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

REPORT
EXCAVATION, AERATION, AND REMOVAL OF CONTAMINATED SOIL INCLUDING SOIL SAMPLING AND ANALYSES

Exxon Service Station No. 7-3006
720 High Street
Oakland, California

July 1987

AGS Job No. 87042-2

Report prepared for

Exxon Company, U.S.A.
1646 N. California Blvd.
Walnut Creek, CA 94596-9740

by

C. Robin Ross
Project Geologist

Michael N. Clark
C.E.G. 1264

July 10, 1987

TABLE OF CONTENTS

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

REPORT
EXCAVATION, AERATION, AND REMOVAL OF CONTAMINATED SOIL INCLUDING SOIL SAMPLING AND ANALYSES
Exxon Service Station No. 7-3006
720 High Street
Oakland, California
For: Exxon Company, U.S.A.

INTRODUCTION

The following report describes an excavation and aeration program for petroleum product contaminated soil at the above-referenced Exxon Service Station. Soil contaminated with petroleum product concentrations greater than 1000 ppm was found at the site during Applied GeoSystems' first phase of investigation. Exxon Company, U.S.A. requested that Applied GeoSystems conduct a second phase of soil contamination evaluation of the backfill and native soil in the gasoline tank pit, and in the soil present beneath the product and vapor recovery lines. Applied GeoSystems also was

requested to work with Exxon's contractor in excavating, aerating, and sampling the petroleum product contaminated soil.

This report describes the work elements associated with the investigation, and summarizes and discusses the analytical results obtained. Our interpretation of the data collected and recommendations for future work are also presented.

BACKGROUND

The Exxon service station is located in Oakland, California at 720 High Street, as shown on the Site Vicinity Map (Plate P-1). Four underground storage tanks were located on the site. Three tanks were positioned in a single tank cluster in the southern portion of the site. The tanks were of 8,000-, 6,000-, and 10,000-gallon capacity, and were used to store regular, super unleaded, and unleaded gasoline, respectively. One 1000-gallon tank located behind the station building was used to store waste oil. These four tanks were excavated and removed from the site on April 29, 1987 by Exxon's contractor. The approximate locations of the removed underground storage tanks are shown on the Generalized Site Plan (Plate P-2). We have no information

regarding the condition of the tanks or soil in the tank pits at the time of tank removal.

HYDROGEOLOGY

The Exxon service station site is located less than 1/2-mile from a San Francisco Bay tidal canal (see Generalized Site Plan). Ground water flow at this site is inferred to be toward the tidal canal, in the southwest direction. The earth materials at the site are Quaternary bay deposits composed of silty clay and clay, with discontinuous fluvial lenses of silty, gravelly sand, as revealed during our first phase site investigation. The depth to first ground water ranges between approximately 12.5 and 14 feet. Observation of the ground water depth during the second phase of investigation indicated that the depth does not appear to be related to tidal fluctuation. During field investigations, we observed an interval of water seepage at a depth of approximately 12 feet on the walls of the excavated gasoline tank pit; this possibly could be a seasonal perched aquifer. According to Peter Johnson of the San Francisco Bay Regional Water Quality Control Board (R.W.Q.C.B.), this site is located in a low-sensitivity water use area. The ground water beneath this site presently is

not used as a municipal supply, although it may be in the future.

PREVIOUS INVESTIGATIONS

Applied GeoSystems conducted a first phase soil contamination evaluation on April 28, 1987 (see letter report AGS 87042-1, dated May 13, 1987). The purpose of this investigation was to evaluate the potential hydrocarbon product contamination in soil that was excavated to expose the underground storage tanks before removal. Six soil samples were collected from the gasoline tank pit. Five of these samples contained total volatile hydrocarbon (TVH) concentrations greater than 1000 parts per million (ppm) - the R.W.Q.C.B.'s recommended level for soil excavation. Laboratory analysis of the sample collected from excavated soil above the waste oil tank revealed non-detectable concentrations of total extractable petroleum hydrocarbons (TEH).

Trenches were excavated by Exxon's contractor, Pacific Southwest Construction and Service, in order to remove vapor recovery and product lines. Applied GeoSystems personnel used an organic vapor analyzer (OVA) to evaluate relative hydrocarbon vapor concentrations of soil in the trenches. Areas of relatively high

qualitative OVA readings were found (greater than 1000 ppm). A black, potentially contaminated soil layer was exposed in the trenches and gasoline tank pit at a depth of approximately 3 feet. A soil sample taken from this layer was analyzed in our laboratory for TEH, and found to be below 1000 ppm (434 ppm). We recommended in our letter report 87042-1 that further sampling and analyses of soil in the trenches should be conducted where the OVA readings were high (greater than 1000 ppm).

Excavation and removal of the four underground storage tanks, and sampling of the soil beneath the tanks was conducted by Pacific Southwest Construction and Service on April 29, 1987. Laboratory analyses on these samples were performed by Scientific Environmental.

Based on the Phase I investigation, Applied GeoSystems recommended further excavation and sampling of the backfill and native soil in the gasoline tank pit, as well as further soil sampling in the trenches. The purpose of the second phase of work at the site was to evaluate and mitigate the petroleum product contamination present in the backfill and native soil of

the gasoline tank pit, and in the soil present beneath the removed product and vapor recovery lines.

PHASE II WORK

NOTIFICATION AND AUTHORIZATION

After verbal approval from Exxon personnel on May 1, 1987, the Alameda County Division of Environmental Health and the R.W.Q.C.B. were verbally notified by Applied GeoSystems regarding the mitigation program that we intended to conduct at the site. An Underground Storage Tank Unauthorized Release (Leak)/ Contamination Site Report was filed with the Alameda County Division of Environmental Health, the State Water Resources Control Board, the R.W.Q.C.B, the Toxic Substances Control Division of the California Department of Health Services, and Exxon Company, U.S.A. because soil contaminated with high concentrations of hydrocarbon product was encountered. Applied GeoSystems, acting as agent for Exxon, filed the leak report which is required by state law on May 1, 1987. A copy of the report in included in the Appendix of this report.

Authorization to perform a second phase of work at the site was given by Exxon personnel on May 4, 1987. During the second phase of work, Exxon requested that Applied GeoSystems work with Exxon's contractor in excavating, aerating, and sampling the contaminated soil. On May 4, 1987, Applied GeoSystems notified the Bay Area Air Quality Management District (B.A.A.Q.M.D.) that uncontrolled aeration of the soil was to begin at the site in accordance with District standards. This information also was relayed verbally to Exxon personnel.

FIELD WORK - MAY 5, 1987

Gasoline Tank Pit

An Applied GeoSystems geologist observed soil excavation from the gasoline tank pit on May 5, 1987. An OVA was used by our field geologist to distinguish excavated soil with hydrocarbon product vapor concentrations less than and greater than 1000 ppm. Field instruments such as the OVA are capable of evaluating relative concentrations of petroleum product contamination and cannot be used to give absolute levels of contamination. Soil contaminated with petroleum hydrocarbon concentrations greater than 1000 ppm was excavated by Pacific Southwest Construction and Service from

the gasoline product tank pit using a trackhoe. Contaminated soil was excavated to the depth of ground water which was encountered at 14 feet on this day.

