in the vadose zone from ground surface to a 40-foot depth. Borings SCB 02, 03, 10, 11, and 28 were advanced in proximity to the CB398 boring locations having the same number, in order to provide continuity with deeper vadose zone soil data. Borings SCB 01, SCB 27, and HP1 were implemented to expand information about the shallow vadose zone surrounding Tank 398. The data were intended to evaluate residual contaminants in the shallow vadose zone above the apparent confining layer, and the potential to impact recipients on the surface.

The borings were advanced using hollow-stem auger techniques and soil samples were collected at predetermined depths using a California method split-spoon sampler. The samples were collected and screened with a photoionization detector (PID), a boring log was prepared, samples were labeled, documented, and submitted for laboratory analysis following the *Tank 398 Sampling Strategy, OHM 2000.* The boring number, sample number, sample depth, and laboratory analytical results are summarized in Table 4-1. The boring locations are shown in Figure 4-1.

Evaluation of the soil analytical results indicates that the shallow vadose zone from ground surface to an approximate 20-foot depth is largely free of the target analytes: TPHg and benzene. In the area of a suspected leak at a 20-foot depth, south of the dry well, TPHg (1,300 mg/kg) and TPH JP5 (3400 mg/kg) were detected in the soil sample from SCB 28 and total petroleum hydrocarbons as diesel (TPHd) (900 mg/kg) was detected in the soil sample from CB398 02. There were no other detections of petroleum hydrocarbons or benzene at this depth or shallower.

The zone from 20-feet to 40-feet below ground surface reflects the presence of the relatively less permeable zone extending from approximately 35 feet to 60 feet below ground surface. The less permeable zone is composed of horizontally laminated silty clay that creates a perched-like zone, concentrating petroleum hydrocarbons. TPHg concentrations ranged from 1.1 mg/kg in boring SCB 01 to 8,500 in boring SCB 10. Benzene was detected in one sample, CB398 02 (1.8 µg/L leachate) at a 40-foot depth. The relatively impermeable layer appears to act as a barrier to product migrating downward and is thought to act as a barrier to vapors migrating upward.

In the interval from approximately 40 to 190 feet below ground surface, TPHg, TPHd, and TPH JP5 were all detected. Benzene was detected only once in soil sample CB398 10 (360J µg/kg) at 188 feet below ground surface.

The general interpretation of these data is that there are no significant residual constituents in the vadose zone shallower than at a 20-foot depth and very limited residual constituents between a 20- and 40-foot depth, as shown in the cross sections in Figure 4-2 and Figure 4-3. The occurrence of the less permeable stratigraphic layer extending from 35 feet to approximately 60 feet below ground surface acts as a perched layer to some residual petroleum hydrocarbons and as a barrier to soil vapor from the relatively high concentrations of petroleum hydrocarbons in the strata below a 60-foot depth.

Section 5
Conclusions and Recommendations

The following conclusions and recommendations were made based on the findings in previous investigation activities and results of corrective actions.

5.1 Conclusions

Tank 398, a former JP-5 storage tank, was removed in 1993 and the release of JP-5 from this site has been remediated using free product recovery techniques and SVE technology. Benzene, a primary risk driver for the site, is present in concentrations less than 0.5 percent by weight in JP-5 fuel and residual levels in the vadose zone have been significantly reduced as a result of the remediation projects. To date, approximately 18,000 gallons of petroleum hydrocarbons have been removed from the vadose zone using the SVE system and 10,000 gallons recovered using a free product recovery system. Benzene concentrations in the extracted soil vapor were reduced from the initial 181 µg/L in 1996 to 3.2 µg/L at the end of SVE operation in 1999.

Groundwater is located approximately 180 to 210 feet below ground surface at the site. The approximate dimensions of the dissolved-phase plume have remained relatively constant during the six years of groundwater monitoring. The groundwater gradient is north-northwest and the dissolved phase plume is aligned in this direction. The free product plume is not flowing in the direction of the regional gradient but is flowing toward the southwest along a channel deposit.

The active systems have reached their technical limitations and are no longer cost effective. Engineering evaluation indicates that natural attenuation is effectively controlling the migration of the dissolved phase plume. The levels of geochemical indicators in the groundwater clearly illustrate that natural attenuation has been occurring. Indigenous microorganisms are using available supplies of dissolved oxygen, nitrate, iron, manganese, and sulfate as the electron acceptors to biodegrade the petroleum hydrocarbon compounds in the water.

5.2 Recommendations

The SVE and free-product recovery system implemented has reached its limitation due to the lithology of the site. Future operation of the remediation system would no longer be cost-effective. In addition, the SVE system has successfully removed the TPH contamination in the upper 20 feet of soil in the vadose zone. The potential surface exposure to human receptors by the contaminated soil vapor has been shown to be negligible. In addition, the groundwater monitoring data indicated the groundwater plume has been stable since 1996. Therefore, no further action in the vadose zone is recommended.

It is recommended that monitored natural attenuation be implemented for a five-year period followed by long-term monitoring of the plume. The natural attenuation parameters will be evaluated on an annual basis and summarized in an annual monitoring report. It is also proposed

that on-site groundwater extraction for any beneficial use be prohibited until the remediation is completed.

A modified network of wells is proposed to monitor the progress of natural attenuation based on the historical groundwater monitoring data. Details of the proposed network are discussed below.

An effective monitoring well network is a key factor in the successful implementation of the natural attenuation approach for remediation of groundwater contamination. Groundwater levels have risen since 1994 at an approximate rate of 2 feet per year. The screen intervals of most of the existing older wells are currently submerged in groundwater, making them unusable for the original design functions. We have evaluated the current conditions of all monitoring wells and implemented measures to effectively monitor free product and the dissolved phase plume at this site, described in the following paragraphs.

The future monitoring network will include new wells, replacement wells, and existing wells. The new wells have been installed in locations with no existing wells. The replacement wells have been installed next to existing wells in strategic locations that have totally submerged screen intervals. Existing wells, strategically located and properly screened, may also be incorporated into the network.

In order to locate new wells, soil data from confirmation borings and shallow borings, groundwater data from existing wells, and Hydropunch samples were used to evaluate optimum monitoring locations. Figure 4-1 shows the shallow soil boring and hydropunch groundwater sample locations and the new and replacement groundwater monitoring well locations. Current conditions of the existing groundwater monitoring wells are summarized in Table 2-1. Details of the proposed well and boring locations are discussed below and summarized in Table 5-1.

New Wells – Three additional groundwater monitoring wells complete monitoring coverage in all directions for potential groundwater plume migration. As shown in Figure 5-2, well MW398-28 is located approximately 120 feet west of well RW398-01 to delineate the western extent of the free-product layer. Two wells are recommended to delineate the dissolved-phase plume: one (MW398-29) approximately 200 feet west of well MW 398-17, and one (MW398-30) approximately 100 feet northeast of well MW398-04. Hydropunch groundwater sampling was used to assess the final locations of these wells.

Replacement Wells – Two types of replacement wells were installed: boundary well MW398-19D, located near the center of the free-product layer and hot spot well ASMW3908-02D, located at the midpoint of the dissolved-phase plume.

Existing Wells – Six existing wells are recommended for incorporation into the future groundwater monitoring network. Four wells,(MW398-01, MW398-12, MW398-21, and MW398-27) will monitor groundwater quality at the edge of the plume. Well RW398-02 is located near the center of the free-product layer and well MW398-17 will monitor groundwater quality near the midpoint of the plume.

In summary, the proposed future groundwater monitoring network at the site consists of eleven wells as follows:

- Seven wells at the plume boundary (MW398-01, MW398-12, MW398-21, MW398-27, MW398-28, MW398-29, and MW398-30)
- Two wells at the hot spots (MW398-19D and RW398-02)
- Two wells at the midpoints of the plume (MW398-17 and ASMW-02D).

Section 6
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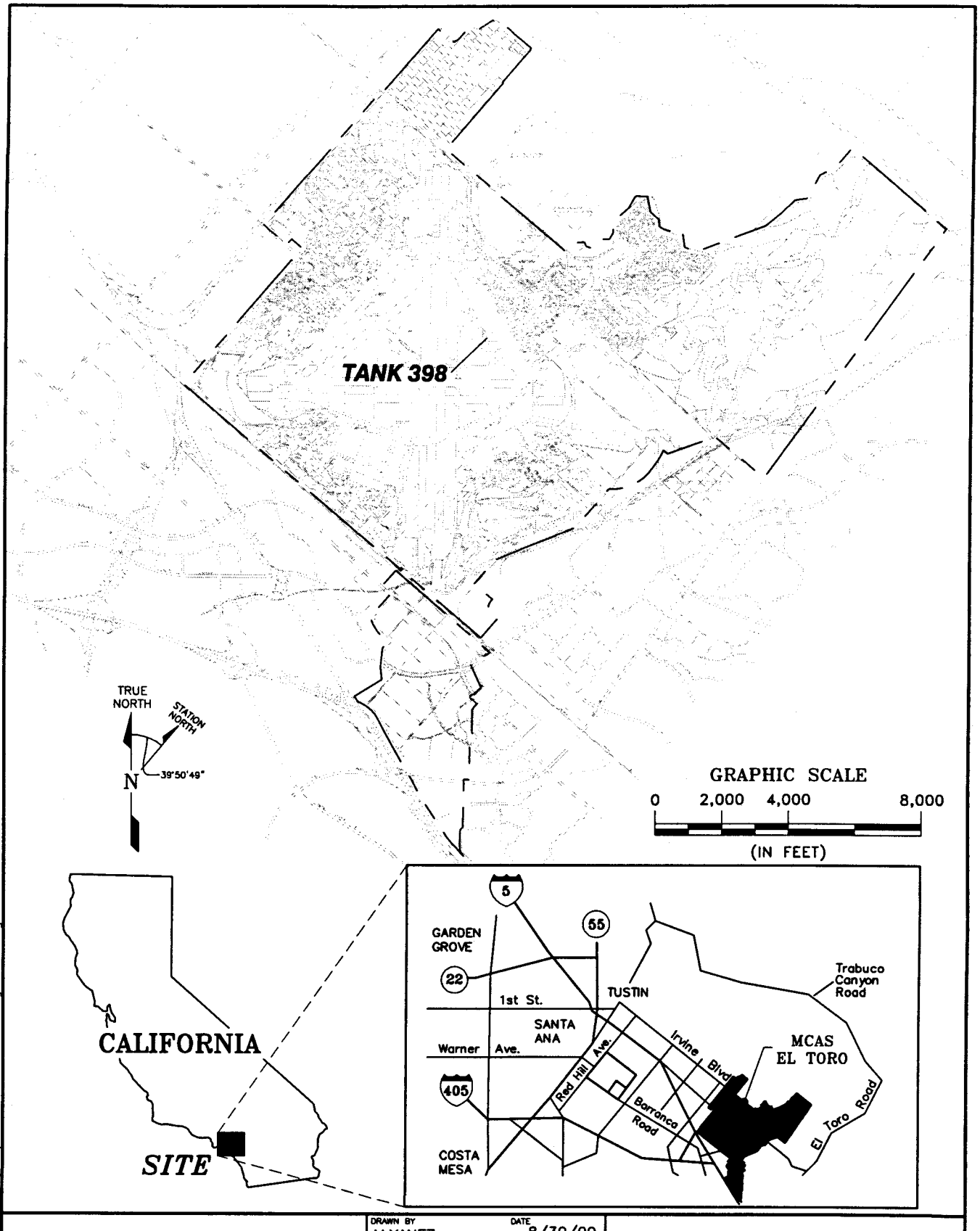
Figures



OHM Remediation Services Corp. A Subsidiary of OHM Corporation, SAN DIEGO, CA				DRAWN BY M.YANEZ	DATE 8/30/00	VICINITY MAP TANK 398			
				CHECKED BY G. Berger	DATE 11-17-00				
				APPROVED BY	DATE				
CONTRACT NAME SWDIV				PROJECT MANAGER DR	DATE 11/19/00	MARINE CORPS AIR STATION EL TORO, CALIFORNIA			
AUTOCAD FILE No. FIG_1-1.DWG	PLOT SCALE 1=1	SHEET 1	OF 1	SCALE 1"=4,000'	DOCUMENT CONTROL No. SW8989	OHM PROJECT No. 920242	FIGURE No. FIG 1-1	REVISION 0	

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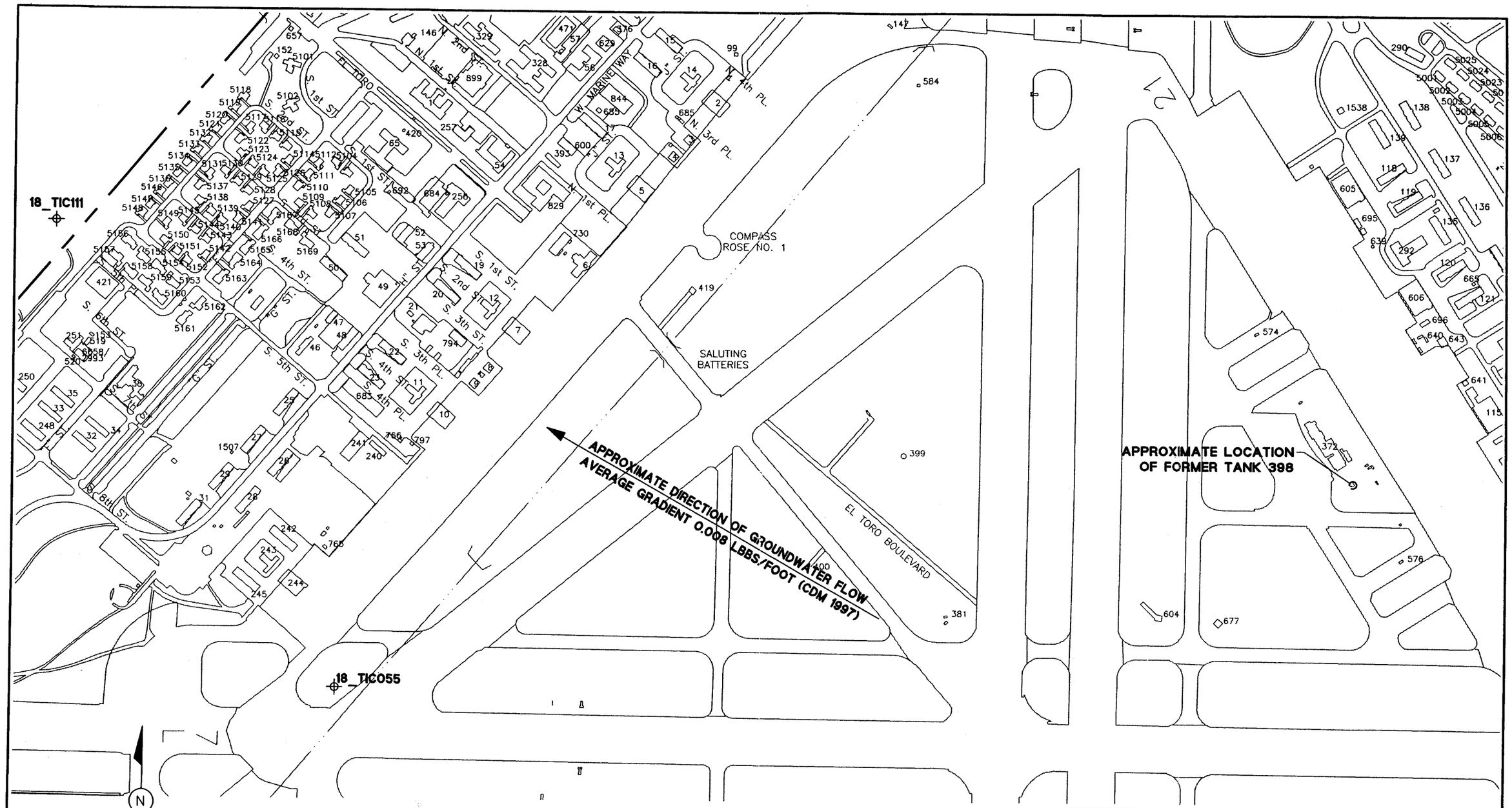

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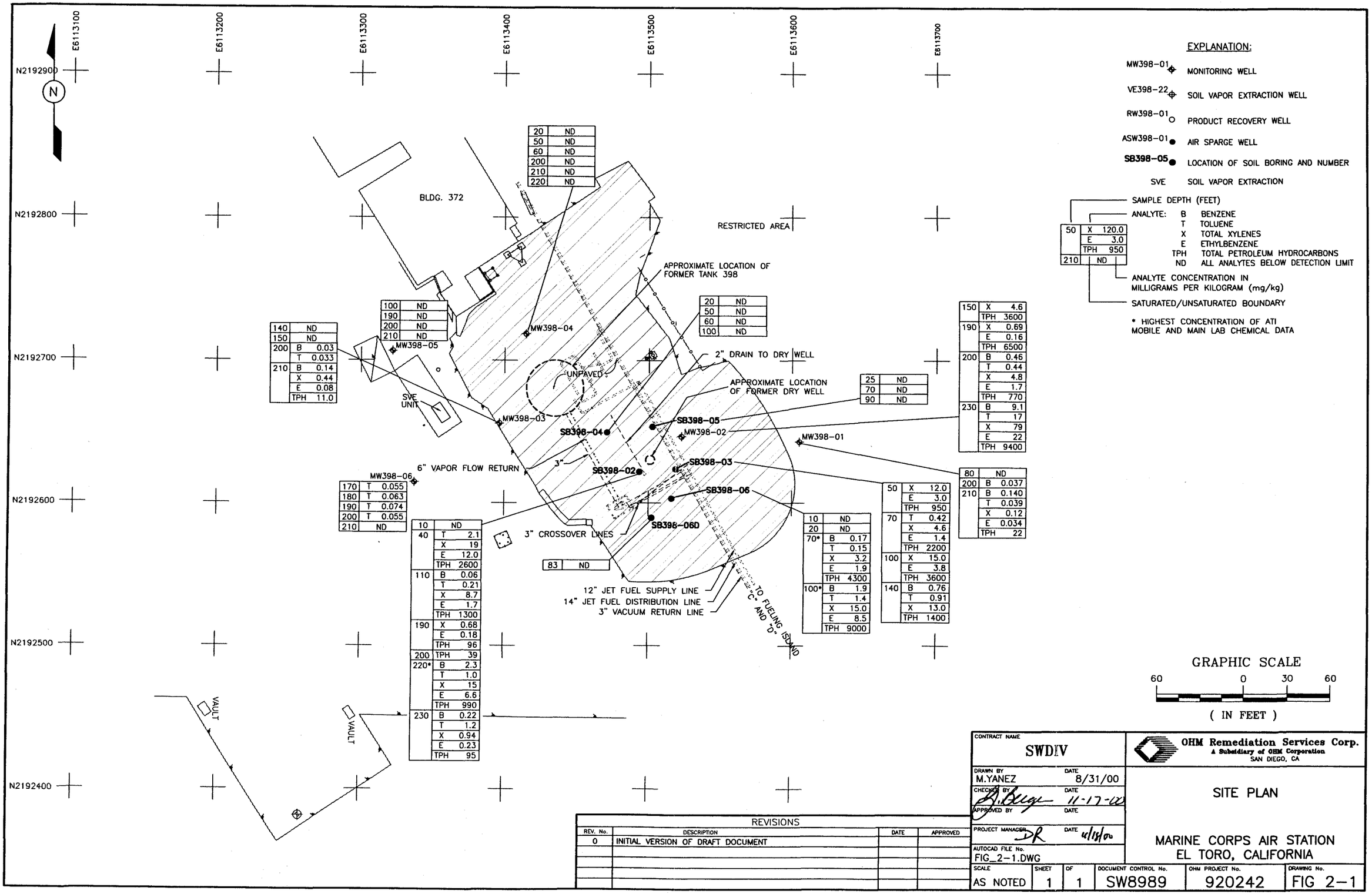
DRAWN BY	M.YANEZ
DATE	8/31/00
CHECKED BY	A. Bulga
DATE	11-17-00
APPROVED BY	
DATE	
PROJECT MANAGER	DR
DATE	4/18/00
AUTOCAD FILE No.	FIG_1-2

OHM Remediation Services Corp.
A Subsidiary of OHM Corporation
SAN DIEGO, CA

SITE LOCATION MAP
TANK 398 SITE

MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
AS NOTED	1	1	SW8989	920242	FIG 1-2



EXPLANATION:

- MW398-01 ⊕ MONITORING WELL
- VE398-22 ⊕ SOIL VAPOR EXTRACTION WELL
- RW398-01 ○ PRODUCT RECOVERY WELL
- ASW398-01 ● AIR SPARGE WELL
- SB398-05 ● LOCATION OF SOIL BORING AND NUMBER
- SVE SOIL VAPOR EXTRACTION

50	X	120.0
	E	3.0
	TPH	950
210	ND	

- SAMPLE DEPTH (FEET)
- ANALYTE: B BENZENE; T TOLUENE; X TOTAL XYLENES; E ETHYLBENZENE; TPH TOTAL PETROLEUM HYDROCARBONS; ND ALL ANALYTES BELOW DETECTION LIMIT
- ANALYTE CONCENTRATION IN MILLIGRAMS PER KILOGRAM (mg/kg)
- SATURATED/UNSATURATED BOUNDARY

* HIGHEST CONCENTRATION OF ATI MOBILE AND MAIN LAB CHEMICAL DATA

GRAPHIC SCALE

60 0 30 60

(IN FEET)

REVISIONS			
REV. No.	DESCRIPTION	DATE	APPROVED
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CONTRACT NAME: SWDIV

OHM Remediation Services Corp.
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SAN DIEGO, CA

DRAWN BY: M.YANEZ DATE: 8/31/00
CHECKED BY: B.Beigi DATE: 11-17-00
APPROVED BY: DATE:
PROJECT MANAGER: DR DATE: 11/15/00
AUTOCAD FILE No.: FIG_2-1.DWG

SITE PLAN

MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
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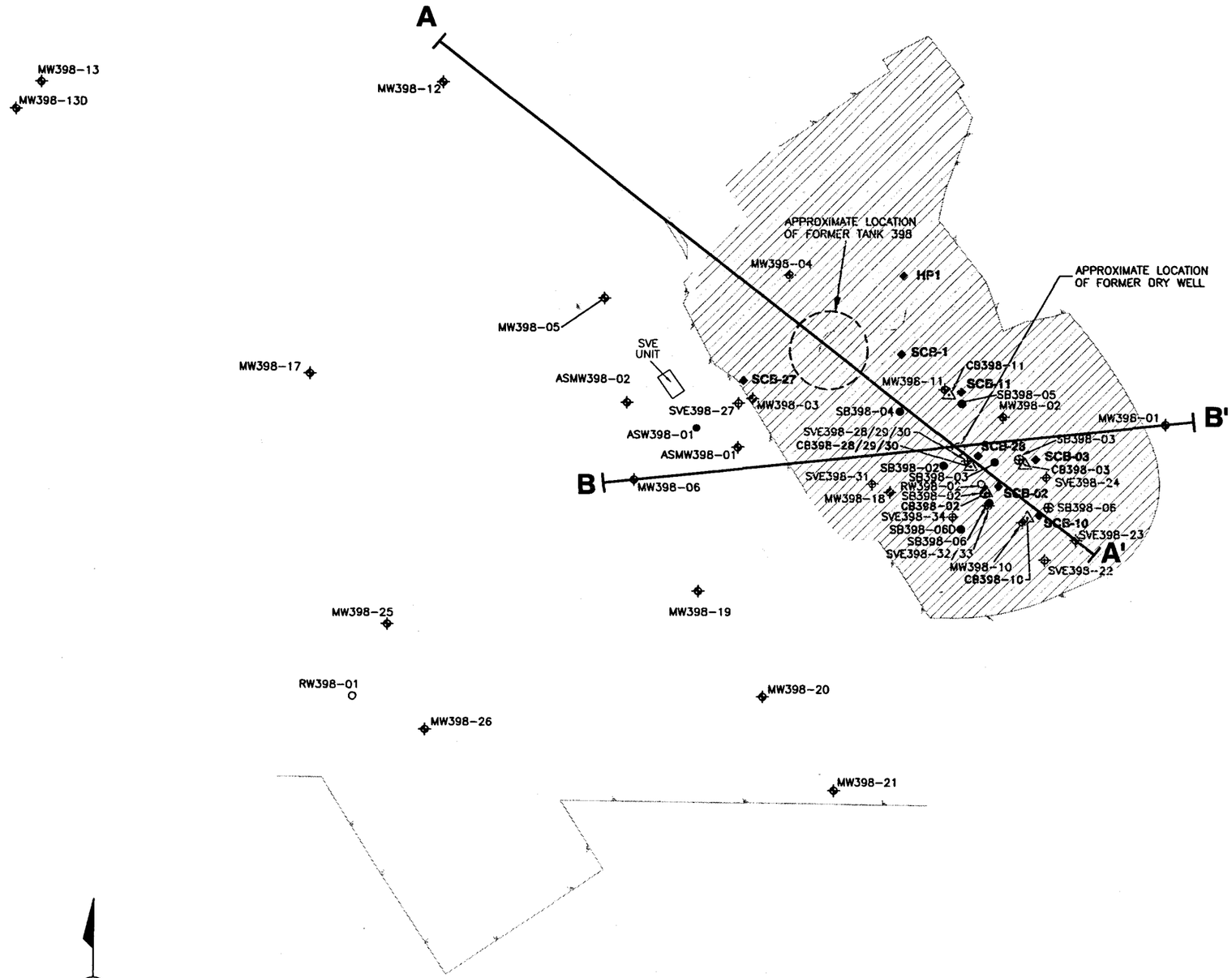


EXPLANATION:

MW398-11 ◆	MONITORING WELL
SVE398-22 ⊕	SOIL VAPOR EXTRACTION WELL
RW398-01 ○	PRODUCT RECOVERY WELL
ASW398-01 ●	AIR SPARGE WELL
SB398-02 ⊕	SOIL BORING (APPROXIMATE LOCATION) R.L. STOLLER AND ASSOCIATES.
CB398-10 △	JANUARY 2000 CONFIRMATION BORING LOCATION
SB398-01 ●	SOIL BORING, PREVIOUS INVESTIGATIONS
SCB-1 ◆	JUNE 2000 SHALLOW CONFIRMATION BORING
	UNPAVED AREA

REVISIONS

REV. No.	DESCRIPTION	DATE	APPROVED
		3/30/98	

CONTRACT NAME: SWDIV

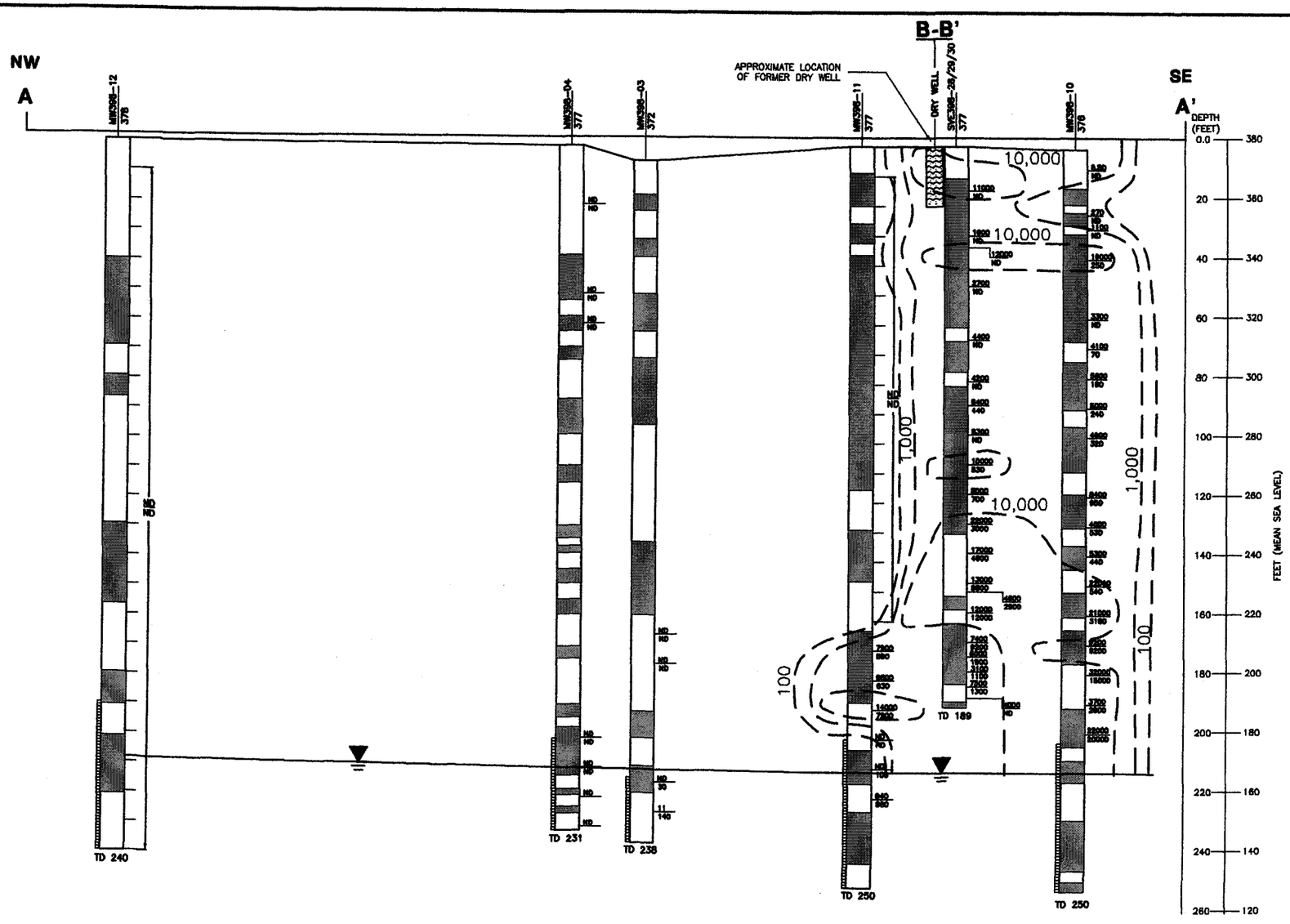
OHM Remediation Services Corp.
A Subsidiary of OHM Corporation
SAN DIEGO, CA

DRAWN BY: M.YANEZ	DATE: 8/31/00
CHECKED BY: G Berge	DATE: 11-17-00
APPROVED BY:	DATE:
PROJECT MANAGER: DR	DATE: 11/15/00
AUTOCAD FILE No.: FIG_2-2.DWG	

SAMPLE LOCATION PLAN

MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
1"=60'	1	1	SW8989	920242	FIG 2-2



EXPLANATION:

- TPH= mg/kg, BENZENE= µg/kg
- WELL SCREEN INTERVAL
- SOIL WITH MODERATE TO HIGH PERMEABILITY
- SOIL WITH LOW TO MODERATE PERMEABILITY
- APPROXIMATE GROUNDWATER LEVEL, FEBRUARY 1992
- TPH IN mg/kg, DASHED WHERE INFERRED

VERTICAL SCALE (FEET) 40' / 0 / HORIZONTAL SCALE (FEET) 40'

NOTES:

BENZENE CONCENTRATIONS PLOTTED IN µg/kg, BUT NOT CONTURED.

REVISIONS			
REV. No.	DESCRIPTION	DATE	APPROVED

CONTRACT NAME: SWDIV

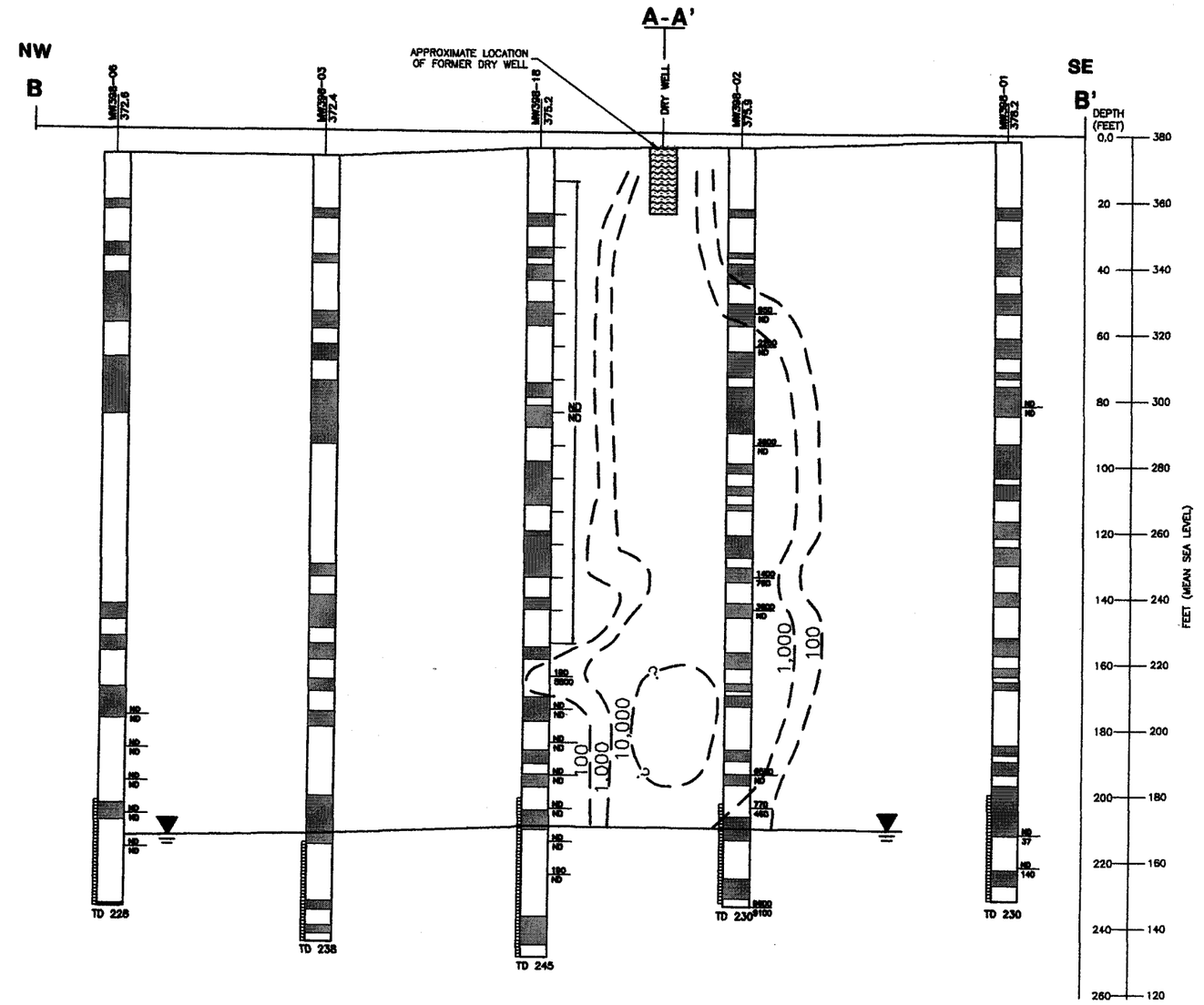
OHM Remediation Services Corp.
A Subsidiary of OHM Corporation
SAN DIEGO, CA

DRAWN BY: M.YANEZ — DATE: 9/2/00
CHECKED BY: — DATE: 11-17-00
APPROVED BY: — DATE:
PROJECT MANAGER: DR — DATE: 11/17/00
AUTOCAD FILE No.: FIG_2-3.DWG

GEOLOGIC CROSS-SECTION A-A' 1993

MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
AS NOTED	1	1	SW8989	920242	FIG 2-3



EXPLANATION:

TPH= mg/kg
BENZENE= µg/kg

WELL SCREEN INTERVAL

SOIL WITH MODERATE TO HIGH PERMEABILITY

SOIL WITH LOW TO MODERATE PERMEABILITY

APPROXIMATE GROUNDWATER LEVEL, FEBRUARY 1992

TPH IN mb/kg, DASHED WHERE INFERRED

VERTICAL SCALE (FEET) 40' 0

HORIZONTAL SCALE (FEET) 40'

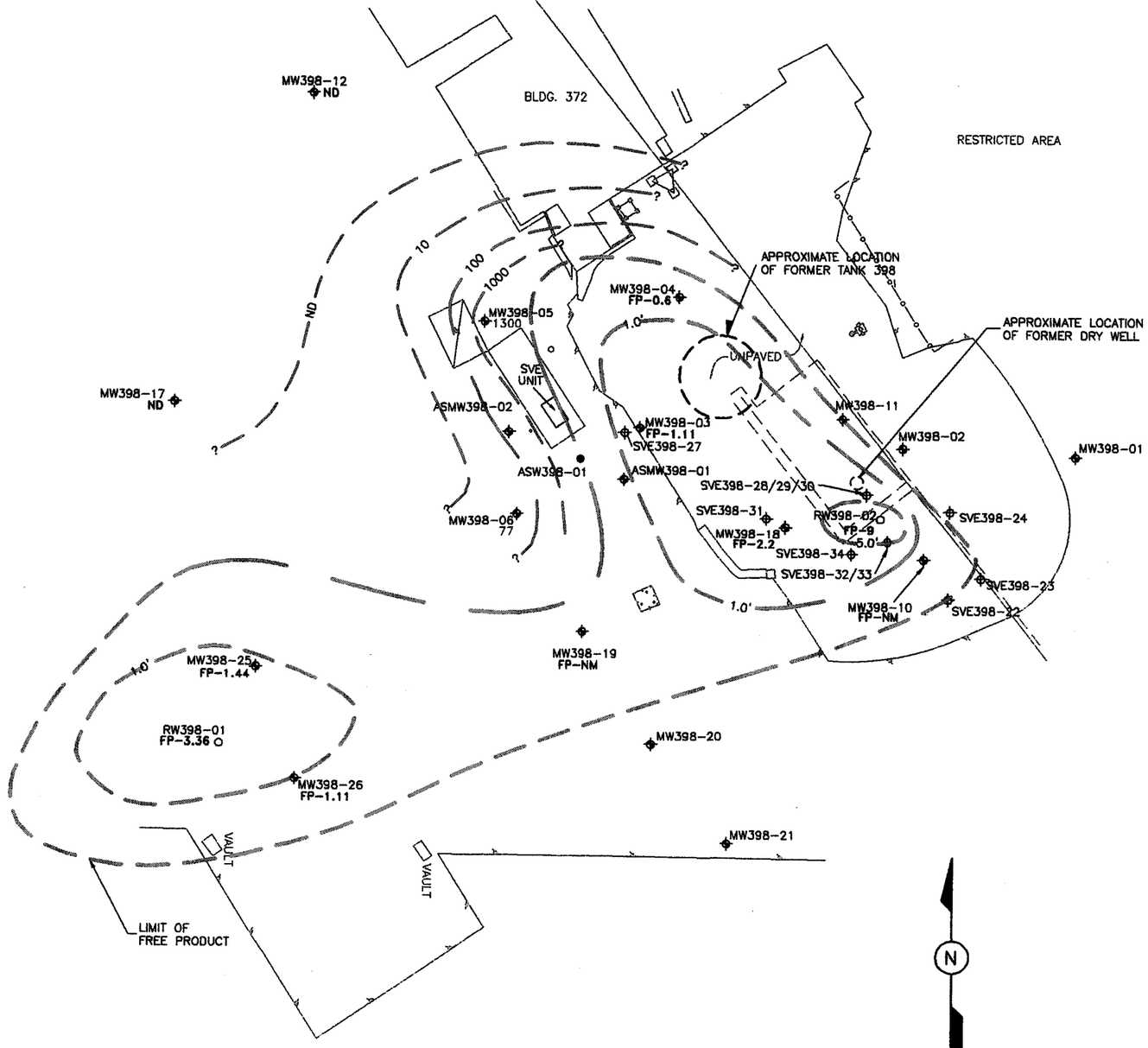
NOTES:

1. BENZENE CONCENTRATION PLOTTED IN µg/kg, BUT NOT CONTOURED.

REVISIONS			
REV. No.	DESCRIPTION	DATE	APPROVED

CONTRACT NAME: SWDIV	OHM Remediation Services Corp. A Subsidiary of OHM Corporation SAN DIEGO, CA
DRAWN BY: M.YANEZ DATE: 9/2/00	GEOLOGIC CROSS-SECTION B-B' 1993
CHECKED BY: DATE: 11-17-00	
APPROVED BY: DATE:	
PROJECT MANAGER: DR DATE: 11/17/00	MARINE CORPS AIR STATION EL TORO, CALIFORNIA
AUTOCAD FILE No.: FIG_2-4.DWG	

SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
AS NOTED	1	1	SW8989	920242	FIG 2-4



EXPLANATION:

MW398-11 ⊕	MONITORING WELL
SVE398-22 ⊕	SOIL VAPOR EXTRACTION WELL
RW398-01 ○	PRODUCT RECOVERY WELL
ASW398-01 ●	AIR SPARGE WELL
1300	BENZENE CONCENTRATION IN µg/L
ND	BENZENE NOT DETECTED AT CONCENTRATION EQUAL TO OR ABOVE STATED LABORATORY REPORTING LIMIT
NS	NO PRODUCT BOUNDARY
FP-NM	FREE PRODUCT THICKNESS IN FEET
FP-9	FREE PRODUCT PRESENT, THICKNESS NOT REPORTED BECAUSE SCREEN WAS SUBMERGED
	FREE PRODUCT THICKNESS IN FEET. DASHED WHERE INFERRED.
	BENZENE IN GROUNDWATER – CONCENTRATION IN µg/L. DASHED WHERE INFERRED.

N

GRAPHIC SCALE

0 30 60 120

(IN FEET)

REVISIONS

REV. No.	DESCRIPTION	DATE	APPROVED
		3/30/98	

CONTRACT NAME: SWDIV

OHM Remediation Services Corp.
A Subsidiary of OHM Corporation
SAN DIEGO, CA

DRAWN BY: M.YANEZ DATE: 9/2/00

CHECKED BY: L. Berg DATE: 11-17-00

APPROVED BY: DATE:

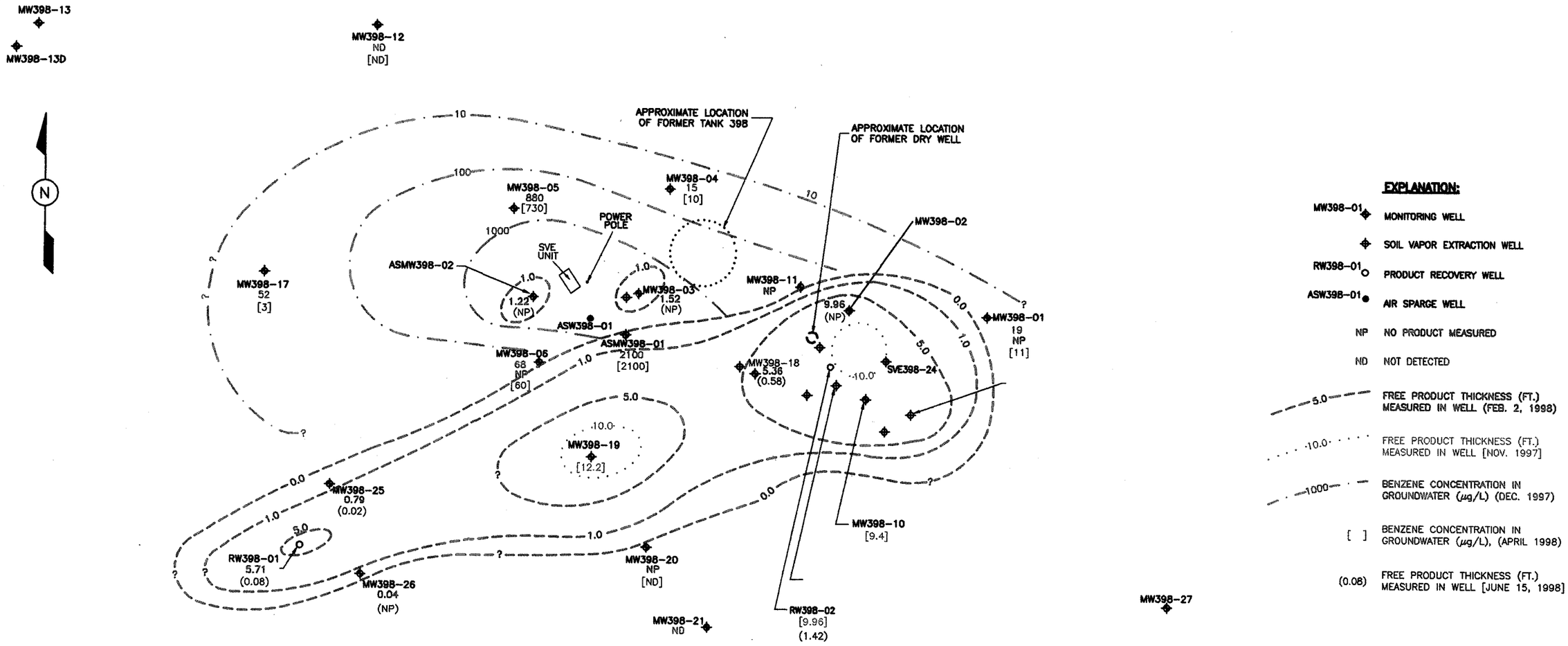
PROJECT MANAGER: DR DATE: 11/17/00

AUTOCAD FILE No.: FIG_2-5.DWG

FREE PRODUCT THICKNESS AND DISSOLVED TPH AND BENZENE CONCENTRATIONS IN GROUNDWATER 1996

MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
1"=60'	1	1	SW8989	920242	FIG 2-5



REVISIONS			
REV. No.	DESCRIPTION	DATE	APPROVED
01	16716013.DWG OHM DRAWING BY R. PIRMORADIAN	11/19/98	
02	20242005.DWG OHM DRAWING BY R. PIRMORADIAN	03/12/98	
03	20242014.DWG OHM DRAWING BY R. PIRMORADIAN	03/30/98	

CONTRACT NAME: SWDIV

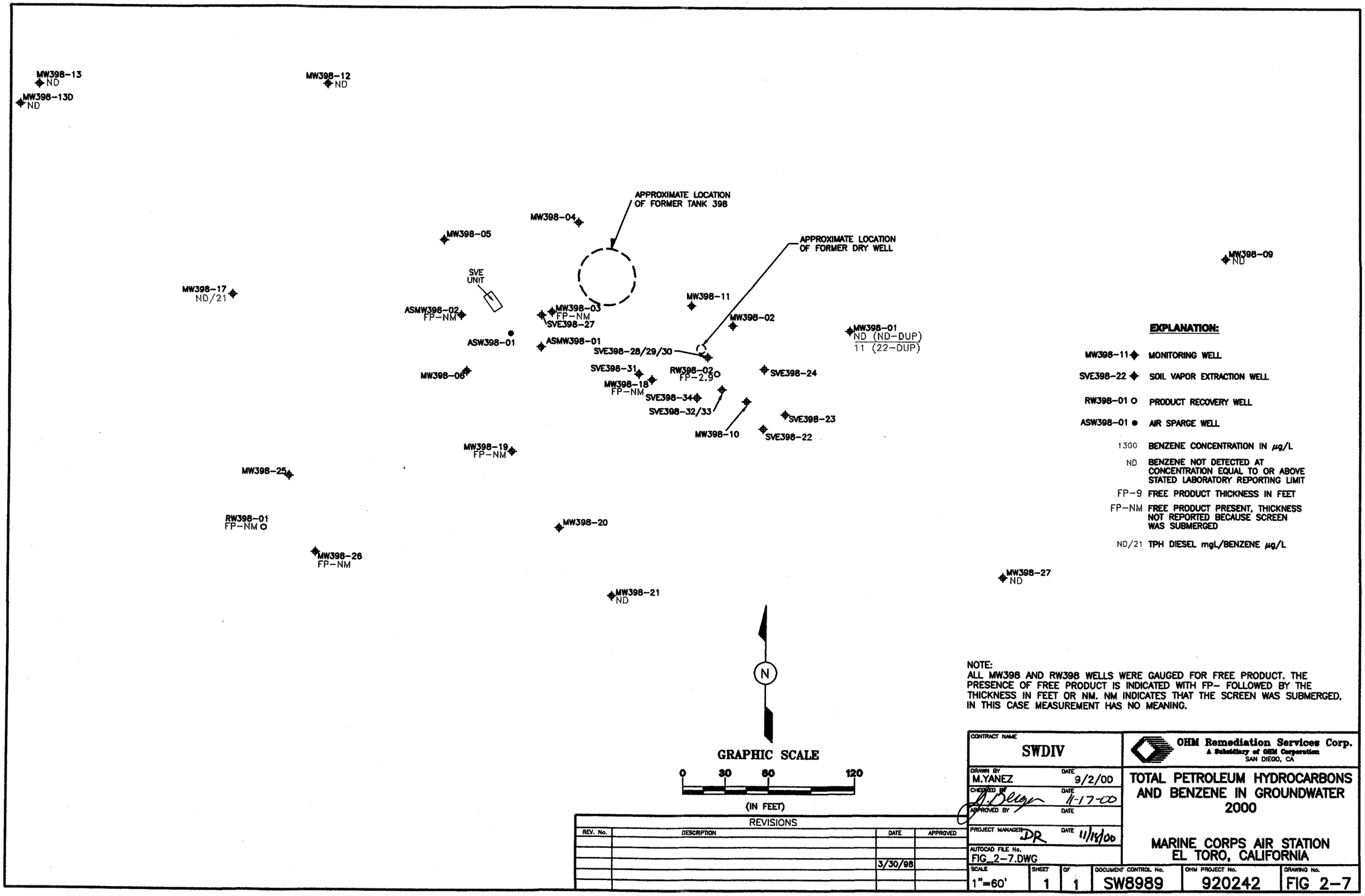
OHM Remediation Services Corp.
A Subsidiary of OHM Corporation
SAN DIEGO, CA

DRAWN BY: M.YANEZ DATE: 9/2/00
CHECKED BY: DATE: 11-17-00
APPROVED BY: DATE:
PROJECT MANAGER: DR DATE: 11/18/00
AUTOCAD FILE No.: FIG_2-6.DWG

FREE PRODUCT THICKNESS AND DISSOLVED TPH AND BENZENE CONCENTRATIONS IN GROUNDWATER 1998

MARINE CORPS AIR STATION EL TORO, CALIFORNIA

SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
AS NOTED	1	1	SW8989	920242	FIG 2-6



EXPLANATION:

MW398-11 ◆	MONITORING WELL
SVE398-22 ◆	SOIL VAPOR EXTRACTION WELL
RW398-01 ○	PRODUCT RECOVERY WELL
ASW398-01 ●	AIR SPARGE WELL
1300	BENZENE CONCENTRATION IN µg/L
ND	BENZENE NOT DETECTED AT CONCENTRATION EQUAL TO OR ABOVE STATED LABORATORY REPORTING LIMIT
FP-9	FREE PRODUCT THICKNESS IN FEET
FP-NM	FREE PRODUCT PRESENT, THICKNESS NOT REPORTED BECAUSE SCREEN WAS SUBMERGED
ND/21	TPH DIESEL mgL/BENZENE µg/L

NOTE:
ALL MW398 AND RW398 WELLS WERE GAUGED FOR FREE PRODUCT. THE PRESENCE OF FREE PRODUCT IS INDICATED WITH FP- FOLLOWED BY THE THICKNESS IN FEET OR NM. NM INDICATES THAT THE SCREEN WAS SUBMERGED, IN THIS CASE MEASUREMENT HAS NO MEANING.

REVISIONS			
REV. No.	DESCRIPTION	DATE	APPROVED
		3/30/98	

CONTRACT NAME: SWDIV

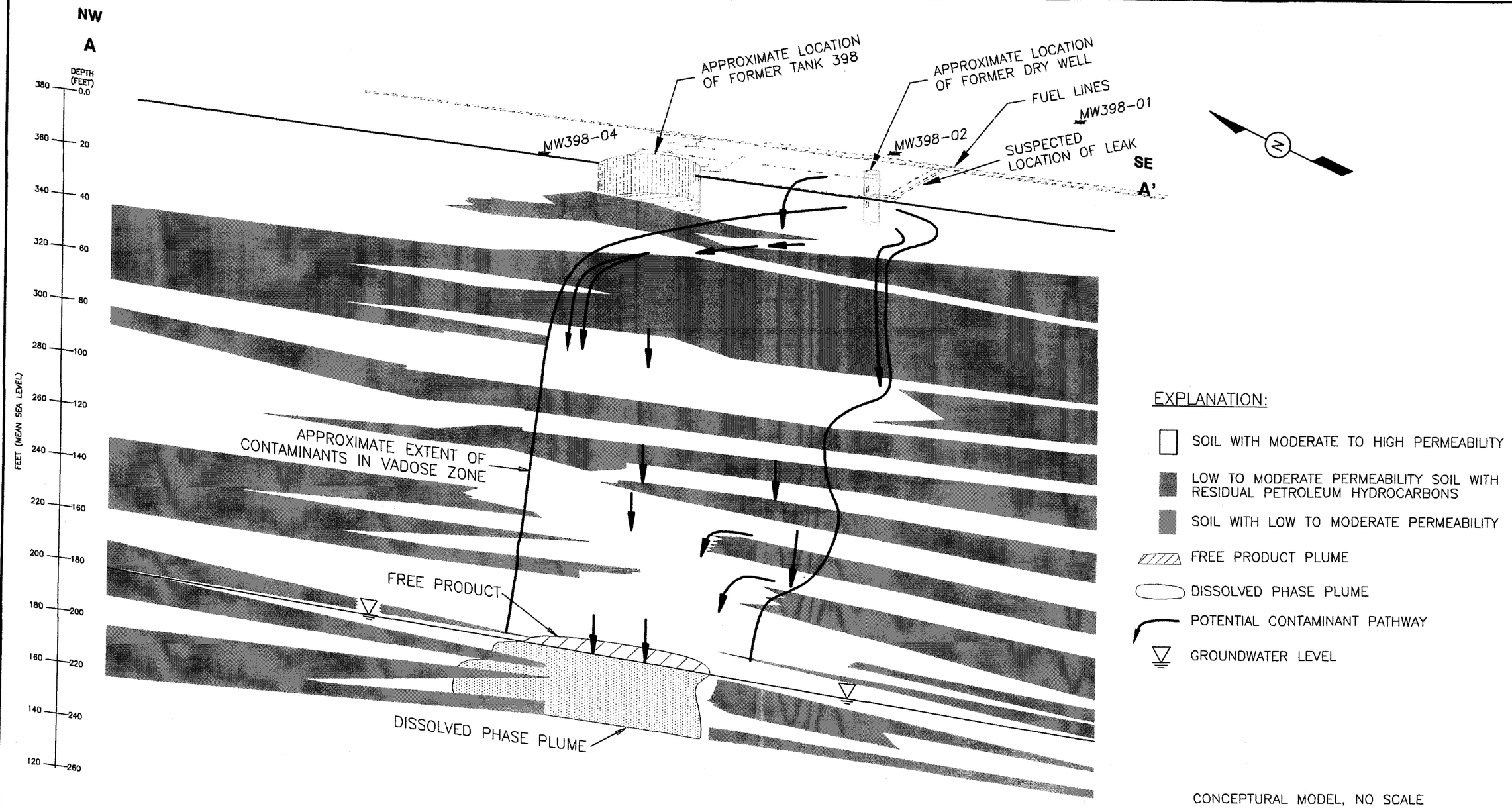
OHM Remediation Services Corp.
A Subsidiary of OHM Corporation
SAN DIEGO, CA

DRAWN BY: M.YANEZ — DATE: 9/2/00
CHECKED BY: — DATE: 11-17-00
APPROVED BY: — DATE:
PROJECT MANAGER: DR — DATE: 11/15/00
AUTOCAD FILE No.: FIG_2-7.DWG

TOTAL PETROLEUM HYDROCARBONS AND BENZENE IN GROUNDWATER 2000

MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
1"=60'	1	1	SW8989	920242	FIG 2-7



CONCEPTURAL MODEL, NO SCALE

Witzel-Yanez Design 11/17/00 2:38 PM fig_2-8.dwg

REV. No.	APPROVED
0	

CONTRACT NAME: SWDIV

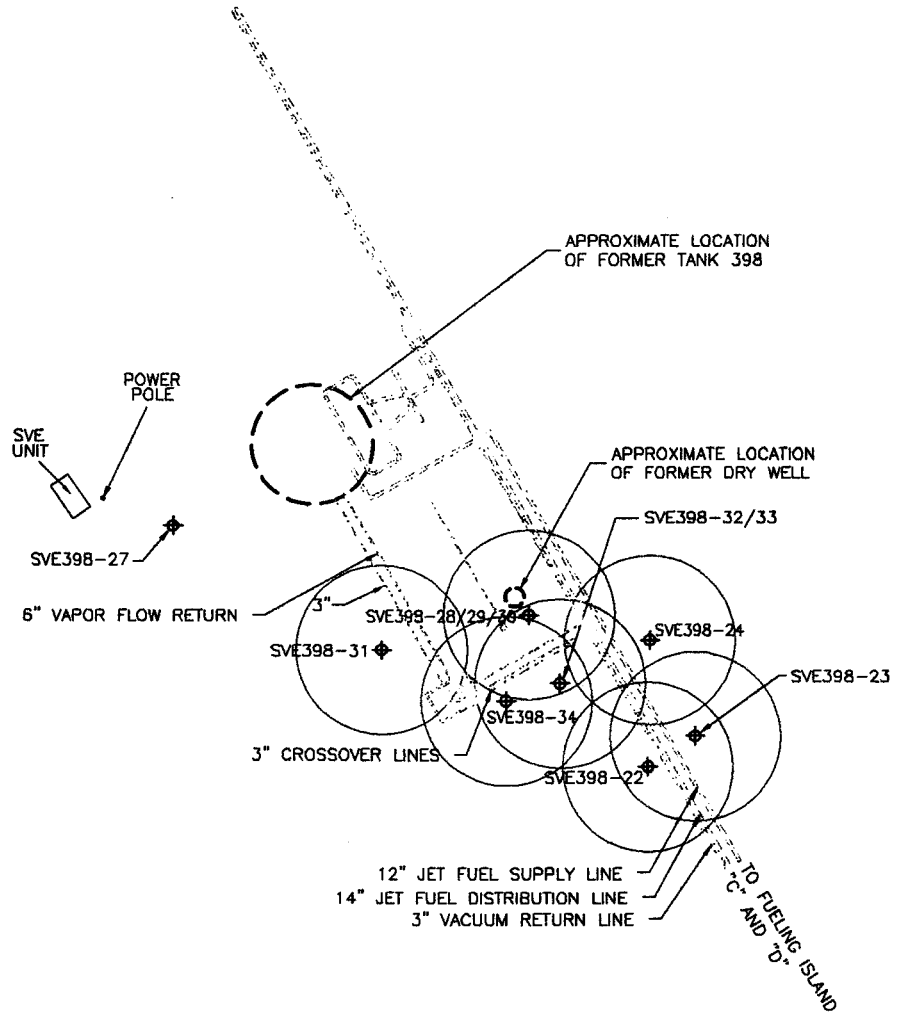
OHM Remediation Services Corp.
A Subsidiary of OHM Corporation
SAN DIEGO, CA

DRAWN BY: M.YANEZ DATE: 11/14/00
CHECKED BY: DATE: 11.20.00
APPROVED BY: DATE:
PROJECT MANAGER: DR DATE: 4/22/00
AUTOCAD FILE No.: FIG_2-8.DWG

CONCEPTUAL MODEL OF PETROLEUM CONTAMINATION AT TANK 398 SITE

MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
NONE	1	1	SW8989	920242	FIG 2-8



GRAPHIC SCALE

0 30 60 120

(IN FEET)

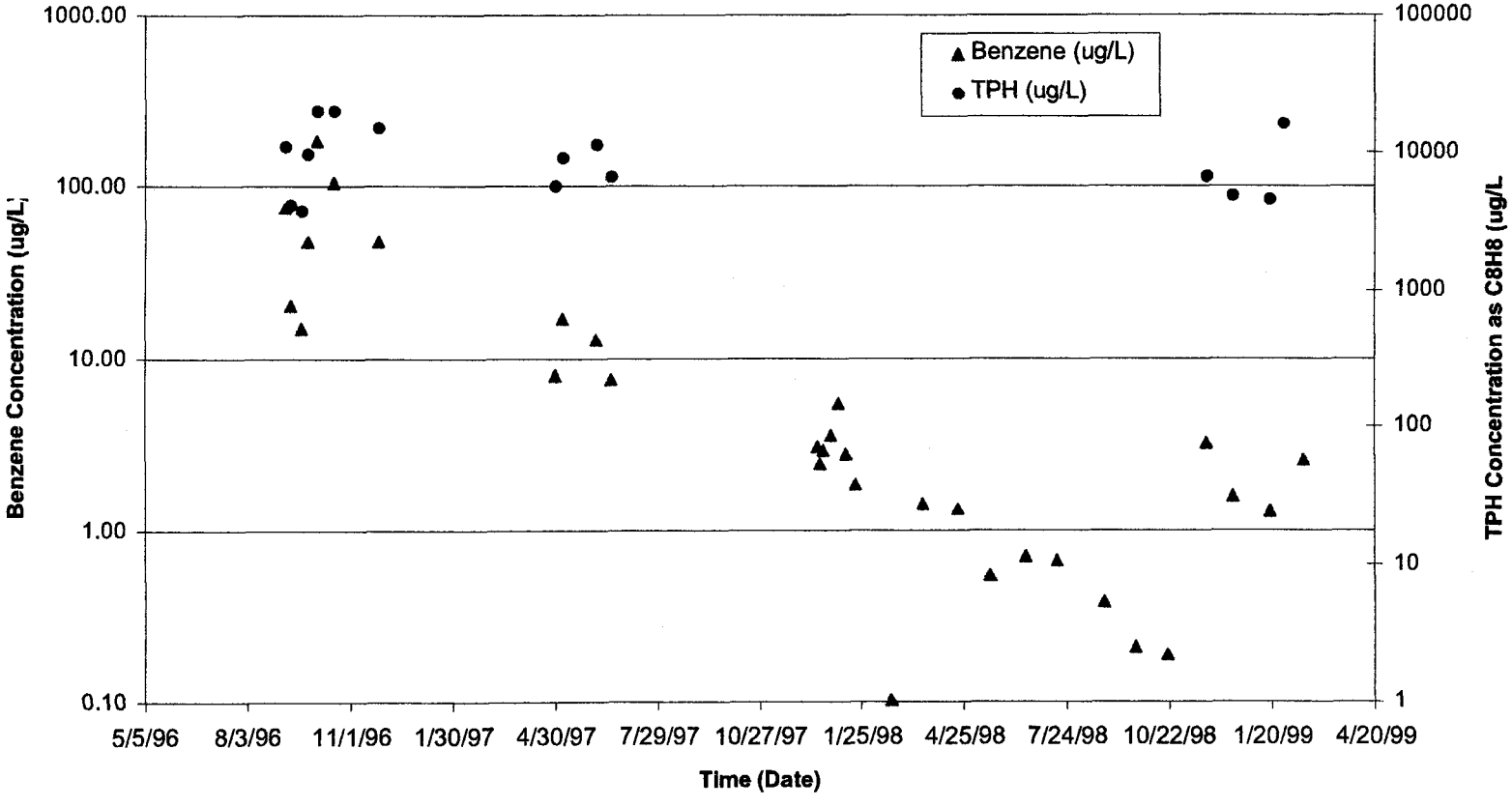
EXPLANATION:

SVE398-22 SOIL VAPOR EXTRACTION WELL

APPROXIMATE SOIL VAPOR EXTRACTION WELL RADIUS OF INFLUENCE

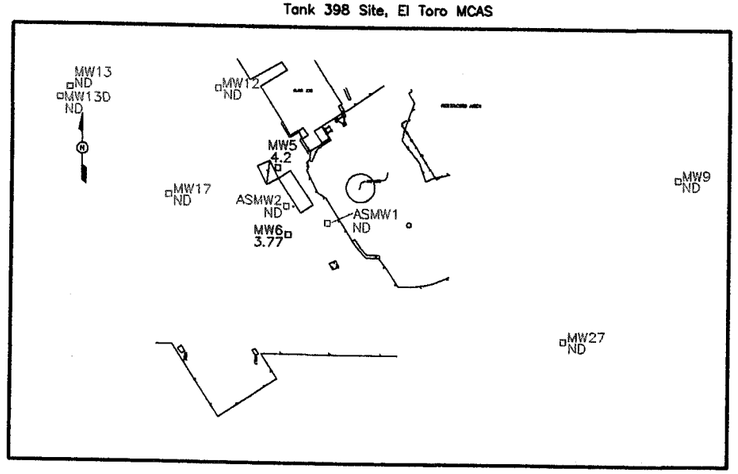
OHM Remediation Services Corp. A Subsidiary of OHM Corporation SAN DIEGO, CA	DRAWN BY M.YANEZ DATE 8/30/00	SOIL VAPOR EXTRACTION WELL LOCATIONS	
	CHECKED BY DATE 11-17-00		
	APPROVED BY DATE		
CONTRACT NAME SWDIV	PROJECT MANAGER DR DATE 11/17/00	MARINE CORPS AIR STATION EL TORO, CALIFORNIA	

AUTOCAD FILE No.	PLOT SCALE	SHEET	OF	SCALE	DOCUMENT CONTROL No.	OHM PROJECT No.	FIGURE No.	REVISION
FIG_3-1.DWG	1=1	1	1	1"=4,000'	SW8989	920242	FIG 3-1	0

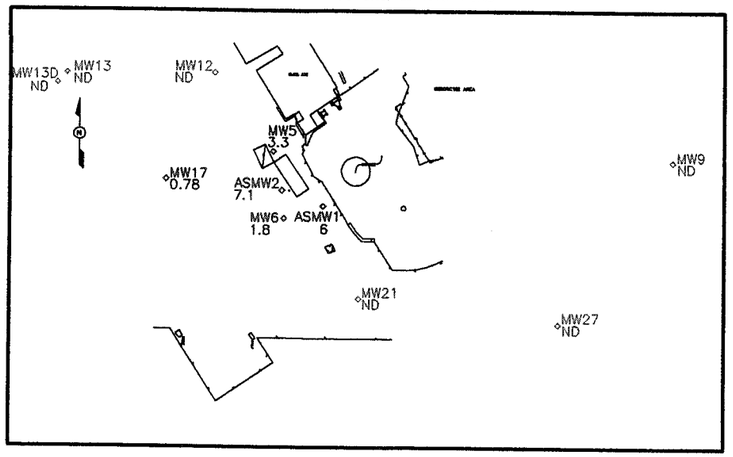


OHM Remediation Services Corp. A Subsidiary of OHM Corporation SAN DIEGO, CA				DRAWN BY M.YANEZ	DATE 9/7/00	TPH AND BENZENE CONCENTRATION VS. TIME			
				CHECKED BY	DATE 11-17-00				
				APPROVED BY	DATE				
CONTRACT NAME SWDIV				PROJECT MANAGER	DATE 11/20/00	MARINE CORPS AIR STATION EL TORO, CALIFORNIA			
AUTOCAD FILE No. FIG_3-2.DWG	PLOT SCALE 1=1	SHEET 1	OF 1	SCALE NONE	DOCUMENT CONTROL No. SW8989	OHM PROJECT No. 920242	FIGURE No. FIG 3-2	REVISION 0	

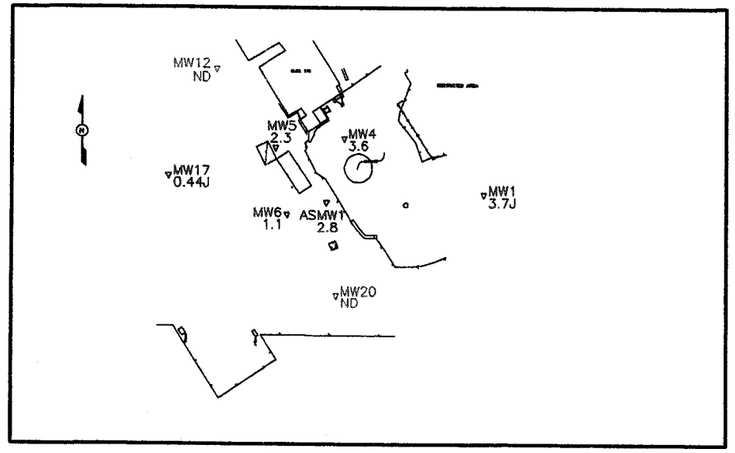
Concentration of TPH as Diesel in May/June 1996
Tank 398 Site, El Toro MCAS



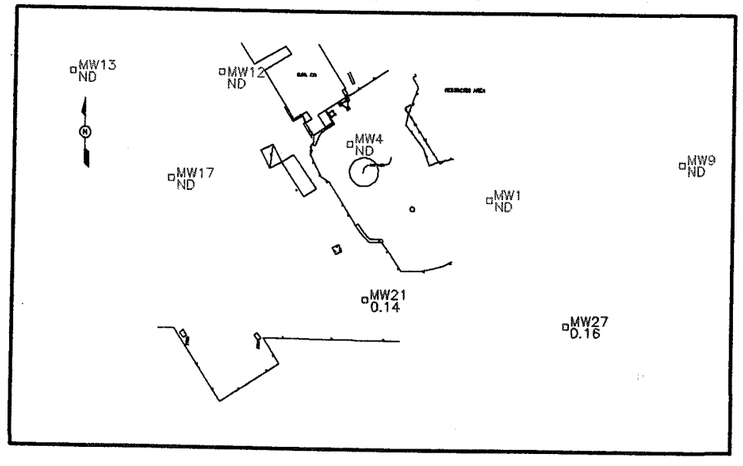
Concentration of TPH as Diesel in April 1997
Tank 398 Site, El Toro MCAS



Concentration of TPH as Diesel in April 1998
Tank 398 Site, El Toro MCAS



Concentration of TPH as Diesel in June 2000
Tank 398 Site, El Toro MCAS



LEGEND

MW17	GROUNDWATER MONITORING WELL
3.77	CONCENTRATION OF TOTAL PETROLEUM HYDROCARBONS AS DIESEL IN mg/L
ND	CONCENTRATION OF TOTAL PETROLEUM HYDROCARBONS AS DIESEL BELOW LABORATORY DETECTION LIMIT

0 200' 400'
FEET

REVISIONS			
REV. No.	DESCRIPTION	DATE	APPROVED

CONTRACT NAME: SWDIV

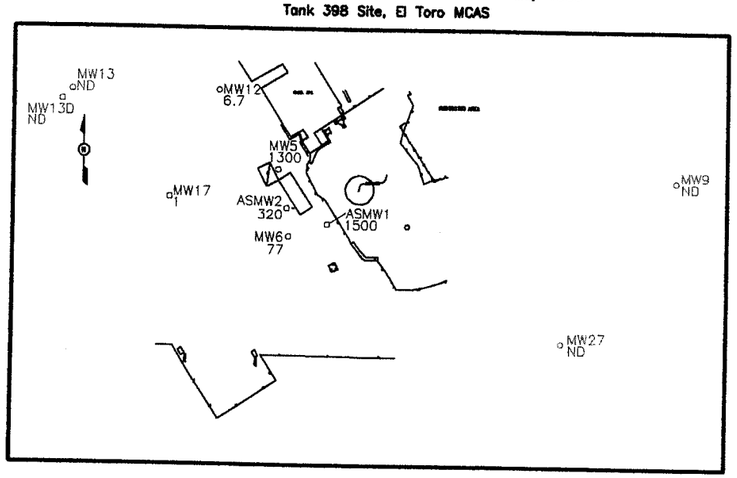
OHM Remediation Services Corp.
A Subsidiary of OHM Corporation
SAN DIEGO, CA

DRAWN BY: M.YANEZ DATE: 8/24/00
CHECKED BY: J. Berge DATE: 11.20.00
APPROVED BY: DATE:
PROJECT MANAGER: DR DATE: 4/20/01
AUTOCAD FILE No.: FIG_3-3

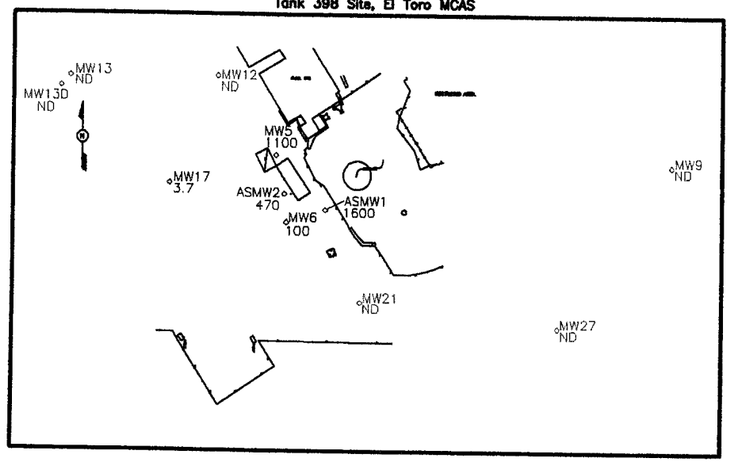
CONCENTRATION CHANGES OF TOTAL PETROLEUM HYDROCARBONS AS DIESEL IN GROUNDWATER
MARINE CORPS AIR STATION EL TORO, CALIFORNIA

SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
AS NOTED	1	1	SW8989	920242	FIG. 3-3

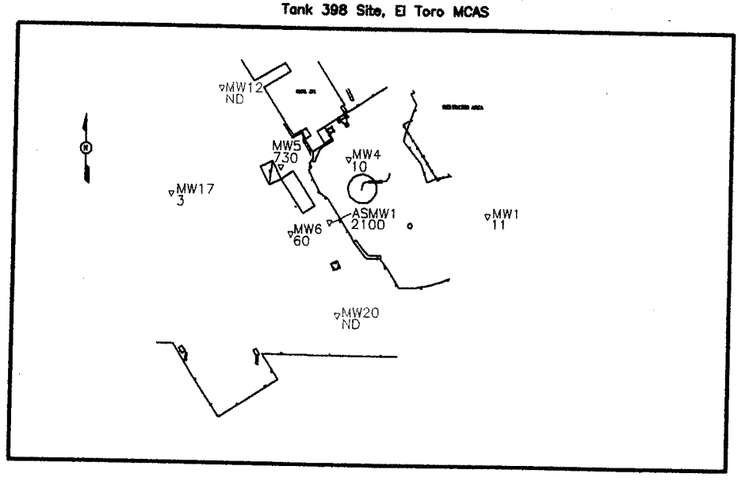
Benzene Concentration (ug/L) Distribution – May 1996
Tank 398 Site, El Toro MCAS



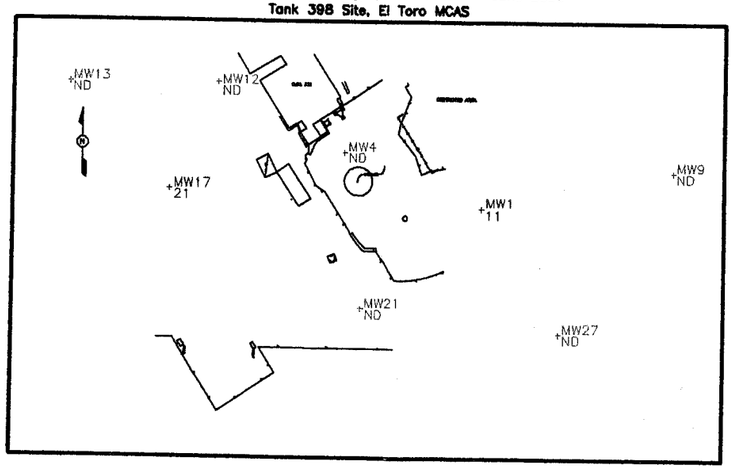
Benzene Concentration (ug/L) Distribution – April 1997
Tank 398 Site, El Toro MCAS



Benzene Concentration (ug/L) Distribution – April 1998
Tank 398 Site, El Toro MCAS



Benzene Concentration (ug/L) Distribution – June 2000
Tank 398 Site, El Toro MCAS



LEGEND

MW17	GROUNDWATER MONITORING WELL
21	CONCENTRATION OF BENZENE IN µg/L
ND	CONCENTRATION OF BENZENE BELOW LABORATORY DETECTION LIMIT

0 200' 400'
FEET

REVISIONS

REV. No.	DESCRIPTION	DATE	APPROVED

CONTRACT NAME	SWDIV
DRAWN BY	M.YANEZ
DATE	8/30/00
CHECKED BY	W. Belgin
DATE	11-17-00
APPROVED BY	
DATE	
PROJECT MANAGER	
DATE	11/20/00
AUTOCAD FILE No.	FIG_3-4

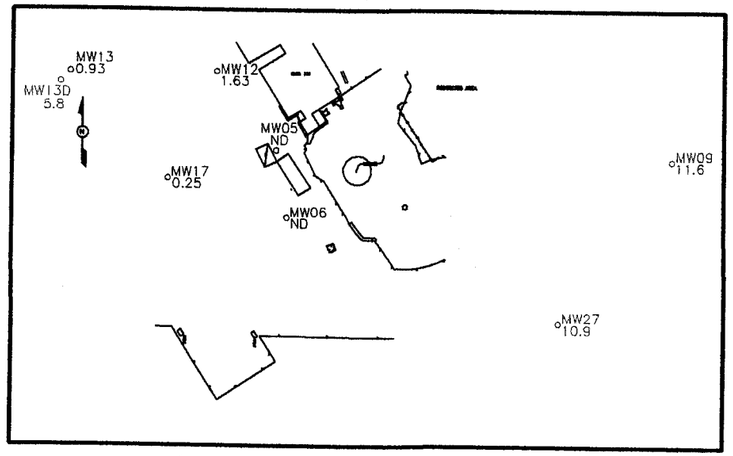
OHM Remediation Services Corp.
A Subsidiary of OHM Corporation
SAN DIEGO, CA

CONCENTRATIONS CHANGES OF BENZENE IN GROUNDWATER

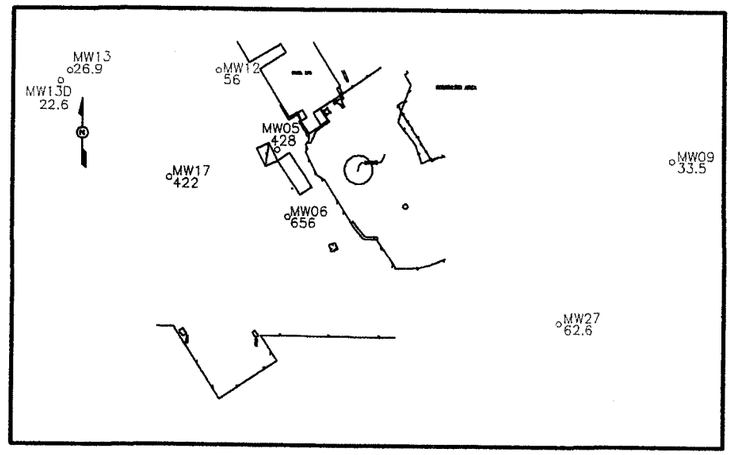
MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
AS NOTED	1	1	SW8989	920242	FIG. 3-4

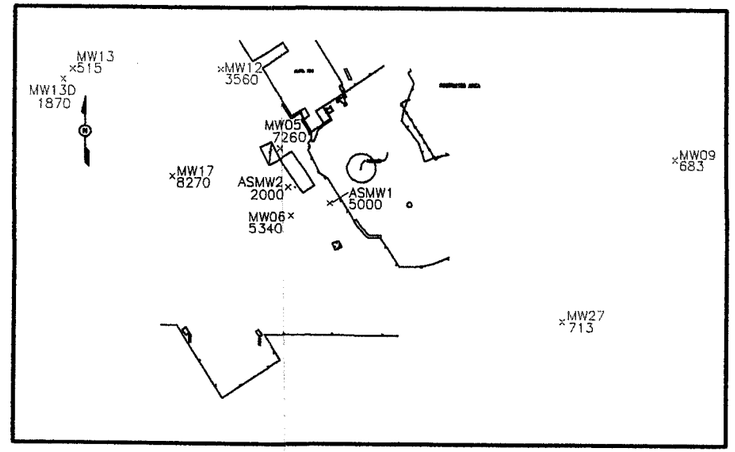
Nitrate Concentration (mg/L) Distribution – May 1996
Tank 398 Site, El Toro MCAS



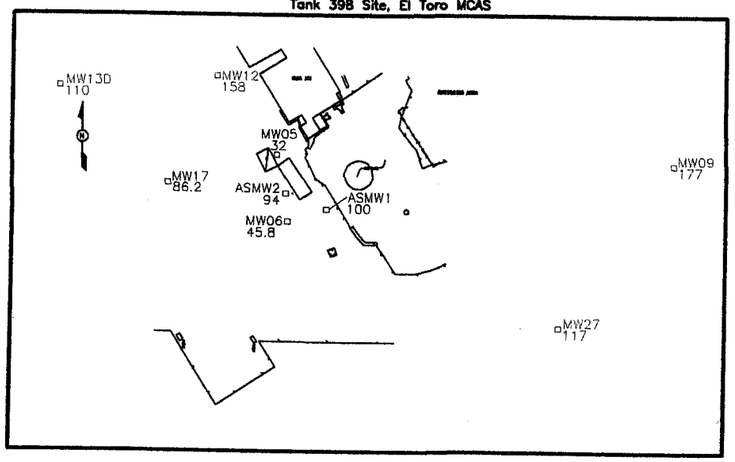
Manganese Concentration (ug/L) Distribution – May 1996
Tank 398 Site, El Toro MCAS



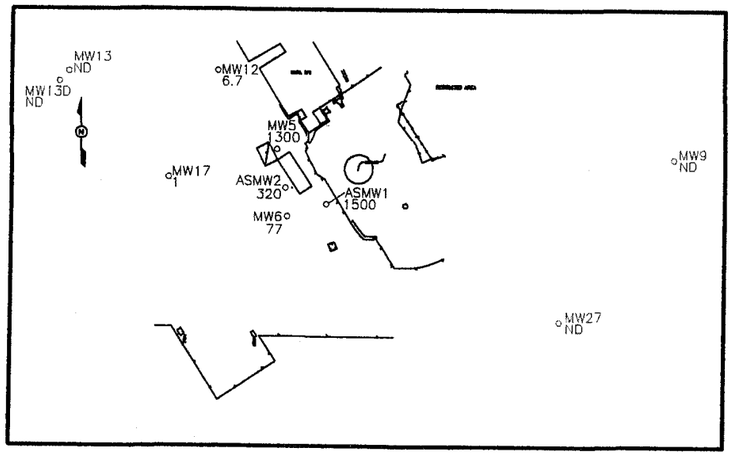
Total Iron Concentration (ug/L) Distribution – May 1996
Tank 398 Site, El Toro MCAS



Sulfate Concentration (mg/L) Distribution – May 1996
Tank 398 Site, El Toro MCAS



Benzene Concentration (ug/L) Distribution – May 1996
Tank 398 Site, El Toro MCAS



LEGEND

MW17	GROUNDWATER MONITORING WELL
21	CONCENTRATION OF BENZENE OR NATURAL ATTENUATION INDICATOR IN UNIT SHOWN ON THE TITLE OF INDIVIDUAL CHART
ND	CONCENTRATION OF BENZENE OR NATURAL ATTENUATION INDICATOR BELOW LABORATORY DETECTION LIMIT

0 200' 400'
FEET

REVISIONS			
REV. No.	DESCRIPTION	DATE	APPROVED

CONTRACT NAME: SWDIV

OHM Remediation Services Corp.
A Subsidiary of OHM Corporation
SAN DIEGO, CA

DRAWN BY: M.YANEZ DATE: 8/30/00
CHECKED BY: DATE: 11-17-00
APPROVED BY: DATE:
PROJECT MANAGER: DR DATE: 11/20/00
AUTOCAD FILE No.: FIG_3-5

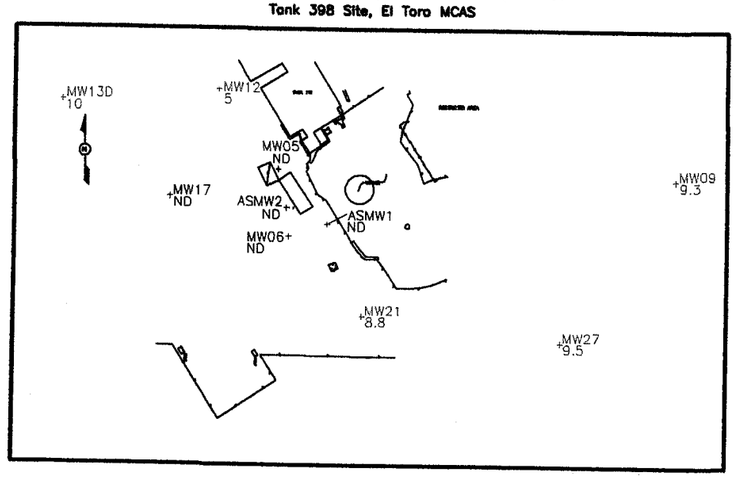
CONCENTRATION CHANGES OF NATURAL ATTENUATION INDICATORS IN GROUNDWATER, 1996

MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

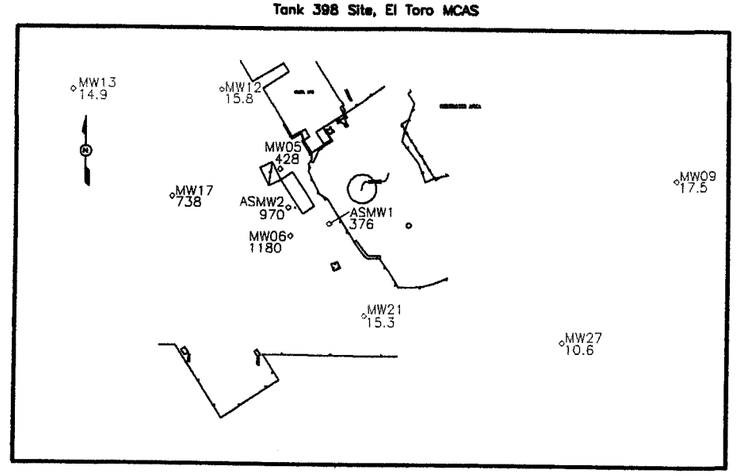
SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
AS NOTED	1	1	SW8989	920242	FIG. 3-5

Witzel-Yanez Design 9/1/00 3:31 PM fig_3-5.dwg

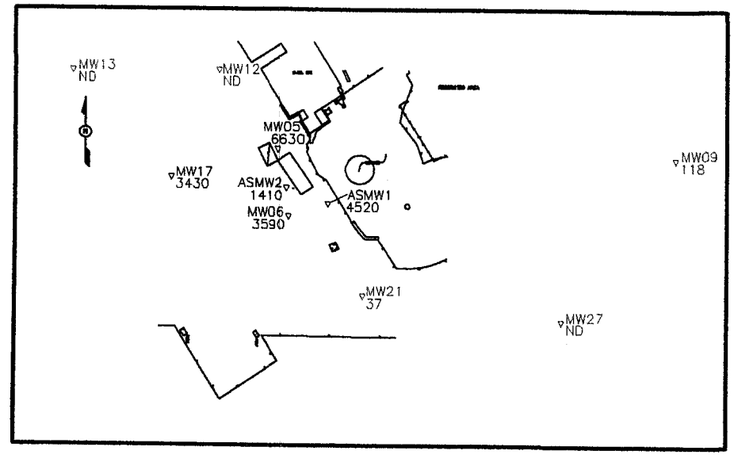
Nitrate Concentration (mg/L) Distribution – April 1997
Tank 398 Site, El Toro MCAS



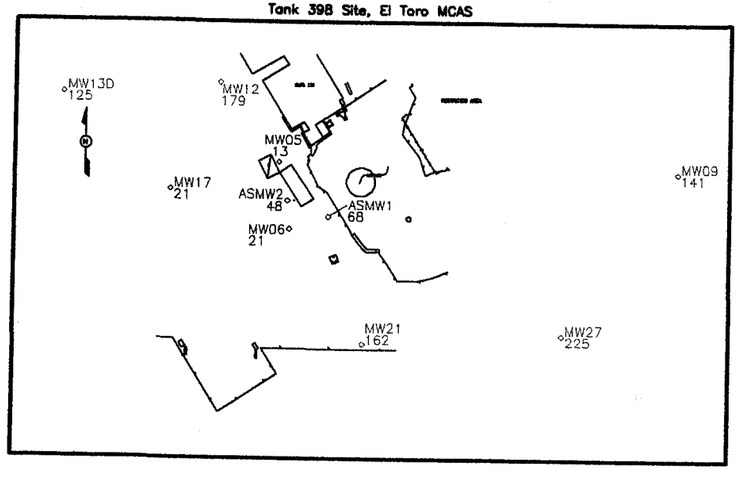
Manganese Concentration (ug/L) Distribution – April 1997
Tank 398 Site, El Toro MCAS



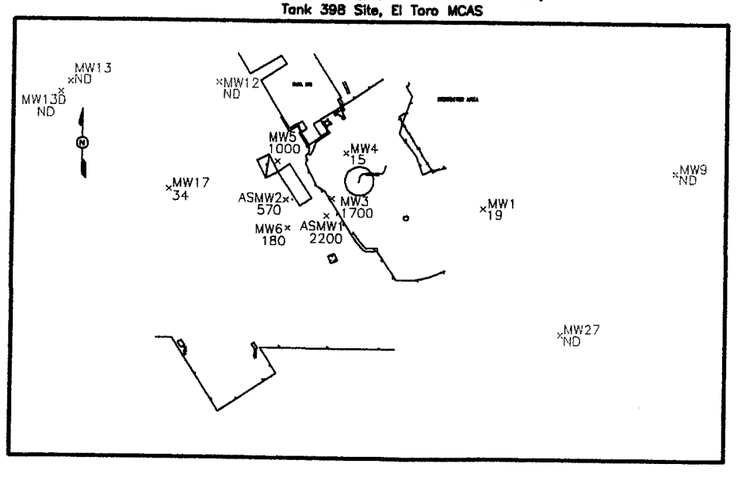
Total Iron Concentration (ug/L) Distribution – April 1997
Tank 398 Site, El Toro MCAS



Sulfate Concentration (mg/L) Distribution – April 1997
Tank 398 Site, El Toro MCAS



Benzene Concentration (ug/L) Distribution – January 1997
Tank 398 Site, El Toro MCAS



LEGEND

MW17	GROUNDWATER MONITORING WELL
21	CONCENTRATION OF BENZENE OR NATURAL ATTENUATION INDICATOR IN UNIT SHOWN ON THE TITLE OF INDIVIDUAL CHART
ND	CONCENTRATION OF BENZENE OR NATURAL ATTENUATION INDICATOR BELOW LABORATORY DETECTION LIMIT

0 200' 400'
FEET

REVISIONS			
REV. No.	DESCRIPTION	DATE	APPROVED

CONTRACT NAME: SWDIV

OHM Remediation Services Corp.
A Subsidiary of OHM Corporation
SAN DIEGO, CA

DRAWN BY: M.YANEZ DATE: 8/30/00
CHECKED BY: DATE: 11-17-00
APPROVED BY: DATE:
PROJECT MANAGER: DR DATE: 11/20/00
AUTOCAD FILE No.: FIG_3-6.DWG

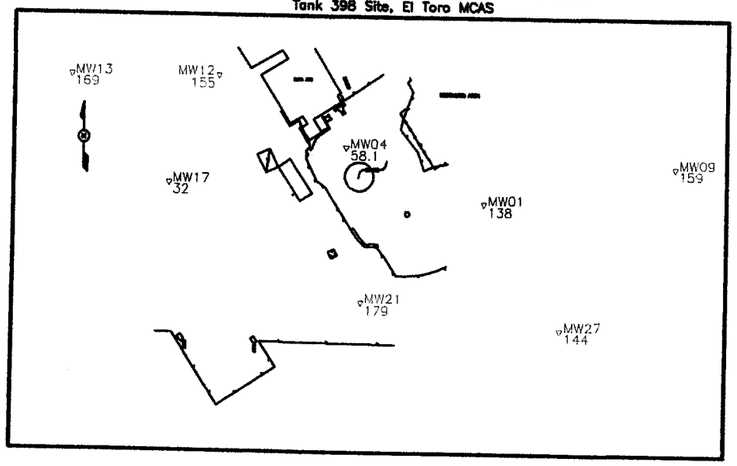
CONCENTRATION CHANGES OF NATURAL ATTENUATION INDICATORS IN GROUNDWATER, 1997

MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

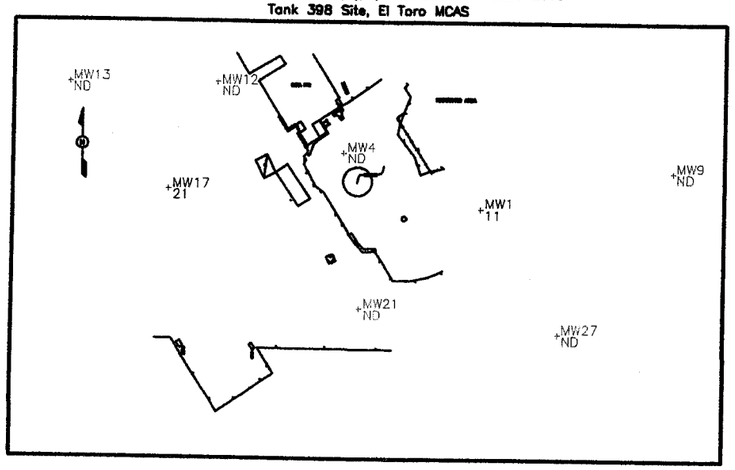
SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
AS NOTED	1	1	SW8989	920242	FIG. 3-6

Witzel-Yanez Design 9/1/00 3:31 PM fig_3-6.dwg

Sulfate Concentration (mg/L) Distribution – June 2000
Tank 398 Site, El Toro MCAS



Benzene Concentration (ug/L) Distribution – June 2000
Tank 398 Site, El Toro MCAS



LEGEND

MW17 GROUNDWATER MONITORING WELL

21 CONCENTRATION OF BENZENE OR NATURAL ATTENUATION INDICATOR IN UNIT SHOWN ON THE TITLE OF INDIVIDUAL CHART

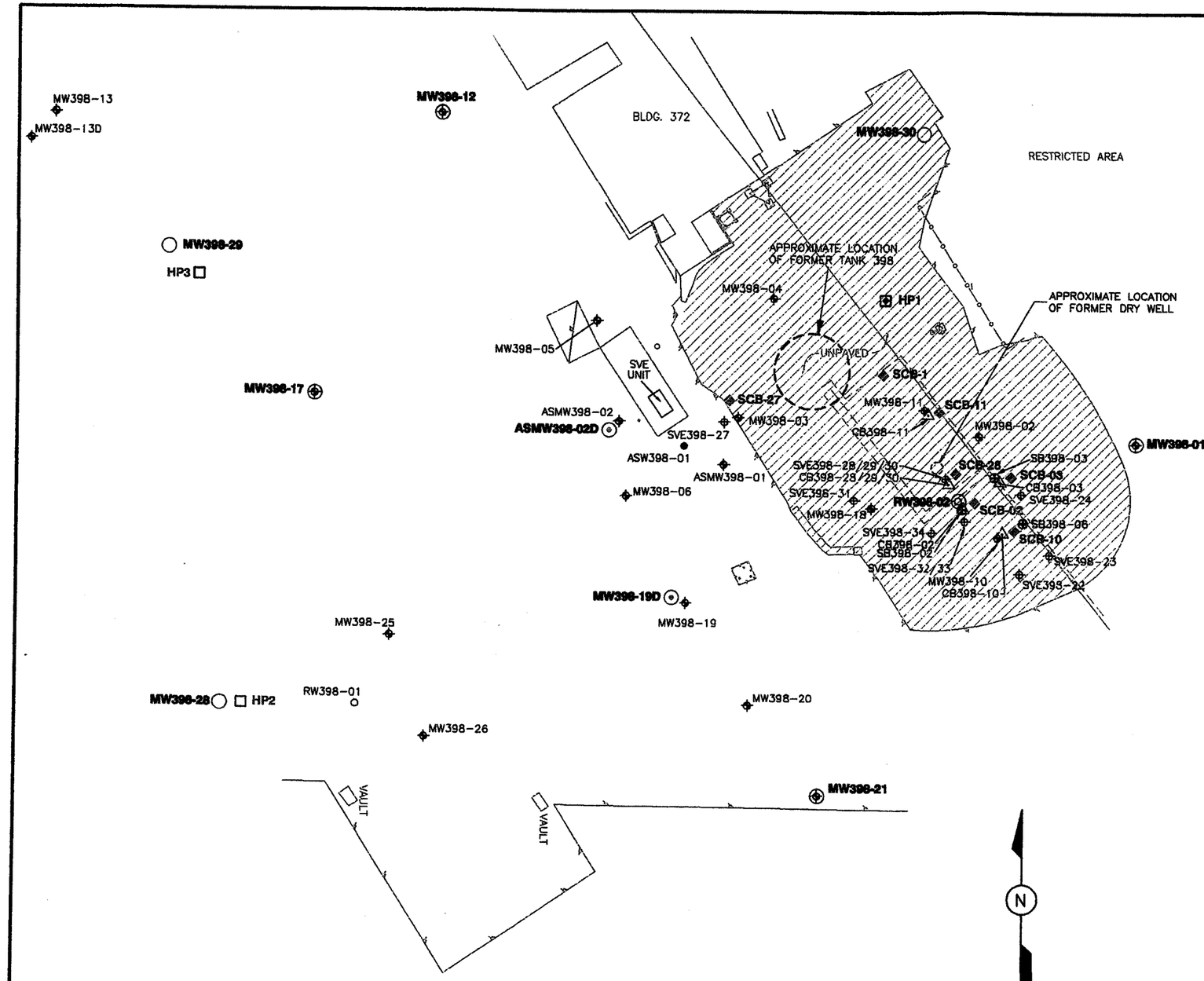
ND CONCENTRATION OF BENZENE OR NATURAL ATTENUATION INDICATOR BELOW LABORATORY DETECTION LIMIT

0 200' 400'
FEET

REVISIONS

REV. No.	DESCRIPTION	DATE	APPROVED

CONTRACT NAME: SWDIV				OHM Remediation Services Corp. A Subsidiary of OHM Corporation SAN DIEGO, CA	
DRAWN BY: M.YANEZ	DATE: 8/30/00			CONCENTRATION CHANGES OF NATURAL ATTENUATION INDICATORS IN GROUNDWATER, 2000	
CHECKED BY: [signature]	DATE: 11-17-00				
APPROVED BY:	DATE:				
PROJECT MANAGER: DR	DATE: 11/20/00			MARINE CORPS AIR STATION EL TORO, CALIFORNIA	
AUTOCAD FILE No.: FIG_3-7.DWG					
SCALE: AS NOTED	SHEET: 1	OF: 1	DOCUMENT CONTROL No.: SW8989	OHM PROJECT No.: 920242	DRAWING No.: FIG. 3-7



GRAPHIC SCALE

0 30 60 120

(IN FEET)

EXPLANATION:

- MW398-11 ◆ MONITORING WELL
- SVE398-22 ⊕ SOIL VAPOR EXTRACTION WELL
- RW398-01 ○ PRODUCT RECOVERY WELL
- ASW398-01 ● AIR SPARGE WELL
- SB398-02 ⊕ SOIL BORING (APPROXIMATE LOCATION) R.L. STOLLER AND ASSOCIATES.
- CB398-10 △ 1999 CONFIRMATION BORING LOCATION
- SCB-1 ◆ SHALLOW CONFIRMATION BORING
- HP2 □ HYDROPUNCH BORING
- HP1 ⊞ HYDROPUNCH BORING WITH SHALLOW CONFIRMATION SOIL SAMPLE
- MW398-27 ⊕ PROPOSED EXISTING MONITORING WELL FOR MONITORING WELL NETWORK
- ASW398-02D ⊙ PROPOSED REPLACEMENT OF EXISTING WELL
- MW398-30 ○ PROPOSED NEW GROUNDWATER MONITORING WELL. (NOTE: LOCATIONS WILL BE BASED PARTLY ON HYDROPUNCH SAMPLE RESULTS COLLECTED AT NEARBY LOCATIONS.)
- UNPAVED AREA

REVISIONS

REV. No.	DESCRIPTION	DATE	APPROVED
		3/30/98	

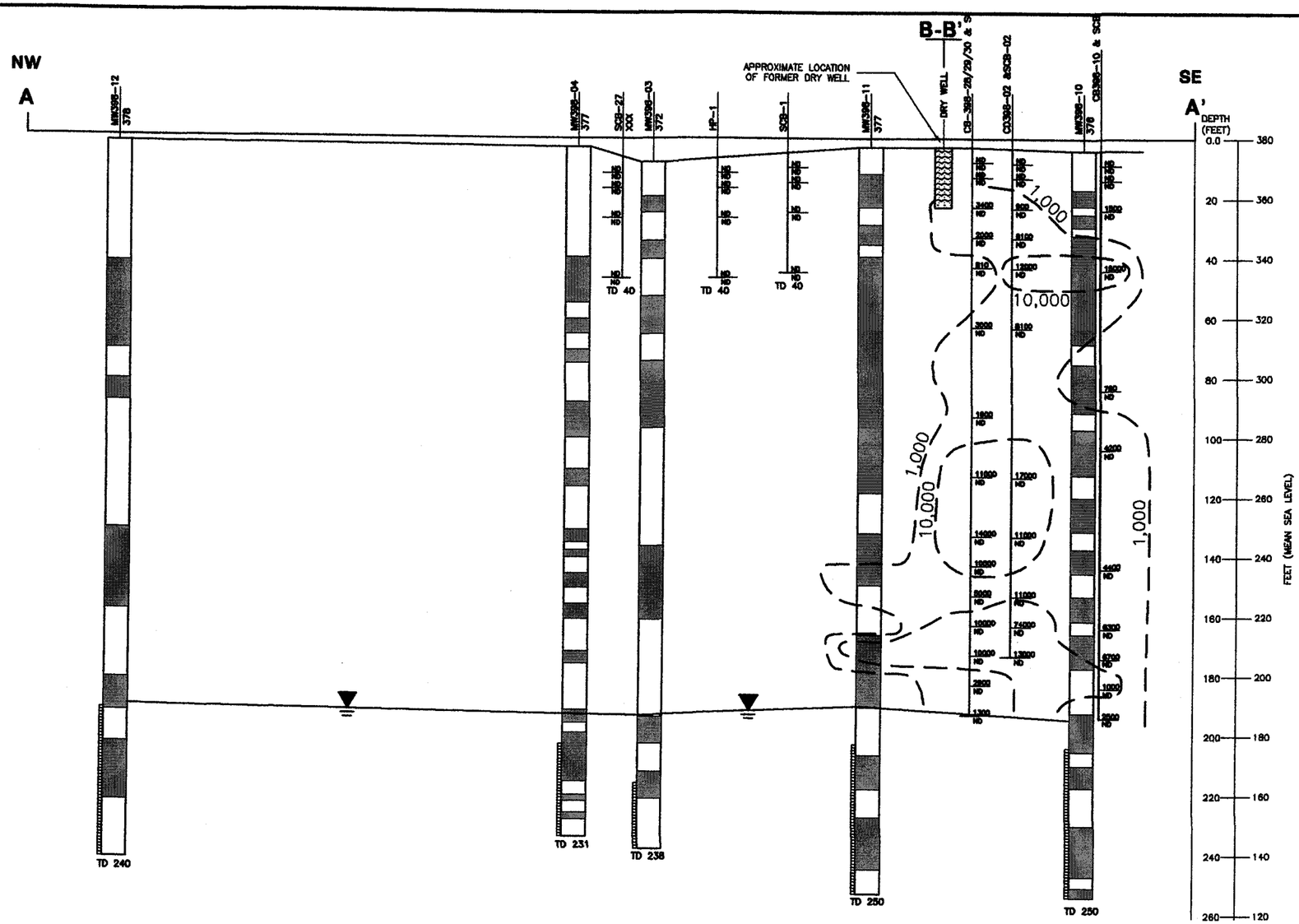
CONTRACT NAME	SWDIV
DRAWN BY	M.YANEZ
DATE	9/4/00
CHECKED BY	J.Bergin
DATE	11-17-00
APPROVED BY	
DATE	
PROJECT MANAGER	DR
DATE	11/20/00
AUTOCAD FILE No.	FIG_4-1.DWG

OHM Remediation Services Corp.
A Subsidiary of OHM Corporation
SAN DIEGO, CA

SOIL CONFIRMATORY SAMPLING AND PROPOSED GROUNDWATER MONITORING WELL NETWORK

MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
1"=60'	1	1	SW8989	920242	FIG 4-1



EXPLANATION:

TPH= mg/kg
BENZENE= µg/kg

WELL SCREEN INTERVAL

SOIL WITH MODERATE TO HIGH PERMEABILITY

SOIL WITH LOW TO MODERATE PERMEABILITY

APPROXIMATE GROUNDWATER LEVEL, FEBRUARY 1992

TPH IN mg/kg, DASHED WHERE INFERRED

VERTICAL SCALE (FEET) 40' 0

HORIZONTAL SCALE (FEET) 40'

NOTES:

1. BENZENE WAS NOT DETECTED IN THE JANUARY AND JUNE 2000 SOIL SAMPLES.

2. STRATIGRAPHIC LOG FOR SVE398-28/29/30 WAS REMOVED FOR CLARITY.

REVISIONS

REV. No.	DESCRIPTION	DATE	APPROVED

CONTRACT NAME: SWDIV

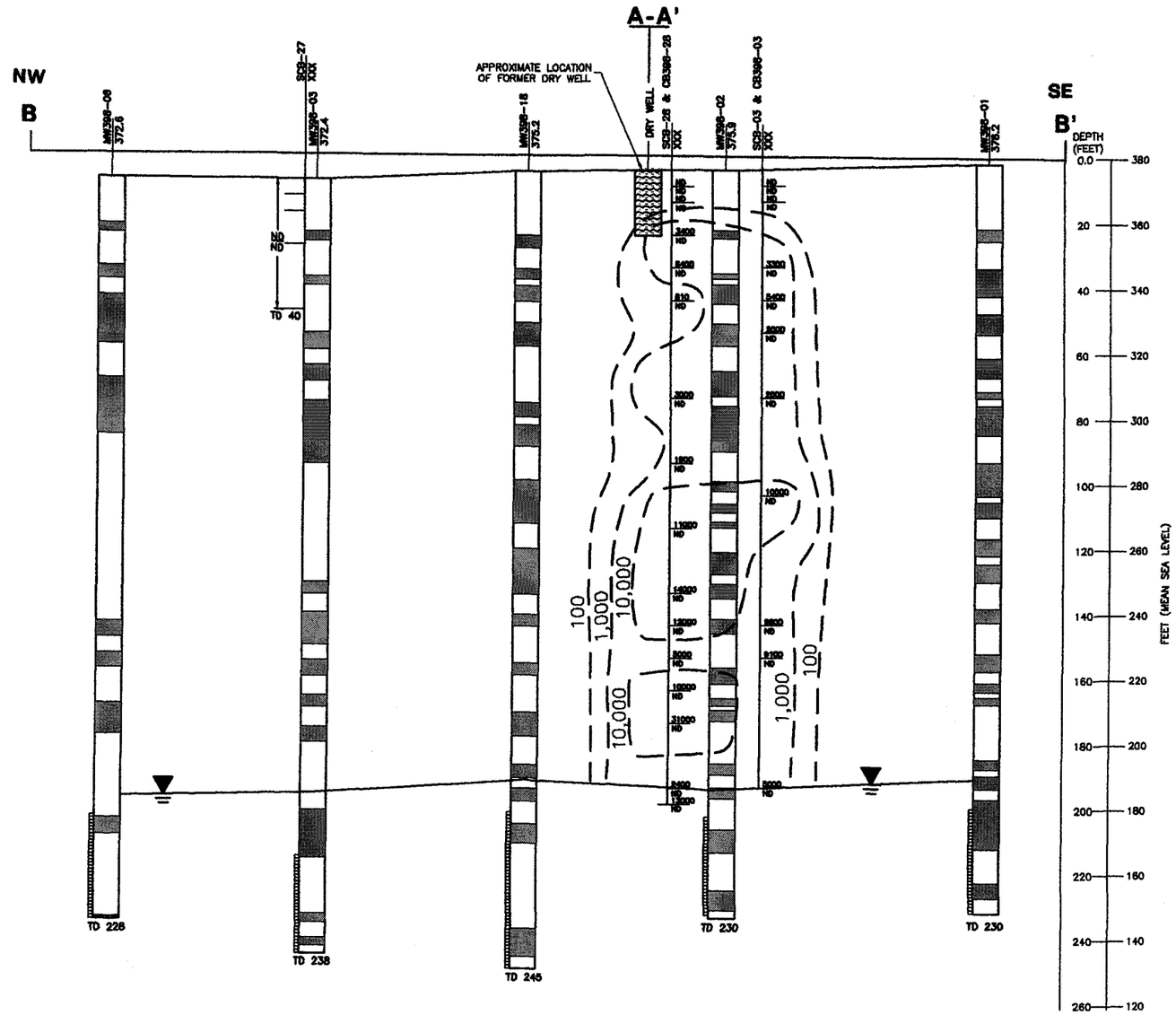
OHM Remediation Services Corp.
A Subsidiary of OHM Corporation
SAN DIEGO, CA

DRAWN BY: M.YANEZ DATE: 9/2/00
CHECKED BY: DATE: 11-17-00
APPROVED BY: DATE:
PROJECT MANAGER: DR DATE: 11/20/00
AUTOCAD FILE No.: FIG_4-2.DWG

GEOLOGIC CROSS-SECTION A-A' 2000

MARINE CORPS AIR STATION EL TORO, CALIFORNIA

SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
AS NOTED	1	1	SW8989	920242	FIG 4-2



EXPLANATION:

TPH= mg/kg
BENZENE= µg/kg

WELL SCREEN INTERVAL

SOIL WITH MODERATE TO HIGH PERMEABILITY

SOIL WITH LOW TO MODERATE PERMEABILITY

APPROXIMATE GROUNDWATER LEVEL, FEBRUARY 1992

TPH IN mg/kg, DASHED WHERE INFERRED

VERTICAL SCALE (FEET) 40' 0

HORIZONTAL SCALE (FEET) 40'

NOTE:

BENZENE NOT DETECTED NI THE JANUARY AND JUNE 2000 SOIL SAMPLES.

REVISIONS			
REV. No.	DESCRIPTION	DATE	APPROVED

CONTRACT NAME: SWDIV	OHM Remediation Services Corp. A Subsidiary of OHM Corporation SAN DIEGO, CA
DRAWN BY: M.YANEZ DATE: 9/2/00	GEOLOGIC CROSS-SECTION B-B' 2000
CHECKED BY: DATE: 11-17-00	
APPROVED BY: DATE:	
PROJECT MANAGER: DR DATE: 11/20/00	MARINE CORPS AIR STATION EL TORO, CALIFORNIA
AUTOCAD FILE No.: FIG_4-3.DWG	

SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
AS NOTED	1	1	SW8989	920242	FIG 4-3

Tables

Table 2-1
Well Construction Details and Groundwater Elevations
MCAS El Toro, Santa Ana, California

Well ID Number	Date Installed	Installed By	Total Depth of Boring (feet bgs)	Borehole Diameter (inches)	Casing/Screen Diameter (inches)	Blank Casing (feet bgs)	Screened Interval (feet bgs)	Sand Pack (feet bgs)	Bentonite Seal (feet bgs)	Grout/ Concrete Seal (feet bgs)
Air Sparging Wells										
ASMW398-01	4/24/96	OHM	219	12	6	0 – 190	190 – 215	187 – 219	175 – 187	0 – 138
ASMW398-01-PROBE 1		OHM			1	0 – 172	172 – 173	170 – 175	146 – 170	
ASMW398-01-PROBE 2		OHM			1	0 – 143	143 – 144	141 – 146	138 – 141	
ASMW398-02	4/19/96	OHM	219	12	6	0 – 190	190 – 215	189 – 219	178 – 189	0 – 140
ASMW398-02-PROBE 1		OHM			1	0 – 176	176 – 177	173 – 178	148 – 173	
ASMW398-02-PROBE 2		OHM			1	0 – 146	146 – 147	143 – 148	140 – 143	
ASW398-01	4/8/96	OHM	210	8	2	0 – 205	205 – 210	202 – 214	199 – 202	0 – 199
Monitoring Wells										
MW398-01	2/11/90	STA	231	9 7/8	4	0 – 198	198 – 229	194 – 231	189 – 194	0 – 189
MW398-02	3/4/90	STA	231	9 7/8	4	0 – 199	199 – 229	194 – 231	189 – 194	0 – 194
MW398-03	2/2/90	STA	242	9 7/8	4	0 – 208	208 – 238	200 – 242	196 – 200	0 – 196
MW398-04	2/6/90	STA	232	9 7/8	4	0 – 201	201 – 231	195 – 232	191 – 195	0 – 191
MW398-05	2/14/90	STA	230	9 7/8	4	0 – 197	197 – 227	191 – 230	185 – 191	0 – 185
MW398-06	3/1/90	STA	228	9 7/8	4	0 – 196	196 – 228	189 – 228	184 – 189	0 – 184
MW398-08	2/9/90	STA	233	9 7/8	4	0 – 200	200 – 230	196 – 233	189 – 196	0 – 189
MW398-09	11/26/91	IT	242	9 7/8	4	0 – 190	190 – 240	185 – 240	180 – 185	0 – 180
MW398-10	1/17/92	IT	250	11 1/8	6	0 – 200	200 – 250	190 – 250	183 – 190	0 – 183
MW398-11	1/28/92	IT	250	11 1/8	6	0 – 200	200 – 250	180 – 250	170 - 180	0 – 170
MW398-12	11/20/91	IT	242	9 7/8	4	0 – 190	190 – 240	185 – 242	180 – 185	0 – 180
MW398-13	12/13/91	IT	245	9 7/8	4	0 – 193	193 – 243	188 – 193	184 – 188	0 – 184
MW398-13D	12/17/91	IT	301	9 7/8	4	0 – 251	251 – 301	245 – 301	Unknown	0 – 245
MW398-14	12/5/91	IT	242	9 7/8	4	0 – 190	190 – 240	184 – 240	179 – 184	0 – 179
MW398-15	12/3/91	IT	249	9 7/8	4	0 – 199	199 – 249	190 – 249	185 – 190	0 – 185
MW398-16	12/11/91	IT	247	9 7/8	4	0 – 194	194 – 244	189 – 247	185 – 189	0 – 185
MW398-17	11/23/91	IT	241	9 7/8	4	0 – 189	189 – 239	184 – 241	179 – 184	0 – 179
MW398-18	2/3/92	IT	267	11 1/8	6	0 – 194	194 – 244	190 – 267	182 – 190	0 – 182
MW398-19	2/3/93	IT	252	9 7/8	4	0 – 202	202 – 252	195 – 252	190 – 195	0 – 190
MW398-20	1/28/93	IT	253	9 7/8	4	0 – 201	201 – 251	195 – 253	190 – 195	0 – 190
MW398-21	1/21/93	IT	254	9 7/8	4	0 – 193	193 – 243	185 – 254	180 – 185	0 – 180
MW398-25	2/8/93	IT	253.5	9 7/8	4	0 – 201	201 – 251	194 – 253.5	190 – 194	0 – 190
MW398-26	2/10/93	IT	253	9 7/8	4	0 – 201.5	201.5 – 251.5	194 – 253	190 – 194	0 – 190
MW398-27	2/12/93	IT	253	9 7/8	4	0 – 201.5	201.5 – 251.5	195 – 253	191 – 195	0 – 191
Product Recovery Wells										
RW398-01	12/21/95	OHM	235	12	6[a]	0 – 193	193 – 233	192 – 235	188 – 192	0 – 188
RW398-02	8/23/96	OHM	232	13	6[b]	0 – 180	180 – 230	178 – 232	166.8 – 178	0 – 166.8
RW398-02 PZ	8/23/96	OHM	232	2	2[b]	0 – 180	180 – 230	178 – 232	166.8 – 178	0 – 166.8

Note: All 4-inch wells are constructed with flush-threaded, Schedule 40 PVC. All 6-inch wells are constructed with flush-threaded, Schedule 80 PVC unless otherwise noted.
The screen slot size is 0.01 inch for all wells unless otherwise noted. All wells are flush mounted.
a – Well is constructed with flush-threaded steel pipe. The screen slot size is 0.020 inch.
b – Well is constructed with flush-threaded steel pipe and stainless steel screen. The screen slot size is 0.020 inch.
bgs – below ground surface
ID – identification
NA – not available
PVC – polyvinyl chloride
STA – Stollar and Associates
IT – International Technology Corporation
OHM – OHM Remediation Services Corp.

Table 3-1
Soil Vapor Extraction Wells Construction Details, Tank 398 Site, MCAS El Toro

Construction Details by Depth (details per well completion logs and reported in feet unless otherwise noted)											Reference Point Elevation[a]	
Well ID Number	Date Installed	Total Depth (bgs)	Borehole Diameter (inches)	Screen Diameter (inches)	Screen Slot Size	Screen Material	Screened Interval (bgs)	Blank Casing (bgs)	Blank Casing Material	Grout/ Concrete Seal (bgs)	Top of Casing	Well Box Rim Surface
VE398-18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VE398-22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VE398-23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VE398-24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VE398-27	3/11/96	205	12	4	0.020	PVC	190-205/180-185	0-180/185-190	PVC	0-175	374.19	372.86
VE398-28/29/30* SVE-28 SVE-29 SVE-30	4/25/96	188	12	 2 2 2	 0.020 0.020 0.020	 SS SS SS	 155-180 105-130 30-50	 180-185/0-155 130-135/0-105 30-35/0-30	 LCS LCS LCS	0-28	377.96 378.74 378.72	377.2
VE398-31	4/3/96	182	8	4	0.020	PVC	150-180	0-150	PVC	0-139.5	377.48	376.31
VE389-32/33 ** SVE-32 SVE-33	5/9/96	170	12	 2 2	 0.020 0.020	 SS SS	 135-165 70-100	 165-170/0-135 100-105/0-70	 LCS LCS	0-67	378.15 377.3	376.67
VE398-34	8/5/96	81	8	4	0.020	PVC	40-80	0-40	PVC	0-34	376.14	
ASW398-01	4/8/96	210	8	2	0.020	SS	205-210	0-205	LCS	0-199	372.71	372.99
ASMW398-01	4/24/96	219	12	6	0.020	SS	190-215	0-190	LCS	0-138	372.32	372.82
ASMW398-02	4/19/96	219	12	6	0.020	SS	190-215	0-190	LCS	0-140	372.17	372.9

Legend:

(a) - Reference point and elevation data was collected by Towill Surveying of Tustin, California. Data collected August 6, 1996, with the exception of 398RW-02 and 398SVE-34. Those wells were surveyed on No

NA - Data not available for well

SS - stainless steel

PVC - polyvinyl chloride casing

LCS - low carbon steel

bgs - below ground surface

ID - identification

- bentonite seal includes #0/30 transition sand for water wells

* - triple-casing well

** - dual-casing well

398-SVE-27 - multiple screen completion well

Multiple completion well - 398 SVE 28/29/30 and 398 SVE 32/33, multiple completion wells have stainless steel 5-foot by 2-inch diameter sumps installed directly below the screened zone.

