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TRANSMITTAL FORM

LF

Date 4-3-90 | Project No. 18061-4

Subject: Report Soil Excavation Aeration and Sampling

TO Mr. Scott Hugenberger
California Regional Water Quality Control Board - S.F. Bay Region
1800 Jackson Street, Suite 700
Oakland, CA 94612

01

FROM Parnian Kaboli

TITLE Senior Project Manager

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REPORT
SOIL EXCAVATION, AERATION, AND SAMPLING RELATED TO UNDERGROUND STORAGE TANK REMOVAL
at
Unocal Station No. 5484
18950 Lake Chabot Road
Castro Valley, California

AGS Job No. 18061-4

Prepared for

Unocal Corporation
2175 North California Boulevard
Suite 605
Walnut Creek, California

by
Applied GeoSystems

Parnian Kaboli
Senior Project Manager

Michael N. Clark
C.E.G. 1264

March 30, 1990

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

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March 30, 1990
AGS 18061-4

Mr. Ron Bock
Unocal Corporation
Suite 605
2175 North California Boulevard
Walnut Creek, California 94596

Subject: Executive Summary of Report No. 18061-4, Soil Excavation, Aeration, and Sampling Related to Underground Storage Tank Removal at Unocal Station No. 5484, 18950 Lake Chabot Road, Castro Valley, California.

Mr. Bock:

This report describes Applied GeoSystems'(AGS) field work and analytical results related to the excavation, aeration, sampling, and analyses of soil in conjunction with the removal and replacement of two underground storage tanks (USTs) for gasoline, associated fuel lines, and one UST for waste oil tank at the subject station. This work was conducted at the request of Unocal Corporation (Unocal) to evaluate the extent of hydrocarbon impact to the soil and to document the cleanup and removal of hydrocarbon-containing soil from the site.

Field work included observing tank removal and evaluating native soil and bedrock materials after removal of USTs and associated fuel lines, collecting and analyzing soil samples from the tank pits and fuel-line trenches, directing placement of excavated soil at the site for aeration, collecting soil samples from the soil stockpiles, and analyzing them for total petroleum hydrocarbons as gasoline (TPHg) and for benzene, toluene, ethylbenzene, and xylenes (BTEX).

On June 12 through June 16, 1989, two underground 10,000-gallon gasoline (unleaded and super unleaded) storage tanks and one 280-gallon waste-oil-storage tank were excavated and removed from the property by Paradiso Construction Company (Paradiso) personnel, under direct contract to Unocal. The total depths of the gasoline and waste-oil tank pits were approximately 14-1/2 and 8 feet, respectively. Fuel lines adjacent to the service islands were also removed. The station was closed for the approximately 3-month period during which the work was conducted.

As the gasoline USTs were removed, a strong hydrocarbon odor was emanating from the tank pit. No obvious signs of weakness were observed in the fuel lines, but soil

discoloration and a strong product odor were noted in the fuel-line trenches at the east sides of the east and west service islands, respectively. AGS personnel collected samples of the native soil and bedrock materials for laboratory analysis from the sidewalls and floor of the tank pit, adjacent to the ends of each tank, from beneath the product fuel lines, and from the former waste-oil UST area. Only a small amount of ground water was encountered in the pit.

On June 21 through August 1, 1989, Paradiso performed further excavation of hydrocarbon-containing soil around the former gasoline tank pit and service islands. A minimum of one soil sample was collected from each of the areas where additional excavation was conducted before the excavation was backfilled with pea gravel. Soil was excavated to the east edge of the City sidewalk, to a depth of approximately 15 feet.

Laboratory analysis of soil samples from the tank pit excavation, collected promptly after tank removal, indicated concentrations of total petroleum hydrocarbons as gasoline (TPHg) up to 4,300 parts per million (ppm). The highest concentrations were detected in the samples from the southwest corner of the tank pit, in the relative downgradient direction of ground-water flow. Composite samples from the floor and sidewalls of the final excavation indicated TPHg concentrations of less than detection limits, while discrete soil samples contained 8.9 ppm TPHg or less. The laboratory results of samples taken after final excavation indicate that the hydrocarbon-impacted soil in and around the gasoline UST pit was excavated.

Laboratory analysis of two soil samples collected from a depth of approximately 8 feet below the ground surface beneath the former waste-oil UST location indicated 480 and 87 ppm TPHg, 1,300 and 1,800 ppm total oil and grease (TOG), and no detectable levels of volatile organic compounds (VOC).

We collected soil samples from aerated stockpiles of soil from the gasoline UST pit on 10 occasions. Once the laboratory results indicated less than 100 ppm hydrocarbon in the soil, AGS informed Paradiso, and they transported the aerated soil to the Redwood Sanitary Landfill, Inc. Class III disposal facility in North Novato, California.

Laboratory results of soil samples collected from stockpiled soil excavated from the former waste-oil UST area indicated up to 6,900 ppm TOG, 170 ppm TPHg, very low to nondetectable levels of benzene, toluene, ethylbenzene, and total xylene isomers (BTEX), and no detectable levels of VOC. We understand that this soil was removed from the site by Paradiso and disposed of in an appropriate Class I disposal facility.

On June 19, 1989, two new 12,000-gallon double walled fiberglass-coated USTs for gasoline were placed in the tank pit, and the pit was backfilled with pea gravel. A new 520-gallon double walled fiberglass-coated waste-oil UST was placed underground on the

north side of the station building southeast of and adjacent to the new gasoline USTs. Monitoring wells MW-1 and MW-3 were destroyed during the soil excavation.

At the completion of the tank replacement, in the Recommendations section of this report, we recommended that the remaining onsite ground-water monitoring wells MW-2 and MW-6, and offsite monitoring wells MW-4 and MW-5, be monitored and sampled quarterly to evaluate trends in the concentrations of dissolved hydrocarbon constituents with time at Unocal's request. This monitoring has been continuously carried out by AGS. We also recommended further evaluation of the lateral and vertical extent of hydrocarbons in soil in the southwestern and southern portion of the property near the former waste-oil tank location. Drilling of five additional soil borings, B-7 through B-11 was completed on November 18, 1989, and the report (AGS report No.18061-5) documenting that work is forthcoming. In addition, a preliminary evaluation of alternatives and their feasibility for mitigating hydrocarbons in soil will be included in that report.

We recommend that copies of this report be submitted to Mr. Scott Seery of the Alameda County Health Care Services Agency, Department of Environmental Health, Hazardous Materials Division, 80 Swan Way, Room 200, Oakland, California 94621, and Mr. Scott Hugenberger of the California Regional Water Quality Control Board, San Francisco Bay Region, 1800 Jackson Street, Suite 700, Oakland, California 94612. Please call us if you have questions.

Sincerely,
Applied GeoSystems

Parnian Kaboli
Project Manager

Enclosure: Report on Soil Excavation, Aeration, and Sampling Related to Underground Storage Tank Removal

CONTENTS

PLATES

TABLES

APPENDICES

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

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REPORT
SOIL EXCAVATION, AERATION, AND SAMPLING RELATED TO UNDERGROUND STORAGE TANK REMOVAL
at
Unocal Station No. 5484
18950 Lake Chabot Road
Castro Valley, California

INTRODUCTION

At the request of Unocal Corporation (Unocal), Applied GeoSystems conducted a limited environmental investigation in conjunction with the removal of two underground storage tanks (USTs) for gasoline and associated product lines, and one UST for waste oil, at Unocal Station No. 5484 in Castro Valley, California. The purpose of the investigation was to examine the potential hydrocarbon impact on the native soil and bedrock after removal of USTs and associated fuel lines, by sampling the soil below and adjacent to the excavated tanks. The scope of work also included observation of the excavation and aeration activities as hydrocarbon-containing soil was removed from the tank pits.

This report describes our field activities, the soil sampling procedures, the results of laboratory analyses of samples collected during the tank removal and replacement activities, and our recommendations for the site.

SITE DESCRIPTION AND BACKGROUND

Site Location and Features

Unocal Service Station No. 5484 is at the southeast corner of the intersection of Lake Chabot Road and Quail Avenue (Walnut Road) in Castro Valley, California, as shown on the Site Vicinity Map, Plate P-1. The site is at an elevation of approximately 230 feet above mean sea level. Until June 12, 1989, facilities at the site included a station building, two dispenser islands and a canopy, two 10,000-gallon USTs for gasoline, and one 280-gallon UST for waste oil. The relative locations of these facilities are shown on the Generalized Site Plan, Plate P-2. The USTs T1 and T2 were used to store regular-unleaded and super-unleaded gasoline, respectively, in the south-central portion of the property. The waste-oil UST was approximately 6 feet south of the station building.

The site is bounded to the north by residential properties. To the south and east of the site are a community center and park properties administered by the Hayward Area Recreation and Park District. Several commercial businesses and two vacant lots are west of the site across Lake Chabot Road.

Background and Previous Work

On the basis of information provided by Unocal, it appears likely that leakage occurred in the fiberglass adapter and the sub-pump swing joint of the underground unleaded gasoline UST. Additionally, we understand from conversations with the current station manager that one or more releases of hydrocarbon constituents may have occurred several years ago in the turbine area of one of the tanks.

At Unocal's request, AGS periodically has monitored and sampled ground water in three onsite ground-water monitoring wells (MW-1, MW-2, and MW-3) since October 1988. The locations of wells MW-1 through MW-3 are shown on Plate P-2. Work has included measuring depth to ground water in the wells to evaluate ground-water gradient and flow direction; subjectively evaluating ground-water samples; measuring the thickness of and bailing floating product, when present, from well MW-3; and purging and sampling the other two wells for laboratory analyses. Ground-water samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg) and for the purgeable gasoline constituents benzene, toluene, ethylbenzene, and total xylene isomers (BTEX).

Because of the presence of floating product in well MW-3, in January 1989 AGS recommended additional work to delineate and eliminate the source of hydrocarbons. The Alameda County Health Care Services Agency (ACHCSA) concurred and requested

that a Work Plan be prepared for the additional work. At Unocal's request, a Letter Work Plan was prepared on March 22, 1989. The ACHCSA approved the Letter Work Plan on April 28, 1989.

CONCURRENT WORK

At the request of Unocal, AGS had an additional soil boring drilled at the site (B-6), and had two additional, offsite soil borings drilled southwest (downgradient) of the site (B-4 and B-5) in May and June 1989. AGS personnel constructed ground-water monitoring wells in those borings (MW-6, MW-4, and MW-5, respectively), and collected soil samples from the borings and ground-water samples from the monitoring wells to delineate further the extent and concentrations of hydrocarbon constituents in soil and ground water in the vicinity of the site. The locations of the monitoring wells are shown on Plate P-2.

Laboratory analysis of the soil and ground-water samples indicated very low to nondetectable levels (less than 2.4 ppm TPHg in soil; less than 0.026 ppm TPHg in ground water) of petroleum hydrocarbons. The results of that phase and our ongoing work at the site were communicated to Unocal in AGS Report No. 18061-3, dated September 11, 1989.

areas which had been previously evaluated as containing elevated concentrations of petroleum hydrocarbons. These areas were near tanks T1 and T2, beneath the service island canopy, and near the former waste-oil UST location. Soil excavation during this stage of work resulted in the destruction and removal of ground-water monitoring wells MW-1 and MW-3.

Soil excavated from the gasoline UST pit and surrounding areas was temporarily stockpiled in the northern portion of the site and partially covered with plastic to prevent unauthorized release of hydrocarbons contained in the soil. A portion of the stockpile was left uncovered to allow hydrocarbon levels in the soil to decrease through aeration.

Soil was excavated from the base of the gasoline UST pit to a total depth of approximately 15 feet. A small amount of water recharged into the bottom of the excavation over the approximate 2-day period that the excavation pit was open prior to placement of new tanks. Soil adjacent to the waste-oil UST was excavated to a total depth of approximately 8 feet.

The total volume of hydrocarbon-containing soil excavated in conjunction with removal of the two gasoline-storage tanks and the waste-oil-storage tank was approximately 1,800

FIELD WORK

Field work was performed in accordance with AGS Site Safety Plan No. 18061-3S, May 22, 1989, as presented in Appendix A. Unocal Station No. 5484 was closed for approximately 3 months. Paradiso Construction, of Oakland, California (Paradiso), under direct contract to Unocal, excavated soil from areas beneath and around the USTs in two phases. The initial excavation, which was conducted from June 12 through June 16, 1989, included soil from immediately beneath the gasoline and waste-oil USTs. We understand that, prior to initiating excavation activities, Paradiso notified the Bay Area Air Quality Management District of their intent to remove the USTs and to aerate hydrocarbon-contaminating soil. As the gasoline USTs were removed, a strong hydrocarbon odor was emanating from the tank pit. No obvious signs of weakness were observed in the fuel lines, but soil discoloration and a strong product odor were noted in the fuel-line trenches at the east sides of the east and west service islands, respectively. Mr. Scott Seery of the ACHCSA was onsite on June 13 and June 16, 1989, to observe the tank removal and soil excavation. On June 19, 1989, two new 12,000-gallon double walled fiberglass-coated USTs for gasoline were placed in the tank pit, and the pit was backfilled with pea gravel. A new 520-gallon double walled fiberglass-coated waste-oil UST was placed underground on the north side of the station building southeast of and adjacent to the new gasoline USTs. Paradiso conducted the second phase of excavation between June 21 and August 1, 1989, which involved the excavation of additional soil in

cubic yards. A composite sketch showing the approximate location, lateral dimensions, and depth of the excavation is shown on Plate P-7.

Native soil underlying the gasoline-storage tank pit and the waste-oil-storage tank pit consisted of silty clay with gravel. A gray weathered and fractured siltstone bedrock was encountered beneath the soil at a depth of approximately 8 feet below the ground surface. Discoloration (grayish blue) was observed in soil and bedrock in these areas, at depths ranging from approximately 6 to 14 feet below grade.

SOIL SAMPLING

At the request of Unocal, we visited the site on 20 occasions between June 13 and August 4, 1989, to examine and sample native soil and bedrock from the two tank pit excavations and the soil stockpiles. Standardized field procedures are described in Appendix A. The field geologist initiated Chain-of-Custody Records (CCRs) for the soil samples and delivered them to a State-certified laboratory. Copies of the CCRs are presented in Appendix B.

We used an Organic Vapor Meter (OVM) or Organic Vapor Analyzer (OVA) to measure relative and approximate organic vapor concentrations in soil to evaluate disposal alternatives. The OVM and OVA procedures are described in Appendix A.

Gasoline UST and Service Island Excavation

On June 13, 1989, at the request of Mr. Scott Seery of the ACHCSA, AGS collected five soil samples from the sidewalls of the gasoline UST excavation (S-6-T1a, S-6-T1b, S-6-T2a, S-6-T2b, and S-6-T2s) to evaluate hydrocarbon concentrations in soil. Two samples were collected from each end wall of the pit, adjacent to each end of each tank, and one sample was collected from the south sidewall of the excavation. The approximate locations of the samples are shown on Plate P-3.

On June 16, 1989, AGS collected four soil samples (S-15-Tb1, S-14-Tb2, S-14-Tb3, and S-15-Tb4) from the bottom of the gasoline UST excavation. The samples were collected from approximately below the former locations of the tank fill ports. The approximate locations of the soil samples are shown on Plate P-4. OVM readings taken on the four samples identified above, by placing the intake probe on the sample sleeves, were 0.0, 1.4, 0.2, and 50 ppm, respectively.

Fuel lines in the areas of the tanks and service islands were removed and replaced during the soil excavation activities. On subsequent site visits, the AGS geologist observed soil discoloration, strong product odor, and elevated OVM readings (up to 557

ppm) in the native soil beneath the fuel-line trenches at the east sides of both the east and west service islands.

On July 19, 1989, AGS personnel collected two soil samples (S-0719-1A and S-0719-1B) at a depth of approximately 11.5 feet from the east sidewall of the expanded gasoline-tank excavation and on July 24, 1989, two additional soil samples (S-0724-1A and S-0724-1B) were collected from a depth of approximately 12 feet from the east sidewall of the expanded excavation. Each set of soil samples was composited into one sample by the laboratory prior to analysis. The approximate locations of the samples are shown on Plate P-5.

A composite sketch showing the locations of stockpiled soil excavated from the gasoline and waste-oil UST pits is shown on Plate P-6. Soil excavated from the waste-oil UST pit was placed next to the pit, southwest of the station building (Plate P-6).

As excavation of the hydrocarbon-impacted soil was proceeding, AGS personnel collected one soil sample (S-12-WF) from the excavation on the southwest end of the service island west canopy footing on July 25, 1989. The sample was collected from the floor of the approximately 12-foot by 12-foot pit near the west canopy footing. On July 28, 1989, one soil sample (S-0728-1A) was collected from the floor of the excavation just west of the east canopy footing. On August 1, 1989, a geologist collected one soil

sample (S-15-PIT) from the floor of the newly excavated pit between the canopy footings and extending northeast from the service island area. This sample was collected from a depth of approximately 15 feet.

On August 3, 1989, two soil samples (S-0803-1B and S-0803-1W) were collected from the gasoline UST excavation floor and sidewall. The samples were collected from the newly excavated area northeast of the service island area. The approximate limits of the excavation and the OVM readings from the excavation sidewalls, which ranged from approximately 9 to 290 ppm, are shown on Plate P-7.

Waste-Oil UST Excavation

On June 28, 1989, AGS personnel collected two initial soil samples from native soil beneath the waste-oil UST at a depth of approximately 7 feet below the ground surface for laboratory analysis. The approximate locations of the soil samples are shown on Plate P-4.

On July 5 and July 11, 1989, AGS collected soil samples from the floor of the waste-oil UST excavation. Samples S-0705-4A and S-0705-4B were collected from a depth of approximately 7 feet on July 5. Samples S-0711-WT1 and S-0711-WT2 were collected

from a depth of approximately 8 feet on July 11. Each sample set was composited into one sample by the laboratory prior to analysis.

Stockpiled Soil

On June 19, 1989, AGS personnel collected 40 soil samples from the main stockpile of soil excavated from the gasoline-storage-tank excavation. The 40 samples were composited into 10 composite samples in the laboratory (S-0619-1A-4A through S-0619-1J-4J). Sample locations are shown on Plate P-5. Soil vapor from the stockpile exhibited OVA readings ranging from approximately 100 to 15,000 ppm.

On June 28, June 29, July 5, July 7, July 11, July 21, July 25, July 31, and August 4, 1989, AGS geologists collected soil samples from various small soil stockpiles on the central and eastern portions of the property, south of the main soil stockpile. Soil hydrocarbon vapors measured with the OVM indicated concentrations ranging from 0 to 89.2 ppm. Soil samples were collected from the stockpile stations in groups of four and those groups were composited for analysis. Table 1 shows dates of collection and numbers of the samples collected.

On July 5, 1989, AGS personnel collected four samples (S-0705-3A through S-0705-3D) from the stockpile of soil excavated from near the former waste-oil UST location.

Sample locations are presented on Plate P-5. The four samples were composited in the laboratory into one sample (S-0705-3A-3D). OVM readings from the soil vapor in the stockpile indicated levels less than 9.5 ppm.

ANALYTICAL METHODS AND RESULTS

Gasoline UST and Service Island Excavation

Discrete and composite soil samples collected from directly beneath the gasoline USTs, areas adjacent to the tank pit, and beneath and adjacent to the service islands and canopy were analyzed for total petroleum hydrocarbons as gasoline (TPHg) by modified Environmental Protection Agency (EPA) Method 8015. To meet new acceptance criteria established by representatives of the landfill site, after July 21, 1989, soil samples were also analyzed for the purgeable gasoline constituents benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) by EPA Method 8020.