After soil contaminated with hydrocarbon product vapor concentrations greater than 1000 ppm was removed from the gasoline tank pit, soil samples were collected from the walls and at the 16-foot depth at the bottom of the tank pit by driving laboratory cleaned brass sleeves into a backhoe bucket of soil taken from these locations. The sampling locations within the tank pit are shown on Plate P-2. These locations were chosen for sampling and analyses in order to evaluate whether or not soil left in the ground contains petroleum hydrocarbon concentrations greater than 1000 ppm. Immediately sealed with aluminum foil, plastic caps and air-tight tape, the samples were labeled and placed on ice for transport to Applied GeoSystems' laboratory. A Chain-of-Custody form for the samples was initiated in the field and accompanied the samples to Applied GeoSystems' analytical laboratory.

Soil samples were analyzed for Total Volatile Hydrocarbon concentrations by EPA Method 8020, using gas chromatography

what about TPH??

separation, and photo- and flame-ionization detection. Laboratory analyses on soil samples taken from the gasoline tank pit after contaminated soil was removed are presented in Table 1. The Chain-of-Custody form and laboratory Record of Analysis for the samples are included in the Appendix of this report.

TABLE 1
RESULTS OF CHEMICAL ANALYSES ON SOIL SAMPLES
COLLECTED FROM THE PRODUCT TANK PIT
Exxon Service Station No. 7-3006
Oakland, California

Sample	Date Sampled	TVH	Detection Limit
S-8-N	5/5/87	96.8	0.5
S-10-E	5/5/87	186.6	0.5
S-7-S	5/5/87	13.55	0.5
S-6-W	5/5/87	8.69	0.5
S-16-S	5/6/87	0.86	0.5

Values listed are in milligrams per kilogram (parts per million)
TVH = Total Volatile Hydrocarbons

Soil samples also were collected from the excavated soil piles by driving laboratory cleaned brass sleeves at least 1-foot into the soil piles. These samples were collected in order to evaluate the relative degree of contamination in the excavated soil. Chain-of-Custody protocol was used as described previously. Soil samples were analyzed for Total Volatile Hydrocarbon concentrations. The Chain-of-Custody form and laboratory Record

of Analysis for the samples are included in the Appendix of this report. Contaminated soil was spread and aerated on site until it could be shown that petroleum hydrocarbon concentrations were below 100 ppm.

Product Removal and Site Security

H & H Ship Service was requested by Applied GeoSystems to remove petroleum product that was found floating on top of the ground water at the bottom of the gasoline tank pit.
H & H Ship Service transported the material to their disposal facility in San Francisco. A copy of the Uniform Hazardous Waste Manifest is included in the Appendix of this report.

A chain-link fence was installed around the gasoline tank pit by Security Contractors on May 6, 1987. This measure was taken in order to discourage unauthorized access into the tank pit.

Product and Vapor Recovery Line Trenches

Soil samples were taken from areas of the product and vapor recovery line trenches that were evaluated using the OVA to

contain high concentrations of petroleum hydrocarbon vapors. Soil sample locations are shown on Plate P-2. A hand sampler was driven at least 1-foot into the native soil during sample collection. Soil samples from areas with similar OVA readings were composited and analyzed in our laboratory for TVH. Based on laboratory results, shown in Table 2, we verbally recommended to Exxon that further soil sampling in the trenches be conducted.

TABLE 2
RESULTS OF CHEMICAL ANALYSES ON SOIL SAMPLES
COLLECTED FROM PIPELINE TRENCHES
Exxon Service Station No. 7-3006
Oakland, California

Composite Samples	Date Sampled	TVH	Detection Limit
S(3A+3B)	5/5/87	17.0	5.0
S(3C+3D)	5/5/87	4299.0	2.0
S(3E+3F+3G)	5/5/87	545.70	0.5

Values listed are in milligrams per kilogram (parts per million)
TVH = Total Volatile Hydrocarbons

FIELD WORK - MAY 14, 1987

Product and Vapor Recovery Line Trenches

Applied GeoSystems notified Exxon's contractor that contaminated soil - greater than 1000 ppm petroleum hydrocarbons on the OVA - could be excavated from the vapor recovery and product line

trenches. This work was done using a backhoe and by hand digging. On June 11, 1987, the soil from these areas was again sampled by driving a hand sampler at least one-foot into the native soil. As shown in Table 3, laboratory analyses on the soil samples revealed low volatile hydrocarbon concentrations. We verbally recommended no further excavation in the product and vapor recovery line trenches.

TABLE 3
RESULTS OF CHEMICAL ANALYSES ON SOIL SAMPLES
COLLECTED FROM PIPELINE TRENCHES
Exxon Service Station No. 7-3006
Oakland, California

Sample	Date Sampled	TVH	Detection Limit
S-1T	6/3/87	0.71	0.05
S-2T	6/3/87	1.70	0.05
S-3T	6/3/87	3.21	0.05
S-4T	6/3/87	0.44	0.05

Values listed are in milligrams per kilogram (parts per million)
TVH = Total Volatile Hydrocarbons

FIELD WORK - MAY 15, 1987

Secondary Excavation
Adjacent to Gasoline Tank Pit

A pocket of contaminated soil was encountered during tank pit excavation on May 14, 1987. Applied GeoSystems verbally

recommended to Exxon on May 14 that this soil be excavated and aerated; Exxon personnel authorized further soil excavation. On May 15, 1987, excavation into the southwestern wall of the tank pit was conducted to remove the contaminated soil which was present at a depth of approximately 14 feet. Excavation of approximately 70 cu yds of soil revealed that the area of contaminated soil increased in both the horizontal and vertical directions (up to within 5 feet of the surface), suggesting the presence of a contamination source not related to the gasoline tank pit. Two soil samples were taken from the excavated soil pile, composited in our laboratory, and analyzed for Total Volatile Hydrocarbons. Laboratory results are presented in Table 4.

TABLE 4
RESULTS OF CHEMICAL ANALYSES ON SOIL SAMPLES
COLLECTED FROM SECONDARY EXCAVATION
Exxon Service Station No. 7-3006
Oakland, California

Sample	Date Sampled	TVH	Detection Limit
S1B+S2A	5/15/87	915.7	0.5

Values listed are in milligrams per kilogram (parts per million)
TVH = Total Volatile Hydrocarbons

On May 15, 1987 the depth to ground water in the gasoline tank pit had risen to approximately 12.5 feet. Approximately 1-1/2 feet of water was present in the bottom of the pit.

INVESTIGATION ON HISTORIC USE OF SITE

On May 14, 1987, our field geologist was informed by local workers that hazardous waste containing heavy metals had been introduced to the soil and ground water at a nearby industrial site, and that the Exxon site had at one time been used as a dumpsite. This information prompted Applied GeoSystems to request authorization from Exxon to conduct further investigation on potential hazardous wastes that may have been disposed on the Exxon site and the past use of this site as a disposal facility.

Information provided by Exxon personnel confirmed the presence of a dump site that existed prior to 1970 on the property of the present Exxon Service Station. To our knowledge, there is no current available information on what was dumped at this site. Dumping appears to have been unsupervised. Ownership histories were reconstructed for properties within one 1/4 mile of the project site in order to: 1) determine what industries were

previously or are currently located in the area and might be contaminating the ground water, and 2) identify potential waste products and/or contaminates that may have been dumped at the site. City records indicate that several industries located close to the previous dump site produced or utilized potentially hazardous chemicals or by-products. Efforts were also made to contact residents who lived in the vicinity of the former dump site prior to conversion in 1970 to its current use as a service station. Telephone conversations with the residents who could be located disclosed that, while many of the nearby residents remembered the dump, none had knowledge of any waste other than trash or rubbish having been dumped at the site.