Table 3-2
Levels of Heterotrophic Bacteria Population in Groundwater

Well Number	Sample Number	Date Sampled	Heterotrophic Bacteria Population (cfu/mL)[4]	Reference
Upgradient				
MW398-09	96-T398-W-360	12/26/96	1.2×10^2	2
MW398-27	96-T398-W-357	12/20/96	1.1×10^2	2
Within Dissolved-Phase Plume				
MW398-01	96-398-E-13	10/8/96	2.8×10^5	1
MW398-02	96-398-E-12	10/8/96	4.2×10^5	1
MW398-03	96-398-W-368	1/7/97	5.8×10^5	2
MW398-05	96-398-W-366	1/2/97	2.1×10^4	2
MW398-10	96-398-E-14	10/8/96	1.0×10^6	1
MW398-18	96-398-E-18	10/22/96	3.9×10^3	1
MW398-19	96-398-E-10	10/1/96	1.5×10^8	1
RW398-01	96-398-E-11	10/3/96	7.9×10^6	1
RW398-02	96-398-E-22	10/8/96	4.4×10^5	1
ASMW398-01	96-398-W-092	6/12/96	1.4×10^5	3
ASMW398-02	96-398-W-091	6/12/96	1.2×10^6	3
ASMW398-01	96-398-W-092	6/12/96	1.4×10^5	3
Downgradient				
MW398-12	96-T398-W-352	12/19/96	2.6×10^2	2
MW398-13D	96-T398-W-345	12/17/96	1.1×10^3	2

References:
1. *Southwest Division, Naval Facilities Engineering Command, 1997e*
2. *Quarterly groundwater monitoring June 1996 (Appendix C)*
3. *Quarterly groundwater monitoring January 1997 (Appendix C)*
4. *U.S. Environmental Protection Agency Standard Method SM9215-B/C/D*

cfu - colony forming unit
mL - milliliter

Table 4-1
Summary of Analytical Results — Soil Borings

Sample Identification		18609-3368	18609-3369	18609-3370	18609-3371	18609-3349	18609-3350	18609-3351
Location Code		398-SCB-01	398-SCB-01	398-SCB-01	398-SCB-01	398-SCB-02	398-SCB-02	398-SCB-02
Date Sampled		08/01/00	08/01/00	08/01/00	08/01/00	07/31/00	07/31/00	07/31/00
Depth (feet below ground surface)		5.0	10.0	20.0	40.0	5.0	10.0	30.0
	Unit							
CA LUFT 8015M								
TPH as Diesel	mg/kg	88	11 U	11 U	11 U	10 U	10 U	68 U
TPH as Gasoline	mg/kg	8.3	1.3	1.09 U	1.1	1.7	1.03 U	6100
TPH as JP-5	mg/kg	11 U	11 U	11 U	29	10 U	10 U	3500
EPA 1312/8015M								
TPH as Diesel	mg/L	NA	NA	NA	NA	NA	NA	NA
TPH as Gasoline	mg/L	NA	NA	NA	NA	NA	NA	NA
TPH as JP-5	mg/L	NA	NA	NA	NA	NA	NA	NA
EPA 1312/8020								
Benzene	µg/L	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	µg/L	NA	NA	NA	NA	NA	NA	NA
Toluene	µg/L	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	µg/L	NA	NA	NA	NA	NA	NA	NA
EPA 8260A								
	µg/kg	5.4 U	5.5 U	5.5 U	5.4 U	5.2 U	5.1 U	3400 U
Ethylbenzene	µg/kg	5.4 U	5.5 U	5.5 U	5.4 U	5.2 U	5.1 U	860 J
Methyl tert-butyl ether (MTBE)	µg/kg	11 U	11 U	11 U	11 U	10 U	10 U	6800 U
Toluene	µg/kg	5.4 U	5.5 U	5.5 U	5.4 U	5.2 U	5.1 U	3400 U
Trichloroethene	µg/kg	5.4 U	5.5 U	5.5 U	5.4 U	5.2 U	5.1 U	3400 U
Xylenes (total)	µg/kg	5.4 U	5.5 U	5.5 U	5.4 U	5.2 U	5.1 U	3400 U

CA LUFT - California Leaking Underground Fuel Tank
EPA - United States Environmental Protection Agency
mg/kg - milligrams per kilogram
NA - not analyzed
U - not detected above or equal to the stated reporting limit
µg/kg - micrograms per kilogram

Table 4-1
Summary of Analytical Results — Soil Borings

Sample Identification		18609-3363	18609-3364	18609-3365	18609-3366 (Dup)	18609-3367	18609-3344	18609-3345
Location Code		398-SCB-03	398-SCB-03	398-SCB-03	398-SCB-03	398-SCB-03	398-SCB-10	398-SCB-10
Date Sampled		08/01/00	08/01/00	08/01/00	08/01/00	08/01/00	07/31/00	07/31/00
Depth (feet below ground surface)		5.0	10.0	30.0	29.5	40.0	5.0	10.0
	Unit							
CA LUFT 8015M								
TPH as Diesel	mg/kg	10 U	11 U	69 U	71 U	130 U	11 U	11 U
TPH as Gasoline	mg/kg	1.04 U	1.07 U	3200	3400	6900	1.08 U	1.13 U
TPH as JP-5	mg/kg	10 U	11 U	3300	3600	5300	11 U	11 U
EPA 1312/8015M								
TPH as Diesel	mg/L	NA	NA	NA	NA	NA	NA	NA
TPH as Gasoline	mg/L	NA	NA	NA	NA	NA	NA	NA
TPH as JP-5	mg/L	NA	NA	NA	NA	NA	NA	NA
EPA 1312/8020								
Benzene	µg/L	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	µg/L	NA	NA	NA	NA	NA	NA	NA
Toluene	µg/L	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	µg/L	NA	NA	NA	NA	NA	NA	NA
EPA 8260A								
	µg/kg	5.2 UJ	5.4 U	350 U	350 UJ	320 UJ	5.4 U	5.7 U
Ethylbenzene	µg/kg	5.2 UJ	5.4 U	200 J	680 J	610 J	5.4 U	5.7 U
Methyl tert-butyl ether (MTBE)	µg/kg	10 U	11 U	690 U	710 UJ	640 UJ	11 U	11 U
Toluene	µg/kg	5.2 UJ	5.4 U	350 U	350 UJ	320 UJ	5.4 U	5.7 U
Trichloroethene	µg/kg	5.2 UJ	5.4 U	350 U	350 UJ	320 UJ	5.4 U	5.7 U
Xylenes (total)	µg/kg	5.2 UJ	5.4 U	350 U	350 UJ	320 UJ	5.4 U	5.7 U

CA LUFT - California Leaking Underground Fuel Tank
EPA - United States Environmental Protection Agency
mg/kg - milligrams per kilogram
NA - not analyzed
U - not detected above or equal to the stated reporting limit
µg/kg - micrograms per kilogram

Table 4-1
Summary of Analytical Results — Soil Borings

Sample Identification		18609-3346	18609-3347	18609-3348 (Dup)	18609-3357	18609-3358	18609-3359	18609-3360
Location Code		398-SCB-10	398-SCB-10	398-SCB-10	398-SCB-11	398-SCB-11	398-SCB-11	398-SCB-11
Date Sampled		07/31/00	07/31/00	07/31/00	07/31/00	07/31/00	07/31/00	07/31/00
Depth (feet below ground surface)		20.0	40.0	39.5	5.0	10.0	20.0	40.0
	Unit							
CA LUFT 8015M								
TPH as Diesel	mg/kg	11 U	67 U	140 U	11 U	11 U	12 U	11 U
TPH as Gasoline	mg/kg	1.1 U	5600	8500	1.06 U	1.11 U	1.18 U	1.11 U
TPH as JP-5	mg/kg	11 U	4500	8000	11 U	11 U	12 U	11 U
EPA 1312/8015M								
TPH as Diesel	mg/L	NA	NA	NA	NA	NA	NA	NA
TPH as Gasoline	mg/L	NA	NA	NA	NA	NA	NA	NA
TPH as JP-5	mg/L	NA	NA	NA	NA	NA	NA	NA
EPA 1312/8020								
Benzene	µg/L	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	µg/L	NA	NA	NA	NA	NA	NA	NA
Toluene	µg/L	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	µg/L	NA	NA	NA	NA	NA	NA	NA
EPA 8260A								
	µg/kg	5.5 U	3400 U	3400 U	5.3 U	5.5 U	5.9 U	5.5 U
Ethylbenzene	µg/kg	5.5 U	770 J	4800	5.3 U	5.5 U	5.9 U	5.5 U
Methyl tert-butyl ether (MTBE)	µg/kg	11 U	6700 U	6900 U	11 U	11 U	12 U	11 U
Toluene	µg/kg	5.5 U	3400 U	3400 U	5.3 U	5.5 U	5.9 U	5.5 U
Trichloroethene	µg/kg	5.5 U	3400 U	3400 U	5.3 U	5.5 U	5.9 U	5.5 U
Xylenes (total)	µg/kg	5.5 U	3400 U	2600 J	5.3 U	5.5 U	5.9 U	5.5 U

CA LUFT - California Leaking Underground Fuel Tank
EPA - United States Environmental Protection Agency
mg/kg - milligrams per kilogram
NA - not analyzed
U - not detected above or equal to the stated reporting limit
µg/kg - micrograms per kilogram

Table 4-1
Summary of Analytical Results — Soil Borings

Sample Identification		18609-3372	18609-3373	18609-3374	18609-3375	18609-3352	18609-3353	18609-3354
Location Code		398-SCB-27	398-SCB-27	398-SCB-27	398-SCB-27	398-SCB-28	398-SCB-28	398-SCB-28
Date Sampled		08/01/00	08/01/00	08/01/00	08/01/00	07/31/00	07/31/00	07/31/00
Depth (feet below ground surface)		5.0	10.0	20.0	40.0	5.0	10.5	20.0
	Unit							
CA LUFT 8015M								
TPH as Diesel	mg/kg	11 U	11 U	11 U	10 U	10 U	11 U	13 U
TPH as Gasoline	mg/kg	1.12 U	1.08 U	1.08 U	1.04 U	1.02 U	1.07 U	1300
TPH as JP-5	mg/kg	11 U	11 U	11 U	10 U	10 U	11 U	3400
EPA 1312/8015M								
TPH as Diesel	mg/L	NA	NA	NA	NA	NA	NA	NA
TPH as Gasoline	mg/L	NA	NA	NA	NA	NA	NA	NA
TPH as JP-5	mg/L	NA	NA	NA	NA	NA	NA	NA
EPA 1312/8020								
Benzene	µg/L	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	µg/L	NA	NA	NA	NA	NA	NA	NA
Toluene	µg/L	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	µg/L	NA	NA	NA	NA	NA	NA	NA
EPA 8260A								
	µg/kg	5.6 U	5.4 U	5.4 U	5.2 U	5.1 U	5.4 U	3300 U
Ethylbenzene	µg/kg	5.6 U	5.4 U	5.4 U	5.2 U	5.1 U	5.4 U	3300 U
Methyl tert-butyl ether (MTBE)	µg/kg	11 U	11 U	11 U	10 U	10 U	11 U	6600 U
Toluene	µg/kg	5.6 U	5.4 U	5.4 U	5.2 U	5.1 U	5.4 U	3300 U
Trichloroethene	µg/kg	5.6 U	5.4 U	5.4 U	5.2 U	5.1 U	5.4 U	3300 U
Xylenes (total)	µg/kg	5.6 U	5.4 U	5.4 U	5.2 U	5.1 U	5.4 U	3300 U

CA LUFT - California Leaking Underground Fuel Tank
EPA - United States Environmental Protection Agency
mg/kg - milligrams per kilogram
NA - not analyzed
U - not detected above or equal to the stated reporting limit
µg/kg - micrograms per kilogram

Table 4-1
Summary of Analytical Results — Soil Borings

Sample Identification		18609-3355	18609-3356 (Dup)	18609-2642	18609-2643	18609-2644 (Dup)	18609-2645	18609-2646
Location Code		398-SCB-28	398-SCB-28	CB-398-02	CB-398-02	CB-398-02	CB-398-02	CB-398-02
Date Sampled		07/31/00	07/31/00	01/14/00	01/14/00	01/14/00	01/14/00	01/14/00
Depth (feet below ground surface)		30.0	29.5	20.0	39.5	40.0	61.0	104.5
	Unit							
CA LUFT 8015M								
TPH as Diesel	mg/kg	14 U	140 U	900	12000	3400	8700	17000
TPH as Gasoline	mg/kg	2000	7600	9	4400	7600	4600	8800
TPH as JP-5	mg/kg	910	6400	NA	NA	NA	NA	NA
EPA 1312/8015M								
TPH as Diesel	mg/L	NA	NA	NA	NA	29	NA	1.7
TPH as Gasoline	mg/L	NA	NA	NA	NA	NA	NA	NA
TPH as JP-5	mg/L	NA	NA	NA	NA	NA	NA	NA
EPA 1312/8020								
Benzene	µg/L	NA	NA	NA	.5 U	1.8	NA	1 U
Ethylbenzene	µg/L	NA	NA	NA	15	25	NA	97
Toluene	µg/L	NA	NA	NA	.5 U	.5 U	NA	1 U
Xylenes (total)	µg/L	NA	NA	NA	1.5 U	1.5 U	NA	8.5
EPA 8260A								
	µg/kg	3500 U	3500 U	7 U	680 U	1200 U	260 U	550 U
Ethylbenzene	µg/kg	3500 U	390 J	7 U	960	8000	260 U	7100
Methyl tert-butyl ether (MTBE)	µg/kg	7000 U	6900 U	14 U	1400 U	2400 U	520 U	1100 U
Toluene	µg/kg	3500 U	3500 U	7 U	680 U	1200 U	260 U	550 U
Trichloroethene	µg/kg	3500 U	3500 U	7 U	680 U	1200 U	260 U	550 U
Xylenes (total)	µg/kg	3500 U	3500 U	7 U	680 U	1200 U	260 U	12000

CA LUFT - California Leaking Underground Fuel Tank
EPA - United States Environmental Protection Agency
mg/kg - milligrams per kilogram
NA - not analyzed
U - not detected above or equal to the stated reporting limit
µg/kg - micrograms per kilogram

Table 4-1
Summary of Analytical Results — Soil Borings

Sample Identification		18609-2648	18609-2649	18609-2650	18609-2651	18609-2652	18609-2680	18609-2682
Location Code		CB-398-02	CB-398-02	CB-398-02	CB-398-02	CB-398-02	CB-398-03	CB-398-03
Date Sampled		01/14/00	01/14/00	01/17/00	01/17/00	01/17/00	01/19/00	01/20/00
Depth (feet below ground surface)		125.0	149.5	169.5	185.0	189.0	49.5	69.5
	Unit							
CA LUFT 8015M								
TPH as Diesel	mg/kg	11000	11000	74000	1500 J	13000	5400	2000
TPH as Gasoline	mg/kg	12000	10000	1600	1500	4500	5100	2100
TPH as JP-5	mg/kg	NA	NA	NA	NA	NA	NA	NA
EPA 1312/8015M								
TPH as Diesel	mg/L	NA	3	440	NA	5.8	NA	NA
TPH as Gasoline	mg/L	NA	NA	NA	NA	2.7	NA	NA
TPH as JP-5	mg/L	NA	NA	NA	NA	NA	NA	NA
EPA 1312/8020								
Benzene	µg/L	1 U	.5 U	NA	NA	NA	NA	NA
Ethylbenzene	µg/L	95	2.2	NA	NA	NA	NA	NA
Toluene	µg/L	1 U	.5 U	NA	NA	NA	NA	NA
Xylenes (total)	µg/L	170	4.9	NA	NA	NA	NA	NA
EPA 8260A								
	µg/kg	2700 U	1100 U	1500 U	520 U	570 U	2900 U	5700 U
Ethylbenzene	µg/kg	14000	1100 U	1500 U	520 U	570 U	410 J	5700 U
Methyl tert-butyl ether (MTBE)	µg/kg	5400 U	2300 U	3000 U	1000 U	1100 U	5800 U	11000 U
Toluene	µg/kg	2700 U	1100 U	1500 U	520 U	570 U	2900 U	5700 U
Trichloroethene	µg/kg	2700 U	200 J	1500 U	520 U	570 U	2900 U	5700 U
Xylenes (total)	µg/kg	59000	1100 U	24000	520 U	1100	2000 J	5700 U

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EPA - United States Environmental Protection Agency
mg/kg - milligrams per kilogram
NA - not analyzed
U - not detected above or equal to the stated reporting limit
µg/kg - micrograms per kilogram

Table 4-1
Summary of Analytical Results — Soil Borings

Sample Identification		18609-2683	18609-2684 (Dup)	18609-2685	18609-2686	18609-2687	18609-2669	18609-2670
Location Code		CB-398-03	CB-398-03	CB-398-03	CB-398-03	CB-398-03	CB-398-10	CB-398-10
Date Sampled		01/20/00	01/20/00	01/20/00	01/20/00	01/20/00	01/18/00	01/18/00
Depth (feet below ground surface)		99.5	100.0	139.5	149.5	189.0	40.0	79.5
	Unit							
CA LUFT 8015M								
TPH as Diesel	mg/kg	8800	10000	6600	9100	5000	15000	760
TPH as Gasoline	mg/kg	9900	7000	6500	3100	3900	8300	500
TPH as JP-5	mg/kg	NA	NA	NA	NA	NA	NA	NA
EPA 1312/8015M								
TPH as Diesel	mg/L	NA	37	7.3	3.8	4.3	NA	NA
TPH as Gasoline	mg/L	3.5	NA	3.2	2.9	2.9	NA	NA
TPH as JP-5	mg/L	NA	NA	NA	NA	NA	NA	NA
EPA 1312/8020								
Benzene	µg/L	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	µg/L	NA	NA	NA	NA	NA	NA	NA
Toluene	µg/L	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	µg/L	NA	NA	NA	NA	NA	NA	NA
EPA 8260A								
	µg/kg	5600 U	5700 U	5400 U	6400 U	5800 U	3100 U	1200 U
Ethylbenzene	µg/kg	5600 U	5700 U	5400 U	6400 U	5800 U	2000 J	1200 U
Methyl tert-butyl ether (MTBE)	µg/kg	11000 U	11000 U	11000 U	13000 U	12000 U	6200 U	2300 U
Toluene	µg/kg	5600 U	5700 U	5400 U	6400 U	5800 U	3100 U	1200 U
Trichloroethene	µg/kg	5600 U	5700 J	5400 U	6400 U	5800 U	3100 U	1200 U
Xylenes (total)	µg/kg	5600 U	5700 U	5400 U	6400 U	5800 U	1200 J	1200 U

CA LUFT - California Leaking Underground Fuel Tank
EPA - United States Environmental Protection Agency
mg/kg - milligrams per kilogram
NA - not analyzed
U - not detected above or equal to the stated reporting limit
µg/kg - micrograms per kilogram

Table 4-1
Summary of Analytical Results — Soil Borings

Sample Identification		18609-2672	18609-2673	18609-2674 (Dup)	18609-2675	18609-2676	18609-2677	18609-2678
Location Code		CB-398-10	CB-398-10	CB-398-10	CB-398-10	CB-398-10	CB-398-10	CB-398-10
Date Sampled		01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00	01/19/00
Depth (feet below ground surface)		99.5	139.5	140.0	159.5	169.5	180.0	188.0
	Unit							
CA LUFT 8015M								
TPH as Diesel	mg/kg	4200	2700	4400	6300	6700	11000	2500
TPH as Gasoline	mg/kg	3500	1400	3900	5800	3800	9000	2400
TPH as JP-5	mg/kg	NA	NA	NA	NA	NA	NA	NA
EPA 1312/8015M								
TPH as Diesel	mg/L	NA	NA	NA	NA	NA	6.7	2.9
TPH as Gasoline	mg/L	NA	NA	NA	NA	NA	5.5	7
TPH as JP-5	mg/L	NA	NA	NA	NA	NA	NA	NA
EPA 1312/8020								
Benzene	µg/L	NA	NA	NA	NA	NA	1 U	46
Ethylbenzene	µg/L	NA	NA	NA	NA	NA	29	130
Toluene	µg/L	NA	NA	NA	NA	NA	1.1	7.5
Xylenes (total)	µg/L	NA	NA	NA	NA	NA	120	620
EPA 8260A								
	µg/kg	2700 U	2700 U	2800 U	3100 U	2600 U	2800 U	360 J
Ethylbenzene	µg/kg	2700 U	2700 U	2800 U	3100 U	2600 U	2800 J	4000
Methyl tert-butyl ether (MTBE)	µg/kg	5400 U	5400 U	5600 U	6300 U	5200 U	5600 U	6100 U
Toluene	µg/kg	2700 U	2700 U	2800 U	3100 U	2600 U	2800 U	3000 U
Trichloroethene	µg/kg	2700 U	2700 U	2800 U	3100 U	2600 U	2800 U	3000 U
Xylenes (total)	µg/kg	770 J	2200 J	1100 J	3100 U	800 J	11000	19000

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EPA - United States Environmental Protection Agency
mg/kg - milligrams per kilogram
NA - not analyzed
U - not detected above or equal to the stated reporting limit
µg/kg - micrograms per kilogram

Table 4-1
Summary of Analytical Results — Soil Borings

Sample Identification		18609-2635	18609-2636	18609-2637	18609-2638	18609-2639	18609-2654	18609-2655
Location Code		CB-398-11	CB-398-11	CB-398-11	CB-398-11	CB-398-11	CB-398-28	CB-398-28
Date Sampled		01/13/00	01/13/00	01/13/00	01/13/00	01/13/00	01/17/00	01/17/00
Depth (feet below ground surface)		140.0	149.5	160.0	169.5	179.5	39.0	69.0
	Unit							
CA LUFT 8015M								
TPH as Diesel	mg/kg	10.4 U	NA	280	NA	48	810	3000
TPH as Gasoline	mg/kg	1.04 U	3400 J	8.3	8700 J	2.2	110	1400 J
TPH as JP-5	mg/kg	NA	4800	NA	14000	NA	NA	NA
EPA 1312/8015M								
TPH as Diesel	mg/L	NA	NA	NA	NA	NA	NA	NA
TPH as Gasoline	mg/L	NA	2.9	NA	3.9	NA	NA	NA
TPH as JP-5	mg/L	NA	1.3	NA	2.4	NA	NA	NA
EPA 1312/8020								
Benzene	µg/L	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	µg/L	NA	NA	NA	NA	NA	NA	NA
Toluene	µg/L	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	µg/L	NA	NA	NA	37	NA	NA	NA
EPA 8260A								
	µg/kg	5.2 U	630 U	290 U	1200 U	5.4 U	590 U	560 U
Ethylbenzene	µg/kg	5.2 U	630 U	290 U	1200 U	5.4 U	2000	560 U
Methyl tert-butyl ether (MTBE)	µg/kg	10 U	1300 U	580 U	2400 U	11 U	1200 U	1100 U
Toluene	µg/kg	5.2 U	630 U	290 U	1200 U	5.4 U	590 U	560 U
Trichloroethene	µg/kg	5.2 U	630 U	290 U	1200 U	5.4 U	590 U	560 U
Xylenes (total)	µg/kg	5.2 U	620 J	290 U	5100	5.4 U	590 U	560 U

CA LUFT - California Leaking Underground Fuel Tank
EPA - United States Environmental Protection Agency
mg/kg - milligrams per kilogram
NA - not analyzed
U - not detected above or equal to the stated reporting limit
µg/kg - micrograms per kilogram

Table 4-1
Summary of Analytical Results — Soil Borings

Sample Identification		18609-2656 (Dup)	18609-2657	18609-2658	18609-2661	18609-2662	18609-2663	18609-2664
Location Code		CB-398-28	CB-398-28	CB-398-28	CB-398-28	CB-398-28	CB-398-28	CB-398-28
Date Sampled		01/17/00	01/17/00	01/17/00	01/18/00	01/18/00	01/18/00	01/18/00
Depth (feet below ground surface)		70.5	89.0	109.0	129.5	139.5	149.5	160.0
	Unit							
CA LUFT 8015M								
TPH as Diesel	mg/kg	2800	1900	11000	14000	12000	5000	10000
TPH as Gasoline	mg/kg	2500	1200	9700	8200	13000	1700	7300
TPH as JP-5	mg/kg	NA	NA	NA	NA	NA	NA	NA
EPA 1312/8015M								
TPH as Diesel	mg/L	NA	NA	NA	NA	NA	NA	NA
TPH as Gasoline	mg/L	NA	NA	NA	NA	32	NA	NA
TPH as JP-5	mg/L	NA	NA	NA	NA	NA	NA	NA
EPA 1312/8020								
Benzene	µg/L	NA	NA	NA	NA	2.5 U	NA	NA
Ethylbenzene	µg/L	NA	NA	NA	NA	160	NA	NA
Toluene	µg/L	NA	NA	NA	NA	13	NA	NA
Xylenes (total)	µg/L	NA	NA	NA	NA	290	NA	NA
EPA 8260A								
	µg/kg	560 U	570 U	540 U	2800 U	1100 U	1300 U	1200 U
Ethylbenzene	µg/kg	560 U	570 U	2700	31000	26000	220 J	520 J
Methyl tert-butyl ether (MTBE)	µg/kg	1100 U	1100 U	1100 U	5700 U	2100 U	2700 U	2300 U
Toluene	µg/kg	560 U	570 U	540 U	2800 U	1100 U	1300 U	1200 U
Trichloroethene	µg/kg	560 U	570 U	540 U	2800 U	1100 U	1300 U	1200 U
Xylenes (total)	µg/kg	560 U	570 U	2900	30000	45000	2700	990 J

CA LUFT - California Leaking Underground Fuel Tank
EPA - United States Environmental Protection Agency
mg/kg - milligrams per kilogram
NA - not analyzed
U - not detected above or equal to the stated reporting limit
µg/kg - micrograms per kilogram

Table 4-1
Summary of Analytical Results — Soil Borings

Sample Identification		18609-2665	18609-2666	18609-2667	18609-3377	18609-3378	18609-3379	18609-3380
Location Code		CB-398-28	CB-398-28	CB-398-28	398-SB-HP-01	398-SB-HP-01	398-SB-HP-01	398-SB-HP-01
Date Sampled		01/18/00	01/18/00	01/18/00	08/01/00	08/01/00	08/01/00	08/01/00
Depth (feet below ground surface)		169.5	185.0	189.5	5.0	10.0	20.0	40.0
	Unit							
CA LUFT 8015M								
TPH as Diesel	mg/kg	31000	2400	13000	11 U	12 U	11 U	12 U
TPH as Gasoline	mg/kg	17000	3200	7100	1.08 U	1.21 U	1.07 U	1.16 U
TPH as JP-5	mg/kg	NA	NA	NA	11 U	12 U	11 U	12 U
EPA 1312/8015M								
TPH as Diesel	mg/L	730	NA	2.1	NA	NA	NA	NA
TPH as Gasoline	mg/L	3.5	NA	2.4	NA	NA	NA	NA
TPH as JP-5	mg/L	NA	NA	NA	NA	NA	NA	NA
EPA 1312/8020								
Benzene	µg/L	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	µg/L	NA	NA	NA	NA	NA	NA	NA
Toluene	µg/L	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	µg/L	NA	NA	NA	NA	NA	NA	NA
EPA 8260A								
	µg/kg	1100 U	1200 U	1100 U	5.4 U	6 U	5.3 U	5.8 U
Ethylbenzene	µg/kg	370 J	650 J	300 J	5.4 U	6 U	5.3 U	5.8 U
Methyl tert-butyl ether (MTBE)	µg/kg	2200 U	2300 U	2300 U	11 U	12 U	11 U	12 U
Toluene	µg/kg	1100 U	1200 U	1100 U	5.4 U	6 U	5.3 U	5.8 U
Trichloroethene	µg/kg	1100 U	1200 U	1100 U	5.4 U	6 U	5.3 U	5.8 U
Xylenes (total)	µg/kg	8200	5100	1800	5.4 U	6 U	5.3 U	5.8 U

CA LUFT - California Leaking Underground Fuel Tank
EPA - United States Environmental Protection Agency
mg/kg - milligrams per kilogram
NA - not analyzed
U - not detected above or equal to the stated reporting limit
µg/kg - micrograms per kilogram

Table 5-1
Proposed Boring and Well Locations

Proposed Location	Status	Function	Justification
Proposed Soil and Hydropunch Sample Locations:			
SBC-1	Completed August 2000	Shallow soil sample boring	Provide shallow soil analytical data east of former TF398 tank, where no previous data was collected.
SBC-02	Completed August 2000	Shallow soil sample boring	Provide shallow soil analytical data at the CB398-02 location.
SBC-03	Completed August 2000	Shallow soil sample boring	Provide shallow soil analytical data at the CB398-03 location.
SBC-10	Completed August 2000	.	Provide shallow soil analytical data at the CB398-10 location.
SCB-11	Completed August 2000	Shallow soil sample boring	Provide shallow soil analytical data at the CB398-11 location.
SCB-27	Completed August 2000	Shallow soil sample boring	Provide shallow soil analytical data at the CB398-27 location.
SBC-28	Completed August 2000	Shallow soil sample boring	Provide shallow soil analytical data at the CB398-28 location.
HP-1	Soil boring Completed August 2000. Hydropunch sampling will be completed to obtain groundwater information.	Shallow soil sample and hydropunch groundwater sample	Provide shallow soil data in an area where no previous data exists and provide groundwater quality data to assist in placing proposed monitoring well MW398-30 at location NE of former 398 tank.
HP-2	New groundwater data location	Hydropunch groundwater sample	Provide groundwater quality data to assist in placing proposed monitoring well MW398-28 atSW boundary of plume
HP-3	New groundwater data location	Hydropunch groundwater sample	Provide groundwater quality data to assist in placing proposed monitoring well MW398-29 at NW boundary of plume
Proposed Groundwater Sampling Locations:			
MW398-01	Proposed existing monitoring well as part of the Monitoring Well Network	Monitor grounwater quality at the east boundary of plume.	Although the screen is submerged this well will provide some upgradient data about aqueous constituents. Free product plume is thought not to exist at this location.
MW398-21	Proposed existing monitoring well as part of the Monitoring Well Network	Provide background water quality data southeast and upgradient of the plume	Although the screen is submerged this well will provide upgradient data about aqueous constituents. Free product plume is not thought to exist at this location.

Table 5-1
Proposed Boring and Well Locations

Proposed Location	Status	Function	Justification
MW398-27	Proposed existing monitoring well as part of the Monitoring Well Network	Provide background water quality data south and upgradient of the plume	Although the screen is submerged this well will provide upgradient data about aqueous constituents. Free product plume is not thought to exist at this location.
MW398-12	Proposed existing monitoring well as part of the Monitoring Well Network	Monitor groundwater quality North and downgradient of the plume	This well has a proper screened interval and could monitor a free pproduct plume.
MW398-17	Proposed existing monitoring well as part of the Monitoring Well Network	Monitor groundwater quality on the Western boundary of the plume	Although the screen is submerged this well will provide mid plume data about aqueous constituents.
RW398-02	Proposed existing monitoring well as part of the Monitoring Well Network	Monitor groundwater quality at the center of the plume "hot spot."	Existing well in good shape with proper screened interval. This well was located in the center of plume with the greatest free product thickness.
ASMW398-02D	Proposed Replacement Well	Monitor groundwater quality near the north edge of the free product plume and within the aqueous plume	The ASW well data provides historic continuity. The well must be replaced because the top of the screen in the original well is submerged, making it impossible to measure freeproduct.
MW398-19D	Proposed Replacement Well	Near the south edge of the free product plume and within the aqueous plume	The MW well data provides historic continuity. The well must be replaced because the top of the screen in the original well is submerged, making it impossible to measure free product.
MW398-28	Proposed New Well	Monitor Northeast plume boundary	New well in area where no wells are located currently. Monitor potential extent of plume into that area.
MW398-29	Proposed New Well	Monitor Northwest plume boundary	This well will be installed if data from the MW398-17 well indicates the presence of the plume constituents.
MW398-30	Proposed New Well	Monitor Southwest plume boundary	

Appendix A
Groundwater Monitoring Data

Table A-1
Summary of Analytical Results for Ground Water Samples - T398

Sample Identification Location Code Date Sampled	Unit	96-398-W-092 ASMW398-01 06/12/96	96-T398-W-144 ASMW398-01 08/19/96	97-T398-W-1483 ASMW398-01 01/07/97	97-T398-W-374 ASMW398-01 02/10/97	97-T398-W-1574 ASMW398-01 02/28/97	16716-411 ASMW398-01 04/11/97	20242-049 ASMW398-01 12/30/97	20242-243 ASMW398-01 04/03/98	20242-244 ASMW398-01 04/03/98	96-398-W-091 ASMW398-02 06/12/96	96-ASMW02-04 ASMW398-02 08/28/96	97-T398-W-1489 ASMW398-02 01/09/97	97-T398-W-1576 ASMW398-02 02/28/97
CA LUFT-8015M														
TPH as Diesel	mg/L	0.5 U	0.5 U	5.8	4.3	NA	6.0	2.2 J	2.8 P	2.9 P	0.5 U	2.4 P	28	NA
TPH as Gasoline	mg/L	7.8 P	5.4 P	13	7.0	9.5	7.4	6.5	7.6 P	6.5 P	3.2 P	4.7 P	4	4.9
TPH as JP-5	mg/L	5.2	5.4 P	0.6 U	NA	4.8	NA	2.6 J	1.0 U	1.0 U	2.1	3 P	NA	15
EPA 8020/8260														
Benzene	µg/L	1500	2000	2200	3000	1700	1600	2100	2100	2100	320	730	570	400
Toluene	µg/L	1.0 U	3.2	1.0 U	50 U	100 U	5 U	3.6	11 J	50 U	1.1 U	2.6	1.0	5 U
Ethylbenzene	µg/L	260	290	394	480	300	280	360	380	380	1.0 U	0.5 J	0.8 J	5 U
Xylenes (total)	µg/L	220	190	210	260	100 U	120	48	47 J	100 U	60	75	36	27
Methyl tert-butyl ether (MTBE)	µg/L	1.0 U	1.0 U	1.0 U	50 U	100 U	5 U	10 J	250 U	500 U	1.0 U	NA	1.0 U	5 U
EPA 6010														
Aluminum	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	µg/L	NA	NA	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	µg/L	NA	NA	NA	NA	NA	86100	NA	NA	NA	NA	NA	NA	NA
Chromium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	µg/L	5000	NA	NA	4230	3970	4520	NA	NA	NA	2000	NA	1700	8810
Lead	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	µg/L	NA	NA	NA	NA	NA	64600	NA	NA	NA	NA	NA	NA	NA
Manganese	µg/L	NA	NA	NA	NA	NA	376	NA	NA	NA	NA	NA	NA	NA
Molybdenum	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	µg/L	6400	NA	NA	NA	2980	3260	NA	NA	NA	6000	NA	4600	5010
Selenium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	µg/L	NA	NA	NA	NA	NA	131000	NA	NA	NA	NA	NA	NA	NA
Thallium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPA 7470														
Mercury	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPA 7196A														
Hexavalent chromium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
General Chemistry														
Specific Conductance (EPA 120.1)	umhos/cm	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Hardness (EPA 130.0 / 314A)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH (EPA 150.1)	pH units	6.9	NA	NA	NA	7.0	NA	NA	NA	NA	6.9	NA	NA	7.0
Total Dissolved Solids (EPA 160.0)	mg/L	1000	NA	NA	NA	815	820	NA	NA	NA	880	NA	NA	940
Total Suspended Solids (EPA 160.0)	mg/L	28	NA	NA	NA	10 U	NA	NA	NA	NA	36	NA	NA	144
Fluoride (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	.5 U	NA	NA	NA	NA	NA	NA	NA
Alkalinity (EPA 310.1)	mg/L	770	NA	690	NA	553	NA	NA	NA	NA	680	NA	710	798
Alkalinity, Bicarbonate (EPA 310.1)	mg/L	NA	NA	NA	NA	NA	353	NA	NA	NA	NA	NA	NA	NA
Alkalinity, Carbonate (EPA 310.1)	mg/L	NA	NA	NA	NA	NA	10 U	NA	NA	NA	NA	NA	NA	NA
Ammonia (EPA 350.0)	mg/L	0.029 J	NA	0.10 U	NA	NA	NA	NA	NA	NA	0.1 U	NA	0.10 U	NA
Nitrogen (EPA 350.0)	mg/L	0.049	NA	0.040 U	NA	.14	NA	NA	NA	NA	0.036 J	NA	0.040 U	.05 U
Nitrate/Nitrite as Nitrogen (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate (EPA 300.0)	mg/L	NA	NA	NA	.5 U	.5 U	.5 U	NA	NA	NA	NA	NA	NA	.5 U
Nitrite (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphate (EPA 300.0 / 365.2)	mg/L	0.16	NA	NA	NA	NA	NA	NA	NA	NA	0.13	NA	NA	NA
Phosphorus, Total (EPA 365.2)	mg/L	NA	NA	NA	NA	.03 U	NA	NA	NA	NA	NA	NA	NA	.39
Sulfate (EPA 300.0 / 375.0)	mg/L	100	NA	NA	NA	91	68	NA	NA	NA	94	NA	NA	78
Chloride (EPA 300.0/9250/9252)	mg/L	NA	NA	NA	NA	NA	65	NA	NA	NA	NA	NA	NA	NA
Total Kjeldahl Nitrogen (TKN) (EPA 350.0)	mg/L	1.0 U	NA	0.001 U	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA	1.0 U	1.0 U
Biochemical Oxygen Demand (BOD) (EPA 405.1)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chemical Oxygen Demand (COD) (EPA 410.4)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (TOC) (EPA 415.1)	mg/L	5.7	NA	4.8	NA	26 J	NA	NA	NA	NA	4.9	NA	6.2	24
Total Organic Halide (TOX) (EPA 9020)	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heterotrophic plate count (SM 9215)	cfu/mL	140000	NA	10 U	NA	6000	NA	NA	NA	NA	1200000	NA	1000	1000

Table A-1
Summary of Analytical Results for Ground Water Samples - T398

Sample Identification		16716-409	20242-044	20242-045	20242-238	18609-3134	18609-3138	97-T398-W-368	20242-048	20242-239	20242-929	18609-2499	18609-2500	18609-3142
Location Code		ASMW398-02	MW398-01	MW398-01 Dup	MW398-01	398-MW-01	398-MW-01 Dup	MW398-03	MW398-04	MW398-04	MW398-04	TF398-MW-04	TF398-MW-04 Dup	398-MW-04
Date Sampled	Unit	04/11/97	12/29/97	12/29/97	04/02/98	06/23/00	06/23/00	01/07/97	12/30/97	04/02/98	06/22/99	12/13/99	12/13/99	06/26/00
CA LUFT-8015M														
TPH as Diesel	mg/L	7.1	2	2	3.7 JP	.096 U	.097 U	120	0.76	3.6 JP	0.8	.73	.59	.094 U
TPH as Gasoline	mg/L	5.0	2.3	2.4	2.5 P	1.6 J	1 J	270	0.59	1.4 P	0.79	.69	.74	.85 J
TPH as JP-5	mg/L	NA	2.3	2.3	1.0 U	2.0	.98	NA	0.66	1.0 U	NA	NA	NA	.66
EPA 8020/8260														
Benzene	µg/L	470	19	19	11	11	22	1700	15	10	5.5	5	4.6	5 U
Toluene	µg/L	2.5 U	2.8	2.8	0.65	5 U	1.9 J	5 U	1 U	0.79	0.5 U	.5 U	.5 U	5 U
Ethylbenzene	µg/L	3.2	50	51	36	9.5	16	300	34	46	32.4	26	26	28
Xylenes (total)	µg/L	29	72	73	40	7.4	5 U	690	17	26	8.1	3.7	3.8	5 U
Methyl tert-butyl ether (MTBE)	µg/L	2.5 U	6.4 J	2.9 J	2.8 J	10 U	10 U	5 U	5 J	2.4 J	5 U	1 U	1 U	10 U
EPA 6010														
Aluminum	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	µg/L	112000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	µg/L	1410	NA	NA	NA	NA	NA	9680	NA	NA	NA	NA	NA	NA
Lead	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	µg/L	68300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	µg/L	970	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Molybdenum	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	µg/L	4380	NA	NA	NA	NA	NA	6710	NA	NA	NA	NA	NA	NA
Selenium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	µg/L	134000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPA 7470														
Mercury	µg/L	NA	NA	NA	NA	NA	NA	.326	NA	NA	NA	NA	NA	NA
EPA 7196A														
Hexavalent chromium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
General Chemistry														
Specific Conductance (EPA 120.1)	umhos/cm	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Hardness (EPA 130.0 / 314A)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH (EPA 150.1)	pH units	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Dissolved Solids (EPA 160.0)	mg/L	905	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Suspended Solids (EPA 160.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoride (EPA 300.0)	mg/L	.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alkalinity (EPA 310.1)	mg/L	NA	NA	NA	NA	439	710	1248	NA	NA	NA	NA	NA	430
Alkalinity, Bicarbonate (EPA 310.1)	mg/L	537	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alkalinity, Carbonate (EPA 310.1)	mg/L	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ammonia (EPA 350.0)	mg/L	NA	NA	NA	NA	NA	NA	.05 U	NA	NA	NA	NA	NA	NA
Nitrogen (EPA 350.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate/Nitrite as Nitrogen (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate (EPA 300.0)	mg/L	.5 U	NA	NA	NA	NA	NA	.5 U	NA	NA	NA	NA	NA	NA
Nitrite (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphate (EPA 300.0 / 365.2)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus, Total (EPA 365.2)	mg/L	NA	NA	NA	NA	NA	NA	.07	NA	NA	NA	NA	NA	NA
Sulfate (EPA 300.0 / 375.0)	mg/L	48	NA	NA	NA	138	314	NA	NA	NA	NA	NA	NA	58.1
Chloride (EPA 300.0/9250/9252)	mg/L	56	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Kjeldahl Nitrogen (TKN) (EPA 350.0)	mg/L	NA	NA	NA	NA	NA	NA	.1 U	NA	NA	NA	NA	NA	NA
Biochemical Oxygen Demand (BOD) (EPA 405.1)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chemical Oxygen Demand (COD) (EPA 410.4)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (TOC) (EPA 415.1)	mg/L	NA	NA	NA	NA	NA	NA	26	NA	NA	NA	NA	NA	NA
Total Organic Halides (TOX) (EPA 9020)	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heterotrophic plate count (SM 9215)	cfu/mL	NA	NA	NA	NA	NA	NA	580000	NA	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Ground Water Samples - T398

Sample Identification		95ETMW-05W011	96EL-MW05-W-028	96-398-W-088A	96-T398-W-141	97-T398-W-366	97-T398-W-1568	16716-400	18292-483	18292-486	20242-031	20242-234	20242-665	96EL-MW06-W-029
Location Code		MW398-05	MW398-05	MW398-05	MW398-05	MW398-05	MW398-05	MW398-05	MW398-05	MW398-05	MW398-05	MW398-05	MW398-05	MW398-06
Date Sampled		12/01/95	02/15/96	05/21/96	08/16/96	01/02/97	02/26/97	04/09/97	08/04/97	08/05/97	12/23/97	03/31/98	12/18/98	02/16/96
	Unit													
CA LUFT-8015M														
TPH as Diesel	mg/L	1.8	NA	4.2	1.7	3.5	3.3	3.3	NA	3.6	2.8	2.3 JP	0.5 U	NA
TPH as Gasoline	mg/L	NA	NA	NA	NA	4.9	6.3	8.0	.29	3.9	4	5.2 P	5.0	NA
TPH as JP-5	mg/L	NA	1.8	NA	NA	NA	NA	NA	65	NA	0.5 U	1.0 U	2.2	1.4
EPA 8020/8260														
Benzene	µg/L	1700	1300	1300	2000	1000	1100	1100	.85	770	880	730	400	320
Toluene	µg/L	25 U	10	.5 U	1.3	2.5 U	10 U	.5 U	.67	3 U	3 U	0.59 J	50 U	2.5 U
Ethylbenzene	µg/L	240	180	140	280	390	420	320	.3 U	270	450	450	400	33
Xylenes (total)	µg/L	130	94	42	74	65	62	54	1 U	49	27	28	150 U	14
Methyl tert-butyl ether (MTBE)	µg/L	NA	NA	8.3	17	2.5 U	10 U	.5 U	1 U	10 U	10 U	19 J	100 U	NA
EPA 6010														
Aluminum	µg/L	NA	NA	NA	NA	50 U	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	µg/L	NA	NA	50 U	NA	60 U	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	µg/L	NA	NA	10 U	NA	21.8	NA	NA	NA	NA	NA	NA	NA	NA
Barium	µg/L	NA	NA	720	NA	748	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	µg/L	NA	NA	10 U	NA	5 U	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	µg/L	NA	NA	10 U	NA	5 U	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	µg/L	NA	NA	NA	NA	69600	NA	71300	NA	NA	NA	NA	NA	NA
Chromium	µg/L	NA	NA	11.3	NA	10 U	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	µg/L	NA	NA	50 U	NA	50 U	NA	NA	NA	NA	NA	NA	NA	NA
Copper	µg/L	NA	NA	26.3	NA	25 U	NA	NA	NA	NA	NA	NA	NA	NA
Iron	µg/L	NA	NA	7260	NA	6320	6640	6630	NA	NA	NA	NA	NA	NA
Lead	µg/L	NA	NA	13.1	NA	3 U	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	µg/L	NA	NA	NA	NA	47700	NA	52100	NA	NA	NA	NA	NA	NA
Manganese	µg/L	NA	NA	428	NA	419	NA	428	NA	NA	NA	NA	NA	NA
Molybdenum	µg/L	NA	NA	50 U	NA	50 U	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	µg/L	NA	NA	50 U	NA	40 U	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	µg/L	NA	NA	NA	NA	4540	3440	3360	NA	NA	NA	NA	NA	NA
Selenium	µg/L	NA	NA	10 U	NA	5 U	NA	NA	NA	NA	NA	NA	NA	NA
Silver	µg/L	NA	NA	10 U	NA	10 U	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	µg/L	NA	NA	NA	NA	199000	NA	218000	NA	NA	NA	NA	NA	NA
Thallium	µg/L	NA	NA	500 U	NA	10 U	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	µg/L	NA	NA	50 U	NA	50 U	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	µg/L	NA	NA	343	NA	20 U	NA	NA	NA	NA	NA	NA	NA	NA
EPA 7470														
Mercury	µg/L	NA	NA	5 U	NA	.118 J	NA	NA	NA	NA	NA	NA	NA	NA
EPA 7196A														
Hexavalent chromium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
General Chemistry														
Specific Conductance (EPA 120.1)	umhos/cm	NA	NA	1410	NA	26000	NA	NA	NA	NA	NA	NA	NA	NA
Total Hardness (EPA 130.0 / 314A)	mg/L	NA	NA	382	NA	370	NA	NA	NA	NA	NA	NA	NA	NA
pH (EPA 150.1)	pH units	NA	NA	7.4	NA	7.3	7.0	NA	NA	NA	NA	NA	NA	NA
Total Dissolved Solids (EPA 160.0)	mg/L	NA	NA	855	NA	1010	915	930	NA	NA	NA	NA	NA	NA
Total Suspended Solids (EPA 160.0)	mg/L	NA	NA	143	NA	15	10 U	NA	NA	NA	NA	NA	NA	NA
Fluoride (EPA 300.0)	mg/L	NA	NA	.2 U	NA	1 U	NA	.5 U	NA	NA	NA	NA	NA	NA
Alkalinity (EPA 310.1)	mg/L	NA	NA	577	NA	400	606	NA	NA	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (EPA 310.1)	mg/L	NA	NA	NA	NA	NA	NA	389	NA	NA	NA	NA	NA	NA
Alkalinity, Carbonate (EPA 310.1)	mg/L	NA	NA	NA	NA	NA	NA	75	NA	NA	NA	NA	NA	NA
Ammonia (EPA 350.0)	mg/L	NA	NA	NA	NA	NA	0.058	NA	NA	NA	NA	NA	NA	NA
Nitrogen (EPA 350.0)	mg/L	NA	NA	NA	NA	NA	0.058	NA	NA	NA	NA	NA	NA	NA
Nitrate/Nitrite as Nitrogen (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate (EPA 300.0)	mg/L	NA	NA	.1 U	NA	.5 U	.5 U	.5 U	NA	NA	NA	NA	NA	NA
Nitrite (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphate (EPA 300.0 / 365.2)	mg/L	NA	NA	.2 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus, Total (EPA 365.2)	mg/L	NA	NA	NA	NA	.08	.03 U	NA	NA	NA	NA	NA	NA	NA
Sulfate (EPA 300.0 / 375.0)	mg/L	NA	NA	32	NA	NA	5 U	13	NA	NA	NA	NA	NA	NA
Chloride (EPA 300.0/9250/9252)	mg/L	NA	NA	114.00	NA	161	NA	194	NA	NA	NA	NA	NA	NA
Total Kjeldahl Nitrogen (TKN) (EPA 350.0)	mg/L	NA	NA	NA	NA	.1 U	1 U	NA	NA	NA	NA	NA	NA	NA
Biochemical Oxygen Demand (BOD) (EPA 405.1)	mg/L	NA	NA	NA	NA	12	NA	NA	NA	NA	NA	NA	NA	NA
Chemical Oxygen Demand (COD) (EPA 410.4)	mg/L	NA	NA	NA	NA	12	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (TOC) (EPA 415.1)	mg/L	NA	NA	NA	NA	42	26	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides (TOX) (EPA 9020)	µg/L	NA	NA	NA	NA	50 U	NA	NA	NA	NA	NA	NA	NA	NA
Heterotrophic plate count (SM 9215)	cfu/mL	NA	NA	NA	NA	21000	54	NA	NA	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Ground Water Samples - T398

Sample Identification		96EL-MW06-W-030	96-398-W-090	96-T398-W-147	96-T398-W-363	97-T398-W-376	97-T398-W-1580	16716-402	16716-403	20242-032	20242-232	20242-233	20242-661	20242-662
Location Code		MW398-06 Dup	MW398-06	MW398-06	MW398-06	MW398-06	MW398-06	MW398-06	MW398-06 Dup	MW398-06	MW398-06	MW398-06 Dup	MW398-06	MW398-06
Date Sampled		02/16/96	05/23/96	08/19/96	12/27/96	02/11/97	03/03/97	04/09/97	04/09/97	12/23/97	03/31/98	03/31/98	12/18/98	12/18/98
	Unit													
CA LUFT-8015M														
TPH as Diesel	mg/L	NA	3.77	1.8	1.8	1.7	2.3	1.8	2.2	0.92 J	1.1 P	1.0 U	0.5 U	0.5 U
TPH as Gasoline	mg/L	NA	NA	NA	2.36	1.9	1.6	2.0	2.4	1.2	1.5 U	0.10 U	1.55	1.61
TPH as JP-5	mg/L	1.3	NA	NA	NA	NA	NA	NA	NA	0.5 U	1.0 U	1.0 U	0.8	0.8
EPA 8020/8260														
Benzene	µg/L	290	77	270	180	290	160	100	89	68	60	62	23 J	23 J
Toluene	µg/L	2.5 U	.5 U	.5 U	2.5 U	2.7	2.7	2.5 U	.5 U	5 U	0.44 J	1.5	50 U	50 U
Ethylbenzene	µg/L	33	3.4	35.0	54	110	86	67	65	89	79	93	136	150
Xylenes (total)	µg/L	17	5.7	8.2	7.5	13	14	7.5 U	3.7	2.6 J	1.9 J	5.2	150 U	150 U
Methyl tert-butyl ether (MTBE)	µg/L	NA	2.6	8.5	2.5 U	10	2 U	2.5 U	.5 U	10 U	3.8 J	6.2 J	100 U	100 U
EPA 6010														
Aluminum	µg/L	NA	NA	NA	74.3	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	µg/L	NA	50 U	NA	60 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	µg/L	NA	10 U	NA	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	µg/L	NA	100 U	NA	382	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	µg/L	NA	10 U	NA	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	µg/L	NA	10 U	NA	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	µg/L	NA	NA	NA	95200	NA	NA	96100	90500	NA	NA	NA	NA	NA
Chromium	µg/L	NA	10 U	NA	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	µg/L	NA	50 U	NA	50 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	µg/L	NA	10 U	NA	25 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	µg/L	NA	5340	NA	3310	3320	3600	3590	3440	NA	NA	NA	NA	NA
Lead	µg/L	NA	5 U	NA	8.88	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	µg/L	NA	NA	NA	63700	NA	NA	66300	62300	NA	NA	NA	NA	NA
Manganese	µg/L	NA	656	NA	1100	NA	NA	1180	1130	NA	NA	NA	NA	NA
Molybdenum	µg/L	NA	50 U	NA	50 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	µg/L	NA	50 U	NA	40 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	µg/L	NA	NA	NA	4070	NA	3360	3230	3060	NA	NA	NA	NA	NA
Selenium	µg/L	NA	10 U	NA	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	µg/L	NA	10 U	NA	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	µg/L	NA	NA	NA	166000	NA	NA	162000	162000	NA	NA	NA	NA	NA
Thallium	µg/L	NA	500 U	NA	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	µg/L	NA	50 U	NA	50 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	µg/L	NA	59.6	NA	38.5	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPA 7470														
Mercury	µg/L	NA	5 U	NA	.2 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPA 7196A														
Hexavalent chromium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
General Chemistry														
Specific Conductance (EPA 120.1)	umhos/cm	NA	1130	NA	1530	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Hardness (EPA 130.0 / 314A)	mg/L	NA	405	NA	500	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH (EPA 150.1)	pH units	NA	7.8	NA	7.2	NA	7.0	NA	NA	NA	NA	NA	NA	NA
Total Dissolved Solids (EPA 160.0)	mg/L	NA	715	NA	965	NA	735	875	855	NA	NA	NA	NA	NA
Total Suspended Solids (EPA 160.0)	mg/L	NA	31	NA	10 U	NA	13	NA	NA	NA	NA	NA	NA	NA
Fluoride (EPA 300.0)	mg/L	NA	.2 U	NA	NA	NA	NA	.5 U	.5 U	NA	NA	NA	NA	NA
Alkalinity (EPA 310.1)	mg/L	NA	294	NA	546	NA	697	NA	NA	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (EPA 310.1)	mg/L	NA	NA	NA	NA	NA	NA	403	555	NA	NA	NA	NA	NA
Alkalinity, Carbonate (EPA 310.1)	mg/L	NA	NA	NA	NA	NA	NA	57	10 U	NA	NA	NA	NA	NA
Ammonia (EPA 350.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen (EPA 350.0)	mg/L	NA	NA	NA	NA	NA	.05 U	NA	NA	NA	NA	NA	NA	NA
Nitrate/Nitrite as Nitrogen (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate (EPA 300.0)	mg/L	NA	.1 U	NA	.5 U	.5 U	.5 U	.5 U	.5 U	NA	NA	NA	NA	NA
Nitrite (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphate (EPA 300.0 / 365.2)	mg/L	NA	.2 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus, Total (EPA 365.2)	mg/L	NA	NA	NA	.08	NA	.03	NA	NA	NA	NA	NA	NA	NA
Sulfate (EPA 300.0 / 375.0)	mg/L	NA	45.8	NA	28	NA	24	21	15	NA	NA	NA	NA	NA
Chloride (EPA 300.0/9250/9252)	mg/L	NA	28.7	NA	106	NA	NA	113	125	NA	NA	NA	NA	NA
Total Kjeldahl Nitrogen (TKN) (EPA 350.0)	mg/L	NA	NA	NA	.1 U	NA	1.0 U	NA	NA	NA	NA	NA	NA	NA
Biochemical Oxygen Demand (BOD) (EPA 405.1)	mg/L	NA	NA	NA	6	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chemical Oxygen Demand (COD) (EPA 410.4)	mg/L	NA	NA	NA	23	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (TOC) (EPA 415.1)	mg/L	NA	NA	NA	56	NA	22	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides (TOX) (EPA 9020)	µg/L	NA	NA	NA	68	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heterotrophic plate count (SM 9215)	cfu/mL	NA	NA	NA	10 U	NA	30	NA	NA	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Ground Water Samples - T398

Sample Identification		20242-098	20242-248	98EL-MW-09-WA-025	96-398-W-085	96-T398-W-150	96-T398-W-360	16716-393	18292-498	18292-499	20242-917	18609-2501	18609-3125	95ETMW-12W007
Location Code		MW398-08	MW398-08	MW398-09	MW398-09	MW398-09	MW398-09	MW398-09	MW398-09	MW398-09 Dup	MW398-09	TF398-MW-09	398-MW-09	MW398-12
Date Sampled	Unit	01/28/98	04/06/98	02/14/96	05/15/96	08/20/96	12/26/96	04/07/97	08/07/97	08/07/97	06/17/99	12/13/99	06/20/00	11/30/95
CA LUFT-8015M														
TPH as Diesel	mg/L	0.5 U	1.0 U	NA	.5 U	.5 U	.5 U	.5 U	.1 U	.1 U	0.5 U	.095 U	.092 U	NA
TPH as Gasoline	mg/L	0.1 U	0.021 PJ	NA	NA	NA	.1 U	.1 U	.1 U	.1 U	0.05 U	.1 U	.1 U	NA
TPH as JP-5	mg/L	0.5 U	1.0 U	.5 U	NA	NA	NA	NA	NA	NA	NA	NA	.46 U	.5 U
EPA 8020/8260														
Benzene	µg/L	0.5 U	0.50 U	3.9	.5 U	5.3	.5 U	.5 U	.3 U	.3 U	5 U	.5 U	5 U	.5 U
Toluene	µg/L	0.5 U	0.50 U	.5 U	.5 U	.5 U	.5 U	.5 U	.3 U	.3 U	5 U	.5 U	5 U	.5 U
Ethylbenzene	µg/L	0.5 U	0.50 U	4.6	.5 U	3.2	.5 U	.5 U	.3 U	.3 U	5 U	.5 U	5 U	.5 U
Xylenes (total)	µg/L	2 U	1.0 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1 U	1 U	15 U	1.5 U	5 U	1.5 U
Methyl tert-butyl ether (MTBE)	µg/L	10 U	5.0 U	NA	NA	.5 U	.5 U	.5 U	1 U	1 U	10 U	1 U	10 U	NA
EPA 6010														
Aluminum	µg/L	NA	NA	NA	NA	NA	1100	NA	NA	NA	NA	NA	NA	NA
Antimony	µg/L	NA	NA	NA	50 U	NA	60 U	NA	NA	NA	NA	NA	NA	NA
Arsenic	µg/L	NA	NA	NA	10 U	NA	10 U	NA	NA	NA	NA	NA	NA	NA
Barium	µg/L	NA	NA	NA	100 U	NA	46.7	NA	NA	NA	NA	NA	NA	NA
Beryllium	µg/L	NA	NA	NA	10 U	NA	3 U	NA	NA	NA	NA	NA	NA	NA
Cadmium	µg/L	NA	NA	NA	10 U	NA	5 U	NA	NA	NA	NA	NA	NA	NA
Calcium	µg/L	NA	NA	NA	NA	NA	87900	84700	NA	NA	NA	NA	NA	NA
Chromium	µg/L	NA	NA	NA	14.5	NA	33.3	NA	NA	NA	NA	NA	NA	NA
Cobalt	µg/L	NA	NA	NA	50 U	NA	10 U	NA	NA	NA	NA	NA	NA	NA
Copper	µg/L	NA	NA	NA	10 U	NA	10 U	NA	NA	NA	NA	NA	NA	NA
Iron	µg/L	NA	NA	NA	683	NA	994	118	NA	NA	NA	NA	NA	NA
Lead	µg/L	NA	NA	NA	5 U	NA	3 U	NA	NA	NA	NA	NA	NA	NA
Magnesium	µg/L	NA	NA	NA	NA	NA	58200	59800	NA	NA	NA	NA	NA	NA
Manganese	µg/L	NA	NA	NA	33.5	NA	37.8	17.5	NA	NA	NA	NA	NA	NA
Molybdenum	µg/L	NA	NA	NA	50 U	NA	40 U	NA	NA	NA	NA	NA	NA	NA
Nickel	µg/L	NA	NA	NA	50 U	NA	27	NA	NA	NA	NA	NA	NA	NA
Potassium	µg/L	NA	NA	NA	NA	NA	4820	3510	NA	NA	NA	NA	NA	NA
Selenium	µg/L	NA	NA	NA	10 U	NA	16.7	NA	NA	NA	NA	NA	NA	NA
Silver	µg/L	NA	NA	NA	10 U	NA	10 U	NA	NA	NA	NA	NA	NA	NA
Sodium	µg/L	NA	NA	NA	NA	NA	113000	115000	NA	NA	NA	NA	NA	NA
Thallium	µg/L	NA	NA	NA	500 U	NA	10 U	NA	NA	NA	NA	NA	NA	NA
Vanadium	µg/L	NA	NA	NA	50 U	NA	26.5	NA	NA	NA	NA	NA	NA	NA
Zinc	µg/L	NA	NA	NA	10.1	NA	10.9	NA	NA	NA	NA	NA	NA	NA
EPA 7470														
Mercury	µg/L	NA	NA	NA	.817	NA	.21	NA	NA	NA	NA	NA	NA	NA
EPA 7196A														
Hexavalent chromium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
General Chemistry														
Specific Conductance (EPA 120.1)	umhos/cm	NA	NA	NA	1230	NA	1243	NA	NA	NA	NA	NA	NA	NA
Total Hardness (EPA 130.0 / 314A)	mg/L	NA	NA	NA	386.00	NA	459	NA	NA	NA	NA	NA	NA	NA
pH (EPA 150.1)	pH units	NA	NA	NA	7.9	NA	7.7	NA	NA	NA	NA	NA	NA	NA
Total Dissolved Solids (EPA 160.0)	mg/L	NA	NA	NA	730	NA	875	840	NA	NA	NA	NA	NA	NA
Total Suspended Solids (EPA 160.0)	mg/L	NA	NA	NA	33.00	NA	10 U	NA	NA	NA	NA	NA	NA	NA
Fluoride (EPA 300.0)	mg/L	NA	NA	NA	.2 U	NA	1 U	.2 U	NA	NA	NA	NA	288	NA
Alkalinity (EPA 310.1)	mg/L	NA	NA	NA	450	NA	221	NA	NA	NA	NA	NA	NA	NA
Alkalinity, Bicarbonate (EPA 310.1)	mg/L	NA	NA	NA	NA	NA	NA	180	NA	NA	NA	NA	NA	NA
Alkalinity, Carbonate (EPA 310.1)	mg/L	NA	NA	NA	NA	NA	NA	22	NA	NA	NA	NA	NA	NA
Ammonia (EPA 350.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen (EPA 350.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate/Nitrite as Nitrogen (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate (EPA 300.0)	mg/L	NA	NA	NA	11.6	NA	10.7	9.3	NA	NA	NA	NA	NA	NA
Nitrite (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphate (EPA 300.0 / 365.2)	mg/L	NA	NA	NA	.27	NA	1 U	NA	NA	NA	NA	NA	NA	NA
Phosphorus, Total (EPA 365.2)	mg/L	NA	NA	NA	NA	NA	.39	NA	NA	NA	NA	NA	NA	NA
Sulfate (EPA 300.0 / 375.0)	mg/L	NA	NA	NA	177	NA	162	141	NA	NA	NA	NA	159	NA
Chloride (EPA 300.0/9250/9252)	mg/L	NA	NA	NA	165	NA	154	151	NA	NA	NA	NA	NA	NA
Total Kjeldahl Nitrogen (TKN) (EPA 350.0)	mg/L	NA	NA	NA	NA	NA	.1 U	NA	NA	NA	NA	NA	NA	NA
Biochemical Oxygen Demand (BOD) (EPA 405.1)	mg/L	NA	NA	NA	NA	NA	9	NA	NA	NA	NA	NA	NA	NA
Chemical Oxygen Demand (COD) (EPA 410.4)	mg/L	NA	NA	NA	NA	NA	26	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon (TOC) (EPA 415.1)	mg/L	NA	NA	NA	NA	NA	14	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides (TOX) (EPA 9020)	µg/L	NA	NA	NA	NA	NA	50	NA	NA	NA	NA	NA	NA	NA
Heterotrophic plate count (SM 9215)	cfu/mL	NA	NA	NA	NA	NA	120	NA	NA	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Ground Water Samples - T398