Laboratory analyses for TPHg and BTEX were performed at the Applied GeoSystems laboratory in Fremont, California. This laboratory is certified by the State of California to perform the required tests (Certificate No. 153). The results of analyses of the discrete soil samples from the gasoline UST pit are presented in Table 2. The results of analyses of composite soil samples collected from bottoms of excavations in the area of

the gasoline tanks and service islands are presented in Table 4. Certified Analytical Reports (CARs) for all soil analyses are included in Appendix B. The analytical results indicate TPHg concentrations of 8.9 ppm or less and less than 1 ppm BTEX in discrete soil samples from the bottom of the final tank pit excavation (see Table 2, and no detectable levels of TPHg or BTEX in composite samples collected from the bottoms of the excavations (see Table 4).

Waste-Oil UST

Soil samples collected from beneath the waste-oil UST were analyzed for TPHg, BTEX, and total oil and grease (TOG) by Standard Method 503E, and for halogenated volatile organic compounds (VOC) by EPA Method 8240. Analyses were conducted at the Anametrix, Inc. laboratory in San Jose, California. This laboratory is certified by the State of California to perform the required tests (Certificate No. 151). Results of analyses of the discrete soil samples from the waste-oil tank pit are presented in Table 3.

The soil samples collected from beneath the waste-oil UST on July 11, 1989, showed TOG concentrations ranging from 1300 to 1800 ppm, TPHg concentrations ranging from 87 to 480 ppm, and nondetectable concentrations of volatile organic compounds, with the exception of up to 12 ppm toluene, up to 15 ppm ethylbenzene, and up to 74 ppm

xylenes. Results of the analyses of the composite soil samples from the stockpiled soil from the waste-oil UST pit are presented in Table 4 and discussed in the following section. CARs are included in Appendix B.

Stockpiled Soil

Composite soil samples collected from soil stockpiles resulting from excavation beneath and around the gasoline-tanks and service islands were analyzed for TPHg by modified Environmental Protection Agency (EPA) Method 8015. Selected samples were also analyzed for the purgeable gasoline constituents BTEX by EPA Method 8020.

Composite samples representing stockpiled soil from the waste-oil tank excavation pit were analyzed for TPHg and BTEX by EPA Methods 8015 and 8020; TOG by Standard Method 503E; and VOC by EPA Method 8240 to satisfy the landfill acceptance requirements. Table 4 presents the results of laboratory analyses of the above-mentioned composite soil samples.

Results of analyses of composited soil samples of stockpiled soil from the initial gasoline UST pit excavation indicated TPHg concentrations of 32 to 760 ppm. Laboratory analyses of soil samples collected from portions of this stockpile after sequential reworking and aeration by Paradiso indicated TPHg concentrations less than 66 ppm.

Analysis of composite samples collected from similar aerated stockpiles resulting from excavation of gasoline-containing soil in areas surrounding the gasoline tanks indicated less than 33 ppm TPHg, and no detectable concentrations of BTEX. The aerated soil was hauled offsite by Paradiso for disposal at an appropriate Class III disposal facility.

Laboratory analysis of the composite sample of stockpiled soil excavated from next to and directly below the waste-oil tank (S-0705-3A-3D) indicated 170 ppm TPHg, 0.240 ppm total xylenes, no detectable levels of benzene, toluene, or ethylbenzene, 6,900 ppm TOG, and no detectable levels of other VOCs. We understand that this soil was removed from the site by Paradiso and disposed of at an appropriate Class I disposal facility.

ADDITIONAL FIELD WORK

AGS has conducted a subsequent soil boring investigation in the area west and south of the station building. Results of laboratory analyses of soil samples collected from five borings (drilled to depths up to approximately 20 feet below grade) indicated a maximum concentration of TPHg of 220 ppm in subsurface soil; no detectable concentrations of TOG were found in soil samples collected from two of the borings drilled in the proximity of the former waste-oil UST pit. This data is presented in Applied GeoSystems Report No. 18061-5, which is in preparation.

CONCLUSIONS

Analyses of soil samples indicated detectable levels of hydrocarbons in subsurface soil and bedrock beneath and adjacent to the gasoline and waste-oil UST pits. The highest concentration of hydrocarbons in soil (4,300 ppm TPHg) was detected during the first phase of excavation, and appeared in the southwest (downgradient) corner of the gasoline UST pit.

Laboratory testing of the soil after the completion of the second phase of soil excavation in the area of the gasoline UST pit and service islands indicated that the majority of the hydrocarbon-containing soil in this area had been removed. Visual observation and field testing after excavation indicated that some hydrocarbons remain in the soil only in the area beneath the City sidewalk west of the area of the gasoline UST pit.

Laboratory analysis of discrete soil samples collected on July 11, 1989, from native soil beneath the former area of the waste-oil tank at depths ranging from approximately 7 to 10 feet below the ground surface indicated TOG concentrations ranging from 1300 to 1800 ppm and TPHg concentrations ranging from 87 to 480 ppm. These data suggest that subsurface soil beneath and adjacent to the former waste-oil UST may locally contain heavy hydrocarbons.

RECOMMENDATIONS

AGS recommends further evaluation of the lateral and vertical extent of hydrocarbons in soil in the southeastern and southern portion of the property, near the former waste-oil tank location. Drilling of five additional soil borings, B-7 through B-11, at locations shown on Plate P-8, is recommended.

We also recommend that the remaining onsite ground-water monitoring wells MW-2 and MW-6, and offsite monitoring wells MW-4 and MW-5, continue to be monitored and sampled quarterly to evaluate trends in the concentrations of dissolved hydrocarbons in ground water with time.

In addition we recommend a preliminary evaluation of alternatives and their feasibility for mitigating hydrocarbons in soil.

We recommend that Unocal forward copies of this report to Mr. Scott Seery at the Alameda County Health Care Services Agency, Department of Environmental Health, Hazardous Materials Division, 80 Swan Way, Room 200, Oakland, California 94621, and Mr. Lester Feldman of the California Regional Water Quality Control Board, San Francisco Bay Region, 1800 Harrison Street, Suite 700, Oakland, California 94612.

LIMITATIONS

This investigation has been conducted in accordance with standards of environmental geological practice generally accepted in California at the time this report was prepared. This investigation was conducted solely for the purpose of evaluating environmental conditions of the soil with respect to hydrocarbon-product in the vicinity of the tank pits on the subject property. No soil or engineering or geotechnical recommendations are implied or should be inferred. Evaluation of the geologic conditions at the site for the purpose this limited investigation is made from a limited number of observation points. Subsurface conditions may vary away from the data points available. Additional work, including further subsurface investigation, can reduce the inherent uncertainties associated with this type of investigation.

REFERENCES CITED

Applied GeoSystems. August 30, 1988. Report, Subsurface Environmental Investigation at Unocal Service Station No. 5484, 18950 Lake Chabot Road, Castro Valley, California. Job No. 18061-1.

Applied GeoSystems. January 6, 1989. Letter Report, Quarterly Ground-Water Monitoring at Unocal Service Station No. 5484, 18950 Lake Chabot Road, Castro Valley, California. Job No. 18061-2.

Applied GeoSystems. February 9, 1989. Letter Report, Quarterly Ground-Water Monitoring at Unocal Service Station No. 5484, 18950 Lake Chabot Road, Castro Valley, California. Job No. 18061-2.

Applied GeoSystems. March 22, 1989. Letter Work Plan, Delineation of Ground-Water Contamination at Unocal Service Station No. 5484, 18950 Lake Chabot Road, Castro Valley, California. Job No. 18061-3W.

Applied GeoSystems. May 22, 1989. Site Safety Plan. Job No. 18061-3S.

Hickenbottom, Kelvin, and Muir, Kenneth. June 1988. Geohydrology and Groundwater Quality Overview, East Bay Plain Area, Alameda County, California, 205(J) Report. Alameda County Flood Control and Water Conservation District.

Maslonkowski, D. P. 1984. Groundwater in the San Leandro and San Lorenzo alluvial cones of the East Bay Plan of Alameda County. Alameda County Flood Control and Water Conservation District.

Source: U.S. Geological Survey
7.5-Minute Quadrangle
Hayward, California
Photorevised 1980

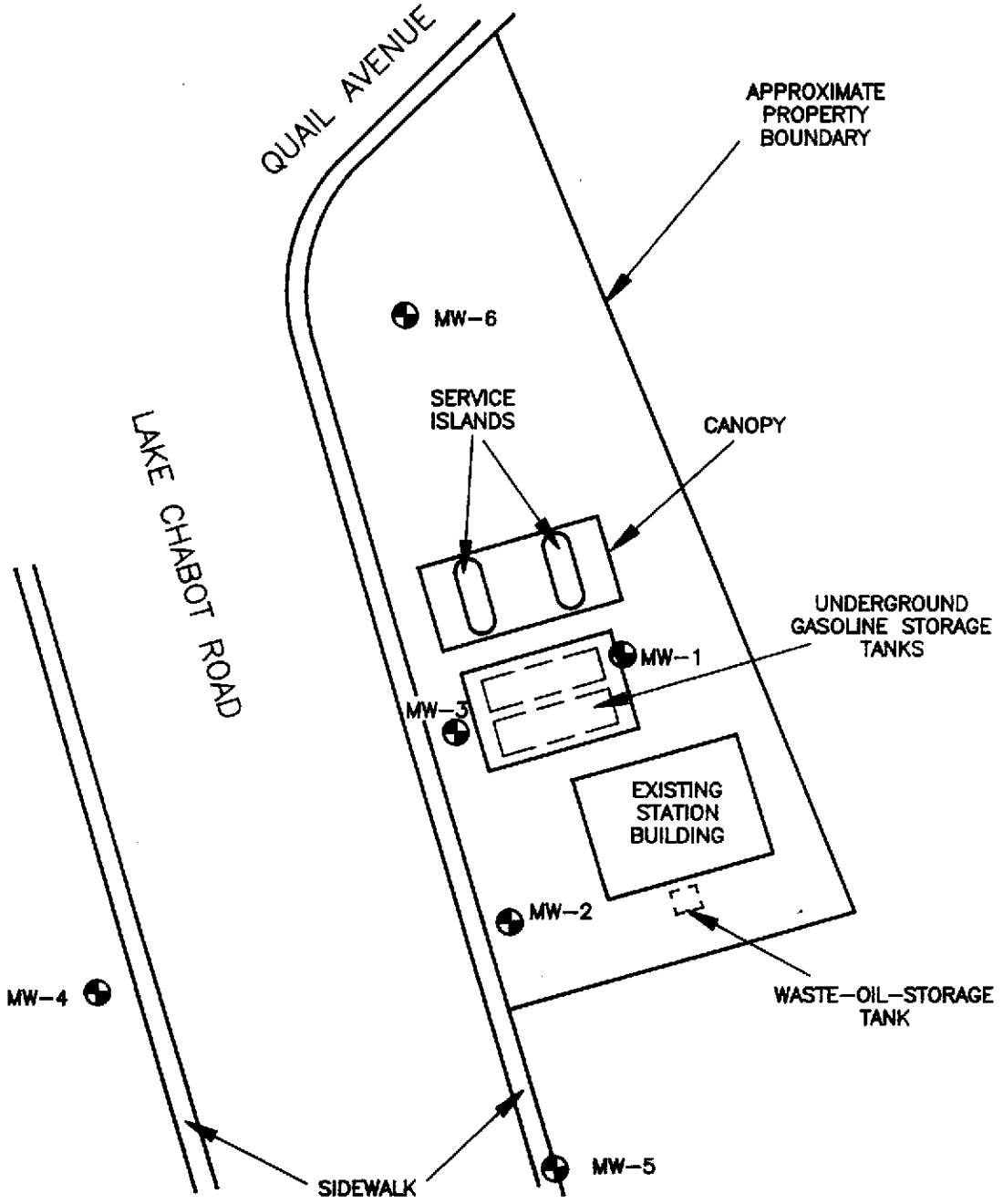
N

Approximate Scale

2000 1000 0 2000 4000

feet

Applied Geosystems	**SITE VICINITY MAP** **Unocal Station No. 5484** **18950 Lake Chabot Road** **Castro Valley, California**	**PLATE** **P - 1**
PROJECT NO. 18061-4		



MW-6 = Monitoring well

Source: Surveyed by Ron Archer, Civil Engineer, Inc.

N

Approximate Scale

40 20 0 40 80

feet

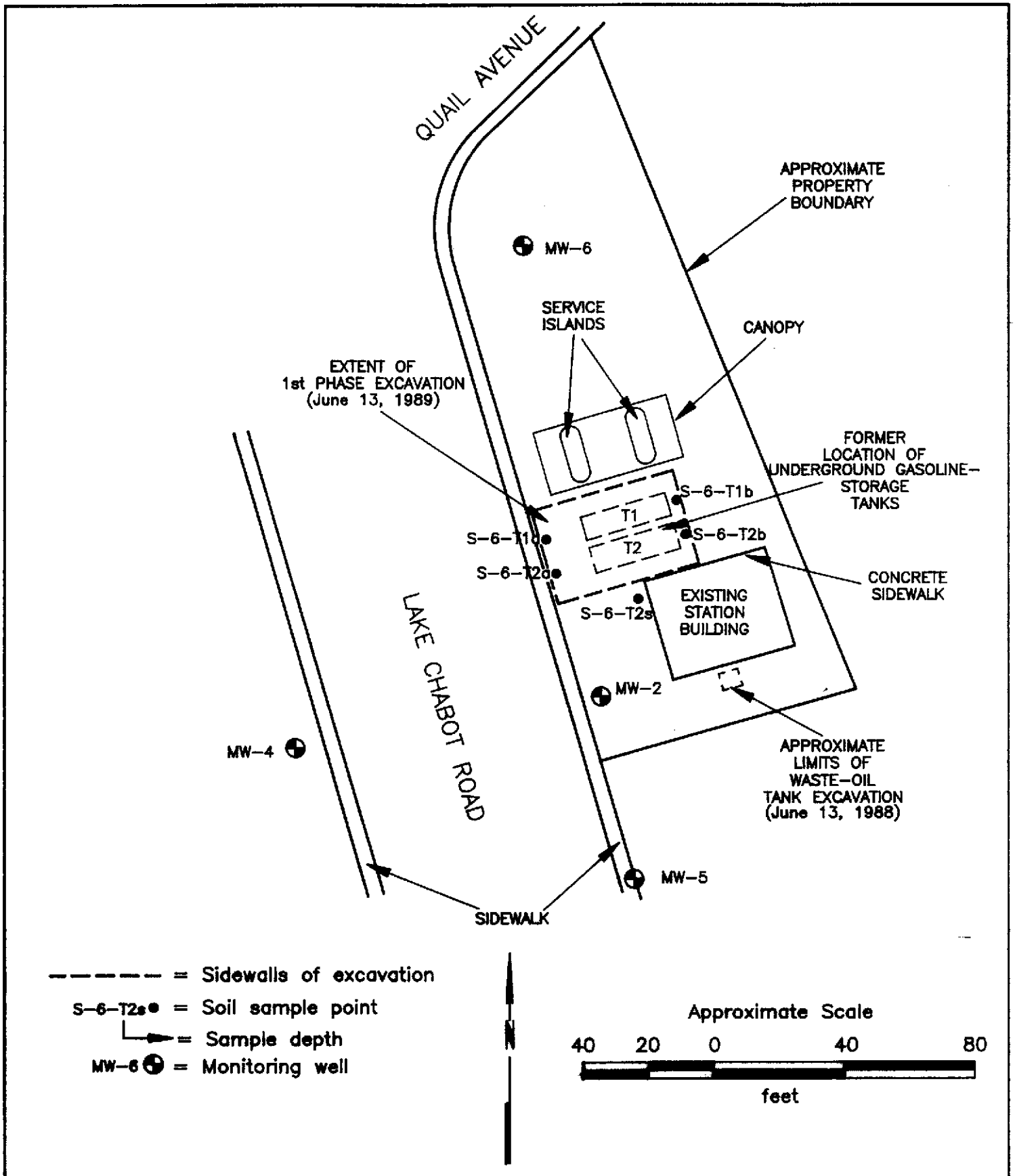
Applied GeoSystems

PROJECT NO. 18061-4

GENERALIZED SITE PLAN
Unocal Station No. 5484
18950 Lake Chabot Road
Castro Valley, California

PLATE

P - 2

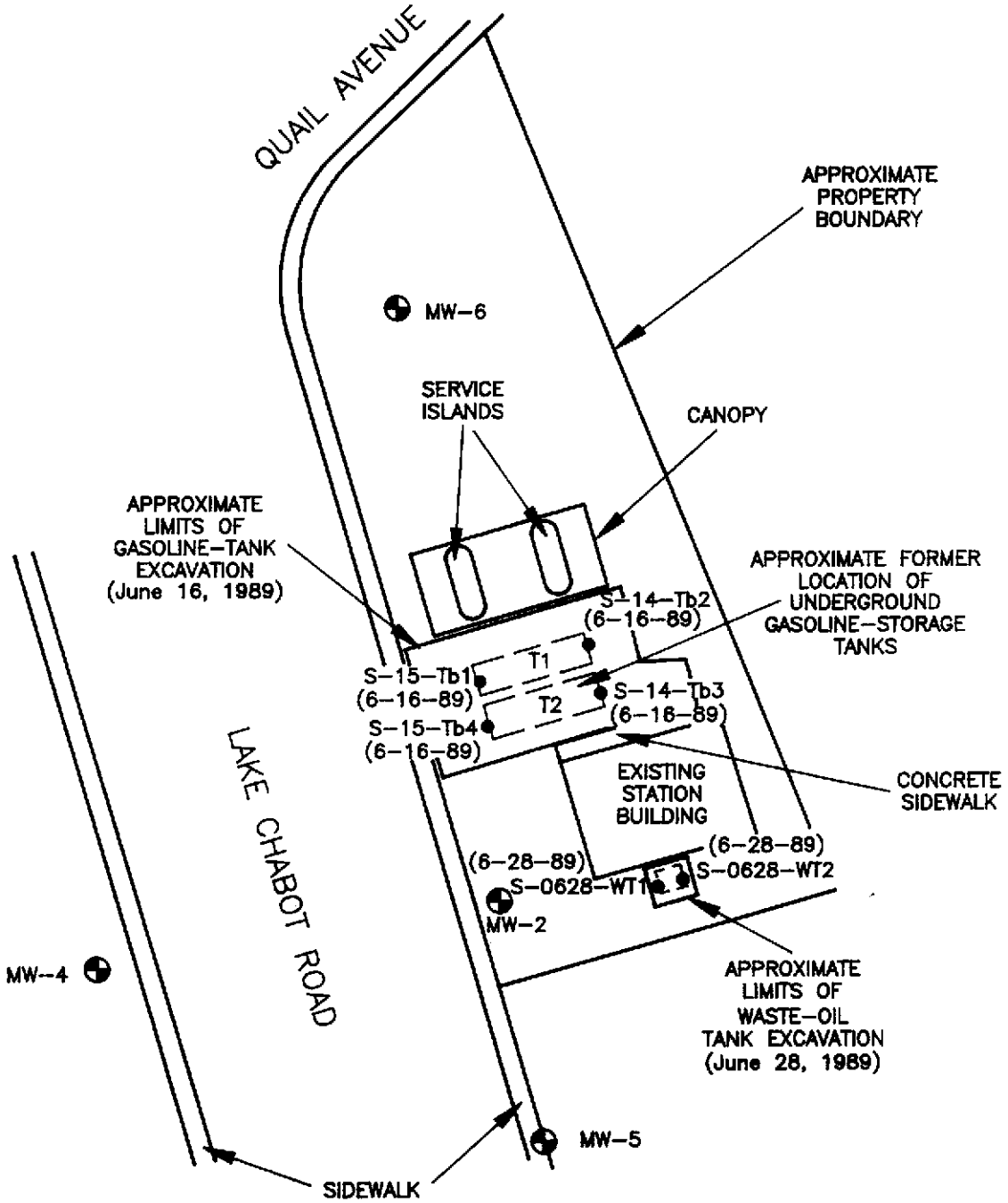


Applied GeoSystems

PROJECT NO. 18061-4

SOIL SAMPLE LOCATIONS : GASOLINE UST PIT SIDEWALLS
(June 13, 1989)
Unocal Station No. 5484
Castro Valley, California