ADDITIONAL LABORATORY ANALYSES

Due to the concern of possible hazardous waste contamination, a soil sample (S-14EE) that was taken on May 15, 1987 from the southwestern wall of the secondary excavation was analyzed for potential contaminants. Analyses were selected that would cover a broad range of possible contaminants because no specific contaminants could be identified when researching the dumping practices at the site. This soil sample was collected by driving

a hand sampler containing a brass sleeve approximately 1-foot into a trackhoe bucket of soil that was collected at a depth of approximately 14 feet in the excavation wall. Chain of Custody protocol was followed in transporting this sample to a laboratory. This sample was analyzed by Brown and Caldwell Laboratories of Emeryville, California for concentrations of 17 heavy metals, purgeable organic (priority) pollutants (Environmental Protection Agency (EPA) Method 8240), and oil and grease (EPA Method 418.2).

Laboratory analyses results revealed that the concentrations of heavy metals in this sample are below the Total Threshold Limit Concentrations (TTLC) cited in the California Administrative Code, Title 22, Division 4, Chapter 30 (Minimum Standards for Management of Hazardous and Extremely Hazardous Wastes), Section 66699. Soils containing heavy metals above the TTLC concentrations are considered to be hazardous waste, and are required to be removed from the site, transported under manifest, and disposed of in a Class I hazardous waste landfill. Based on soil analysis data from this sample, the nearby soil may remain in place without violation of State hazardous waste laws for heavy metals.

Most concentrations of purgeable organic (priority) pollutants are below the detection limits for each analysis, except those listed in Table 5. To our knowledge no published list exists that cites hazardous levels of contamination for these pollutants except for trichloroethylene. According to Brown and Caldwell personnel, the purgeable organic concentrations are not hazardous (including those in Table 5). The concentration of total oil and grease hydrocarbons is 520 ppm. The Chain-of-Custody form and laboratory Record of Analysis for these analyses are included in the Appendix of this report.

TABLE 5
DETECTABLE PURGEABLE ORGANIC POLLUTANTS
ON SOIL SAMPLE (S-14EE) COLLECTED MAY 15, 1987
Exxon Service Station No. 7-3006
Oakland, California

Parameter	Mg/kg (ppm)
Benzene	20
Ethylbenzene	60
Toluene	40
Semi-Quantified Results*	
A C6H12 Cyclic Hydrocarbon	200
C7H14	100
Xylene Isomers	180

*Quantification based upon comparison of total ion count of the compound with that of the nearest internal standard.

AERATION OF CONTAMINATED SOIL

Soil aeration was conducted between May 5, 1987 and July 3, 1987. Approximately 30 cu yds of contaminated soil per day was spread from soil piles containing petroleum hydrocarbon concentrations between 1000 and 2000 ppm (distinguished when the soil was stockpiled). The material was spread over an approximate 40- by 80-foot area, averaging 6- to 8-inches thick. Approximately 60 cu yds of soil was similarly spread for aeration from soil piles containing concentrations between 500 and 1000 ppm. This soil was raked and turned daily by Exxon's contractor. The locations of soil stockpiles and aerating soil that were present on the site are shown on Plate P-3.

Approximately twice a week, Applied GeoSystems' personnel visited the site and examined the aerating soil using an OVA. Contaminated soil was aerated on site until OVA readings were low (less than 100 ppm). Soil samples were then collected and transported to our laboratory following Chain-of-Custody protocol. Samples were taken beneath the top layer of aerating soil in order to obtain samples that represented a more realistic amount of volatilization. Three soil samples were taken for

every approximate 50 cu yds of soil, and composited in the laboratory. Each composited sample was analyzed for TVH concentrations. Laboratory analyses on composited soil samples indicated that petroleum hydrocarbon concentrations were below 100 ppm. Laboratory analyses on soil samples taken from aerating soil are shown in Table 6.

TABLE 6
RESULTS OF CHEMICAL ANALYSES ON AERATED SOIL SAMPLES
Exxon Service Station No. 7-3006
Oakland, California

Composited Samples	Date Sampled	TVH	Detection Limit
S2+S4	5/12/87	8.61	0.05
S1+S3E	5/12/87	6.30	0.05
S5	5/12/87	13.57	0.05
S6+S10	5/12/87	17.71	0.05
S7+S9	5/12/87	11.37	0.05
S8	5/12/87	14.53	0.05
S(1+2+3)A1	5/18/87	2.78	0.05
S(4+5)A1	5/18/87	0.55	0.05
S(1+2+3)A2	5/18/87	4.25	0.05
S(7+8)A2	5/18/87	2.81	0.05
S1(1+2+3)	6/3/87	0.35	0.05
S2(1+2+3)	6/3/87	0.29	0.05
S3(1+2+3)	6/3/87	0.48	0.05
S4(1+2+3)	6/3/87	0.64	0.05
S5(1+2+3)	6/3/87	0.47	0.05
S6(1+2+3)	6/3/87	1.24	0.05
S1(A+B+C)	6/12/87	0.86	0.05
S2(A+B+C)	6/12/87	0.52	0.05
S(1+2+3)	6/15/87	1.70	0.05
S(4+5+9)	6/15/87	0.62	0.05
S(6+7+8)	6/15/87	0.54	0.05
S1(A+B+C)	6/18/87	ND	0.05
S2(A+B+C)	6/18/87	ND	0.05
S1(A+B+C)	6/24/87	1.83	0.05
S1(1+2+3)	7/1/87	2.00	0.05
S2(1+2+3)	7/1/87	0.29	0.05

Values listed are in milligrams per kilogram (parts per million)
TVH = Total Volatile Hydrocarbons
ND = Not present or below method detection limits.

Both OVA measurements and laboratory analyses indicate that contamination levels of samples from the aerated soil are below

100 ppm. The soil was stockpiled, to be removed by Exxon's contractor.

During a site visit on June 3, 1987, an oily viscous petroleum-like fluid was observed seeping from the southwestern wall of the secondary excavation at a depth of approximately 12 feet. This oily seepage was collecting on top of the ground water in the southwestern section of the tank pit (shown on Plate P-2). Exxon Company, U.S.A. was notified of the presence of this oily seepage.

REMOVAL AND DISPOSAL OF AERATED SOIL

Approximately 300 cu yds of aerated soil that contained petroleum hydrocarbon vapor concentrations less than 100 ppm were removed from the Exxon site and disposed of at Union City's Turk Island disposal site on June 10, 1987. Applied GeoSystems assisted in the operation by sending copies of laboratory analyses on the aerated soil to Fuller Excavation, Exxon's contractor. The Alameda County Environmental Health Department and R.W.Q.C.B. were notified by Applied GeoSystems regarding the quantity and concentrations of petroleum hydrocarbons present in the soil that

would be disposed of at Turk Island. On June 18, 1987, an additional 100 cu yds of aerated soil were removed from the Exxon site and delivered to the Turk Island disposal site. We also notified Exxon Company, U.S.A. on July 2, 1987 that all remaining excavated soil had been aerated to levels that were below 100 ppm Total Volatile Hydrocarbons. Fuller Excavation removed the remaining 360 cu yds of soil from the site on July 3, 1987, and disposed of the soil at the Turk Island facility.

CONCLUSIONS AND RECOMMENDATIONS

In the second phase of work at the Exxon site, five soil samples were taken from the walls and at the 16-foot depth in the gasoline tank pit. Laboratory analyses were run on the samples which showed petroleum hydrocarbon concentrations less than 200 ppm. On June 5, 1987, Applied GeoSystems notified the R.W.Q.C.B. via telephone concerning the results of the work performed at the Exxon site. The R.W.Q.C.B. was informed that, in our opinion, the installation of new underground storage tanks should not impede further environmental investigations at the Exxon site. On June 5, 1987, Applied GeoSystems verbally recommended to Exxon Company personnel that new underground storage tanks could be

installed, based on the results of the five laboratory analyses on soil samples taken out of the gasoline tank pit and information obtained to date concerning the site. In our opinion, the installation of new underground storage tanks should not interrupt further subsurface environmental investigation and contamination evaluation of the soil and ground water at the Exxon site.