Sample Identification		96EL-MW-12-WA-024	96-398-W-089A	96-T398-W-139	96-T398-W-352	16716-388	18292-490	20242-245	18609-3141	95ELMW398-13W002	96ELMW-13-W020	96-398-W-088	96-T398-W-130	96-T398-W-131
Location Code		MW398-12	MW398-12	MW398-12	MW398-12	MW398-12	MW398-12	MW398-12	398-MW-12	MW398-13	MW398-13	MW398-13	MW398-13	MW398-13 Dup
Date Sampled	Unit	02/14/96	05/22/96	08/16/96	12/19/96	04/04/97	08/05/97	04/03/98	06/26/00	11/15/95	02/09/96	05/20/96	08/14/96	08/14/96
CA LUFT-8015M														
TPH as Diesel	mg/L	NA	.5 U	.5 U	0.5 U	.5 U	0.1 U	1.0 U	.096 U	.05 U	NA	.5 U	.5 U	.5 U
TPH as Gasoline	mg/L	NA	NA	NA	NA	.1 U	.1 U	0.10 U	.1 U	NA	NA	NA	NA	NA
TPH as JP-5	mg/L	.5 U	NA	NA	NA	NA	NA	1.0 U	.48 U	NA	.5 U	NA	NA	NA
EPA 8020/8260														
Benzene	µg/L	2.0	6.7	.5 U	.5 U	.5 U	.3 U	0.50 U	5 U	.5 U	.5 U	.5 U	1.0	1.0
Toluene	µg/L	.5 U	.5 U	.5 U	.5 U	.5 U	.3 U	0.50 U	5 U	.5 U	.5 U	.5 U	.5 U	.5 U
Ethylbenzene	µg/L	2.5	.5 U	.5 U	.5 U	.5 U	.3 U	0.50 U	5 U	.5 U	.5 U	.5 U	.5 U	.5 U
Xylenes (total)	µg/L	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1 U	1.0 U	5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Methyl tert-butyl ether (MTBE)	µg/L	NA	.5 U	.5 U	.5 U	.5 U	1 U	5.0 U	10 U	NA	NA	.5 U	.5 U	.5 U
EPA 6010														
Aluminum	µg/L	NA	NA	NA	50 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	µg/L	NA	50 U	NA	60 U	NA	NA	NA	NA	50 U	NA	50 U	NA	NA
Arsenic	µg/L	NA	10 U	NA	10 U	NA	NA	NA	NA	10 U	NA	10 U	NA	NA
Barium	µg/L	NA	100 U	NA	200 U	NA	NA	NA	NA	100 U	NA	100 U	NA	NA
Beryllium	µg/L	NA	10 U	NA	5 U	NA	NA	NA	NA	10 U	NA	10 U	NA	NA
Cadmium	µg/L	NA	10 U	NA	5 U	NA	NA	NA	NA	10 U	NA	10 U	NA	NA
Calcium	µg/L	NA	NA	NA	90400	79500	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	µg/L	NA	10 U	NA	10 U	NA	NA	NA	NA	10 U	NA	10 U	NA	NA
Cobalt	µg/L	NA	50 U	NA	50 U	NA	NA	NA	NA	50 U	NA	50 U	NA	NA
Copper	µg/L	NA	10 U	NA	25 U	NA	NA	NA	NA	10 U	NA	10 U	NA	NA
Iron	µg/L	NA	3560	NA	37.8	20 U	NA	NA	NA	NA	NA	515	NA	NA
Lead	µg/L	NA	5 U	NA	3 U	NA	NA	NA	NA	5 U	NA	5 U	NA	NA
Magnesium	µg/L	NA	NA	NA	54800	51400	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	µg/L	NA	56	NA	14.8	15.8	NA	NA	NA	NA	NA	26.9	NA	NA
Molybdenum	µg/L	NA	50 U	NA	50 U	NA	NA	NA	NA	50 U	NA	51.7	NA	NA
Nickel	µg/L	NA	50 U	NA	40 U	NA	NA	NA	NA	50 U	NA	50 U	NA	NA
Potassium	µg/L	NA	NA	NA	3850	3620	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	µg/L	NA	10 U	NA	9.35	NA	NA	NA	NA	10 U	NA	10 U	NA	NA
Silver	µg/L	NA	10 U	NA	10 U	NA	NA	NA	NA	10 U	NA	10 U	NA	NA
Sodium	µg/L	NA	NA	NA	129000	128000	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	µg/L	NA	500 U	NA	10 U	NA	NA	NA	NA	500 U	NA	500 U	NA	NA
Vanadium	µg/L	NA	50 U	NA	50 U	NA	NA	NA	NA	50 U	NA	50 U	NA	NA
Zinc	µg/L	NA	17.8	NA	20 U	NA	NA	NA	NA	113	NA	10 U	NA	NA
EPA 7470														
Mercury	µg/L	NA	5 U	NA	.2 U	NA	NA	NA	NA	.2 U	NA	5 U	NA	NA
EPA 7196A														
Hexavalent chromium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	.01	NA	NA	NA	NA
General Chemistry														
Specific Conductance (EPA 120.1)	umhos/cm	NA	1170	NA	1343	NA	NA	NA	NA	1170	NA	1320	NA	NA
Total Hardness (EPA 130.0 / 314A)	mg/L	NA	414	NA	452	NA	NA	NA	NA	396.5	NA	377.00	NA	NA
pH (EPA 150.1)	pH units	NA	7.6	NA	7.3	NA	NA	NA	NA	7.8	NA	8.1	NA	NA
Total Dissolved Solids (EPA 160.0)	mg/L	NA	760	NA	870	815	NA	NA	NA	580	NA	770	NA	NA
Total Suspended Solids (EPA 160.0)	mg/L	NA	84	NA	10 U	NA	NA	NA	NA	243	NA	19	NA	NA
Fluoride (EPA 300.0)	mg/L	NA	.2 U	NA	NA	.24	NA	NA	NA	.35	NA	.2 U	NA	NA
Alkalinity (EPA 310.1)	mg/L	NA	294	NA	320	NA	NA	NA	359	115	NA	370	NA	NA
Alkalinity, Bicarbonate (EPA 310.1)	mg/L	NA	NA	NA	NA	192	NA	NA	NA	NA	NA	NA	NA	NA
Alkalinity, Carbonate (EPA 310.1)	mg/L	NA	NA	NA	NA	40	NA	NA	NA	NA	NA	NA	NA	NA
Ammonia (EPA 350.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen (EPA 350.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate/Nitrite as Nitrogen (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate (EPA 300.0)	mg/L	NA	1.63	NA	5.03	5.0	NA	NA	NA	8.8	NA	0.93	NA	NA
Nitrite (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	.5 U	NA	NA	NA	NA
Phosphate (EPA 300.0 / 365.2)	mg/L	NA	.2 U	NA	NA	NA	NA	NA	NA	1 U	NA	.2 U	NA	NA
Phosphorus, Total (EPA 365.2)	mg/L	NA	NA	NA	.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate (EPA 300.0 / 375.0)	mg/L	NA	158	NA	90	179	NA	NA	155	130	NA	136	NA	NA
Chloride (EPA 300.0/9250/9252)	mg/L	NA	97	NA	157	125	NA	NA	NA	120	NA	133	NA	NA
Total Kjeldahl Nitrogen (TKN) (EPA 350.0)	mg/L	NA	NA	NA	.1 U	NA	NA	NA	NA	.5 U	NA	NA	NA	NA
Biochemical Oxygen Demand (BOD) (EPA 405.1)	mg/L	NA	NA	NA	5	NA	NA	NA	NA	1 U	NA	NA	NA	NA
Chemical Oxygen Demand (COD) (EPA 410.4)	mg/L	NA	NA	NA	12	NA	NA	NA	NA	40 U	NA	NA	NA	NA
Total Organic Carbon (TOC) (EPA 415.1)	mg/L	NA	NA	NA	9	NA	NA	NA	NA	5 U	NA	NA	NA	NA
Total Organic Halides (TOX) (EPA 9020)	µg/L	NA	NA	NA	60	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heterotrophic plate count (SM 9215)	cfu/mL	NA	NA	NA	260	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table A-1
Summary of Analytical Results for Ground Water Samples - T398

Sample Identification		96-T398-W-348	16716-381	20242-657	18609-2484	18609-3133	95ETMW13D-W004	96EL-MW13D-W-024	96-398-W-086	96-398-W-087	96-T398-W-128	96-T398-W-136	96-T398-W-345	16716-382
Location Code		MW398-13	MW398-13	MW398-13	TF398-MW-13	398-MW-13	MW398-13D	MW398-13D	MW398-13D	MW398-13D Dup	MW398-13D	MW398-13D	MW398-13D	MW398-13D
Date Sampled		12/18/96	04/03/97	12/17/98	12/08/99	05/22/00	11/16/95	02/12/96	05/17/96	05/17/96	08/13/96	08/15/96	12/17/96	04/03/97
	Unit													
CA LUFT-8015M														
TPH as Diesel	mg/L	.5 U	.5 U	0.5 U	.096 U	.1 U	.5 U	NA	.5 U	.5 U	.5 U	.5 U	.5 U	.5 U
TPH as Gasoline	mg/L	NA	.1 U	0.05 U	.1 U	.1 U	NA	NA	NA	NA	NA	NA	NA	.1 U
TPH as JP-5	mg/L	NA	NA	NA	NA	.5 U	NA	.5 U	NA	NA	NA	NA	NA	NA
EPA 8020/8260														
Benzene	µg/L	.5 U	.5 U	0.5 U	.5 U	5 U	.5 U	2.01	.5 U	.5 U	NA	.5 U	.5 U	.5 U
Toluene	µg/L	.5 U	.5 U	0.5 U	.5 U	5 U	.5 U	.5 U	.5 U	.5 U	NA	.5 U	.5 U	.5 U
Ethylbenzene	µg/L	.5 U	.5 U	0.5 U	.5 U	5 U	.5 U	3.41	.5 U	.5 U	NA	.5 U	.5 U	.5 U
Xylenes (total)	µg/L	1.5 U	1.5 U	1 UJ	1.5 U	5 U	1.5 U	1.5 U	1.5 U	1.5 U	NA	1.5 U	1.5 U	1.5 U
Methyl tert-butyl ether (MTBE)	µg/L	.5 U	.5 U	5 U	1 U	10 U	NA	NA	.5 U	.5 U	NA	.5 U	.5 U	.5 U
EPA 6010														
Aluminum	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	50 U	NA
Antimony	µg/L	60 U	NA	NA	NA	NA	50 U	NA	50 U	NA	NA	NA	60 U	NA
Arsenic	µg/L	10 U	NA	NA	NA	NA	10 U	NA	10 U	NA	NA	NA	10 U	NA
Barium	µg/L	200 U	NA	NA	NA	NA	100 U	NA	100 U	NA	NA	NA	200 U	NA
Beryllium	µg/L	5 U	NA	NA	NA	NA	10 U	NA	10 U	NA	NA	NA	5 U	NA
Cadmium	µg/L	5 U	NA	NA	NA	NA	10 U	NA	10 U	NA	NA	NA	5 U	NA
Calcium	µg/L	NA	72200	NA	NA	NA	NA	NA	NA	NA	NA	NA	93500	103000
Chromium	µg/L	10 U	NA	NA	NA	NA	10 U	NA	20.7	NA	NA	NA	10 U	NA
Cobalt	µg/L	50 U	NA	NA	NA	NA	50 U	NA	50 U	NA	NA	NA	50 U	NA
Copper	µg/L	25 U	NA	NA	NA	NA	10 U	NA	13.3	NA	NA	NA	25 U	NA
Iron	µg/L	NA	20 U	NA	NA	NA	NA	NA	1870	NA	NA	NA	46.9	20 U
Lead	µg/L	3 U	NA	NA	NA	NA	5 U	NA	5 U	NA	NA	NA	3 U	NA
Magnesium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	35500	NA
Manganese	µg/L	NA	14.9	NA	NA	NA	NA	NA	22.6	NA	NA	NA	10 U	10 U
Molybdenum	µg/L	50 U	NA	NA	NA	NA	50 U	NA	50 U	NA	NA	NA	50 U	NA
Nickel	µg/L	40 U	NA	NA	NA	NA	50 U	NA	50 U	NA	NA	NA	40 U	NA
Potassium	µg/L	NA	2980	NA	NA	NA	NA	NA	NA	NA	NA	NA	2770	3200
Selenium	µg/L	11.1	NA	NA	NA	NA	10 U	NA	10 U	NA	NA	NA	26	NA
Silver	µg/L	10 U	NA	NA	NA	NA	10 U	NA	10 U	NA	NA	NA	10 U	NA
Sodium	µg/L	NA	149000	NA	NA	NA	NA	NA	NA	NA	NA	NA	89000	106000
Thallium	µg/L	10 U	NA	NA	NA	NA	500 U	NA	500 U	NA	NA	NA	10 U	NA
Vanadium	µg/L	50 U	NA	NA	NA	NA	50 U	NA	50 U	NA	NA	NA	50 U	NA
Zinc	µg/L	20 U	NA	NA	NA	NA	64.5	NA	36.7	NA	NA	NA	20 U	NA
EPA 7470														
Mercury	µg/L	.2 U	NA	NA	NA	NA	0.384	NA	5 U	5 U	NA	NA	.2 U	NA
EPA 7196A														
Hexavalent chromium	mg/L	NA	NA	NA	NA	NA	.01 U	NA	NA	NA	NA	NA	NA	NA
General Chemistry														
Specific Conductance (EPA 120.1)	umhos/cm	NA	NA	NA	NA	NA	1360	NA	1050	1070	NA	NA	1164	NA
Total Hardness (EPA 130.0 / 314A)	mg/L	NA	NA	NA	NA	NA	389.6	NA	379	345.00	NA	NA	380	NA
pH (EPA 150.1)	pH units	NA	NA	NA	NA	NA	7.4	NA	8.4	8.2	NA	NA	7.3	NA
Total Dissolved Solids (EPA 160.0)	mg/L	NA	760	NA	NA	NA	715	NA	655	655.00	NA	NA	675	740
Total Suspended Solids (EPA 160.0)	mg/L	NA	NA	NA	NA	NA	33	NA	20	17	NA	NA	10 U	NA
Fluoride (EPA 300.0)	mg/L	NA	.2 U	NA	NA	NA	.4	NA	0.6	0.6	NA	NA	NA	.2 U
Alkalinity (EPA 310.1)	mg/L	NA	NA	NA	NA	338	188	NA	260	260	NA	NA	222	NA
Alkalinity, Bicarbonate (EPA 310.1)	mg/L	NA	217	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	54
Alkalinity, Carbonate (EPA 310.1)	mg/L	NA	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	200
Ammonia (EPA 350.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen (EPA 350.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate/Nitrite as Nitrogen (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10
Nitrate (EPA 300.0)	mg/L	13	5	NA	NA	NA	3.7	NA	5.8	5.9	NA	NA	10.2	NA
Nitrite (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	.5 U	NA	NA	NA	NA	NA	NA	NA
Phosphate (EPA 300.0 / 365.2)	mg/L	NA	NA	NA	NA	NA	1 U	NA	1 U	1 U	NA	NA	NA	NA
Phosphorus, Total (EPA 365.2)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	.05 U	NA
Sulfate (EPA 300.0 / 375.0)	mg/L	NA	NA	NA	NA	169	140	NA	110	115	NA	NA	82	125
Chloride (EPA 300.0/9250/9252)	mg/L	222	108	NA	NA	NA	140	NA	97	103	NA	NA	144	104
Total Kjeldahl Nitrogen (TKN) (EPA 350.0)	mg/L	NA	NA	NA	NA	NA	0.40 U	NA	NA	NA	NA	NA	.1 U	NA
Biochemical Oxygen Demand (BOD) (EPA 405.1)	mg/L	NA	NA	NA	NA	NA	4	NA	NA	NA	NA	NA	4 U	NA
Chemical Oxygen Demand (COD) (EPA 410.4)	mg/L	NA	NA	NA	NA	NA	40 U	NA	NA	NA	NA	NA	10 U	NA
Total Organic Carbon (TOC) (EPA 415.1)	mg/L	NA	NA	NA	NA	NA	5 U	NA	NA	NA	NA	NA	21	NA
Total Organic Halides (TOX) (EPA 9020)	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	50 U	NA
Heterotrophic plate count (SM 9215)	cfu/mL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1100	NA

Table A-1
Summary of Analytical Results for Ground Water Samples - T398

Sample Identification		20242-108	20242-249	20242-109	20242-253	20242-254	20242-097	20242-255	95ETMW-17W010	96EL-MW17-W-027	96-398-W-089	96-T398-W-135	96-T398-W-354	16716-397
Location Code		MW398-14	MW398-14	MW398-15	MW398-15	MW398-15 Dup	MW398-16	MW398-16	MW398-17	MW398-17	MW398-17	MW398-17	MW398-17	MW398-17
Date Sampled		01/28/98	04/06/98	01/29/98	04/07/98	04/07/98	01/27/98	04/07/98	12/01/95	02/15/96	05/20/96	08/15/96	12/20/96	04/08/97
	Unit													
CA LUFT-8015M														
TPH as Diesel	mg/L	0.5 U	1.0 U	0.5 U	1.0 U	1.0 U	0.5 U	1.0 U	.27	NA	.5 U	.5 U	0.43 J	0.78
TPH as Gasoline	mg/L	0.1 U	0.10 U	0.1 U	0.10 U	0.78 PJ	0.1 U	0.027 JP	NA	NA	NA	NA	NA	1.9
TPH as JP-5	mg/L	0.5 U	1.0 U	0.5 U	1.0 U	1.0 U	0.5 U	1.0 U	NA	0.34	NA	NA	NA	NA
EPA 8020/8260														
Benzene	µg/L	0.5 U	0.50 U	0.5 U	0.50 U	0.68	0.5 U	0.50 U	2.5	54.4	1.0	3.20	34	3.7
Toluene	µg/L	0.5 U	0.50 U	0.5 U	0.50 U	1.4	0.5 U	0.50 U	1.2	.5 U	.5 U	0.71	.5 U	0.55
Ethylbenzene	µg/L	0.5 U	0.50 U	0.5 U	0.50 U	0.70	0.5 U	0.50 U	.5 U	2.7	.5 U	.5 U	9.1	4.3
Xylenes (total)	µg/L	2 U	1.0 U	2 U	1.0 U	3.6	2 U	1.0 U	1.7	3.0	1.5 U	5.80	1.5 U	2.8
Methyl tert-butyl ether (MTBE)	µg/L	10 U	5.0 U	10 U	5.0 U	5.0 U	10 U	5.0 U	NA	NA	.5 U	.5 U	.5 U	.5 U
EPA 6010														
Aluminum	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	50 U	NA
Antimony	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	50 U	NA	60 U	NA
Arsenic	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	NA	22.6	NA
Barium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	100 U	NA	211	NA
Beryllium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	NA	3 U	NA
Cadmium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	NA	5 U	NA
Calcium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	75400	77400
Chromium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	21.5	NA	10 U	NA
Cobalt	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	50 U	NA	10 U	NA
Copper	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	22.7	NA	10 U	NA
Iron	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	8270	NA	2160	3430
Lead	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.7	NA	3 U	NA
Magnesium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	47300	48200
Manganese	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	422	NA	744	738
Molybdenum	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	50 U	NA	NA	NA
Nickel	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	50 U	NA	20 U	NA
Potassium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3540	3510
Selenium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	NA	11.6	NA
Silver	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	NA	10 U	NA
Sodium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	166000	168000
Thallium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	500 U	NA	10 U	NA
Vanadium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	50 U	NA	10 U	NA
Zinc	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	80.4	NA	33.7	NA
EPA 7470														
Mercury	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA	.2 U	NA
EPA 7196A														
Hexavalent chromium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
General Chemistry														
Specific Conductance (EPA 120.1)	umhos/cm	NA	NA	NA	NA	NA	NA	NA	NA	NA	920	NA	1453	NA
Total Hardness (EPA 130.0 / 314A)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	402	NA	383	NA
pH (EPA 150.1)	pH units	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.2	NA	7.0	NA
Total Dissolved Solids (EPA 160.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	545	NA	870	800
Total Suspended Solids (EPA 160.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	181	NA	12	NA
Fluorides (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	.2 U	NA	NA	.5 U
Alkalinity (EPA 310.1)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	440	NA	516	NA
Alkalinity, Bicarbonate (EPA 310.1)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	302
Alkalinity, Carbonate (EPA 310.1)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	70
Ammonia (EPA 350.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen (EPA 350.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate/Nitrite as Nitrogen (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.25	NA	.5 U	.5 U
Nitrate (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphate (EPA 300.0 / 365.2)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	.2 U	NA	NA	NA
Phosphorus, Total (EPA 365.2)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	.061	NA
Sulfate (EPA 300.0 / 375.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	86.2	NA	80	21
Chloride (EPA 300.0/9250/9252)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	26.2	NA	167	117
Total Kjeldahl Nitrogen (TKN) (EPA 350.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	.1 U	NA
Biochemical Oxygen Demand (BOD) (EPA 405.1)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9	NA
Chemical Oxygen Demand (COD) (EPA 410.4)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	29	NA
Total Organic Carbon (TOC) (EPA 415.1)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14	NA
Total Organic Halides (TOX) (EPA 9020)	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	50 U	NA
Heterotrophic plate count (SM 9215)	cfu/mL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1900	NA

Table A-1
Summary of Analytical Results for Ground Water Samples - T398

Sample Identification		20242-029	20242-230	20242-654	20242-926	20242-927	18609-2482	18609-2483	18609-3137	20242-227	20242-659	97-T398-W-1582	16716-391	18292-489
Location Code		MW398-17	MW398-17	MW398-17	MW398-17	MW398-17	TF398-MW-17	TF398-MW-17 Dup	398-MW-17	MW398-20	MW398-20	MW398-21	MW398-21	MW398-21
Date Sampled		12/22/97	03/30/98	12/16/98	06/21/99	06/21/99	12/08/99	12/08/99	06/23/00	03/30/98	12/17/98	03/03/97	04/07/97	08/06/97
	Unit													
CA LUFT-8015M														
TPH as Diesel	mg/L	0.5 U	0.44 JP	0.6	0.38	0.38	.63	.61	.097 U	0.055 U	0.1 J	.5 U	.5 U	0.1 U
TPH as Gasoline	mg/L	1.5	0.72 P	0.66	0.85	0.92	.9	.96	.96 J	0.10 U	0.1	.05 U	.1 U	.1 U
TPH as JP-5	mg/L	1 J	1.0 U	NA	NA	NA	NA	NA	.81	1.0 U	NA	NA	NA	NA
EPA 8020/8260														
Benzene	µg/L	52	3.0	2.6	24.8	24.3	26	25	21	0.50 U	0.9	1 U	.5 U	.3 U
Toluene	µg/L	0.5 U	1.3	0.3 J	0.5 U	0.5 U	.5 U	.5 U	2.1 J	0.50 U	0.5 U	1 U	.5 U	.3 U
Ethylbenzene	µg/L	86	1.5	4.4	14.0	14.8	18	18	15	0.50 U	1.0	1 U	.5 U	.3 U
Xylenes (total)	µg/L	2 U	4.6	2.1	2.8	2.2	2.8	2.5	5 U	1.0 U	0.3 J	1 U	1.5 U	1 U
Methyl tert-butyl ether (MTBE)	µg/L	10 U	7.5	2.5 J	5 U	5 U	1 U	1 U	10 U	5.0 U	5 U	1 U	.5 U	1 U
EPA 6010														
Aluminum	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	106000	NA
Calcium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	37	NA
Iron	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	50900	NA
Magnesium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	15.3	NA
Manganese	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Molybdenum	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2400	2900	NA
Potassium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	65400 J	NA
Sodium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPA 7470														
Mercury	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPA 7196A														
Hexavalent chromium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
General Chemistry														
Specific Conductance (EPA 120.1)	umhos/cm	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Hardness (EPA 130.0 / 314A)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.4	NA	NA
pH (EPA 150.1)	pH units	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	605	830	NA
Total Dissolved Solids (EPA 160.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	13	NA	NA
Total Suspended Solids (EPA 160.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	.2 U	NA
Fluoride (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	716	NA	NA	252	NA	NA
Alkalinity (EPA 310.1)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	242	NA
Alkalinity, Bicarbonate (EPA 310.1)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10	NA
Alkalinity, Carbonate (EPA 310.1)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ammonia (EPA 350.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.05 U	NA	NA
Nitrogen (EPA 350.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11	8.8	NA
Nitrate/Nitrite as Nitrogen (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	.05 U	NA	NA
Nitrite (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphate (EPA 300.0 / 365.2)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	.03 U	NA	NA
Phosphorus, Total (EPA 365.2)	mg/L	NA	NA	NA	NA	NA	NA	NA	32	NA	NA	174	162	NA
Sulfate (EPA 300.0 / 375.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	64	NA
Chloride (EPA 300.0/9250/9252)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Kjeldahl Nitrogen (TKN) (EPA 350.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Biochemical Oxygen Demand (BOD) (EPA 405.1)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chemical Oxygen Demand (COD) (EPA 410.4)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7	NA	NA
Total Organic Carbon (TOC) (EPA 415.1)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Halides (TOX) (EPA 9020)	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	NA	NA
Heterotrophic plate count (SM 9215)	cfu/mL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			

Table A-1
Summary of Analytical Results for Ground Water Samples - T398

Sample Identification		20242-921	18609-2495	18609-3129	95ETMW-27W006	95ETMW-47W008	96ELMW-27-W022	96-398-W-084	96-T398-W-155	96-T398-W-357	16716-387
Location Code		MW398-21	TF398-MW-21	398-MW-21	MW398-27	MW398-27	MW398-27	MW398-27	MW398-27	MW398-27	MW398-27
Date Sampled	Unit	06/18/99	12/10/99	06/21/00	11/30/95	11/30/95	02/09/96	05/14/96	08/21/96	12/20/96	04/04/97
CA LUFT-8015M											
TPH as Diesel	mg/L	0.5 U	.096 U	.14	NA	NA	NA	.5 U	.5 U	.5 U	.5 U
TPH as Gasoline	mg/L	0.05 U	.1 U	.1 U	NA	NA	NA	NA	NA	NA	.1 U
TPH as JP-5	mg/L	NA	NA	.5 U	.5 U	.5 U	.5 U	NA	NA	NA	NA
EPA 8020/8260											
Benzene	µg/L	0.5 U	.5 U	5 U	.5 U	.5 U	.5 U	.5 U	2.5	.5 U	.5 U
Toluene	µg/L	0.5 U	.5 U	5 U	.5 U	.5 U	.5 U	.5 U	1.1	.5 U	.5 U
Ethylbenzene	µg/L	0.5 U	.5 U	5 U	.5 U	.5 U	.5 U	.5 U	2.1	.5 U	.5 U
Xylenes (total)	µg/L	1.5 U	1.5 U	5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Methyl tert-butyl ether (MTBE)	µg/L	5 U	1 U	10 U	NA	NA	NA	NA	.5 U	.5 U	.5 U
EPA 6010											
Aluminum	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	50 U	NA
Antimony	µg/L	NA	NA	NA	NA	NA	NA	50 U	NA	60 U	NA
Arsenic	µg/L	NA	NA	NA	NA	NA	NA	10 U	NA	10 U	NA
Barium	µg/L	NA	NA	NA	NA	NA	NA	100 U	NA	57.2	NA
Beryllium	µg/L	NA	NA	NA	NA	NA	NA	10 U	NA	3 U	NA
Cadmium	µg/L	NA	NA	NA	NA	NA	NA	10 U	NA	5 U	NA
Calcium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	102000	95200
Chromium	µg/L	NA	NA	NA	NA	NA	NA	10 U	NA	10 U	NA
Cobalt	µg/L	NA	NA	NA	NA	NA	NA	50 U	NA	10 U	NA
Copper	µg/L	NA	NA	NA	NA	NA	NA	10 U	NA	10 U	NA
Iron	µg/L	NA	NA	NA	NA	NA	NA	713	NA	23.7	20 U
Lead	µg/L	NA	NA	NA	NA	NA	NA	5.39	NA	3 U	NA
Magnesium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	49100	46700
Manganese	µg/L	NA	NA	NA	NA	NA	NA	62.6	NA	11.7	10.6
Molybdenum	µg/L	NA	NA	NA	NA	NA	NA	50 U	NA	NA	NA
Nickel	µg/L	NA	NA	NA	NA	NA	NA	50 U	NA	20 U	NA
Potassium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	3390	3180
Selenium	µg/L	NA	NA	NA	NA	NA	NA	10 U	NA	13.9	NA
Silver	µg/L	NA	NA	NA	NA	NA	NA	10 U	NA	10 U	NA
Sodium	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	71600	80000
Thallium	µg/L	NA	NA	NA	NA	NA	NA	500 U	NA	10 U	NA
Vanadium	µg/L	NA	NA	NA	NA	NA	NA	50 U	NA	21.2	NA
Zinc	µg/L	NA	NA	NA	NA	NA	NA	55	NA	10 U	NA
EPA 7470											
Mercury	µg/L	NA	NA	NA	.2 U	NA	NA	5 U	NA	.2 U	NA
EPA 7196A											
Hexavalent chromium	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
General Chemistry											
Specific Conductance (EPA 120.1)	umhos/cm	NA	NA	NA	1120	NA	NA	1030	NA	1122	NA
Total Hardness (EPA 130.0 / 314A)	mg/L	NA	NA	NA	435	NA	NA	441	NA	457	NA
pH (EPA 150.1)	pH units	NA	NA	NA	7.6	NA	NA	7.8	NA	7.3	NA
Total Dissolved Solids (EPA 160.0)	mg/L	NA	NA	NA	725	NA	NA	660	NA	690	685
Total Suspended Solids (EPA 160.0)	mg/L	NA	NA	NA	37	NA	NA	21	NA	10 U	NA
Fluoride (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	.2 U	NA	NA	.28
Alkalinity (EPA 310.1)	mg/L	NA	NA	293	231	NA	NA	440	NA	252	NA
Alkalinity, Bicarbonate (EPA 310.1)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	137
Alkalinity, Carbonate (EPA 310.1)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	75
Ammonia (EPA 350.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen (EPA 350.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate/Nitrite as Nitrogen (EPA 300.0)	mg/L	NA	NA	NA	9.3	NA	NA	NA	NA	NA	NA
Nitrate (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	10.9	NA	10.8	9.5
Nitrite (EPA 300.0)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphate (EPA 300.0 / 365.2)	mg/L	NA	NA	NA	1 U	NA	NA	.2 U	NA	NA	NA
Phosphorus, Total (EPA 365.2)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	.05 U	NA
Sulfate (EPA 300.0 / 375.0)	mg/L	NA	NA	179	NA	NA	NA	117	NA	72	225
Chloride (EPA 300.0/9250/9252)	mg/L	NA	NA	NA	100	NA	NA	21.4	NA	142	98
Total Kjeldahl Nitrogen (TKN) (EPA 350.0)	mg/L	NA	NA	NA	1.34	NA	NA	NA	NA	.13	NA
Biochemical Oxygen Demand (BOD) (EPA 405.1)	mg/L	NA	NA	NA	4 U	NA	NA	NA	NA	13	NA
Chemical Oxygen Demand (COD) (EPA 410.4)	mg/L	NA	NA	NA	10 U	NA	NA	NA	NA	29	NA
Total Organic Carbon (TOC) (EPA 415.1)	mg/L	NA	NA	NA	8	NA	NA	NA	NA	11	NA
Total Organic Halides (TOX) (EPA 9020)	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	110	NA
Heterotrophic plate count (SM 9215)	cfu/mL	NA	NA	NA	NA	NA	NA	NA	NA	110	NA

COMPLETED MW 7/7 MG 7/5/00

WBS-0[illegible]024

CHAIN-OF-CUSTODY RECORD

PROJECT DATA MANAGER'S COPY

A 12038

FORM 0019 REV. 9-99

the igroup
IT Corporation
2790 Mosside Blvd.
Monroeville, PA 15146-2792
(412)372-7701

398-MWG

LAB COORDINATOR	LAB COORDINATOR'S PHONE	LAB COORDINATOR'S FAX	LABORATORY SERVICE ID	LABORATORY CONTACT	MAIL REPORT (COMPANY NAME)
[illegible]	[illegible]	[illegible]	00F114	E MAX	IT GROUP
PROJECT NAME	**PROJECT LOCATION**	**PROJECT NUMBER**	**LABORATORY PHONE**	**LABORATORY FAX**	**RECIPIENT NAME**
[illegible]	[illegible]	918601	[illegible]		D MILLER
PROJECT CONTACT	**PROJECT PHONE NUMBER**	**PROJECT FAX**	**LABORATORY ADDRESS**		**ADDRESS**
[illegible]	[illegible]	[illegible]	[illegible] MARC		[illegible]
PROJECT ADDRESS	**CITY, STATE AND ZIP CODE**	**CLIENT**	**CITY, STATE AND ZIP CODE**		**CITY, STATE AND ZIP CODE**
		SW DIV	IRVINE CA		IRVINE CA 92618
PROJECT MANAGER	**PROJECT MANAGER'S PHONE**	**PROJECT MANAGER'S FAX**			
E DIAK	[illegible]				

Sample Identifier	Matrix	Date	Time	Preserved	# of Cont.	QC Level	T.A.T.	Analyses	Comments
918601-3125	W	6/28/00	1500	HCL	9	3	5 DAY	X X X X X X X	

Sample Point Location	Sample Type G	C	F	QC
1 398 MWG WELL SAMPLE	X			

Project Information Section
For Project Personnel Only
Do Not Submit to Laboratory

398 MWG

SAMPLES COLLECTED BY: [illegible]

COURIER AND AIR BILL NUMBER: [illegible]

COOLER TEMPERATURE UPON RECEIPT:

RELINQUISHED BY	RECEIVED BY	DATE	TIME	SAMPLE'S CONDITION UPON RECEIPT
[illegible]	[illegible]	[illegible]	[illegible]	

Comments: due- 6/28/00 rec'd 6/28

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Manilla - Project Data Manager

Sample Type: G - Grab, C - Composite, F - Field Sample, QC - Quality Control Sample

AL

S358

5045 N

EMAX
LABORATORIES, INC.
630 Maple Ave.
Torrance, CA 90503
Telephone: (310) 618-8889
Fax: (310) 618-0818

Date: 07-02-2000
EMAX Batch No.: 00F114

Attn: Dwayne Ishida

IT Corporation
3347 Michelson Dr. # 200
Irvine CA 92612

Subject: Laboratory Report
Project: MCAS El Toro/18609/D.O. 70

Enclosed is the Laboratory report for samples received on 06/20/00. The data reported include :

Sample ID	Control #	Col Date	Matrix	Analysis
18609-3125	F114-01	06/20/00	WATER	TPH DIESEL
				TPH GASOLINE
				TPH JP-5
				VOLATILE ORGANICS BY GC/MS
				ALKALINITY
				SULFATE BY IC

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning these results.

Sincerely yours,

Kam Y. Pang, Ph.D.
Laboratory Director

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

[redacted]	: IT CORPORATION	Date Collected:	06/20/00
[redacted]t	: MCAS EL TORO/18609/D.O. 70	Date Received:	06/20/00
atch No.	: 00F714	Date Extracted:	06/21/00 14:50
ample ID:	918809-3125	Date Analyzed:	06/23/00 18:38
ab Samp ID:	F114-01	Dilution Factor:	.92
ab File ID:	TF09008A	Matrix :	WATER
xt Btch ID:	DSF032W	% Moisture :	NA
alib. Ref.:	TF09001A	Instrument ID :	GCT050

ARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
IESEL	ND	.092	.062
P5	ND	.46	.12

JRROGATE PARAMETERS	% RECOVERY	QC LIMIT
ROMOBENZENE	88	65-135
EXACOSANE	114	60-145

C LIMIT : (SOIL) 60-140 55-150
C LIMIT : (WATER) 65-135 60-145
JRR1 : Bromobenzene
JRR2 : Hexacosane
L : Reporting Limit

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client : IT CORPORATION	Date Collected: NA
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/21/00
Batch No. : 00F114	Date Extracted: 06/21/00 14:50
Sample ID: MBLK1W	Date Analyzed: 06/22/00 02:15
Lab Samp ID: DSF032WB	Dilution Factor: 1
Lab File ID: DF09046A	Matrix : WATER
Ext Btch ID: DSF032W	% Moisture : NA
Calib. Ref.: DF09040A	Instrument ID : GCT043

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
DIESEL	ND	.1	.067
JP5	ND	.5	.13

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	68	65-135
HEXACOSANE	67	60-145

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SURR1 : Bromobenzene
SURR2 : Hexacosane
RL : Reporting Limit

METHOD 5030B/M8015
TOTAL PETROLEUM HYDROCARBONS BY PURGE & TRAP

Client : IT CORPORATION
Project : MCAS EL TORO/18609/D.O. 70
Batch No. : 00F114

Matrix : WATER
Instrument ID : GCT039

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	SURR (%)	DLF	MOIST	PRL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	VAF3739B	ND	92	1	NA	.1	.012	06/21/0012:43	06/21/0012:43	EF12004A	EF12003A	VAF3739	NA	06/21/00
LCS1W	VAF3739L	.553	114	1	NA	.1	.012	06/21/0013:39	06/21/0013:39	EF12005A	EF12003A	VAF3739	NA	06/21/00
LCD1W	VAF3739C	.523	111	1	NA	.1	.012	06/21/0014:44	06/21/0014:44	EF12006A	EF12003A	VAF3739	NA	06/21/00
918609-3125	F114-01	ND	91	1	NA	.1	.012	06/21/0018:12	06/21/0018:12	EF12012A	EF12009A	VAF3739	06/20/00	06/20/00

SURR : Bromofluorobenzene (W)65-135 (S)60-140
PRL : Reporting Limit
E : Value exceed the upper level of the initial calibration
D : Value from dilution

4 of 4

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 00F114
METHOD: METHOD 5030B/M8015

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	VAF3739B	VAF3739L	VAF3739C		
LAB FILE ID:	EF12004A	EF12005A	EF12006A		
DATE EXTRACTED:	06/21/0012:43	06/21/0013:39	06/21/0014:44	DATE COLLECTED:	NA
DATE ANALYZED:	06/21/0012:43	06/21/0013:39	06/21/0014:44	DATE RECEIVED:	06/21/00
PREP. BATCH:	VAF3739	VAF3739	VAF3739		
CALIB. REF:	EF12003A	EF12003A	EF12003A		

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Gasoline	ND	.55	.553	101	.55	.523	95	6	67-136	30

SURROGATE PARAMETER	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	QC LIMIT (%)
Bromofluorobenzene	.02	.0228	114	.02	.0221	111	65-135

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 06/20/00
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/20/00
Batch No. : 00F114	Date Extracted: 06/21/00 20:38
Sample ID: 18609-3125	Date Analyzed: 06/21/00 20:38
Lab Samp ID: F114-01	Dilution Factor: 1
Lab File ID: RFQ440	Matrix : WATER
Ext Btch ID: VOF2905	% Moisture : NA
Calib. Ref.: RFQ425	Instrument ID : T-005

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	.91
1,1,2,2-TETRACHLOROETHANE	ND	5	1.1
1,1,2-TRICHLOROETHANE	ND	5	.83
1,1-DICHLOROETHANE	ND	5	.65
1,1-DICHLOROETHENE	ND	5	.86
1,2-DICHLOROETHANE	ND	5	.95
1,2-DICHLOROPROPANE	ND	5	.73
2-BUTANONE	ND	50	6.7
2-CHLOROETHYLVINYLETHER	ND	50	1.3
2-HEXANONE	ND	50	5.6
4-METHYL-2-PENTANONE	ND	50	3.6
ACETONE	ND	50	9.6
BENZENE	ND	5	.77
BROMODICHLOROMETHANE	ND	5	.82
BROMOFORM	ND	5	.74
BROMOMETHANE	ND	5	1.9
CARBON DISULFIDE	ND	5	.61
CARBON TETRACHLORIDE	ND	5	.83
CHLOROBENZENE	ND	5	1.1
CHLOROETHANE	ND	5	1.7
CHLOROFORM	ND	5	.67
[illegible]OROMETHANE	ND	5	.67
[illegible]S-1,2-DICHLOROETHENE	ND	5	.79
CIS-1,3-DICHLOROPROPENE	ND	5	.79
DIBROMOCHLOROMETHANE	ND	5	.71
ETHYLBENZENE	ND	5	1
MTBE	ND	10	.77
METHYLENE CHLORIDE	ND	5	1.4
STYRENE	ND	5	.87
TETRACHLOROETHENE	ND	5	1.1
TOLUENE	ND	5	.99
TRANS-1,2-DICHLOROETHENE	ND	5	.73
TRANS-1,3-DICHLOROPROPENE	ND	5	.82
TRICHLOROETHENE	ND	5	.89
VINYL ACETATE	ND	50	1.4
VINYL CHLORIDE	ND	5	2.5
XYLENES	ND	5	3.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	105	62-139
BROMOFLUOROBENZENE	99	75-125
TOLUENE-D8	102	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: NA
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/21/00
Batch No. : 00F114	Date Extracted: 06/21/00 13:40
Sample ID: MBLK1W	Date Analyzed: 06/21/00 13:40
Lab Samp ID: V0F2905Q	Dilution Factor: 1
Lab File ID: RFQ429	Matrix : WATER
Ext Btch ID: V0F2905	% Moisture : NA
Calib. Ref.: RFQ425	Instrument ID : T-005

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	.91
1,1,2,2-TETRACHLOROETHANE	ND	5	1.1
1,1,2-TRICHLOROETHANE	ND	5	.83
1,1-DICHLOROETHANE	ND	5	.65
1,1-DICHLOROETHENE	ND	5	.86
1,2-DICHLOROETHANE	ND	5	.95
1,2-DICHLOROPROPANE	ND	5	.73
2-BUTANONE	ND	50	6.7
2-CHLOROETHYLVINYLETHER	ND	50	1.3
2-HEXANONE	ND	50	5.6
4-METHYL-2-PENTANONE	ND	50	3.6
ACETONE	ND	50	9.6
BENZENE	ND	5	.77
BROMODICHLOROMETHANE	ND	5	.82
BROMOFORM	ND	5	.74
BROMOMETHANE	ND	5	1.9
CARBON DISULFIDE	ND	5	.61
CARBON TETRACHLORIDE	ND	5	.83
CHLOROBENZENE	ND	5	1.1
CHLOROETHANE	ND	5	1.7
CHLOROFORM	ND	5	.67
CHLOROMETHANE	ND	5	.67
CIS-1,2-DICHLOROETHENE	ND	5	.79
CIS-1,3-DICHLOROPROPENE	ND	5	.79
DIBROMOCHLOROMETHANE	ND	5	.71
ETHYLBENZENE	ND	5	1
MTBE	ND	10	.77
METHYLENE CHLORIDE	ND	5	1.4
STYRENE	ND	5	.87
TETRACHLOROETHENE	ND	5	1.1
TOLUENE	ND	5	.99
TRANS-1,2-DICHLOROETHENE	ND	5	.73
TRANS-1,3-DICHLOROPROPENE	ND	5	.82
TRICHLOROETHENE	ND	5	.89
VINYL ACETATE	ND	50	1.4
VINYL CHLORIDE	ND	5	2.5
XYLENES	ND	5	3.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	97	62-139
BROMOFLUOROBENZENE	104	75-125
TOLUENE-D8	99	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 00F114
METHOD: METHOD 5030A/8260A

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	V0F2905Q	V0F2905L	V0F2905C		
LAB FILE ID:	RFQ429	RFQ426	RFQ427		
DATE EXTRACTED:	06/21/0013:40	06/21/0011:48	06/21/0012:26	DATE COLLECTED:	NA
DATE ANALYZED:	06/21/0013:40	06/21/0011:48	06/21/0012:26	DATE RECEIVED:	06/21/00
PREP. BATCH:	V0F2905	V0F2905	V0F2905		
CALIB. REF:	RFQ425	RFQ425	RFQ425		

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
1,1-Dichloroethene	ND	20	17.7	89	20	18.3	91	3	75-125	20
Benzene	ND	20	19.9	100	20	19.4	97	3	75-125	20
Chlorobenzene	ND	20	19.1	96	20	19.5	97	2	75-125	20
Toluene	ND	20	19.9	100	20	19.5	97	2	74-125	20
Trichloroethene	ND	20	18.9	94	20	18.2	91	4	71-125	20

SURROGATE PARAMETER	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	QC LIMIT (%)
1,2-Dichlorethane-d4	50	49.2	98	50	49.8	100	62-139
[illegible]mofluorobenzene	50	53	106	50	51.9	104	75-125
[illegible]uene-d8	50	52.1	104	50	50.2	100	75-125

METHOD 310.1
TOTAL ALKALINITY

Client : IT CORPORATION
Project : MCAS EL TORO/18609/D.O. 70
Batch No. : 00F114

Matrix : WATER
Instrument ID :

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
18609-3125	F114-01	288	1	NA	5	.469	06/22/0013:30	NA	ALF010W-14	NA	ALF010W	06/20/00	06/20/00
MBLK1W	ALF010WB	ND	1	NA	5	.469	06/22/0010:15	NA	ALF010W-1	NA	ALF010W	NA	NA
LCS1W	ALF010WL	173	1	NA	5	.469	06/22/0010:30	NA	ALF010W-2	NA	ALF010W	NA	NA
LCD1W	ALF010WC	170	1	NA	5	.469	06/22/0010:45	NA	ALF010W-3	NA	ALF010W	NA	NA

RL: Reporting Limit

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
METHOD: METHOD 310.1
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 00F114
SAMPLE ID: LCS1W/LCD1W
CONTROL NO.: ALF010WL/C

DATE RECEIVED: NA
DATE EXTRACTED: NA
DATE ANALYZED: 06/22/00 10:30/10:45

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD %	QC LIMIT %	RPD LIMIT %
Alkalinity	ND	157	173	110	157	170	108	2	80-120	20

EMAX QUALITY CONTROL DATA
MS ANALYSIS

:LIENT: IT CORPORATION
'ROJECT: MCAS EL TORO/18609/D.O. 70
IETHOD: METHOD 310.1
IATRIX: WATER
; MOISTURE: NA

:ATCH NO.: 00F114 DATE RECEIVED: 06/16/00
;AMPLE ID: S0021904MS DATE EXTRACTED: NA
:ONTROL NO.: F086-04M DATE ANALYZED: 06/22/00 12:00

\CCESSION:

'ARAMETER	SMPL RSLT (mg/L)	SPIKE AMT (mg/L)	MS RSLT (mg/L)	MS % REC	QC LIMIT (%)
\lkalinity	195	58.50	259	109	80-120

EMAX QUALITY CONTROL DATA
DUPLICATE ANALYSIS

LIENT: IT CORPORATION
ROJECT: MCAS EL TORO/18609/D.O. 70
ETHOD: METHOD 310.1
ATRIX: WATER
MOISTURE: NA

ATCH NO.: 00F114 DATE RECEIVED: 06/16/00
AMPLE ID: S0021904DUP DATE EXTRACTED: NA
ONTROL NO.: F086-04D DATE ANALYZED: 06/22/00 11:45

CCESSION:

ARAMETER	SAMPLE (mg/L)	DUP. SAMPLE (mg/L)	RPD (%)	RPD LIMIT (%)
lkalinity	195	201	3	20

METHOD 300.0
SULFATE

Client : IT CORPORATION
Project : MCAS EL TORO/18609/D.O. 70
Batch No. : 00F114

Matrix : WATER
Instrument ID : TI006

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	ICF045WB	ND	1	NA	.5	.101	06/23/0000:45	NA	AF22051A	AF22049A	ICF045W	NA	NA
LCS1W	ICF045WL	20.2	1	NA	.5	.101	06/23/0001:00	NA	AF22052A	AF22049A	ICF045W	NA	NA
LCD1W	ICF045WC	20.2	1	NA	.5	.101	06/23/0001:15	NA	AF22053A	AF22049A	ICF045W	NA	NA
18609-3125	F114-01	159	5	NA	2.5	.505	06/23/0004:01	NA	AF22064A	AF22061A	ICF045W	06/20/00	06/20/00

RL : Reporting Limit

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 00F114
METHOD: METHOD 300.0

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	ICF045WB	ICF045WL	ICF045WC		
LAB FILE ID:	AF22051A	AF22052A	AF22053A		
DATE EXTRACTED:	NA	NA	NA	DATE COLLECTED:	NA
DATE ANALYZED:	06/23/0000:45	06/23/0001:00	06/23/0001:15	DATE RECEIVED:	NA
PREP. BATCH:	ICF045W	ICF045W	ICF045W		
CALIB. REF:	AF22049A	AF22049A	AF22049A		

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Sulfate	ND	20	20.2	101	20	20.2	101	0	80-120	20

COMPLETED MW MS 7/5/00

WBS 0200902.1

CHAIN-OF-CUSTODY RECORD

PROJECT DATA MANAGER'S COPY

A 12028

FORM 0019 REV. 9-99

the igroup

IT Corporation
2790 Mosside Blvd.
Monroeville, PA 15146-2792
(412)372-7701

398-MW-27,21

LAB COORDINATOR	LAB COORDINATOR'S PHONE	LAB COORDINATOR'S FAX	LABORATORY SERVICE ID	LABORATORY CONTACT	MAIL REPORT (COMPANY NAME)
N CONCATTON	949-660-7550	949-475-5433	00F124	E MAX	IT GROUP
PROJECT NAME	PROJECT LOCATION	PROJECT NUMBER	LABORATORY PHONE	LABORATORY FAX	RECIPIENT NAME
L TORO RD-70	MCAS EL TORO	918609	310-618-8887		D ISHIDA
PROJECT CONTACT	PROJECT PHONE NUMBER	PROJECT FAX	LABORATORY ADDRESS		ADDRESS
N CONCATTON	949-451-1667	949-475-5433	600 MAPLE		3347 MICHELSON #200
PROJECT ADDRESS	CITY, STATE AND ZIP CODE	CLIENT	CITY, STATE AND ZIP CODE		CITY, STATE AND ZIP CODE
		S.W. DIV	TORRANCE CA		IRVINE CA 92612
PROJECT MANAGER	PROJECT MANAGER'S PHONE	PROJECT MANAGER'S FAX			
E STEPLAK	949-660-5446				

Item	Sample Identifier	Matrix	Date	Time	Preserved	# of Cont.	QC Level	T.A.T.	Analyses	Comments
1	918609 3126	W	6/29/00	730	4°C HCl	7	3	5 DAY	X X X X X	
2	918609 3127			700		2			X	
3	918609 3128			1110		9			X X X X X X	
4	918609 3129			1445		9			X X X X X X	
5										
6										
7										
8										
9										
10										

SAMPLES COLLECTED BY: MC-MAINS

RELINQUISHED BY

COURIER AND AIR BILL NUMBER: COURIER

COOLER TEMPERATURE UPON RECEIPT:

RECEIVED BY	DATE	TIME	SAMPLE'S CONDITION UPON RECEIPT
	6/29/00	3:55	

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Manilla - Project Data Manager

Project Information Section
For Project Personnel Only
Do Not Submit to Laboratory

398 MW-27,21

Sample Point Location	Sample Type G	C	F	QC
1-398 MW 27,21	X			
EQUIP RINSATE				
2-398 MW 27,21	X			
TRIP BLANK				
3-398 MW-27,21	X			
MW-27 SAMPLE				
4-398 MW 27,21	X			
MW-21 SAMPLE				

Comments

due: 6/29/00 rec'd 6/29/00

Sample Type: G - Grab, C - Composite, F - Field Sample, QC - Quality Control Sample

AL

5374

50450

EMAX
LABORATORIES, INC.
630 Maple Ave.
Torrance, CA 90503
Telephone: (310) 618-8889
Fax: (310) 618-0818

Date: 07-02-2000
EMAX Batch No.: 00F124

Attn: Dwayne Ishida

IT Corporation
3347 Michelson Dr. # 200
Irvine CA 92612

Subject: Laboratory Report
Project: MCAS El Toro/18609/D.O. 70

Enclosed is the Laboratory report for samples received on 06/21/00. The data reported include :

Sample ID	Control #	Col Date	Matrix	Analysis
918609-3126	F124-01	06/21/00	WATER	HOLD
918609-3127	F124-02	06/21/00	WATER	VOLATILE ORGANICS BY GC/MS
918609-3128	F124-03	06/21/00	WATER	TPH GASOLINE
				TPH DIESEL
				TPH JP-5
				VOLATILE ORGANICS BY GC/MS
				ALKALINITY
				SULFATE BY IC
918609-3129	F124-04	06/21/00	WATER	VOLATILE ORGANICS BY GC/MS
				TPH DIESEL
				TPH GASOLINE
				TPH JP-5
				ALKALINITY
				SULFATE BY IC

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning these results.

Sincerely yours,

Kam Y. Pang, Ph.D.
Laboratory Director

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: IT CORPORATION	Date Collected:	06/21/00
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	06/21/00
Batch No.	: 00F124	Date Extracted:	06/27/00 11:00
Sample ID:	18609-3128	Date Analyzed:	06/29/00 16:51
Lab Samp ID:	F124-03R	Dilution Factor:	1
Lab File ID:	TF11031A	Matrix :	WATER
Ext Btch ID:	DSF039W	% Moisture :	NA
Calib. Ref.:	TF11029A	Instrument ID :	GCT050

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
DIESEL	.16**	.1	.067
JP5	ND	.5	.13

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	102	65-135
HEXACOSANE	114	60-145

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SURR1 : Bromobenzene
SURR2 : Hexacosane
RL : Reporting Limit
** : Chromatogram shows a non-typical fuel pattern, calculated and reported as Diesel.

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client : IT CORPORATION	Date Collected: 06/21/00
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/21/00
Batch No. : 005124	Date Extracted: 06/27/00 11:00
Sample ID: 18609-3129	Date Analyzed: 06/29/00 17:42
Lab Samp ID: F124-04R	Dilution Factor: 1
Lab File ID: TF11032A	Matrix : WATER
Ext Btch ID: DSF039W	% Moisture : NA
Calib. Ref.: TF11029A	Instrument ID : GCT050

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
DIESEL	.14**	.1	.067
JP5	ND	.5	.13

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	103	65-135
HEXACOSANE	116	60-145

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SURR1 : Bromobenzene
SURR2 : Hexacosane
RL : Reporting Limit
** : Chromatogram shows a non-typical fuel pattern, calculated and reported as Diesel.

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: IT CORPORATION	Date Collected:	NA
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	06/27/00
Batch No.	: 00F124	Date Extracted:	06/27/00 11:00
Sample ID	: MBLK1W	Date Analyzed:	06/29/00 18:32
Lab Samp ID	: DSF039WB	Dilution Factor:	1
Lab File ID	: TF11033A	Matrix :	WATER
Ext Btch ID	: DSF039W	% Moisture :	NA
Calib. Ref.	: TF11029A	Instrument ID :	GCT050

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
DIESEL	ND	.1	.067
JP5	ND	.5	.13

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	77	65-135
HEXACOSANE	90	60-145

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SURR1 : Bromobenzene
SURR2 : Hexacosane
RL : Reporting Limit

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 00F124
METHOD: METHOD M8015

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	DSF039WB	DSF039WL	DSF039WC		
LAB FILE ID:	TF11033A	TF11034A	TF11035A		
DATE EXTRACTED:	06/27/0011:00	06/27/0011:00	06/27/0011:00	DATE COLLECTED:	NA
DATE ANALYZED:	06/29/0018:32	06/29/0019:22	06/29/0020:12	DATE RECEIVED:	06/27/00
PREP. BATCH:	DSF039W	DSF039W	DSF039W		
CALIB. REF:	TF11029A	TF11029A	TF11029A		

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Diesel	ND	5	5.88	118	5	4.96	99	17	61-143	30

SURROGATE PARAMETER	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	QC LIMIT (%)
Bromobenzene	1	.929	93	1	.855	86	65-135
Hexacosane	.25	.245	98	.25	.242	97	60-145

METHOD 5030B/M8015
TOTAL PETROLEUM HYDROCARBONS BY PURGE & TRAP

Client : IT CORPORATION
Project : MCAS EL TORO/18609/D.O. 70
Batch No. : 00F124

Matrix : WATER
Instrument ID : GCT039

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	SURR (%)	DLF	MOIST	PRL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	VAF4039B	ND	91	1	NA	.1	.012	06/22/0023:41	06/22/0023:41	EF12063A	EF12062A	VAF4039	NA	06/22/00
LCS1W	VAF4039L	.615	119	1	NA	.1	.012	06/23/0000:15	06/23/0000:15	EF12064A	EF12062A	VAF4039	NA	06/23/00
LCD1W	VAF4039C	.539	115	1	NA	.1	.012	06/23/0000:50	06/23/0000:50	EF12065A	EF12062A	VAF4039	NA	06/23/00
18609-3128	F124-03	ND	97	1	NA	.1	.012	06/23/0003:43	06/23/0003:43	EF12070A	EF12062A	VAF4039	06/21/00	06/21/00
18609-3129	F124-04	ND	102	1	NA	.1	.012	06/23/0004:17	06/23/0004:17	EF12071A	EF12062A	VAF4039	06/21/00	06/21/00

SURR : Bromofluorobenzene (W)65-135 (S)60-140
PRL : Reporting Limit
E : Value exceed the upper level of the initial calibration
D : Value from dilution

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 00F124
METHOD: METHOD 5030B/M8015

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	VAF4039B	VAF4039L	VAF4039C		
LAB FILE ID:	EF12063A	EF12064A	EF12065A		
DATE EXTRACTED:	06/22/0023:41	06/23/0000:15	06/23/0000:50	DATE COLLECTED:	NA
DATE ANALYZED:	06/22/0023:41	06/23/0000:15	06/23/0000:50	DATE RECEIVED:	06/23/00
PREP. BATCH:	VAF4039	VAF4039	VAF4039		
CALIB. REF:	EF12062A	EF12062A	EF12062A		

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Gasoline	ND	.55	.615	112	.55	.539	98	13	67-136	30

SURROGATE PARAMETER	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	QC LIMIT (%)
Bromofluorobenzene	.02	.0238	119	.02	.0231	115	65-135

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 06/21/00
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/21/00
Batch No. : 00F124	Date Extracted: 06/22/00 14:09
Sample ID: 18609-3127	Date Analyzed: 06/22/00 14:09
Lab Samp ID: F124-02	Dilution Factor: 1
Lab File ID: RFQ450	Matrix : WATER
Ext Btch ID: VOF3005	% Moisture : NA
Calib. Ref.: RFQ444	Instrument ID : T-005

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	.91
1,1,2,2-TETRACHLOROETHANE	ND	5	1.1
1,1,2-TRICHLOROETHANE	ND	5	.83
1,1-DICHLOROETHANE	ND	5	.65
1,1-DICHLOROETHENE	ND	5	.86
1,2-DICHLOROETHANE	ND	5	.95
1,2-DICHLOROPROPANE	ND	5	.73
2-BUTANONE	ND	50	6.7
2-CHLOROETHYLVINYLETHER	ND	50	1.3
2-HEXANONE	ND	50	5.6
4-METHYL-2-PENTANONE	ND	50	3.6
ACETONE	ND	50	9.6
BENZENE	ND	5	.77
BROMODICHLOROMETHANE	ND	5	.82
BROMOFORM	ND	5	.74
BROMOMETHANE	ND	5	1.9
CARBON DISULFIDE	ND	5	.61
CARBON TETRACHLORIDE	ND	5	.83
CHLOROBENZENE	ND	5	1.1
CHLOROETHANE	ND	5	1.7
CHLOROFORM	ND	5	.67
CHLOROMETHANE	ND	5	.67
CIS-1,2-DICHLOROETHENE	ND	5	.79
CIS-1,3-DICHLOROPROPENE	ND	5	.79
DIBROMOCHLOROMETHANE	ND	5	.71
ETHYLBENZENE	ND	5	1
MTBE	ND	10	.77
METHYLENE CHLORIDE	ND	5	1.4
STYRENE	ND	5	.87
TETRACHLOROETHENE	ND	5	1.1
TOLUENE	ND	5	.99
TRANS-1,2-DICHLOROETHENE	ND	5	.73
TRANS-1,3-DICHLOROPROPENE	ND	5	.82
TRICHLOROETHENE	ND	5	.89
VINYL ACETATE	ND	50	1.4
VINYL CHLORIDE	ND	5	2.5
XYLENES	ND	5	3.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	96	62-139
BROMOFLUOROBENZENE	107	75-125
TOLUENE-D8	97	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 06/21/00
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/21/00
Btch No. : VOOF124	Date Extracted: 06/22/00 14:47
Sample ID: 18609-3128	Date Analyzed: 06/22/00 14:47
Lab Samp ID: F124-03	Dilution Factor: 1
Lab File ID: RFQ451	Matrix : WATER
Ext Btch ID: VOF3005	% Moisture : NA
Calib. Ref.: RFQ444	Instrument ID : T-005

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	.91
1,1,2,2-TETRACHLOROETHANE	ND	5	1.1
1,1,2-TRICHLOROETHANE	ND	5	.83
1,1-DICHLOROETHANE	ND	5	.65
1,1-DICHLOROETHENE	ND	5	.86
1,2-DICHLOROETHANE	ND	5	.95
1,2-DICHLOROPROPANE	ND	5	.73
2-BUTANONE	ND	50	6.7
2-CHLOROETHYLVINYLETHER	ND	50	1.3
2-HEXANONE	ND	50	5.6
4-METHYL-2-PENTANONE	ND	50	3.6
ACETONE	ND	50	9.6
BENZENE	ND	5	.77
BROMODICHLOROMETHANE	ND	5	.82
BROMOFORM	ND	5	.74
BROMOMETHANE	ND	5	1.9
CARBON DISULFIDE	ND	5	.61
CARBON TETRACHLORIDE	ND	5	.83
CHLOROBENZENE	ND	5	1.1
CHLOROETHANE	ND	5	1.7
CHLOROFORM	ND	5	.67
CHLOROMETHANE	ND	5	.67
[illegible]-1,2-DICHLOROETHENE	ND	5	.79
[illegible]-1,3-DICHLOROPROPENE	ND	5	.79
DIBROMOCHLOROMETHANE	ND	5	.71
ETHYLBENZENE	ND	5	1
MTBE	ND	10	.77
METHYLENE CHLORIDE	ND	5	1.4
STYRENE	ND	5	.87
TETRACHLOROETHENE	ND	5	1.1
TOLUENE	ND	5	.99
TRANS-1,2-DICHLOROETHENE	ND	5	.73
TRANS-1,3-DICHLOROPROPENE	ND	5	.82
TRICHLOROETHENE	ND	5	.89
VINYL ACETATE	ND	50	1.4
VINYL CHLORIDE	ND	5	2.5
XYLENES	ND	5	3.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	99	62-139
BROMOFLUOROBENZENE	107	75-125
TOLUENE-D8	99	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 06/21/00
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/21/00
Batch No. : DOF124	Date Extracted: 06/22/00 15:27
Sample ID: 18609-3129	Date Analyzed: 06/22/00 15:27
Lab Samp ID: F124-04	Dilution Factor: 1
Lab File ID: RFQ452	Matrix : WATER
Ext Btch ID: VOF3005	% Moisture : NA
Calib. Ref.: RFQ444	Instrument ID : T-005

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	.91
1,1,2,2-TETRACHLOROETHANE	ND	5	1.1
1,1,2-TRICHLOROETHANE	ND	5	.83
1,1-DICHLOROETHANE	ND	5	.65
1,1-DICHLOROETHENE	ND	5	.86
1,2-DICHLOROETHANE	ND	5	.95
1,2-DICHLOROPROPANE	ND	5	.73
2-BUTANONE	ND	50	6.7
2-CHLOROETHYLVINYLETHER	ND	50	1.3
2-HEXANONE	ND	50	5.6
4-METHYL-2-PENTANONE	ND	50	3.6
ACETONE	ND	50	9.6
BENZENE	ND	5	.77
BROMODICHLOROMETHANE	ND	5	.82
BROMOFORM	ND	5	.74
BROMOMETHANE	ND	5	1.9
CARBON DISULFIDE	ND	5	.61
CARBON TETRACHLORIDE	ND	5	.83
CHLOROBENZENE	ND	5	1.1
CHLOROETHANE	ND	5	1.7
CHLOROFORM	ND	5	.67
CHLOROMETHANE	ND	5	.67
CIS-1,2-DICHLOROETHENE	ND	5	.79
CIS-1,3-DICHLOROPROPENE	ND	5	.79
DIBROMOCHLOROMETHANE	ND	5	.71
ETHYLBENZENE	ND	5	1
MTBE	ND	10	.77
METHYLENE CHLORIDE	ND	5	1.4
STYRENE	ND	5	.87
TETRACHLOROETHENE	ND	5	1.1
TOLUENE	ND	5	.99
TRANS-1,2-DICHLOROETHENE	ND	5	.73
TRANS-1,3-DICHLOROPROPENE	ND	5	.82
TRICHLOROETHENE	ND	5	.89
VINYL ACETATE	ND	50	1.4
VINYL CHLORIDE	ND	5	2.5
XYLENES	ND	5	3.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	99	62-139
BROMOFLUOROBENZENE	105	75-125
TOLUENE-D8	98	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: NA
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/22/00
Batch No. : 00F124	Date Extracted: 06/22/00 12:50
Sample ID: MBLK1W	Date Analyzed: 06/22/00 12:50
Lab Samp ID: V0F3005Q	Dilution Factor: 1
Lab File ID: RF0448	Matrix : WATER
Ext Btch ID: V0F3005	% Moisture : NA
Calib. Ref.: RF0444	Instrument ID : T-005