PLATE
P - 3



S-15-Tb4 ● = Soil sample point
└→ = Sample depth
MW-6 ⊕ = Monitoring well

N

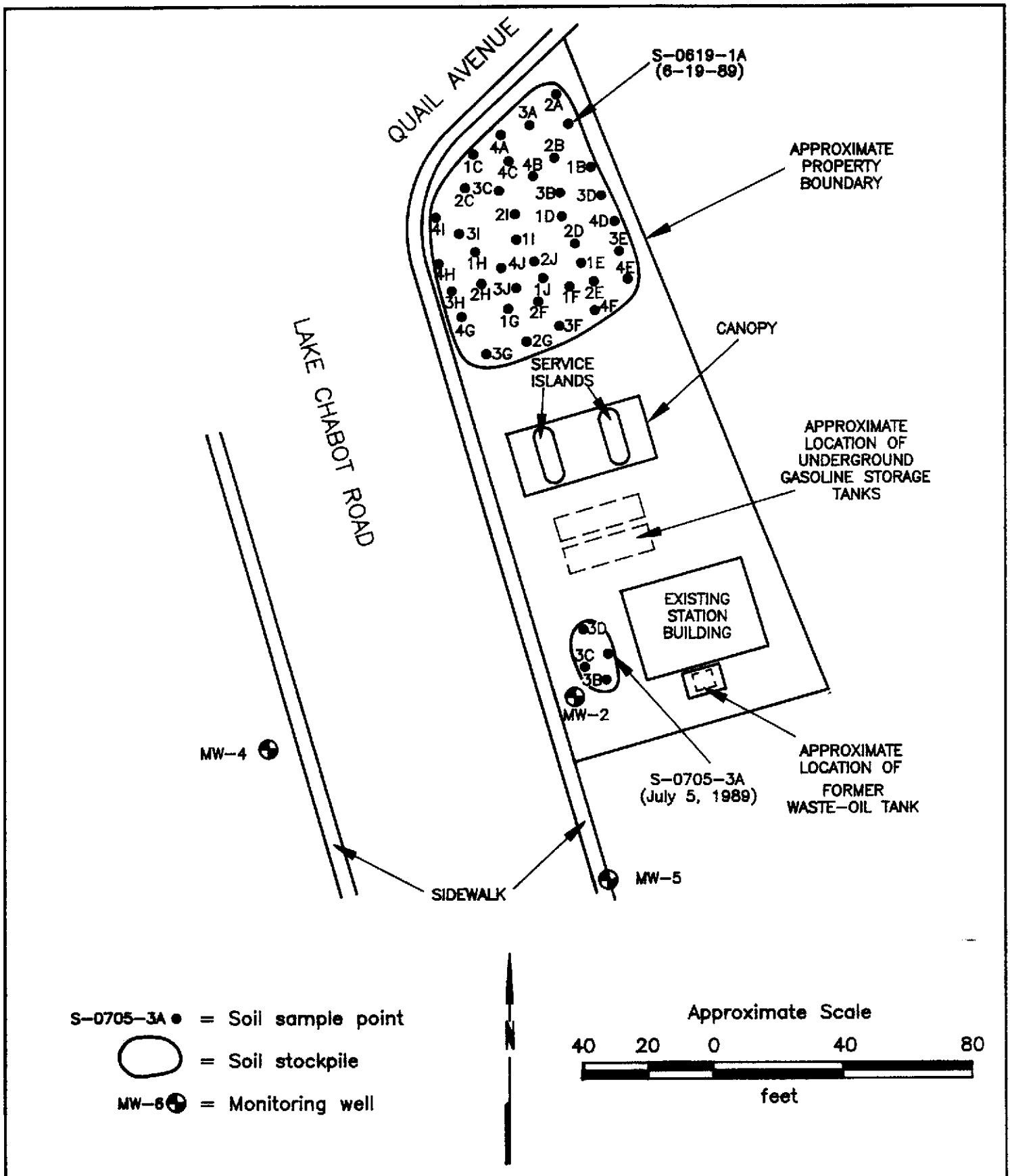
Approximate Scale
40 20 0 40 80
feet

Applied GeoSystems

PROJECT NO. 16061-4

SOIL SAMPLE LOCATIONS, EXTENT OF GASOLINE AND WASTE-OIL UST EXCAVATIONS
(June 16, 1989; June 28, 1989)
Unocal Station No. 5464
Castro Valley, California

PLATE
P - 4

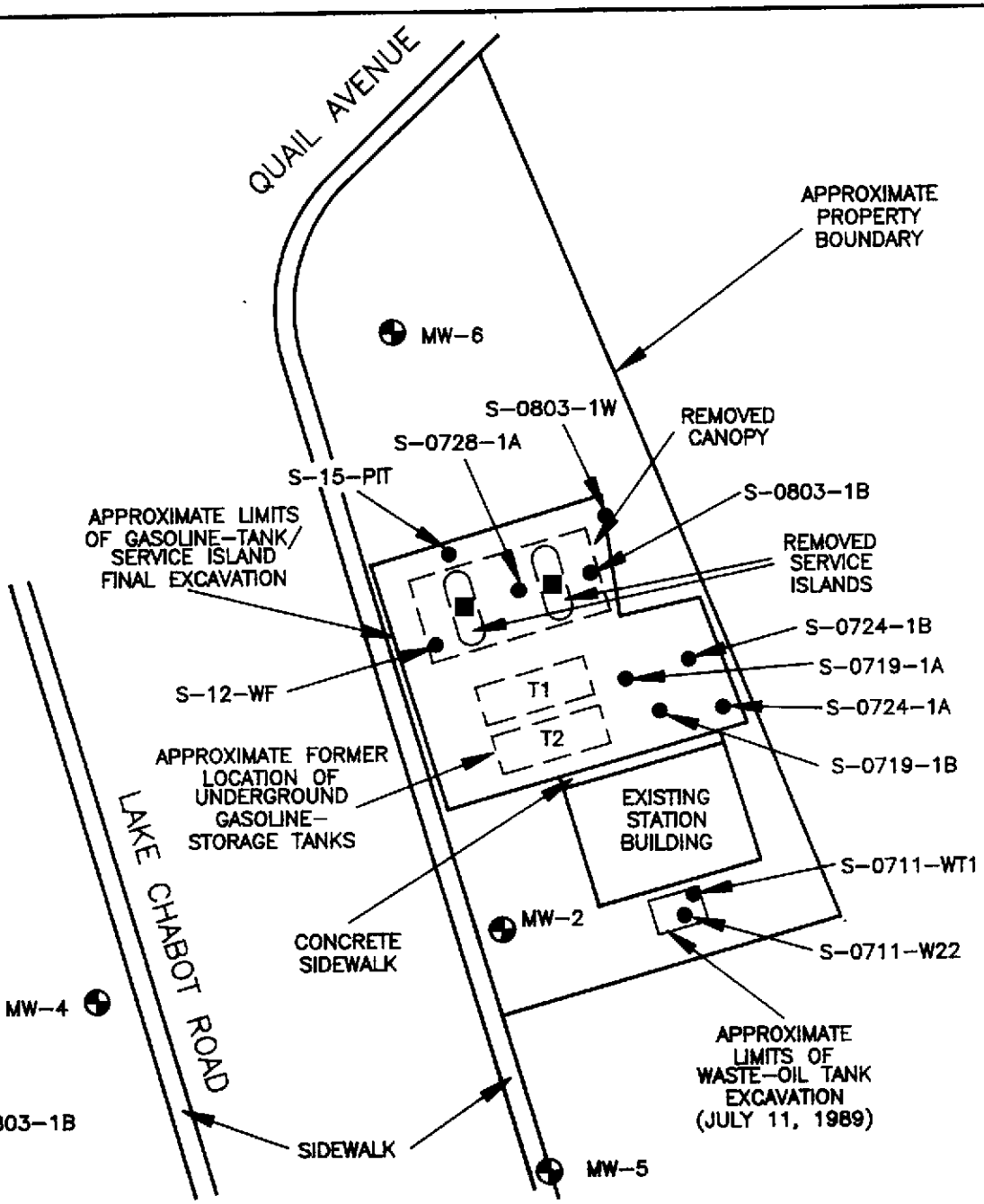


Applied GeoSystems

PROJECT NO. 18061-4

SOIL SAMPLE LOCATIONS:
SOIL STOCKPILES (6-19-89, 7-5-89)
Unocal Station No. 5484
18950 Lake Chabot Road
Castro Valley, California

PLATE
P - 5



S-0803-1B ● = Soil sample point

■ = Canopy posts

MW-6 ◔ = Monitoring well

N

Approximate Scale

40 20 0 40 80

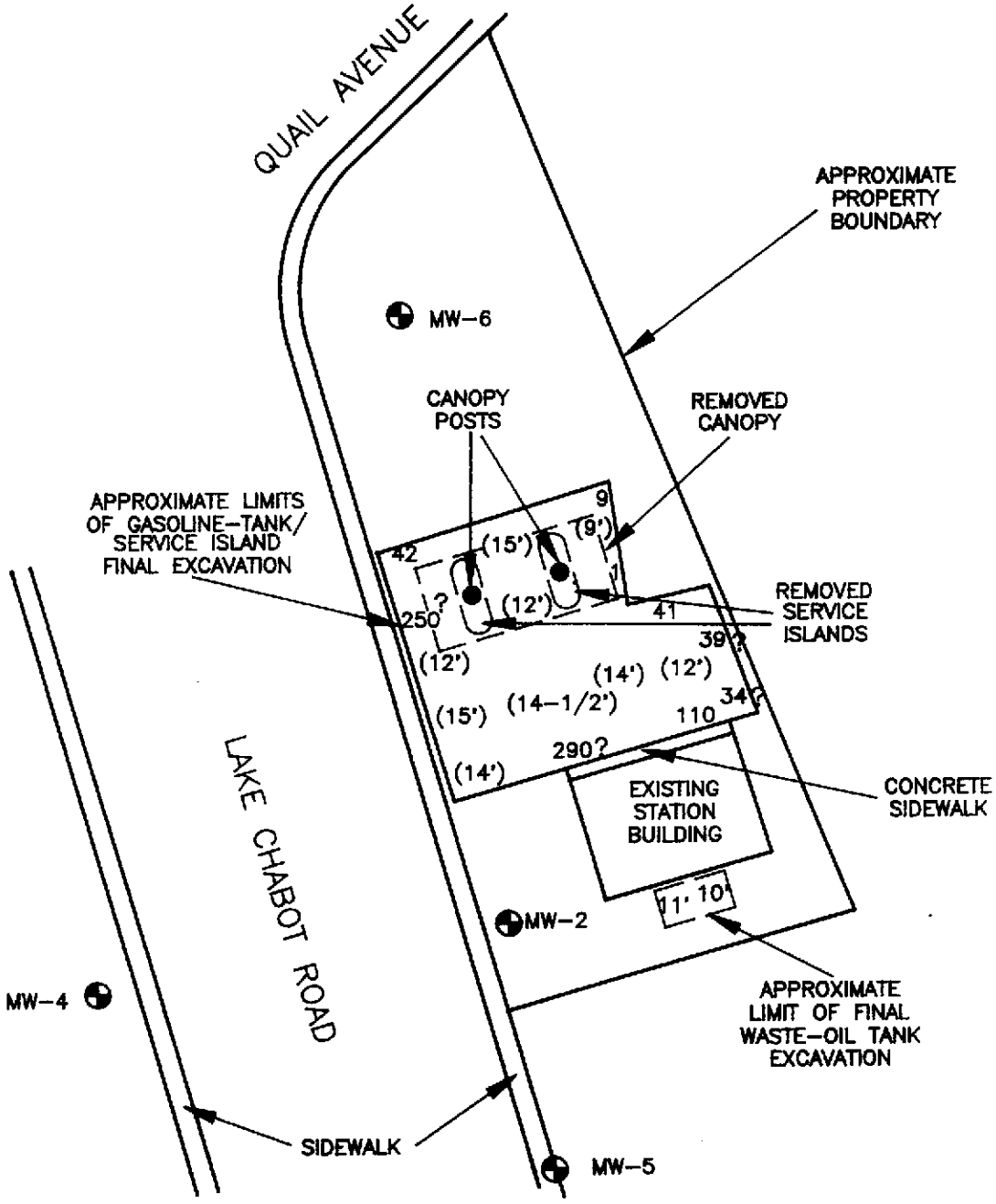
feet

Applied GeoSystems

PROJECT NO. 18061-4

SOIL SAMPLE LOCATIONS, GASOLINE UST SERVICE ISLAND, AND WASTE-OIL UST EXCAVATIONS (July 11 - August 3, 1989)
Unocal Station No. 5484
Castro Valley, California

PLATE P - 6



(15') = Approximate depth of excavation in feet

290 = OVM reading in sidewall of excavation in ppm

MW-6 = Monitoring well

Approximate Scale

40 20 0 40 80

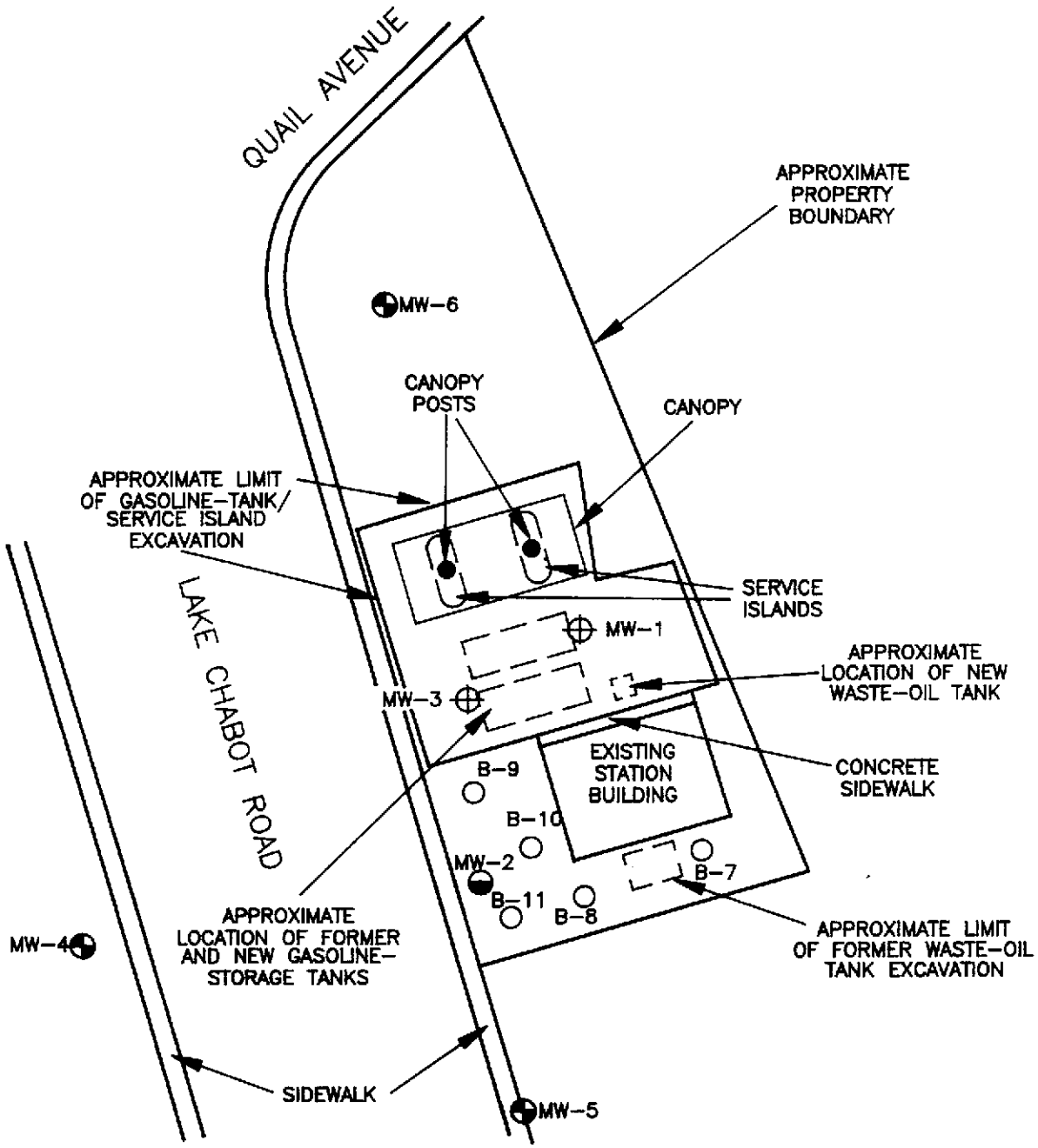
feet

Applied GeoSystems

PROJECT NO. 19061-4

APPROXIMATE LIMITS OF EXCAVATIONS AT COMPLETION OF SOIL REMOVAL
Unocal Station No. 5484
19950 Lake Chabot Road
Castro Valley, California

PLATE P - 7



B-11 ○ = Proposed soil boring

MW-6 ◒ = Monitoring well installed by Applied GeoSystems (1989)

MW-2 ◒ = Monitoring well installed by Applied GeoSystems (1988)

MW-3 ⊕ = Former monitoring well installed by Applied GeoSystems (1988)

N

Approximate Scale

40 20 0 40 80

feet

Source: Surveyed by Ron Archer, Civil Engineer, Inc.