However, due to the presence of petroleum product contamination and the oily seepage present in the soil of the secondary excavation, we recommend lining the tank pit with high-density polyethylene. The lining should be placed in the tank pit prior to installing new storage tanks. The purpose of lining the tank pit is to prevent potential migration of petroleum product contamination encountered in the secondary excavation into the tank pit cavity, and to prevent potential future leakage of petroleum product in the gasoline tank pit from migrating into the native soil.

At present we do not have sufficient data to define the extent of hydrocarbon product contamination present in the subsurface soil of the secondary excavation at the Exxon site, the contamination

source, or its lateral and vertical extent. We also do not know the possible affect that hydrocarbon contaminated soil removed from the tank pit and trenches had on ground water. We recommend, therefore, conducting a third phase subsurface environmental investigation to evaluate the presence (and levels) or absence of petroleum product contamination in the soil of the secondary excavation and the ground water at the site. Up to five soil borings should be constructed downgradient from the secondary excavation, and five monitoring wells should be installed downgradient from areas where petroleum product contamination was found (including near the waste oil tank due to the apparent poor condition of the bottom of the tank). As described in our Proposal 1016-P, dated June 12, 1987, the purpose of installing the wells and soil borings is to gather data that can be used in evaluating the extent and type of contamination present in the soil and ground water at the Exxon site.

Source: U.S. Geological Survey
Oakland East
7.5 Minute Quadrangle

N

Approximate Scale

2000 1000 0 2000 4000
feet

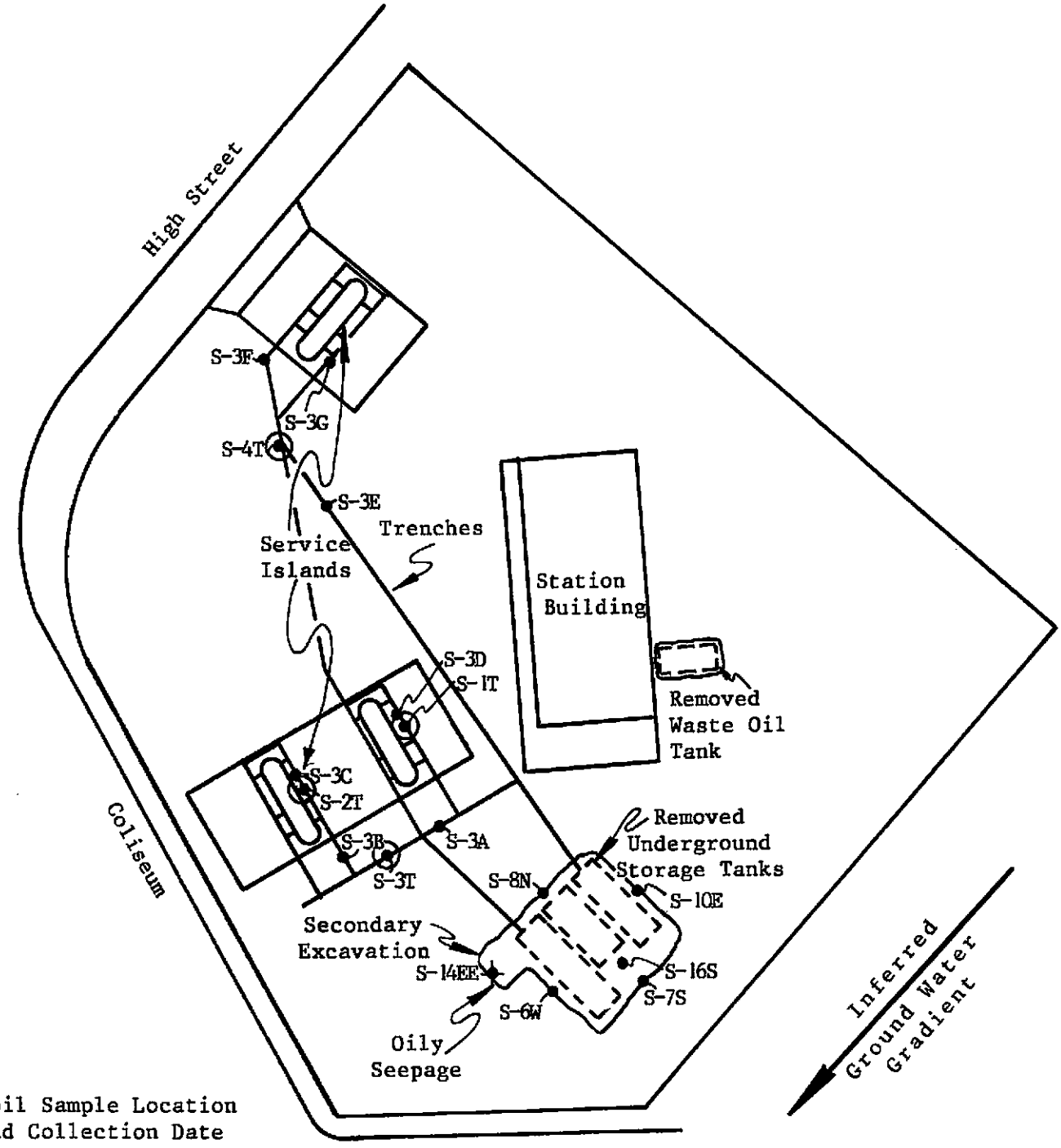
Applied GeoSystems
43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