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	.91
1,1,2,2-TETRACHLOROETHANE	ND	5	1.1
1,1,2-TRICHLOROETHANE	ND	5	.83
1,1-DICHLOROETHANE	ND	5	.65
1,1-DICHLOROETHENE	ND	5	.86
1,2-DICHLOROETHANE	ND	5	.95
1,2-DICHLOROPROPANE	ND	5	.73
2-BUTANONE	ND	50	6.7
2-CHLOROETHYLVINYLETHER	ND	50	1.3
2-HEXANONE	ND	50	5.6
4-METHYL-2-PENTANONE	ND	50	3.6
ACETONE	ND	50	9.6
BENZENE	ND	5	.77
BROMODICHLOROMETHANE	ND	5	.82
BROMOFORM	ND	5	.74
BROMOMETHANE	ND	5	1.9
CARBON DISULFIDE	ND	5	.61
CARBON TETRACHLORIDE	ND	5	.83
CHLOROBENZENE	ND	5	1.1
CHLOROETHANE	ND	5	1.7
CHLOROFORM	ND	5	.67
CHLOROMETHANE	ND	5	.67
CIS-1,2-DICHLOROETHENE	ND	5	.79
CIS-1,3-DICHLOROPROPENE	ND	5	.79
DIBROMOCHLOROMETHANE	ND	5	.71
ETHYLBENZENE	ND	5	1
MTBE	ND	10	.77
METHYLENE CHLORIDE	ND	5	1.4
STYRENE	ND	5	.87
TETRACHLOROETHENE	ND	5	1.1
TOLUENE	ND	5	.99
TRANS-1,2-DICHLOROETHENE	ND	5	.73
TRANS-1,3-DICHLOROPROPENE	ND	5	.82
TRICHLOROETHENE	ND	5	.89
VINYL ACETATE	ND	50	1.4
VINYL CHLORIDE	ND	5	2.5
XYLENES	ND	5	3.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	98	62-139
BROMOFLUOROBENZENE	103	75-125
TOLUENE-D8	101	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 00F124
METHOD: METHOD 5030A/8260A

MATRIX: WATER % MOISTURE: NA
DILUTION FACTOR: 1 1 1
SAMPLE ID: MBLK1W
LAB SAMP ID: V0F3005Q V0F3005L V0F3005C
LAB FILE ID: RFQ448 RFQ445 RFQ446
DATE EXTRACTED: 06/22/0012:50 06/22/0010:58 06/22/0011:36 DATE COLLECTED: NA
DATE ANALYZED: 06/22/0012:50 06/22/0010:58 06/22/0011:36 DATE RECEIVED: 06/22/00
PREP. BATCH: V0F3005 V0F3005 V0F3005
CALIB. REF: RFQ444 RFQ444 RFQ444

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
1,1-Dichloroethene	ND	20	19	95	20	20.8	104	9	75-125	20
Benzene	ND	20	20.4	102	20	19.2	96	6	75-125	20
Chlorobenzene	ND	20	19.6	98	20	19.5	97	1	75-125	20
Toluene	ND	20	20.4	102	20	19.5	97	5	74-125	20
Trichloroethene	ND	20	19.3	96	20	18.3	92	5	71-125	20

SURROGATE PARAMETER	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	QC LIMIT (%)
1,2-Dichlorethane-d4	50	50.3	101	50	48.6	97	62-139
Bromofluorobenzene	50	54.5	109	50	53.2	106	75-125
Toluene-d8	50	51.6	103	50	49.7	99	75-125

METHOD 310.1
TOTAL ALKALINITY

Client : IT CORPORATION
Project : MCAS EL TORO/18609/D.O. 70
Batch No. : 00F124

Matrix : WATER
Instrument ID :

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
18609-3128	F124-03	285	1	NA	5	.469	06/26/0013:00	NA	ALF011W-15	NA	ALF011W	06/21/00	06/21/00
18609-3129	F124-04	293	1	NA	5	.469	06/26/0013:15	NA	ALF011W-16	NA	ALF011W	06/21/00	06/21/00
MBLK1W	ALF011WB	ND	1	NA	5	.469	06/26/0009:30	NA	ALF011W-1	NA	ALF011W	NA	NA
LCS1W	ALF011WL	173	1	NA	5	.469	06/26/0009:45	NA	ALF011W-2	NA	ALF011W	NA	NA
LCD1W	ALF011WC	173	1	NA	5	.469	06/26/0010:00	NA	ALF011W-3	NA	ALF011W	NA	NA

RL: Reporting Limit

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
METHOD: METHOD 310.1
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 00F124
SAMPLE ID: LCD1W/LCD1W
CONTROL NO.: ALF011WL/C

DATE RECEIVED: NA
DATE EXTRACTED: NA
DATE ANALYZED: 06/26/00 09:45/10:00

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD %	QC LIMIT %	RPD LIMIT %
Alkalinity	ND	157	173	110	157	173	110	0	80-120	20

METHOD 300.0
SULFATE

Client : IT CORPORATION
Project : MCAS EL TORO/18609/D.O. 70
Batch No. : 00F124

Matrix : WATER
Instrument ID : TI006

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	ICF048WB	ND	1	NA	.5	.101	06/24/0000:50	NA	AF23051A	AF23049A	ICF048W	NA	NA
LCS1W	ICF048WL	20.6	1	NA	.5	.101	06/24/0001:05	NA	AF23052A	AF23049A	ICF048W	NA	NA
LCD1W	ICF048WC	20.6	1	NA	.5	.101	06/24/0001:20	NA	AF23053A	AF23049A	ICF048W	NA	NA
18609-3128	F124-03	144	5	NA	2.5	.505	06/24/0005:05	NA	AF23068A	AF23061A	ICF048W	06/21/00	06/21/00
18609-3129	F124-04	179	5	NA	2.5	.505	06/24/0005:20	NA	AF23069A	AF23061A	ICF048W	06/21/00	06/21/00

RL : Reporting Limit

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 00F124
METHOD: METHOD 300.0

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	ICF048WB	ICF048WL	ICF048WC		
LAB FILE ID:	AF23051A	AF23052A	AF23053A		
DATE EXTRACTED:	NA	NA	NA	DATE COLLECTED:	NA
DATE ANALYZED:	06/24/0000:50	06/24/0001:05	06/24/0001:20	DATE RECEIVED:	NA
PREP. BATCH:	ICF048W	ICF048W	ICF048W		
CALIB. REF:	AF23049A	AF23049A	AF23049A		

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Sulfate	ND	20	20.6	103	20	20.6	103	0	80-120	20

CONCERTION

CHAIN-OF-CUSTODY RECORD

PROJECT DATA MANAGER'S COPY

A 12039

FORM 0019 REV. 9-99

398 - MW-13

the IT group
IT Corporation
2790 Mosside Blvd.
Monroeville, PA 15146-2792
(412)372-7701

IT'S LAB COORDINATOR: CONCERTION	LAB COORDINATOR'S PHONE: 949-660-7550	LAB COORDINATOR'S FAX: 949-475-5433	LABORATORY SERVICE ID: 00F134	LABORATORY CONTACT: E-MAX	MAIL REPORT (COMPANY NAME): IT GROUP
PROJECT NAME: EL TORO D070	PROJECT LOCATION: MCAS EL TORO	PROJECT NUMBER: 918609	LABORATORY PHONE: 301 618-8989	LABORATORY FAX: -	RECIPIENT NAME: D ICHIDA
PROJECT CONTACT: CONCERTION	PROJECT PHONE NUMBER: 949-451-1607	PROJECT FAX: 949-475-5433	LABORATORY ADDRESS: 655 MAPLE		ADDRESS: 3347 MICHELSON #200
PROJECT ADDRESS	CITY, STATE AND ZIP CODE	CLIENT: S.W. DIV	CITY, STATE AND ZIP CODE: TORRANCE CA		CITY, STATE AND ZIP CODE: IRVINE CA 92606
PROJECT MANAGER: B SEDLAK	PROJECT MANAGER'S PHONE: 949-660-5446	PROJECT MANAGER'S FAX			

Item	Sample Identifier	Matrix	Date	Time	Preserved	# of Cont.	QC Level	T.A.T.	Analyses	Comments
1	918609 - 3130	W	6/26	730	HCl	7	3	5 DAY	X X X X	
2	918609 - 3131			705		2	3		X	
3	918609 - 8132			105		7	3		X X X X	
4	918609 - 3133	L	L	1340	L	9	3	L	X X X X X X	
5										
6										
7										
8										
9										
10										

SAMPLES COLLECTED BY: MAINS

COURIER AND AIR BILL NUMBER: COURIER

COOLER TEMPERATURE UPON RECEIPT:

RELINQUISHED BY	RECEIVED BY	DATE	TIME	SAMPLE'S CONDITION UPON RECEIPT
		6/27/00	3:20	

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Manilla - Project Data Manager

Project Information Section
For Project Personnel Only
Do Not Submit to Laboratory

398-MW-13

Sample Point Location	Sample Type G	C	F	QC
1 - 398 MW-13	X			
EQUIP RINSATE PUMP #1	X			
2 398 MW-13	X			
TRIP BLANK				
3 - 398 MW-13	X			
EQUIP RINSATE PUMP #2				
4 398 MW-13	X			
WELL SAMPLE				

Comments: due 6/30/00 rec'd 6/30/00

Sample Type: G - Grab, C - Composite, F - Field Sample, QC - Quality Control Sample

5358

5045 P

EMAX
LABORATORIES, INC.
630 Maple Ave.
Torrance, CA 90503
Telephone: (310) 618-8889
Fax: (310) 618-0818

Date: 07-02-2000
EMAX Batch No.: 00F134

Attn: Dwayne Ishida

IT Corporation
3347 Michelson Dr. # 200
Irvine CA 92612

Subject: Laboratory Report
Project: MCAS El Toro/18609/D.O. 70

Enclosed is the Laboratory report for samples received on 06/22/00. The data reported include :

Sample ID	Control #	Col Date	Matrix	Analysis
18609-3130	F134-01	06/22/00	WATER	HOLD
18609-3131	F134-02	06/22/00	WATER	VOLATILE ORGANICS BY GC/MS
18609-3132	F134-03	06/22/00	WATER	TPH GASOLINE
				TPH DIESEL
				TPH JP-5
				VOLATILE ORGANICS BY GC/MS
18609-3133	F134-04	06/22/00	WATER	TPH GASOLINE
				TPH DIESEL
				TPH JP-5
				VOLATILE ORGANICS BY GC/MS
				ALKALINITY
				SULFATE BY IC

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning these results.

Sincerely yours,

Kam Y. Pang, Ph.D.
Laboratory Director

1000

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client : IT CORPORATION	Date Collected: 06/22/00
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/22/00
Batch No. : DOF134	Date Extracted: 06/24/00 15:00
Sample ID: 18609-3132	Date Analyzed: 06/29/00 21:01
Lab Samp ID: F134-03	Dilution Factor: .94
Lab File ID: TF11036A	Matrix : WATER
Ext Btch ID: DSF038W	% Moisture : NA
Calib. Ref.: TF11029A	Instrument ID : GCT050

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
DIESEL	ND	.094	.063
JP5	ND	.47	.12

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	79	65-135
HEXACOSANE	96	60-145

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SURR1 : Bromobenzene
SURR2 : Hexacosane
RL : Reporting Limit

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client : IT CORPORATION	Date Collected: 06/22/00
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/22/00
Batch No. : GOF134	Date Extracted: 06/27/00 11:00
Sample ID: 918609-3133	Date Analyzed: 06/29/00 21:51
Lab Samp ID: F134-04R	Dilution Factor: 1
Lab File ID: TF11037A	Matrix : WATER
Ext Btch ID: DSF039W	% Moisture : NA
Calib. Ref.: TF11029A	Instrument ID : GCTO50

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
DIESEL	ND	.1	.067
JP5	ND	.5	.13

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	90	65-135
HEXACOSANE	96	60-145

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SURR1 : Bromobenzene
SURR2 : Hexacosane
RL : Reporting Limit

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client : IT CORPORATION	Date Collected: NA
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/24/00
Batch No. : 00F134	Date Extracted: 06/24/00 15:00
Sample ID: MBLK1W	Date Analyzed: 06/29/00 22:41
Lab Samp ID: DSF038WB	Dilution Factor: 1
Lab File ID: TF11038A	Matrix : WATER
Ext Btch ID: DSF038W	% Moisture : NA
Calib. Ref.: TF11029A	Instrument ID : GCT050

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
DIESEL	ND	.1	.067
JP5	ND	.5	.13

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	75	65-135
HEXACOSANE	99	60-145

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SURR1 : Bromobenzene
SURR2 : Hexacosane
RL : Reporting Limit

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client : IT CORPORATION	Date Collected: NA
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/27/00
Batch No. : 00F134	Date Extracted: 06/27/00 11:00
Sample ID: MBLK2W	Date Analyzed: 06/29/00 18:32
Lab Samp ID: DSF039WB	Dilution Factor: 1
Lab File ID: TF11033A	Matrix : WATER
Ext Btch ID: DSF039W	% Moisture : NA
Calib. Ref.: TF11029A	Instrument ID : GCTO50

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
DIESEL	ND	.1	.067
JP5	ND	.5	.13

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	77	65-135
HEXACOSANE	90	60-145

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SURR1 : Bromobenzene
SURR2 : Hexacosane
RL : Reporting Limit

5010

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 00F134
METHOD: METHOD M8015

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	DSF038WB	DSF038WL	DSF038WC		
LAB FILE ID:	TF11038A	TF11039A	TF11040A		
DATE EXTRACTED:	06/24/0015:00	06/24/0015:00	06/24/0015:00	DATE COLLECTED:	NA
DATE ANALYZED:	06/29/0022:41	06/29/0023:30	06/30/0000:20	DATE RECEIVED:	06/24/00
PREP. BATCH:	DSF038W	DSF038W	DSF038W		
CALIB. REF:	TF11029A	TF11029A	TF11029A		

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Diesel	ND	5	6.63	133	5	5.93	119	11	61-143	30

SURROGATE PARAMETER	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	QC LIMIT (%)
Bromobenzene	1	.969	97	1	.86	86	65-135
Hexacosane	.25	.275	110	.25	.247	99	60-145

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 00F134
METHOD: METHOD M8015

MATRIX: WATER % MOISTURE: NA

DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK2W				
LAB SAMP ID:	DSF039WB	DSF039WL	DSF039WC		
LAB FILE ID:	TF11033A	TF11034A	TF11035A		
DATE EXTRACTED:	06/27/0011:00	06/27/0011:00	06/27/0011:00	DATE COLLECTED:	NA
DATE ANALYZED:	06/29/0018:32	06/29/0019:22	06/29/0020:12	DATE RECEIVED:	06/27/00
PREP. BATCH:	DSF039W	DSF039W	DSF039W		
CALIB. REF:	TF11029A	TF11029A	TF11029A		

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Diesel	ND	5	5.88	118	5	4.96	99	17	61-143	30

SURROGATE PARAMETER	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	QC LIMIT (%)
Bromobenzene	1	.929	93	1	.855	86	65-135
Hexacosane	.25	.245	98	.25	.242	97	60-145

METHOD 5030B/M8015
TOTAL PETROLEUM HYDROCARBONS BY PURGE & TRAP

Client : IT CORPORATION
Project : MCAS EL TORO/18609/D.O. 70
Batch No. : 00F134

Matrix : WATER
Instrument ID : GCT039

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	SURR (%)	DLF	MOIST	PRL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	VAF4139B	ND	100	1	NA	.1	.012	06/23/0012:38	06/23/0012:38	EF13004A	EF13003A	VAF4139	NA	06/23/00
LCS1W	VAF4139L	.565	121	1	NA	.1	.012	06/23/0013:13	06/23/0013:13	EF13005A	EF13003A	VAF4139	NA	06/23/00
LCD1W	VAF4139C	.567	118	1	NA	.1	.012	06/23/0013:48	06/23/0013:48	EF13006A	EF13003A	VAF4139	NA	06/23/00
18609-3132	F134-03	ND	86	1	NA	.1	.012	06/23/0014:35	06/23/0014:35	EF13007A	EF13003A	VAF4139	06/22/00	06/22/00
18609-3133	F134-04	ND	94	1	NA	.1	.012	06/23/0015:10	06/23/0015:10	EF13008A	EF13003A	VAF4139	06/22/00	06/22/00

SURR : Bromofluorobenzene (W)65-135 (S)60-140
PRL : Reporting Limit
E : Value exceed the upper level of the initial calibration
D : Value from dilution

4004

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 00F134
METHOD: METHOD 5030B/M8015

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	VAF4139B	VAF4139L	VAF4139C		
LAB FILE ID:	EF13004A	EF13005A	EF13006A		
DATE EXTRACTED:	06/23/0012:38	06/23/0013:13	06/23/0013:48	DATE COLLECTED:	NA
DATE ANALYZED:	06/23/0012:38	06/23/0013:13	06/23/0013:48	DATE RECEIVED:	06/23/00
PREP. BATCH:	VAF4139	VAF4139	VAF4139		
CALIB. REF:	EF13003A	EF13003A	EF13003A		

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Gasoline	ND	.55	.565	103	.55	.567	103	0	67-136	30

SURROGATE PARAMETER	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	QC LIMIT (%)
Bromofluorobenzene	.02	.0243	121	.02	.0237	118	65-135

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 06/22/00
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/22/00
Batch No. : VOF134	Date Extracted: 06/27/00 01:31
Sample ID: 18609-3131	Date Analyzed: 06/27/00 01:31
Lab Samp ID: F134-02	Dilution Factor: 1
Lab File ID: RFQ526	Matrix : WATER
Ext Btch ID: VOF3405	% Moisture : NA
Calib. Ref.: RFQ521	Instrument ID : T-005

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	.91
1,1,2,2-TETRACHLOROETHANE	ND	5	1.1
1,1,2-TRICHLOROETHANE	ND	5	.83
1,1-DICHLOROETHANE	ND	5	.65
1,1-DICHLOROETHENE	ND	5	.86
1,2-DICHLOROETHANE	ND	5	.95
1,2-DICHLOROPROPANE	ND	5	.73
2-BUTANONE	ND	50	6.7
2-CHLOROETHYLVINYLETHER	ND	50	1.3
2-HEXANONE	ND	50	5.6
4-METHYL-2-PENTANONE	ND	50	3.6
ACETONE	ND	50	9.6
BENZENE	ND	5	.77
BROMODICHLOROMETHANE	ND	5	.82
BROMOFORM	ND	5	.74
BROMOMETHANE	ND	5	1.9
CARBON DISULFIDE	ND	5	.61
CARBON TETRACHLORIDE	ND	5	.83
CHLOROBENZENE	ND	5	1.1
CHLOROETHANE	ND	5	1.7
CHLOROFORM	ND	5	.67
CHLOROMETHANE	ND	5	.67
CIS-1,2-DICHLOROETHENE	ND	5	.79
CIS-1,3-DICHLOROPROPENE	ND	5	.79
DIBROMOCHLOROMETHANE	ND	5	.71
ETHYLBENZENE	ND	5	1
MTBE	ND	10	.77
METHYLENE CHLORIDE	ND	5	1.4
STYRENE	ND	5	.87
TETRACHLOROETHENE	ND	5	1.1
TOLUENE	ND	5	.99
TRANS-1,2-DICHLOROETHENE	ND	5	.73
TRANS-1,3-DICHLOROPROPENE	ND	5	.82
TRICHLOROETHENE	ND	5	.89
VINYL ACETATE	ND	50	1.4
VINYL CHLORIDE	ND	5	2.5
XYLENES	ND	5	3.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	106	62-139
BROMOFLUOROBENZENE	102	75-125
TOLUENE-D8	103	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 06/22/00
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/22/00
Batch No. : VOF134	Date Extracted: 06/27/00 02:46
Sample ID: 18609-3132	Date Analyzed: 06/27/00 02:46
Lab Samp ID: F134-03	Dilution Factor: 1
Lab File ID: RFQ528	Matrix : WATER
Ext Btch ID: VOF3405	% Moisture : NA
Calib. Ref.: RFQ521	Instrument ID : T-005

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	.91
1,1,2,2-TETRACHLOROETHANE	ND	5	1.1
1,1,2-TRICHLOROETHANE	ND	5	.83
1,1-DICHLOROETHANE	ND	5	.65
1,1-DICHLOROETHENE	ND	5	.86
1,2-DICHLOROETHANE	ND	5	.95
1,2-DICHLOROPROPANE	ND	5	.73
2-BUTANONE	ND	50	6.7
2-CHLOROETHYLVINYLETHER	ND	50	1.3
2-HEXANONE	ND	50	5.6
4-METHYL-2-PENTANONE	ND	50	3.6
ACETONE	ND	50	9.6
BENZENE	ND	5	.77
BROMODICHLOROMETHANE	ND	5	.82
BROMOFORM	ND	5	.74
BROMOMETHANE	ND	5	1.9
CARBON DISULFIDE	ND	5	.61
CARBON TETRACHLORIDE	ND	5	.83
CHLOROBENZENE	ND	5	1.1
CHLOROETHANE	ND	5	1.7
CHLOROFORM	ND	5	.67
CHLOROMETHANE	ND	5	.67
CIS-1,2-DICHLOROETHENE	ND	5	.79
CIS-1,3-DICHLOROPROPENE	ND	5	.79
DIBROMOCHLOROMETHANE	ND	5	.71
ETHYLBENZENE	ND	5	1
MTBE	ND	10	.77
METHYLENE CHLORIDE	ND	5	1.4
STYRENE	ND	5	.87
TETRACHLOROETHENE	ND	5	1.1
TOLUENE	ND	5	.99
TRANS-1,2-DICHLOROETHENE	ND	5	.73
TRANS-1,3-DICHLOROPROPENE	ND	5	.82
TRICHLOROETHENE	ND	5	.89
VINYL ACETATE	ND	50	1.4
VINYL CHLORIDE	ND	5	2.5
XYLENES	ND	5	3.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	106	62-139
BROMOFLUOROBENZENE	98	75-125
TOLUENE-D8	100	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

2005

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 06/22/00
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/22/00
Batch No. : 00F134	Date Extracted: 06/27/00 03:24
Sample ID : 18609-3133	Date Analyzed: 06/27/00 03:24
Lab Samp ID: F134-04	Dilution Factor: 1
Lab File ID: RFQ529	Matrix : WATER
Ext Btch ID: VOF3405	% Moisture : NA
Calib. Ref.: RFQ521	Instrument ID : T-005

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	.91
1,1,2,2-TETRACHLOROETHANE	ND	5	1.1
1,1,2-TRICHLOROETHANE	ND	5	.83
1,1-DICHLOROETHANE	ND	5	.65
1,1-DICHLOROETHENE	ND	5	.86
1,2-DICHLOROETHANE	ND	5	.95
1,2-DICHLOROPROPANE	ND	5	.73
2-BUTANONE	ND	50	6.7
2-CHLOROETHYLVINYLETHER	ND	50	1.3
2-HEXANONE	ND	50	5.6
4-METHYL-2-PENTANONE	ND	50	3.6
ACETONE	ND	50	9.6
BENZENE	ND	5	.77
BROMODICHLOROMETHANE	ND	5	.82
BROMOFORM	ND	5	.74
BROMOMETHANE	ND	5	1.9
CARBON DISULFIDE	ND	5	.61
CARBON TETRACHLORIDE	ND	5	.83
CHLOROBENZENE	ND	5	1.1
CHLOROETHANE	ND	5	1.7
CHLOROFORM	ND	5	.67
CHLOROMETHANE	ND	5	.67
CIS-1,2-DICHLOROETHENE	ND	5	.79
CIS-1,3-DICHLOROPROPENE	ND	5	.79
DIBROMOCHLOROMETHANE	ND	5	.71
ETHYLBENZENE	ND	5	1
MTBE	ND	10	.77
METHYLENE CHLORIDE	1.6J8	5	1.4
STYRENE	ND	5	.87
TETRACHLOROETHENE	ND	5	1.1
TOLUENE	ND	5	.99
TRANS-1,2-DICHLOROETHENE	ND	5	.73
TRANS-1,3-DICHLOROPROPENE	ND	5	.82
TRICHLOROETHENE	ND	5	.89
VINYL ACETATE	ND	50	1.4
VINYL CHLORIDE	ND	5	2.5
XYLENES	ND	5	3.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	107	62-139
BROMOFLUOROBENZENE	102	75-125
TOLUENE-D8	102	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: NA
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/27/00
Batch No. : 00F134	Date Extracted: 06/27/00 00:54
Sample ID: MBLK1W	Date Analyzed: 06/27/00 00:54
Lab Samp ID: V0F3405Q	Dilution Factor: 1
Lab File ID: RFQ525	Matrix : WATER
Ext Btch ID: V0F3405	% Moisture : NA
Calib. Ref.: RFQ521	Instrument ID : T-005

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	.91
1,1,2,2-TETRACHLOROETHANE	ND	5	1.1
1,1,2-TRICHLOROETHANE	ND	5	.83
1,1-DICHLOROETHANE	ND	5	.65
1,1-DICHLOROETHENE	ND	5	.86
1,2-DICHLOROETHANE	ND	5	.95
1,2-DICHLOROPROPANE	ND	5	.73
2-BUTANONE	ND	50	6.7
2-CHLOROETHYLVINYLETHER	ND	50	1.3
2-HEXANONE	ND	50	5.6
4-METHYL-2-PENTANONE	ND	50	3.6
ACETONE	ND	50	9.6
BENZENE	ND	5	.77
BROMODICHLOROMETHANE	ND	5	.82
BROMOFORM	ND	5	.74
BROMOMETHANE	ND	5	1.9
CARBON DISULFIDE	ND	5	.61
CARBON TETRACHLORIDE	ND	5	.83
CHLOROBENZENE	ND	5	1.1
CHLOROETHANE	ND	5	1.7
CHLOROFORM	ND	5	.67
CHLOROMETHANE	ND	5	.67
CIS-1,2-DICHLOROETHENE	ND	5	.79
CIS-1,3-DICHLOROPROPENE	ND	5	.79
DIBROMOCHLOROMETHANE	ND	5	.71
ETHYLBENZENE	ND	5	1
MTBE	ND	10	.77
METHYLENE CHLORIDE	1.5J	5	1.4
STYRENE	ND	5	.87
TETRACHLOROETHENE	ND	5	1.1
TOLUENE	ND	5	.99
TRANS-1,2-DICHLOROETHENE	ND	5	.73
TRANS-1,3-DICHLOROPROPENE	ND	5	.82
TRICHLOROETHENE	ND	5	.89
VINYL ACETATE	ND	50	1.4
VINYL CHLORIDE	ND	5	2.5
XYLENES	ND	5	3.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	104	62-139
BROMOFLUOROBENZENE	101	75-125
TOLUENE-D8	103	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 00F134
METHOD: METHOD 5030A/8260A

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	V0F3405Q	V0F3405L	V0F3405C		
LAB FILE ID:	RF0525	RF0522	RF0523		
DATE EXTRACTED:	06/27/0000:54	06/26/0023:01	06/26/0023:39	DATE COLLECTED:	NA
DATE ANALYZED:	06/27/0000:54	06/26/0023:01	06/26/0023:39	DATE RECEIVED:	06/26/00
PREP. BATCH:	V0F3405	V0F3405	V0F3405		
CALIB. REF:	RF0521	RF0521	RF0521		

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
1,1-Dichloroethene	ND	20	19.6	98	20	21	105	7	75-125	20
Benzene	ND	20	21.6	108	20	22.1	111	2	75-125	20
Chlorobenzene	ND	20	20.9	105	20	21.2	106	1	75-125	20
Toluene	ND	20	22.2	111	20	23	115	3	74-125	20
Trichloroethene	ND	20	21.8	109	20	22.2	111	2	71-125	20

SURROGATE PARAMETER	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	QC LIMIT (%)
1,2-Dichlorethane-d4	50	51.8	104	50	51.7	103	62-139
Bromofluorobenzene	50	51.2	102	50	49	98	75-125
Toluene-d8	50	51	102	50	50.4	101	75-125

2009

METHOD 310.1
TOTAL ALKALINITY

Client : IT CORPORATION
Project : MCAS EL TORO/18609/D.O. 70
Batch No. : 00F134

Matrix : WATER
Instrument ID :

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
18609-3133	F134-04	338	1	NA	5	.469	06/26/0013:30	NA	ALF011W-17	NA	ALF011W	06/22/00	06/22/00
MBLK1W	ALF011WB	ND	1	NA	5	.469	06/26/0009:30	NA	ALF011W-1	NA	ALF011W	NA	NA
LCS1W	ALF011WL	173	1	NA	5	.469	06/26/0009:45	NA	ALF011W-2	NA	ALF011W	NA	NA
LCD1W	ALF011WC	173	1	NA	5	.469	06/26/0010:00	NA	ALF011W-3	NA	ALF011W	NA	NA

RL: Reporting Limit

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
METHOD: METHOD 310.1
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 00F134
SAMPLE ID: LCS1W/LCD1W
CONTROL NO.: ALF011WL/C

DATE RECEIVED: NA
DATE EXTRACTED: NA
DATE ANALYZED: 06/26/00 09:45/10:00

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD %	QC LIMIT %	RPD LIMIT %
Alkalinity	ND	157	173	110	157	173	110	0	80-120	20

8003

METHOD 300.0
SULFATE

Client : IT CORPORATION
Project : MCAS EL TORO/18609/D.O. 70
Batch No. : 00F134

Matrix : WATER
Instrument ID : TI006

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	ICF049WB	ND	1	NA	.5	.101	06/24/0007:17	NA	AF23075A	AF23073A	ICF049W	NA	NA
LCS1W	ICF049WL	20	1	NA	.5	.101	06/24/0007:32	NA	AF23076A	AF23073A	ICF049W	NA	NA
LCD1W	ICF049WC	19.9	1	NA	.5	.101	06/24/0007:47	NA	AF23077A	AF23073A	ICF049W	NA	NA
18609-3133	F134-04	169	5	NA	2.5	.505	06/24/0008:02	NA	AF23078A	AF23073A	ICF049W	06/22/00	06/22/00

RL : Reporting Limit

8008

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 00F134
METHOD: METHOD 300.0

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	ICF049WB	ICF049WL	ICF049WC		
LAB FILE ID:	AF23075A	AF23076A	AF23077A		
DATE EXTRACTED:	NA	NA	NA	DATE COLLECTED:	NA
DATE ANALYZED:	06/24/0007:17	06/24/0007:32	06/24/0007:47	DATE RECEIVED:	NA
PREP. BATCH:	ICF049W	ICF049W	ICF049W		
CALIB. REF:	AF23073A	AF23073A	AF23073A		

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Sulfate	ND	20	20	100	20	19.9	100	0	80-120	20

8040

May 7/10/00

WBS, 0700902

the IT group

IT Corporation
2790 Mosside Blvd.
Monroeville, PA 15146-2792
(412)372-7701

CHAIN-OF-CUSTODY RECORD

398-MW-1,17

PROJECT DATA MANAGER'S COPY

A 12040

FORM 0019 REV. 9-99

LAB COORDINATOR: M CONNELLY	LAB COORDINATOR'S PHONE: 949-660-1550	LAB COORDINATOR'S FAX: 949-475-5433	LABORATORY SERVICE ID: 00F147	LABORATORY CONTACT: E MAX	MAIL REPORT COMPANY NAME: IT GROUP
PROJECT NAME: MCAS EL TORO	PROJECT LOCATION: MCAS EL TORO	PROJECT NUMBER: 918609	LABORATORY PHONE: 818-779-1844	LABORATORY FAX:	RECIPIENT NAME: D CHITA
PROJECT CONTACT: M CONNELLY	PROJECT PHONE NUMBER: 949-451-1607	PROJECT FAX: 949-475-5433	LABORATORY ADDRESS: 660 MAPLE		ADDRESS: 320 MILLER DR #D
PROJECT ADDRESS:	CITY, STATE AND ZIP CODE:	CLIENT: S.W. DIV	CITY, STATE AND ZIP CODE: ORANGE CA		CITY, STATE AND ZIP CODE: IRVINE CA 92612
PROJECT MANAGER: J JERLAK	PROJECT MANAGER'S PHONE: 949-660-5466	PROJECT MANAGER'S FAX:			

Sample Identifier	Matrix	Date	Time	Preserved	# of Cont.	QC Level	T.A.T.	Analyses: TPH-GX	TPH-DCM-EXT	TPH-DCM-EXT SILICA GEL	ALCOHOLS	SULFATE	ALKALINITY	H2S	Comments
918609 - 3124	W	6/13/00	1025	4°C HCl	9	3	5DAY	X	X	X	X	X	X		
918609 - 3125			20		2						X				
918609 - 3126			1100		7			X	X	X	X			X	
918609 - 3127			1120		9			X	X	X	X	X	X		
918609 - 3128	V	V	1140	V	9	4	V	X	X	X	X	X	X		

SAMPLES COLLECTED BY: M MANN

RELINQUISHED BY

COURIER AND AIR BILL NUMBER: COURIER

RECEIVED BY: Phillip Chan

DATE: 6-23-00 TIME: 3:00

COOLER TEMPERATURE UPON RECEIPT:

SAMPLE'S CONDITION UPON RECEIPT

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Manilla - Project Data Manager

AU

Project Information Section
For Project Personnel Only
Do Not Submit to Laboratory

398-MW-1,17

Sample Point Location	Sample Type G	C	F	QC
1- 398 MW-1,17	X			
WELL SAMPLE MW-1				
2 398 MW-1,17	X			
TRIP BLANK				
3: 398 MW-1,17	X			
EQUIP RINSATE				
4-398 MW-1,17	X			
MW-17 WELL SAMPLE				
5 398-MW-17	X			X
MW-17 DUPE				

Comments

~~due: 6~~ 7/3/00 rec'd 7/3/00

Sample Type: G - Grab, C - Composite, F - Field Sample, QC - Quality Control Sample

5357

5045R

EMAX
LABORATORIES, INC.
630 Maple Ave.
Torrance, CA 90503
Telephone: (310) 618-8889
Fax: (310) 618-0818

Date: 07-04-2000
EMAX Batch No.: 00F147

Attn: Dwayne Ishida

IT Corporation
3347 Michelson Dr. # 200
Irvine CA 92612

Subject: Laboratory Report
Project: MCAS El Toro/18609/D.O. 70

Enclosed is the Laboratory report for samples received on 06/23/00. The data reported include :

Sample ID	Control #	Col Date	Matrix	Analysis
18609-3134	F147-01	06/23/00	WATER	TPH GASOLINE
				TPH DIESEL
				TPH JP-5
				VOLATILE ORGANICS BY GC/MS
				SULFATE BY IC
				ALKALINITY
18609-3135	F147-02	06/23/00	WATER	VOLATILE ORGANICS BY GC/MS
18609-3136	F147-03	06/23/00	WATER	HOLD
18609-3137	F147-04	06/23/00	WATER	TPH GASOLINE
				TPH DIESEL
				TPH JP-5
				VOLATILE ORGANICS BY GC/MS
				SULFATE BY IC
				ALKALINITY
18609-3138	F147-05	06/23/00	WATER	TPH GASOLINE
				TPH DIESEL
				TPH JP-5
				VOLATILE ORGANICS BY GC/MS
				SULFATE BY IC

Sample ID	Control #	Col Date	Matrix	Analysis
				ALKALINITY

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning these results.

Sincerely yours,

Kam Y. Pang, Ph.D.
Laboratory Director

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METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

[redacted]t	: IT CORPORATION	Date Collected:	06/23/00
[redacted]ct	: MCAS EL TORO/18609/D.O. 70	Date Received:	06/23/00
Batch No.	: 00F147	Date Extracted:	06/27/00 11:00
Sample ID	: 18609-3134	Date Analyzed:	06/30/00 19:22
Lab Samp ID	: F147-01	Dilution Factor:	.96
Lab File ID	: TF11063A	Matrix :	WATER
Ext Btch ID	: DSF039W	% Moisture :	NA
Calib. Ref.	: TF11056A	Instrument ID :	GCT050

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
DIESEL	ND	.096	.064
JP5	2.0**	.48	.12

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	111	65-135
HEXACOSANE	108	60-145

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SURR1 : Bromobenzene
SURR2 : Hexacosane
RL : Reporting Limit
** : Chromatogram shows a mixture of JP5 and non-typical fuel pattern, calculated and reported as JP5.

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client : IT CORPORATION	Date Collected: 06/23/00
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/23/00
Batch No. : 00F147	Date Extracted: 06/27/00 11:00
Sample ID: 18609-3137	Date Analyzed: 06/30/00 17:42
Lab Samp ID: F147-04	Dilution Factor: .97
Lab File ID: TF11061A	Matrix : WATER
Ext Btch ID: DSF039W	% Moisture : NA
Calib. Ref.: TF11056A	Instrument ID : GCTO50

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
DIESEL	ND	.097	.065
JP5	.81	.49	.13

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	91	65-135
HEXACOSANE	90	60-145

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SURR1 : Bromobenzene
SURR2 : Hexacosane
RL : Reporting Limit

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

[redacted]t	: IT CORPORATION	Date Collected:	06/23/00
[redacted]ct	: MCAS EL TORO/18609/D.O. 70	Date Received:	06/23/00
Batch No.	: QQF147	Date Extracted:	06/27/00 11:00
Sample ID:	18609-3138	Date Analyzed:	06/30/00 18:32
Lab Samp ID:	F147-05	Dilution Factor:	.97
Lab File ID:	TF11062A	Matrix :	WATER
Ext Btch ID:	DSF039W	% Moisture :	NA
Calib. Ref.:	TF11056A	Instrument ID :	GCT050

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
DIESEL	ND	.097	.065
JP5	.98	.49	.13

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	96	65-135
HEXACOSANE	130	60-145

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SURR1 : Bromobenzene
SURR2 : Hexacosane
RL : Reporting Limit

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client : IT CORPORATION	Date Collected: NA
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/27/00
Batch No. : 00F147	Date Extracted: 06/27/00 11:00
Sample ID: MBLK1W	Date Analyzed: 06/29/00 18:32
Lab Samp ID: DSF039WB	Dilution Factor: 1
Lab File ID: TF11033A	Matrix : WATER
Ext Btch ID: DSF039W	% Moisture : NA
Calib. Ref.: TF11029A	Instrument ID : GCTO50

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
DIESEL	ND	.1	.067
JP5	ND	.5	.13

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	77	65-135
HEXACOSANE	90	60-145

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SURR1 : Bromobenzene
SURR2 : Hexacosane
RL : Reporting Limit

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EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
LAB NO.: 00F147
METHOD: METHOD M8015

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	DSF039WB	DSF039WL	DSF039WC		
LAB FILE ID:	TF11033A	TF11034A	TF11035A		
DATE EXTRACTED:	06/27/0011:00	06/27/0011:00	06/27/0011:00	DATE COLLECTED:	NA
DATE ANALYZED:	06/29/0018:32	06/29/0019:22	06/29/0020:12	DATE RECEIVED:	06/27/00
PREP. BATCH:	DSF039W	DSF039W	DSF039W		
CALIB. REF:	TF11029A	TF11029A	TF11029A		

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Diesel	ND	5	5.88	118	5	4.96	99	17	61-143	30

SURROGATE PARAMETER	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	QC LIMIT (%)
Bromobenzene	1	.929	93	1	.855	86	65-135
Hexacosane	.25	.245	98	.25	.242	97	60-145

METHOD 5030B/M8015
TOTAL PETROLEUM HYDROCARBONS BY PURGE & TRAP

Client : IT CORPORATION
Project : MCAS EL TORO/18609/D.O. 70
Batch No. : 00F147

Matrix : WATER
Instrument ID : GCT039

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	SURR (%)	DLF	MOIST	PRL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	VAF4539B	ND	101	1	NA	.1	.012	06/27/0011:31	06/27/0011:31	EF15004A	EF15003A	VAF4539	NA	06/27/00
LCS1W	VAF4539L	.504	118	1	NA	.1	.012	06/27/0012:06	06/27/0012:06	EF15005A	EF15003A	VAF4539	NA	06/27/00
LCD1W	VAF4539C	.553	123	1	NA	.1	.012	06/27/0012:41	06/27/0012:41	EF15006A	EF15003A	VAF4539	NA	06/27/00
18609-3134	F147-01	1.7	175*	1	NA	.1	.012	06/27/0013:16	06/27/0013:16	EF15007A	EF15003A	VAF4539	06/23/00	06/23/00
18609-3134RE	F147-01R	1.6	156*	1	NA	.1	.012	06/27/0023:11	06/27/0023:11	EF15024A	EF15015A	VAF4539	06/23/00	06/23/00
18609-3137	F147-04	1.1	176*	1	NA	.1	.012	06/27/0013:51	06/27/0013:51	EF15008A	EF15003A	VAF4539	06/23/00	06/23/00
18609-3137RE	F147-04R	.96	168*	1	NA	.1	.012	06/27/0023:45	06/27/0023:45	EF15025A	EF15015A	VAF4539	06/23/00	06/23/00
18609-3138	F147-05	1.1	188*	1	NA	.1	.012	06/27/0014:26	06/27/0014:26	EF15009A	EF15003A	VAF4539	06/23/00	06/23/00
18609-3138RE	F147-05R	1	177*	1	NA	.1	.012	06/28/0001:29	06/28/0001:29	EF15028A	EF15027A	VAF4539	06/23/00	06/23/00

mg/L

SURR : Bromofluorobenzene (W)65-135 (S)60-140
PRL : Reporting Limit
E : Value exceed the upper level of the initial calibration
D : Value from dilution
* : Out of QC limits

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 00F147
METHOD: METHOD 5030B/M8015

MATRIX: WATER
% MOISTURE: NA

DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	VAF4539B	VAF4539L	VAF4539C		
LAB FILE ID:	EF15004A	EF15005A	EF15006A		
DATE EXTRACTED:	06/27/0011:31	06/27/0012:06	06/27/0012:41	DATE COLLECTED:	NA
DATE ANALYZED:	06/27/0011:31	06/27/0012:06	06/27/0012:41	DATE RECEIVED:	06/27/00
PREP. BATCH:	VAF4539	VAF4539	VAF4539		
CALIB. REF:	EF15003A	EF15003A	EF15003A		

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Gasoline	ND	.55	.504	92	.55	.553	101	9	67-136	30

SURROGATE PARAMETER	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	QC LIMIT (%)
Bromofluorobenzene	.02	.0237	118	.02	.0246	123	65-135

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 06/23/00
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/23/00
Batch No. : 00F147	Date Extracted: 06/27/00 04:02
Sample ID: 918609-3134	Date Analyzed: 06/27/00 04:02
Lab Samp ID: F147-01	Dilution Factor: 1
Lab File ID: RFQ530	Matrix : WATER
Ext Btch ID: VOF3405	% Moisture : NA
Calib. Ref.: RFQ521	Instrument ID : T-005

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	.91
1,1,2,2-TETRACHLOROETHANE	ND	5	1.1
1,1,2-TRICHLOROETHANE	ND	5	.83
1,1-DICHLOROETHANE	ND	5	.65
1,1-DICHLOROETHENE	ND	5	.86
1,2-DICHLOROETHANE	ND	5	.95
1,2-DICHLOROPROPANE	ND	5	.73
2-BUTANONE	ND	50	6.7
2-CHLOROETHYLVINYLETHER	ND	50	1.3
2-HEXANONE	ND	50	5.6
4-METHYL-2-PENTANONE	ND	50	3.6
ACETONE	ND	50	9.6
BENZENE	11	5	.77
BROMODICHLOROMETHANE	ND	5	.82
BROMOFORM	ND	5	.74
BROMOMETHANE	ND	5	1.9
CARBON DISULFIDE	ND	5	.61
CARBON TETRACHLORIDE	ND	5	.83
CHLOROBENZENE	ND	5	1.1
CHLOROETHANE	ND	5	1.7
CHLOROFORM	1.7J	5	.67
CHLOROMETHANE	ND	5	.67
CIS-1,2-DICHLOROETHENE	ND	5	.79
CIS-1,3-DICHLOROPROPENE	ND	5	.79
DIBROMOCHLOROMETHANE	ND	5	.71
ETHYLBENZENE	9.5	5	1
MTBE	ND	10	.77
METHYLENE CHLORIDE	ND	5	1.4
STYRENE	ND	5	.87
TETRACHLOROETHENE	ND	5	1.1
TOLUENE	ND	5	.99
TRANS-1,2-DICHLOROETHENE	ND	5	.73
TRANS-1,3-DICHLOROPROPENE	ND	5	.82
TRICHLOROETHENE	ND	5	.89
VINYL ACETATE	ND	50	1.4
VINYL CHLORIDE	ND	5	2.5
XYLENES	7.4	5	3.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	105	62-139
BROMOFLUOROBENZENE	95	75-125
TOLUENE-D8	101	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

2003A

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 06/23/00
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/23/00
Batch No. : 00F147	Date Extracted: 06/27/00 02:09
Sample ID: 18609-3135	Date Analyzed: 06/27/00 02:09
Lab Samp ID: F147-02	Dilution Factor: 1
Lab File ID: RFQ527	Matrix : WATER
Ext Btch ID: VOF3405	% Moisture : NA
Calib. Ref.: RFQ521	Instrument ID : T-005

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	.91
1,1,2,2-TETRACHLOROETHANE	ND	5	1.1
1,1,2-TRICHLOROETHANE	ND	5	.83
1,1-DICHLOROETHANE	ND	5	.65
1,1-DICHLOROETHENE	ND	5	.86
1,2-DICHLOROETHANE	ND	5	.95
1,2-DICHLOROPROPANE	ND	5	.73
2-BUTANONE	ND	50	6.7
2-CHLOROETHYLVINYLETHER	ND	50	1.3
2-HEXANONE	ND	50	5.6
4-METHYL-2-PENTANONE	ND	50	3.6
ACETONE	ND	50	9.6
BENZENE	ND	5	.77
BROMODICHLOROMETHANE	ND	5	.82
BROMOFORM	ND	5	.74
BROMOMETHANE	ND	5	1.9
CARBON DISULFIDE	ND	5	.61
CARBON TETRACHLORIDE	ND	5	.83
CHLOROBENZENE	ND	5	1.1
CHLOROETHANE	ND	5	1.7
CHLOROFORM	ND	5	.67
[illegible]ROMETHANE	ND	5	.67
[illegible],2-DICHLOROETHENE	ND	5	.79
CIS-1,3-DICHLOROPROPENE	ND	5	.79
DIBROMOCHLOROMETHANE	ND	5	.71
ETHYLBENZENE	ND	5	1
MTBE	ND	10	.77
METHYLENE CHLORIDE	ND	5	1.4
STYRENE	ND	5	.87
TETRACHLOROETHENE	ND	5	1.1
TOLUENE	ND	5	.99
TRANS-1,2-DICHLOROETHENE	ND	5	.73
TRANS-1,3-DICHLOROPROPENE	ND	5	.82
TRICHLOROETHENE	ND	5	.89
VINYL ACETATE	ND	50	1.4
VINYL CHLORIDE	ND	5	2.5
XYLENES	ND	5	3.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	106	62-139
BROMOFLUOROBENZENE	99	75-125
TOLUENE-D8	100	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 06/23/00
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/23/00
Batch No. : DOF147	Date Extracted: 06/27/00 04:39
Sample ID: 18609-3137	Date Analyzed: 06/27/00 04:39
Lab Samp ID: F147-04	Dilution Factor: 1
Lab File ID: RFQ531	Matrix : WATER
Ext Btch ID: VOF3405	% Moisture : NA
Calib. Ref.: RFQ521	Instrument ID : T-005

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	.91
1,1,2,2-TETRACHLOROETHANE	ND	5	1.1
1,1,2-TRICHLOROETHANE	ND	5	.83
1,1-DICHLOROETHANE	ND	5	.65
1,1-DICHLOROETHENE	ND	5	.86
1,2-DICHLOROETHANE	ND	5	.95
1,2-DICHLOROPROPANE	ND	5	.73
2-BUTANONE	ND	50	6.7
2-CHLOROETHYLVINYLETHER	ND	50	1.3
2-HEXANONE	ND	50	5.6
4-METHYL-2-PENTANONE	ND	50	3.6
ACETONE	ND	50	9.6
BENZENE	21	5	.77
BROMODICHLOROMETHANE	ND	5	.82
BROMOFORM	ND	5	.74
BROMOMETHANE	ND	5	1.9
CARBON DISULFIDE	ND	5	.61
CARBON TETRACHLORIDE	ND	5	.83
CHLOROBENZENE	ND	5	1.1
CHLOROETHANE	ND	5	1.7
CHLOROFORM	ND	5	.67
CHLOROMETHANE	ND	5	.67
CIS-1,2-DICHLOROETHENE	ND	5	.79
CIS-1,3-DICHLOROPROPENE	ND	5	.79
DIBROMOCHLOROMETHANE	ND	5	.71
ETHYLBENZENE	15	5	1
MTBE	ND	10	.77
METHYLENE CHLORIDE	1.7JB	5	1.4
STYRENE	ND	5	.87
TETRACHLOROETHENE	ND	5	1.1
TOLUENE	2.1J	5	.99
TRANS-1,2-DICHLOROETHENE	ND	5	.73
TRANS-1,3-DICHLOROPROPENE	ND	5	.82
TRICHLOROETHENE	ND	5	.89
VINYL ACETATE	ND	50	1.4
VINYL CHLORIDE	ND	5	2.5
XYLENES	ND	5	3.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	106	62-139
BROMOFLUOROBENZENE	102	75-125
TOLUENE-D8	105	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 06/23/00
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/23/00
Batch No. : 00F147	Date Extracted: 06/27/00 05:17
Sample ID: 18609-3138	Date Analyzed: 06/27/00 05:17
Lab Samp ID: F147-05	Dilution Factor: 1
Lab File ID: RF0532	Matrix : WATER
Ext Btch ID: VOF3405	% Moisture : NA
Calib. Ref.: RF0521	Instrument ID : T-005

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	.91
1,1,2,2-TETRACHLOROETHANE	ND	5	1.1
1,1,2-TRICHLOROETHANE	ND	5	.83
1,1-DICHLOROETHANE	ND	5	.65
1,1-DICHLOROETHENE	ND	5	.86
1,2-DICHLOROETHANE	ND	5	.95
1,2-DICHLOROPROPANE	ND	5	.73
2-BUTANONE	ND	50	6.7
2-CHLOROETHYLVINYLETHER	ND	50	1.3
2-HEXANONE	ND	50	5.6
4-METHYL-2-PENTANONE	ND	50	3.6
ACETONE	ND	50	9.6
BENZENE	22	5	.77
BROMODICHLOROMETHANE	ND	5	.82
BROMOFORM	ND	5	.74
BROMOMETHANE	ND	5	1.9
CARBON DISULFIDE	ND	5	.61
CARBON TETRACHLORIDE	ND	5	.83
CHLOROBENZENE	ND	5	1.1
CHLOROETHANE	ND	5	1.7
CHLOROFORM	ND	5	.67
CHLOROMETHANE	ND	5	.67
CIS-1,2-DICHLOROETHENE	ND	5	.79
CIS-1,3-DICHLOROPROPENE	ND	5	.79
DIBROMOCHLOROMETHANE	ND	5	.71
ETHYLBENZENE	16	5	1
MTBE	ND	10	.77
METHYLENE CHLORIDE	1.8JB	5	1.4
STYRENE	ND	5	.87
TETRACHLOROETHENE	ND	5	1.1
TOLUENE	1.9J	5	.99
TRANS-1,2-DICHLOROETHENE	ND	5	.73
TRANS-1,3-DICHLOROPROPENE	ND	5	.82
TRICHLOROETHENE	ND	5	.89
VINYL ACETATE	ND	50	1.4
VINYL CHLORIDE	ND	5	2.5
XYLENES	ND	5	3.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	109	62-139
BROMOFLUOROBENZENE	101	75-125
TOLUENE-D8	103	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: NA
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/27/00
Batch No. : 00F147	Date Extracted: 06/27/00 00:54
Sample ID: MBLK1W	Date Analyzed: 06/27/00 00:54
Lab Samp ID: V0F3405Q	Dilution Factor: 1
Lab File ID: RFQ525	Matrix : WATER
Ext Btch ID: V0F3405	% Moisture : NA
Calib. Ref.: RFQ521	Instrument ID : T-005

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	.91
1,1,2,2-TETRACHLOROETHANE	ND	5	1.1
1,1,2-TRICHLOROETHANE	ND	5	.83
1,1-DICHLOROETHANE	ND	5	.65
1,1-DICHLOROETHENE	ND	5	.86
1,2-DICHLOROETHANE	ND	5	.95
1,2-DICHLOROPROPANE	ND	5	.73
2-BUTANONE	ND	50	6.7
2-CHLOROETHYLVINYLETHER	ND	50	1.3
2-HEXANONE	ND	50	5.6
4-METHYL-2-PENTANONE	ND	50	3.6
ACETONE	ND	50	9.6
BENZENE	ND	5	.77
BROMODICHLOROMETHANE	ND	5	.82
BROMOFORM	ND	5	.74
BROMOMETHANE	ND	5	1.9
CARBON DISULFIDE	ND	5	.61
CARBON TETRACHLORIDE	ND	5	.83
CHLOROBENZENE	ND	5	1.1
CHLOROETHANE	ND	5	1.7
CHLOROFORM	ND	5	.67
CHLOROMETHANE	ND	5	.67
CIS-1,2-DICHLOROETHENE	ND	5	.79
CIS-1,3-DICHLOROPROPENE	ND	5	.79
DIBROMOCHLOROMETHANE	ND	5	.71
ETHYLBENZENE	ND	5	1
MTBE	ND	10	.77
METHYLENE CHLORIDE	1.5J	5	1.4
STYRENE	ND	5	.87
TETRACHLOROETHENE	ND	5	1.1
TOLUENE	ND	5	.99
TRANS-1,2-DICHLOROETHENE	ND	5	.73
TRANS-1,3-DICHLOROPROPENE	ND	5	.82
TRICHLOROETHENE	ND	5	.89
VINYL ACETATE	ND	50	1.4
VINYL CHLORIDE	ND	5	2.5
XYLENES	ND	5	3.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	104	62-139
BROMOFLUOROBENZENE	101	75-125
TOLUENE-D8	103	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
[redacted] NO.: 00F147
[redacted]D: METHOD 5030A/8260A

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	V0F3405Q	V0F3405L	V0F3405C		
LAB FILE ID:	RFQ525	RFQ522	RFQ523		
DATE EXTRACTED:	06/27/0000:54	06/26/0023:01	06/26/0023:39	DATE COLLECTED:	NA
DATE ANALYZED:	06/27/0000:54	06/26/0023:01	06/26/0023:39	DATE RECEIVED:	06/26/00
PREP. BATCH:	V0F3405	V0F3405	V0F3405		
CALIB. REF:	RFQ521	RFQ521	RFQ521		

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
1,1-Dichloroethene	ND	20	19.6	98	20	21	105	7	75-125	20
Benzene	ND	20	21.6	108	20	22.1	111	2	75-125	20
Chlorobenzene	ND	20	20.9	105	20	21.2	106	1	75-125	20
Toluene	ND	20	22.2	111	20	23	115	3	74-125	20
Trichloroethene	ND	20	21.8	109	20	22.2	111	2	71-125	20

SURROGATE PARAMETER	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	QC LIMIT (%)
1,2-Dichlorethane-d4	50	51.8	104	50	51.7	103	62-139
Bromofluorobenzene	50	51.2	102	50	49	98	75-125
[redacted]uene-d8	50	51	102	50	50.4	101	75-125

[redacted]

[redacted]

2019

METHOD 310.1
TOTAL ALKALINITY

Client : IT CORPORATION
Project : MCAS EL TORO/18609/D.O. 70
Batch No. : 00F147

Matrix : WATER
Instrument ID :

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
18609-3134	F147-01	439	1	NA	5	.469	06/26/0013:45	NA	ALF011W-18	NA	ALF011W	06/23/00	06/23/00
18609-3137	F147-04	716	1	NA	5	.469	06/26/0014:15	NA	ALF011W-19	NA	ALF011W	06/23/00	06/23/00
18609-3138	F147-05	710	1	NA	5	.469	06/26/0014:45	NA	ALF011W-20	NA	ALF011W	06/23/00	06/23/00
MBLK1W	ALF011WB	ND	1	NA	5	.469	06/26/00 9:30	NA	ALF011W-1	NA	ALF011W	NA	NA
LCS1W	ALF011WL	173	1	NA	5	.469	06/26/00 9:45	NA	ALF011W-2	NA	ALF011W	NA	NA
LCD1W	ALF011WC	173	1	NA	5	.469	06/26/0010:00	NA	ALF011W-3	NA	ALF011W	NA	NA

RL: Reporting Limit

2002

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
METHOD: METHOD 310.1
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 00F147
SAMPLE ID: LCS1W/LCD1W
CONTROL NO.: ALF011WL/C

DATE RECEIVED: NA
DATE EXTRACTED: NA
DATE ANALYZED: 06/26/00 9:45/10:00

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD %	QC LIMIT %	RPD LIMIT %
Alkalinity	ND	1570	173	110	157	173	110	0	80-120	20

0033

EMAX QUALITY CONTROL DATA
MS ANALYSIS

LIENT: IT CORPORATION
ROJECT: MCAS EL TORO/18609/D.O. 70
ETHOD: METHOD 310.1
ATRIX: WATER
MOISTURE: NA

ATCH NO.: 00F147
AMPLE ID: S0022104MS
ONTROL NO.: F106-04M

DATE RECEIVED: 06/20/00
DATE EXTRACTED: NA
DATE ANALYZED: 06/26/00 11:15

CCESSION:

ARAMETER	SMPL RSLT (mg/L)	SPIKE AMT (mg/L)	MS RSLT (mg/L)	MS % REC	QC LIMIT (%)
lkalinity	447	58.5	496	84	80-120

EMAX QUALITY CONTROL DATA
DUPLICATE ANALYSIS

LIENT: IT CORPORATION
ROJECT: MCAS EL TORO/18609/D.O. 70
ETHOD: METHOD 310.1
ATRIX: WATER
MOISTURE: NA

ATCH NO.: 00F147
AMPLE ID: S0022104DUP
ONTROL NO.: F106-04D

DATE RECEIVED: 06/20/00
DATE EXTRACTED: NA
DATE ANALYZED: 06/26/00 11:00

CCESSION:

PARAMETER	SAMPLE (mg/L)	DUP. SAMPLE (mg/L)	RPD (%)	RPD LIMIT (%)
lkalinity	447	442	1	20

METHOD 300.0
SULFATE

Client : IT CORPORATION
Project : MCAS EL TORO/18609/D.O. 70
Batch No. : 00F147

Matrix : WATER
Instrument ID : TI006

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	ICF049WB	ND	1	NA	.5	.101	06/24/0007:17	NA	AF23075A	AF23073A	ICF049W	NA	NA
LCS1W	ICF049WL	20	1	NA	.5	.101	06/24/0007:17	NA	AF23076A	AF23073A	ICF049W	NA	NA
LCD1W	ICF049WC	19.9	1	NA	.5	.101	06/24/0007:32	NA	AF23077A	AF23073A	ICF049W	NA	NA
918609-3134	F147-01	138	25	NA	12.5	2.53	06/24/0008:32	NA	AF23080A	AF23073A	ICF049W	06/23/00	06/23/00
918609-3134MS	F147-01M	260	25	NA	12.5	2.53	06/24/0008:47	NA	AF23081A	AF23073A	ICF049W	06/23/00	06/23/00
918609-3134MSD	F147-01S	259	25	NA	12.5	2.53	06/24/0009:02	NA	AF23082A	AF23073A	ICF049W	06/23/00	06/23/00
918609-3137	F147-04	32	25	NA	12.5	2.53	06/24/0009:17	NA	AF23083A	AF23073A	ICF049W	06/23/00	06/23/00
918609-3138	F147-05	31.4	25	NA	12.5	2.53	06/24/0009:32	NA	AF23084A	AF23073A	ICF049W	06/23/00	06/23/00

RL : Reporting Limit

EMAX QUALITY CONTROL DATA
MS/MSD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 00F147
METHOD: METHOD 300.0

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	25	25	25		
SAMPLE ID:	918609-3134				
LAB SAMP ID:	F147-01	F147-01M	F147-01S		
LAB FILE ID:	AF23080A	AF23081A	AF23082A		
DATE EXTRACTED:	NA	NA	NA	DATE COLLECTED:	06/23/00
DATE ANALYZED:	06/24/0008:32	06/24/0008:47	06/24/0009:02	DATE RECEIVED:	06/23/00
PREP. BATCH:	ICF049W	ICF049W	ICF049W		
CALIB. REF:	AF23073A	AF23073A	AF23073A		

ACCESSION:

PARAMETER	SMPL RSLT (mg/L)	SPIKE AMT (mg/L)	MS RSLT (mg/L)	MS % REC	SPIKE AMT (mg/L)	MSD RSLT (mg/L)	MSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Sulfate	138	125	260	98	125	259	97	0	80-120	20

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 00F147
METHOD: METHOD 300.0

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	ICF049WB	ICF049WL	ICF049WC		
LAB FILE ID:	AF23075A	AF23076A	AF23077A		
DATE EXTRACTED:	NA	NA	NA	DATE COLLECTED:	NA
DATE ANALYZED:	06/24/0007:17	06/24/0007:17	06/24/0007:32	DATE RECEIVED:	NA
PREP. BATCH:	ICF049W	ICF049W	ICF049W		
CALIB. REF:	AF23073A	AF23073A	AF23073A		

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Sulfate	ND	20	20	100	20	19.9	100	0	80-120	20

DH M 10/00

WBS: 0202 21

CHAIN-OF-CUSTODY RECORD

PROJECT DATA MANAGER'S COPY

A 12043

FORM 0019 REV. 9-99

398-MW-4,12

the igroup
IT Corporation
2790 Mosside Blvd.
Monroeville, PA 15146-2792
(412)372-7701

LAB COORDINATOR: CONCEPTION	LAB COORDINATOR'S PHONE: 944-600-7550	LAB COORDINATOR'S FAX: 949-475-5432	LABORATORY SERVICE ID: 00F158	LABORATORY CONTACT: E MAK	MAIL REPORT (COMPANY NAME): IT GROUP
PROJECT NAME: EL TORO MCAS	PROJECT LOCATION: EL TORO	PROJECT NUMBER: 918609	LABORATORY PHONE: 818-48 8867	LABORATORY FAX:	RECIPIENT NAME: D SHIDA
PROJECT CONTACT: CONCEPTION	PROJECT PHONE NUMBER: 949-451-1667	PROJECT FAX: 949-475-5433	LABORATORY ADDRESS: 630 MAPLE		ADDRESS: 3347 MICHELSON DRIVE
PROJECT ADDRESS:	CITY, STATE AND ZIP CODE:	CLIENT: S.W. DIV	CITY, STATE AND ZIP CODE: BREA CA		CITY, STATE AND ZIP CODE: IRVINE CA 92612
PROJECT MANAGER: SEDLAK	PROJECT MANAGER'S PHONE: 949-600-5446	PROJECT MANAGER'S FAX:			

Item	Sample Identifier	Matrix	Date	Time	Preserved	# of Cont.	QC Level	T.A.T.	Analyses: TCL GC/MS VOCs	TCL GC/MS SVOCs	TCL GC/MS PEST/PCBs	TPH as Gasoline	TPH as Diesel	Nitrate + Nitrite	Alkalinity	Sulfate	Comments
1	918609 - 313	W	6/26/00	730	HCl	7	3	5 DAY	X	X	X	X					
2	918609 340			700		2						X					
3	918609 341			600		9			X	X	X	X	X	X			
4	918609 342			845		9			X	X	X	X	X	X			

SAMPLES COLLECTED BY: M MAK

RELINQUISHED BY:

COURIER AND AIR BILL NUMBER: COURIER

RECEIVED BY	DATE	TIME
	6/27/00	9:00

COOLER TEMPERATURE UPON RECEIPT:

SAMPLE'S CONDITION UPON RECEIPT

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Manilla - Project Data Manager

Project Information Section
For Project Personnel Only
Do Not Submit to Laboratory

398-MW-4,12

Sample Point Location	Sample Type G	C	F	QC
1- 398 MW-4,12	X			
EQUIPMENT RINSATE				
2- 398 MW-4,12	X			
TRIP BLANK				
3- 398 MW-4,12	X			
WELL SAMPLE MW-2				
4- 398 MW-4,12	X			
WELL SAMPLE MW-4				

Comments

due: 6/7/13/00
rec'd 7/5/00

Sample Type: G - Grab, C - Composite, F - Field Sample, QC - Quality Control Sample

[redacted]

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: IT CORPORATION	Date Collected:	06/26/00
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	06/27/00
Batch No.	: 00F158	Date Extracted:	06/28/00 14:00
Sample ID:	18609-3139	Date Analyzed:	07/01/00 06:56
Lab Samp ID:	F158-01	Dilution Factor:	.94
Lab File ID:	TF11077A	Matrix :	WATER
Ext Btch ID:	DSF041W	% Moisture :	NA
Calib. Ref.:	TF11068A	Instrument ID :	GCT050

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
DIESEL	ND	.094	.063
JP5	ND	.47	.12

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	88	65-135
HEXACOSANE	82	60-145

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SURR1 : Bromobenzene
SURR2 : Hexacosane
RL : Reporting Limit

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client : IT CORPORATION	Date Collected: 06/26/00
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/27/00
Batch No. : 00F158	Date Extracted: 06/28/00 14:00
Sample ID: 918609-3141	Date Analyzed: 07/01/00 07:46
Lab Samp ID: F158-03	Dilution Factor: .96
Lab File ID: TF11078A	Matrix : WATER
Ext Btch ID: DSF041W	% Moisture : NA
Calib. Ref.: TF11068A	Instrument ID : GCT050

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
DIESEL	ND	.096	.064
JP5	ND	.48	.12

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	82	65-135
HEXACOSANE	83	60-145

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SURR1 : Bromobenzene
SURR2 : Hexacosane
RL : Reporting Limit

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client : IT CORPORATION	Date Collected: 06/26/00
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/27/00
Batch No. : 00F158	Date Extracted: 06/28/00 14:00
Sample ID: 18609-3142	Date Analyzed: 07/01/00 08:35
Lab Samp ID: F158-04	Dilution Factor: .94
Lab File ID: TF11079A	Matrix : WATER
Ext Btch ID: DSF041W	% Moisture : NA
Calib. Ref.: TF11068A	Instrument ID : GCT050

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
DIESEL	ND	.094	.063
JP5	.66	.47	.12

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	81	65-135
HEXACOSANE	82	60-145

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SURR1 : Bromobenzene
SURR2 : Hexacosane
RL : Reporting Limit

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: IT CORPORATION	Date Collected:	NA
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	06/28/00
Batch No.	: 00F158	Date Extracted:	06/28/00 14:00
Sample ID:	MBLK1W	Date Analyzed:	07/01/00 04:28
Lab Samp ID:	DSF041WB	Dilution Factor:	1
Lab File ID:	TF11074A	Matrix :	WATER
Ext Btch ID:	DSF041W	% Moisture :	NA
Calib. Ref.:	TF11068A	Instrument ID :	GCT050

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
DIESEL	ND	.1	.067
JP5	ND	.5	.13

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	89	65-135
HEXACOSANE	90	60-145

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SURR1 : Bromobenzene
SURR2 : Hexacosane
RL : Reporting Limit

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 00F158
METHOD: METHOD M8015

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	DSF041WB	DSF041WL	DSF041WC		
LAB FILE ID:	TF11074A	TF11075A	TF11076A		
DATE EXTRACTED:	06/28/0014:00	06/28/0014:00	06/28/0014:00	DATE COLLECTED:	NA
DATE ANALYZED:	07/01/0004:28	07/01/0005:17	07/01/0006:07	DATE RECEIVED:	06/28/00
PREP. BATCH:	DSF041W	DSF041W	DSF041W		
CALIB. REF:	TF11068A	TF11068A	TF11068A		

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Diesel	ND	5	4.96	99	5	5.44	109	9	61-143	30

SURROGATE PARAMETER	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	QC LIMIT (%)
Bromobenzene	1	.823	82	1	.923	92	65-135
Hexacosane	.25	.231	92	.25	.222	89	60-145

METHOD 5030B/M8015
TOTAL PETROLEUM HYDROCARBONS BY PURGE & TRAP

Client : IT CORPORATION
Project : MCAS EL TORO/18609/D.O. 70
Batch No. : 00F158

Matrix : WATER
Instrument ID : GCT039

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	SURR (%)	DLF	MOIST	PRL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	VAF4639B	ND	94	1	NA	.1	.012	06/28/0009:31	06/28/0009:31	EF15042A	EF15039A	VAF4639	NA	06/28/00
LCS1W	VAF4639L	.56	120	1	NA	.1	.012	06/28/0004:21	06/28/0004:21	EF15033A	EF15027A	VAF4639	NA	06/28/00
LCD1W	VAF4639C	.505	109	1	NA	.1	.012	06/28/0004:55	06/28/0004:55	EF15034A	EF15027A	VAF4639	NA	06/28/00
918609-3139	F158-01	ND	96	1	NA	.1	.012	06/28/0005:30	06/28/0005:30	EF15035A	EF15027A	VAF4639	06/26/00	06/27/00
918609-3141	F158-03	ND	93	1	NA	.1	.012	06/28/0006:04	06/28/0006:04	EF15036A	EF15027A	VAF4639	06/26/00	06/27/00
918609-3142	F158-04	.85	195*	1	NA	.1	.012	06/28/0006:38	06/28/0006:38	EF15037A	EF15027A	VAF4639	06/26/00	06/27/00
918609-3142RE	F158-04R	.93	211*	1	NA	.1	.012	06/28/0010:22	06/28/0010:22	EF15043A	EF15039A	VAF4639	06/26/00	06/27/00

SURR : Bromofluorobenzene (W)65-135 (S)60-140
PRL : Reporting Limit
E : Value exceed the upper level of the initial calibration
D : Value from dilution
* : Out of QC limits.