Applied GeoSystems

PROJECT NO. 19061-4

PROPOSED BORING LOCATIONS
Unocal Station No. 5484
19950 Lake Chabot Road
Castro Valley, California

PLATE

P - 8

TABLE 1
COMPOSITE SAMPLES COLLECTED
FROM SMALL STOCKPILES
Unocal Service Station No. 5484
Castro Valley, California

Date of Collection	Sample Numbers
June 28, 1989:	S-0628-A through S-0628-D
	S-0628-E through S-0628-H
June 29:	S-0629-A through S-0629-D
	S-0629-E (separate sample)
July 5:	S-0705-1A through S-0705-1D
	S-0705-2A through S-0705-2D
July 7:	S-0707-1A through S-0707-1D
July 11:	S-0711-1A through S-0707-1D
	S-0711-2A through S-0711-2D
July 21:	S-0721-1A through S-0721-1D
	S-0721-2A through S-0721-2D
	S-0721-3A through S-0721-3D
July 25:	S-0725-1A through S-0725-1D
	S-0725-2A through S-0725-2D
	S-0725-3A through S-0725-3D
	S-0725-4A through S-0725-4D
July 31:	S-0731-1A through S-0731-1D
	S-0731-2A through S-0731-2D
	S-0731-3A through S-0731-3D
	S-0731-4A through S-0731-4D
August 4:	S-0804-1A through S-0804-1D
	S-0804-2A through S-0804-2D
	S-0804-3A through S-0804-3D
	S-0804-4A through S-0804-4D
	S-0804-5A through S-0804-5D
	S-0804-6A through S-0804-6D

TABLE 2
RESULTS OF ANALYSES OF DISCRETE SOIL SAMPLES
COLLECTED FROM GASOLINE TANK EXCAVATION
Unocal Service Station No. 5484
18950 Lake Chabot Road
Castro Valley, California

Sample ID	Date Sampled	TPHg	B	T	E	X
S-6-T1a	06/13/89	2,100	13	110	37	230
S-6-T1b	06/13/89	1,800	5.6	89	35	210
S-6-T2a	06/13/89	4,300	12	150	57	350
S-6-T2b	06/13/89	1,400	9.7	100	47	270
S-6-T2S	06/13/89	1,800	4.2	48	39	240
S-15-Tb1	06/16/89	<2.0	<0.050	0.056	<0.050	0.15
S-14-Tb2	06/16/89	<2.0	<0.050	<0.050	<0.050	<0.050
S-14-Tb3	06/16/89	<2.0	<0.050	<0.050	<0.050	<0.050
S-15-Tb4	06/16/89	8.9	<0.050	0.27	0.13	0.88
S-12-WF	07/25/89	<2.0	<0.050	<0.050	<0.050	<0.050
S-0728-1A	07/28/89	<2.0	<0.050	<0.050	<0.050	<0.050
S-15-PIT	08/01/89	3.4	<0.050	<0.050	<0.050	<0.050
S-0803-1B	08/03/89	<2.0	<0.050	<0.050	<0.050	<0.050
S-0803-1W	08/03/89	<2.0	<0.050	<0.050	<0.050	<0.050

Results reported in parts per million (ppm)
TPHg = total petroleum hydrocarbons as gasoline
TPHd = total petroleum hydrocarbons as diesel
B = benzene
T = toluene
E = ethylbenzene
X = total xylene isomers
< = less than detection limit for method of analysis used

Sample description: S-6-T2S

- S — Soil sample
- 6 — Depth below grade (feet)
- T — Tank number
- 2 — Wall of pit sampled (a = west; b = east; S = south) (Tb = Bottom sample)

TABLE 3
RESULTS OF ANALYSES OF DISCRETE SOIL SAMPLES
COLLECTED FROM WASTE-OIL TANK EXCAVATION
Unocal Service Station No. 5484
18950 Lake Chabot Road
Castro Valley, California

Sample ID	TPHg	B	T	E	X	TOG	VOC
S-0711-WT1	480	<1.0	12.0	15.0	74.0	1300	ND#
S-0711-WT2	87	<0.5	1.3	2.1	9.1	1800	ND#

Results reported in parts per million (ppm)
TPHg = total petroleum hydrocarbons as gasoline
B = benzene
T = toluene
E = ethylbenzene
X = total xylene isomers
TOG = total oil and grease
VOC = halogenated and aromatic organics
< = less than detection limit for method of analysis used
ND = no constituents detected
ND# = constituents other than B,T,E, and X not detected

Sample description: S-0705-3A-D
- S — Soil sample
- 0705 — Date collected (month and day)
- 3A-D — Composite sample name

TABLE 4
RESULTS OF ANALYSES OF COMPOSITE SOIL SAMPLES
FROM EXCAVATION BOTTOMS AND STOCKPILES
Unocal Service Station No. 5484
Castro Valley, California
(page 1 of 3)

Sample ID	TPHg	B	T	E	X	TOG	VOC
Gasoline UST pit excavation							
S-0719-1A-1B	<2.0	<0.050	<0.050	<0.050	<0.050	NA	NA
S-0724-1A-1B	<2.0	<0.050	<0.050	<0.050	<0.050	NA	NA
Waste-oil UST pit excavation							
S-0628-WT1,2	650	<2.0	8.0	3.0	26.0	19,000	0.0078*
S-0705-4A-4B	110	0.026	0.110	0.065	0.480	1,200	ND#
Composite samples collected from aerated soil stockpiles							
Gasoline UST pit							
S-0619-1A-4A	400	NR	NR	NR	NR	NA	NA
S-0619-1B-4B	56	NR	NR	NR	NR	NA	NA
S-0619-1C-4C	32	NR	NR	NR	NR	NA	NA
S-0619-1D-4D	760	NR	NR	NR	NR	NA	NA
S-0619-1E-4E	130	NR	NR	NR	NR	NA	NA
S-0619-1F-4F	110	NR	NR	NR	NR	NA	NA
S-0619-1G-4G	74	NR	NR	NR	NR	NA	NA
S-0619-1H-4H	610	NR	NR	NR	NR	NA	NA
S-0619-1I-4I	430	NR	NR	NR	NR	NA	NA
S-0619-1J-4J	560	NR	NR	NR	NR	NA	NA
S-0628-A-D	16	NR	NR	NR	NR	NA	NA
S-0628-E-H	<2	NR	NR	NR	NR	NA	NA
S-0629-A-D	21	NR	NR	NR	NR	NA	NA
S-0629-E	12	NR	NR	NR	NR	NA	NA
S-0705-1A-1D	18	NR	NR	NR	NR	NA	NA
S-0705-2A-2D	4.8	NR	NR	NR	NR	NA	NA
S-0707-1A-1D	31	NR	NR	NR	NR	NA	NA
S-0711-1A-1D	66	NR	NR	NR	NR	NA	NA
S-0711-2A-2D	42	NR	NR	NR	NR	NA	NA
S-0721-1A-1D	15	NR	NR	NR	NR	NA	NA
S-0721-2A-2D	33	NR	NR	NR	NR	NA	NA
S-0721-3A-3D	8.5	NR	NR	NR	NR	NA	NA

See notes, page 3 of 3.

TABLE 4
RESULTS OF ANALYSES OF COMPOSITE SOIL SAMPLES
FROM EXCAVATION BOTTOMS AND STOCKPILES
Unocal Service Station No. 5484
Castro Valley, California
(page 2 of 3)

Sample ID	TPHg	B	T	E	X	TOG	VOC
Gasoline UST pit (continued)							
S-0725-1A-1D	<2.0	<0.050	<0.050	<0.050	<0.050	NA	NA
S-0725-2A-2D	<2.0	<0.050	<0.050	<0.050	<0.050	NA	NA
S-0725-3A-3D	11	<0.050	<0.050	<0.050	<0.050	NA	NA
S-0725-4A-4D	3.4	<0.050	<0.050	<0.050	<0.050	NA	NA
S-0731-1A-1D	2.4	<0.050	<0.050	<0.050	<0.050	NA	NA
S-0731-2A-2D	3.8	<0.050	<0.050	<0.050	<0.050	NA	NA
S-0731-3A-3D	2.7	<0.050	<0.050	<0.050	<0.050	NA	NA
S-0731-4A-4D	26	<0.050	<0.050	<0.050	<0.050	NA	NA
S-0804-1A-1D	<2.0	<0.050	<0.050	<0.050	<0.050	NA	NA
S-0804-2A-2D	<2.0	<0.050	<0.050	<0.050	<0.050	NA	NA
S-0804-3A-3D	<2.0	<0.050	<0.050	<0.050	<0.050	NA	NA
S-0804-4A-4D	<2.0	<0.050	<0.050	<0.050	<0.050	NA	NA
S-0804-5A-5D	<2.0	<0.050	<0.050	<0.050	<0.050	NA	NA
S-0804-6A-6B	<2.0	<0.050	<0.050	<0.050	<0.050	NA	NA
Waste-oil UST pit							
S-0705-3A-D	170	<0.01	<0.01	<0.01	0.240	6900	ND#

See notes, page 3 of 3.

TABLE 4
RESULTS OF ANALYSES OF COMPOSITE SOIL SAMPLES
FROM EXCAVATION BOTTOMS AND STOCKPILES
Unocal Service Station No. 5484
Castro Valley, California
(page 3 of 3)

Sample ID	TPHg	B	T	E	X	TOG	VOC

NR = analysis not required
NA = sample not analyzed for particular constituent
0.0078* = halogenated volatile organics by EPA Method 8010:
0.0078 ppm tetrachloroethene
0.0009 ppm 1,1-dichloroethene
0.0032 ppm 1,1-dichloroethane
0.0054 ppm 1,1,1-trichloroethane
0.0007 ppm trichloroethene

Results reported in parts per million (ppm)
TPHg = total petroleum hydrocarbons as gasoline
B = benzene
T = toluene
E = ethylbenzene
X = total xylene isomers
TOG = total oil and grease
VOC = halogenated and aromatic organics by EPA Method 8240 (unless otherwise specified)
< = less than detection limit for method of analysis used
ND = no constituents detected
ND# = constituents other than B,T,E, and X not detected

Sample description: S-0705-3A-D
- S — Soil sample
- 0705 — Date collected (month and day)
- 3A-D — Composite sample name

APPENDIX A

STANDARDIZED FIELD PROCEDURES

STANDARDIZED FIELD PROCEDURES

Site Safety Plan

Field work performed at the site by Applied GeoSystems on behalf of Unocal was conducted in accordance with Applied GeoSystems Site Safety Plan No. 18061-3S (Applied GeoSystems, May 22, 1989). This safety plan describes the basic safety requirements for the subsurface environmental investigation and excavation of the tanks. The Site Safety Plan was applicable to personnel and subcontractors of Applied GeoSystems. Personnel and subcontractors of Applied GeoSystems scheduled to perform work at the site were briefed on the contents of the Site Safety Plan before work began. The staff representative of Applied GeoSystems acted as the Site Safety Officer.

Soil Sample Collection and Subjective Analysis

The geologist used an Organic Vapor Meter (OVM) or Organic Vapor Analyzer (OVA) to evaluate organic vapor concentrations in bulk samples of soil collected from the pit sidewalls and soil stockpiles. Measurements made with instruments like the OVM and OVA indicate relative organic vapor concentrations in soil, but cannot measure the soil hydrocarbon concentrations with the confidence of laboratory analyses. Readings were collected by placing the intake probe into 6-inch-deep holes dug into a bucket load of soil when the backhoe brought it to the surface, or into 6-inch- to 1-foot-deep holes dug into the soil stockpile.

Soil samples were collected by driving a handheld percussion sampler lined with a clean brass sleeve into the soil in the backhoe bucket or into the floor of the excavation. Soil samples were collected from stockpiled soil by driving a handheld percussion sampler lined with a clean brass sleeve into the stockpile after digging into it 1 to 3 feet. The samples were sealed promptly in their sleeves with aluminum foil, plastic caps, and aluminized duct tape. They were then labeled and placed in iced storage for transport to the laboratory of Applied GeoSystems in Fremont, California, or to the Anametrix laboratory in San Jose, California, for analysis. These laboratories are certified by the State of California to perform the required analyses (Certificate Nos. 153 and 151, respectively). Chain of Custody Records for the samples were prepared by the geologist and accompanied the samples to the laboratory. Copies of these forms are included in Appendix B of this report.

APPENDIX B

CHAIN OF CUSTODY RECORDS

AND

CERTIFIED ANALYTICAL REPORTS

CHAIN OF CUSTODY RECORD

Applied GeoSystems

43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): Jon R. Luellen

Phone: (415) 651-1906

LABORATORY: Applied GeoSystems

TURNAROUND TIME: 24-hour

Project Leader: Jon Luellen

Phone No. (415) 651-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
Jon R. Luellen			
	Received for laboratory by: [signature]	8/4/89	17 30

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
composite: S-0804-1a	18061-4	08/04/89	TPHg & BTEX	ICED
S-0804-1b				
S-0804-1c				
S-0804-1d				
composite: S-0804-2a				
S-0804-2b				
S-0804-2c				
S-0804-2d				
composite: S-0804-3a				
S-0804-3b				
S-0804-3c				
S-0804-3d				

CHAIN OF CUSTODY RECORD

Applied GeoSystems
43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): Jon R. Zuellen

Phone: (415) 651-1906

LABORATORY: Applied GeoSystems

TURNAROUND TIME: 24-hour

Project Leader: Jon Luellen

Phone No. (415) 651-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
Jon R Zuellen			
	Received for laboratory by:	8/4/89	17 30

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
composite S-0804-4a	1806-4	08/04/89	TPH g & BTEX	ICED
S-0804-4b				
S-0804-4c				
S-0804-4d				
composite S-0804-5a				
S-0804-5b				
S-0804-5c				
S-0804-5d				
composite S-0804-6a				
S-0804-6b				

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ANALYSIS REPORT

0212lab.frm

Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 08-04-89
Laboratory Number: 90814S01
Project #: 18061-4
Sample #: S-0804-1(abcd)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	ND		2.0		08-04-89	
TEH as Diesel						NR
Benzene	ND		0.050		08-04-89	
Toluene	ND		0.050		08-04-89	
Ethylbenzene	ND		0.050		08-04-89	
Total Xylenes	ND		0.050		08-04-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

08-07-89
Date Reported

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ANALYSIS REPORT

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 08-04-89
Laboratory Number: 90814S02
Project #: 18061-4
Sample #: S-0804-2(abcd)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	ND		2.0		08-04-89	
TEH as Diesel						NR
Benzene	ND		0.050		08-04-89	
Toluene	ND		0.050		08-04-89	
Ethylbenzene	ND		0.050		08-04-89	
Total Xylenes	ND		0.050		08-04-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

08-07-89
Date Reported

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ANALYSIS REPORT

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 08-04-89
Laboratory Number: 90814S03
Project #: 18061-4
Sample #: S-0804-3(abcd)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	ND		2.0		08-04-89	
TEH as Diesel						NR
Benzene	ND		0.050		08-04-89	
Toluene	ND		0.050		08-04-89	
Ethylbenzene	ND		0.050		08-04-89	
Total Xylenes	ND		0.050		08-04-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

08-07-89
Date Reported

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ANALYSIS REPORT

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 08-04-89
Laboratory Number: 90814S04
Project #: 18061-4
Sample #: S-0804-4(abcd)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	ND		2.0		08-04-89	
TEH as Diesel						NR
Benzene	ND		0.050		08-04-89	
Toluene	ND		0.050		08-04-89	
Ethylbenzene	ND		0.050		08-04-89	
Total Xylenes	ND		0.050		08-04-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

08-07-89
Date Reported

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

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ANALYSIS REPORT

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 08-04-89
Laboratory Number: 90814S05
Project #: 18061-4
Sample #: S-0804-5(ABCD)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	ND		2.0		08-04-89	
TEH as Diesel						NR
Benzene	ND		0.050		08-04-89	
Toluene	ND		0.050		08-04-89	
Ethylbenzene	ND		0.050		08-04-89	
Total Xylenes	ND		0.050		08-04-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

08-07-89
Date Reported

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ANALYSIS REPORT

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 08-04-89
Laboratory Number: 90814S06
Project #: 18061-4
Sample #: S-0804-6(ab)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	ND		2.0		08-04-89	
TEH as Diesel						NR
Benzene	ND		0.050		08-04-89	
Toluene	ND		0.050		08-04-89	
Ethylbenzene	ND		0.050		08-04-89	
Total Xylenes	ND		0.050		08-04-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

08-07-89
Date Reported

CHAIN OF CUSTODY RECORD

Applied GeoSystems
43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): Eddie Wagstaff
Phone: (415) 651-1906

LABORATORY:
APPLIED GEOSYSTEMS.

TURNAROUND TIME: 2 WEEK

Project Leader: JON LUELLEN
Phone No. (415) 651-1906

SHIPPING INFORMATION:
Shipper
Address
Date Shipped
Service Used
Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
Eddie Wagstaff	Jon R. Luellen	8-3-89	1320
	Received for laboratory by:	8-3-89	1400

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
S-0803-1B	18061-4	8-3-89	T.P.H.g & B.T.E.X.	ICED
S-0803-1W	18061-4	8-3-89	T.P.H.g & B.T.E.X.	ICED

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ANALYSIS REPORT

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 08-03-89
Laboratory Number: 90808S01
Project #: 18061-4
Sample #: S-0803-1b
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	ND		2.0		08-04-89	
TEH as Diesel						NR
Benzene	ND		0.050		08-04-89	
Toluene	ND		0.050		08-04-89	
Ethylbenzene	ND		0.050		08-04-89	
Total Xylenes	ND		0.050		08-04-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

08-07-89
Date Reported

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ANALYSIS REPORT

02121ab.frm

Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 08-03-89
Laboratory Number: 90808S02
Project #: 18061-4
Sample #: S-0803-1W
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	ND		2.0		08-04-89	
TEH as Diesel						NR
Benzene	ND		0.050		08-04-89	
Toluene	ND		0.050		08-04-89	
Ethylbenzene	ND		0.050		08-04-89	
Total Xylenes	ND		0.050		08-04-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

08-07-89
Date Reported

CHAIN OF CUSTODY RECORD

Applied GeoSystems

43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): [signature]

Phone: (415) 651-1906

LABORATORY: Applied GeoSystems

TURNAROUND TIME: 24 hours

Project Leader: Jon Luellen

Phone No. (415) 651-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
[signature]			
	Received for laboratory by: [signature]	8/1/89	18^00

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
S-15-pit	18061-3	8-1-89	TPH (gasoline) & BTEX	iced

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ANALYSIS REPORT

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 08-01-89
Laboratory Number: 90805S01
Project #: 18061-3
Sample #: S-15-Pit
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	3.4		2.0		08-01-89	
TEH as Diesel						NR
Benzene	ND		0.050		08-01-89	
Toluene	ND		0.050		08-01-89	
Ethylbenzene	ND		0.050		08-01-89	
Total Xylenes	ND		0.050		08-01-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

08-02-89
Date Reported

CHAIN OF CUSTODY RECORD

Applied GeoSystems

43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): Eblee Westphal

Phone: 651-1906

LABORATORY: Applied Analytics

TURNAROUND TIME: 24hr

Project Leader: Jon Ellman

Phone No. 415-651-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
Eblee Westphal	Jon R Ellman	07/31/89	1230
	Received for laboratory by:	8-1-89	945

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
Composite: S-0731-1a	1806-4	1806-4 7/31/89	TPH-g BTEX	HCID
S-0731-1b				
S-0731-1c				
S-0731-1d				
Composite: S-0731-2a				
S-0731-2b				
S-0731-2c				
S-0731-2d				
Composite: S-0731-3a				
S-0731-3b				
S-0731-3c				
S-0731-3d				
Composite: S-0731-4a				
S-0731-4b				
S-0731-4c				
S-0731-4d				

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ANALYSIS REPORT

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Report Prepared for:
Applied GeoSystems
43255 Misson Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 08-01-89
Laboratory Number: 90801S01
Project #: 18061-4
Sample #: S-0731-1(ABCD)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	2.4		2.0		08-01-89	
TEH as Diesel						NR
Benzene	ND		0.050		08-01-89	
Toluene	ND		0.050		08-01-89	
Ethylbenzene	ND		0.050		08-01-89	
Total Xylenes	ND		0.050		08-01-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

08-01-89
Date Reported

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ANALYSIS REPORT

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Report Prepared for:
Applied GeoSystems
43255 Misson Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 08-01-89
Laboratory Number: 90801S02
Project #: 18061-4
Sample #: S-0731-2(ABCD)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	3.8		2.0		08-01-89	
TEH as Diesel						NR
Benzene	ND		0.050		08-01-89	
Toluene	ND		0.050		08-01-89	
Ethylbenzene	ND		0.050		08-01-89	
Total Xylenes	ND		0.050		08-01-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

08-01-89
Date Reported

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ANALYSIS REPORT

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Report Prepared for:
Applied GeoSystems
43255 Misson Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 08-01-89
Laboratory Number: 90801S03
Project #: 18061-4
Sample #: S-0731-3(ABCD)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	2.7		2.0		08-01-89	
TEH as Diesel						NR
Benzene	ND		0.050		08-01-89	
Toluene	ND		0.050		08-01-89	
Ethylbenzene	ND		0.050		08-01-89	
Total Xylenes	ND		0.050		08-01-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