PROJECT NO. 87042-2

SITE VICINITY MAP
EXXON Station #7-3006
720 High Street
Oakland, California

PLATE

P-1



Soil Sample Location and Collection Date

- May 5, 1987
- May 14, 1987
- May 15, 1987

Source: Modified from Map supplied by EXXON

N

Approximate Scale

40 0 40 80

feet

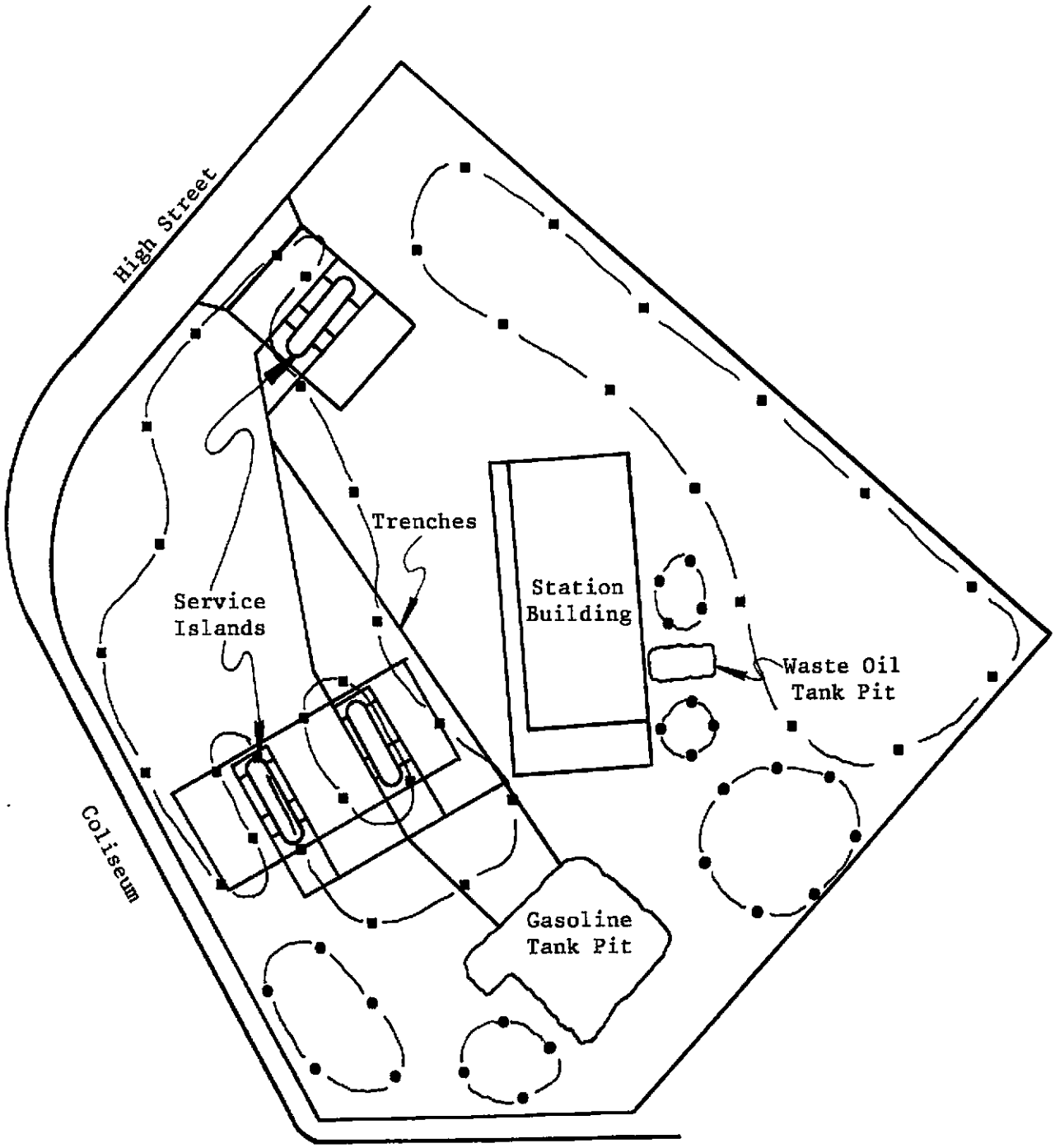
Applied GeoSystems
43255 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-7906

PROJECT NO. 87042-2

GENERALIZED SITE PLAN
EXXON Station #7-3006
720 High Street
Oakland, California

PLATE

P-2



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

PROJECT NO. 87042-2

EXCAVATED SOIL
EXXON Station # 7-3006
720 High Street
Oakland, California

PLATE

P-3

CHAIN OF CUSTODY RECORD

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

SAMPLER (signature): William C Rivera

Phone:

LABORATORY: APPLIED GEOSYSTEMS

TURNAROUND TIME: 1 WEEK (due 5/8)

Attention: ROBIN ROSS

Phone No.

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
William C Rivera			
	Received for laboratory by:	5-7-87	8:00AM

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-8-N	87042-2	5/5/87	TVH	ICED
S-10-E	"	"	TVH	ICED
S-7-S	"	"	TVH	ICED
S-6-W	"	"	TVH	ICED
COMPOSITE S2 & S3	"	"	TVH	ICED
COMPOSITE S4 & S5 & S6 & S7	"	"	TVH	ICED
COMPOSITE S-3-A & S-3-B	"	"	TVH	ICED
COMPOSITE S-3-C & S-3-D	"	"	TVH	
COMPOSITE S-3-E & S-3-F & S-3-G	"	"		

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

RECORD OF ANALYSIS

Date 5-11-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: C. Robin Ross

Date Received: 5-7-87 Laboratory# 8705S024
Date Analyzed: 5-7-87

Procedure:

The soil samples referenced on the attached Chain-of-Custody were analyzed for Total Volatile Hydrocarbons (TVH) by EPA method 8020. The samples were concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for these samples is 0.5 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL VOLATILE HYDROCARBONS
S-8-N	87042-2	96.8
S-10-E	87042-2	186.6
S(4,5,6,7) COMPOSITE	87042-2	238.3
S(3E,3F,3G) COMPOSITE	87042-2	545.7

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

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

RECORD OF ANALYSIS

Date 5-11-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: C. Robin Ross

Date Received: 5-7-87 Laboratory# 8705S026
Date Analyzed: 5-7-87

Procedure:

The soil samples referenced on the attached Chain-of-Custody were analyzed for Total Volatile Hydrocarbons (TVH) by EPA method 8020. The samples were concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for these samples is 0.5 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL VOLATILE HYDROCARBONS
S-7-S	87042-2	13.55
S-6-W	87042-2	8.69
(S2 + S3) COMPOSITE	87042-2	27.13

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

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

RECORD OF ANALYSIS

Date 5-11-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: C. Robin Ross

Date Received: 5-7-87 Laboratory# 8705S030
Date Analyzed: 5-7-87

Procedure:

The soil sample referenced on the attached Chain-of-Custody was analyzed for Total Volatile Hydrocarbons (TVH) by EPA method 8020. The sample was concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for this sample is 2.0 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL VOLATILE HYDROCARBONS
S(3C + 3D) COMPOSITE	87042-2	4299

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

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

RECORD OF ANALYSIS

Date 5-11-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: C. Robin Ross

Date Received: 5-7-87
Date Analyzed: 5-7-87

Laboratory# 8705DS01

Procedure:

The soil sample was analyzed for high boiling point hydrocarbons by EPA method 3550 for soil extraction. The sample was injected into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for this sample is 5 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL EXTRACTABLE HYDROCARBONS
S(3A + 3B) COMPOSITE	87042-1	17

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

CHAIN OF CUSTODY RECORD

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

SAMPLER (signature): William C Rivera
Phone: (415) 651-1906

LABORATORY:
APPLIED GEOSYSTEMS

TURNAROUND TIME: 1 WEEK (due 5/8)
Attention:
Phone No.

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

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
William C Rivera			
	Received for laboratory by: [signature]	5-7-87	8:00 AM

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-16-S	87042-2	5/6/87	TVH	ICED

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

RECORD OF ANALYSIS

Date 5-11-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: C. Robin Ross

Date Received: 5-7-87
Date Analyzed: 5-7-87

Laboratory# 8705S032

Procedure:

The soil sample referenced on the attached Chain-of-Custody was analyzed for Total Volatile Hydrocarbons (TVH) by EPA method 8020. The sample was concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for this sample is 0.05 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL VOLATILE HYDROCARBONS
S-16-S	87042-2	0.86

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

CHAIN OF CUSTODY RECORD

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

SAMPLER (signature): William C. Rivera

Phone: _____

LABORATORY: APPLIED GEOSYSTEMS

TURNAROUND TIME: ONE WEEK

Attention: ROBIN ROSS

Phone No. _____

SHIPPING INFORMATION:

Shipper _____

Address _____

Date Shipped _____

Service Used _____

Airbill No. _____ Cooler No. _____

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
William C. Rivera			
	Received for laboratory by: [signature]	5-12-87	11:00

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
S2+S4	87042-2	5/12/87	TVH	ICED
S1+S3	87042-2	5/12/87	TVH	ICED
S5	87042-2	5/12/87	TVH	ICED
S6+S10	87042-2	5/12/87	TVH	ICED
S7+S9	87042-2	5/12/87	TVH	ICED
S8	87042-2	5/12/87	TVH	ICED