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 00F158
METHOD: METHOD 5030B/M8015

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	VAF4639B	VAF4639L	VAF4639C		
LAB FILE ID:	EF15042A	EF15033A	EF15034A		
DATE EXTRACTED:	06/28/0009:31	06/28/0004:21	06/28/0004:55	DATE COLLECTED:	NA
DATE ANALYZED:	06/28/0009:31	06/28/0004:21	06/28/0004:55	DATE RECEIVED:	06/28/00
PREP. BATCH:	VAF4639	VAF4639	VAF4639		
CALIB. REF:	EF15039A	EF15027A	EF15027A		

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Gasoline	ND	.55	.56	102	.55	.505	92	10	67-136	30

SURROGATE PARAMETER	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	QC LIMIT (%)
Bromofluorobenzene	.02	.0241	120	.02	.0219	109	65-135

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 06/26/00
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/27/00
Batch No. : 00F158	Date Extracted: 06/30/00 12:33
Sample ID: 18609-3139	Date Analyzed: 06/30/00 12:33
Lab Samp ID: F158-01	Dilution Factor: 1
Lab File ID: RFQ646	Matrix : WATER
Ext Btch ID: VOF4205	% Moisture : NA
Calib. Ref.: RFQ636	Instrument ID : T-005

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	.91
1,1,2,2-TETRACHLOROETHANE	ND	5	1.1
1,1,2-TRICHLOROETHANE	ND	5	.83
1,1-DICHLOROETHANE	ND	5	.65
1,1-DICHLOROETHENE	ND	5	.86
1,2-DICHLOROETHANE	ND	5	.95
1,2-DICHLOROPROPANE	ND	5	.73
2-BUTANONE	ND	50	6.7
2-CHLOROETHYLVINYLETHER	ND	50	1.3
2-HEXANONE	ND	50	5.6
4-METHYL-2-PENTANONE	ND	50	3.6
ACETONE	ND	50	9.6
BENZENE	ND	5	.77
BROMODICHLOROMETHANE	ND	5	.82
BROMOFORM	ND	5	.74
BROMOMETHANE	ND	5	1.9
CARBON DISULFIDE	ND	5	.61
CARBON TETRACHLORIDE	ND	5	.83
CHLOROBENZENE	ND	5	1.1
CHLOROETHANE	ND	5	1.7
CHLOROFORM	ND	5	.67
CHLOROMETHANE	ND	5	.67
CIS-1,2-DICHLOROETHENE	ND	5	.79
CIS-1,3-DICHLOROPROPENE	ND	5	.79
DIBROMOCHLOROMETHANE	ND	5	.71
ETHYLBENZENE	ND	5	1
MTBE	ND	10	.77
METHYLENE CHLORIDE	ND	5	1.4
STYRENE	ND	5	.87
TETRACHLOROETHENE	ND	5	1.1
TOLUENE	ND	5	.99
TRANS-1,2-DICHLOROETHENE	ND	5	.73
TRANS-1,3-DICHLOROPROPENE	ND	5	.82
TRICHLOROETHENE	ND	5	.89
VINYL ACETATE	ND	50	1.4
VINYL CHLORIDE	ND	5	2.5
XYLENES	ND	5	3.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	103	62-139
BROMOFLUOROBENZENE	91	75-125
TOLUENE-D8	100	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

2004

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 06/26/00
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/27/00
Batch No. : 00F158	Date Extracted: 06/30/00 11:56
Sample ID: 18609-3140	Date Analyzed: 06/30/00 11:56
Lab Samp ID: F158-02	Dilution Factor: 1
Lab File ID: RFQ645	Matrix : WATER
Ext Btch ID: VOF4205	% Moisture : NA
Calib. Ref.: RFQ636	Instrument ID : T-005

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	.91
1,1,2,2-TETRACHLOROETHANE	ND	5	1.1
1,1,2-TRICHLOROETHANE	ND	5	.83
1,1-DICHLOROETHANE	ND	5	.65
1,1-DICHLOROETHENE	ND	5	.86
1,2-DICHLOROETHANE	ND	5	.95
1,2-DICHLOROPROPANE	ND	5	.73
2-BUTANONE	ND	50	6.7
2-CHLOROETHYLVINYLETHER	ND	50	1.3
2-HEXANONE	ND	50	5.6
4-METHYL-2-PENTANONE	ND	50	3.6
ACETONE	ND	50	9.6
BENZENE	ND	5	.77
BROMODICHLOROMETHANE	ND	5	.82
BROMOFORM	ND	5	.74
BROMOMETHANE	ND	5	1.9
CARBON DISULFIDE	ND	5	.61
CARBON TETRACHLORIDE	ND	5	.83
CHLOROBENZENE	ND	5	1.1
CHLOROETHANE	ND	5	1.7
CHLOROFORM	ND	5	.67
CHLOROMETHANE	ND	5	.67
CIS-1,2-DICHLOROETHENE	ND	5	.79
CIS-1,3-DICHLOROPROPENE	ND	5	.79
DIBROMOCHLOROMETHANE	ND	5	.71
ETHYLBENZENE	ND	5	1
MTBE	ND	10	.77
METHYLENE CHLORIDE	ND	5	1.4
STYRENE	ND	5	.87
TETRACHLOROETHENE	ND	5	1.1
TOLUENE	ND	5	.99
TRANS-1,2-DICHLOROETHENE	ND	5	.73
TRANS-1,3-DICHLOROPROPENE	ND	5	.82
TRICHLOROETHENE	ND	5	.89
VINYL ACETATE	ND	50	1.4
VINYL CHLORIDE	ND	5	2.5
XYLENES	ND	5	3.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	103	62-139
BROMOFLUOROBENZENE	95	75-125
TOLUENE-D8	99	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 06/26/00
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/27/00
Batch No. : 00F158	Date Extracted: 06/30/00 13:11
Sample ID: 18609-3141	Date Analyzed: 06/30/00 13:11
Lab Samp ID: F158-03	Dilution Factor: 1
Lab File ID: RFQ647	Matrix : WATER
Ext Btch ID: VOF4205	% Moisture : NA
Calib. Ref.: RFQ636	Instrument ID : T-005

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	.91
1,1,2,2-TETRACHLOROETHANE	ND	5	1.1
1,1,2-TRICHLOROETHANE	ND	5	.83
1,1-DICHLOROETHANE	ND	5	.65
1,1-DICHLOROETHENE	ND	5	.86
1,2-DICHLOROETHANE	ND	5	.95
1,2-DICHLOROPROPANE	ND	5	.73
2-BUTANONE	ND	50	6.7
2-CHLOROETHYLVINYLETHER	ND	50	1.3
2-HEXANONE	ND	50	5.6
4-METHYL-2-PENTANONE	ND	50	3.6
ACETONE	ND	50	9.6
BENZENE	ND	5	.77
BROMODICHLOROMETHANE	ND	5	.82
BROMOFORM	ND	5	.74
BROMOMETHANE	ND	5	1.9
CARBON DISULFIDE	ND	5	.61
CARBON TETRACHLORIDE	ND	5	.83
CHLOROBENZENE	ND	5	1.1
CHLOROETHANE	ND	5	1.7
CHLOROFORM	ND	5	.67
CHLOROMETHANE	ND	5	.67
CIS-1,2-DICHLOROETHENE	ND	5	.79
CIS-1,3-DICHLOROPROPENE	ND	5	.79
DIBROMOCHLOROMETHANE	ND	5	.71
ETHYLBENZENE	ND	5	1
MTBE	ND	10	.77
METHYLENE CHLORIDE	ND	5	1.4
STYRENE	ND	5	.87
TETRACHLOROETHENE	ND	5	1.1
TOLUENE	ND	5	.99
TRANS-1,2-DICHLOROETHENE	ND	5	.73
TRANS-1,3-DICHLOROPROPENE	ND	5	.82
TRICHLOROETHENE	ND	5	.89
VINYL ACETATE	ND	50	1.4
VINYL CHLORIDE	ND	5	2.5
XYLENES	ND	5	3.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	102	62-139
BROMOFLUOROBENZENE	98	75-125
TOLUENE-D8	101	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 06/26/00
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 06/27/00
Batch No. : 00F158	Date Extracted: 06/30/00 13:49
Sample ID: 18609-3142	Date Analyzed: 06/30/00 13:49
Lab Samp ID: F158-04	Dilution Factor: 1
Lab File ID: RFQ648	Matrix : WATER
Ext Btch ID: VOF4205	% Moisture : NA
Calib. Ref.: RFQ636	Instrument ID : T-005

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	.91
1,1,2,2-TETRACHLOROETHANE	ND	5	1.1
1,1,2-TRICHLOROETHANE	ND	5	.83
1,1-DICHLOROETHANE	ND	5	.65
1,1-DICHLOROETHENE	ND	5	.86
1,2-DICHLOROETHANE	ND	5	.95
1,2-DICHLOROPROPANE	ND	5	.73
2-BUTANONE	ND	50	6.7
2-CHLOROETHYLVINYLETHER	ND	50	1.3
2-HEXANONE	ND	50	5.6
4-METHYL-2-PENTANONE	ND	50	3.6
ACETONE	ND	50	9.6
BENZENE	ND	5	.77
BROMODICHLOROMETHANE	ND	5	.82
BROMOFORM	ND	5	.74
BROMOMETHANE	ND	5	1.9
CARBON DISULFIDE	ND	5	.61
CARBON TETRACHLORIDE	ND	5	.83
CHLOROBENZENE	ND	5	1.1
CHLOROETHANE	ND	5	1.7
CHLOROFORM	ND	5	.67
CHLOROMETHANE	ND	5	.67
CIS-1,2-DICHLOROETHENE	ND	5	.79
CIS-1,3-DICHLOROPROPENE	ND	5	.79
DIBROMOCHLOROMETHANE	ND	5	.71
ETHYLBENZENE	28	5	1
MTBE	ND	10	.77
METHYLENE CHLORIDE	ND	5	1.4
STYRENE	ND	5	.87
TETRACHLOROETHENE	ND	5	1.1
TOLUENE	ND	5	.99
TRANS-1,2-DICHLOROETHENE	ND	5	.73
TRANS-1,3-DICHLOROPROPENE	ND	5	.82
TRICHLOROETHENE	ND	5	.89
VINYL ACETATE	ND	50	1.4
VINYL CHLORIDE	ND	5	2.5
XYLENES	ND	5	3.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	101	62-139
BROMOFLUOROBENZENE	91	75-125
TOLUENE-D8	96	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client	: IT CORPORATION	Date Collected:	NA
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	06/30/00
Batch No.	: 00F158	Date Extracted:	06/30/00 08:43
Sample ID:	MBLK1W	Date Analyzed:	06/30/00 08:43
Lab Samp ID:	V0F4205Q	Dilution Factor:	1
Lab File ID:	RFQ640	Matrix :	WATER
Ext Btch ID:	V0F4205	% Moisture :	NA
Calib. Ref.:	RFQ636	Instrument ID :	T-005

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	.91
1,1,2,2-TETRACHLOROETHANE	ND	5	1.1
1,1,2-TRICHLOROETHANE	ND	5	.83
1,1-DICHLOROETHANE	ND	5	.65
1,1-DICHLOROETHENE	ND	5	.86
1,2-DICHLOROETHANE	ND	5	.95
1,2-DICHLOROPROPANE	ND	5	.73
2-BUTANONE	ND	50	6.7
2-CHLOROETHYLVINYLETHER	ND	50	1.3
2-HEXANONE	ND	50	5.6
4-METHYL-2-PENTANONE	ND	50	3.6
ACETONE	ND	50	9.6
BENZENE	ND	5	.77
BROMODICHLOROMETHANE	ND	5	.82
BROMOFORM	ND	5	.74
BROMOMETHANE	ND	5	1.9
CARBON DISULFIDE	ND	5	.61
CARBON TETRACHLORIDE	ND	5	.83
CHLOROBENZENE	ND	5	1.1
CHLOROETHANE	ND	5	1.7
CHLOROFORM	ND	5	.67
[illegible]LOROMETHANE	ND	5	.67
[illegible]-1,2-DICHLOROETHENE	ND	5	.79
CIS-1,3-DICHLOROPROPENE	ND	5	.79
DIBROMOCHLOROMETHANE	ND	5	.71
ETHYLBENZENE	ND	5	1
MTBE	ND	10	.77
METHYLENE CHLORIDE	ND	5	1.4
STYRENE	ND	5	.87
TETRACHLOROETHENE	ND	5	1.1
TOLUENE	ND	5	.99
TRANS-1,2-DICHLOROETHENE	ND	5	.73
TRANS-1,3-DICHLOROPROPENE	ND	5	.82
TRICHLOROETHENE	ND	5	.89
VINYL ACETATE	ND	50	1.4
VINYL CHLORIDE	ND	5	2.5
XYLENES	ND	5	3.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	99	62-139
BROMOFLUOROBENZENE	95	75-125
TOLUENE-D8	101	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 00F158
METHOD: METHOD 5030A/8260A

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	V0F4205Q	V0F4205L	V0F4205C		
LAB FILE ID:	RFQ640	RFQ637	RFQ638		
DATE EXTRACTED:	06/30/0008:43	06/30/0006:50	06/30/0007:27	DATE COLLECTED:	NA
DATE ANALYZED:	06/30/0008:43	06/30/0006:50	06/30/0007:27	DATE RECEIVED:	06/30/00
PREP. BATCH:	V0F4205	V0F4205	V0F4205		
CALIB. REF:	RFQ636	RFQ636	RFQ636		

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
1,1-Dichloroethene	ND	20	20.2	101	20	20	100	1	75-125	20
Benzene	ND	20	21.6	108	20	20.9	105	3	75-125	20
Chlorobenzene	ND	20	20.5	103	20	19.8	99	4	75-125	20
Toluene	ND	20	21.9	110	20	21.6	108	2	74-125	20
Trichloroethene	ND	20	21.8	109	20	20.7	104	5	71-125	20

SURROGATE PARAMETER	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	QC LIMIT (%)
1,2-Dichlorethane-d4	50	49.5	99	50	50.2	100	62-139
Bromofluorobenzene	50	47.1	94	50	47.5	95	75-125
Toluene-d8	50	50.5	101	50	50.1	100	75-125

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: June 20, 2000

LDC Report Date: July 21, 2000

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Extractables

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 00F114

Sample Identification

18609-3125

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0% .

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG 00F114

No Sample Data Qualified in this SDG

MCAS El Toro
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG 00F114

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: June 20, 2000

LDC Report Date: July 20, 2000

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Gasoline

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 00F114

Sample Identification

918609-3125

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Gasoline.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0% .

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as gasoline contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro
Total Petroleum Hydrocarbons as Gasoline - Data Qualification Summary - SDG 00F114

No Sample Data Qualified in this SDG

MCAS El Toro
Total Petroleum Hydrocarbons as Gasoline - Laboratory Blank Data Qualification Summary - SDG 00F114

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: June 20, 2000

LDC Report Date: July 25, 2000

Matrix: Water

Parameters: Volatiles

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 00F114

Sample Identification

18609-3125

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260A for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all calibration check compounds and less than or equal to 50.0% for all other compounds.

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% for all calibration check compounds and less than or equal to 50.0% for all other compounds.

All of the continuing calibration RRF values were within method and validation criteria with the following exceptions:

Date	Compound	RRF (Limits)	Associated Samples	Flag	A or P
6/21/00	Acetone	0.044 (≥0.05)	All samples in SDG 00F114	J (all detects) R (all non-detects)	A

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro
Volatiles - Data Qualification Summary - SDG 00F114

SDG	Sample	Compound	Flag	A or P	Reason
00F114	918609-3125	Acetone	J (all detects) R (all non-detects)	A	Continuing calibration (RRF)

MCAS El Toro
Volatiles - Laboratory Blank Data Qualification Summary - SDG 00F114

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: June 20, 2000

LDC Report Date: July 17, 2000

Matrix: Water

Parameters: Alkalinity & Sulfate

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 00F114

Sample Identification

018609-3125

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 310.1 for Alkalinity and EPA Method 300.0 for Sulfate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section VII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met with the following exceptions:

Sample	Analyte	Finding	Criteria	Flag	A or P
All samples in SDG 00F114	Sulfate	A blank was not used to establish the calibration curve.	A blank must be used to establish the calibration curve.	None	P

b. Calibration verification

Calibration verification frequency and analysis criteria were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No alkalinity or sulfate contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Matrix Spike/(Matrix Spike) Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

b. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Sample Result Verification

Raw data were not reviewed for this SDG.

VI. Overall Assessment of Data

Data flags are summarized at the end of this report.

VII. Field Duplicates

No field duplicates were identified in this SDG.

VIII. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro
Alkalinity & Sulfate - Data Qualification Summary - SDG 00F114

SDG	Sample	Analyte	Flag	A or P	Reason
00F114	918609-3125	Sulfate	None	P	Calibration

MCAS El Toro
Alkalinity & Sulfate - Laboratory Blank Data Qualification Summary - SDG 00F114

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: June 21, 2000

LDC Report Date: July 21, 2000

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Extractables

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 00F124

Sample Identification

918609-3128
918609-3129

Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0% .

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG 00F124

No Sample Data Qualified in this SDG

MCAS El Toro
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG 00F124

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: June 21, 2000

LDC Report Date: July 20, 2000

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Gasoline

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 00F124

Sample Identification

918609-3128
918609-3129

Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Gasoline.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0% .

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as gasoline contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro
Total Petroleum Hydrocarbons as Gasoline - Data Qualification Summary - SDG 00F124

No Sample Data Qualified in this SDG

MCAS El Toro
Total Petroleum Hydrocarbons as Gasoline - Laboratory Blank Data Qualification Summary - SDG 00F124

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: June 21, 2000

LDC Report Date: July 25, 2000

Matrix: Water

Parameters: Volatiles

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 00F124

Sample Identification

918609-3127
918609-3128
918609-3129

Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260A for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

Air bubbles were apparent in all of the sample containers for 918609-3128. There should be no air bubbles in the sample containers.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all calibration check compounds and less than or equal to 50.0% for all other compounds.

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% for all calibration check compounds and less than or equal to 50.0% for all other compounds.

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spik duplicate (MSD) analyses specified for the samples in this SDG, and therefore matri spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percer recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample 918609-3127 was identified as a trip blank. No volatile contaminants were foun in this blank.

MCAS El Toro
Volatiles - Data Qualification Summary - SDG 00F124

No Sample Data Qualified in this SDG

MCAS El Toro
Volatiles - Laboratory Blank Data Qualification Summary - SDG 00F124

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: June 21, 2000

LDC Report Date: July 17, 2000

Matrix: Water

Parameters: Alkalinity & Sulfate

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 00F124

Sample Identification

918609-3128
918609-3129

Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 310.1 for Alkalinity and EPA Method 300.0 for Sulfate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section VII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met with the following exceptions:

Sample	Analyte	Finding	Criteria	Flag	A or P
All samples in SDG 00F124	Sulfate	A blank was not used to establish the calibration curve.	A blank must be used to establish the calibration curve.	None	P

b. Calibration verification

Calibration verification frequency and analysis criteria were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No alkalinity or sulfate contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Matrix Spike/(Matrix Spike) Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

b. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Sample Result Verification

Raw data were not reviewed for this SDG.

VI. Overall Assessment of Data

Data flags are summarized at the end of this report.

VII. Field Duplicates

No field duplicates were identified in this SDG.

VIII. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro
Alkalinity & Sulfate - Data Qualification Summary - SDG 00F124

SDG	Sample	Analyte	Flag	A or P	Reason
00F124	918609-3128 918609-3129	Sulfate	None	P	Calibration

MCAS El Toro
Alkalinity & Sulfate - Laboratory Blank Data Qualification Summary - SDG 00F124

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: June 22, 2000

LDC Report Date: July 21, 2000

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Extractables

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 00F134

Sample Identification

918609-3132
918609-3133

Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0% .

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

Sample 918609-3132 was identified as an equipment rinsate. No total petroleum hydrocarbons as extractable contaminants were found in this blank.

MCAS El Toro
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG 00F134

No Sample Data Qualified in this SDG

MCAS El Toro
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG 00F134

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: June 22, 2000

LDC Report Date: July 20, 2000

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Gasoline

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 00F134

Sample Identification

918609-3132
918609-3133

Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Gasoline.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0% .

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as gasoline contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

Sample 918609-3132 was identified as an equipment rinsate. No total petroleum hydrocarbons as gasoline contaminants were found in this blank.

MCAS El Toro
Total Petroleum Hydrocarbons as Gasoline - Data Qualification Summary - SDG 00F134

No Sample Data Qualified in this SDG

MCAS El Toro
Total Petroleum Hydrocarbons as Gasoline - Laboratory Blank Data Qualification Summary - SDG 00F134

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: June 22, 2000

LDC Report Date: July 25, 2000

Matrix: Water

Parameters: Volatiles

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 00F134

Sample Identification

918609-3131
918609-3132
918609-3133

Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260A for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all calibration check compounds and less than or equal to 50.0% for all other compounds.

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% for all calibration check compounds and less than or equal to 50.0% for all other compounds.

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
MBLK1W	6/27/00	Methylene chloride	1.5 ug/L	All samples in SDG 00F134

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
918609-3131	Methylene chloride	1.6 ug/L	5U ug/L

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample 918609-3131 was identified as a trip blank. No volatile contaminants were found in this blank.

Sample 918609-3133 was identified as an equipment rinsate. No volatile contaminants were found in this blank.

MCAS El Toro
Volatiles - Data Qualification Summary - SDG 00F134

No Sample Data Qualified in this SDG

MCAS El Toro
Volatiles - Laboratory Blank Data Qualification Summary - SDG 00F134

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
00F134	18609-3131	Methylene chloride	5U ug/L	A

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: June 22, 2000

LDC Report Date: July 17, 2000

Matrix: Water

Parameters: Alkalinity & Sulfate

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 00F134

Sample Identification

918609-3133

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 310.1 for Alkalinity and EPA Method 300.0 for Sulfate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section VII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met with the following exceptions:

Sample	Analyte	Finding	Criteria	Flag	A or P
All samples in SDG 00F134	Sulfate	A blank was not used to establish the calibration curve.	A blank must be used to establish the calibration curve.	None	P

b. Calibration verification

Calibration verification frequency and analysis criteria were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No alkalinity or sulfate contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Matrix Spike/(Matrix Spike) Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

b. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Sample Result Verification

Raw data were not reviewed for this SDG.

VI. Overall Assessment of Data

Data flags are summarized at the end of this report.

VII. Field Duplicates

No field duplicates were identified in this SDG.

VIII. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro
Alkalinity & Sulfate - Data Qualification Summary - SDG 00F134

SDG	Sample	Analyte	Flag	A or P	Reason
00F134	918609-3133	Sulfate	None	P	Calibration

MCAS El Toro
Alkalinity & Sulfate - Laboratory Blank Data Qualification Summary - SDG 00F134

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: June 23, 2000

LDC Report Date: July 22, 2000

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Extractables

Validation Level: NFESC Level C & D

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 00F147

Sample Identification

918609-3134
918609-3137
918609-3138**

**Indicates sample underwent NFESC Level D review

Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent NFESC Level D review. NFESC Level C review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by NFESC Level C criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0% .

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Target Compound Identification

All target compound identifications were within validation criteria for samples on which NFESC Level D review was performed. Raw data were not evaluated for the samples reviewed by NFESC Level C criteria.

VI. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which NFESC Level D review was performed. Raw data were not evaluated for the samples reviewed by NFESC Level C criteria.

VII. System Performance

The system performance was within validation criteria for samples on which NFESC Level D review was performed. Raw data were not evaluated for the samples reviewed by NFESC Level C criteria.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

Samples 918609-3137 and 918609-3138** were identified as field duplicates. No total petroleum hydrocarbons as extractables were detected in any of the samples with the following exceptions:

Compound	Concentration (mg/L)		RPD
	918609-3137	918609-3138**	
TPH as JP-5	0.81	0.98	19

X. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG 00F147

No Sample Data Qualified in this SDG

MCAS El Toro
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG 00F147

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: June 23, 2000

LDC Report Date: July 22, 2000

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Gasoline

Validation Level: NFESC Level C & D

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 00F147

Sample Identification

918609-3134
918609-3134RE
918609-3137
918609-3137RE
918609-3138**
918609-3138RE**

**Indicates sample underwent NFESC Level D review

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Gasoline.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent NFESC Level D review. NFESC Level C review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by NFESC Level C criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0% .

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as gasoline contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Surrogate	%R (Limits)	Compound	Flag	A or P
918609-3134	Bromofluorobenzene	175 (65-135)	TPH as gasoline	J (all detects)	A
918609-3134RE	Bromofluorobenzene	156 (65-135)	TPH as gasoline	J (all detects)	A
918609-3137	Bromofluorobenzene	176 (65-135)	TPH as gasoline	J (all detects)	A
918609-3137RE	Bromofluorobenzene	168 (65-135)	TPH as gasoline	J (all detects)	A
918609-3138**	Bromofluorobenzene	188 (65-135)	TPH as gasoline	J (all detects)	A

Sample	Surrogate	%R (Limits)	Compound	Flag	A or P
918609-3138RE**	Bromofluorobenzene	177 (65-135)	TPH as gasoline	J (all detects)	A

b. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Target Compound Identification

All target compound identifications were within validation criteria for samples on which NFESC Level D review was performed. Raw data were not evaluated for the samples reviewed by NFESC Level C criteria.

VI. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which NFESC Level D review was performed. Raw data were not evaluated for the samples reviewed by NFESC Level C criteria.

VII. System Performance

The system performance was within validation criteria for samples on which NFESC Level D review was performed. Raw data were not evaluated for the samples reviewed by NFESC Level C criteria.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

Samples 918609-3137 and 918609-3138** and samples 918609-3137RE and 918609-3138RE** were identified as field duplicates. No total petroleum hydrocarbons as gasoline were detected in any of the samples with the following exceptions:

Compound	Concentration (mg/L)		RPD
	918609-3137	918609-3138**	
TPH as gasoline	1.1	1.1	0

Compound	Concentration (mg/L)		RPD
	918609-3137RE	918609-3138RE**	
TPH as gasoline	0.96	1.0	4

X. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro
Total Petroleum Hydrocarbons as Gasoline - Data Qualification Summary - SDG 00F147

SDG	Sample	Compound	Flag	A or P	Reason
00F147	918609-3134 918609-3134RE 918609-3137 918609-3137RE 918609-3138** 918609-3138RE**	TPH as gasoline	J (all detects)	A	Surrogate recovery (%R)

MCAS El Toro
Total Petroleum Hydrocarbons as Gasoline - Laboratory Blank Data Qualification Summary - SDG 00F147

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: June 23, 2000

LDC Report Date: July 25, 2000

Matrix: Water

Parameters: Volatiles

Validation Level: NFESC Level C & D

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 00F147

Sample Identification

918609-3134
918609-3135
918609-3137
918609-3138**

**Indicates sample underwent NFESC Level D review

Introduction

This data review covers 4 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260A for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Samples indicated by a double asterisk on the front cover underwent a NFESC Level D review. A NFESC Level C review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level C criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all calibration check compounds and less than or equal to 50.0% for all other compounds.

Average relative response factors (RRF) for all volatile target compounds and system monitoring compounds were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% for all calibration check compounds and less than or equal to 50.0% for all other compounds.

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
MBLK1W	6/27/00	Methylene chloride	1.5 ug/L	All samples in SDG 00F147

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
918609-3137	Methylene chloride	1.7 ug/L	5U ug/L
918609-3138**	Methylene chloride	1.8 ug/L	5U ug/L

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

All target compound identifications were within validation criteria for samples on which a NFESC Level D review was performed. Raw data were not evaluated for the samples reviewed by Level C criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which a NFESC Level D review was performed. Raw data were not evaluated for the samples reviewed by Level C criteria.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was within validation criteria for samples on which a NFESC Level D review was performed. Raw data were not evaluated for the samples reviewed by Level C criteria.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

Samples 918609-3137 and 918609-3138** were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	918609-3137	918609-3138**	
Benzene	21	22	5
Ethylbenzene	15	16	6
Methylene chloride	1.7	1.8	6
Toluene	2.1	1.9	10

XVII. Field Blanks

Sample 918609-3135 was identified as a trip blank. No volatile contaminants were found in this blank.

MCAS El Toro
Volatiles - Data Qualification Summary - SDG 00F147

No Sample Data Qualified in this SDG

MCAS El Toro
Volatiles - Laboratory Blank Data Qualification Summary - SDG 00F147

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
00F147	918609-3137	Methylene chloride	5U ug/L	A
00F147	918609-3138**	Methylene chloride	5U ug/L	A

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: June 23, 2000

LDC Report Date: July 24, 2000

Matrix: Water

Parameters: Alkalinity & Sulfate

Validation Level: NFESC Level C & D

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 00F147

Sample Identification

918609-3134
918609-3137
918609-3138**
918609-3134MS
918609-3134MSD

**Indicates sample underwent NFESC Level D review

Introduction

This data review covers 5 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 300.0 for Sulfate and EPA Method 310.1 for Alkalinity.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the methods stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section VII.

Samples indicated by a double asterisk on the front cover underwent a NFESC Level D review. A NFESC Level C review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level C criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met with the following exceptions:

Sample	Analyte	Finding	Criteria	Flag	A or P
All samples in SDG 00F147	Sulfate	A blank was not used to establish the calibration curve.	A blank must be used to establish the calibration curve.	None	P

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. Accuracy and Precision Data

a. Matrix Spike/(Matrix Spike) Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

b. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Sample Result Verification

All sample result verifications were within validation criteria for samples on which a NFESC Level D review was performed. Raw data were not evaluated for the samples reviewed by Level C criteria.

VI. Overall Assessment of Data

Data flags are summarized at the end of this report.

VII. Field Duplicates

Samples 918609-3137 and 918609-3138** were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD
	918609-3137	918609-3138**	
Alkalinity	716	710	0.8
Sulfate	32	31.4	2

VIII. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro
Alkalinity & Sulfate - Data Qualification Summary - SDG 00F147

SDG	Sample	Analyte	Flag	A or P	Reason
00F147	918609-3134 918609-3137 918609-3138**	Sulfate	None	P	Calibration

MCAS El Toro
Alkalinity & Sulfate - Laboratory Blank Data Qualification Summary - SDG 00F147

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: June 26, 2000

LDC Report Date: August 6, 2000

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Extractables

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 00F158

Sample Identification

918609-3139
918609-3141
918609-3142

Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0% .

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG 00F158

No Sample Data Qualified in this SDG

MCAS El Toro
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG 00F158

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: June 26, 2000

LDC Report Date: August 6, 2000

Matrix: Water

Parameters: Total Petroleum Hydrocarbons as Gasoline

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 00F158

Sample Identification

918609-3139
918609-3141
918609-3142
918609-3142RE

Introduction

This data review covers 4 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Gasoline.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0% .

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as gasoline contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Surrogate	%R (Limits)	Compound	Flag	A or P
918609-3142	Bromofluorobenzene	195 (65-135)	TPH as gasoline	J (all detects)	A
918609-3142RE	Bromofluorobenzene	211 (65-135)	TPH as gasoline	J (all detects)	A

b. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro
Total Petroleum Hydrocarbons as Gasoline - Data Qualification Summary - SDG 00F158

SDG	Sample	Compound	Flag	A or P	Reason
00F158	918609-3142 918609-3142RE	TPH as gasoline	J (all detects)	A	Surrogate recovery (%R)

MCAS El Toro
Total Petroleum Hydrocarbons as Gasoline - Laboratory Blank Data Qualification Summary - SDG 00F158

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: June 26, 2000

LDC Report Date: August 2, 2000

Matrix: Water

Parameters: Volatiles

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 00F158

Sample Identification

918609-3139
918609-3140
918609-3141
918609-3142

Introduction

This data review covers 4 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260A for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all calibration check compounds and less than or equal to 50.0% for all other compounds.

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% for all calibration check compounds and less than or equal to 50.0% for all other compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
6/30/00	2-Chloroethylvinyl ether	60.6	All samples in SDG 00F158	J (all detects) UJ (all non-detects)	A

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample 918609-3140 was identified as a trip blank. No volatile contaminants were found in this blank.

MCAS El Toro
Volatiles - Data Qualification Summary - SDG 00F158

SDG	Sample	Compound	Flag	A or P	Reason
00F158	918609-3139 918609-3140 918609-3141 918609-3142	2-Chloroethylvinyl ether	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)

MCAS El Toro
Volatiles - Laboratory Blank Data Qualification Summary - SDG 00F158

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: June 26, 2000

LDC Report Date: August 1, 2000

Matrix: Water

Parameters: Alkalinity & Sulfate

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 00F158

Sample Identification

918609-3141
918609-3142

Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 310.1 for Alkalinity and EPA Method 300.0 for Sulfate.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section VII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration were met with the following exceptions:

Sample	Analyte	Finding	Criteria	Flag	A or P
All samples in SDG 00F158	Sulfate	A blank was not used to establish the calibration curve.	A blank must be used to establish the calibration curve.	None	P

b. Calibration verification

Calibration verification frequency and analysis criteria were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No alkalinity or sulfate contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Matrix Spike/(Matrix Spike) Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

b. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Sample Result Verification

Raw data were not reviewed for this SDG.

VI. Overall Assessment of Data

Data flags are summarized at the end of this report.

VII. Field Duplicates

No field duplicates were identified in this SDG.

VIII. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro
Alkalinity & Sulfate - Data Qualification Summary - SDG 00F158

SDG	Sample	Analyte	Flag	A or P	Reason
00F158	918609-3141 918609-3142	Sulfate	None	P	Calibration

MCAS El Toro
Alkalinity & Sulfate - Laboratory Blank Data Qualification Summary - SDG 00F158

No Sample Data Qualified in this SDG

Appendix B
Soil Vapor Extraction System Operation Data

SVE SYSTEM HYDROCARBON MASS REMOVAL CALCULATIONS, TANK 398 SITE
MCAS EL TORO, CALIFORNIA

Date	LEL	Converted TPH*		Removal Rate	Cum. Mass	System Infl.	Laboratory	System Infl.	Removal Rate	Cum. Mass	Cum. Mass
		From LEL	From LEL	From LEL	From LEL	Conc. - Lab.	Sample Date	Conc. - Lab.	From Lab.	From Lab.	From Lab.
	(%)	(ppmv)	(mg/m3)	(kg/hour)	(kg)	(ppmv)		(mg/m3)	(kg/hour)	(kg)	(lb)
9/4/96	6	600	2628.5	2.2	0.0	2900.000	9/5/96	12704.3	10.7	0.0	0
9/4/96	6	600	2628.5	2.2	2.0	2900.000	9/5/96	12704.3	10.7	9.6	21.2
9/5/96	6	600	2628.5	2.2	47.8	2900.000	9/5/96	12704.3	10.7	231.3	508.8
9/5/96	6	600	2628.5	2.2	56.7	2900.000	9/5/96	12704.3	10.7	274.1	603.0
9/5/96	9	881	3860.0	3.2	65.1	2900.000	9/5/96	12704.3	10.6	301.6	663.6
9/5/96	12	1162	5091.5	4.2	68.4	2900.000	9/5/96	12704.3	10.5	310.0	682.0
9/6/96	14	1443	6322.9	5.1	68.4	2900.000	9/5/96	12704.3	10.3	310.0	682.0
9/6/96	17	1724	7554.4	4.5	72.1	2900.000	9/5/96	12704.3	7.6	316.1	695.4
9/6/96	20	2006	8785.9	5.4	77.4	2900.000	9/5/96	12704.3	7.8	323.9	712.5
9/6/96	23	2287	10017.4	6.2	96.1	2900.000	9/5/96	12704.3	7.9	347.6	764.7
9/7/96	26	2568	11248.9	7.1	224.6	2900.000	9/5/96	12704.3	8.1	492.7	1083.9
9/8/96	28	2849	12480.4	8.1	418.1	2900.000	9/5/96	12704.3	8.2	689.6	1517.2
9/9/96	31.3	3130	13711.9	9.0	634.5	2900.000	9/5/96	12704.3	8.4	890.1	1958.2
9/9/96	29.4	2940	12879.5	8.2	659.1	2900.000	9/5/96	12704.3	8.1	914.4	2011.7
9/9/96	29.4	2940	12879.5	8.2	675.5	2900.000	9/5/96	12704.3	8.1	930.6	2047.3
9/10/96	26	2600	12184.9	8.0	851.3	1100.000	9/10/96	5155.1	3.4	1005.0	2210.9
9/11/96	2	200	937.3	0.6	866.8	1100.000	9/10/96	5155.1	3.5	1090.1	2398.2
9/12/96	6.5	650	3046.2	2.1	923.8	1100.000	9/10/96	5155.1	3.6	1186.2	2609.6
9/13/96	5.3	530	2483.8	1.7	964.5	1100.000	9/10/96	5155.1	3.6	1271.1	2796.4
9/14/96	5.4	543	2546.3	1.8	1008.5	1100.000	9/10/96	5155.1	3.7	1360.3	2992.6
9/15/96	5.6	557	2608.8	1.9	1055.3	1100.000	9/10/96	5155.1	3.9	1452.7	3195.9
9/16/96	5.7	570	2671.3	2.1	1104.9	1100.000	9/10/96	5155.1	4.0	1548.3	3406.4
9/17/96	27	2700	12653.5	7.3	1148.8	1100.000	9/10/96	5155.1	3.0	1566.3	3445.8
9/17/96	29	2900	13590.8	7.8	1174.5	1100.000	9/10/96	5155.1	3.0	1576.0	3467.2
9/18/96	26	2600	12184.9	7.0	1342.5	1100.000	9/10/96	5155.1	3.0	1647.1	3623.5
9/19/96	20	2000	9528.2	5.7	1443.6	1000.000	9/19/96	4764.1	2.9	1697.6	3734.8
9/20/96	20	2000	9528.2	5.7	1579.6	1000.000	9/19/96	4764.1	2.8	1765.6	3884.4
9/21/96	15	1513	7209.7	4.8	1586.9	1000.000	9/19/96	4764.1	3.2	1770.4	3894.9
9/22/96	10	1027	4891.1	3.7	1586.9	1000.000	9/19/96	4764.1	3.8	1770.4	3894.9
9/23/96	5.4	540	2572.6	2.1	1586.9	1000.000	9/19/96	4764.1	3.9	1770.4	3894.9
9/24/96	8	800	3811.3	3.2	1663.5	1000.000	9/19/96	4764.1	4.0	1866.2	4105.6
9/25/96	6	600	2927.0	2.4	1721.6	2600.000	9/25/96	12683.8	10.5	2118.1	4659.8
9/26/96	17	1700	8293.2	5.1	1844.0	2600.000	9/25/96	12683.8	7.8	2305.3	5071.6
9/27/96	41	4100	20001.4	16.5	2240.4	2600.000	9/25/96	12683.8	10.5	2556.7	5624.6
9/28/96	41	4100	20001.4	15.7	2617.5	2600.000	9/25/96	12683.8	10.0	2795.8	6150.7
9/29/96	41	4100	20001.4	14.9	2975.2	2600.000	9/25/96	12683.8	9.5	3022.6	6649.8
9/30/96	41	4100	20001.4	14.1	3313.7	2600.000	9/25/96	12683.8	8.9	3237.3	7122.0
10/1/96	41	4100	20001.4	13.8	3644.8	2600.000	9/25/96	12683.8	8.7	3447.3	7584.0
10/2/96	40	4000	18268.0	12.3	3871.5	5300.000	10/2/96	24205.0	16.3	3747.7	8244.9
10/3/96	35	3500	15984.5	10.6	4163.9	5300.000	10/2/96	24205.0	16.0	4190.3	9218.7
10/3/96	41	4100	18724.7	15.1	4169.9	5300.000	10/2/96	24205.0	19.5	4198.2	9235.9
10/4/96	43	4325	19752.2	15.1	4531.5	5300.000	10/2/96	24205.0	18.5	4641.3	10210.9
10/5/96	46	4550	20779.8	14.9	4890.0	5300.000	10/2/96	24205.0	17.4	5058.8	11129.4
10/6/96	48	4775	21807.4	14.7	5243.0	5300.000	10/2/96	24205.0	16.3	5450.6	11991.4
10/7/96	50	5000	22834.9	14.4	5559.6	5300.000	10/2/96	24205.0	15.3	5786.3	12729.9
10/8/96	52	5200	23748.3	14.8	5875.0	5300.000	10/2/96	24205.0	15.1	6107.8	13437.1
10/9/96	46	4600	21008.1	13.1	6241.8	5300.000	10/2/96	24205.0	15.1	6530.4	14366.8
10/10/96	48	4800	21921.5	13.8	6509.2	5300.000	10/2/96	24205.0	15.2	6825.6	15016.2
10/11/96	49	4900	22378.2	13.8	6860.7	5300.000	10/2/96	24205.0	15.0	7205.8	15852.7
10/12/96	48	4825	22035.7	13.6	7187.3	5300.000	10/2/96	24205.0	14.9	7564.6	16642.0
10/13/96	48	4750	21693.2	13.4	7508.4	5300.000	10/2/96	24205.0	14.9	7922.8	17430.2

SVE SYSTEM HYDROCARBON MASS REMOVAL CALCULATIONS, TANK 398 SITE
MCAS EL TORO, CALIFORNIA

Date	LEL	Converted TPH*		Removal Rate	Cum. Mass	System Infl.	Laboratory	System Infl.	Removal Rate	Cum. Mass	Cum. Mass
		From LEL	From LEL	From LEL	From LEL	Conc. - Lab.	Sample Date	Conc. - Lab.	From Lab.	From Lab.	From Lab.
	(%)	(ppmv)	(mg/m3)	(kg/hour)	(kg)	(ppmv)		(mg/m3)	(kg/hour)	(kg)	(lb)
10/14/96	47	4675	21350.7	13.1	7824.0	5300.000	10/2/96	24205.0	14.9	8280.6	18217.4
10/15/96	46	4600	21008.1	12.9	8134.1	5300.000	10/2/96	24205.0	14.9	8637.9	19003.4
10/16/96	44	4400	20094.7	12.4	8422.1	5300.000	10/2/96	24205.0	14.9	8984.8	19766.5
10/17/96	43	4300	20702.3	12.8	8739.2	5300.000	10/17/96	25516.8	15.8	9375.6	20626.4
10/18/96	42	4200	20220.8	12.4	9037.7	5300.000	10/17/96	25516.8	15.7	9752.3	21455.0
10/19/96	35	3533	17011.2	10.9	9298.5	5300.000	10/17/96	25516.8	16.3	10143.5	22315.7
10/20/96	29	2867	13801.5	9.1	9518.0	5300.000	10/17/96	25516.8	16.9	10549.3	23208.4
10/21/96	22	2200	10591.9	7.3	9691.0	5300.000	10/17/96	25516.8	17.5	10966.1	24125.5
10/22/96	26	2600	12517.7	8.5	9895.7	5300.000	10/17/96	25516.8	17.4	11383.4	25043.4
10/23/96	29	2900	13962.0	9.2	10123.9	5300.000	10/17/96	25516.8	16.8	11800.5	25961.2
10/24/96	27	2700	12999.1	8.6	10331.2	5300.000	10/17/96	25516.8	17.0	12207.4	26856.2
10/25/96	26	2600	12517.7	8.2	10532.9	5300.000	10/17/96	25516.8	16.6	12618.6	27760.8
10/26/96	27	2671	12861.5	8.4	10734.3	5300.000	10/17/96	25516.8	16.6	13018.1	28639.8
10/27/96	27	2743	13205.4	8.6	10941.1	5300.000	10/17/96	25516.8	16.6	13417.6	29518.8
10/28/96	28	2814	13549.3	8.8	11153.2	5300.000	10/17/96	25516.8	16.6	13817.2	30397.8
10/29/96	29	2886	13893.2	9.1	11370.8	5300.000	10/17/96	25516.8	16.6	14216.7	31276.8
10/30/96	30	2957	14237.1	9.3	11554.7	5300.000	10/17/96	25516.8	16.6	14546.4	32002.0
10/31/96	30	3029	14581.0	9.5	11554.7	5300.000	10/17/96	25516.8	16.6	14546.4	32002.0
10/31/96	31	3100	14924.9	9.7	11577.1	5300.000	10/17/96	25516.8	16.6	14584.6	32086.2
11/1/96	32	3200	15406.3	9.9	11758.1	5300.000	10/17/96	25516.8	16.4	14884.5	32746.0
11/2/96	35	3500	16850.7	11.2	12028.0	5300.000	10/17/96	25516.8	17.0	15293.2	33645.0
11/3/96	38	3800	18295.0	12.7	12332.0	5300.000	10/17/96	25516.8	17.7	15717.2	34577.8
11/4/96	41	4100	19739.4	14.2	12671.9	5300.000	10/17/96	25516.8	18.3	16156.5	35544.4
11/5/96	44	4400	21183.7	15.7	13049.3	5300.000	10/17/96	25516.8	18.9	16611.2	36544.7
11/6/96	44	4400	21183.7	15.8	13449.1	5300.000	10/17/96	25516.8	19.0	17092.7	37604.0
11/7/96	47	4700	22628.1	16.7	13831.2	5300.000	10/17/96	25516.8	18.8	17523.6	38551.9
11/8/96	42	4200	20220.8	14.6	14220.1	5300.000	10/17/96	25516.8	18.4	18014.4	39631.7
11/9/96	43	4267	20541.8	14.8	14575.8	5300.000	10/17/96	25516.8	18.4	18456.2	40603.7
11/10/96	43	4333	20862.8	15.1	14937.6	5300.000	10/17/96	25516.8	18.4	18898.8	41577.3
11/11/96	44	4400	21183.7	15.3	15265.8	5300.000	10/17/96	25516.8	18.5	19294.0	42446.8
11/12/96	45	4500	21665.2	15.7	15642.1	5300.000	10/17/96	25516.8	18.5	19737.3	43422.0
11/13/96	46	4600	22146.6	16.0	16034.8	5300.000	10/17/96	25516.8	18.5	20189.7	44417.4
11/14/96	44	4400	21183.7	15.3	16479.9	5300.000	10/17/96	25516.8	18.4	20725.9	45597.0
11/15/96	44	4400	21183.7	15.3	16847.0	5300.000	10/17/96	25516.8	18.4	21168.1	46569.9
11/16/96	44	4400	21183.7	15.3	17214.2	5300.000	10/17/96	25516.8	18.4	21610.3	47542.7
11/17/96	44	4400	21183.7	15.3	17580.4	5300.000	10/17/96	25516.8	18.4	22051.5	48513.3
11/18/96	44	4400	21183.7	15.3	17946.7	5300.000	10/17/96	25516.8	18.4	22492.6	49483.8
11/19/96	44	4400	21183.7	15.3	18291.5	5300.000	10/17/96	25516.8	18.4	22908.1	50397.8
11/20/96	44	4417	21264.0	15.3	18658.5	5300.000	10/17/96	25516.8	18.3	23348.4	51366.4
11/21/96	44	4433	21344.2	15.3	19026.0	5300.000	10/17/96	25516.8	18.3	23787.8	52333.2
11/22/96	45	4450	21424.5	15.3	19394.3	5300.000	10/17/96	25516.8	18.3	24226.4	53298.0
11/23/96	45	4467	21504.7	15.4	19763.1	5300.000	10/17/96	25516.8	18.2	24664.1	54260.9
11/24/96	45	4483	21584.9	15.4	20132.6	5300.000	10/17/96	25516.8	18.2	25100.9	55221.9
11/25/96	45	4500	21665.2	15.4	20438.0	5300.000	10/17/96	25516.8	18.2	25460.5	56013.2
11/26/96	46	4600	22533.0	15.8	20854.9	4100.000	11/26/96	20083.7	14.1	25832.1	56830.6
11/27/96	45	4500	22043.1	15.7	21180.5	4100.000	11/26/96	20083.7	14.3	26128.8	57483.3
11/28/96	46	4580	22435.0	15.9	21563.2	4100.000	11/26/96	20083.7	14.3	26471.4	58237.1
11/29/96	47	4660	22826.9	16.2	21953.1	4100.000	11/26/96	20083.7	14.3	26814.4	58991.6
11/30/96	47	4740	23218.7	16.5	22349.9	4100.000	11/26/96	20083.7	14.3	27157.7	59746.9
12/1/96	48	4820	23610.6	16.8	22753.9	4100.000	11/26/96	20083.7	14.3	27501.3	60502.9
12/2/96	49	4900	24002.5	17.1	23163.3	4100.000	11/26/96	20083.7	14.3	27843.8	61256.4

SVE SYSTEM HYDROCARBON MASS REMOVAL CALCULATIONS, TANK 398 SITE
MCAS EL TORO, CALIFORNIA

Date	LEL	Converted TPH*		Removal Rate	Cum. Mass	System Infl.	Laboratory	System Infl.	Removal Rate	Cum. Mass	Cum. Mass
		From LEL	From LEL	From LEL	From LEL	Conc. - Lab.	Sample Date	Conc. - Lab.	From Lab.	From Lab.	From Lab.
	(%)	(ppmv)	(mg/m3)	(kg/hour)	(kg)	(ppmv)		(mg/m3)	(kg/hour)	(kg)	(lb)
12/3/96	38	3800	18614.2	13.9	23590.5	4100.000	11/26/96	20083.7	15.0	28304.7	62270.4
12/4/96	46	4600	22533.0	16.6	23892.9	4100.000	11/26/96	20083.7	14.8	28574.3	62863.4
12/5/96	45	4522	22152.0	16.6	24373.2	4100.000	11/26/96	20083.7	15.0	29009.8	63821.5
12/6/96	44	4444	21771.0	16.5	24373.2	4100.000	11/26/96	20083.7	15.2	29009.8	63821.5
12/7/96	44	4367	21390.0	16.4	24373.2	4100.000	11/26/96	20083.7	15.4	29009.8	63821.5
12/8/96	43	4289	21009.0	16.4	24373.2	4100.000	11/26/96	20083.7	15.6	29009.8	63821.5
12/9/96	42	4211	20628.0	16.3	24373.2	4100.000	11/26/96	20083.7	15.9	29009.8	63821.5
12/10/96	41	4133	20247.0	16.2	24373.2	4100.000	11/26/96	20083.7	16.1	29009.8	63821.5
12/11/96	41	4056	19866.0	16.1	24373.2	4100.000	11/26/96	20083.7	16.3	29009.8	63821.5
12/12/96	40	3978	19485.0	16.0	24373.2	4100.000	11/26/96	20083.7	16.5	29009.8	63821.5
12/13/96	39	3900	19104.0	15.9	24373.2	4100.000	11/26/96	20083.7	16.7	29009.8	63821.5
12/14/96	38	3822	18723.0	15.7	24373.2	4100.000	11/26/96	20083.7	16.9	29009.8	63821.5
12/15/96	37	3744	18342.0	15.6	24373.2	4100.000	11/26/96	20083.7	17.1	29009.8	63821.5
12/16/96	37	3667	17961.1	15.5	24373.2	4100.000	11/26/96	20083.7	17.3	29009.8	63821.5
12/17/96	36	3589	17580.1	15.3	24373.2	4100.000	11/26/96	20083.7	17.5	29009.8	63821.5
12/18/96	35	3511	17199.1	15.2	24373.2	4100.000	11/26/96	20083.7	17.7	29009.8	63821.5
12/19/96	34	3433	16818.1	15.0	24373.2	4100.000	11/26/96	20083.7	17.9	29009.8	63821.5
12/20/96	34	3356	16437.1	14.8	24373.2	4100.000	11/26/96	20083.7	18.1	29009.8	63821.5
12/21/96	33	3278	16056.1	14.7	24373.2	4100.000	11/26/96	20083.7	18.4	29009.8	63821.5
12/22/96	32	3200	15675.1	14.5	24373.2	4100.000	11/26/96	20083.7	18.6	29009.8	63821.5
12/23/96	31	3122	15294.1	14.3	24373.2	4100.000	11/26/96	20083.7	18.8	29009.8	63821.5
12/24/96	30	3044	14913.1	13.4	24373.2	4100.000	11/26/96	20083.7	18.0	29009.8	63821.5
12/25/96	30	2967	14532.1	12.5	24373.2	4100.000	11/26/96	20083.7	17.2	29009.8	63821.5
12/26/96	29	2889	14151.1	11.6	24373.2	4100.000	11/26/96	20083.7	16.5	29009.8	63821.5
12/27/96	28	2811	13770.1	10.8	24373.2	4100.000	11/26/96	20083.7	15.7	29009.8	63821.5
12/28/96	27	2733	13389.1	10.0	24373.2	4100.000	11/26/96	20083.7	15.0	29009.8	63821.5
12/29/96	27	2656	13008.2	9.2	24373.2	4100.000	11/26/96	20083.7	14.2	29009.8	63821.5
12/30/96	26	2578	12627.2	8.5	24373.2	4100.000	11/26/96	20083.7	13.4	29009.8	63821.5
12/31/96	25	2500	12246.2	7.7	24373.2	4100.000	11/26/96	20083.7	12.7	29009.8	63821.5
1/1/97	25	2500	12246.2	7.3	24373.2	4100.000	11/26/96	20083.7	11.9	29009.8	63821.5
1/2/97	25	2500	12246.2	6.8	24373.2	4100.000	11/26/96	20083.7	11.2	29009.8	63821.5
1/3/97	20	2000	9796.9	5.1	24380.8	4100.000	11/26/96	20083.7	10.4	29025.4	63855.9
1/4/97	22	2167	10613.3	5.7	24516.7	4100.000	11/26/96	20083.7	10.7	29282.5	64421.6
1/5/97	23	2333	11429.8	6.3	24667.3	4100.000	11/26/96	20083.7	11.0	29547.1	65003.5
1/6/97	25	2500	12246.2	6.9	25332.5	4100.000	11/26/96	20083.7	11.3	30638.0	67403.6
1/7/97	25	2500	12246.2	6.9	25518.4	4100.000	11/26/96	20083.7	11.3	30943.0	68074.5
1/8/97	25	2500	12246.2	7.0	25657.8	4100.000	11/26/96	20083.7	11.4	31171.6	68577.5
1/9/97	24	2400	11756.3	6.7	25817.5	4100.000	11/26/96	20083.7	11.4	31444.3	69177.4
1/10/97	28	2800	13715.7	7.7	25998.0	4100.000	11/26/96	20083.7	11.3	31708.6	69758.9
1/11/97	28	2817	13797.4	7.9	26033.5	4100.000	11/26/96	20083.7	11.5	31760.3	69872.6
1/12/97	28	2833	13879.0	8.1	26033.5	4100.000	11/26/96	20083.7	11.7	31760.3	69872.6
1/13/97	29	2850	13960.6	8.3	26033.5	4100.000	11/26/96	20083.7	11.9	31760.3	69872.6
1/14/97	29	2867	14042.3	8.4	26033.5	4100.000	11/26/96	20083.7	12.1	31760.3	69872.6
1/15/97	29	2883	14123.9	8.6	26033.5	4100.000	11/26/96	20083.7	12.3	31760.3	69872.6
1/16/97	29	2900	14205.6	8.8	26033.5	4100.000	11/26/96	20083.7	12.5	31760.3	69872.6
1/17/97	29	2917	14287.2	9.0	26033.5	4100.000	11/26/96	20083.7	12.6	31760.3	69872.6
1/18/97	29	2933	14368.8	9.2	26033.5	4100.000	11/26/96	20083.7	12.8	31760.3	69872.6
1/19/97	30	2950	14450.5	9.4	26033.5	4100.000	11/26/96	20083.7	13.0	31760.3	69872.6
1/20/97	30	2967	14532.1	9.6	26033.5	4100.000	11/26/96	20083.7	13.2	31760.3	69872.6
1/21/97	30	2983	14613.8	9.8	26033.5	4100.000	11/26/96	20083.7	13.4	31760.3	69872.6
1/21/97	30	3000	14695.4	10.0	26036.5	4100.000	11/26/96	20083.7	13.6	31764.4	69881.6