08-01-89
Date Reported

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

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ANALYSIS REPORT

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Report Prepared for:
Applied GeoSystems
43255 Misson Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 08-01-89
Laboratory Number: 90801S04
Project #: 18061-4
Sample #: S-0731-4(ABCD)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	26		2.0		08-01-89	
TEH as Diesel						NR
Benzene	ND		0.050		08-01-89	
Toluene	ND		0.050		08-01-89	
Ethylbenzene	ND		0.050		08-01-89	
Total Xylenes	ND		0.050		08-01-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

08-01-89
Date Reported

CHAIN OF CUSTODY RECORD

Applied GeoSystems
43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): Scott McVea

Phone: (415) 651-1906

LABORATORY: APPLIED GEOSYSTEMS

TURNAROUND TIME: 24 HOURS

Project Leader: JON WHELAN

Phone No. (415) 651-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
Scott McVea			
	Received for laboratory by:	7/28/89	18[15]

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
S-0728-1A	18061-3	7-28-89	TPH & BTEX	ICED

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

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ANALYSIS REPORT

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 07-28-89
Laboratory Number: 90768S01
Project #: 18061-3
Sample #: S-0728-1A
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	ND		2.0		07-31-89	
TEH as Diesel						NR
Benzene	ND		0.050		07-31-89	
Toluene	ND		0.050		07-31-89	
Ethylbenzene	ND		0.050		07-31-89	
Total Xylenes	ND		0.050		07-31-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

08-01-89
Date Reported

CHAIN OF CUSTODY RECORD

Applied GeoSystems
43255 Mission Blvd Suite B Fremont, CA 94539 (415)651-1906

SAMPLER (signature): Dan Kirkman
Phone: 651-1906

LABORATORY: Applied GeoSystems

TURNAROUND TIME: 24 hr
Project Leader: Jon Luellen
Phone No. 651-1906

SHIPPING INFORMATION:
Shipper
Address
Date Shipped
Service Used
Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
Dan Kirkman	Jon R. Luellen	7/25/89	1520
Jon R. Luellen			
	Received for laboratory by:	7-25-89	1530

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

	Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
composite	S-0725-1a	1906I-3	7-25-89	TPHg + BETX	Iced
	S-0725-1b	DK	DK	DK	DK
	S-0725-1c				
	S-0725-1D				
composite	S-0725-2a				
	S-0725-2b				
	S-0725-2C				
	S-0725-2D				
composite	S-0725-3a				
	S-0725-3b				
	S-0725-3C				
	S-0725-3D				
composite	S-0725-4a				
	S-0725-4b				
	S-0725-4c				
	S-0725-4D	DK	DK	DK	DK

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ANALYSIS REPORT

02121ab.frm

Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 07-25-89
Laboratory Number: 90752S01
Project #: 18061-3
Sample #: S-12-WF
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	ND		2.0		07-26-89	
TEH as Diesel						NR
Benzene	ND		0.050		07-26-89	
Toluene	ND		0.050		07-26-89	
Ethylbenzene	ND		0.050		07-26-89	
Total Xylenes	ND		0.050		07-26-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

07-28-89
Date Reported

CHAIN OF CUSTODY RECORD

Copy

Applied GeoSystems

43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): Dan Kirkman

Phone: 651-1906

LABORATORY: Applied GeoSystems

TURNAROUND TIME: 2 week

Project Leader: Jon Luellen

Phone No. 651-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
Dan Kirkman	Jon R. Luellen	7/25/89	1520
Jon R. Luellen			
	Received for laboratory by:	7-25-89	1520

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
S-12-WF	18061-3	7-25-89	TPHg + BETX	Iced

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ANALYSIS REPORT

0212lab.frm

Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 07-25-89
Laboratory Number: 90751S01
Project #: 18061-3
Sample #: S-0725-1(ABCD)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	ND		2.0		07-25-89	
TEH as Diesel						NR
Benzene	ND		0.050		07-25-89	
Toluene	ND		0.050		07-25-89	
Ethylbenzene	ND		0.050		07-25-89	
Total Xylenes	ND		0.050		07-25-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

07-26-89
Date Reported

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

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ANALYSIS REPORT

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 07-25-89
Laboratory Number: 90751S02
Project #: 18061-3
Sample #: S-0725-2(ABCD)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	5.6		2.0		07-25-89	
TEH as Diesel						NR
Benzene	ND		0.050		07-25-89	
Toluene	ND		0.050		07-25-89	
Ethylbenzene	ND		0.050		07-25-89	
Total Xylenes	0.065		0.050		07-25-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

07-26-89
Date Reported

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ANALYSIS REPORT

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 07-25-89
Laboratory Number: 90751S03
Project #: 18061-3
Sample #: S-0725-3(ABCD)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	11		2.0		07-25-89	
TEH as Diesel						NR
Benzene	ND		0.050		07-25-89	
Toluene	ND		0.050		07-25-89	
Ethylbenzene	ND		0.050		07-25-89	
Total Xylenes	0.22		0.050		07-25-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

07-26-89
Date Reported

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ANALYSIS REPORT

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 07-25-89
Laboratory Number: 90751S04
Project #: 18061-3
Sample #: S-0725-4(ABCD)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	3.4		2.0		07-25-89	
TEH as Diesel						NR
Benzene	ND		0.050		07-25-89	
Toluene	ND		0.050		07-25-89	
Ethylbenzene	ND		0.050		07-25-89	
Total Xylenes	ND		0.050		07-25-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

07-26-89
Date Reported

CHAIN OF CUSTODY RECORD

Applied GeoSystems
43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): Keith McVeigh
Phone: (415) 651-1906

LABORATORY: APPLIED GEOSYSTEMS

TURNAROUND TIME: 2 WEEKS

Project Leader: JON WIELLEN
Phone No. (415) 651-1906

SHIPPING INFORMATION:
Shipper
Address
Date Shipped
Service Used
Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Tim
Keith McVeigh	Jon R. Zuellen	7/24/89	170
Jon R. Zuellen			
	Received for laboratory by:	7-24-89	171

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
S-0724-1A (COMPOSITE)	18061-3	7-24-89	TPHg & BTEX	ICED
S-0724-1B				

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ANALYSIS REPORT

0212lab.frm

Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 07-24-89
Laboratory Number: 90749S01
Project #: 18061-3
Sample #: S-0724-1(AB)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	ND		2.0		07-25-89	
TEH as Diesel						NR
Benzene	ND		0.050		07-25-89	
Toluene	ND		0.050		07-25-89	
Ethylbenzene	ND		0.050		07-25-89	
Total Xylenes	ND		0.050		07-25-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

07-26-89
Date Reported

CHAIN OF CUSTODY RECORD

Applied GeoSystems
43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): Keith McVey

Phone: (415) 651-1906

LABORATORY: APPLIED GEOSYSTEMS

TURNAROUND TIME: 24 HOURS

Project Leader: JON LUELLEN

Phone No. (415) 651-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
Keith McVey	Jon R Luellen	7/21/89	1443
Jon R. Luellen	Received for laboratory by:	7-21-89	1445

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

	Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
COMPOSITE	S-0721-1A	18061-3	07-21-89	TPH(g)	ICED
	S-0721-1B	KM	KM	KM	KM
	S-0721-1C				
	S-0721-1D				
COMPOSITE	S-0721-2A				
	S-0721-2B				
	S-0721-2C				
	S-0721-2D	KM	KM	KM	KM
COMPOSITE	S-0721-3A	KM	KM	KM	KM
	S-0721-3B	KM	KM	KM	KM

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ANALYSIS REPORT

0212lab.frm

Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 07-21-89
Laboratory Number: 90745S01
Project #: 18061-3
Sample #: S-0721-1(ABCD)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	15		2.0		07-21-89	
TEH as Diesel						NR
Benzene						NR
Toluene						NR
Ethylbenzene						NR
Total Xylenes						NR

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

07-24-89
Date Reported

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

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ANALYSIS REPORT

02121ab.frm

Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 07-21-89
Laboratory Number: 90745S02
Project #: 18061-3
Sample #: S-0721-2(ABCD)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	33		2.0		07-21-89	
TEH as Diesel						NR
Benzene						NR
Toluene						NR
Ethylbenzene						NR
Total Xylenes						NR

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

07-24-89
Date Reported

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

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ANALYSIS REPORT

02121ab.frm

Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 07-21-89
Laboratory Number: 90745S03
Project #: 18061-3
Sample #: S-0721-3(AB)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	8.5		2.0		07-21-89	
TEH as Diesel						NR
Benzene						NR
Toluene						NR
Ethylbenzene						NR
Total Xylenes						NR

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

07-24-89
Date Reported

CHAIN OF CUSTODY RECORD

Applied GeoSystems
43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature):

Phone: 651-1906

LABORATORY: Applied GeoSystems

TURNAROUND TIME: 24-hour

Project Leader: Jon Kvellen

Phone No. 651-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
	Jon R Kvellen	7/19/89	4:30 PM
	Received for laboratory by:	7-19-89	1710

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
composite S-0719-1a	1806 1-3	7/19/89	TPH-g, BTEX	ICED
S-0719-1b				

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

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ANALYSIS REPORT

0212lab.frm

Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 07-19-89
Laboratory Number: 90736S01
Project #: 18061-3
Sample #: S-0719-1(AB)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	ND		2.0		07-19-89	
TEH as Diesel						NR
Benzene	ND		0.050		07-19-89	
Toluene	ND		0.050		07-19-89	
Ethylbenzene	ND		0.050		07-19-89	
Total Xylenes	ND		0.050		07-19-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

07-21-89
Date Reported

CHAIN OF CUSTODY RECORD

Applied GeoSystems
43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): Jon DeLon

Phone: (415) 651 1906

LABORATORY: Applied Geo Systems

TURNAROUND TIME: 24 HRS

Project Leader: Jon Lhellen

Phone No. 415-651-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
Jon DeLon			
	Received for laboratory by:	7-12-89	0910

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

	Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
Composite	S-0711-1A	18061-3	7-11-89	TPHG	ICED
	S-0711-1B	18061-3	7-11-89		
	S-0711-1C	18061-3	7-11-89		
	S-0711-1D	18061-3	7-11-89		
Composite	S-0711-2A	18061-3	7-11-89	TPHG	ICED
	S-0711-2B				
	S-0711-2C				
	S-0711-2D				

CHAIN OF CUSTODY RECORD

Applied GeoSystems
43255 Mission Blvd Suite B Fremont CA 94539 (415)651-1906

SAMPLER (signature): Jon Delon

Phone: 415 651 1906

LABORATORY: ANAMETRIX INC

TURNAROUND TIME: 24 hr

Project Leader: Jon Chelton

Phone No. 415 651 1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
Jon Delon		7-12-89	0910
	Received for laboratory by: John Memarzadeh	7/12/89	11:25

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
S-0711-W.P.1	18061-3	7-11-89	~~TPH as gas 8240~~ TPH as gas VOCs TOG (5030)	ICED
S-0711-W.P.2.	18061-3	7-11-89		ICED

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

• FREMONT • COSTA MESA • SACRAMENTO • HOUSTON

ANALYSIS REPORT

0212lab.frm

Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 07-12-89
Laboratory Number: 90711S01
Project #: 18061-3
Sample #: S-0711-1(ABCD)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	66		2.0		07-12-89	
TEH as Diesel						NR
Benzene						NR
Toluene						NR
Ethylbenzene						NR
Total Xylenes						NR

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

07-12-89
Date Reported

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

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ANALYSIS REPORT

0212lab.frm

Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 07-12-89
Laboratory Number: 90711S02
Project #: 18061-3
Sample #: S-0711-2(ABCD)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	42		2.0		07-12-89	
TEH as Diesel						NR
Benzene						NR
Toluene						NR
Ethylbenzene						NR
Total Xylenes						NR

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

07-12-89
Date Reported

1806/-3

ANAMETRIX INC
Environmental & Analytical Chemistry
1961 Concourse Drive, Suite E, San Jose, CA 95131
(408) 432-8192 • Fax (408) 432-8198

REPORT

Jon Luellen
Applied Geosystems
43255 Mission Boulevard
Suite B
Fremont, CA 94539

July 14, 1989
Anametrix W.O.#: 8907061
Date Received : 07/12/89
Purchase Order#: N/A

Dear Mr. Luellen:

Your samples have been received for analysis. The REPORT SUMMARY lists your sample identifications and the analytical methods you requested. The following sections are included in this report: RESULTS, EXTRA COMPOUNDS and QUALITY ASSURANCE.

NOTE: 1) Amounts reported are net values, i.e. corrected for method blank contamination.
2) The following footnotes are applicable to Methods 624/8240:

*	A Method 624 priority pollutant compound (Federal Register, 10/26/84)
**	A compound on the U.S. EPA CLP Hazardous Substance List (HSL)
#	An additional compound analyzed for by Anametrix, Inc.
ND:	Not detected at or above the practical quantitation limit for the method.

If there is any more that we can do, please give us a call. Thank you for using ANAMETRIX, INC.

Sincerely,

ANAMETRIX, INC.

Burt Sutherland

Burt Sutherland
Laboratory Director

BWS/lm

REPORT SUMMARY
ANAMETRIX, INC. (408) 432-8192

Client : Applied Geosystems
Address : 43255 Mission Boulevard
Suite B
City : Fremont, CA 94539
Attn. : Jon Luellen

Anametrix W.O.#: 8907061
Date Received : 07/12/89
Purchase Order#: N/A
Project No. : 18061-3
Date Released : 07/14/89

Anametrix I.D.	Sample I.D.	Matrix	Date Sampled	Method	Date Extract	Date Analyzed	Inst I.D.
RESULTS							
8907061-01	S-0711-W.T.1	SOIL	07/11/89	8240		07/13/89	F1
8907061-02	S-0711-W.T.2	SOIL	07/11/89	8240		07/13/89	F1
8907061-01	S-7011-W.T.1	SOIL	07/11/89	TPH	07/12/89	07/12/89	N/A
8907061-02	S-7011-W.T.2	SOIL	07/11/89	TPH	07/12/89	07/12/89	N/A
TENTATIVELY INDENTIFIED COMPOUNDS (Extra)							
8907061-01	S-0711-W.T.1	SOIL	07/11/89	XTRAS		07/13/89	F1
8907061-02	S-0711-W.T.2	SOIL	07/11/89	XTRAS		07/13/89	F1
QUALITY ASSURANCE (QA)							
1CB0713V00	METHOD BLANK	SOIL	N/A	8240		07/13/89	F1

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 624/8240
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 18061-3 S-0711-W.T.1
Matrix : SOIL
Date sampled : 07/11/89
Date analyzed: 07/13/89
Dilut. factor: 200

Anametrix I.D. : 8907061-01
Analyst : TC
Supervisor : PG
Date released : 07/14/89
Instrument ID : F1

CAS #	Compound Name	Reporting Limit (ug/Kg)	Amount Found (ug/Kg)
74-87-3	* Chloromethane	2000	ND
75-01-4	* Vinyl Chloride	2000	ND
74-83-9	* Bromomethane	2000	ND
75-00-3	* Chloroethane	2000	ND
75-69-4	* Trichlorofluoromethane	1000	ND
75-35-4	* 1,1-Dichloroethene	1000	ND
76-13-1	# Trichlorotrifluoroethane	1000	ND
67-64-1	**Acetone	4000	ND
75-15-0	**Carbondisulfide	1000	ND
75-09-2	* Methylene Chloride	1000	ND
156-60-5	* Trans-1,2-Dichloroethene	1000	ND
75-34-3	* 1,1-Dichloroethane	1000	ND
78-93-3	**2-Butanone	4000	ND
156-59-2	* Cis-1,2-Dichloroethene	1000	ND
67-66-3	* Chloroform	1000	ND
71-55-6	* 1,1,1-Trichloroethane	1000	ND
56-23-5	* Carbon Tetrachloride	1000	ND
71-43-2	* Benzene	1000	ND
107-06-2	* 1,2-Dichloroethane	1000	ND
79-01-6	* Trichloroethene	1000	ND
78-87-5	* 1,2-Dichloropropane	1000	ND
75-27-4	* Bromodichloromethane	1000	ND
110-75-8	* 2-Chloroethylvinylether	1000	ND
108-05-4	**Vinyl Acetate	2000	ND
10061-02-6	* Trans-1,3-Dichloropropene	1000	ND
108-10-1	**4-Methyl-2-Pentanone	2000	ND
108-88-3	* Toluene	1000	12000
10061-01-5	* cis-1,3-Dichloropropene	1000	ND
79-00-5	* 1,1,2-Trichloroethane	1000	ND
127-18-4	* Tetrachloroethene	1000	ND
591-78-6	**2-Hexanone	2000	ND
124-48-1	* Dibromochloromethane	1000	ND
108-90-7	* Chlorobenzene	1000	ND
100-41-4	* Ethylbenzene	1000	15000
1330-20-7	**Total Xylenes	1000	74000
100-42-5	**Styrene	1000	ND
75-25-2	* Bromoform	1000	ND
79-34-5	* 1,1,2,2-Tetrachloroethane	1000	ND
541-73-1	* 1,3-Dichlorobenzene	1000	ND
106-46-7	* 1,4-Dichlorobenzene	1000	ND
95-50-1	* 1,2-Dichlorobenzene	1000	ND

CAS #	Surrogate Compounds	Limits	% Recovery
17060-07-0	1,2-Dichloroethane-d4	73-130%	95%
2037-26-5	Toluene-d8	74-121%	96%
460-00-4	p-Bromofluorobenzene	70-124%	101%

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 624/8240
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 18061-3 S-0711-W.T.2
Matrix : SOIL
Date sampled : 07/11/89
Date analyzed: 07/13/89
Dilut. factor: 100

Anametrix I.D. : 8907061-02
Analyst : TC
Supervisor : PG
Date released : 07/14/89
Instrument ID : F1

CAS #	Compound Name	Reporting Limit (ug/Kg)	Amount Found (ug/Kg)
74-87-3	* Chloromethane	1000	ND
75-01-4	* Vinyl Chloride	1000	ND
74-83-9	* Bromomethane	1000	ND
75-00-3	* Chloroethane	1000	ND
75-69-4	* Trichlorofluoromethane	500	ND
75-35-4	* 1,1-Dichloroethene	500	ND
76-13-1	# Trichlorotrifluoroethane	500	ND
67-64-1	**Acetone	2000	ND
75-15-0	**Carbondisulfide	500	ND
75-09-2	* Methylene Chloride	500	ND
156-60-5	* Trans-1,2-Dichloroethene	500	ND
75-34-3	* 1,1-Dichloroethane	500	ND
78-93-3	**2-Butanone	2000	ND
156-59-2	* Cis-1,2-Dichloroethene	500	ND
67-66-3	* Chloroform	500	ND
71-55-6	* 1,1,1-Trichloroethane	500	ND
56-23-5	* Carbon Tetrachloride	500	ND
71-43-2	* Benzene	500	ND
107-06-2	* 1,2-Dichloroethane	500	ND
79-01-6	* Trichloroethene	500	ND
78-87-5	* 1,2-Dichloropropane	500	ND
75-27-4	* Bromodichloromethane	500	ND
110-75-8	* 2-Chloroethylvinylether	500	ND
108-05-4	**Vinyl Acetate	1000	ND
10061-02-6	* Trans-1,3-Dichloropropene	500	ND
108-10-1	**4-Methyl-2-Pentanone	1000	ND
108-88-3	* Toluene	500	1300
10061-01-5	* cis-1,3-Dichloropropene	500	ND
79-00-5	* 1,1,2-Trichloroethane	500	ND
127-18-4	* Tetrachloroethene	500	ND
591-78-6	**2-Hexanone	1000	ND
124-48-1	* Dibromochloromethane	500	ND
108-90-7	* Chlorobenzene	500	ND
100-41-4	* Ethylbenzene	500	2100
1330-20-7	**Total Xylenes	500	9100
100-42-5	**Styrene	500	ND
75-25-2	* Bromoform	500	ND
79-34-5	* 1,1,2,2-Tetrachloroethane	500	ND
541-73-1	* 1,3-Dichlorobenzene	500	ND
106-46-7	* 1,4-Dichlorobenzene	500	ND
95-50-1	* 1,2-Dichlorobenzene	500	ND