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

RECORD OF ANALYSIS

Date 5-21-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: C. Robin Ross

Date Received: 5-12-87
Date Analyzed: 5-15-87

Laboratory# 8705S090

Procedure:

The soil samples referenced on the attached Chain-of-Custody were analyzed for Total Volatile Hydrocarbons (TVH) by EPA method 8020. The samples were concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for these samples is 0.05 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL VOLATILE HYDROCARBONS
S2+S4	87042-2	8.61
S1+S3	87042-2	6.30
S5	87042-2	13.57
S6+S10	87042-2	17.71
S7+S9	87042-2	11.37
S8	87042-2	14.53

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

CHAIN OF CUSTODY RECORD

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

SAMPLER (signature): William C. Rivera

Phone: (415) 651-1906

LABORATORY: Applied GeoSystems

TURNAROUND TIME: 1 week

Attention: Robin Ross

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
William C. Rivera			
	Received for laboratory by: [signature]	5-15-87	14:00

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
S1B (Composite)	87042-2	5/15/87	TVH	ICE
S2A (Composite)	87042-2	5/15/87	TVH	ICE

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

RECORD OF ANALYSIS

Date 5-21-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: C. Robin Ross

Date Received: 5-15-87 Laboratory# 8705S106
Date Analyzed: 5-18-87

Procedure:

The soil sample referenced on the attached Chain-of-Custody was analyzed for Total Volatile Hydrocarbons (TVH) by EPA method 8020. The sample was concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for this sample is 0.5 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL VOLATILE HYDROCARBONS
S1B+S2A	87042-2	915.7

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

CHAIN OF CUSTODY RECORD

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

SAMPLER (signature): William O'Riva

Phone:

LABORATORY: BROWN AND CALDWELL

TURNAROUND TIME: 24 HR

Attention: ROBIN ROSS

Phone No.

SHIPPING INFORMATION:

Shipper APPLIED GEOSYSTEMS

Address 43255 MISSION BLVD STE B

Date Shipped 5/21/87

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
William O'Riva	[illegible] P Lg	5/21/87	16:00
[illegible] P Lg	E. Kwong	5/21/87	17:55
	Received for laboratory by:		

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-14-EE	87042-2	5/15/87	EPA 8240, EPA 418.2, and TTLC (Metals)	ICED

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E87-05-545

Received: 21 MAY 87
Reported: 02 JUN 87

Ms. Robin Ross
Applied Geosystems
43255 Mission Boulevard, Suite B
Fremont, California 94539

Project: 87042-2

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
05-545-1	S-14-EE	15 MAY 87

PARAMETER	05-545-1
Antimony, mg/kg	<10
Arsenic, mg/kg	3.4
Barium, mg/kg	140
Beryllium, mg/kg	0.5
Cadmium, mg/kg	<0.2
Chromium, mg/kg	67
Cobalt, mg/kg	23
Copper, mg/kg	23
Lead, mg/kg	7.8
Mercury, mg/kg	0.20
Molybdenum, mg/kg	<2
Nickel, mg/kg	220
Selenium, mg/kg	<0.2
Silver, mg/kg	<1
Thallium, mg/kg	5.6
Vanadium, mg/kg	34
Zinc, mg/kg	37
Hydrocarbons by IR, mg/kg	520
Nitric Acid Digestion, Date	05.27.87

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E87-05-545

Received: 21 MAY 87
Reported: 02 JUN 87

Ms. Robin Ross
Applied Geosystems
43255 Mission Boulevard, Suite B
Fremont, California 94539

Project: 87042-2

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
05-545-1	S-14-EE	15 MAY 87

PARAMETER	05-545-1
Purgeable Priority Pollutants	
Extraction	05.26.87
1,1,1-Trichloroethane, mg/kg	<20
1,1,2,2-Tetrachloroethane, mg/kg	<20
1,1,2-Trichloroethane, mg/kg	<20
1,1-Dichloroethane, mg/kg	<20
1,1-Dichloroethylene, mg/kg	<20
1,2-Dichloroethane, mg/kg	<20
1,2-Dichloropropane, mg/kg	<20
1,3-Dichloropropene, mg/kg	<20
2-Chloroethylvinylether, mg/kg	<20
Acrolein, mg/kg	<200
Acrylonitrile, mg/kg	<200
Bromodichloromethane, mg/kg	<20
Bromomethane, mg/kg	<20
Benzene, mg/kg	20
Chlorobenzene, mg/kg	<20
Carbon Tetrachloride, mg/kg	<20
Chloroethane, mg/kg	<20
Bromoform, mg/kg	<20
Chloroform, mg/kg	<20
Chloromethane, mg/kg	<20
Dibromochloromethane, mg/kg	<20
Ethylbenzene, mg/kg	60
Methylene chloride, mg/kg	<50

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E87-05-545

Received: 21 MAY 87
Reported: 02 JUN 87

Ms. Robin Ross
Applied Geosystems
43255 Mission Boulevard, Suite B
Fremont, California 94539

Project: 87042-2

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
05-545-1	S-14-EE	15 MAY 87

PARAMETER	05-545-1
Tetrachloroethylene, mg/kg	<20
Trichloroethylene, mg/kg	<20
Trichlorofluoromethane, mg/kg	<20
Toluene, mg/kg	40
Vinyl chloride, mg/kg	<20
trans-1,2-Dichloroethylene, mg/kg	<20
trans-1,3-Dichloropropene, mg/kg	<20
Semi-Quantified Results **	
A C6H12 Cyclic Hydrocarbon, mg/kg	200
C7H14, mg/kg	100
Xylene Isomers, mg/kg	180

** Quantification based upon comparison of total ion count of the compound with that of the nearest internal standard.

Linda Black FOR
D. A. McLean, Laboratory Director

CHAIN OF CUSTODY RECORD

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

SAMPLER (signature): Jeremy S Russell
Phone: 415-651-1906

LABORATORY: AGS

TURNAROUND TIME: ONE WEEK
Attention: Tia Tran
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
Jeremy S Russell			
	Received for laboratory by:	5-18-87	14:00

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-1-A, & S-2-A, & S-3-A,	87042-2	5/18	TVH	ICED
S-4-A, & S-5-A,	87042-2	5/18	"	"
1-A2 & S-2-A2 & S-3-A2	87042-2	5/18	"	"
-7-A2 & S-8-A2	87042-2	5/18	"	"

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

RECORD OF ANALYSIS

Date 5-27-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: C. Robin Ross

Date Received: 5-18-87 Laboratory# 8705S131
Date Analyzed: 5-22-87

Procedure:

The soil samples referenced on the attached Chain-of-Custody were analyzed for Total Volatile Hydrocarbons (TVH) by EPA method 8020. The samples were concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for these samples is 0.05 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL VOLATILE HYDROCARBONS
S(1,2,3)A1 COMPOSITE	87042-2	2.78
S(4,5)A1 COMPOSITE	87042-2	0.55

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

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

RECORD OF ANALYSIS

Date 5-27-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: C. Robin Ross

Date Received: 5-18-87
Date Analyzed: 5-22-87

Laboratory# 8705S133

Procedure:

The soil samples referenced on the attached Chain-of-Custody were analyzed for Total Volatile Hydrocarbons (TVH) by EPA method 8020. The samples were concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for these samples is 0.05 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL VOLATILE HYDROCARBONS
S(1,2,3)A2 COMPOSITE	87042-2	4.25
S(7,8)A2 COMPOSITE	87042-2	2.81

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

CHAIN OF CUSTODY RECORD

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

SAMPLER (signature): Charles Ard

Phone:

LABORATORY: Applied Geosystems

TURNAROUND TIME: 1 week

Attention: Charles Ard

Phone No.