SVE SYSTEM HYDROCARBON MASS REMOVAL CALCULATIONS, TANK 398 SITE											
MCAS EL TORO, CALIFORNIA											
Date	LEL	Converted TPH*		Removal Rate	Cum. Mass	System Infl.	Laboratory	System Infl.	Removal Rate	Cum. Mass	Cum. Mass
		From LEL	From LEL	From LEL	From LEL	Conc. - Lab.	Sample Date	Conc. - Lab.	From Lab.	From Lab.	From Lab.
	(%)	(ppmv)	(mg/m3)	(kg/hour)	(kg)	(ppmv)		(mg/m3)	(kg/hour)	(kg)	(lb)
1/22/97	7	700	3428 9	2 5	26089 4	4100 000	11/26/96	20083 7	14 7	32074 7	70564.3
1/23/97	9	867	4245 3	3 0	26166 3	4100 000	11/26/96	20083 7	14 4	32438 5	71364.6
1/24/97	10	1033	5061 8	3 5	26166 3	4100 000	11/26/96	20083 7	14 1	32438 5	71364.6
1/25/97	12	1200	5878 2	4 0	26166 3	4100 000	11/26/96	20083 7	13 7	32438 5	71364.6
1/26/97	14	1367	6694 6	4 5	26166 3	4100 000	11/26/96	20083 7	13 4	32438 5	71364.6
1/27/97	15	1533	7511 0	4 9	26166 3	4100 000	11/26/96	20083 7	13 1	32438 5	71364.6
1/28/97	17	1700	8327 4	5 3	26166 3	4100 000	11/26/96	20083 7	12 7	32438 5	71364.6
1/29/97	19	1867	9143 8	5 7	26166 3	4100 000	11/26/96	20083 7	12 4	32438 5	71364.6
1/30/97	20	2033	9960 2	6 0	26166 3	4100 000	11/26/96	20083 7	12 1	32438 5	71364.6
1/31/97	22	2200	10776 6	6 3	26166 3	4100 000	11/26/96	20083 7	11 8	32438 5	71364.6
2/1/97	24	2367	11593 0	6 6	26166 3	4100 000	11/26/96	20083 7	11 4	32438 5	71364.6
2/2/97	25	2533	12409 5	6 9	26166 3	4100 000	11/26/96	20083 7	11 1	32438 5	71364.6
2/3/97	27	2700	13225 9	7 1	26166 3	4100 000	11/26/96	20083 7	10 8	32438 5	71364.6
2/4/97	29	2867	14042 3	7 3	26166 3	4100 000	11/26/96	20083 7	10 4	32438 5	71364.6
2/5/97	30	3033	14858 7	7 5	26166 3	4100 000	11/26/96	20083 7	10 1	32438 5	71364.6
2/6/97	32	3200	15675.1	7 6	26166 3	4100 000	11/26/96	20083 7	9 8	32438 5	71364.6
2/7/97	36	3600	17634 5	8 7	26321 9	4100 000	11/26/96	20083.7	9 9	32615 6	71754.3
2/8/97	27	2733	13389 1	7 7	26505 5	4100 000	11/26/96	20083.7	11 5	32891 0	72360.3
2/9/97	19	1867	9143 8	5 9	26648 2	4100 000	11/26/96	20083 7	13 1	33204 4	73049.7
2/10/97	10	1000	4898 5	3 6	26733 9	4100 000	11/26/96	20083 7	14 6	33555 7	73822.6
2/10/97	10	1000	4898 5	3 3	26754 8	4100 000	11/26/96	20083.7	13 6	33641 7	74011.8
2/11/97	10	1000	4898 5	3 1	26754 8	4100 000	11/26/96	20083 7	12 8	33641 7	74011.8
2/11/97	10	1000	4898 5	2 9	26767 9	4100 000	11/26/96	20083.7	11 9	33695 5	74130.0
2/12/97	0	0	0 0	0 0	26767.9	4100 000	11/26/96	20083.7	0 0	33695 5	74130.0
2/13/97	0	0	0.0	0 0	26767 9	4100 000	11/26/96	20083 7	0 0	33695 5	74130.0
2/14/97	0	0	0 0	0 0	26767 9	4100 000	11/26/96	20083 7	0 0	33695 5	74130.0
2/15/97	0	0	0.0	0 0	26767 9	4100 000	11/26/96	20083 7	0 0	33695 5	74130.0
2/16/97	0	0	0.0	0 0	26767 9	4100 000	11/26/96	20083 7	0.0	33695 5	74130.0
2/17/97	0	0	0.0	0.0	26767 9	4100 000	11/26/96	20083 7	0 0	33695 5	74130.0
2/18/97	0	0	0.0	0.0	26767.9	4100 000	11/26/96	20083.7	0 0	33695 5	74130.0
2/19/97	0	0	0.0	0 0	26767.9	4100 000	11/26/96	20083 7	0.0	33695 5	74130.0
2/20/97	0	0	0.0	0 0	26767.9	4100 000	11/26/96	20083 7	0 0	33695 5	74130.0
2/21/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083 7	0 0	33695 5	74130.0
2/22/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083 7	0.0	33695 5	74130.0
2/23/97	0	0	0.0	0 0	26767.9	4100.000	11/26/96	20083.7	0 0	33695 5	74130.0
2/24/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695 5	74130.0
2/25/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695 5	74130.0
2/26/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695 5	74130.0
2/27/97	0	0	0 0	0.0	26767.9	4100 000	11/26/96	20083 7	0 0	33695.5	74130.0
2/28/97	0	0	0 0	0 0	26767.9	4100 000	11/26/96	20083 7	0 0	33695 5	74130.0
3/1/97	0	0	0.0	0.0	26767.9	4100 000	11/26/96	20083.7	0.0	33695 5	74130.0
3/2/97	0	0	0.0	0 0	26767.9	4100 000	11/26/96	20083.7	0.0	33695 5	74130.0
3/3/97	0	0	0 0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695 5	74130.0
3/4/97	0	0	0.0	0.0	26767 9	4100.000	11/26/96	20083.7	0.0	33695 5	74130.0
3/5/97	0	0	0.0	0.0	26767 9	4100.000	11/26/96	20083.7	0 0	33695 5	74130.0
3/6/97	0	0	0 0	0.0	26767.9	4100 000	11/26/96	20083.7	0.0	33695 5	74130.0
3/7/97	0	0	0.0	0.0	26767.9	4100 000	11/26/96	20083.7	0 0	33695 5	74130.0
3/8/97	0	0	0 0	0 0	26767.9	4100 000	11/26/96	20083 7	0 0	33695 5	74130.0
3/9/97	0	0	0 0	0.0	26767.9	4100 000	11/26/96	20083 7	0 0	33695 5	74130.0
3/10/97	0	0	0 0	0 0	26767.9	4100 000	11/26/96	20083 7	0 0	33695 5	74130.0
3/11/97	0	0	0 0	0 0	26767 9	4100 000	11/26/96	20083.7	0 0	33695 5	74130.0

SVE SYSTEM HYDROCARBON MASS REMOVAL CALCULATIONS, TANK 398 SITE
MCAS EL TORO, CALIFORNIA

Date	LEL	Converted TPH*		Removal Rate	Cum. Mass	System Infl.	Laboratory	System Infl.	Removal Rate	Cum. Mass	Cum. Mass
		From LEL	From LEL	From LEL	From LEL	Conc. - Lab.	Sample Date	Conc. - Lab.	From Lab.	From Lab.	From Lab.
	(%)	(ppmv)	(mg/m3)	(kg/hour)	(kg)	(ppmv)		(mg/m3)	(kg/hour)	(kg)	(lb)
3/12/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
3/13/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
3/14/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
3/15/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
3/16/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
3/17/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
3/18/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
3/19/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
3/20/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
3/21/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
3/22/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
3/23/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
3/24/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
3/25/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
3/26/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
3/27/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
3/28/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
3/29/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
3/30/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
3/31/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/1/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/2/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/3/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/4/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/5/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/6/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/7/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/8/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/9/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/10/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/11/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/12/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/13/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/14/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/15/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/16/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/17/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/18/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/19/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/20/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/21/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/22/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/23/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	33695.5	74130.0
4/24/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	15.9	33695.5	74130.0
4/25/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	15.9	34012.8	74828.2
4/26/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	34012.8	74828.2
4/27/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	34012.8	74828.2
4/28/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	15.9	34049.3	74908.5
4/29/97	0	0	0.0	0.0	26767.9	4100.000	11/26/96	20083.7	0.0	34049.3	74908.5
4/30/97	20	2000	9966.1	7.9	26767.9	1500.000	4/30/97	7474.6	5.9	34049.3	74908.5
4/30/97	31	3100	15447.4	12.4	26782.8	1500.000	4/30/97	7474.6	6.0	34056.5	74924.2

SVE SYSTEM HYDROCARBON MASS REMOVAL CALCULATIONS, TANK 398 SITE
MCAS EL TORO, CALIFORNIA

Date	LEL	Converted TPH*		Removal Rate	Cum. Mass	System Infl.	Laboratory	System Infl.	Removal Rate	Cum. Mass	Cum. Mass
		From LEL	From LEL	From LEL	From LEL	Conc. - Lab.	Sample Date	Conc. - Lab.	From Lab.	From Lab.	From Lab.
	(%)	(ppmv)	(mg/m3)	(kg/hour)	(kg)	(ppmv)		(mg/m3)	(kg/hour)	(kg)	(lb)
4/30/97	37	3700	18437.2	14.6	26811.9	1500.000	4/30/97	7474.6	5.9	34068.3	74950.2
5/1/97	21	2100	10464.4	8.4	26935.0	1500.000	4/30/97	7474.6	6.0	34156.2	75143.7
5/2/97	33	3300	16444.0	12.9	27237.0	1500.000	4/30/97	7474.6	5.8	34293.5	75445.7
5/3/97	32	3233	16111.8	12.7	27540.8	1500.000	4/30/97	7474.6	5.9	34434.4	75755.7
5/4/97	32	3167	15779.6	12.5	27839.7	1500.000	4/30/97	7474.6	5.9	34576.0	76067.3
5/5/97	31	3100	15447.4	12.3	28093.4	1500.000	4/30/97	7474.6	5.9	34698.8	76337.3
5/6/97	31	3100	15447.4	12.3	28373.5	1500.000	4/30/97	7474.6	6.0	34834.3	76635.4
5/7/97	32	3200	16300.1	12.8	28677.4	2400.000	5/7/97	12225.1	9.6	35062.2	77136.8
5/8/97	32	3200	16300.1	12.8	28987.7	2400.000	5/7/97	12225.1	9.6	35294.9	77648.8
5/9/97	32	3200	16300.1	12.9	29324.5	2400.000	5/7/97	12225.1	9.7	35547.5	78204.6
5/10/97	32	3200	16300.1	12.7	29629.2	2400.000	5/7/97	12225.1	9.5	35776.1	78707.4
5/11/97	32	3200	16300.1	12.5	29929.0	2400.000	5/7/97	12225.1	9.4	36000.9	79202.0
5/12/97	32	3200	16300.1	12.3	30223.8	2400.000	5/7/97	12225.1	9.2	36222.0	79688.4
5/13/97	32	3200	16300.1	12.1	30490.6	2400.000	5/7/97	12225.1	9.1	36422.1	80128.7
5/14/97	33	3300	16809.5	12.6	30788.5	2400.000	5/7/97	12225.1	9.2	36638.8	80605.4
5/15/97	33	3300	16809.5	13.0	31052.7	2400.000	5/7/97	12225.1	9.4	36831.0	81028.1
5/15/97	33	3300	16809.5	13.3	31079.3	2400.000	5/7/97	12225.1	9.7	36850.3	81070.6
5/16/97	32	3200	16300.1	12.8	31342.9	2400.000	5/7/97	12225.1	9.6	37048.0	81505.5
5/17/97	33	3267	16639.7	12.8	31650.7	2400.000	5/7/97	12225.1	9.4	37274.1	82003.0
5/18/97	33	3333	16979.3	12.8	31959.0	2400.000	5/7/97	12225.1	9.2	37496.1	82491.4
5/19/97	34	3400	17318.9	12.9	32315.2	2400.000	5/7/97	12225.1	9.1	37747.5	83044.6
5/20/97	34	3400	17318.9	12.9	32584.5	2400.000	5/7/97	12225.1	9.1	37937.6	83462.8
5/21/97	33	3300	16809.5	12.9	32904.6	2400.000	5/7/97	12225.1	9.4	38170.4	83975.0
5/22/97	33	3300	16809.5	12.9	33243.6	2400.000	5/7/97	12225.1	9.4	38417.0	84517.3
5/23/97	33	3283	16724.6	12.9	33553.7	2400.000	5/7/97	12225.1	9.4	38643.6	85015.9
5/24/97	33	3267	16639.7	12.9	33863.3	2400.000	5/7/97	12225.1	9.5	38871.1	85516.4
5/25/97	33	3250	16554.8	12.9	34172.5	2400.000	5/7/97	12225.1	9.5	39099.4	86018.7
5/26/97	32	3233	16469.9	12.9	34481.2	2400.000	5/7/97	12225.1	9.5	39328.5	86522.8
5/27/97	32	3217	16385.0	12.8	34732.9	2400.000	5/7/97	12225.1	9.6	39516.4	86936.0
5/27/97	32	3200	16300.1	12.8	34763.6	2400.000	5/7/97	12225.1	9.6	39539.4	86986.7
5/28/97	29	2900	14772.0	11.2	35032.8	2400.000	5/7/97	12225.1	9.2	39762.2	87476.8
5/29/97	26	2600	13243.8	10.0	35251.6	2400.000	5/7/97	12225.1	9.3	39964.1	87921.1
5/30/97	27	2700	13753.2	10.7	35484.3	2400.000	5/7/97	12225.1	9.5	40171.0	88376.2
5/31/97	27	2733	13923.0	10.8	35742.6	2400.000	5/7/97	12225.1	9.5	40397.8	88875.2
6/1/97	28	2767	14092.8	10.8	36001.8	2400.000	5/7/97	12225.1	9.4	40622.6	89369.8
6/2/97	28	2800	14262.6	10.8	36262.9	2400.000	5/7/97	12225.1	9.3	40846.4	89862.1
6/3/97	28	2800	14262.6	10.8	36543.2	2400.000	5/7/97	12225.1	9.2	41086.7	90390.8
6/4/97	27	2700	13753.2	10.3	36800.8	2400.000	5/7/97	12225.1	9.2	41315.7	90894.6
6/5/97	29	2900	14772.0	11.0	37076.9	2400.000	5/7/97	12225.1	9.1	41544.2	91397.2
6/6/97	30	3000	16269.6	12.1	37330.0	2400.000	6/6/97	13015.7	9.7	41746.6	91842.6
6/7/97	29	2867	15546.5	11.6	37609.1	3000.000	6/6/97	16269.6	12.2	42038.7	92485.2
6/8/97	27	2733	14823.4	11.1	37876.7	3000.000	6/6/97	16269.6	12.2	42332.4	93131.3
6/9/97	26	2600	14100.3	10.7	38122.9	3000.000	6/6/97	16269.6	12.3	42616.6	93756.4
6/10/97	28	2800	15185.0	11.5	38410.6	3000.000	6/6/97	16269.6	12.3	42924.8	94434.5
6/11/97	33	3300	17896.6	13.5	38720.4	3000.000	6/6/97	16269.6	12.2	43206.4	95054.1
6/12/97	28	2800	15185.0	11.6	38997.8	3000.000	6/6/97	16269.6	12.4	43503.6	95708.0
6/13/97	38	3800	20608.2	16.0	39382.7	3000.000	6/6/97	16269.6	12.7	43807.5	96376.4
6/14/97	34	3400	18438.9	14.3	39726.0	3000.000	6/6/97	16269.6	12.6	44110.4	97043.0
6/15/97	30	3000	16269.6	12.6	40028.1	3000.000	6/6/97	16269.6	12.6	44412.5	97707.5
6/16/97	26	2600	14100.3	10.9	40289.1	3000.000	6/6/97	16269.6	12.5	44713.7	98370.1
6/17/97	27	2700	14642.6	11.1	40588.7	3000.000	6/6/97	16269.6	12.3	45046.6	99102.4

SVE SYSTEM HYDROCARBON MASS REMOVAL CALCULATIONS, TANK 398 SITE
MCAS EL TORO, CALIFORNIA

Date	LEL	Converted TPH*		Removal Rate	Cum. Mass	System Infl.	Laboratory	System Infl.	Removal Rate	Cum. Mass	Cum. Mass
		From LEL	From LEL	From LEL	From LEL	Conc. - Lab.	Sample Date	Conc. - Lab.	From Lab.	From Lab.	From Lab.
	(%)	(ppmv)	(mg/m3)	(kg/hour)	(kg)	(ppmv)		(mg/m3)	(kg/hour)	(kg)	(lb)
6/18/97	27	2700	13944 9	10 2	40834 4	1800 000	6/18/97	9296 6	6 8	45210 3	99462.7
6/19/97	27	2700	13944 9	10 0	40954 9	1800 000	6/18/97	9296 6	6 7	45290 7	99639.5
6/20/97	0	0	0.0	0 0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
6/21/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
6/22/97	0	0	0 0	0 0	40954 9	0.000	6/18/97	0.0	0.0	45290 7	99639.5
6/23/97	0	0	0 0	0 0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
6/24/97	0	0	0 0	0 0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
6/25/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
6/26/97	0	0	0 0	0 0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
6/27/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0.0	45290 7	99639.5
6/28/97	0	0	0.0	0 0	40954 9	0.000	6/18/97	0 0	0.0	45290 7	99639.5
6/29/97	0	0	0 0	0.0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
6/30/97	0	0	0 0	0 0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
7/1/97	0	0	0.0	0 0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
7/2/97	0	0	0 0	0 0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
7/3/97	0	0	0.0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
7/4/97	0	0	0.0	0 0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
7/5/97	0	0	0 0	0 0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
7/6/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
7/7/97	0	0	0.0	0 0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
7/8/97	0	0	0 0	0 0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
7/9/97	0	0	0.0	0 0	40954 9	0 000	6/18/97	0 0	0.0	45290 7	99639.5
7/10/97	0	0	0.0	0 0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
7/11/97	0	0	0 0	0 0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
7/12/97	0	0	0 0	0 0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
7/13/97	0	0	0.0	0 0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
7/14/97	0	0	0 0	0.0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
7/15/97	0	0	0.0	0 0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
7/16/97	0	0	0.0	0 0	40954 9	0.000	6/18/97	0 0	0.0	45290 7	99639.5
7/17/97	0	0	0 0	0 0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
7/18/97	0	0	0.0	0.0	40954 9	0.000	6/18/97	0 0	0.0	45290 7	99639.5
7/19/97	0	0	0 0	0 0	40954 9	0.000	6/18/97	0 0	0.0	45290 7	99639.5
7/20/97	0	0	0 0	0 0	40954 9	0.000	6/18/97	0.0	0 0	45290 7	99639.5
7/21/97	0	0	0 0	0 0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
7/22/97	0	0	0.0	0.0	40954 9	0 000	6/18/97	0.0	0.0	45290 7	99639.5
7/23/97	0	0	0 0	0 0	40954 9	0.000	6/18/97	0.0	0.0	45290 7	99639.5
7/24/97	0	0	0 0	0.0	40954 9	0.000	6/18/97	0.0	0 0	45290 7	99639.5
7/25/97	0	0	0.0	0.0	40954 9	0.000	6/18/97	0.0	0 0	45290 7	99639.5
7/26/97	0	0	0 0	0.0	40954 9	0.000	6/18/97	0.0	0.0	45290 7	99639.5
7/27/97	0	0	0 0	0.0	40954 9	0.000	6/18/97	0.0	0 0	45290 7	99639.5
7/28/97	0	0	0 0	0.0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
7/29/97	0	0	0 0	0.0	40954 9	0.000	6/18/97	0 0	0.0	45290 7	99639.5
7/30/97	0	0	0.0	0.0	40954 9	0 000	6/18/97	0.0	0.0	45290 7	99639.5
7/31/97	0	0	0 0	0.0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
8/1/97	0	0	0 0	0.0	40954 9	0.000	6/18/97	0.0	0 0	45290 7	99639.5
8/2/97	0	0	0 0	0.0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
8/3/97	0	0	0 0	0.0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
8/4/97	0	0	0 0	0.0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
8/5/97	0	0	0 0	0.0	40954 9	0.000	6/18/97	0 0	0 0	45290 7	99639.5
8/6/97	0	0	0 0	0 0	40954 9	0.000	6/18/97	0 0	0.0	45290 7	99639.5
8/7/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0.0	0 0	45290 7	99639.5

SVE SYSTEM HYDROCARBON MASS REMOVAL CALCULATIONS, TANK 398 SITE
MCAS EL TORO, CALIFORNIA

Date	LEL	Converted TPH*		Removal Rate	Cum. Mass	System Infl.	Laboratory	System Infl.	Removal Rate	Cum. Mass	Cum. Mass
		From LEL	From LEL	From LEL	From LEL	Conc. - Lab.	Sample Date	Conc. - Lab.	From Lab.	From Lab.	From Lab.
	(%)	(ppmv)	(mg/m3)	(kg/hour)	(kg)	(ppmv)		(mg/m3)	(kg/hour)	(kg)	(lb)
8/8/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
8/9/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
8/10/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
8/11/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
8/12/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
8/13/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
8/14/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
8/15/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
8/16/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
8/17/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
8/18/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	*0.0	45290.7	99639.5
8/19/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
8/20/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
8/21/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
8/22/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
8/23/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
8/24/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
8/25/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
8/26/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
8/27/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
8/28/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
8/29/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
8/30/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
8/31/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/1/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/2/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/3/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/4/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/5/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/6/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/7/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/8/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/9/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/10/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/11/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/12/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/13/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/14/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/15/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/16/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/17/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/18/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/19/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/20/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/21/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/22/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/23/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/24/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/25/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/26/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/27/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5

SVE SYSTEM HYDROCARBON MASS REMOVAL CALCULATIONS, TANK 398 SITE MCAS EL TORO, CALIFORNIA											
Date	LEL	Converted TPH*		Removal Rate	Cum. Mass	System Infl.	Laboratory	System Infl.	Removal Rate	Cum. Mass	Cum. Mass
		From LEL	From LEL	From LEL	From LEL	Conc. - Lab.	Sample Date	Conc. - Lab.	From Lab.	From Lab.	From Lab.
	(%)	(ppmv)	(mg/m3)	(kg/hour)	(kg)	(ppmv)		(mg/m3)	(kg/hour)	(kg)	(lb)
9/28/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/29/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
9/30/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/1/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/2/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/3/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/4/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/5/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/6/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/7/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/8/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/9/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/10/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/11/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/12/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/13/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/14/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/15/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/16/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/17/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/18/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/19/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/20/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/21/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/22/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/23/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/24/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/25/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/26/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/27/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/28/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/29/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/30/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
10/31/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
11/1/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
11/2/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
11/3/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
11/4/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
11/5/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
11/6/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
11/7/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
11/8/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
11/9/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
11/10/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
11/11/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
11/12/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
11/13/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
11/14/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
11/15/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
11/16/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5
11/17/97	0	0	0.0	0.0	40954.9	0.000	6/18/97	0.0	0.0	45290.7	99639.5

SVE SYSTEM HYDROCARBON MASS REMOVAL CALCULATIONS, TANK 398 SITE
MCAS EL TORO, CALIFORNIA

Date	LEL	Converted TPH*		Removal Rate	Cum. Mass	System Infl.	Laboratory	System Infl.	Removal Rate	Cum. Mass	Cum. Mass
		From LEL	From LEL	From LEL	From LEL	Conc. - Lab.	Sample Date	Conc. - Lab.	From Lab.	From Lab.	From Lab.
	(%)	(ppmv)	(mg/m3)	(kg/hour)	(kg)	(ppmv)		(mg/m3)	(kg/hour)	(kg)	(lb)
11/18/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
11/19/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
11/20/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
11/21/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
11/22/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
11/23/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
11/24/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
11/25/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
11/26/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
11/27/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
11/28/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
11/29/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
11/30/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
12/1/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
12/2/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
12/3/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
12/4/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
12/5/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
12/6/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
12/7/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
12/8/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
12/9/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
12/10/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
12/11/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
12/12/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
12/13/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
12/14/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
12/15/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
12/16/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
12/17/97	0	0	0 0	0 0	40954 9	0 000	6/18/97	0 0	0 0	45290 7	99639.5
12/18/97	13	1300	5215.4	1 2	40954 9	2568 600	12/18/97	10304 8	2 3	45290.7	99639.5
12/19/97	13	1300	5215.4	1 2	40982.5	1576 700	12/19/97	6325 4	1 4	45324 2	99713.3
12/20/97	13	1300	5215.4	1 2	41010.2	1576.700	12/19/97	6325.4	1.4	45357 8	99787.1
12/21/97	13	1300	5215.4	1.2	41037.8	1576.700	12/19/97	6325.4	1 4	45391 3	99860.8
12/22/97	13	1300	5215.4	1 2	41065.5	668.000	12/22/97	2679.9	0 6	45405 5	99892.1
12/23/97	13	1300	5215.4	1.2	41093.1	668.000	12/22/97	2679.9	0.6	45419.7	99923.3
12/24/97	13	1300	5215.4	1.2	41120.8	668.000	12/22/97	2679.9	0.6	45433 9	99954.6
12/25/97	13	1300	5215.4	1.2	41148.4	668.000	12/22/97	2679 9	0.6	45448 1	99985.8
12/26/97	13	1300	5215 4	1 2	41176.1	668.000	12/22/97	2679.9	0 6	45462 3	100017.1
12/27/97	13	1300	5215.4	1 2	41203.7	668.000	12/22/97	2679.9	0.6	45476 5	100048.3
12/28/97	13	1300	5215 4	1 2	41231.4	668.000	12/22/97	2679.9	0.6	45490 7	100079.6
12/29/97	13	1300	5215 4	1.2	41259.0	150 900	12/29/97	605.4	0 1	45493 9	100086.7
12/30/97	14	1400	5616 6	1 3	41289.0	150 900	12/29/97	605 4	0 1	45497 2	100093.8
12/31/97	12	1200	4814.2	1.1	41314.3	150.900	12/29/97	605 4	0 1	45500 4	100100.8
1/1/98	12	1200	4814 2	1 1	41339.7	150.900	12/29/97	605.4	0 1	45503 5	100107.8
1/2/98	12	1200	4814 2	1 1	41365.0	150.900	12/29/97	605 4	0 1	45506 7	100114.8
1/3/98	12	1200	4814 2	1 1	41390 3	150 900	12/29/97	605 4	0 1	45509 9	100121.8
1/4/98	12	1200	4814 2	1 1	41415.6	150.900	12/29/97	605 4	0 1	45513 1	100128.8
1/5/98	12	1200	4814 2	1 1	41441.0	95.600	1/5/98	383 5	0 1	45515 1	100133.2
1/6/98	14	1400	5616 6	1 3	41472 1	95 600	1/5/98	383 5	0 1	45517 2	100137.9
1/7/98	12	1200	4814 2	1 1	41499.6	95 600	1/5/98	383 5	0 1	45519 4	100142.7

SVE SYSTEM HYDROCARBON MASS REMOVAL CALCULATIONS, TANK 398 SITE
MCAS EL TORO, CALIFORNIA

Date	LEL	Converted TPH*		Removal Rate	Cum. Mass	System Infl.	Laboratory	System Infl.	Removal Rate	Cum. Mass	Cum. Mass
		From LEL	From LEL	From LEL	From LEL	Conc. - Lab.	Sample Date	Conc. - Lab.	From Lab.	From Lab.	From Lab.
	(%)	(ppmv)	(mg/m3)	(kg/hour)	(kg)	(ppmv)		(mg/m3)	(kg/hour)	(kg)	(lb)
1/8/98	12	1200	4814.2	1.1	41527.1	95.600	1/5/98	383.5	0.1	45521.6	100147.6
1/9/98	12	1200	4814.2	1.1	41553.2	95.600	1/5/98	383.5	0.1	45523.7	100152.1
1/10/98	12	1200	4814.2	1.1	41579.3	95.600	1/5/98	383.5	0.1	45525.8	100156.7
1/11/98	13	1300	5215.4	1.2	41607.6	95.600	1/5/98	383.5	0.1	45527.9	100161.3
1/12/98	13	1300	5215.4	1.1	41633.9	792.470	1/12/98	3179.3	0.7	45543.9	100196.6
1/13/98	12	1200	4814.2	1.0	41659.1	792.470	1/12/98	3179.3	0.7	45560.5	100233.2
1/14/98	12	1200	4814.2	1.0	41684.2	792.470	1/12/98	3179.3	0.7	45577.1	100269.7
1/15/98	12	1200	4814.2	1.0	41709.3	792.470	1/12/98	3179.3	0.7	45593.7	100306.2
1/16/98	12	1200	4814.2	1.0	41734.4	792.470	1/12/98	3179.3	0.7	45610.3	100342.7
1/17/98	12	1200	4814.2	1.0	41759.6	792.470	1/12/98	3179.3	0.7	45626.9	100379.2
1/18/98	12	1200	4814.2	1.0	41784.7	792.470	1/12/98	3179.3	0.7	45643.5	100415.7
1/19/98	12	1200	4814.2	1.0	41809.8	854.400	1/18/98	3427.7	0.7	45661.4	100455.0
1/20/98	12	1200	4814.2	1.0	41835.0	854.400	1/18/98	3427.7	0.7	45679.3	100494.4
1/21/98	12	1200	4814.2	1.0	41860.1	854.400	1/18/98	3427.7	0.7	45697.2	100533.8
1/22/98	12	1200	4814.2	1.0	41885.2	854.400	1/18/98	3427.7	0.7	45715.1	100573.1
1/23/98	9	900	3610.6	0.9	41906.0	854.400	1/18/98	3427.7	0.8	45734.8	100616.5
1/24/98	9	900	3610.6	0.9	41926.7	854.400	1/18/98	3427.7	0.8	45754.5	100659.8
1/25/98	9	900	3610.6	0.9	41947.5	854.400	1/18/98	3427.7	0.8	45774.2	100703.2
1/26/98	3	300	1203.5	0.3	41953.6	854.400	1/18/98	3427.7	0.7	45791.6	100741.6
1/27/98	15	1500	6017.7	1.2	41983.6	854.400	1/18/98	3427.7	0.7	45808.7	100779.1
1/28/98	15	1500	6017.7	1.3	42014.2	854.400	1/18/98	3427.7	0.7	45826.2	100817.6
1/29/98	15	1500	6017.7	1.3	42044.9	854.400	1/18/98	3427.7	0.7	45843.6	100856.0
1/30/98	15	1500	6017.7	1.3	42075.3	854.400	1/18/98	3427.7	0.7	45861.0	100894.1
1/31/98	15	1500	6017.7	1.3	42105.8	854.400	1/18/98	3427.7	0.7	45878.3	100932.3
2/1/98	15	1500	6017.7	1.3	42136.2	854.400	1/18/98	3427.7	0.7	45895.6	100970.4
2/2/98	15	1500	6017.7	1.3	42167.8	854.400	1/18/98	3427.7	0.7	45913.6	101010.0
2/3/98	15	1500	6017.7	1.2	42195.8	854.400	1/18/98	3427.7	0.7	45929.6	101045.1
2/4/98	15	1500	6017.7	1.2	42225.3	854.400	1/18/98	3427.7	0.7	45946.4	101082.0
2/5/98	15	1500	6017.7	1.2	42253.9	854.400	1/18/98	3427.7	0.7	45962.7	101118.0
2/6/98	15	1500	6017.7	1.5	42281.5	854.400	1/18/98	3427.7	0.8	45978.4	101152.5
2/7/98	15	1500	6017.7	1.5	42301.9	854.400	1/18/98	3427.7	0.8	45990.0	101178.0
2/8/98	0	0	0.0	0.0	42301.9	854.400	1/18/98	3427.7	0.0	45990.0	101178.0
2/9/98	15	1500	6017.7	1.6	42339.9	854.400	1/18/98	3427.7	0.9	46011.7	101225.7
2/10/98	15	1500	6017.7	1.5	42384.2	854.400	1/18/98	3427.7	0.9	46036.9	101281.2
2/11/98	15	1500	6017.7	1.5	42421.3	854.400	1/18/98	3427.7	0.9	46058.0	101327.6
2/12/98	22	2200	8826.0	2.3	42478.5	854.400	1/18/98	3427.7	0.9	46080.3	101376.6
2/13/98	25	2500	10029.6	2.6	42543.4	854.400	1/18/98	3427.7	0.9	46102.4	101425.3
2/14/98	25	2500	10029.6	2.6	42569.1	854.400	1/18/98	3427.7	0.9	46111.2	101444.7
2/15/98	0	0	0.0	0.0	42569.1	854.400	1/18/98	3427.7	0.0	46111.2	101444.7
2/16/98	25	2500	10029.6	2.6	42600.0	854.400	1/18/98	3427.7	0.9	46121.8	101467.9
2/17/98	25	2500	10029.6	2.6	42620.6	854.400	1/18/98	3427.7	0.9	46128.8	101483.4
2/18/98	25	2500	10029.6	2.6	42654.0	854.400	1/18/98	3427.7	0.9	46140.2	101508.5
2/19/98	25	2500	10029.5	2.6	42679.8	185.470	2/19/98	744.1	0.2	46142.1	101512.7
2/20/98	21	2100	8424.8	2.7	42733.0	185.470	2/19/98	744.1	0.2	46146.9	101523.1
2/21/98	21	2100	8424.8	2.7	42797.6	185.470	2/19/98	744.1	0.2	46152.6	101535.6
2/22/98	21	2100	8424.8	2.7	42862.2	185.470	2/19/98	744.1	0.2	46158.3	101548.2
2/23/98	21	2100	8424.8	2.7	42926.8	185.470	2/19/98	744.1	0.2	46164.0	101560.7
2/24/98	21	2100	8424.8	2.7	42991.4	185.470	2/19/98	744.1	0.2	46169.7	101573.3
2/25/98	21	2100	8424.8	2.7	43056.0	185.470	2/19/98	744.1	0.2	46175.4	101585.8
2/26/98	21	2100	8424.8	2.7	43120.5	185.470	2/19/98	744.1	0.2	46181.1	101598.4
2/27/98	21	2100	8424.8	2.7	43185.1	185.470	2/19/98	744.1	0.2	46186.8	101610.9

SVE SYSTEM HYDROCARBON MASS REMOVAL CALCULATIONS, TANK 398 SITE
MCAS EL TORO, CALIFORNIA

Date	LEL	Converted TPH*		Removal Rate	Cum. Mass	System Infl.	Laboratory	System Infl.	Removal Rate	Cum. Mass	Cum. Mass
		From LEL	From LEL	From LEL	From LEL	Conc. - Lab.	Sample Date	Conc. - Lab.	From Lab.	From Lab.	From Lab.
	(%)	(ppmv)	(mg/m3)	(kg/hour)	(kg)	(ppmv)		(mg/m3)	(kg/hour)	(kg)	(lb)
2/28/98	21	2100	8424.8	2.7	43249.7	185.470	2/19/98	744.1	0.2	46192.5	101623.5
3/1/98	21	2100	8424.8	2.7	43314.3	185.470	2/19/98	744.1	0.2	46198.2	101636.0
3/2/98	21	2100	8424.8	2.7	43381.6	185.470	2/19/98	744.1	0.2	46204.1	101649.1
3/3/98	21	2100	8424.8	2.7	43397.7	185.470	2/19/98	744.1	0.2	46205.6	101652.2
3/4/98	21	2100	8424.8	2.7	43462.3	185.470	2/19/98	744.1	0.2	46211.3	101664.8
3/5/98	21	2100	8424.8	2.7	43526.9	185.470	2/19/98	744.1	0.2	46217.0	101677.3
3/6/98	21	2100	8424.8	2.7	43591.5	185.470	2/19/98	744.1	0.2	46222.7	101689.9
3/7/98	21	2100	8424.8	2.7	43656.1	185.470	2/19/98	744.1	0.2	46228.4	101702.4
3/8/98	21	2100	8424.8	2.7	43720.6	185.470	2/19/98	744.1	0.2	46234.1	101715.0
3/9/98	21	2100	8424.8	2.7	43785.2	185.470	2/19/98	744.1	0.2	46239.8	101727.5
3/10/98	21	2100	8424.8	2.7	43849.8	185.470	2/19/98	744.1	0.2	46245.5	101740.1
3/11/98	21	2100	8424.8	2.0	43898.6	185.470	2/19/98	744.1	0.2	46249.8	101749.5
3/12/98	21	2100	8424.8	2.0	43947.4	185.470	2/19/98	744.1	0.2	46254.1	101759.0
3/13/98	21	2100	8424.8	2.0	43996.2	185.470	2/19/98	744.1	0.2	46258.4	101768.5
3/14/98	21	2100	8424.8	2.0	44032.7	185.470	2/19/98	744.1	0.2	46261.6	101775.6
3/15/98	0	0	0.0	0.0	44032.7	185.470	2/19/98	744.1	0.0	46261.6	101775.6
3/16/98	21	2100	8424.8	2.0	44073.4	185.470	2/19/98	744.1	0.2	46265.2	101783.5
3/17/98	21	2100	8424.8	2.0	44122.2	185.470	2/19/98	744.1	0.2	46269.5	101793.0
3/18/98	21	2100	8424.8	2.0	44173.0	185.470	2/19/98	744.1	0.2	46274.0	101802.9
3/19/98	21	2100	8424.8	2.0	44221.8	1080.360	3/19/98	4334.2	1.0	46299.1	101858.1
3/20/98	21	2100	8424.8	2.0	44270.5	1080.360	3/19/98	4334.2	1.0	46324.2	101913.3
3/21/98	21	2100	8424.8	2.0	44319.3	1080.360	3/19/98	4334.2	1.0	46349.3	101968.5
3/22/98	21	2100	8424.8	2.0	44368.1	1080.360	3/19/98	4334.2	1.0	46374.4	102023.7
3/23/98	21	2100	8424.8	2.0	44416.9	1080.360	3/19/98	4334.2	1.0	46399.5	102078.9
3/24/98	11	1100	4413.0	1.1	44437.1	1080.360	3/19/98	4334.2	1.0	46419.4	102122.6
3/25/98	0	0	0.0	0.0	44437.1	1080.360	3/19/98	0.0	0.0	46419.4	102122.6
3/26/98	0	0	0.0	0.0	44437.1	1080.360	3/19/98	0.0	0.0	46419.4	102122.6
3/27/98	0	0	0.0	0.0	44437.1	1080.360	3/19/98	0.0	0.0	46419.4	102122.6
3/28/98	0	0	0.0	0.0	44437.1	1080.360	3/19/98	0.0	0.0	46419.4	102122.6
3/29/98	0	0	0.0	0.0	44437.1	1080.360	3/19/98	0.0	0.0	46419.4	102122.6
3/30/98	0	0	0.0	0.0	44437.1	1080.360	3/19/98	0.0	0.0	46419.4	102122.6
3/31/98	0	0	0.0	0.0	44437.1	1080.360	3/19/98	0.0	0.0	46419.4	102122.6
4/1/98	23	2300	9227.2	4.7	44526.2	1080.360	3/19/98	4334.2	2.2	46461.2	102214.7
4/2/98	24	2400	9628.4	4.7	44630.6	1080.360	3/19/98	4334.2	2.1	46508.2	102318.0
4/3/98	23	2300	9227.2	5.2	44730.0	1080.360	3/19/98	4334.2	2.5	46554.9	102420.8
4/4/98	23	2300	9227.2	5.2	44855.7	1080.360	3/19/98	4334.2	2.5	46613.9	102550.7
4/5/98	23	2300	9227.2	5.2	44981.4	1080.360	3/19/98	4334.2	2.5	46673.0	102680.6
4/6/98	21	2100	8424.8	5.2	45095.1	1080.360	3/19/98	4334.2	2.7	46731.5	102809.2
4/7/98	26	2600	10430.7	7.2	45267.3	1080.360	3/19/98	4334.2	3.0	46803.0	102966.7
4/8/98	31	3100	12436.7	8.6	45515.5	1080.360	3/19/98	4334.2	3.0	46889.5	103157.0
4/9/98	31	3100	12436.7	8.6	45720.9	1080.360	3/19/98	4334.2	3.0	46961.1	103314.4
4/10/98	22	2200	8826.0	6.2	45831.8	1080.360	3/19/98	4334.2	3.0	47015.6	103434.3
4/11/98	21	2100	8424.8	5.9	45878.9	1080.360	3/19/98	4334.2	3.0	47039.8	103487.5
4/12/98	0	0	0.0	0.0	45878.9	1080.360	3/19/98	4334.2	0.0	47039.8	103487.5
4/13/98	20	2000	8023.6	4.0	45899.0	1080.360	3/19/98	4334.2	2.2	47050.7	103511.5
4/14/98	25	2500	10029.6	6.6	46037.5	1080.360	3/19/98	4334.2	2.8	47110.5	103643.2
4/15/98	27	2700	10831.9	7.3	46235.3	1080.360	3/19/98	4334.2	2.9	47189.7	103817.3
4/16/98	24	2400	9628.4	7.5	46400.8	1080.360	3/19/98	4334.2	3.4	47264.2	103981.2
4/17/98	24	2400	9628.4	7.5	46581.4	1080.360	3/19/98	4334.2	3.4	47345.5	104160.1
4/18/98	24	2400	9628.4	7.5	46762.0	1080.360	3/19/98	4334.2	3.4	47426.8	104338.9
4/19/98	24	2400	9628.4	7.5	46942.6	1080.360	3/19/98	4334.2	3.4	47508.1	104517.8

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		From LEL	From LEL	From LEL	From LEL	Conc. - Lab.	Sample Date	Conc. - Lab.	From Lab.	From Lab.	From Lab.
	(%)	(ppmv)	(mg/m3)	(kg/hour)	(kg)	(ppmv)		(mg/m3)	(kg/hour)	(kg)	(lb)
4/20/98	31	3100	12436.7	8.0	47102.0	1277.600	4/20/98	5125.5	3.3	47573.7	104662.2
4/21/98	3	300	1203.5	0.7	47121.9	1277.600	4/20/98	5125.5	3.0	47658.6	104848.9
4/22/98	4	400	1604.7	1.0	47144.1	1277.600	4/20/98	5125.5	3.1	47729.5	105004.9
4/23/98	3	300	1203.5	0.7	47158.7	1277.600	4/20/98	5125.5	3.1	47791.7	105141.7
4/24/98	3	300	1203.5	0.8	47176.1	1277.600	4/20/98	5125.5	3.2	47866.0	105305.2
4/25/98	3	300	1203.5	0.8	47194.3	1277.600	4/20/98	5125.5	3.2	47943.5	105475.8
4/26/98	3	300	1203.5	0.8	47212.6	1277.600	4/20/98	5125.5	3.2	48021.1	105646.3
4/27/98	1	100	401.2	0.3	47220.6	1277.600	4/20/98	5125.5	3.3	48123.4	105871.4
4/28/98	31	3100	12436.7	8.1	47244.9	1277.600	4/20/98	5125.5	3.3	48133.4	105893.5
4/29/98	35	3500	14041.4	11.5	47520.9	1277.600	4/20/98	5125.5	4.2	48234.1	106115.1
4/30/98	38	3800	15244.9	12.8	47738.0	1277.600	4/20/98	5125.5	4.3	48307.1	106275.7
5/1/98	37	3700	14843.8	12.2	48054.0	1277.600	4/20/98	5125.5	4.2	48416.3	106515.8
5/2/98	37	3700	14843.8	12.2	48345.7	1277.600	4/20/98	5125.5	4.2	48517.0	106737.4
5/3/98	37	3700	14843.8	12.2	48637.5	1277.600	4/20/98	5125.5	4.2	48617.7	106959.0
5/4/98	28	2800	11233.1	9.3	48897.2	1277.600	4/20/98	5125.5	4.2	48736.2	107219.7
5/5/98	30	3000	12035.5	10.5	49149.5	1277.600	4/20/98	5125.5	4.5	48843.7	107456.1
5/6/98	30	3000	12035.5	10.5	49338.6	1277.600	4/20/98	5125.5	4.5	48924.2	107633.3
5/7/98	0	0	0.0	0.0	49338.6	1277.600	4/20/98	0.0	0.0	48924.2	107633.3
5/8/98	0	0	0.0	0.0	49338.6	1277.600	4/20/98	0.0	0.0	48924.2	107633.3
5/9/98	0	0	0.0	0.0	49338.6	1277.600	4/20/98	0.0	0.0	48924.2	107633.3
5/10/98	0	0	0.0	0.0	49338.6	1277.600	4/20/98	0.0	0.0	48924.2	107633.3
5/11/98	0	0	0.0	0.0	49338.6	1277.600	4/20/98	0.0	0.0	48924.2	107633.3
5/12/98	18	1800	7221.3	4.7	49357.4	1277.600	4/20/98	5125.5	3.3	48937.5	107662.6
5/13/98	19	1900	7622.5	5.1	49469.1	1277.600	4/20/98	5125.5	3.4	49012.6	107827.8
5/14/98	26	2600	10430.7	7.1	49667.1	1277.600	4/20/98	5125.5	3.5	49109.9	108041.9
5/15/98	27	2700	10831.9	6.8	49790.0	1277.600	4/20/98	5125.5	3.2	49168.1	108169.8
5/16/98	27	2700	10831.9	6.8	49953.8	1277.600	4/20/98	5125.5	3.2	49245.6	108340.4
5/17/98	27	2700	10831.9	6.8	50117.7	1277.600	4/20/98	5125.5	3.2	49323.2	108511.0
5/18/98	36	3600	14436.4	9.9	50324.8	791.000	5/18/98	3172.0	2.2	49368.7	108611.1
5/19/98	34	3400	13634.4	8.2	50546.8	791.000	5/18/98	3172.0	1.9	49420.3	108724.7
5/20/98	33	3300	13233.4	4.5	50655.8	791.000	5/18/98	3172.0	1.1	49446.4	108782.2
5/21/98	34	3400	13634.4	9.0	50871.5	791.000	5/18/98	3172.0	2.1	49496.6	108892.6
5/22/98	33	3300	13233.4	4.5	50980.5	791.000	5/18/98	3172.0	1.1	49522.8	108950.1
5/23/98	33	3300	13233.4	4.5	51089.5	791.000	5/18/98	3172.0	1.1	49548.9	109007.5
5/24/98	33	3300	13233.4	4.5	51198.5	791.000	5/18/98	3172.0	1.1	49575.0	109065.0
5/25/98	33	3300	13233.4	4.5	51298.4	791.000	5/18/98	3172.0	1.1	49599.0	109117.7
5/26/98	28	2800	11228.3	7.8	51337.4	791.000	5/18/98	3172.0	2.2	49610.0	109142.0
5/27/98	28	2800	11228.3	7.8	51524.2	791.000	5/18/98	3172.0	2.2	49662.8	109258.1
6/5/98	25	2500	10025.3	6.8	52660.3	791.000	5/18/98	3172.0	2.1	50022.2	110048.8
6/12/98	21	2100	8421.2	5.6	53592.9	791.000	5/18/98	3172.0	2.1	50373.5	110821.7
6/18/98	29	2900	11629.3	8.1	54759.4	723.000	6/18/98	2899.0	2.0	50664.3	111461.4
6/26/98	18	1800	7218.2	5.1	55735.1	723.000	6/18/98	2899.0	2.0	51056.1	112323.5
6/29/98	19	1900	7619.2	2.5	55915.6	723.000	6/18/98	2899.0	1.0	51124.8	112474.6
7/9/98	15	1500	6015.2	4.2	57535.5	723.000	6/18/98	2899.0	2.0	51905.5	114192.1
7/16/98	20	2000	8020.2	5.6	57669.6	777.000	7/16/98	3117.0	2.2	51957.6	114306.8
7/21/98	20	2000	8020.2	5.5	58311.7	777.000	7/16/98	3117.0	2.1	52207.2	114855.8
7/30/98	14.6	1460	5854.8	4.0	58687.7	777.000	7/16/98	3117.0	2.1	52407.3	115296.2
8/7/98	14.7	1470	5894.9	3.8	59426.5	777.000	7/16/98	3117.0	2.0	52798.0	116155.6

SVE SYSTEM HYDROCARBON MASS REMOVAL CALCULATIONS, TANK 398 SITE
MCAS EL TORO, CALIFORNIA

Date	LEL	Converted TPH*		Removal Rate	Cum. Mass	System Infl.	Laboratory	System Infl.	Removal Rate	Cum. Mass	Cum. Mass
		From LEL	From LEL	From LEL	From LEL	Conc. - Lab.	Sample Date	Conc. - Lab.	From Lab.	From Lab.	From Lab.
	(%)	(ppmv)	(mg/m3)	(kg/hour)	(kg)	(ppmv)		(mg/m3)	(kg/hour)	(kg)	(lb)
8/17/98	14.9	1490	5975.1	3.9	60368.4	777.000	7/16/98	3117.0	2.0	53289.4	117236.6
8/24/98	15.8	1580	6336.0	4.4	60827.4	1320.000	8/25/98	5297.0	3.7	53673.1	118080.9
8/31/98	21.5	2150	8621.7	5.7	61793.6	1320.000	8/25/98	5297.0	3.5	54266.7	119386.8
9/4/98	20.8	2080	8341.0	5.4	62563.7	1320.000	8/25/98	5297.0	3.4	54755.8	120462.7
9/11/98	19	1900	7619.2	5.2	63178.8	1320.000	8/25/98	5297.0	3.6	55183.4	121403.5
9/18/98	24.1	2410	9664.4	5.1	63551.8	1320.000	8/25/98	5297.0	2.8	55725.0	122595.0
9/25/98	18.6	1860	7458.8	4.2	64222.3	912.000	9/22/98	3659.0	2.1	56236.9	123721.2

Appendix C
Free Product Recovery Data

TANK 398 FREE PRODUCT RECOVERY SYSTEM
MASS REMOVAL CALCULATION
MCAS, El Toro

Date	Total Liquid inside AST	Water inside AST	Water Prod.	Cum Water Prod.	Free Product inside AST	Free Product Prod.	Bailed Product	Cum Free Product Recovered (Gal)	Cum Free Product Recovered (kg)	Remarks
12/1/95	**0**	**0**		**0**					**0**	
3/31/96	**1330**			**489**				**841**	2710	
6/28/96	**1435**			**2270**				**3165**	10198	
9/30/96	**651**			**4010**				**4641**	14955	
12/31/96	**2519**			**5349**	**1069**			**5538**	17845	
3/31/97	**2512**			**7187**	**1355**			**7105**	22894	
6/31/97	**2257**			**7564**	**2040**			**7790**	25102	
11/1/97								**7845**	25279	
11/19/97							37.41	7882.41	25399	
11/20/97							27.73	7910.14	25489	
11/24/97							27.45	7937.59	25577	
12/3/97							9.75	7947.34	25608	
12/4/97							26.75	7974.09	25695	
12/5/97	461	226.8	226.8	7790.8	234.2	234.2		8208.29	26449	From initial digital liquid level readout. Initial storage tank contents.
12/29/97	1406.8	884.2	657.4	8448.2	522.6	288.4		8651.69	27878	
12/30/97	1412.2	884.2	0.0	8448.2	528.0	5.4		8657.09	27896	
1/12/98	1490.3	961.0	76.8	8525.0	529.3	1.3		8647.09	27863	#VALUE!
1/13/98	1496.9	965.8	4.8	8529.8	531.1	1.8		8648.89	27869	
1/23/98	2171.9	1579.2	613.4	9143.2	592.7	61.6		8560.59	27585	
1/26/98	2259.2	1631.6	52.4	9195.6	627.6	34.9		8595.49	27697	
1/28/98	346.7	220.4	[illegible]	9195.6	126.3	[illegible]		8595.49	27697	1411.2 gallons of water and 501.3 gallons of free product were REMOVED from 4000-gallon AST and transported to Central Treatment Facility.
1/30/98	372.0	220.4	0.0	9195.6	151.6	25.3		8620.79	27779	
2/2/98	403.8	220.4	0.0	9195.6	183.4	31.8		8652.59	27881	
2/3/98	429.6	230.0	9.6	9205.2	199.6	16.2		8668.79	27933	
2/4/98	457.8	239.6	9.6	9214.8	218.2	18.6		8687.39	27993	
2/5/98	467.7	242.8	3.2	9218.0	224.9	6.7	10.75	8704.84	28049	
2/6/98	473.8	242.8	0.0	9218.0	231.0	6.1	0.00	8710.94	28069	
2/9/98	495.0	250.0	7.2	9225.2	245.0	14.0	0.50	8725.44	28116	C-101 was turned off at 11:05. PSV-101 failed. J. Neahaus and B. Sedlak informed.
2/10/98	499.3	250.0	0.0	9225.2	249.3	4.3		8729.74	28130	C-101 was still off.
2/11/98	499.3	250.0	0.0	9225.2	249.3	0.0		8729.74	28130	C-101 was serviced. It will be back on line tomorrow.