CAS #	Surrogate Compounds	Limits	% Recovery
17060-07-0	1,2-Dichloroethane-d4	73-130%	95%
2037-26-5	Toluene-d8	74-121%	99%
460-00-4	p-Bromofluorobenzene	70-124%	99%

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: 18061-3 S-7011-W.T.1	Anametrix I.D.	: 8907061-01
Matrix	: SOIL	Analyst	: RK
Date sampled	: 07/11/89	Supervisor	: [illegible]
Date anl.TPHg	: 07/12/89	Date released	: 07/14/89
Date ext.TPHd	: N/A	Date ext. TOG	: 07/12/89
Date anl.TPHd	: N/A	Date anl. TOG	: 07/12/89

CAS #	Compound Name	Detection Limit (ug/kg)	Amount Found (ug/kg)
	TPH as Gasoline	1000	480000
	Total Oil & Grease	30000	1300000

ND - Not detected at or above the practical quantitation limit for the method.
TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
TOG - Total Oil & Grease is determined by Standard Method 503E.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: 18061-3 S-7011-W.T.2	Anametrix I.D.	: 8907061-02
Matrix	: SOIL	Analyst	: RK
Date sampled	: 07/11/89	Supervisor	: JU
Date anl.TPHg	: 07/12/89	Date released	: 07/14/89
Date ext.TPHd	: N/A	Date ext. TOG	: 07/12/89
Date anl.TPHd	: N/A	Date anl. TOG	: 07/12/89

CAS #	Compound Name	Detection Limit (ug/kg)	Amount Found (ug/kg)
	TPH as Gasoline	1000	87000
	Total Oil & Grease	30000	1800000

ND - Not detected at or above the practical quantitation limit for the method.
TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
TOG - Total Oil & Grease is determined by Standard Method 503E.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ORGANICS ANALYSIS DATA SHEET - 624/8240 TENTATIVELY IDENTIFIED COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 18061-3 S-0711-W.T.1
Matrix : SOIL
Date Sampled : 07/11/89
Analyzed VOA : 07/13/89
Dilution VOA : 1:200

Anametrix I.D. : 8907061-01
Analyst : TC
Supervisor : PG
Date Released : 07/14/89

	CAS #	Scan#	Volatile Fraction Compound Name	Det. Limit ppb	Amt. Found ppb
1	611-14-3	946	1-ethyl-2-methylbenzene	1000	50000
2	108-67-8	981	1,3,5-trimethylbenzene	1000	70000
3	99-87-6	1031	1-methyl-4-(1-methylethyl)benzene	1000	30000
4	1758-88-9	1048	2-ethyl-1,4-dimethylbenzene	1000	15000
5	874-41-9	1054	2-ethyl-2,4-dimethylbenzene	1000	15000
6				1000	
7				1000	
8				1000	
9				1000	
10				1000	
11				1000	
12				1000	
13				1000	
14				1000	
15				1000	

Tentatively identified compounds are significant chromatographic peaks (TICs) other than priority pollutants. TIC spectra are compared with entries in the National Bureau of Standards mass spectral library. Identification is made by following US EPA guidelines and acceptance criteria. TICs are quantitated by using the area of the nearest internal standard and assuming a response factor of one (1). Values calculated are ESTIMATES ONLY.

ORGANICS ANALYSIS DATA SHEET - 624/8240 TENTATIVELY IDENTIFIED COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 18061-3 S-0711-W.T.2
Matrix : SOIL
Date Sampled : 07/11/89
Analyzed VOA : 07/13/89
Dilution VOA : 1:100

Anametrix I.D. : 8907061-02
Analyst : TC
Supervisor : PG
Date Released : 07/14/89

	CAS #	Scan#	Volatile Fraction Compound Name	Det. Limit ppb	Amt. Found ppb
1	611-14-3	946	1-ethyl-2-methylbenzene	500	5000
2	108-67-8	981	1,3,5-trimethylbenzene	500	12000
3	99-87-6	1031	1-methyl-4-(1-methylethyl)benzene	500	6000
4	874-41-9	1053	2-ethyl-2,4-dimethylbenzene	500	4000
5	527-53-7	1077	1,2,3,5-tetramethylbenzene	500	3500
6				500	
7				500	
8				500	
9				500	
10				500	
11				500	
12				500	
13				500	
14				500	
15				500	

Tentatively identified compounds are significant chromatographic peaks (TICs) other than priority pollutants. TIC spectra are compared with entries in the National Bureau of Standards mass spectral library. Identification is made by following US EPA guidelines and acceptance criteria. TICs are quantitated by using the area of the nearest internal standard and assuming a response factor of one (1). Values calculated are ESTIMATES ONLY.

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 624/8240
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: METHOD BLANK	Anametrix I.D.	: 1CB0713V00
Matrix	: SOIL	Analyst	: TC
Date sampled	: N/A	Supervisor	: PG
Date analyzed	: 07/13/89	Date released	: 07/14/89
Dilut. factor	: NONE	Instrument ID	: F1

CAS #	Compound Name	Reporting Limit (ug/Kg)	Amount Found (ug/Kg)
74-87-3	* Chloromethane	10	ND
75-01-4	* Vinyl Chloride	10	ND
74-83-9	* Bromomethane	10	ND
75-00-3	* Chloroethane	10	ND
75-69-4	* Trichlorofluoromethane	5	ND
75-35-4	* 1,1-Dichloroethene	5	ND
76-13-1	# Trichlorotrifluoroethane	5	ND
67-64-1	**Acetone	20	ND
75-15-0	**Carbondisulfide	5	ND
75-09-2	* Methylene Chloride	5	ND
156-60-5	* Trans-1,2-Dichloroethene	5	ND
75-34-3	* 1,1-Dichloroethane	5	ND
78-93-3	**2-Butanone	20	ND
156-59-2	* Cis-1,2-Dichloroethene	5	ND
67-66-3	* Chloroform	5	ND
71-55-6	* 1,1,1-Trichloroethane	5	ND
56-23-5	* Carbon Tetrachloride	5	ND
71-43-2	* Benzene	5	ND
107-06-2	* 1,2-Dichloroethane	5	ND
79-01-6	* Trichloroethene	5	ND
78-87-5	* 1,2-Dichloropropane	5	ND
75-27-4	* Bromodichloromethane	5	ND
110-75-8	* 2-Chloroethylvinylether	5	ND
108-05-4	**Vinyl Acetate	10	ND
10061-02-6	* Trans-1,3-Dichloropropene	5	ND
108-10-1	**4-Methyl-2-Pentanone	10	ND
108-88-3	* Toluene	5	ND
10061-01-5	* cis-1,3-Dichloropropene	5	ND
79-00-5	* 1,1,2-Trichloroethane	5	ND
127-18-4	* Tetrachloroethene	5	ND
591-78-6	**2-Hexanone	10	ND
124-48-1	* Dibromochloromethane	5	ND
108-90-7	* Chlorobenzene	5	ND
100-41-4	* Ethylbenzene	5	ND
1330-20-7	**Total Xylenes	5	ND
100-42-5	**Styrene	5	ND
75-25-2	* Bromoform	5	ND
79-34-5	* 1,1,2,2-Tetrachloroethane	5	ND
541-73-1	* 1,3-Dichlorobenzene	5	ND
106-46-7	* 1,4-Dichlorobenzene	5	ND
95-50-1	* 1,2-Dichlorobenzene	5	ND

CAS #	Surrogate Compounds	Limits	% Recovery
17060-07-0	1,2-Dichloroethane-d4	73-130%	91%
2037-26-5	Toluene-d8	74-121%	100%
460-00-4	p-Bromofluorobenzene	70-124%	106%

CHAIN OF CUSTODY RECORD

Applied GeoSystems
43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): Wilson J. DeBoo

Phone:

LABORATORY: Applied Geo Systems

TURNAROUND TIME: 24 hrs

Project Leader: Jon Luellen

Phone No. 415-651 1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
Wilson J. DeBoo			
	Received for laboratory by:	7-7-89	1045

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
S-0707-1A (Composite)	1906 #3	7-7-89	TPHG	ICED
S-0707-1B (Composite)				
S-0707-1C (Composite)				
S-0707-1D (Composite)				

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

• FREMONT • COSTA MESA • SACRAMENTO • HOUSTON

ANALYSIS REPORT

0212lab.frm

Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 07-07-89
Laboratory Number: 90707S01
Project #: 18061-3
Sample #: S-0707-1(ABCD)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	31		2.0		07-07-89	
TEH as Diesel						NR
Benzene						NR
Toluene						NR
Ethylbenzene						NR
Total Xylenes						NR

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

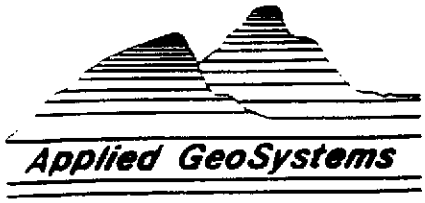
TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

07-07-89
Date Reported

CHAIN OF CUSTODY RECORD

18061-7



43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): Robert A Sorg

Phone: 415-651-1906

LABORATORY: Applied GeoSystems

TURNAROUND TIME: 24 hour

Project Leader: Jon Luellen

Phone No. 415-651-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
Robert A Sorg			
	Received for laboratory by:	7-5-89	1400

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
S-0705-1A (COMPOSITE)	18061-3	070589	TPHg	ICED
S-0705-1B (COMPOSITE)				
S-0705-1C (COMPOSITE)				
S-0705-1D (COMPOSITE)				
S-0705-2A (COMPOSITE)	18061-3	070589	TPHg	ICED
S-0705-2B (COMPOSITE)				
S-0705-2C (COMPOSITE)				
S-0705-2D (COMPOSITE)				

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

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ANALYSIS REPORT

02121ab.frm

Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 07-05-89
Laboratory Number: 90701S01
Project #: 18061-3
Sample #: S-0705-1(ABCD)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	18		2.0		07-05-89	
TEH as Diesel						NR
Benzene						NR
Toluene						NR
Ethylbenzene						NR
Total Xylenes						NR

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

07-06-89
Date Reported

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906
• FREMONT • COSTA MESA • SACRAMENTO • HOUSTON

ANALYSIS REPORT

02121ab.frm

Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 07-05-89
Laboratory Number: 90701S02
Project #: 18061-3
Sample #: S-0705-2(ABCD)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	4.8		2.0		07-05-89	
TEH as Diesel						NR
Benzene						NR
Toluene						NR
Ethylbenzene						NR
Total Xylenes						NR

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

07-06-89
Date Reported

CHAIN OF CUSTODY RECORD

Applied GeoSystems
43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): Rebecca A Sawyer

Phone: 415 - 651-1906

LABORATORY: Anametrix, Inc.

TURNAROUND TIME: ~~2-week~~ 24 hour JRL

Project Leader: Jon Luellen

Phone No. 415-651-1906

SHIPPING INFORMATION:

Shipper ______

Address ______

Date Shipped ______

Service Used ______

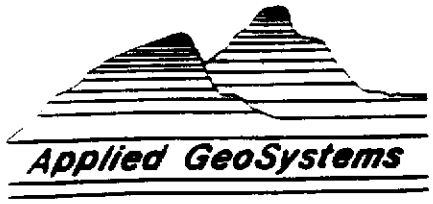
Airbill No. ______ Cooler No. ______

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
Rebecca A Sawyer	Jon R. Luellen	7-5-89	1430
	Received for laboratory by: Taghi Monirzadeh	7-7-89	13:50

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
S-0705-4A (composite)	18061-3	7-5-89	TPH as gasoline; VOCs (8240); TOG (503E)	ICED
S-0705-4B (composite)	↓	↓		↓

CHAIN OF CUSTODY RECORD



43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): Robert A Sorg

Phone: (415) 651-1906

LABORATORY: Anametrix, Inc.

TURNAROUND TIME: 24-hour

Project Leader: Jon Luellen

Phone No. (415) 651-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
Robert A Sorg	Jon DeLong and Jon R Luellen	7/5/89	2:10
	Received for laboratory by: Dani Lohr	7-5-89	14:50

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
S-0705-3A	1806 1-3	7-6-89	TPH as gasoline; BTEX (included in 8240)	2.0
S-0705-3B			VOCs ~~(8010)~~ (8240)	
S-0705-3C			TOG (503E)	
S-0705-3D				

COMPOSITE

ANAMETRIX INC
Environmental & Analytical Chemistry
1961 Concourse Drive. Suite E. San Jose, CA 95131
(408) 432-8192 • Fax (408) 432-8198

REPORT

Jon Luellen
Applied GeoSystems
43255 Mission Boulevard
Suite B
Fremont, CA 94539

July 06, 1989
Anametrix W.O.#: 8907004
Date Received : 07/05/89
Purchase Order#: N/A

Dear Mr. Luellen:

Your sample has been received for analysis. The REPORT SUMMARY lists your sample identifications and the analytical methods you requested. The following sections are included in this report: RESULTS, EXTRA COMPOUNDS and QUALITY ASSURANCE.

NOTE: 1) Amounts reported are net values, i.e. corrected for method blank contamination.
2) The following footnotes are applicable to Methods 624/8240:

* A Method 624 priority pollutant compound (Federal Register, 10/26/84)
** A compound on the U.S. EPA CLP Hazardous Substance List (HSL)
\# An additional compound analyzed for by Anametrix, Inc.
ND: Not detected at or above the practical quantitation limit for the method.

If there is any more that we can do, please give us a call. Thank you for using ANAMETRIX, INC.

Sincerely,

ANAMETRIX, INC.

Sarah Schoen, Ph. D
GC Manager

SRS/lm

REPORT SUMMARY
ANAMETRIX, INC. (408) 432-8192

Client : Applied GeoSystems
Address : 43255 Mission Boulevard
Suite B
City : Fremont, CA 94539
Attn. : Jon Luellen

Anametrix W.O.#: 8907004
Date Received : 07/05/89
Purchase Order#: N/A
Project No. : 18061-3
Date Released : 07/06/89

Anametrix I.D.	Sample I.D.	Matrix	Date Sampled	Method	Date Extract	Date Analyzed	Inst I.D.
RESULTS							
8907004-01	S-0705-3A,B,C,D	SOIL	07/05/89	8240		07/05/89	F1
8907004-01	S-0705-3A,B,C,D	SOIL	07/05/89	TPH		07/05/89	N/A
TENTATIVELY INDENTIFIED COMPOUNDS (Extra)							
8907004-01	S-0705-3A,B,C,D	SOIL	07/05/89	XTRAS		07/05/89	F1
QUALITY ASSURANCE (QA)							
1CB0705V00	METHOD BLANK	SOIL	N/A	8240		07/05/89	F1

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 624/8240
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 18061-3 S-0705-3A,B,C,D
Matrix : SOIL
Date sampled : 07/05/89
Date analyzed: 07/05/89
Dilut. factor: 2

Anametrix I.D. : 8907004-01
Analyst : TC
Supervisor : PG
Date released : 07/06/89
Instrument ID : F1

CAS #	Compound Name	Reporting Limit (ug/Kg)	Amount Found (ug/Kg)
74-87-3	* Chloromethane	20	ND
75-01-4	* Vinyl Chloride	20	ND
74-83-9	* Bromomethane	20	ND
75-00-3	* Chloroethane	20	ND
75-69-4	* Trichlorofluoromethane	10	ND
75-35-4	* 1,1-Dichloroethene	10	ND
76-13-1	# Trichlorotrifluoroethane	10	ND
67-64-1	**Acetone	40	ND
75-15-0	**Carbondisulfide	10	ND
75-09-2	* Methylene Chloride	10	ND
156-60-5	* Trans-1,2-Dichloroethene	10	ND
75-34-3	* 1,1-Dichloroethane	10	ND
78-93-3	**2-Butanone	40	ND
156-59-2	* Cis-1,2-Dichloroethene	10	ND
67-66-3	* Chloroform	10	ND
71-55-6	* 1,1,1-Trichloroethane	10	ND
56-23-5	* Carbon Tetrachloride	10	ND
71-43-2	* Benzene	10	ND
107-06-2	* 1,2-Dichloroethane	10	ND
79-01-6	* Trichloroethene	10	ND
78-87-5	* 1,2-Dichloropropane	10	ND
75-27-4	* Bromodichloromethane	10	ND
110-75-8	* 2-Chloroethylvinylether	10	ND
108-05-4	**Vinyl Acetate	20	ND
10061-02-6	* Trans-1,3-Dichloropropene	10	ND
108-10-1	**4-Methyl-2-Pentanone	20	ND
108-88-3	* Toluene	10	ND
10061-01-5	* cis-1,3-Dichloropropene	10	ND
79-00-5	* 1,1,2-Trichloroethane	10	ND
127-18-4	* Tetrachloroethene	10	ND
591-78-6	**2-Hexanone	20	ND
124-48-1	* Dibromochloromethane	10	ND
108-90-7	* Chlorobenzene	10	ND
100-41-4	* Ethylbenzene	10	ND
1330-20-7	**Total Xylenes	10	240
100-42-5	**Styrene	10	ND
75-25-2	* Bromoform	10	ND
79-34-5	* 1,1,2,2-Tetrachloroethane	10	ND
541-73-1	* 1,3-Dichlorobenzene	10	ND
106-46-7	* 1,4-Dichlorobenzene	10	ND
95-50-1	* 1,2-Dichlorobenzene	10	ND

CAS #	Surrogate Compounds	Limits	% Recovery
17060-07-0	1,2-Dichloroethane-d4	73-130%	104%
2037-26-5	Toluene-d8	74-121%	93%
460-00-4	p-Bromofluorobenzene	70-124%	93%

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: 18061-3 S-0705-3A,B,C,D	Anametrix I.D.	: 8907004-01
Matrix	: SOIL	Analyst	: RK
Date sampled	: 07/05/89	Supervisor	: SS
Date anl.TPHg	: 07/05/89	Date released	: 07/06/89
Date ext.TPHd	: N/A	Date ext. TOG	: 07/05/89
Date anl.TPHd	: N/A	Date anl. TOG	: 07/05/89

CAS #	Compound Name	Detection Limit (ug/kg)	Amount Found (ug/kg)
	TPH as Gasoline	1000	170,000
	Total Oil & Grease	30000	6900,000

ND - Not detected at or above the practical quantitation limit for the method.
TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
TOG - Total Oil & Grease is determined by Standard Method 503E.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ORGANICS ANALYSIS DATA SHEET - 624/8240 TENTATIVELY IDENTIFIED COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 18061-3 S-0705-3A,B,C,D
Matrix : SOIL
Date Sampled : 07/05/89
Analyzed VOA : 07/05/89
Dilution VOA : 1:2

Anametrix I.D. : 8907004-01
Analyst : TC
Supervisor : PG
Date Released : 07/06/89

	CAS #	Scan#	Volatile Fraction Compound Name	Det. Limit ppb	Amt. Found ppb
1	108-67-8	977	1,3,5-trimethylbenzene	10	450
2	526-73-8	1036	1,2,3-trimethylbenzene	10	400
3	1074-43-7	1049	1-methyl-3-propylbenzene	10	300
4	99-87-6	1054	1-methyl-4-(1-methylethyl)-benzene	10	500
5	1758-88-9	1075	2-ethyl-1,4-dimethylbenzene	10	400
6				10	
7				10	
8				10	
9				10	
10				10	
11				10	
12				10	
13				10	
14				10	
15				10	

Tentatively identified compounds are significant chromatographic peaks (TICs) other than priority pollutants. TIC spectra are compared with entries in the National Bureau of Standards mass spectral library. Identification is made by following US EPA guidelines and acceptance criteria. TICs are quantitated by using the area of the nearest internal standard and assuming a response factor of one (1). Values calculated are ESTIMATES ONLY.

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 624/8240
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : METHOD BLANK
Matrix : SOIL
Date sampled : N/A
Date analyzed: 07/05/89
Dilut. factor: NONE

Anametrix I.D. : 1CB0705V00
Analyst : TC
Supervisor : PG
Date released : 07/06/89
Instrument ID : F1

CAS #	Compound Name	Reporting Limit (ug/Kg)	Amount Found (ug/Kg)
74-87-3	* Chloromethane	10	ND
75-01-4	* Vinyl Chloride	10	ND
74-83-9	* Bromomethane	10	ND
75-00-3	* Chloroethane	10	ND
75-69-4	* Trichlorofluoromethane	5	ND
75-35-4	* 1,1-Dichloroethene	5	ND
76-13-1	# Trichlorotrifluoroethane	5	ND
67-64-1	**Acetone	20	ND
75-15-0	**Carbondisulfide	5	ND
75-09-2	* Methylene Chloride	5	ND
156-60-5	* Trans-1,2-Dichloroethene	5	ND
75-34-3	* 1,1-Dichloroethane	5	ND
78-93-3	**2-Butanone	20	ND
156-59-2	* Cis-1,2-Dichloroethene	5	ND
67-66-3	* Chloroform	5	ND
71-55-6	* 1,1,1-Trichloroethane	5	ND
56-23-5	* Carbon Tetrachloride	5	ND
71-43-2	* Benzene	5	ND
107-06-2	* 1,2-Dichloroethane	5	ND
79-01-6	* Trichloroethene	5	ND
78-87-5	* 1,2-Dichloropropane	5	ND
75-27-4	* Bromodichloromethane	5	ND
110-75-8	* 2-Chloroethylvinylether	5	ND
108-05-4	**Vinyl Acetate	10	ND
10061-02-6	* Trans-1,3-Dichloropropene	5	ND
108-10-1	**4-Methyl-2-Pentanone	10	ND
108-88-3	* Toluene	5	ND
10061-01-5	* cis-1,3-Dichloropropene	5	ND
79-00-5	* 1,1,2-Trichloroethane	5	ND
127-18-4	* Tetrachloroethene	5	ND
591-78-6	**2-Hexanone	10	ND
124-48-1	* Dibromochloromethane	5	ND
108-90-7	* Chlorobenzene	5	ND
100-41-4	* Ethylbenzene	5	ND
1330-20-7	**Total Xylenes	5	ND
100-42-5	**Styrene	5	ND
75-25-2	* Bromoform	5	ND
79-34-5	* 1,1,2,2-Tetrachloroethane	5	ND
541-73-1	* 1,3-Dichlorobenzene	5	ND
106-46-7	* 1,4-Dichlorobenzene	5	ND
95-50-1	* 1,2-Dichlorobenzene	5	ND

CAS #	Surrogate Compounds	Limits	% Recovery
17060-07-0	1,2-Dichloroethane-d4	73-130%	111%
2037-26-5	Toluene-d8	74-121%	98%
460-00-4	p-Bromofluorobenzene	70-124%	104%

ANAMETRIX INC
Environmental & Analytical Chemistry
1961 Concourse Drive, Suite E, San Jose, CA 95131
(408) 432-8192 • Fax (408) 432-8198

REPORT

Jon Luellen
Applied GeoSystems
43255 Mission Boulevard
Suite B
Fremont, CA 94539

July 10, 1989
Anametrix W.O.#: 8907024
Date Received : 07/07/89
Purchase Order#: N/A

Dear Mr. Luellen:

Your sample has been received for analysis. The REPORT SUMMARY lists your sample identifications and the analytical methods you requested. The following sections are included in this report: RESULTS, EXTRA COMPOUNDS and QUALITY ASSURANCE.

NOTE: 1) Amounts reported are net values, i.e. corrected for method blank contamination.
2) The following footnotes are applicable to Methods 624/8240:

- * A Method 624 priority pollutant compound (Federal Register, 10/26/84)
- ** A compound on the U.S. EPA CLP Hazardous Substance List (HSL)
- # An additional compound analyzed for by Anametrix, Inc.
- ND: Not detected at or above the practical quantitation limit for the method.

3) 1,2-dichloroethane-d4 surrogate compound recovery was outside established limits for sample S-0705-4A/B and METHOD BLANK.

If there is any more that we can do, please give us a call. Thank you for using ANAMETRIX, INC.

Sincerely,

ANAMETRIX, INC.

Burt Sutherland

Burt Sutherland
Laboratory Director

BWS/dmt

REPORT SUMMARY
ANAMETRIX, INC. (408) 432-8192

Client	: Applied GeoSystems	Anametrix W.O.#:	8907024
Address	: 43255 Mission Boulevard	Date Received :	07/07/89
	Suite B	Purchase Order#:	N/A
City	: Fremont, CA 94539	Project No. :	18061-3
Attn.	: Jon Luellen	Date Released :	07/10/89

Anametrix I.D.	Sample I.D.	Matrix	Date Sampled	Method	Date Extract	Date Analyzed	Inst I.D.
RESULTS							
8907024-01	S-0705-4A/B COMP.	SOIL	07/05/89	8240		07/10/89	F3
8907024-01	S-0705-4A/B COMP.	SOIL	07/05/89	TPHg	07/07/89	07/07/89	N/A
TENTATIVELY INDENTIFIED COMPOUNDS (Extra)							
8907024-01	S-0705-4A/B COMP.	SOIL	07/05/89	XTRAS		07/10/89	F3
QUALITY ASSURANCE (QA)							
3CB0710V01	METHOD BLANK	SOIL	N/A	8240		07/10/89	F3

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 624/8240
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 18061-3 S-0705-4A/B COMP.
Matrix : SOIL
Date sampled : 07/05/89
Date analyzed: 07/10/89
Dilut. factor: NONE

Anametrix I.D. : 8907024-01
Analyst : ARL
Supervisor : PG
Date released : 07/10/89
Instrument ID : F3

CAS #	Compound Name	Reporting Limit (ug/Kg)	Amount Found (ug/Kg)
74-87-3	* Chloromethane	10	ND
75-01-4	* Vinyl Chloride	10	ND
74-83-9	* Bromomethane	10	ND
75-00-3	* Chloroethane	10	ND
75-69-4	* Trichlorofluoromethane	5	ND
75-35-4	* 1,1-Dichloroethene	5	ND
76-13-1	# Trichlorotrifluoroethane	5	ND
67-64-1	**Acetone	20	ND
75-15-0	**Carbondisulfide	5	ND
75-09-2	* Methylene Chloride	5	ND
156-60-5	* Trans-1,2-Dichloroethene	5	ND
75-34-3	* 1,1-Dichloroethane	5	ND
78-93-3	**2-Butanone	20	ND
156-59-2	* Cis-1,2-Dichloroethene	5	ND
67-66-3	* Chloroform	5	ND
71-55-6	* 1,1,1-Trichloroethane	5	ND
56-23-5	* Carbon Tetrachloride	5	ND
71-43-2	* Benzene	5	26
107-06-2	* 1,2-Dichloroethane	5	ND
79-01-6	* Trichloroethene	5	ND
78-87-5	* 1,2-Dichloropropane	5	ND
75-27-4	* Bromodichloromethane	5	ND
110-75-8	* 2-Chloroethylvinylether	5	ND
108-05-4	**Vinyl Acetate	10	ND
10061-02-6	* Trans-1,3-Dichloropropene	5	ND
108-10-1	**4-Methyl-2-Pentanone	10	ND
108-88-3	* Toluene	5	110
10061-01-5	* cis-1,3-Dichloropropene	5	ND
79-00-5	* 1,1,2-Trichloroethane	5	ND
127-18-4	* Tetrachloroethene	5	ND
591-78-6	**2-Hexanone	10	ND
124-48-1	* Dibromochloromethane	5	ND
108-90-7	* Chlorobenzene	5	ND
100-41-4	* Ethylbenzene	5	65
1330-20-7	**Total Xylenes	5	480
100-42-5	**Styrene	5	ND
75-25-2	* Bromoform	5	ND
79-34-5	* 1,1,2,2-Tetrachloroethane	5	ND
541-73-1	* 1,3-Dichlorobenzene	5	ND
106-46-7	* 1,4-Dichlorobenzene	5	ND
95-50-1	* 1,2-Dichlorobenzene	5	ND

CAS #	Surrogate Compounds	Limits	% Recovery
17060-07-0	1,2-Dichloroethane-d4	73-130%	139%
2037-26-5	Toluene-d8	74-121%	101%
460-00-4	p-Bromofluorobenzene	70-124%	93%

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: 18061-3 S-0705-4A/B COMP.	Anametrix I.D.	: 8907024-01
Matrix	: SOIL	Analyst	: CK
Date sampled	: 07/05/89	Supervisor	: MJ
Date anl.TPHg	: 07/07/89	Date released	: 07/10/89
Date ext.TPHd	: N/A	Date ext. TOG	: 07/07/89
Date anl.TPHd	: N/A	Date anl. TOG	: 07/07/89

CAS #	Compound Name	Reporting Limit (ug/kg)	Amount Found (ug/kg)
	TPH as Gasoline	1000	110000
	Total Oil & Grease	30000	1200000

ND - Not detected at or above the practical quantitation limit for the method.
TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
TOG - Total Oil & Grease is determined by Standard Method 503E.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ORGANICS ANALYSIS DATA SHEET - 624/8240 TENTATIVELY IDENTIFIED COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: 18061-3 S-0705-4A/B COMP.	Anametrix I.D.	: 8907024-01
Matrix	: SOIL	Analyst	: ARL
Date Sampled	: 07/05/89	Supervisor	: PG
Analyzed VOA	: 07/10/89	Date Released	: 07/10/89
Dilution VOA	: NONE		

	CAS #	Scan#	Volatile Fraction Compound Name	Det. Limit ppb	Amt. Found ppb
1	103-65-1	959	propylbenzene	5	50
2	611-14-3	974	1-ethyl-2-methylbenzene	5	200
3	108-67-8	986	1,3,5-trimethylbenzene	5	120
4	95-63-6	1035	1,2,4-trimethylbenzene	5	390
5	611-15-4	1116	1-ethenyl-2-methylbenzene	5	90

Tentatively identified compounds are significant chromatographic peaks (TICs) other than priority pollutants. TIC spectra are compared with entries in the National Bureau of Standards mass spectral library. Identification is made by following US EPA guidelines and acceptance criteria. TICs are quantitated by using the area of the nearest internal standard and assuming a response factor of one (1). Values calculated are ESTIMATES ONLY.

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 624/8240
ANAMETRIX, INC. (408) 432-8192

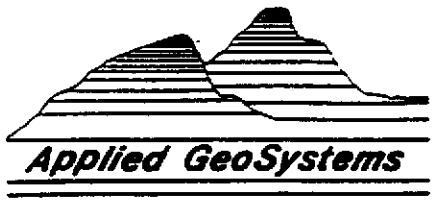
Sample I.D. : METHOD BLANK
Matrix : SOIL
Date sampled : N/A
Date analyzed: 07/10/89
Dilut. factor: NONE

Anametrix I.D. : 3CB0710V01
Analyst : UH
Supervisor : PG
Date released : 07/10/89
Instrument ID : F3

CAS #	Compound Name	Reporting Limit (ug/Kg)	Amount Found (ug/Kg)
74-87-3	* Chloromethane	10	ND
75-01-4	* Vinyl Chloride	10	ND
74-83-9	* Bromomethane	10	ND
75-00-3	* Chloroethane	10	ND
75-69-4	* Trichlorofluoromethane	5	ND
75-35-4	* 1,1-Dichloroethene	5	ND
76-13-1	# Trichlorotrifluoroethane	5	ND
67-64-1	**Acetone	20	21
75-15-0	**Carbondisulfide	5	ND
75-09-2	* Methylene Chloride	5	ND
156-60-5	* Trans-1,2-Dichloroethene	5	ND
75-34-3	* 1,1-Dichloroethane	5	ND
78-93-3	**2-Butanone	20	ND
156-59-2	* Cis-1,2-Dichloroethene	5	ND
67-66-3	* Chloroform	5	ND
71-55-6	* 1,1,1-Trichloroethane	5	ND
56-23-5	* Carbon Tetrachloride	5	ND
71-43-2	* Benzene	5	ND
107-06-2	* 1,2-Dichloroethane	5	ND
79-01-6	* Trichloroethene	5	ND
78-87-5	* 1,2-Dichloropropane	5	ND
75-27-4	* Bromodichloromethane	5	ND
110-75-8	* 2-Chloroethylvinylether	5	ND
108-05-4	**Vinyl Acetate	10	ND
10061-02-6	* Trans-1,3-Dichloropropene	5	ND
108-10-1	**4-Methyl-2-Pentanone	10	ND
108-88-3	* Toluene	5	ND
10061-01-5	* cis-1,3-Dichloropropene	5	ND
79-00-5	* 1,1,2-Trichloroethane	5	ND
127-18-4	* Tetrachloroethene	5	ND
591-78-6	**2-Hexanone	10	ND
124-48-1	* Dibromochloromethane	5	ND
108-90-7	* Chlorobenzene	5	ND
100-41-4	* Ethylbenzene	5	ND
1330-20-7	**Total Xylenes	5	ND
100-42-5	**Styrene	5	ND
75-25-2	* Bromoform	5	ND
79-34-5	* 1,1,2,2-Tetrachloroethane	5	ND
541-73-1	* 1,3-Dichlorobenzene	5	ND
106-46-7	* 1,4-Dichlorobenzene	5	ND
95-50-1	* 1,2-Dichlorobenzene	5	ND

CAS #	Surrogate Compounds	Limits	% Recovery
17060-07-0	1,2-Dichloroethane-d4	73-130%	141%
2037-26-5	Toluene-d8	74-121%	103%
460-00-4	p-Bromofluorobenzene	70-124%	95%

CHAIN OF CUSTODY RECORD



43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-190

SAMPLER (signature): Keith McVeh

Phone: 415-651-1906

LABORATORY: AGS

TURNAROUND TIME: 24 HOURS

Project Leader: JON LUELLEN

Phone No. (415) 651-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Tim
Keith McVeh			
	Received for laboratory by: [illegible]	6/29/89	20

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
S-0629-1A (COMPOSITE)	18061-3	6/29/89	TPH	ICED
S-0629-1B				
S-0629-1C				
S-0629-1D				
S-0629-1E	KOM	KOM	KOM	KOM

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

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ANALYSIS REPORT

0212lab.frm

Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 06-29-89
Laboratory Number: 90649S01
Project #: 18061-3
Sample #: S-0629-1(ABCD)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	21		2.0		06-29-89	
TEH as Diesel						NR
Benzene						NR
Toluene						NR
Ethylbenzene						NR
Total Xylenes						NR

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

06-30-89
Date Reported

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ANALYSIS REPORT

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 06-29-89
Laboratory Number: 90649S02
Project #: 18061-3
Sample #: S-0629-1E
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	12		2.0		06-29-89	
TEH as Diesel						NR
Benzene						NR
Toluene						NR
Ethylbenzene						NR
Total Xylenes						NR

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

06-30-89
Date Reported

CHAIN OF CUSTODY RECORD

Applied GeoSystems

43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): Ruben A. Lopez

Phone: 415-651-1906

LABORATORY: Applied GeoSystems

TURNAROUND TIME: 24 hours

Project Leader: Jon Lueller

Phone No. 415-651-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
Ruben A. Lopez	Jon A. Lueller	6/28/89	1425
	Received for laboratory by:	6-29-89	1430

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

	Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
Composite	S-0628-A	18061-3	062889	TPH 8015	ICED
	S-0628-B				
	S-0628-C				
	S-0628-D				
Composite	S-0628-E	18061-3	062889	TPH 8015	ICED
	S-0628-F				
	S-0628-G				
	S-0628-H				

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ANALYSIS REPORT

0212lab.frm

Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 06-28-89
Laboratory Number: 90644S01
Project #: 18061-3
Sample #: S-0628-(ABCD)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	16		2.0		06-28-89	
TEH as Diesel						NR
Benzene						NR
Toluene						NR
Ethylbenzene						NR
Total Xylenes						NR

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

06-29-89
Date Reported

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

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ANALYSIS REPORT

0212lab.frm

Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 06-28-89
Laboratory Number: 90644S02
Project #: 18061-3
Sample #: S-0628-(EFGH)
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline	ND		2.0		06-28-89	NR
TPH as Gasoline						
TEH as Diesel						NR
Benzene						NR
Toluene						NR
Ethylbenzene						NR
Total Xylenes						NR

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

06-29-89
Date Reported

CHAIN OF CUSTODY RECORD

Applied GeoSystems
43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): Edwin A Long

Phone: 415-651-1906

LABORATORY: Anametrix, Inc.

TURNAROUND TIME: 2 weeks

Project Leader: Jon Lellen

Phone No. 415-651-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
Edwin A Long	Jon R Lellen	6/28/89	1425
	Received for laboratory by:		
	[illegible]	6/29/89	10:15

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
Composite: S0628-WT1	18061-3	062889	TPHg ; Volatile organics (8010)	ICED
			BTEX ;	
S0628-WT2	18061-3	062887	TOG (SOBE)	ICED

ANAMETRIX INC
Environmental & Analytical Chemistry
1961 Concourse Drive, Suite E, San Jose, CA 95131
(408) 432-8192 • Fax (408) 432-8198

REPORT

Jon Luellen
Applied GeoSystems
43255 Mission Boulevard
Suite B
Fremont, CA 94539

July 11, 1989
Anametrix W.O.#: 8906201
Date Received : 06/29/89
Purchase Order#: N/A

Dear Mr. Luellen:

Your sample has been received for analysis. The REPORT SUMMARY lists your sample identifications and the analytical methods you requested. The following sections are included in this report: RESULTS and QUALITY ASSURANCE.

NOTE: Amounts reported are net values, i.e. corrected for method blank contamination.

If there is any more that we can do, please give us a call. Thank you for using ANAMETRIX, INC.

Sincerely,

ANAMETRIX, INC.

Sarah Schoen

Sarah Schoen, Ph.D.
GC Manager

SRS/dag

REPORT SUMMARY
ANAMETRIX, INC. (408) 432-8192

Client	: Applied GeoSystems	Anametrix W.O.#:	8906201
Address	: 43255 Mission Boulevard	Date Received :	06/29/89
	Suite B	Purchase Order#:	N/A
City	: Fremont, CA 94539	Project No. :	18061-3
Attn.	: Jon Luellen	Date Released :	07/11/89

Anametrix I.D.	Sample I.D.	Matrix	Date Sampled	Method	Date Extract	Date Analyzed	Inst I.D.
RESULTS							
8906201-01	S-0628-WT1,2	SOIL	06/28/89	8010		07/06/89	HP10
8906201-01	S-0628-WT1,2	SOIL	06/28/89	TPH	06/30/89	07/06/89	N/A
QUALITY ASSURANCE (QA)							
10B0706H00	METHOD BLANK	SOIL	N/A	8010		07/06/89	HP10

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 601/8010
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: 18061-3 S-0628-WT1,2	Anametrix I.D.	: 8906201-01
Matrix	: SOIL	Analyst	:
Date sampled	: 06/28/89	Supervisor	:
Date analyzed	: 07/06/89	Date released	: 07/11/89
Dilution	: NONE	Instrument ID	: HP10

CAS #	Compound Name	Reporting Limit (ug/Kg)	Amount Found (ug/Kg)
74-87-3	* Chloromethane	1	ND
74-83-9	* Bromomethane	0.5	ND
75-71-8	* Dichlorodifluoromethane	1	ND
75-01-4	* Vinyl Chloride	0.5	ND
75-00-3	* Chloroethane	0.5	ND
75-09-2	* Methylene Chloride	0.5	ND
79-69-4	* Trichlorofluoromethane	0.5	ND
75-35-4	* 1,1-Dichloroethene	0.5	0.9
75-34-3	* 1,1-Dichloroethane	0.5	3.2
156-59-2	# Cis-1,2-Dichloroethene	0.5	ND
156-60-5	* Trans-1,2-Dichloroethene	0.5	ND
67-66-3	* Chloroform	0.5	ND
76-13-1	# Trichlorotrifluoroethane	0.5	ND
107-06-2	* 1,2-Dichloroethane	0.5	ND
71-55-6	* 1,1,1-Trichloroethane	0.5	5.4
56-23-5	* Carbon Tetrachloride	0.5	ND
75-27-4	* Bromodichloromethane	0.5	ND
78-87-5	* 1,2-Dichloropropane	0.5	ND
10061-02-6	* Trans-1,3-Dichloropropene	0.5	ND
79-01-6	* Trichloroethene	0.5	0.7
124-48-1	* Dibromochloromethane	0.5	ND
79-00-5	* 1,1,2-Trichloroethane	0.5	ND
10061-01-5	* cis-1,3-Dichloropropene	0.5	ND
110-75-8	* 2-Chloroethylvinylether	1	ND
75-25-2	* Bromoform	0.5	ND
127-18-4	* Tetrachloroethene	0.5	7.8
79-34-5	* 1,1,2,2-Tetrachloroethane	0.5	ND
108-90-7	* Chlorobenzene	0.5	ND
95-50-1	* 1,2-Dichlorobenzene	1	ND
541-73-1	* 1,3-Dichlorobenzene	1	ND
106-46-7	* 1,4-Dichlorobenzene	1	ND
	% Surrogate Recovery	50-150%	67%

ND : Not detected at or above the pratical quantitation limit for the method.
* A 601/8010 approved compound (Federal Register, 10/26/84).
\# A compound added by Anametrix, Inc.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: 18061-3 S-0628-WT1,2	Anametrix I.D.	: 8906201-01
Matrix	: SOIL	Analyst	: RK
Date sampled	: 06/28/89	Supervisor	: MS
Date anl.TPHg	: 07/06/89	Date released	: 07/11/89
Date ext.TPHd	: N/A	Date ext. TOG	: 06/30/89
Date anl.TPHd	: N/A	Date anl. TOG	: 07/03/89

CAS #	Compound Name	Reporting Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	2000	ND
108-88-3	Toluene	2000	8000
100-41-4	Ethylbenzene	2000	3000
1330-20-7	Total Xylenes	2000	26000
	TPH as Gasoline	20000	650000
	Total Oil & Grease	30000	19000000

ND - Not detected at or above the practical quantitation limit for the method.
TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
TOG - Total Oil & Grease is determined by Standard Method 503E.
BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 601/8010
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: METHOD BLANK	Anametrix I.D.	: 10B0706H00
Matrix	: SOIL	Analyst	: [illegible]
Date sampled	: N/A	Supervisor	: [illegible]
Date analyzed	: 07/06/89	Date released	: 07/11/89
Dilution	: NONE	Instrument ID	: HP10

CAS #	Compound Name	Reporting Limit (ug/Kg)	Amount Found (ug/Kg)
74-87-3	* Chloromethane	1	ND
74-83-9	* Bromomethane	0.5	ND
75-71-8	* Dichlorodifluoromethane	1	ND
75-01-4	* Vinyl Chloride	0.5	ND
75-00-3	* Chloroethane	0.5	ND
75-09-2	* Methylene Chloride	0.5	1.5
79-69-4	* Trichlorofluoromethane	0.5	ND
75-35-4	* 1,1-Dichloroethene	0.5	ND
75-34-3	* 1,1-Dichloroethane	0.5	ND
156-59-2	# Cis-1,2-Dichloroethene	0.5	ND
156-60-5	* Trans-1,2-Dichloroethene	0.5	ND
67-66-3	* Chloroform	0.5	ND
76-13-1	# Trichlorotrifluoroethane	0.5	ND
107-06-2	* 1,2-Dichloroethane	0.5	ND
71-55-6	* 1,1,1-Trichloroethane	0.5	ND
56-23-5	* Carbon Tetrachloride	0.5	ND
75-27-4	* Bromodichloromethane	0.5	ND
78-87-5	* 1,2-Dichloropropane	0.5	ND
10061-02-6	* Trans-1,3-Dichloropropene	0.5	ND
79-01-6	* Trichloroethene	0.5	ND
124-48-1	* Dibromochloromethane	0.5	ND
79-00-5	* 1,1,2-Trichloroethane	0.5	ND
10061-01-5	* cis-1,3-Dichloropropene	0.5	ND
110-75-8	* 2-Chloroethylvinylether	1	ND
75-25-2	* Bromoform	0.5	ND
127-18-4	* Tetrachloroethene	0.5	ND
79-34-5	* 1,1,2,2-Tetrachloroethane	0.5	ND
108-90-7	* Chlorobenzene	0.5	ND
95-50-1	* 1,2-Dichlorobenzene	1	ND
541-73-1	* 1,3-Dichlorobenzene	1	ND
106-46-7	* 1,4-Dichlorobenzene	1	ND
	% Surrogate Recovery	50-150%	98%

ND : Not detected at or above the pratical quantitation limit for the method.
* A 601/8010 approved compound (Federal Register, 10/26/84).
\# A compound added by Anametrix, Inc.

CHAIN OF CUSTODY RECORD

Applied GeoSystems

43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): Ellec A Westfall

Phone: 651-1906

LABORATORY: Applied GeoSystems

TURNAROUND TIME: 24-hour

Project Leader: Jon Wellen

Phone No.: 651-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
Ellec A Westfall	Jon R. Zwellen	6/19/89	5:30 P
	Received for laboratory by: Nalealean	6-19-89	17 5

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

	Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
composite	S-0619-1a	1806/-3	6/19/89	TPHg (8015)	ICED
composite	S-0619-2a	1806/-3	6/19/89	TPHg (8015)	ICED
composite	S-0619-3a	1806/-3	6/19/89	TPHg (8015)	ICED
composite	S-0619-4a	1806/-3	6/19/89	TPHg (8015)	ICED
composite	S-0619-1b	1806/-3	6/19/89	TPHg (8015)	ICED
composite	S-0619-2b	1806/-3	6/19/89	TPHg (8015)	ICED
composite	S-0619-3b	1806/-3	6/19/89	TPHg (8015)	ICED
composite	S-0619-4b	1806/-3	6/19/89	TPHg (8015)	ICED
composite	S-0619-1c	1806/-3	6/19/89	TPHg (8015)	ICED
composite	S-0619-2c	1806/-3	6/19/89	TPHg (8015)	ICED
composite	S-0619-3c	1806/-3	6/19/89	TPHg (8015)	ICED
composite	S-0619-4c	1806/-3	6/19/89	TPHg (8015)	ICED

CHAIN OF CUSTODY RECORD

Applied GeoSystems
43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): Eddie A Wastell
Phone: 651-1906

LABORATORY: AGS

TURNAROUND TIME: 24-hour

Project Leader: Jon Zwillen
Phone No. 651-1906

SHIPPING INFORMATION:
Shipper
Address
Date Shipped
Service Used
Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
Eddie A Wastell	Jon R Zwillen	6/19/89	5:30 P
	Received for laboratory by: M Graham	6-19-89	17 Sc

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
Composite: S-0619-1d	1006 1-3	6/19/89	TPH-g (8015)	HCOD
S-0619-2d				
S-0619-3d				
S-0619-4d				
Composite: S-0619-1e				
S-0619-2e				
S-0619-3e				
S-0619-4e				
Composite: S-0619-1f				
S-0619-2f				
S-0619-3f				
S-0619-4f				

CHAIN OF CUSTODY RECORD

Applied GeoSystems

43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): Eddie Westphal

Phone: 651-1906

LABORATORY: Applied GeoSystems

TURNAROUND TIME: 24-hour

Project Leader: Jon Lyellen

Phone No. 651-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
Eddie Westphal	Jon K. Lyellen	6/19/89	5:30 P
	Received for laboratory by: Ng Lealean	6-19-89	17 50

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

	Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
composite	S-0619-1g	1806/-3	6/19/89	TPHg (8015)	ICED
	S-0619-2g				
	S-0619-3g				
	S-0619 4g				
composite	S-0619-1h				
	S-0619-2h				
	S-0619-3h				
	S-0619-4h				
composite	S-0619-1i				
	S-0619-2i				
	S-0619-3i				
	S-0619-4i				
composite	S-0619-1j				
	S-0619-2j				
	S-0619-3j				
	S-0619-4j				

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ANALYSIS REPORT

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 06-19-89
Laboratory Number: 90631S01
Project #: 18061-3
Sample #: S-0619-(1234)a
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	400		10		06-19-89	
TEH as Diesel						NR
Benzene						NR
Toluene						NR
Ethylbenzene						NR
Total Xylenes						NR

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

06-20-89
Date Reported

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ANALYSIS REPORT

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 06-19-89
Laboratory Number: 90631S02
Project #: 18061-3
Sample #: S-0619-(1234)b
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	56		2.0		06-19-89	
TEH as Diesel						NR
Benzene						NR
Toluene						NR
Ethylbenzene						NR
Total Xylenes						NR

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

06-20-89
Date Reported

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ANALYSIS REPORT

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 06-19-89
Laboratory Number: 90631S03
Project #: 18061-3
Sample #: S-0619-(1234)c
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	32		2.0		06-19-89	
TEH as Diesel						NR
Benzene						NR
Toluene						NR
Ethylbenzene						NR
Total Xylenes						NR

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 06-19-89
Laboratory Number: 90631S04
Project #: 18061-3
Sample #: S-0619-(1234)d
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	760		10		06-19-89	
TEH as Diesel						NR
Benzene						NR
Toluene						NR
Ethylbenzene						NR
Total Xylenes						NR

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 06-19-89
Laboratory Number: 90631S05
Project #: 18061-3
Sample #: S-0619-(1234)e
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	130		2.0		06-19-89	
TEH as Diesel						NR
Benzene						NR
Toluene						NR
Ethylbenzene						NR
Total Xylenes						NR

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

06-20-89
Date Reported

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 06-19-89
Laboratory Number: 90631S06
Project #: 18061-3
Sample #: S-0619-(1234)f
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	110		2.0		06-19-89	
TEH as Diesel						NR
Benzene						NR
Toluene						NR
Ethylbenzene						NR
Total Xylenes						NR

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

06-20-89
Date Reported

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 06-19-89
Laboratory Number: 90631S07
Project #: 18061-3
Sample #: S-0619-(1234)g
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	74		2.0		06-19-89	
TEH as Diesel						NR
Benzene						NR
Toluene						NR
Ethylbenzene						NR
Total Xylenes						NR

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

06-20-89
Date Reported

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 06-19-89
Laboratory Number: 90631S08
Project #: 18061-3
Sample #: S-0619-(1234)h
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	610		10		06-19-89	
TEH as Diesel						NR
Benzene						NR
Toluene						NR
Ethylbenzene						NR
Total Xylenes						NR

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

06-20-89
Date Reported

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ANALYSIS REPORT

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 06-19-89
Laboratory Number: 90631S09
Project #: 18061-3
Sample #: S-0619-(1234)i
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	430		10		06-19-89	
TEH as Diesel						NR
Benzene						NR
Toluene						NR
Ethylbenzene						NR
Total Xylenes						NR

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

06-20-89
Date Reported

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 06-19-89
Laboratory Number: 90631S10
Project #: 18061-3
Sample #: S-0619-(1234)j
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	560		10		06-19-89	
TEH as Diesel						NR
Benzene						NR
Toluene						NR
Ethylbenzene						NR
Total Xylenes						NR

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

06-20-89
Date Reported

C' 'AIN OF CUSTODY R"CORD

Applied GeoSystems
43255 Mission Blvd Suite B Fremont CA 94539 (415)651-1906

SAMPLER (signature): Dan Kirkman
Phone: 651-1906

LABORATORY: Applied GeoSystems

TURNAROUND TIME: 24 hr

Project Leader: Jon Luellen
Phone No. 651-1906

SHIPPING INFORMATION:
Shipper
Address
Date Shipped
Service Used
Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
Dan Kirkman	Jon R. Luellen	6/13/89	4:50
	Received for laboratory by:	6/13/89	18 00

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
S-6-T1a	18061-3 DK	6-13-89 DK	TPH + BETX DK	Iced DK
S-6-T1b				
S-6-T2a				
S-6-T2b				
S-6-T2S	DK	DK	DK	DK

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ANALYSIS REPORT

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Report Prepared for:
Applied GeoSystems
43255 Mission Blvd.
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 06-13-89
Laboratory Number: 90624S01
Project #: 18061-3
Sample #: S-6-T1A
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	2100		50		06-13-89	
TEH as Diesel						NR
Benzene	13		2.5		06-13-89	
Toluene	110		2.5		06-13-89	
Ethylbenzene	37		2.5		06-13-89	
Total Xylenes	230		2.5		06-13-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

06-15-89
Date Reported

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ANALYSIS REPORT

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Report Prepared for:
Applied GeoSystems
43255 Mission Blvd.
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 06-13-89
Laboratory Number: 90624S02
Project #: 18061-3
Sample #: S-6-T1B
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	1800		50		06-13-89	
TEH as Diesel						NR
Benzene	5.6		2.5		06-13-89	
Toluene	89		2.5		06-13-89	
Ethylbenzene	35		2.5		06-13-89	
Total Xylenes	210		2.5		06-13-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

06-15-89
Date Reported

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Report Prepared for:
Applied GeoSystems
43255 Mission Blvd.
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 06-13-89
Laboratory Number: 90624S03
Project #: 18061-3
Sample #: S-6-T2A
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	4300		50		06-13-89	
TEH as Diesel						NR
Benzene	12		2.5		06-13-89	
Toluene	150		2.5		06-13-89	
Ethylbenzene	57		2.5		06-13-89	
Total Xylenes	350		2.5		06-13-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

06-15-89
Date Reported

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Report Prepared for:
Applied GeoSystems
43255 Mission Blvd.
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 06-13-89
Laboratory Number: 90624S04
Project #: 18061-3
Sample #: S-6-T2B
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	1400		50		06-13-89	
TEH as Diesel						NR
Benzene	9.7		2.5		06-13-89	
Toluene	100		2.5		06-13-89	
Ethylbenzene	47		2.5		06-13-89	
Total Xylenes	270		2.5		06-13-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

06-15-89
Date Reported

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Report Prepared for:
Applied GeoSystems
43255 Mission Blvd.
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 06-13-89
Laboratory Number: 90624S05
Project #: 18061-3
Sample #: S-6-T2S
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						NR
TPH as Gasoline	1800		50		06-13-89	
TEH as Diesel						NR
Benzene	4.2		2.5		06-13-89	
Toluene	48		2.5		06-13-89	
Ethylbenzene	39		2.5		06-13-89	
Total Xylenes	240		2.5		06-13-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

06-15-89
Date Reported

CHAIN OF CUSTODY RECORD

Applied GeoSystems
43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): Jon R. Luellen / Ed Westphal Jr.
Phone: (415) 651-1906

LABORATORY: Applied GeoSystems

TURNAROUND TIME: 24 hour

Project Leader: Jon Luellen
Phone No. 651-1906 (415)

SHIPPING INFORMATION:
Shipper
Address
Date Shipped
Service Used
Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
Jon R. Luellen			
	Received for laboratory by:	6-16-89	16 30

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
S-15-Tb1	1806-3	6-16-89	TPH & BTEX	ICED
S-14-Tb2				
S-14-Tb3				
S-15-Tb4				

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 06-16-89
Laboratory Number: 90628S01
Project #: 18061-3
Sample #: S-15-Tb1
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						
TPH as Gasoline	ND		2.0		06-16-89	
TEH as Diesel						
Benzene	ND		0.050		06-16-89	
Toluene	0.056		0.050		06-16-89	
Ethylbenzene	ND		0.050		06-16-89	
Total Xylenes	0.15		0.050		06-16-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

06-19-89
Date Reported

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 06-16-89
Laboratory Number: 90628S02
Project #: 18061-3
Sample #: S-14-Tb2
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline TPH as Gasoline	ND		2.0		06-16-89	
TEH as Diesel						
Benzene	ND		0.050		06-16-89	
Toluene	ND		0.050		06-16-89	
Ethylbenzene	ND		0.050		06-16-89	
Total Xylenes	ND		0.050		06-16-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

06-19-89
Date Reported

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 06-16-89
Laboratory Number: 90628S03
Project #: 18061-3
Sample #: S-14-Tb3
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline TPH as Gasoline	ND		2.0		06-16-89	
TEH as Diesel						
Benzene	ND		0.050		06-16-89	
Toluene	ND		0.050		06-16-89	
Ethylbenzene	ND		0.050		06-16-89	
Total Xylenes	ND		0.050		06-16-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

06-19-89
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ANALYSIS REPORT

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Report Prepared for:
Applied GeoSystems
43255 Mission Boulevard
Fremont, CA 94539
Attention: Jon R. Luellen

Date Received: 06-16-89
Laboratory Number: 90628S04
Project #: 18061-3
Sample #: S-15-Tb4
Matrix: Soil

Parameter	Result (mg/kg)	Result (mg/L)	Detection Limit (mg/kg)	Detection Limit (mg/L)	Date Analyzed	Notes
TVH as Gasoline						
TPH as Gasoline	8.9		2.0		06-16-89	
TEH as Diesel						
Benzene	ND		0.050		06-16-89	
Toluene	0.27		0.050		06-16-89	
Ethylbenzene	0.13		0.050		06-16-89	
Total Xylenes	0.88		0.050		06-16-89	

mg/kg = milligrams per kilogram = parts per million (ppm).
mg/L = milligrams per liter = ppm.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not required.

PROCEDURES

TVH/BTEX--Total volatile hydrocarbons (TVH) and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction according to EPA Method 5030 followed by analysis by a EPA Method 8020/602 (modified for TVH) which uses a gas chromatograph (GC) equipped with a photo-ionization detector (PID) and a flame-ionization detector (FID) in series. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TPH--Total petroleum hydrocarbons (low-to-medium boiling points) are measured by extraction according to EPA Method 5030 followed by analysis by a modified EPA Method 8015 which uses a GC equipped with an FID. Soil extracts and water samples are subjected to purge-and-trap introduction into the GC.

TEH--Total extractable hydrocarbons (high boiling points) are measured by extraction according to EPA Method 3550 for soils or EPA Method 3510 for water followed by a modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Tia Tran, Laboratory Supervisor

06-19-89
Date Reported