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
Charles Ard			
	Received for laboratory by: Charles	6-3-87	12:00

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-1T	87042-2	6-3-87	TVH	ICED
S-2T	"	"	"	"
S-3T	"	"	"	"
S-4T	"	"	"	"

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

RECORD OF ANALYSIS

Date 6-9-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: Charles. L. Ard

Date Received: 6-3-87
Date Analyzed: 6-4-87

Laboratory# 8706S016

Procedure:

The soil samples referenced on the attached Chain-of-Custody were analyzed for Total Volatile Hydrocarbons (TVH) by EPA method 8020. The samples were concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for these samples is 0.05 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL VOLATILE HYDROCARBONS
S-1T	87042-2	0.71
S-2T	87042-2	1.70
S-3T	87042-2	3.21
S-4T	87042-2	0.44

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

CHAIN OF CUSTODY RECORD

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

SAMPLER (signature): [signature]

Phone: _____

LABORATORY: Applied GeoSystems

TURNAROUND TIME: 2-week

Attention: Charles Ard

Phone No. _____

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]	6-3-87	12:00

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-1-1	87042-2	6-3-87	TVH	ICED
S-1-2	S-1			
S-1-3				
S-2-1				
S-2-2	S-2			
S-2-3				
S-3-1				
S-3-2	S-3			
S-3-3				
S-4-1				
S-4-2	S-4			
S-4-3				
S-5-1				
S-5-2	S-5			
S-5-3				
S-6-1				
S-6-2	S-6			
S-6-3				

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

RECORD OF ANALYSIS

Date 6-19-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: Charles L. Ard

Date Received: 6-3-87 Laboratory# 8706S062
Date Analyzed: 6-16-87

Procedure:

The soil samples referenced on the attached Chain-of-Custody were analyzed for Total Volatile Hydrocarbons (TVH) by EPA method 8020. The samples were concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for these samples is 0.05 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL VOLATILE HYDROCARBONS
S1 COMPOSITE	87042-2	0.35
S2 COMPOSITE	87042-2	0.29
S3 COMPOSITE	87042-2	0.48
S4 COMPOSITE	87042-2	0.64
S5 COMPOSITE	87042-2	0.47
S6 COMPOSITE	87042-2	1.24

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

CHAIN OF CUSTODY RECORD

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

SAMPLER (signature): William Stiver

Phone: (415) 651-1906

LABORATORY: Applied GeoSystems

TURNAROUND TIME: 1 week

Attention: Robin Ross

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
William Stiver			
	Received for laboratory by:	6-12-87	9:00AM

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
S1A	Composite	87042-2	6-11-87	TVH	ICE
S1B		"	"	"	"
S1C		"	"	"	"
S2A	Composite	87042-2	"	"	"
S2B		"	"	"	"
S2C		"	"	"	"

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

RECORD OF ANALYSIS

Date 6-19-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: C. Robin Ross

Date Received: 6-12-87
Date Analyzed: 6-17-87

Laboratory# 8706S073

Procedure:

The soil samples referenced on the attached Chain-of-Custody were analyzed for Total Volatile Hydrocarbons (TVH) by EPA method 8020. The samples were concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for these samples is 0.05 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL VOLATILE HYDROCARBONS
S1(ABC)	87042-2	0.86
S2(ABC)	87042-2	0.52

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

CHAIN OF CUSTODY RECORD

Applied GeoSystems

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

SAMPLER (signature): Tim O'Brien

Phone: 415 651 1906

LABORATORY: Applied GeoSystems

TURNAROUND TIME: 2 day

Attention: Robin Ross

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
Tim O'Brien			12 AM
	Received for laboratory by: [signature]	6-15-87	12:15

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-1 (composite S-1 to S-3)	87042-2	6-15-87	TVH	iced
S-2	↓	↓	↓	↓
S-3	↓	↓	↓	↓
S-4 (composite S-4, S-5, S-9)	↓	↓	↓	↓
S-5	↓	↓	↓	↓
S-9	↓	↓	↓	↓
S-6 (composite S-6 to S-8)	↓	↓	↓	↓
S-7	↓	↓	↓	↓
S-8	↓	↓	↓	↓

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

RECORD OF ANALYSIS

Date 6-19-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: C. Robin Ross

Date Received: 6-15-87
Date Analyzed: 6-16-87

Laboratory# 8706S068

Procedure:

The soil samples referenced on the attached Chain-of-Custody were analyzed for Total Volatile Hydrocarbons (TVH) by EPA method 8020. The samples were concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for these samples is 0.05 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL VOLATILE HYDROCARBONS
S(1+2+3)	87042-2	1.70
S(4+5+9)	87042-2	0.62
S(6+7+8)	87042-2	0.54

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

CHAIN OF CUSTODY RECORD

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

SAMPLER (signature): William C. Rivera

Phone: (415) 651-1906

LABORATORY:
Applied GeoSystems

TURNAROUND TIME: 1 WEEK

Attention: Robin Ross

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
William C. Rivera			
	Received for laboratory by:	6-18-87	12:00

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
S1A	87042-2	6 18 87	TVH	ICE
S1B	"	"	"	"
S1C	"	"	"	"
	"			
S2A	"	"	"	"
S2B	"	"	"	"
S2C	"	"	"	"

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

RECORD OF ANALYSIS

Date 6-23-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: C. Robin Ross

Date Received: 6-18-87 Laboratory# 8706S094
Date Analyzed: 6-19-87

Procedure:

The soil samples referenced on the attached Chain-of-Custody were analyzed for Total Volatile Hydrocarbons (TVH) by EPA method 8020. The samples were concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for these samples is 0.05 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL VOLATILE HYDROCARBONS
S1(A,B,C)	87042-2	ND
S2(A,B,C)	87042-2	ND

Results in milligrams/kilogram (parts per million = ppm).
ND=Non Detectable - Less than 0.05 milligrams/kilogram (ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

CHAIN OF CUSTODY RECORD

Applied GeoSystems
43253 Mission Blvd. Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): William C. Rivers

Phone: (415) 651-1906

LABORATORY: Applied GeoSystems

TURNAROUND TIME: 1 week

Attention: Robin Ross

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
William C. Rivers			
	Received for laboratory by:	6-24-87	15:00

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
S1A (Composite)	87042-2	6/24/87	TVH	ICE
S1B				
S1C				

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

RECORD OF ANALYSIS

Date 7-2-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: C. Robin Ross

Date Received: 6-24-87 Laboratory# 8707S001
Date Analyzed: 7-1-87

Procedure:

The soil sample referenced on the attached Chain-of-Custody was analyzed for Total Volatile Hydrocarbons (TVH) by EPA method 8020. The sample was concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for this sample is 0.05 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

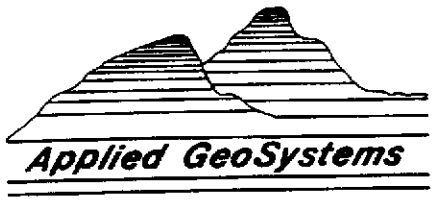
SAMPLE	SITE	TOTAL VOLATILE HYDROCARBONS
S1(ABC)	87042-2	1.83

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).

CHAIN OF CUSTODY RECORD



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

SAMPLER (signature): [signature]

Phone:

LABORATORY: Applied GeoSystems

TURNAROUND TIME: 24 hr.

Attention: Robin

Phone No.

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]	7-1-87	11:00AM

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-1-1	B7042-2	7-1	TVH	ICED
S-1-2	Composite			
S-1-3				
S-2-1	Composite			
S-2-2				
S-2-3				

UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK)/CONTAMINATION SITE REPORT

EMERGENCY ☐ YES ☒ NO — HAS STATE OFFICE OF EMERGENCY SERVICES REPORT BEEN FILED? ☐ YES ☒ NO

STATE TANK ID #:

REPORT DATE: 05/01/87

LOCAL CASE #:

REGIONAL BOARD CASE #:

US EPA ID #:

REPORTED BY

NAME OF INDIVIDUAL FILING REPORT: Robin Ross

PHONE: (415) 651-1906

SIGNATURE:

REPRESENTING: ☐ LOCAL AGENCY ☐ OTHER ☒ Consultant ~~OWNER/OPERATOR~~ ☐ REGIONAL BOARD

COMPANY OR AGENCY NAME: Applied GeoSystems

ADDRESS: 43255 Mission Blvd (STREET) Fremont (CITY) CA (STATE) 94539 (ZIP)

RESPONSIBLE PARTY

NAME: Exxon Company, U.S.A. ☐ UNKNOWN

CONTACT PERSON: Kent Sanderson

PHONE: (415) 945-1966

ADDRESS: 1646 N. California Blvd., Suite 210 (STREET) Walnut Creek (CITY) CA (STATE) 94596 (ZIP)

SITE LOCATION

FACILITY NAME (IF APPLICABLE): Exxon Service Station #7-3006

OPERATOR: Victor Chu

PHONE: (415) 533-6066

ADDRESS: 720 High Street (STREET) Oakland (CITY) Alameda (COUNTY) (ZIP)

CROSS STREET: Coliseum

TYPE OF AREA: ☒ COMMERCIAL ☐ INDUSTRIAL ☐ RESIDENTIAL ☐ RURAL ☐ OTHER

TYPE OF BUSINESS: ☒ RETAIL FUEL STATION ☐ UNKNOWN ☐ OTHER

IMPLEMENTING AGENCIES

LOCAL AGENCY / AGENCY NAME	CONTACT PERSON	PHONE
Alameda County Environmental Health	Ted Gerow	(415) 874-6434
REGIONAL BOARD: San Francisco R.W.Q.C.B.	Greg Zentner	(415) 464-0840
TSCD		( )

SUBSTANCE INVOLVED

CAS # (ATTACH EXTRA SHEET IF NEEDED)	NAME	QUANTITY LOST (GALLONS)
(1)	Gasoline Product	☒ UNKNOWN
(2)		☐ UNKNOWN

DISCOVERY/ABATEMENT

DATE DISCOVERED: 04/20/87

HOW DISCOVERED: ☐ INVENTORY CONTROL ☐ SUBSURFACE MONITORING ☐ ROUTINE MONITORING ☒ TANK REMOVAL ☐ NUISANCE CONDITIONS ☐ OTHER:

DATE DISCHARGE BEGAN: ☒ UNKNOWN

HAS DISCHARGE BEEN STOPPED? ☒ YES ☐ NO IF YES, DATE:

METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY): ☒ REMOVE CONTENTS ☐ REPLACE TANK ☐ CLOSE TANK ☐ REPAIR TANK ☐ REPAIR PIPING ☐ CHANGE PROCEDURES ☒ OTHER Remove Tanks

SOURCE/CAUSE

SOURCE(S) OF DISCHARGE: ☒ TANK LEAK ☐ UNKNOWN ☐ PIPING LEAK ☒ OTHER (SPECIFY) Fill Port

TANKS ONLY/CAPACITY: 6,8,10 thous

AGE: ☒ UNKNOWN

MATERIAL: ☒ STEEL ☐ FIBERGLASS ☐ OTHER

CAUSE(S): ☒ OVERFILL ☒ CORROSION ☐ RUPTURE/FAILURE ☐ SPILL ☐ UNKNOWN ☐ OTHER

RESOURCES AFFECTED/AT RISK

RESOURCES AFFECTED	YES	NO	THREATENED	UNKNOWN
AIR (VAPOR)	☐	☐	☐	☒
SOIL (VADOSE ZONE)	☒	☐	☐	☐
GROUNDWATER	☐	☐	☐	☒
SURFACE WATER OR STORM DRAIN	☐	☐	☐	☒
BUILDING OR UTILITY VAULT	☐	☐	☐	☒
OTHER (SPECIFY)	☐	☐	☐	☐

GROUNDWATER BASIN NAME: ☒ UNKNOWN

WATER SUPPLIES AFFECTED	YES	NO	THREATENED	UNKNOWN	# OF WELLS
PUBLIC DRINKING WATER	☐	☐	☐	☒	
PRIVATE DRINKING WATER	☐	☐	☐	☒	
INDUSTRIAL	☐	☐	☐	☒	
AGRICULTURAL	☐	☐	☐	☒	
OTHER (SPECIFY)	☐	☐	☐	☐	

COMMENTS

COMMENTS:

COMPLETE AND ATTACH A CLEANUP TRACKING REPORT IF ANY CLEANUP WORK OR PLANNING HAS STARTED

HSC 08 (10/85)

e of California—Health and Welfare Agency

ease print or type. *(Form designed for use on elite (12-pitch) typewriter.)*

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of 1	Inform. is no law.
3. Generator's Name and Mailing Address			A. State Manifest Docu 863161	
			B. State Generator's ID	
4. Generator's Phone ( )				
5. Transporter 1 Company Name	6. US EPA ID Number		C. State Transporter's ID	
			D. Transporter's Phone	
7. Transporter 2 Company Name	8. US EPA ID Number		E. State Transporter's ID	
			F. Transporter's Phone	
9. Designated Facility Name and Site Address	10. US EPA ID Number		G. State Facility's ID	
			H. Facility's Phone	

11. US DOT Description *(Including Proper Shipping Name, Hazard Class, and ID Number)*	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste
a.					134
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above	K. Handling Codes for Wastes Listed Above
Gasoline 1% water 99%	

15. Special Handling Instructions and Additional Information

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

Unless I am a small quantity generator who has been exempted by statute or regulation from the duty to make a waste minimization certification under Section 3002(b) of RCRA, I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment.

Printed/Typed Name	Signature	Month	Day	Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
		12	19	17

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

DHS 8022 A (11/85)
EPA 8700—22)

YELLOW GENERATOR RETAINS

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

RECORD OF ANALYSIS

Date 7-2-87

Applied GeoSystems
43255 Mission Blvd.
Fremont, CA. 94539

Attention: C. Robin Ross

Date Received: 7-1-87 Laboratory# 8707S007
Date Analyzed: 7-1-87

Procedure:

The soil samples referenced on the attached Chain-of-Custody were analyzed for Total Volatile Hydrocarbons (TVH) by EPA method 8020. The samples were concentrated on a Tekmar LSC-2 and ALS automatic sampler prior to injection into a 5890 Hewlett Packard gas chromatograph fitted with a Flame Ionization detector (FID). The limit of detection for these samples is 0.05 milligrams/kilogram (parts per million = ppm).

The results are presented in the table below:

SAMPLE	SITE	TOTAL VOLATILE HYDROCARBONS
S1(1+2+3)	87042-2	2.00
S2(1+2+3)	87042-2	0.29

Results in milligrams/kilogram (parts per million = ppm).

Tia Tran, Chemist

Applied GeoSystems is a State of California, Department of Health Services Certified Hazardous Waste Testing Laboratory (No. 153).