Date	Total Liquid inside AST	Water inside AST	Water Prod.	Cum Water Prod.	Free Product inside AST	Free Product Prod.	Bailed Product	Cum Free Product Recovered (Gal)	Cum Free Product Recovered (kg)	Remarks
2/12/98	499.5	250.0	0.0	9225.2	249.5	0.2		8729.94	28130	PSV-101 is still coming off due to pressures over 200 psi on the 1" discharge line.
2/20/98	524.6	250.0	0.0	9225.2	274.6	25.1		8755.04	28211	C-101 is off. PSV-101 is still coming off. Waiting for new PSV rated at 250 psi.
3/2/98	584.7	250.0	0.0	9225.2	334.7	60.1		8815.14	28405	
3/3/98	595.6	250.0	0.0	9225.2	345.6	10.9		8826.04	28440	
3/11/98	690.0	316.0	66.0	9291.2	374.0	28.4		8854.44	28531	Pumps need to be readjusted because they are producing more water than product. Wells MW-26, 25, 03, 02,ASMW02, and RW01 bailed
3/16/98	839.0	453.0	137.0	9428.2	386.0	12.0		8866.44	28570	
3/17/98	849.0	463.0	10.0	9438.2	386.0	0.0	7.60	8874.04	28595	
3/18/98	961.8	565.0	102.0	9530.2	396.8	10.8		8884.84	28629	
3/19/98	999.9	599.0	34.0	9564.2	400.9	4.1	4.85	8893.79	28658	
3/23/98	1040.8	638.0	39.0	9603.2	402.8	1.9		8895.69	28664	
3/24/98	1148.9	740.4	102.4	9666.6	408.5	5.7	1.9	8903.29	28689	System shutdown
3/27/98	1155.9	747.4	7.0	9673.6	408.5	0.0	18.50	8921.79	28748	Free Product Recovery System was shutdown to service submersible pumps and perform pilot test.
3/30/98	1178.2	769.7	22.3	9695.9	408.5	0.0	35.25	8957.04	28862	system off
4/6/98	1271.3	804.7	35.0	9730.9	408.5	0.0	58.13	9015.17	29049	
4/9/98	13.2	4.6	0.0	9730.9	8.5	0.0		9015	29049	EMPTIED 400 gal INTO DRMO FUEL TK. REMOVED 800 gal WATER
4/13/98	199.2	114.7	110.0	9840.9	84.5	76.0	25.45	9091	29294	Pumped approx. 186 gal. from drums to AST
4/14/98	199.2	114.7	0.0	9840.9	84.5	0.0	2.33	9093	29302	
4/16/98	199.2	114.7	0.0	9840.9	84.5		1.50	9095	29307	System off
4/17/98	199.2	114.7	0.0	9840.9	84.5		12.90	9108	29348	System off
4/20/98	284.2	154.7	40.0	9880.9	129.5	45.0	25.25	9153	29493	System off, testing SVE enhanced performance & pump testing RW02 Pumped approx. 100 gal. from drums to AST
4/24/98	284.2	154.7	0.0	9880.9	129.5		14.30	9167	29539	System off, testing SVE enhanced performance & pump testing RW02
4/27/98	284.2	154.7	0.0	9880.9	129.5		11.55	9179	29576	System off, testing SVE enhanced performance & pump testing RW02
4/29/98	364.2	194.7	40.0	9920.9	169.5	40.0	20.65	9219	29705	System off, testing SVE enhanced performance & pump testing RW02 Pumped approx. 80 gal. from drums to AST
5/1/98	364.2	194.7	0.0	9920.9	169.5		3.50	9222	29717	System off, testing SVE enhanced performance & pump testing RW02
5/5/98	364.2	194.7	0.0	9920.9	169.5		8.55	9231	29744	System off, testing SVE enhanced performance & pump testing RW02
5/7/98	364.2	194.7	0.0	9920.9	169.5		8.90	9240	29773	System off, testing SVE enhanced performance & pump testing RW02
5/8/98	364.2	194.7	0.0	9920.9	169.5		8.65	9248	29801	System off, testing SVE enhanced performance & pump testing RW02
5/11/98	364.2	194.7	0.0	9920.9	169.5		9.45	9258	29831	
5/12/98	379.2	209.7	15.0	9935.9	169.5		11.95	9270	29870	SVE Liquids added to AST
5/13/98	390.4	210.8	1.2	9937.0	179.6	10.1	2.40	9272	29877	Product Recovery System was restarted at 10:00.
5/14/98	650.0	410.0	199.2	10136.2	240.0	60.4	0.00	9333	30072	Pumped approx. 80 gal. from drums to AST
5/15/98	857.3	605.0	195.0	10331.2	252.3	12.3	0.00	9345	30112	Pumped approx. 90 gal. from drums to AST
5/18/98	874.7	622.0	17.0	10348.2	252.7	0.4	0.00	9345	30113	
5/19/98	875.1	622.0	0.0	10348.2	253.1	0.4	3.70	9349	30126	
5/20/98	1008.9	738.0	116.0	10464.2	270.9	17.8	0.00	9367	30183	

Date	Total Liquid inside AST	Water inside AST	Water Prod.	Cum Water Prod.	Free Product inside AST	Free Product Prod.	Bailed Product	Cum Free Product Recovered (Gal)	Cum Free Product Recovered (kg)	Remarks
5/21/98	1102.0	825.0	87.0	10551.2	277.0	6.1	0.00	9373	30203	Pumped approx. 40 gal. from drums to AST
6/12/98	3688.0	3297.0	2472.0	13023.2	391.0	114.0	0.00	9487	30570	1900 gal wtr removed from AST
6/15/98	1753.0	1356.0	119.0	13142.2	397.0	6.0	0.00	9493	30590	Pumped approx. 160 gal. from drums to AST
6/23/98	2093	1636	280.0	13422.2	457.0	60.0	0	9433	30396	
7/23/98	2963	2401	765.0	14187.2	562.0	105.0	2.81	9541	30744	
8/7/98	3242	2650	249.0	14436.2	592.0	30.0	0	9571	30841	2200 gal wtr removed from AST
8/14/98	1315	702	252.0	14688.2	613	21.0	0	9592	30908	
8/21/98	1742	1113	411.0	15099.2	629	16.0	0	9608	30960	
8/28/98	2130	1486	373.0	15472.2	644	15.0	0	9623	31008	
9/3/98	2342	1690	204.0	15676.2	652	8.0	0	9631	31034	
9/11/98	2701	2041	351.0	16027.2	660	8.0	1	9638	31056	
9/18/98	2878	2209	168.0	16195.2	669	9.0	0	9647	31085	
9/25/98	3319	2645	436.0	16631.2	674	5.0	0	9652	31102	9/22, pumped approx. 200 gal. from drums to AST

Appendix D
Geologic Logs for Confirmation Sampling

Geologic Log/Well Construction CB 398-02

Project **MCAS/EL TORO**	Drilling Company LAYNE CHRISTENSEN		
Project Number **918609**	Drill Rig AP1000	Begin Drilling 1/14/00	
Client SWDIV	Driller MARTIN	End Drilling 1/14/00	
Location **EL TORO-CB 398**	Drill Method DWRCPH	Well Completion Date 1/14/00	
Geologist A. SIDDIQUI / Checked By A. SIDDIQUI	Date Drilled 1/14/00		
Borehole Diameter 10 INCHES	Total Depth of Borehole 190 FEET bgs	Depth to Water NA	

LITHOLOGICAL DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)	WELL DETAIL
Poorly graded SAND (SP): Yellowish brown (10YR 5/4), 85% fine to medium sand, 15% fine subangular gravel, trace fines, slightly moist, medium dense.	0–10	SP			0	20, 17, 18	6, 6, 6	GROUT (CEMENT-BENTONITE MIXTURE)
18609-2642 Sample collected at 20-20.5 feet bgs. Poorly graded SAND (SP): Light olive brown (2.5Y 5/3), 100% fine well sorted sand, trace fines, slightly moist, medium dense, hydrocarbon odor.	10–20	SP			0	12, 10, 11	6, 6, 6	
Clayey SILT (ML): Dark grayish brown (2.5Y 4/2), 100% medium plastic fines, moist, very stiff, interbedded with silty sand, lenses at places, strong hydrocarbon odor, sand lenses between 20-45 feet.	20–30	ML			157	5, 7, 11	6, 6, 6	
18609-2643/2644 Sample collected at 39.5-40.5 feet bgs. Clayey SILT (ML): Same as above, saturated with hydrocarbon, interbedded with sand that is also saturated with hydrocarbon.	30–40	ML			1457	3, 5	6, 6	

NOTE: This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

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Geologic Log/Well Construction CB 398-02

Project MCAS–EL TORO Project No. 918609

DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 In.	Recovery (6 inches)	WELL DETAIL
18609-2643/2644 Sample collected at 39.5-40.5 feet bgs. Clayey SILT (ML): Same as above, saturated with hydrocarbon, interbedded with sand that is also saturated with hydrocarbon.	40	ML				8	6	GROUT (CEMENT-BENTONITE MIXTURE)
	42							
	44							
	46							
	48							
Silty CLAY (CH): Dark yellowish brown (10YR 3/4), 100% high plastic fines, slightly moist, hard, moderate hydrocarbon odor.	50	CH			217	5 12 23	6 6 6	
Sand shows up in soil cuttings from 52 feet.	52							
	54							
	56							
Poorly graded SAND with SILT (SP-SM): Olive brown (2.5Y 4/3), 90% fine to medium sand 10% fines, slightly moist, very dense, hydrocarbon odor, not enough recovery for lab sample.	58	SP-SM			671	24 50/3	4 0	
18609-2645 Sample collected at 61-61.5 feet bgs. Poorly graded SAND (SP): Light olive brown (2.5Y 5/3), 100% fine sand, trace gravel, trace fines, slightly moist, very dense, strong hydrocarbon odor.	60	SP			556	100 50 50	6 6 6	
	62							
	64							
	66							
Sandy SILT (ML): Dark yellowish brown (10YR 4/4), 75% medium plastic fines, 25% fine to medium sand, slightly moist, hard, hydrocarbon odor.	68	ML			764 15	20 15 33	6 6 6	
	70							
	72							
	74							
	76							
	78							
Same as above, strong hydrocarbon odor.	80	ML			187	12 21	6 6	

Geologic Log/Well Construction CB 398-02

Project MCAS–EL TORO Project No. 918609

DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 In.	Recovery (6 inches)	WELL DETAIL
	80	ML				25	6	
Same as above, strong hydrocarbon odor. Sand begins to show up in soil cuttings at 84 feet.	82							
	84							
	86	SP						
	88							
Poorly graded SAND (SP): Grayish brown (2.5Y 5/2), 100% fine well sorted sand, trace fines, slightly moist, medium dense, hydrocarbon odor, bottom 3" of sample consist of discolored dark grayish brown to dark gray silty sand.	90				231	18 15 18	6 6 6	
	92							
	94							
	96							
	98							
Silty SAND (SM): Dark grayish brown (2.5Y 4/2), 70% fine sand, 30% medium plastic fines, slightly moist, dense, strong hydrocarbon odor.	100	ML			471	15 30 29	6 6 6	
	102							
Silty SAND (SM): Olive brown (2.5Y 4/3), 80% fine sand, 20% fines, slightly moist, dense, hydrocarbon odor.	104				287	33 31 36	6 6 6	
	106							
	108							
Poorly graded SAND (SP): Light olive brown (2.5Y 5/4), 95% fine to medium sand, 5% fines, slightly moist, dense, upper 6 " contains 20% fine to coarse gravel, hydrocarbon odor.	110	SP			610	20 27 42	6 6 6	
	112							
	114							
	116	ML						
	118							
Sandy/clayey SILT (ML): Olive brown (2.5Y 4/4), 80% medium plastic fines, 20% fine sand, slightly moist, hard, hydrocarbon odor.	120				829	10 27	6 6	GROUT (CEMENT-BENTONITE MIXTURE)

Geologic Log/Well Construction CB 398-02

Project MCAS-EL TORO Project No. 918609

DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 In.	Recovery (6 inches)	WELL DETAIL
Sandy/clayey SILT (ML): Olive brown (2.5Y 4/4), 80% medium plastic fines, 20% fine sand, slightly moist, hard, hydrocarbon odor.	120	ML				33	6	
	122							
18609-2648 Sample collected at 125-125.5 feet bgs. Poorly graded SAND (SP): Light yellowish brown (10YR 6/4), 100% fine very well sorted sand, trace fines, slightly moist, dense, hydrocarbon odor.	124	SP			572	23 32 39	6 6 6	
	126							
	128							
Poorly graded SAND with SILT (SP-SM): Light yellowish brown (10YR 6/4), 90% very well sorted fine sand, 10% medium plastic fines, slightly moist, medium dense, interbedded with sandy silt laminae at places, strong hydrocarbon odor.	130	SP-SM			0	15 26 25	6 6 6	
	132							
	134							
	136							
	138							
Sandy SILT (ML): Yellowish brown (10YR 5/4), 65% non plastic fines, 35% fine sand, slightly moist, very stiff, interbedded with lenses of poorly graded sand, strong hydrocarbon odor.	140				0	10 9 12	6 6 6	
	142							
	144	ML						
	146							
	148							
18609-2649 Sample collected at 149.5-150 feet bgs. Sandy SILT (ML): Brown (10YR 5/3), 75% low to medium plastic fines, 25% fine to medium sand, very moist, stiff, strong hydrocarbon odor, black color discoloration of soil in spots at places.	150				0	4 6 10	6 6 6	
	152							
	154							
	156							
Poorly graded SAND (SP): Yellowish brown (10YR 5/4), 95% fine to medium to coarse sand, 5% fine subangular gravel, trace fines, slightly moist, medium dense, strong hydrocarbon odor.	158	SP				11	6	
	160				0	18	4	

GROUT (CEMENT-BENTONITE MIXTURE)

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Geologic Log/Well Construction CB 398-02

Project MCAS–EL TORO Project No. 918609

DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 In.	Recovery (6 inches)	WELL DETAIL
Poorly graded SAND (SP): Yellowish brown (10YR 5/4), 95% fine to medium to coarse sand, 5% subangular gravel, trace fines, slightly moist, medium dense, strong hydrocarbon odor.	160	SP				23	0	GROUT (CEMENT-BENTONITE MIXTURE)
	162							
	164							
	166							
	168							
18609-2650 Sample collected at 169.5-170 feet bgs. Sandy SILT (ML): Olive brown (2.5Y 4/4), fine slightly plastic silts, very fine sands, 75% fines, 25% sand, slighty moist, strong odor.	170	ML			770	17 14 22	4 6 6	
	172							
	174	SP						
	176							
	178							
Silty SAND (SM): Pale olive (5Y 6/3), very fine sand, fines, slightly plastic silts, some small gravels, subrounded, subangular, slightly moist, strong odor, medium dense.	180	SM			0	8 12 21	4 6 6	
	182	SP						
18609-2651 Sample collected at 185-185.5 feet bgs. At 184', entering cobble zone, very dense, no recovery of samples. At 185', GRAVELS/sand (GW): Poorly sorted, subrounded to subangular, some angular gravels, fine to coarse sands.	184	GW			30 140	18 50 10 0 50	0 0 0 0	
	186							
	188							
18609-2652 Sample collected at 189.5-190 feet bgs. GRAVELS/sand (GW): Poorly sorted, subrounded to subangular, some angular gravels, fine to coarse sands, slightly moist to moist, strong odor.	190				500	9 19 32	6/2" 6 0	
End of boring at 190.5 feet.	192							
	194							
	196							
	198							
	200							

Geologic Log/Well Construction CB 398-03

Project **MCAS/EL TORO**	Drilling Company LAYNE CHRISTENSEN		
Project Number **918609**	Drill Rig AP1000	Begin Drilling 1/19/00	
Client SWDIV	Driller MARTIN	End Drilling 1/19/00	
Location **EL TORO-CB 398**	Drill Method DWRCPH	Well Completion Date 1/19/00	
Geologist A. SIDDIQUI / Checked By A. SIDDIQUI	Date Drilled 1/19/00		
Borehole Diameter 10 INCHES	Total Depth of Borehole 190 FEET bgs	Depth to Water NA	

LITHOLOGICAL DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)	WELL DETAIL
Poorly graded SAND (SP): Dark yellowish brown (10YR 4/4), 85% fine to medium sand, 10% fine subangular gravel, 5% fines, slightly moist, medium dense.	0–10	SP			0	17, 17, 18	6, 2, 0	GROUT (CEMENT-BENTONITE MIXTURE)
Poorly graded SAND (SP): Light olive brown (2.5Y 5/3), 100% fine well sorted sand, trace fines, slightly moist, medium dense, interbedded with lenses of sand, clayey silt, strong hydrocarbon odor.	10–20	SP			266	22, 18, 18	6, 6, 6	
Poorly graded SAND (SP): Olive gray (2.5Y 4/2), 100% fine to medium sand, moist, medium dense, very strong hydrocarbon odor at places, grades into silty sand.	20–30	SP			253	20, 15, 20	6, 6, 6	
Silty SAND (SM): Very dark grayihs brown (2.5Y 3/2), 70% fine to medium sand, 30% fines, saturated in hydrocarbon, loose, strong hydrocarbon odor.	30–40	SM			154	5, 7	6, 6	

OHM Remediation Services Corp.

NOTE: This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Geologic Log/Well Construction CB 398-03

Project MCAS–EL TORO Project No. 918609

DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 In.	Recovery (6 inches)	WELL DETAIL
Clayey SILT (ML): Very dark gray (5Y 3/1), 90% medium plastic fines, moist, stiff, strong hydrocarbon odor.	40					9	6	
	42							
	44							
	46							
	48					9	6	
18609-2680 Sample collected at 49.5-50 feet bgs. Clayey SILT (ML): Very dark gray (2.5Y 3/1), 90% medium to high plastic fines, slightly moist, very stiff, hydrocarbon odor.	50				62	18	6	
						26	6	
	52							
	54							
	56							
Clayey SILT (ML): Dark olive brown (2.5Y 3/3), 85% medium plastic fines, 15% fine sand, slightly moist, hard, strong odor.	58					11	6	
	60	ML			79	14	6	
						26	6	
	62							
	64							
	66							
18609-2682 Sample collected at 69.5-70 feet bgs. Clayey SILT (ML): Dark grayish brown (2.5Y 4/2), 85% medium plastic fines, 15% fine to medium sand, slightly moist, hard, hydrocarbon odor.	68					19	6	
	70				123	26	6	
						36	6	
	72							
Few gravels in clayey silt matrix, shows up in soil cuttings at 75'.	74							
	76							
	78							
Clayey/sandy SILT (ML): Dark grayish brown (10YR 4/2), 80% medium plastic fines, 20% fine sand, moist, hard, stained with trace product, strong hydrocarbon odor.	80				1528	16	6	
						22	6	

GROUT (CEMENT-BENTONITE MIXTURE)

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Geologic Log/Well Construction CB 398-03

Project MCAS–EL TORO Project No. 918609

DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 In.	Recovery (6 inches)	WELL DETAIL
Clayey/sandy SILT (ML): Dark grayish brown (10YR 4/2), 80% medium plastic fines, 20% fine sand, moist, hard, stained with trace product, strong hydrocarbon odor.	80	ML				28	6	GROUT (CEMENT-BENTONITE MIXTURE)
	82							
	84							
	86	SP						
	88							
Silty SAND (SM): Dark yellowish brown (10YR 4/4), 70% fine sand, 30% low plastic fines, slightly moist, dense, hydrocarbon odor.	90				0	26 31 50	6 0 6	
	92							
	94							
	96							
	98							
Silty SAND (SM): Brown (10YR 5/3), 75% fine sand, 25% low plastic fines, slightly moist, dense, strong hydrocarbon odor.	100				0	19 30 50	6 6 6	
	102	SM						
Silty SAND (SM): Olive brown (2.5Y 4/3), 80% fine sand, 20% fines, slightly moist, dense, hydrocarbon odor.	104							
	106							
	108							
Gravelly silty SAND (SM): Olive (5Y 4/3), 70% fine to medium sand, 15% fines, 15% fine to coarse sand, slightly moist, dense, strong hydrocarbon odor.	110				0	41 50/5	6 1	
	112							
	114							
	116							
	118							
Silty SILT (ML): Olive brown (2.5Y 4/4), 80% fine sand, 20% low plastic fines, slightly moist, dense, hydrocarbon staining, strong hydrocarbon odor.	120				0	16 29	6 6	

Geologic Log/Well Construction CB 398-03

Project MCAS–EL TORO Project No. 918609

DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 In.	Recovery (6 inches)	WELL DETAIL
Silty SILT (ML): Olive brown (2.5Y 4/4), 80% fine sand, 20% low plastic fines, slightly moist, dense, hydrocarbon staining, strong hydrocarbon odor.	120	SM				42	6	
	122							
	124							
	126							
	128							
Poorly graded SAND (SP): Light yellowish brown (2.5Y 6/4), 100% fine well sorted sand, trace fines, slightly moist, very dense, strong hydrocarbon odor at places grades into poorly graded sand with silt.	130	SP			0	14 27 50/4	6 6 6	
	132							
	134							
	136							
18609-2685 Sample collected at 139.5-140 feet bgs. Silty SAND (SM): Light olive brown (2.5Y 5/3), 75% fine sand, 25% low plastic fines, slightly moist, medium dense, strong hydrocarbon odor, amount of fines 20-30% variable.	138	SM			0	17 22 21	6 6 6	GROUT (CEMENT-BENTONITE MIXTURE)
	140							
	142							
	144							
	146							
18609-2686 Sample collected at 149.5-150 feet bgs. Silty CLAY (CL): Olive brown (2.5Y 4/3), 90% medium plastic fines, 10% fine sand, moist, very stiff, slightly hydrocarbon odor.	148							
	150	CL			0	7 9 11	6 6 6	
	152							
	154							
	156							
Clayey/sandy SILT (ML): Dark grayish brown (2.5Y 4/2), 90% low to medium plastic fines, 10% fine sand, moist, very stiff, hydrocarbon staining, interbedded with poorly graded sand, lenses of sand that are saturated with hydrocarbon, hydrocarbon odor.	158	ML						
	160				0	7 12	6 6	

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Geologic Log/Well Construction CB 398-03

Project MCAS–EL TORO Project No. 918609

DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 In.	Recovery (6 inches)	WELL DETAIL
Clayey/sandy SILT (ML): Dark grayish brown (2.5Y 4/2), 90% low to medium fines, 10% fine sand, moist, very stiff, hydrocarbon staining, interbedded with poorly graded sand, lenses of sand that are saturated with hydrocarbon odor.	160	ML				14	6	GROUT (CEMENT-BENTONITE MIXTURE)
	162							
	164							
	166							
	168							
Silty SAND (SM): Olive brown (2.5Y 4/4), 80% fine sand, 20% medium plastic fines, slightly moist, dense, interbedded with thin lens of sandy silt at places, strong hydrocarbon odor.	170	SM				29 39 42	4 6 6	
	172							
	174							
	176							
	178							
Poorly graded SAND (SP): Olive brown (2.5Y 5/3), 100% fine to medium sand, trace fines, slightly moist, very dense, strong hydrocarbon odor.	180	SP				10 14 50/5	4 6 6	
	182							
	184							
	186							
18609-2687 Sample collected at 189-189.5 feet bgs. Silty SAND (SM): Olive brown, (2.5Y 4/3), 75% fine sand, 25% low plastic fines, moist, medium dense, hydrocarbon odor.	188	SM				10 13 30	6 6 6	
End of boring at 190 feet.	190							
	192							
	194							
	196							
	198							
	200							

Geologic Log/Well Construction CB 398-10

Project **MCAS/EL TORO**	Drilling Company LAYNE CHRISTENSEN		
Project Number **918609**	Drill Rig AP1000	Begin Drilling 1/18/00	
Client SWDIV	Driller MARTIN	End Drilling 1/19/00	
Location **EL TORO-CB 398**	Drill Method DWRCPH	Well Completion Date 1/19/00	
Geologist A. SIDDIQUI / Checked By A. SIDDIQUI	Date Drilled 1/18/00		
Borehole Diameter 10 INCHES	Total Depth of Borehole 188.5 FEET bgs	Depth to Water NA	

LITHOLOGICAL DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)	WELL DETAIL
Silty SAND (SM): Dark yellowish brown (10YR 4/4), 80% fine sand, 20% fines, slightly moist, medium dense.	0–10	SM			0	17, 25, 20	6	GROUT (CEMENT-BENTONITE MIXTURE)
Sandy SILT (ML): Dark yellowish brown (10YR 3/6), 60% non to low plastic fines, 40% fine sand, slightly moist, very stiff, interbedded silty sand.	18–20				0	5, 9, 15	6	
Based on soil cuttings, sand lenses between 23-28'.	22–28							
SILT (SM): Brown (10YR 4/3), 90% low to medium plastic fines, 10% fine sand, moist, very stiff, micaceous.	28–30	ML			0	10, 9, 10	6	
Silty SAND (SM): Dark gray (2.5Y 4/1), 80% fine to medium sand, 20% low plastic fines, wet (product), medium dense, very strong hydrocarbon odor.	34–40	SM			232	7, 8	6	

NOTE: This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Geologic Log/Well Construction CB 398-10

Project MCAS–EL TORO Project No. 918609

DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 In.	Recovery (6 inches)
18609-2669 Sample collected at 40-40.5 feet bgs. Silty SAND (SM): Dark gray (2.5Y 4/1), 80% fine to medium sand, 20% low plastic fines, wet (product), medium dense, very strong hydrocarbon odor.	40	SM				9	6
	42						
	44						
	46						
	48					7	6
Sandy/clayey SILT (ML): Dark yellowish brown (10YR 3/4), 80% medium plastic fines, 20% very fine sand, slightly moist to moist, hard, no hydrocarbon odor,	50	ML			0	21	6
	52					31	6
	54						
	56						
	58					11	4
Sandy/clayey SILT (ML): Same as above.	60	ML			0	17	0
	62					25	6
	64						
	66						
	68					10	6
Sandy SILT (ML): Dark yellowish brown (10YR 3/6), 60% low plastic fines, 40% fine to medium sand, moist, hard, no odor.	70	ML			0	14	6
	72					19	6
	74						
	76						
18609-2670 Sample collected at 79.5-80 feet bgs. Silty SAND (SM): Very dark grayish brown (2.5Y 3/2), 65% fine sand, 35% low plastic fines, slightly moist, discolored hydrocarbon staining, hydrocarbon odor, medium dense, interbedded with sandy silt.	78	SM				8	6
	80				541	14	6

WELL DETAIL: GROUT (CEMENT-BENTONITE MIXTURE)

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Geologic Log/Well Construction CB 398-10

Project MCAS–EL TORO Project No. 918609

DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 In.	Recovery (6 inches)	WELL DETAIL
Silty SAND (SM): Very dark grayish brown (2.5Y 3/2), 65% fine sand, 35% low plastic fines, slightly moist, discolored hydrocarbon staining, hydrocarbon odor, medium dense, interbedded with sandy silt.	80	SM				25	6	
	82							
	84							
	86							
	88							
Poorly graded SAND (SP): Olive brown (2.5Y 4/4), 100% fine to medium sand, trace fines, slightly moist, dense, interbedded with silty sand at places, strong hydrocarbon odor.	90				243	11 22 34	6 6 6	
	92							
	94							
	96							
	98							
Gravelly SAND (SP): Light olive brown (2.5Y 5/4), 70% fine to medium to coarse sand, 30% fine subangular gravel, slightly moist, dense, strong hydrocarbon odor.	100	SP			223	12 39 42	6 6 6	
	102							
	104							
	106							
	108							
Gravelly SAND (SP): Olive (5Y 5/3), 80% fine to medium sand, 20% fine to coarse subrounded gravel (max. 1.5"), trace fines, slightly moist, medium dense, strong hydrocarbon odor.	110				583	12 19 26	6 6 2	
	112							
	114							
	116							
Silty SAND (SM): Olive brown (2.5Y 4/4), 80% fine sand, 20% low plastic fines, slightly moist, dense, strong hydrocarbon odor.	118	SM						
	120				594	15 30	6 6	GROUT (CEMENT-BENTONITE MIXTURE)

Geologic Log/Well Construction CB 398-10

Project MCAS–EL TORO Project No. 918609

DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 In.	Recovery (6 inches)	WELL DETAIL
Silty SAND (SM): Olive brown (2.5Y 4/4), 80% fine sand, 20% low plastic fines, slightly moist, dense, strong hydrocarbon odor.	120	SM				32	6	GROUT (CEMENT-BENTONITE MIXTURE)
	122							
	124							
	126							
	128	ML				9	6	
Sandy SILT (ML): Olive brown (2.5Y 4/4), 70% low plastic fines, 30% very fine sand, slightly moist, very stiff, strong hydrocarbon odor.	130				530	11	6	
						17	6	
	132							
	134							
	136							
18609-2673/2674 Sample collected at 139.5-140.5 feet bgs. Poorly graded SAND with SILT (SP-SM): Light olive brown (2.5Y 5/4), 90% fine to medium sand, 10% low plastic fines, slightly moist, dense, strong hydrocarbon odor at places interbedded with silty sand.	138					13	6	
	140	SP-SM			358	31	6	
						39	6	
	142							
	144							
	146							
	148					6	6	
Sandy/clayey SILT (ML): Olive gray (5Y 4/2), 80% medium plastic fines, 20 % fine sand, saturated with hydrocarbon odor, very stiff.	150				310	7	6	
						11	6	
	152	ML						
	154							
	156							
	158					14	6	
Sandy SILT (ML): Olive gray (5Y 4/2), 75% medium plastic fines, 25% fine sand, moist, very stiff, interbedded with light yellowish brown (2.5Y 6/3) lenses of poorly graded sand, strong hydrocarbon odor.	160				0	18	6	

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Geologic Log/Well Construction CB 398-10

Project MCAS–EL TORO Project No. 918609

DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 In.	Recovery (6 inches)	WELL DETAIL
Sandy SILT (ML): Olive gray (5Y 4/2), 75% medium plastic fines, 25% fine sand, moist, very stiff, interbedded with light yellowish brown (2.5Y 6/3) lenses of poorly graded sand, strong hydrocarbon odor.	160	ML				15	6	GROUT (CEMENT-BENTONITE MIXTURE)
	162							
	164							
	166							
18609-2676 Sample collected at 169.5-170 feet bgs. Gravelly SAND with SILT (SP-SM): Light yellowish brown (2.5Y 6/3), 60% fine to medium to coarse sand, 30% fine to coarse subrounded gravel (1" max.), 10% fines, slightly moist, very dense, hydrocarbon odor.	168	SP-SM				12	6	
	170				255	50/1	6	
						50	6	
	172							
	174							
	176							
18609-2677 Sample collected at 180-180.5 feet bgs. Poorly graded SAND with SILT (SP-SM): Light yellowish brown (2.5Y 6/3), 90% fine sand, 10% fines, slightly moist to moist, medium dense, hydrocarbon odor, well sorted.	178					12	6	
	180				308	18	6	
						25	6	
	182							
	184							
18609-2678 Sample collected at 188-188.5 feet bgs. Clayey SILT (ML): Olive gray (5Y 4/2), 90% medium plastic fines, 10% fine sand, slightly moist to moist, hard, hydrocarbon odor.	186	ML				9	6	
	188				136	16	6	
						35	6	
End of boring at 188.5 feet.	190							
	192							
	194							
	196							
	198							
	200							

Geologic Log/Well Construction CB 398-11

Project **MCAS/EL TORO**	Drilling Company LAYNE CHRISTENSEN		
Project Number **918609**	Drill Rig AP1000	Begin Drilling 1/13/00	
Client SWDIV	Driller MARTIN	End Drilling 1/13/00	
Location **EL TORO-CB 398**	Drill Method DWRCPH	Well Completion Date 1/13/00	
Geologist A. SIDDIQUI / Checked By A. SIDDIQUI	Date Drilled 1/13/00		
Borehole Diameter 10 INCHES	Total Depth of Borehole 180 FEET bgs	Depth to Water NA	

LITHOLOGICAL DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)	WELL DETAIL
Poorly graded SAND with SILT: Brown (10YR 5/3), 90% fine sand, 10% fines, slightly moist, medium dense, well sorted.	0–14	SP-SM			0	15 / 15 / 10		GROUT (CEMENT-BENTONITE MIXTURE)
Poorly graded SAND (SP): Yellowish brown (10YR 5/4), 100% fine sand, trace fines, slightly moist, medium dense, well sorted.	16–20	SP			0	11 / 9 / 10		
Silty SAND (SM): Dark brown (10YR 3/3), 60% fine sand, 40% low plastic fines, slightly moist, medium dense.	22	SM						
Poorly graded SAND (SP): Dark yellowish brown (10YR 4/4), 100% fine to medium to coarse sand, trace fines, slightly moist, medium dense.	24–30	SP			0	18 / 17 / 22		
Sandy SILT (SM): Dark yellowish brown (10YR 4/4), 65% very fine sand, 35% low to non plastic fines, slightly moist, dense, at places grades into sandy silt.	32–40	SM						

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OHM Remediation Services Corp.

NOTE: This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Geologic Log/Well Construction CB 398-11

Project MCAS–EL TORO Project No. 918609

DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 In.	Recovery (6 inches)	WELL DETAIL
Silty SAND (SM): Dark yellowish brown (10YR 4/4), 65% very fine sand, 35 % low to non plastic fines, slightly moist, dense, at places grades into sandy silt.	40	SM			0	22 32 37	6 6 6	GROUT (CEMENT-BENTONITE MIXTURE)
	42							
	44							
	46							
	48							
SILT (ML): Dark yellowish brown (10YR 3/6), 90% low to medium plastic fines, 10% fine sand, slightly moist, hard.	50	ML			0	16 27 37	6 6 6	
	52							
	54							
	56							
	58							
Sandy SILT (ML): Dark yellowish brown (10YR 4/4), 70% low plastic fines, 30% fine sand, slightly moist, hard.	60	ML			0	10 21 31	6 6 6	
	62							
	64							
	66							
	68							
Sandy SILT (ML): Dard yellowish brown (10YR 4/6), 80% low plastic fines, 20% fine sand, slightly moist, hard, streaks of caliche at places.	70	ML			0	14 25 30	6 6 6	
	72							
	74							
	76							
	78							
	80							

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Geologic Log/Well Construction CB 398-11

Project MCAS-EL TORO Project No. 918609

DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 In.	Recovery (6 inches)	WELL DETAIL
Clayey SILT (ML): Brown (7.5YR 4/4), 100% medium plastic fines, trace fine sand, slightly moist, hard.	80	ML			0	13 18 38	6 6 6	
	82							
	84							
	86							
	88							
Silty SAND (SM): Yellowish brown (10YR 5/6), 70% fine sand, 30% low plastic fines, slightly moist, very dense, fine to medium grained sand with some silt showing up in cuttings at approximately 93'.	90	SM			0	16 50/5	6 6	
	92							
	94							
	96							
	98							
Silty SAND (SM): Yellowish brown (10YR 5/4), 75% fine sand, 25% low plastic fines, slightly moist, dense.	100	SM			0	12 37 48	6 6 6	
	102							
	104							
Gravel shows up in soil cuttings from 106'.	106							
	108							
Gravelly silty SAND (SM): Yellowish brown (10YR 5/4), 60% fine sand, 20% fine to coarse subangular to subrounded gravel, 20% non to low plastic fines, slightly moist, very dense, gravels continue to show up in soil cuttings.	110	SM			0	15 50	6 6	
	112							
	114							
	116							
Sandy SILT (ML): Yellowish brown (10YR 5/6), 70% low plastic fines, 30% fine sand, trace gravel, slightly moist, hard.	118	ML						
	120							

GROUT (CEMENT-BENTONITE MIXTURE)

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Geologic Log/Well Construction CB 398-11

Project MCAS–EL TORO Project No. 918609

DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 In.	Recovery (6 inches)	WELL DETAIL
Sandy SILT (ML): Yellowish brown (10YR 5/6), 70% low plastic fines, 30% fine sand, trace gravel, slightly moist, hard.	120	ML			0	14 29 39	6 6 6	GROUT (CEMENT-BENTONITE MIXTURE)
	122							
	124							
	126							
Silty SAND (SM): Dark yellowish brown (10YR 4/6), 70% fine sand, 30% non to low plastic fines, slightly moist, dense.	128	SM			0	9 32 35	6 6 6	
	130							
	132							
	134							
Sandy SILT (ML): Light olive brown (2.5Y 5/3), 80% low plastic fines, 20% fine sand, slightly moist, very stiff.	136	ML			0	8 16 12	6 6 6	
18609-2635 Sample collected at 140-140.5 feet bgs.	138							
Poorly graded SAND with SILT (SP-SM): Light yellowish brown (2.5Y 5/4), 90% fine to medium sand, 10% fines, slightly moist, dense to very dense, no odor.	140	SP-SM						
	142							
	144							
	146							
18609-2636 Sample collected at 149.5-150 feet bgs.	148							
Silty SAND (SM): Olive gray (5Y 4/2), 85% fine sand, 15% fines, slightly moist, medium dense, strong hydrocarbon odor, interbedded with lenses of dark olive gray silty clay/clayey silt lenses.	150	SM			0	6 12 21	6 6 6	
	152							
	154							
	156							
	158							
Silty SAND (SM): Light olive brown (2.5Y 5/3), 80% fine sand, 20% fines, slightly moist, medium dense, interbedded with sandy to clayey silt, moderate hydrocarbon odor.	160				0	7 10	6 6	

Geologic Log/Well Construction CB 398-11

Project MCAS–EL TORO Project No. 918609

DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 In.	Recovery (6 inches)	WELL DETAIL
18609-2637 Sample collected at 160-160.5 feet bgs. Silty SAND (SM): Light olive brown (2.5Y 5/3), 80% fine sand, 20% fines, slightly moist, medium dense, interbedded with sandy to clayey silt, moderate hydrocarbon odor.	160	SM				29	6	GROUT (CEMENT-BENTONITE MIXTURE)
	162							
	164							
	166							
	168							
18609-2638 Sample collected at 169.5-170 feet bgs. Poorly graded SAND with SILT (SP-SM): Olive brown (2.5Y 4/3), 90% fine sand, 10% fines, trace fine to coarse subrounded gravel, slightly moist, medium dense, strong hydrocarbon odor.	170	SP-SM			0	4 9 18	6 6 3	
	172							
	174							
	176							
18609-2639 Sample collected at 179.5-180 feet bgs. Sandy GRAVEL (GP): Light olive brown (2.5Y 5/3), 75% fine to coarse subangular to subrounded gravel (1-1.5" max.), 25% fine to medium sand, trace fines, slightly moist to dry, very dense, slight hydrocarbon odor.	178	GP			0	18 50	6 6	
End of boring at 180 feet.	180							
	182							
	184							
	186							
	188							
	190							
	192							
	194							
	196							
	198							
	200							

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Geologic Log/Well Construction CB 398-28/29/30

Project **MCAS/EL TORO**	Drilling Company LAYNE CHRISTENSEN	
Project Number **918609**	Drill Rig AP1000	Begin Drilling 1/14/00
Client SWDIV	Driller MARTIN	End Drilling 1/14/00
Location **EL TORO-CB 398**	Drill Method DWRCPH	Well Completion Date 1/14/00
Geologist A. SIDDIQUI / Checked By A. SIDDIQUI	Date Drilled 1/14/00	
Borehole Diameter 10 INCHES	Total Depth of Borehole 190.5 FEET bgs	Depth to Water NA

LITHOLOGICAL DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)
Poorly graded SAND with SILT (SP-SM): Dark yellowish brown (10YR 4/4), 90% fine to medium sand, 10% fines, slightly moist, medium dense.	0–10	SP-SM			0	10, 10, 13	6
Poorly grade SAND with SILT (SP-SM): Light olive brown (2.5Y 5/3), 90% fine to medium sand, 10% fines, slightly moist, medium dense, interbedded with silty sand, strong hydrocarbon odor.	10–20	SP-SM			238	13, 11, 11	6
Poorly graded SAND with SILT (SP-SM): Dark grayish brown (2.5Y 4/2), 90 % sand, 10% fines, wet, discolored, strong hydrocarbon odor.	20–30	SP-SM			192	5, 4, 4	6
Silty CLAY (CL): Very dark grayish brown, 100% medium plastic fines, moist, stiff, very strong hydrocarbon odor.	30–32	CL					
18609-2654 Sample collected at 39.5-40 feet bgs. Silty CLAY (CL): Dark olive brown (2.5Y 3/3), fine plastic, firm to soft silts, plastic clays, slightly moist, strong odor detected.	32–40	CL			180	5, 6, 6	6

WELL DETAIL: GROUT (CEMENT-BENTONITE MIXTURE)

NOTE: This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Geologic Log/Well Construction CB 398-28/29/30

Project MCAS–EL TORO Project No. 918609

DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 In.	Recovery (6 inches)	WELL DETAIL
Silty CLAY (CL): Dark olive brown (2.5Y 3/3), fine plastic, firm to soft silts, plastic clays, slightly moist, strong odor detected.	40	CL				10	6	GROUT (CEMENT-BENTONITE MIXTURE)
	42							
	44							
	46							
	48					12	6	
Silty CLAY (CL): Same as above, hard to stiff, slightly moist, very strong odor.	50	CL			530	18	6	
	52					33	6	
	54							
	56							
	58							
SAND (SP): Olive gray (5Y 4/2), very fine sands, some silts, non plastic, medium dense, slightly moist, very strong odor.	60	SP			1375	10	4	
						15	6	
						26	6	
	62							
	64							
	66							
	68							
18609-2655/2656 Sample collected at 69.5-70.5 feet bgs. Silty CLAY (CL): Very dark grayish brown (2.5Y 3/2), stiff to hard, slightly plastic clay, fine silts, some medium sands, slightly moist, strong odor.	70	CL			1000	11	6	
						33	6	
						46	6	
	72							
	74							
	76							
	78							
Silty CLAY (CL): Same as above, slightly moist, strong odor.	80	CL			670	14	6	
						19	6	

Geologic Log/Well Construction CB 398-28/29/30

Project MCAS–EL TORO Project No. 918609

DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 In.	Recovery (6 inches)	WELL DETAIL
Silty SAND (CL): Very dark grayish brown (2.5Y 3/2), stiff to hard, slightly plastic clay, fine silts, some medium sands, slightly moist, strong odor.	80	CL				22	6	GROUT (CEMENT-BENTONITE MIXTURE)
	82							
	84							
	86							
	88					14	6	
SAND (SP): Same as above, very fine. **18609-2657 Sample collected at 89.5-90 feet bgs.**	90	SP			590	20	6	
Silty SAND (CL): Same as above, hard, slightly plastic clay, fine silts, slightly moist, strong odor.		CL				22	6	
	92							
	94							
	96							
	98							
SILT (ML): Dark olive gray (5Y 3/2), fine silts, firm to hard, slightly plastic, slightly moist, very strong odor.	100	ML			1256	22	6	
						23	6	
						27	6	
	102							
	104							
	106							
18609-2658 Sample collected at 109.5-110 feet bgs. SAND (SP): Olive (5Y 5/6), very fine, well sorted sands, subrounded to subangular, dense to very dense, slightly moist, very strong odor.	108							
	110	SP			780	25	6	
						50	6	
						50	6	
	112							
	114							
	116							
	118							
SILT (ML): Light olive brown (2.5Y 5/4), fine, slightly plastic, firm to hard silts, slightly moist, very strong odor, thin product on outside of core.	120	ML			1400	24	6	
						44	6	

Geologic Log/Well Construction CB 398-28/29/30

Project MCAS–EL TORO Project No. 918609

DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 In.	Recovery (6 inches)	WELL DETAIL
SILT (ML): Light olive brown (2.5Y 5/4), fine, slightly plastic, fine to hard silts, slightly moist, very strong odor, thin product on outside of core.	120	ML				50	6	GROUT (CEMENT-BENTONITE MIXTURE)
	122							
	124							
	126							
18609-2661 Sample collected at 129.5-130 feet bgs. Poorly graded SAND with SILT (SP-SM): Light olive brown (2.5Y 5/6), 90% very fine sand, 10% fines, slightly moist, medium dense, very well sorted, hydrocarbon odor.	128	SP-SM				8	6	
	130				353	16	6	
						20	6	
	132							
	134							
	136							
Poorly graded Sand with SILT.	138							
18609-2662 Sample collected at 139.5-140 feet bgs. Sandy SILT (ML): Light olive brown (2.5Y 5/4), 70% non to low plastic fines, 30% very fine sand, slightly moist, hard, strong hydrocarbon odor.	140				566	10	6	
						29	6	
						27	6	
	142							
	144							
	146							
	148							
18609-2663 Sample collected at 149.5-150 feet bgs. Clayey SILT (ML): Dark olive gray (5Y 3/2), 90% medium plastic fines, 10% fine sand, slightly moist, very stiff, interbedded with lenses of poorly graded sand with silt at places, discolored to dark gray at places, strong hydrocarbon odor, interbedded with poorly graded sand, sand in soil cuttings between 150-160'.	150	ML			1222	6	6	
						9	6	
						15	6	
	152							
	154							
	156							
Silty SAND (SM): Olive brown (2.5Y 4/4), 80% fine sand, 20% medium plastic fines, slightly moist, medium dense, interbedded with clayey silt and sandy silt, hydrocarbon odor.	158	SM				7	6	
	160				345	14	6	

Geologic Log/Well Construction CB 398-28/29/30

Project MCAS–EL TORO Project No. 918609

18609-2664 Sample collected at 160-160.5 feet bgs.
Silty SAND (SM): Olive brown (2.4Y 4/4) 80% fine sand, 20% medium plastic fines, slightly moist, medium dense, interbedded with clayey silt and sandy silt, hydrocarbon odor.

18609-2665 Sample collected at 169.5-170 feet bgs.
Poorly graded SAND (SP): Light olive brown (2.5Y 5/4), 100% fine sand, trace fines, slightly moist, very dense.

Based on cuttings: sandy GRAVEL layer from 172-178', from 172', fine to coarse subangular to subrounded gravel begins to show up in soil cuttings, from 179', soil cuttings are discolored with strong hydrocarbon odor.

Gravelly SAND (SP): Based on soil cuttings, becomes slightly siltier at approximately 179', probably thin layers of sandy silt, approximately 25% gravel begin showing up in sand at 182' in soil cuttings.

18609-2666 Sample collected at 185-185.5 feet bgs.
Sandy SILT (ML): Yellowish brown (10YR 5/4), 65% low plastic fines, 35% fine sand, slightly moist, hard, hydrocarbon odor.

18609-2667 Sample collected at 189.5-190 feet bgs.
Silty SAND (SM): Olive brown (2.5Y 4/4), 70% fine sand, 30% medium plastic fines, very moist, dense, strong hydrocarbon odor, bottom sleeve saturated with free product.

End of boring at 190.5 feet.

Depth (feet)	Soil Group	PID/FID (ppm)	Blows/6 In.	Recovery (6 inches)
160	SM		23	6
162				
164				
166				
168				
170	SP	534	10 32 42	6 6 6
172				
174	GP			
176				
178				
180	SP			
182				
184	ML	30	11 18 31	6 6 6
186				
188				
190	SM	349	13 27 39	6 6 6
192				
194				
196				
198				
200				

WELL DETAIL: GROUT (CEMENT-BENTONITE MIXTURE)

Geologic Log/Well Construction SCB-01

Project **MCAS/EL TORO**		Drilling Company LAYNE CHRISTENSEN	
Project Number **918609**		Drill Rig CME 75	Begin Drilling 8/1/00
Client SWDIV		Driller ARTURO CARRERA	End Drilling 8/1/00
Location **EL TORO-CB 398**		Drill Method HSA	Well Completion Date 8/1/00
Geologist A. SIDDIQUI	Checked By A. SIDDIQUI	Date Drilled 8/1/00	
Borehole Diameter 6.5 INCHES	Total Depth of Borehole 41 FEET bgs	Depth to Water NA	

LITHOLOGICAL DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)	WELL DETAIL
Hand augered to 5 feet.	0							GROUT (CEMENT-BENTONITE MIXTURE)
	2							
Silty SAND (SM): Brown (10YR 4/3), 80% fine sand, 20% silt, trace gravel and clay, moist, no odor	4	SM				2		
18609-3368 Sample collected at 5-5.5 feet bgs.	6				289	4 5	6	
	8							
Silty to clayey SAND (SM-SC): Brown (10YR 4/3), 60% fine sand, 40% silt with some clay, more in some layers, horizontal laminae, moist, iron staining in some layers, no odor.	10	SM-SC			67	3 4 5	6 6 6	
18609-3369 Sample collected at 10-10.5 feet bgs.	12							
	14							
	16							
	18							
Silty SAND (SM): Brown (10YR 4/3), 80% fine sand, 20% silt, slightly cohesive, moist, no odor.	20	SM			87	3 4 5	4 6 6	
18609-3370 Sample collected at 20-20.5 feet bgs.	22							
	24							
	26							
	28							
Drill out from 21' to 39.5'.	30							
	32							
	34							
	36							
	38							
Silty SAND (SM): Dark yellowish brown (10YR 4/4), 80% fine sand, 20% silt, trace gravel, moist, slight petroleum odor.	40	SM				2	2	

NOTE: This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Geologic Log/Well Construction SCB-01

Project **MCAS/EL TORO**	Drilling Company LAYNE CHRISTENSEN		
Project Number **918609**	Drill Rig CME 75		Begin Drilling 8/1/00
Client SWDIV	Driller ARTURO CARRERA		End Drilling 8/1/00
Location **EL TORO-CB 398**	Drill Method HSA		Well Completion Date 8/1/00
Geologist A. SIDDIQUI / Checked By A. SIDDIQUI	Date Drilled 8/1/00		
Borehole Diameter 6.5 INCHES	Total Depth of Borehole 41 FEET bgs	Depth to Water NA	

LITHOLOGICAL DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)	WELL DETAIL
Silty SAND (SM): Dark yellowish brown (10YR 4/4), 80% fine sand, 20% silt, trace gravel, slight petroleum odor. **18609-3371 Sample collected at 40-40.5 feet bgs.**	40	SM			71	5	6	GROUT (CEMENT-BENTONITE MIXTURE)
End of boring 41 feet.	42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80							

NOTE: This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

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Geologic Log/Well Construction SCB-02

Project **MCAS/EL TORO**	Drilling Company LAYNE CHRISTENSEN		
Project Number **918609**	Drill Rig CME 75	Begin Drilling 7/31/00	
Client SWDIV	Driller ARTURO CARRERA	End Drilling 7/31/00	
Location **EL TORO-CB 398**	Drill Method HSA	Well Completion Date 7/31/00	
Geologist A. SIDDIQUI / Checked By A. SIDDIQUI	Date Drilled 7/31/00		
Borehole Diameter 6.5 INCHES	Total Depth of Borehole 31 FEET bgs	Depth to Water NA	

LITHOLOGICAL DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)	WELL DETAIL
Hand augered to 5 feet.	0							
Gravely SAND (SW): Yellowish brown (10YR 5/4), 80% medium to coarse sand, 15% gravel, maximum 1/4" in diameter, 5% silt, loose, dry, no odor. **18609-3349 Sample collected at 5-5.5 feet bgs.**	4–6	SW			0	4 3 3	6 6 6	
Gravely SAND (SW): Yellowish brown (10YR 5/4), 85% medium sand, 15% gravel, 5% silt, moist, loose, no odor. **18609-3350 Sample collected at 10-10.5 feet bgs.**	10	SW			0	3 4 4	6 6 6	
Drill out from 11 to 29 feet.	11–29							
Silty CLAY (CH-CL): Very dark grayish brown (2.5Y 3/2), plastic to mostly plastic, soft clay, horizontal laminae, micaceous, petroleum odor. **18609-3351 Sample collected at 30-30.5 feet bgs.**	30	CH-CL			54	2 4 5	6 6 6	
End of boring 31 feet.	32–40							GROUT (CEMENT-BENTONITE MIXTURE)

OHM Remediation Services Corp.

NOTE: This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

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Geologic Log/Well Construction SCB-03

Project **MCAS/EL TORO**		Drilling Company LAYNE CHRISTENSEN	
Project Number **918609**		Drill Rig CME 75	Begin Drilling 8/1/00
Client SWDIV		Driller ARTURO CARRERA	End Drilling 8/1/00
Location **EL TORO-CB 398**		Drill Method HSA	Well Completion Date 8/1/00
Geologist A. SIDDIQUI	Checked By A. SIDDIQUI	Date Drilled 8/1/00	
Borehole Diameter 6.5 INCHES	Total Depth of Borehole 41 FEET bgs	Depth to Water NA	

LITHOLOGICAL DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)	WELL DETAIL
Hand augered to 5 feet.	0							GROUT (CEMENT-BENTONITE MIXTURE)
Gravelly silty SAND (SM-GW): Dark yellowish brown (10YR 4/4), 80% silty fine sand, 20% gravel (maximum 1/4" in diameter), slightly moist, loose, no odor. **18609-3363 Sample collected at 5-5.5 feet bgs.**	4	SM-GW			56	6, 7, 11	6	
Gravelly SAND (SW): Yellowish brown (10YR 5/4), 80% fine to medium sand, 20% gravel (maximum 1" in diameter), moist, loose, no odor. **18609-3364 Sample collected at 10-10.5 feet bgs.**	10	SW			360	2, 2, 5	- - -	
Drill out from 11' to 29.5'.	20							
Silty CLAY (CH-CL): Dark grayish brown (2.5Y 4/2), moderately hard to plastic to moderately plastic clay, 20%-40% silt, 10%-20% silt, horizontal laminae, root/burrow infilled, petroleum odor. **18609-3365, 3366 Samples collected at 29.5-30.5 feet bgs.**	30	CH-CL			435	2, 2, 4	6	
Clayey SAND (SC): Olive gray (5Y 4/2), 80% fine to medium sands, 20% silt and clay, moist to wet.	40	SC				2	6	

NOTE: This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Geologic Log/Well Construction SCB-03

Project **MCAS/EL TORO**	Drilling Company LAYNE CHRISTENSEN	
Project Number **918609**	Drill Rig CME 75	Begin Drilling 8/1/00
Client SWDIV	Driller ARTURO CARRERA	End Drilling 8/1/00
Location **EL TORO-CB 398**	Drill Method HSA	Well Completion Date 8/1/00
Geologist A. SIDDIQUI / Checked By A. SIDDIQUI	Date Drilled 8/1/00	
Borehole Diameter 6.5 INCHES	Total Depth of Borehole 41 FEET bgs	Depth to Water NA

LITHOLOGICAL DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)	WELL DETAIL
Silty CLAY (CL): Very dark grayish brown (2.5Y 3/2), soft to moderately hard, 65% clay, 30% silt, 5% fine sand, horizontal laminae, wet, petroleum odor.	40	CL			1140	2 4	6 6	GROUT (CEMENT-BENTONITE MIXTURE)
End of boring 41 feet.	42							
	44							
	46							
	48							
	50							
	52							
	54							
	56							
	58							
	60							
	62							
	64							
	66							
	68							
	70							
	72							
	74							
	76							
	78							
	80							

NOTE: This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Geologic Log/Well Construction SCB-10

Project **MCAS/EL TORO**		Drilling Company LAYNE CHRISTENSEN	
Project Number **918609**		Drill Rig CME 75	Begin Drilling 7/31/00
Client SWDIV		Driller ARTURO CARRERA	End Drilling 7/31/00
Location **EL TORO-CB 398**		Drill Method HSA	Well Completion Date 7/31/00
Geologist A. SIDDIQUI	Checked By A. SIDDIQUI	Date Drilled 7/31/00	
Borehole Diameter 6.5 INCHES	Total Depth of Borehole 41 FEET bgs	Depth to Water NA	

LITHOLOGICAL DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)	WELL DETAIL
Hand augered to 4.5 feet.	0							
	2							
Silty SAND (SM): Dark brown (10YR 3/3), 50% fine sand, 50% silt, moderately hard to friable, horizontal bedding, very micaceous, no odor. **18609-3344 Sample collected at 5-5.5 feet bgs.**	4	SM			0	3 4 4	3 4 4	
	6							
Silty SAND (SM): (10YR 4/3).	8							
Sandy CLAY (CL): Dark brown, 60% silt and clay, 40% fine sand, low plasticity, horizontal bedding, micaceous, apparent caliche filled root holes, no odor. **18609-3345 Sample collected at 10-10.5 feet bgs.**	10				0	3 3 5	6 6 6	
	12	CL						
	14							
	16							
	18							
Silty SAND (SM): Brown (10YR 4/3), 80% fine sand, 20% silt, trace clay, very micaceous, no bedding, no odor, soft, moist. **18609-3346 Sample collected at 20-20.5 feet bgs.**	20	SM			87	3 5 5	4 6 6	
	22							
	24							
	26							
	28							
Drill out from 21' to 39.5'.	30							
	32							
	34							
	36							
	38							
Clay to silty CLAY (CH): Very dark grayish brown (2.5Y 3/2), wet, plastic clay, horizontally laminated and bedded, roots on bedding planes, very strong petroleum odor.	40	CH				2	6	

GROUT (CEMENT-BENTONITE MIXTURE)

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NOTE: This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Geologic Log/Well Construction SCB-10

Project **MCAS/EL TORO**	Drilling Company LAYNE CHRISTENSEN		
Project Number **918609**	Drill Rig CME 75	Begin Drilling 7/31/00	
Client SWDIV	Driller ARTURO CARRERA	End Drilling 7/31/00	
Location **EL TORO-CB 398**	Drill Method HSA	Well Completion Date 7/31/00	
Geologist A. SIDDIQUI / Checked By A. SIDDIQUI	Date Drilled 7/31/00		
Borehole Diameter 6.5 INCHES	Total Depth of Borehole 41 FEET bgs	Depth to Water NA	

LITHOLOGICAL DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)	WELL DETAIL
Clay to silty CLAY (CH): Very dark grayish brown (2.5Y 3/2), wet, plastic clay, horizontally laminated and bedded, roots on bedding planes, very strong petroleum odor. **18609-3347, 3348 Samples collected at 39.5-40.5 feet bgs.**	40	CH			861	4 6 6	6	GROUT (CEMENT-BENTONITE MIXTURE)
End of boring 41 feet.	42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80							

NOTE: This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Geologic Log/Well Construction SCB-11

Project **MCAS/EL TORO**		Drilling Company LAYNE CHRISTENSEN	
Project Number **918609**		Drill Rig CME 75	Begin Drilling 7/31/00
Client SWDIV		Driller ARTURO CARRERA	End Drilling 7/31/00
Location **EL TORO-CB 398**		Drill Method HSA	Well Completion Date 7/31/00
Geologist A. SIDDIQUI	Checked By A. SIDDIQUI	Date Drilled 7/31/00	
Borehole Diameter 6.5 INCHES	Total Depth of Borehole 41 FEET bgs	Depth to Water NA	

LITHOLOGICAL DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)	WELL DETAIL
Hand augered to 5 feet.	0							
	2							
	4	SM						
Gravelly silty SAND (SM): Brown (10YR 4/3), 60% fine sand, 35% silt, 5% gravel up to 1/4" in diameter, moist, cohesive, micaceous. **18609-3357 Sample collected at 5-5.5 feet bgs.**	6				0	1 1 2	4 6 6	
	8							
Very silty SAND (SM-ML): Dark grayish brown (10YR 4/2), 60% fine sand, 40% silt, moist, micaceous, cohesive, no odor. **18609-3358 Sample collected at 10-10.5 feet bgs.**	10				0	3 3 5	6 6 6	
	12							
	14							
	16	SM-ML						
	18							
Very silty SAND (SM-ML): Brown (10YR 4/3), 50% fine sand, 50% silt, horizontally laminated, micaceous, no odor. **18609-3359 Sample collected at 20-20.5 feet bgs.**	20				0	5 6 6	- - -	
	22							
	24							
	26							
	28							
Silty CLAY (CH/CL): Brown (7.5YR 4/2), stiff plastic clay, horizontal laminae, wet, few infilled burrows, no odor.	30	CH-CL						
	32							
	34							
	36							
	38							
Very silty SAND (SM/ML): Brown (10YR 4/3), 60% fine sand, 40% silt, cohesive, moist, no odor.	40	SM-ML			0	6	-	GROUT (CEMENT-BENTONITE MIXTURE)

NOTE: This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Geologic Log/Well Construction SCB-11

Project **MCAS/EL TORO**	Drilling Company LAYNE CHRISTENSEN		
Project Number **918609**	Drill Rig CME 75	Begin Drilling 7/31/00	
Client SWDIV	Driller ARTURO CARRERA	End Drilling 7/31/00	
Location **EL TORO-CB 398**	Drill Method HSA	Well Completion Date 7/31/00	
Geologist A. SIDDIQUI / Checked By A. SIDDIQUI	Date Drilled 7/31/00		
Borehole Diameter 6.5 INCHES	Total Depth of Borehole 41 FEET bgs	Depth to Water NA	

LITHOLOGICAL DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)	WELL DETAIL
Very silty SAND (SM/ML): Brown (10YR 4/3), 60% fine sand, 40% silt, cohesive, moist, no odor.	40	SM-ML			0	10	-	GROUT (CEMENT-BENTONITE MIXTURE)
End of boring 41 feet.	42							
	44							
	46							
	48							
	50							
	52							
	54							
	56							
	58							
	60							
	62							
	64							
	66							
	68							
	70							
	72							
	74							
	76							
	78							
	80							

NOTE: This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Geologic Log/Well Construction SCB-27

Project **MCAS/EL TORO**	Drilling Company LAYNE CHRISTENSEN		
Project Number **918609**	Drill Rig CME 75	Begin Drilling 8/1/00	
Client SWDIV	Driller ARTURO CARRERA	End Drilling 8/1/00	
Location **EL TORO-CB 398**	Drill Method HSA	Well Completion Date 8/1/00	
Geologist A. SIDDIQUI / Checked By A. SIDDIQUI	Date Drilled 8/1/00		
Borehole Diameter 6.5 INCHES	Total Depth of Borehole 41 FEET bgs	Depth to Water NA	

LITHOLOGICAL DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)	WELL DETAIL
Hand augered to 5 feet.	0							
	2							
	4	SM-ML						
Very silty SAND to very sandy SILT (SM-ML): Dark brown (10YR 3/2), 50-60% fine sand, 40-50% silt, micaceous, moist, no odor. **18609-3372 Sample collected at 5-5.5 feet bgs.**	6				110	1 1 2	6 6	
	8							
Silty SAND (SM): Brown (10YR 4/3), 80% fine to medium sand, 20% silt, trace coarse sand, moist, no odor. **18609-3373 Sample collected at 10-10.5 feet bgs.**	10				500	4 4 5	- -	
	12							
	14							
	16	SM						
	18							
Silty SAND (SM): Dark yellowish brown (10YR 4/4), 80% fine to medium sand, 20% silt, micaceous, moist, no odor. **18609-3374 Sample collected at 20-20.5 feet bgs.**	20				15	4 6 9	- 6	
	22							
	24							
	26							
	28							
Drill out from 21' to 39.5'.	30							
	32							
	34							
	36							
	38							
Gravelly silty SAND (SM): Dark yellowish brown (10YR 4/4), 80% fine sand, 15% silt, 5% gravel (1/4" in diameter), moist, loose, no odor.	40	SM				10	6	GROUT (CEMENT-BENTONITE MIXTURE)

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NOTE: This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Geologic Log/Well Construction SCB-27

Project **MCAS/EL TORO**	Drilling Company LAYNE CHRISTENSEN	
Project Number **918609**	Drill Rig CME 75	Begin Drilling 8/1/00
Client SWDIV	Driller ARTURO CARRERA	End Drilling 8/1/00
Location **EL TORO-CB 398**	Drill Method HSA	Well Completion Date 8/1/00
Geologist A. SIDDIQUI / Checked By A. SIDDIQUI	Date Drilled 8/1/00	
Borehole Diameter 6.5 INCHES	Total Depth of Borehole 41 FEET bgs	Depth to Water NA

LITHOLOGICAL DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)	WELL DETAIL
Gravelly silty SAND (SM): Dark yellowish brown (10YR 4/4), 80% fine sand, 15% gravel (1/4" in diameter), moist, loose, no odor. **18609-3375 Sample collected at 40-40.5 feet bgs.**	40	SM			2.7	14 14	6 6	GROUT (CEMENT-BENTONITE MIXTURE)
End of boring 41 feet.	42							
	44							
	46							
	48							
	50							
	52							
	54							
	56							
	58							
	60							
	62							
	64							
	66							
	68							
	70							
	72							
	74							
	76							
	78							
	80							

NOTE: This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Geologic Log/Well Construction SCB-28

Project **MCAS/EL TORO**	Drilling Company LAYNE CHRISTENSEN	
Project Number **918609**	Drill Rig CME 75	Begin Drilling 7/31/00
Client SWDIV	Driller ARTURO CARRERA	End Drilling 7/31/00
Location **EL TORO-CB 398**	Drill Method HSA	Well Completion Date 7/31/00
Geologist A. SIDDIQUI / Checked By A. SIDDIQUI	Date Drilled 7/31/00	
Borehole Diameter 6.5 INCHES	Total Depth of Borehole 31 FEET bgs	Depth to Water NA

LITHOLOGICAL DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)	WELL DETAIL
Hand augered to 5 feet.	0							GROUT (CEMENT-BENTONITE MIXTURE)
Gravely SAND (SW): Yellowish brown (10YR 5/4), 80% medium to coarse sand, 15% gravel, maximum 1/4" in diameter, 5% silt, loose, dry, no odor. **18609-3352 Sample collected at 5-5.5 feet bgs.**	4	SP			>2000	2 4 5	6	
Gravely SAND (SW): Yellowish brown (10YR 5/4), 85% medium sand, 15% gravel, 5% silt, moist, loose, no odor. **18609-3353 Sample collected at 10-10.5 feet bgs.**	10	GW			-	- - -	6	
Silty SAND (SM): Very dark grayish brown, (2.5Y 3/2), 60-70% fine sand, 30-40% silt, micaceous, moist, slight petroleum odor. **18609-3354 Sample collected at 20-20.5 feet bgs.**	20	SM			<113	2 3 3	- - -	
Silty CLAY (CH-CL): Very dark grayish brown (2.5Y 3/2), plastic to moderately plastic, 60% clay, 40% silt, moderetely hard, horizontally bedded, plant mounds and burrows, micaceous, strong petroleum fuel odor. **18609-3355, 3356 Samples collected at 29.5-30.5 feet bgs.**	30	CH-CL			983	3 3 5	6	
End of boring 31 feet.	40							

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Geologic Log/Well Construction HP1

Project **MCAS/EL TORO**	Drilling Company LAYNE CHRISTENSEN		
Project Number **918609**	Drill Rig CME 75		Begin Drilling 8/1/00
Client SWDIV	Driller ARTURO CARRERA		End Drilling 8/1/00
Location **EL TORO-CB 398**	Drill Method HSA		Well Completion Date 8/1/00
Geologist A. SIDDIQUI / Checked By A. SIDDIQUI	Date Drilled 8/1/00		
Borehole Diameter 6.5 INCHES	Total Depth of Borehole 41 FEET bgs	Depth to Water NA	

LITHOLOGICAL DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)	WELL DETAIL
Hand augered 3 holes to 10' in triangle pattern around well.	0							
	2							
Collected by hand auger. Silty SAND (SM): Brown (10YR 4/3), 80% sand, 20% silt, micaceous, dry. **18609-3377 Sample collected at 5-5.5 feet bgs.**	4				-	- - -	- - -	
	6							
	8							
Silty SAND (SM): Brown (10YR 4/3), 80% fine to medium sand, 20% silt, moist to wet, micaceous, prossible trace clay, no odor. **18609-3378 Sample collected at 10-10.5 feet bgs.**	10	SM			0.2	2 3 6	9 9 9	
	12							
	14							
	16							
	18							
Silty SAND (SM): Brown (10YR 5/3), 80 % fine sand, 20% silt, loose, moist, micaceous, no odor. **18609-3379 Sample collected at 20-20.5 feet bgs.**	20				106	2 4 4	9 9 9	
	22							
	24							
	26							
	28							
Drill out from 21' to 39.5'.	30							
	32							
	34							
	36							
	38							
Sandy CLAY (CL-SC): Brown (10YR 4/3), moderately hard to friable, 60% silty clay, 40% fine sand, horizontally bedded with caliche/sand infilled roots and burrows, micaceous, moist to dry, no odor	40	CL-SC				8	4	GROUT (CEMENT-BENTONITE MIXTURE)

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NOTE: This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Geologic Log/Well Construction HP1

Project **MCAS/EL TORO**	Drilling Company LAYNE CHRISTENSEN	
Project Number **918609**	Drill Rig CME 75	Begin Drilling 8/1/00
Client SWDIV	Driller ARTURO CARRERA	End Drilling 8/1/00
Location **EL TORO-CB 398**	Drill Method HSA	Well Completion Date 8/1/00
Geologist A. SIDDIQUI / Checked By A. SIDDIQUI	Date Drilled 8/1/00	
Borehole Diameter 6.5 INCHES	Total Depth of Borehole 41 FEET bgs	Depth to Water NA

LITHOLOGICAL DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)	WELL DETAIL
Sandy CLAY (CL-SC): Brown (10YR 4/3), moderately hard to friable, 60% silty clay, 40% fine sand, horizontally bedded with caliche/sand infilled roots and burrows, micaceous, moist to dry, no odor.	40	CL-SC			15	17 21	6 6	GROUT (CEMENT-BENTONITE MIXTURE)
End of boring 41 feet.	42							
	44							
	46							
	48							
	50							
	52							
	54							
	56							
	58							
	60							
	62							
	64							
	66							
	68							
	70							
	72							
	74							
	76							
	78							
	80							

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NOTE: This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations