

ALCO
HAZMAT

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21 April 1994
A932789A

Mr. Dennis M. Klimmek, Esq.
Vice President and General Counsel
Kemper Real Estate Management Company
3470 Mt. Diablo Road, Suite A200
P.O. Box 1459
Lafayette, California 94108-4482

**SUBJECT: SOIL GAS SURVEY RESULTS AT THE ALAMEDA RED HANGER
KLEANERS, HARBOR BAY LANDING SHOPPING CENTER, ALAMEDA,
CALIFORNIA**

Dear Dennis,

Applied Geosciences Inc. is pleased to provide you with this report documenting the performance of activities related to several environmental issues affecting portions of the Harbor Bay Landing Shopping Center (HBLSC) on Island Drive in Alameda, California (site; Figures 1 and 2). The scope of work developed and conducted during this phase of work was based on our discussions during the meeting of 8 February 1994, information from previous site work performed by PES Environmental, Inc. (1993) and Applied Geosciences Inc. (1993).

The two environmental issues that Applied Geosciences Inc. were requested to address were 1) the further characterization of volatile organic compounds (VOCs), specifically tetrachloroethene, also known as perchloroethylene (PCE), and its breakdown products trichloroethylene (TCE), and cis-1,2-dichloroethene (cis-1,2-DCE) in the vicinity of the Alameda Red Hanger Kleaners (ARHK) facility, and 2) the quality of groundwater, with respect to a historic release of potentially hazardous materials proximate to the BP Oil Service Station. The review of, and subsequent discussions regarding, the 15 December 1993 report's findings resulted in the decision to perform an additional phase of subsurface investigation to evaluate the presence of PCE and/or its degradation products in the gaseous phase.

OBJECTIVE

The objective of the scope of work was to further characterize the site with respect to the presence of PCE, and to obtain current groundwater quality data from existing wells at the BP Oil Service Station.

Other Offices:

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APPROACH

Applied Geosciences Inc. notified the Alameda County Health Care Services Agency (ACHCSA) in a letter dated 4 March 1994 that PCE had been reported in soil and groundwater samples collected on-site (Applied Geosciences Inc., 1993), and of our intent to perform an additional investigation consisting of a soil gas survey, and shallow soil sampling and analysis. Based on data obtained during our previous investigation of the site, information obtained from consultation with two soil gas surveying companies, and our previous experience with soil gas surveys, it was decided to further characterize the site with respect to the presence of PCE by conducting a soil gas survey. A soil gas sampling grid was then established. The soil gas survey and soil sampling were then conducted concurrently.

Applied Geosciences Inc. also attempted to obtain recent groundwater data for the BP Oil facility located at the southwest corner of the HBLSC. Upon establishing the fact that groundwater sampling had not been performed within the last 6 months, Applied Geosciences Inc. coordinated with BP Oil's consultant to observe their scheduled sampling event and to collect samples from the monitoring wells immediately upon completion of their sample collection activities at each well.

SCOPE OF WORK

The scope of work within the approach included the following tasks.

- Regulatory Agency Notification and Consultation
- Health & Safety Plan Revision
- Soil Gas Investigation
- Sample Analysis
- BP Oil Groundwater Sampling and Reporting
- Data Evaluation, Report Preparation, and Project Management

Regulatory Agency Notification and Consultation

Applied Geosciences Inc. notified the ACHCSA of the presence of PCE at the ARHK site and of our proposed investigation to additionally characterize the site relative to PCE and its degradation products in a letter dated 4 March 1994. That letter also transmitted a copy of Applied Geosciences Inc.'s 15 December 1993 subsurface investigation report. The proposed scope of work for the preliminary characterization of the release at the ARHK site was discussed with the ACHCSA. General concurrence with the proposed scope of work was provided by the ACHCSA (Seto, 1994).

Health & Safety Plan Revision

The Health & Safety Plan prepared for the initial phase of work was revised to include the sampling of groundwater at the BP Oil facility. The original Health and Safety Plan was generally applicable to the performance of the soil gas survey, hand augering, and drive-sampling activities performed on-site; additional revision to include these activities was not required.

The Health and Safety Plan is an integral part of our hazardous materials practice. It is based on our understanding of the potentially hazardous materials that may be present at the site and safety concerns involved with personnel working at the site. It is intended to minimize the likelihood that exposure of Applied Geosciences Inc.'s personnel and subcontractors to potentially hazardous materials and unsafe conditions will occur during field work.

Soil Gas Investigation

Applied Geosciences Inc. scheduled and coordinated underground utility locating and concrete coring activities at the ARHK site as part of this task. Application to "Zone 7" for the necessary permit was also performed, and the required permit was obtained. A soil gas survey utilizing 12 sampling locations was performed at the ARHK site to estimate the areal extent of selected gaseous phase chemical constituents in soil, including PCE, TCE, and cis-1,2-DCE. Soil gas samples were analyzed in a mobile sampling/analytical van using a gas chromatograph. ~~The~~ majority of soil gas samples were collected at depths of approximately 4 feet below the ground surface (BGS). Soil gas sampling locations are shown on Figure 2.

Soil samples were collected from 9 of the 12 locations from which soil gas samples were extracted (samples were not collected at three of the soil gas sampling locations due to the presence of concrete in the subsurface). Field activities were conducted in general accordance with procedures developed by Applied Geosciences Inc., as summarized in Appendix A. The survey grid was designed to 1) provide maximum coverage of the site with a one-day survey, 2) provide us with adequate data to assess whether the concentration pattern of these constituents was indicative of a concentrated source of PCE beneath the site, and 3) assess the general magnitude of the concentrations of these constituents beneath the site.

Soil sampling was conducted in conjunction with the soil gas survey to enable a comparison of the concentrations of VOCs in soil gas and in shallow soils beneath the site. Soils encountered were damp, medium grained sands.

Soil and Soil Gas Sample Analysis

Soil gas was analyzed on-site using a mobile gas chromatograph. Twelve soil gas samples were analyzed for the presence of selected halogenated hydrocarbons, biogenic gases, and total volatile hydrocarbons. A blank sample and a duplicate sample were also analyzed to establish "background" concentrations of the analytes and for QA/QC purposes. The report by Interphase, which includes a tabulation of analytical results, is presented in Appendix B.

Nine soil samples were submitted to Inchcape Testing Services, Anamatrix Laboratories (Anamatrix), a State-certified hazardous waste laboratory, and analyzed for the presence of halogenated volatile organics in general accordance with EPA Method 8010. Analytical results for these soil samples are presented indicated on Table 1. Chain of Custody procedures, including Chain of Custody forms, were used to document sample handling and transport from the time of sample collection to delivery to the laboratory. Laboratory analytical reports and chain of custody forms are included as Appendix C.

BP Oil Groundwater Sampling, Analysis and Reporting

Alisto Engineers performed a round of sampling at the BP Oil facility on 5 April 1994, under contract to BP Oil. Applied Geosciences Inc. personnel observed the sampling procedures utilized by BP Oil's consultant, and collected samples from the wells immediately following the collection of samples by Alisto Engineers. Groundwater samples were collected from the eight monitoring wells by Applied Geosciences Inc. (one well did not recharge enough to yield enough water for the three analyses planned). Field activities were conducted in general accordance with procedures developed by Applied Geosciences Inc., as summarized in Appendix A. Samples collected by Applied Geosciences Inc. were submitted, along with a trip blank, to Anamatrix. The trip blank was provided by the laboratory along with all other groundwater sample containers.

Based on the constituents historically reported in groundwater samples collected on-site (PES, 1993), analyses for the presence of total petroleum hydrocarbons as gasoline (TPHg); benzene, toluene, ethylbenzene, and total xylenes (BTEX); total petroleum hydrocarbons as diesel (TPHd); and total oil and grease, are being performed for samples from seven wells; only analysis for TPHg and BTEX will be performed for the one well from which a sufficient quantity of water was not readily available for collection). The laboratory is scheduled to provide the analytical results on a one-week turnaround basis. Associated reporting will be included in an addendum to this report.

DISCUSSION

Relatively low concentrations of PCE, TCE and/or cis-1,2-DCE were previously reported in the soil and groundwater samples collected on-site (Applied Geosciences Inc., 1993). The soil gas and soil data from this investigation are generally consistent with data from our previous investigation of the site. The concentrations of PCE that were reported in soil gas samples (non-detect to 5 $\mu\text{g}/\text{L}$) and in soil samples (non-detect to 14 $\mu\text{g}/\text{Kg}$) were judged by Applied Geosciences Inc. to be low. TCE, a breakdown product of PCE, was reported in soil gas samples (non-detect to 0.08 $\mu\text{g}/\text{L}$), but not in soil samples. Cis-1,2-DCE, a breakdown product of TCE, was not reported in soil gas or soil samples. There are no applicable regulatory standards for the PCE and TCE in soil gas.

The concentrations of VOCs reported in soil samples collected on-site are considerably below soluble threshold limit concentrations (STLCs) and total threshold limit concentrations (TTLCs) established for TCE (204 ppm, and 2,040 ppm, respectively); STLCs and TTLCs have not been

established for PCE. Concentrations in soil are also considerably below regulatory levels established for comparison with Toxicity Characteristics Leaching Procedures (TCLP) results (0.7 ppm for PCE and 0.5 ppm for TCE) especially since the reported concentrations are total concentrations. STLCs, TTLCs, and TCLPs are regulatory criteria used to assess whether or not a waste is hazardous.

In our judgment soil gas and soil data from this investigation are generally consistent with the results of our previous soil and groundwater investigation (Applied Geosciences Inc., 1993). Where PCE and related compound-concentrations were low or non-detect in the previously analyzed soil and groundwater samples, they were found to be low in the soil gas samples (ie: SG4 to SG8 and SG10 to SG12 in the vicinity of B2 and B4).

Where somewhat elevated concentrations were detected in the vicinity of ~~floor drain F1~~ and nearby dry cleaning and PCE-water separating equipment (in boring B1), soil gas samples from locations SG1 to SG3 and SG9 had detectable concentrations of PCE. These soil gas data are consistent with the interpretation that the concentrations of PCE and related compounds in the soil and groundwater are below those that would typically be of regulatory concern.

It is the judgment of Applied Geosciences Inc. that the data generated during this investigation indicates that ~~the highest concentrations of PCE in soil gas beneath the site, though relatively low, are in the vicinity of floor drain F1, and the nearby dry cleaning and PCE-water separating units, and are likely related to less than desirable storage, handling, and/or disposal practices at the site.~~ It is therefore the judgment of Applied Geosciences Inc. that a review of practices and procedures related to the storage, handling, and disposal of PCE at the site should be conducted, and appropriate mitigative measures taken, including elimination of any routes, and potential routes, of entry of PCE to the subsurface.

The judgments, conclusions, and recommendations described in this report pertain to the conditions judged to be present or applicable at the time the work was performed. Future conditions may differ from those described herein and this report is not intended for use in future evaluations of the site unless an update is conducted by a consultant familiar with environmental assessments and/or subsurface investigations. Use of this report is provided to Kemper Real Estate Management Company for their exclusive use and shall be subject to the terms and conditions in the applicable contract between Kemper Real Estate Management Company and Applied Geosciences Inc. Any third party use, including use by Client's lender, of this report shall also be subject to the terms and conditions governing the work in the contract between Kemper Real Estate Management Company and Applied Geosciences Inc. Any unauthorized release or misuse of this report shall be without risk or liability to Applied Geosciences Inc.

Certain information contained in this report may have been rightfully provided to Applied Geosciences Inc. by third parties or other outside sources. Applied Geosciences Inc. does not make any warranties or representations, whether expressed or implied, regarding the accuracy of such information, and shall not be held accountable or responsible in the event that any such inaccuracies are present.

CONCLUSIONS

Based on the information presented in this report, current regulatory guidelines, and the judgment of Applied Geosciences Inc., the following conclusions are presented:

- The reported soil gas concentrations suggest that there is a low likelihood that significant concentrations of PCE are present beneath the site; and
- The soil gas and soil data from this investigation are generally consistent with data from our previous soil and groundwater investigation of the site. The highest concentrations of PCE in soil gas beneath the site, although relatively low, are in the vicinity of floor drain F1, and the nearby dry cleaning and PCE-water separating units; less than desirable PCE storage, handling, and/or disposal practices at the site are the likely cause.

RECOMMENDATION

Based on the data and conclusions presented in this report, and the judgment of Applied Geosciences Inc., the following recommendation is presented for your consideration:

- A review of practices and procedures related to the storage, handling, and disposal of PCE at the site should be conducted, and appropriate mitigative measures taken, including elimination of any routes, and potential routes, of entry of PCE to the subsurface.

It has been a pleasure working with you on this project. If you have any questions regarding this report, please feel free to contact either of us at your convenience at (408) 452-0262.

Very truly yours,
APPLIED GEOSCIENCES INC.



WILLIAM G. THEYSKENS, CEG 1486
Project Engineering Geologist



WILLIAM P. NYLIN
Regional Office Manager

cc: Mr. Frank Cantone, Contracts Administrator

Attachments

Appendix A. Summary of Field Procedures

Appendix B. Soil Gas Analysis Results

Appendix C. Laboratory Reports and Chain of Custody Forms

References

Applied Geosciences Inc., Subsurface investigation at the Harbor Bay Landing Shopping Center, Alameda, California, 15 December, 1993.

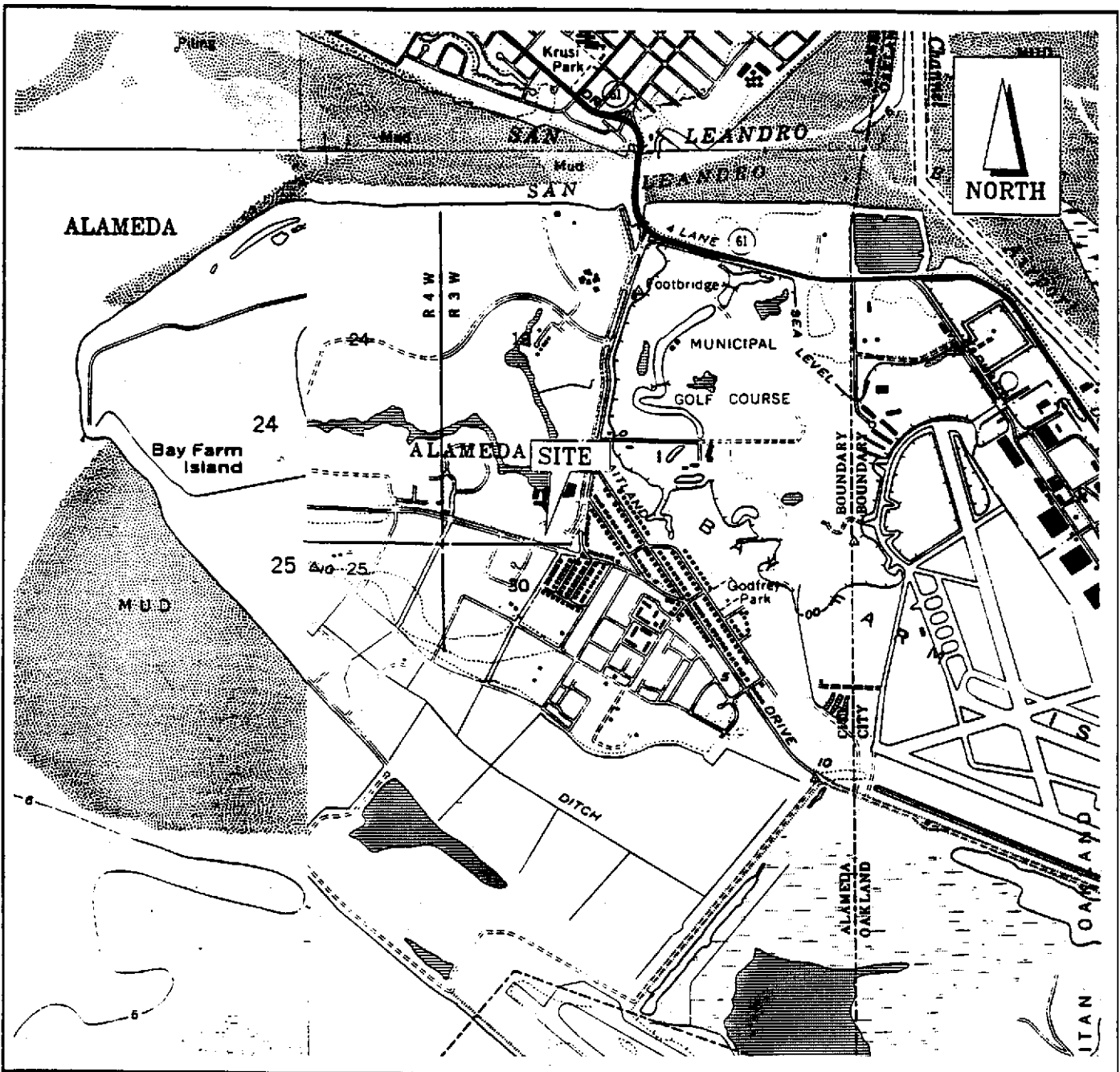
Seto, L., ACHCSA, 1994, oral communication, 3 March 1994.

TABLE 1
HARBOR BAY
SOIL SAMPLE ANALYSES SUMMARY
HALOGENATED VOLATILE ORGANICS PER EPA METHOD NO. 8010
(RESULTS IN MICROGRAMS/KILOGRAM)*

Sample i.d.	Sample Location	Date Collected	Methylene chloride**	Tetrachloroethene
SG1-1.5	SG1	3/20/94	7.6	14
SG2-1.5	SG2	3/20/94	7.2	4.4
SG3-1.5	SG3	3/20/94	7.3	2.1
SG4-2	SG4	3/20/94	7	ND
SG5-1.5	SG5	3/20/94	6.1	ND
SG8-1.5	SG8	3/20/94	6.1	ND
SG10-1.5	SG10	3/20/94	6.9	ND
SG11-2	SG11	3/20/94	7.1	ND
SG12-2	SG12	3/20/94	6.7	ND

Notes:

- * All soil reporting limits are 1.
- ** The laboratory has indicated that "The methylene chloride reported for the samples and the method blank is most likely due to laboratory contamination." It is the judgment of Applied Geosciences Inc. that the laboratory is correct.
- *** Only compounds reported by the laboratory are included on this table.
- **** Laboratory reporting limits are indicated on the laboratory reports (Appendix C).

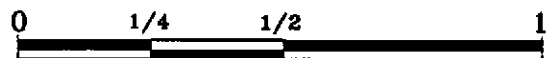


NOTES:

- 1) BASE MAP FROM USGS SAN LEANDRO (1959), OAKLAND EAST (1959), OAKLAND WEST (1959), AND HUNTERS POINT (1956) QUADRANGLES 7.5 MINUTE SERIES (TOPOGRAPHIC). PHOTOREVISED 1980, 1980, 1980, AND 1968 RESPECTIVELY.
- 2) ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.



Quadrangle Location



SCALE, MILES

APPLIED GEOSCIENCES INC.
Environmental Consultants



SITE LOCATION MAP

PROJECT NO. A932789

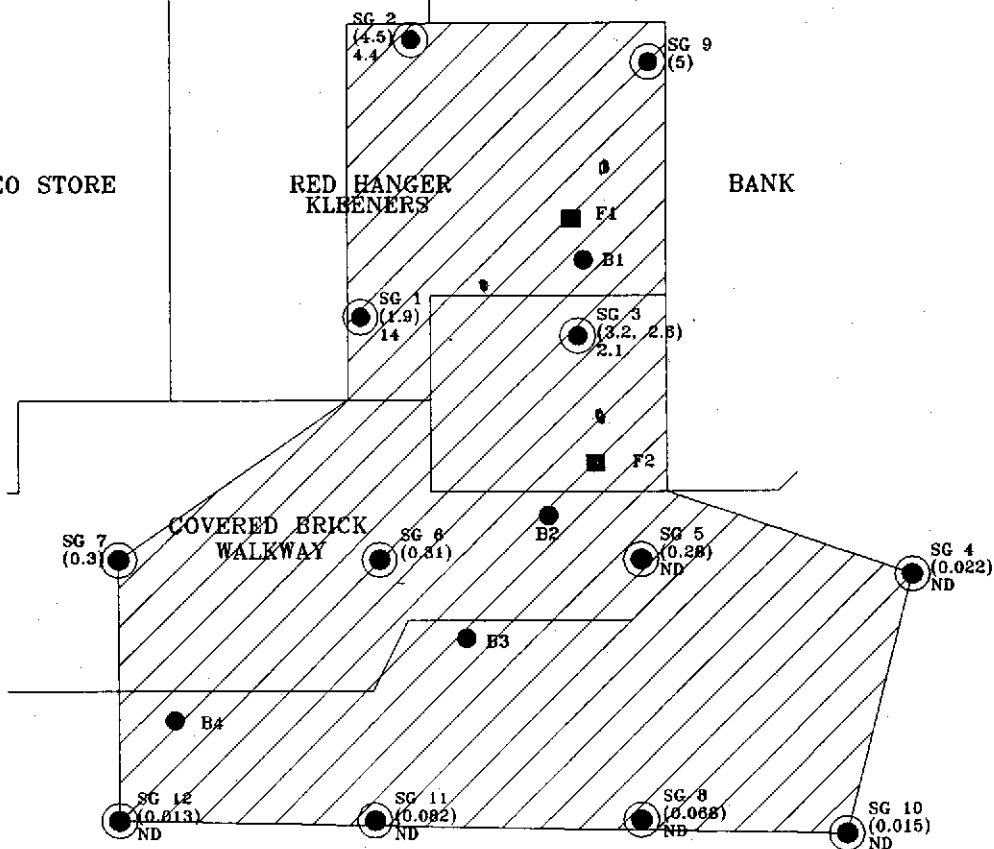
FIGURE 1



VIDEO STORE

RED HANGER
KLEENERS

BANK



EXPLANATION:

- SG 10 (0.015) ND
 DESIGNATION AND LOCATION OF SOIL GAS SURVEY POINTS AND REPORTED TETRACHLOROETHENE CONCENTRATIONS IN (SOIL GAS) AND SOIL SAMPLES COLLECTED.
- B1
 DESIGNATION AND LOCATION OF SOIL BORINGS PREVIOUSLY INSTALLED BY APPLIED GEOSCIENCES INC.
- F1
 DESIGNATION AND LOCATION OF FLOOR DRAIN

NOTE

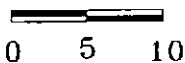
- 1) ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
- 2) SITE PLAN GENERATED FROM FIELD MEASUREMENTS PERFORMED BY APPLIED GEOSCIENCES INC. PERSONNEL.

APPLIED GEOSCIENCES INC.
Environmental Consultants



SITE PLOT PLAN

SCALE



PROJECT NO. A932789

FIGURE 2

APPENDIX A

SUMMARY OF FIELD PROCEDURES

SUMMARY OF FIELD PROCEDURES

The procedures that were used in the performance of the soil gas survey, to hand auger and collect soil samples using drive sampling apparatus, and to sample groundwater in the existing monitoring wells, were as follow:

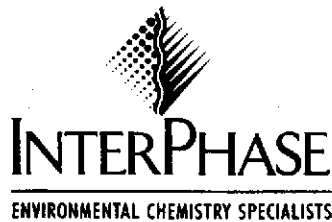
- A permit was acquired from the applicable regulatory agency ("Zone 7") prior to the initiation of field work.
- Following completion of underground utility locating activities, the concrete floor slab was cored.
- Soil gas sampling rods were then driven to depths of four to five feet below the ground surface (BGS) using a slide hammer apparatus. The rods were then pulled upwards, leaving the drive point behind, and exposing the adjacent soils. A dedicated length of polyethylene silicon tubing was inserted through the rod such that the end of the tubing was located proximate to the exposed soils. A vacuum was then applied to the sampling pipe with a large syringe. Following the purging of a volume of air approximately equal to that contained in the silicon tubing, suction was applied and a sample collected by inserting a smaller syringe through the wall of the polyethylene tubing. The syringe was then sub-sampled, and injected into a mobile gas chromatograph.
- Soil borings were then advanced adjacent to the soil gas sampling locations to depths of approximately 2.0 to 2.5 feet BGS using hand augering apparatus. Samples were collected using drive-sampling apparatus.
- Soil descriptions and sample depths were recorded on a field log. The Unified Soil Classification System (USCS) was used.
- All hand augering and drive-sampling equipment was washed using a non-phosphate detergent, rinsed in two tap water rinses, and final rinsed using deionized water, in general accordance with SCVWD and RWQCB guidelines, to minimize the likelihood of cross-contamination.
- Soil samples were collected in 6-inch long stainless steel liners located inside the drive samplers' liner.
- Following retrieval of the sampler, the sample was removed from the sampler, the ends covered with aluminum foil, and capped with PVC end caps. Each sample was labeled with the sample number, depth of collection, date, and project number. With respect to soil sample designations, the first number indicates the boring from which the sample was collected, the second number indicates the approximate depth of the top of the sample with respect to the ground surface.

- Samples retained for laboratory analysis were stored on ice in an insulated chest.
- Samples were delivered to the laboratory within 24 hours of collection. Sample handling, transport, and delivery to the laboratory were performed using chain-of-custody procedures and forms.
- Soil waste generated during the drilling operations were stored on-site in a sealed, labeled, 5- gallon drum pending receipt of laboratory results. Disposal of the soil in accordance with current regulatory guidelines, based on the laboratory results, is the responsibility of the client.

Groundwater Sampling at BP Oil Company Service Station

- Translucent Voss disposal bailers equipped with bottom emptying devices were used to sample groundwater.
- Following the sounding, purging, and sampling activities performed by others, and generally upon recovery to 80% of the original groundwater level if the well was purged dry, groundwater samples were collected by Applied Geosciences Inc. Groundwater samples for the scheduled analyses were collected from seven of the eight wells. Due to very slow recharge rates in two of the wells,, there was only enough water to collect water samples for TPHg/BTEX analysis only from one of the wells.
- Water samples, including one trip blank, were placed into laboratory-provided containers for the respective analyses to be performed, labeled, and stored on ice in an insulated chest pending delivery to the laboratory for analysis.
- Chain-of-Custody procedures were used to document sample handling and transport from the time of sample collection to delivery within 24 hours of sampling to a State-certified hazardous waste laboratory for analysis.
- Groundwater samples are being analyzed on a one week turnaround basis for TPHg and BTEX by EPA Method 8015M/8020 (the Leaking Underground Fuel Tank [LUFT]-prescribed method), for TPHd (EPA Method 8015M), and for total oil and grease (EPA Method 418.1).

APPENDIX B
SOIL GAS ANALYSIS RESULTS



RECEIVED

APR 08 1994

APPLIED GEOSCIENCES INC.

April 6, 1994

APPLIED GEOSCIENCES, INC.
1641 North First Street, Suite 235
San Jose, California 95112
Attention: Mr. Bill Theyskens

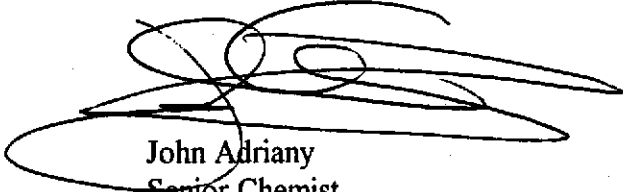
**REVISED SOIL GAS ANALYSIS RESULTS
HARBOR BAY LANDING SHOPPING CENTER
RED HANGER DRY CLEANERS
PROJECT #: 9418**

Mr. Theyskens:

InterPhase is pleased to submit these ~~tables~~ tables presenting concentrations of selected aromatic hydrocarbons, selected halogenated hydrocarbons, biogenic gases and total volatile hydrocarbons analyzed in soil gas collected from the Harbor Bay Landing Shopping Center site in Alameda, California. Our services were performed Sunday, March 20, 1994.

If you have any questions regarding the results, we would be pleased to discuss them with you. We appreciate the opportunity to have worked with you on this project and look forward to working with you in the future.

Sincerely,
InterPhase



John Adriany
Senior Chemist

attachment

Concentration of analytes from soil vapor samples collected and analyzed at the Harbor Bay Landing Shopping Center, Red Hanger Dry Cleaners site, Alameda, California; (Project 9418)

ANALYZED BY: Craig Schieber

DATE: 3-20-94

Total No.(#) of samples analyzed: 16

Table Revision: 4-06-94

Sample (# - ft)	Time Collected	Time Analyzed	Evacuation Volume (ml)	InjVol (uL)	Dilution	CFC-11 (µg/L)	CH ₂ Cl ₂ (µg/L)	1,1-DCA (µg/L)	CHCl ₃ (µg/L)	1,1,1-TCA (µg/L)	CCl ₄ (µg/L)	TCE (µg/L)	PCE (µg/L)
System/Air Blk #1	09:05	09:05	-	500	-	0.002	<1	<1	<0.01	<0.001	<0.001	<0.01	<0.001
1-4'	10:53	10:53	90	50	-	NA	NA	NA	NA	NA	NA	NA	1.9
1-4'	10:53	11:05	-	200	-	*0.002	<1	<1	<0.01	0.006	<0.001	0.02	NA
2-4'	11:20	11:20	90	200	-	*0.002	<1	<1	<0.01	0.009	<0.001	0.08	NA
2-4'	11:20	11:31	-	20	-	NA	NA	NA	NA	NA	NA	NA	4.5
3-4'	11:39	11:41	90	20	-	<0.01	<10	<10	<0.1	<0.01	<0.01	<0.1	3.2
3D-4' duplicate	11:39	11:53	90	20	-	<0.01	<10	<10	<0.1	<0.01	<0.01	<0.1	2.6
4-4'	12:09	12:09	90	50	-	NA	NA	NA	NA	NA	NA	NA	NA
4-4'	12:09	12:18	-	200	-	*0.002	<1	<1	<0.01	<0.001	<0.001	<0.01	0.022
5-4'	12:25	12:28	90	200	-	*0.002	<1	<1	<0.01	0.004	<0.001	<0.01	0.28
6-4'	12:50	12:51	90	100	-	*0.002	<1	<1	<0.01	<0.001	<0.001	<0.01	0.31
7-4'	13:06	13:08	90	200	-	*0.002	<1	<1	<0.01	<0.001	<0.001	<0.01	0.3
8-4'	13:23	13:25	90	200	-	*0.002	<1	<1	<0.01	0.008	<0.001	0.02	0.068
9-4'	13:41	13:43	90	50	-	<0.01	<10	<10	<0.1	0.016	<0.01	*0.02	NA
9-4'	13:41	13:55	-	10	-	NA	NA	NA	NA	NA	NA	NA	5
10-4'	14:03	14:05	90	200	-	0.003	<1	<1	<0.01	0.006	<0.001	<0.01	0.015
11-5'	14:22	14:22	90	200	-	0.003	<1	<1	*0.01	0.006	<0.001	<0.01	0.082
12-4'	14:40	14:42	90	200	-	*0.002	<1	<1	<0.01	<0.001	<0.001	<0.01	0.013
System/Air Blk #2	14:53	14:53	-	500	-	0.005	<1	<1	<0.01	*0.004	<0.001	<0.01	<0.001

µg/L: micrograms per liter

<: less than

ml: milliliters

uL: microliters

NA: not analyzed

~: below reporting limits

*: exceeds reporting limits

CFC-11: trichlorofluoromethane

CH₂Cl₂: methylene chloride

DCE: dichloroethene

DCA: dichloroethane

CHCl₃: chloroform

TCA: trichloroethane

CCl₄: carbon tetrachloride

TCE: trichloroethene

PCE: tetrachloroethene

CO₂: carbon dioxide

O₂: oxygen

TVH: total volatile hydrocarbons

Concentration of analytes continued...

ANALYZED BY: Craig Schieber

DATE: 3-20-94

Total No.(#) of samples analyzed: 16

Table Revision: 4-06-94

Sample (# - ft)	Injection Volume (μL)	1,1-DCE (μg/L)	<i>cis</i> 1,2-DCE (μg/L)	<i>trans</i> 1,2-DCE (μg/L)	Benzene (μg/L)	Toluene (μg/L)	Ethyl-Benzene (μg/L)	m,p-Xylene (μg/L)	o-Xylene (μg/L)	Injection Volume (μL)	TVH (μg/L)	Injection Volume (μL)	CO2 (%)	O2 (%)
System/Air Blk #1	1000	<1	<1	<1	<1	<1	<1	<1	<1	1000	<5	100	<0.1	20.3
1-4'	500	<1	<1	<1	<1	<1	<1	<1	<1	1000	<5	100	0.3	18.9
1-4'	-	NA	NA	NA	NA	NA	NA	NA	NA	-	NA	-	NA	NA
2-4'	500	<1	<1	<1	<1	<1	<1	<1	<1	1000	<5	100	0.5	19.4
2-4'	-	NA	NA	NA	NA	NA	NA	NA	NA	-	NA	-	NA	NA
3-4'	500	<1	<1	<1	<1	<1	<1	<1	<1	1000	<5	100	0.6	18.9
3D-4' duplicate	500	<1	<1	<1	<1	<1	<1	<1	<1	1000	<5	100	0.6	18.8
4-4'	500	<1	<1	<1	<1	<1	<1	<1	<1	1000	<5	100	<0.1	20.5
4-4'	-	NA	NA	NA	NA	NA	NA	NA	NA	-	NA	-	NA	NA
5-4'	500	<1	<1	<1	<1	<1	<1	<1	<1	1000	<5	100	<0.1	19.9
6-4'	500	<1	<1	<1	<1	<1	<1	<1	<1	1000	<5	100	0.6	19.9
7-4'	500	<1	<1	<1	<1	<1	<1	<1	<1	1000	<5	100	0.4	19.5
8-4'	500	<1	<1	<1	<1	<1	<1	<1	<1	1000	<5	100	0.7	19.2
9-4'	500	<1	<1	<1	<1	<1	<1	<1	<1	1000	<5	100	0.6	19.4
9-4'	-	NA	NA	NA	NA	NA	NA	NA	NA	-	NA	-	NA	NA
10-4'	500	<1	<1	<1	<1	<1	<1	<1	<1	1000	<5	100	<0.1	20.7
11-5'	500	<1	<1	<1	<1	<1	<1	<1	<1	1000	<5	100	1.7	12.2
12-4'	500	<1	<1	<1	<1	<1	<1	<1	<1	1000	<5	100	<0.1	21.3
System/Air Blk #2	1000	<1	<1	<1	<1	<1	<1	<1	<1	1000	<5	100	<0.1	19.6

μg/L: micrograms per liter

<: less than

ml: milliliters

uL: microliters

NA: not analyzed

^: below reporting limits

*: exceeds reporting limits

CFC-11: trichlorofluoromethane

CH2Cl2: methylene chloride

DCE: dichloroethene

DCA: dichloroethane

CHCl3: chloroform

TCA: trichloroethane

CCl4: carbon tetrachloride

TCE: trichloroethene

PCE: tetrachloroethene

CO2: carbon dioxide

O2: oxygen

TVH: total volatile hydrocarbons



SOIL GAS SURVEYING PROCEDURES

STANDARD OPERATING PROCEDURES FOR THE COLLECTION AND ANALYSIS OF SOIL GAS SAMPLES

Equipment/Instrumentation

InterPhase operates a mobile sampling and analytical van which is capable of collecting soil gas and ambient air samples. Real-time chemical analyses of soil gas and air samples are performed for indicator compounds (analytes) selected for each project site. Field equipment and sampling systems used by InterPhase are as follows:

- * Modified one-ton Ford E350 van;
- * Two gasoline-powered AC generators;
- * Van-mounted hydraulic driving/hammering system designed to install or remove sampling probes;
- * 100 feet of percussion drill steel in 3-foot probe sections;
- * Oilless air pump and evacuation chamber for collecting exact volumes of soil gas at atmospheric pressure;

Analytical instrumentation and chemical supplies include the following:

- * Varian 3400, Hewlett-Packard 5890 and SRI 8610 gas chromatographs;
- * 386 PC-based data management and GC integration systems;
- * A combination of ECD (electron capture), FID (flame ionization), PID (photoionization), and TCD (thermal conductivity) detectors;
- * UHP grade compressed analytical gases (nitrogen, helium, hydrogen);
- * Analytical vapor and methanolic standards for priority pollutants, gaseous hydrocarbons and fixed/biogenic gases;
- * High resolution megabore, capillary, and packed gas chromatographic columns;
- * Fittings, tools, plumbing and syringes required for normal GC operation.

Sampling Procedures

Soil gas samples are collected at designated depths by connecting a sampling syringe to a length of 1/4 " polyethylene tubing which leads from the exposed end of a soil gas probe to its terminus. The tubing is connected via threaded adapter to a tool installed on the deepest probe. Discrete volumes of gas are removed by 60 ml syringe, the volume of gas removed are determined by the volume of tubing employed and results of purge volume tests. Unlike groundwater sampling, purging of a soil gas probe is designed to remove only the ambient air in the system.

A minimum sampling depth of 3 to 5 feet below ground surface (bgs) is recommended in areas where bare soil is the surface cover in an effort to minimize sample dilution with atmospheric air. Soil gas samples may be collected at depths less than 3 feet bgs to assess the accumulation of vapors under a surface cover such as asphalt or concrete. Comparing contaminant concentrations and fixed/biogenic gas composition as a function of purge volume may be performed at the beginning of a survey. Purge volume experiments may be conducted in an area where subsurface contamination is expected to be greatest and are designed to assess optimal purge times and potential sample dilution with atmospheric air.

As the pressure within the sampling system reaches atmospheric, a 10 cc vapor sample is collected in a glass syringe by inserting the needle through the wall of the tubing. In order to minimize the possibility of cross-contamination among sampling locations; dedicated lengths of polyethylene tubing and drive points are used for each sampling location, and non-dispensable tools are baked in an oven at 80 degrees C for 10 minutes.

Two ambient air samples are collected over the course of each day and analyzed for background concentrations of the target compounds. All components of the sampling system are checked for contamination prior to sampling at the beginning of the day by drawing atmospheric air or nitrogen gas through the system, subjecting it to GC analysis, and comparing the resulting chromatogram with that of ambient air or UHP nitrogen. Steel sampling components are cleaned using steam or pressurized water and detergent (Alconox) at the conclusion of each day.

As part of the sampling procedure, probe locations are recorded on the field sampling sheets. In addition, field data forms (and chain-of-custody forms, if necessary) are used to record observations regarding vapor sampling and probe installation. These field data forms may include, but are not limited to, sample identification, sampling depth, time of sample collection and analysis, volume of soil gas extracted, and observations of soil characteristics.

Confirmatory soil vapor samples are collected by connecting dedicated sections of polyethylene tubing to an evacuated cylinder. Gas containers are normally transferred under chain-of-custody procedures to a commercial laboratory where they are analyzed according to the specified methods. The percentage of duplicates submitted for laboratory

analysis is dependent on project objectives and regulatory specifications. InterPhase recommends that duplicates be collected at 5% of the sampling points.

InterPhase scientists have conducted field experiments to estimate the capture zone around the end of the soil gas sampling probe in order to demonstrate that vapor samples are not diluted with atmospheric air. Capture zone estimates were calculated for sandy soils and for silty or clayey soils as follows:

Sampling Depth: 6 feet

Volume of sampling probe: $15 \text{ cm}^3/3\text{-foot length}$

Purge Volume: 60 cm^3 (Approximately 2 probe volumes)

Air porosity of sandy soils: $30\% = 0.3$

Air porosity of silt or clay soils: $20\% = 0.2$

Volume of soil gas collected from sandy materials:

$$60 \text{ cm}^3/0.3 = 200 \text{ cm}^3$$

Volume of soil gas collected from silty or clayey materials:

$$60 \text{ cm}^3/0.2 = 300 \text{ cm}^3$$

Assuming isotropic vapor flow, the volume of soil gas collected may be described as a sphere with the origin at the tip of the soil gas probe. Therefore,

$$\begin{aligned} (4/3)(\pi)(r^3) &= 200 \text{ cm}^3 \text{ (sand)} \\ r &= 3.6 \text{ cm} \end{aligned}$$

$$\begin{aligned} (4/3)(\pi)(r^3) &= 300 \text{ cm}^3 \text{ (silt/clay)} \\ r &= 4.1 \text{ cm.} \end{aligned}$$

The purge volume of 60 cm^3 ensures that two volumes of the sampling apparatus are evacuated ($2 \text{ probe lengths} \times 15 \text{ cm}^3 = 30 \text{ cm}^3$). The calculated radius of influence is substantially less than the distance to ground surface (182.9 cm), thus minimizing the potential for sample dilution with atmospheric air.

Analytical Procedures

The 10 cc soil gas samples are subsampled and analyzed within 15 minutes of collection in order to preserve the integrity of the vapor sample. Duplicates may be analyzed approximately every twenty samples by gas chromatography for documentation of reproducibility. Analytes are identified by their respective elution times through the selected columns and detectors. Retention or elution times are compared with external standards injected in a gaseous, organic, or aqueous phase. Analyte separation for compounds detected by the FID (e.g. petroleum hydrocarbons and ketones) is performed using a 30 m x 0.53 mm DB-624 or DB23 megabore capillary column (J&W Scientific).

Analyte separation for compounds detected by the ECD (e.g. halogenated aliphatics) is performed by using a 30 m x 0.53 mm DB-624 megabore capillary column (J&W Scientific). Identification of vinyl chloride and alkyl benzenes may be performed using the aforementioned capillary columns and a PID. Analyte separation for compounds detected by the TCD is performed by using either a molecular sieve or CTR-1 2 m stainless steel packed columns (Alltech Associates), ranging in diameter from 0.64 to 0.32 cm. Difficulties associated with peak separation are minimized by the use of low viscosity carrier gases, compound-specific detectors, megabore capillary columns, and method-specific temperature programs.

Analyte concentrations are estimated by comparing the detector response for a known concentration or mass of the external standard with the detector response for the sample. Multi-point calibration curves are computer-generated by plotting the detector response for external standards against a range of analyte concentrations. The detector response is checked periodically during a survey to ensure that the calibration curves are accurate. Analyte detection limits are determined by the response factor for each day.

Although preliminary results are often available in the field, all chromatograms generated during a soil gas survey are subsequently reviewed by another chemist to ensure that computer identification and quantification of analytes are correct. The InterPhase van operates directly under the supervision of a degreed project chemist.

The following procedures are employed during all soil gas surveys:

- * High-volume sampling and subsampling syringes are decontaminated by washing with a mild detergent and drying at a minimum temperature of 90 degrees Celsius;
- * Microliter syringes (used for sample injection onto the GC column) are solvent rinsed, purged with an inert gas, and checked for contamination by immediate injection into the appropriate gas chromatograph;
- * External standards are either commercially-prepared EPA chemical standards or mixtures of commercially-prepared gases;
- * Detector response to analytes is documented over a 10 to 50-fold range in mass or concentration and compared to the theoretical responses in order to check the linearity of the detector response to analytes;
- * Septa on the GC column injectors are replaced daily to minimize the possibility of carrier gas leaks (only UHP gases are used for chromatography); and
- * All analytical data (e.g., chromatograms, calibration curves, integration reports) are stored on a computer floppy disk or hard copy, transmitted to the InterPhase office, and reviewed by a second chemist.

In the unlikely event that chromatograph sensitivity is affected by electrical surges or vibration, resulting changes are immediately observed by continuously monitoring the baseline voltage for all detectors. It should be noted that the analytical instruments are powered by a generator system which is completely separate from that running either the hydraulic/pneumatic equipment or the motor vehicle.

Determination of Detection Limits

Limits of detection for quantitative analysis are determined by the following factors:

- 1) Analytical Method
- 2) Specific Analyte
- 3) Instrumentation (detector)
- 4) Injection Size

Method detection limits are tabulated in the results describing analyte concentrations. Method detection limits are defined by the precision of a detector's response to an analyte over the range of mass the detector is calibrated for the method.

Data Interpretation

Vapor-phase diffusion is the prevailing mechanism by which soil gas analytes are transported in the subsurface. The presence of an analyte in soil gas is a function of the phase, location and concentration of the source, physical properties of the analyte, and the media through which transport occurs. The site-specific variability among soil properties profoundly affect vapor-phase diffusion and must be considered in the interpretation of analyte distribution in the soil gas. Among these soil properties are: soil moisture, soil particle size and distribution, and air-filled porosity. Anomalies in the spatial distribution (vertically or laterally) of analyte concentrations in soil gas samples will be noted. InterPhase provides an interpretive report upon request of the client.

Although isoconcentration contours of soil gas data can be plotted on site maps, it should be emphasized that these isotherms are only representative of the contaminant distribution in soil vapor. Isoconcentration contours for compounds in soil or groundwater may differ in extent and orientation from those delineated in soil gas. Inherent assumptions that are infrequently discussed in preparing soil gas isotherms are:

- * Soil gas concentration data are adequate to describe the spatial distribution of contaminants underlying the site;
- * Vertical anisotropy is either insignificant or can be described by existing site data;

* Vapor barriers that may impede the gaseous diffusion of analytes are either nonexistent or do not vary over the investigation site; and

* Soil texture, water content, and air-filled porosity are spatially uniform over the site.

APPENDIX C

**LABORATORY REPORTS AND
CHAIN-OF-CUSTODY FORMS**



Inchcape Testing Services

Anametrix Laboratories

1961 Concourse Drive
 Suite E
 San Jose, CA 95151
 Tel: 408-432-8192
 Fax: 408-432-8198

MR. BILL THEYSKENS
 APPLIED GEOSCIENCES INC
 1641 NORTH FIRST STREET SUITE 235
 SAN JOSE, CA 95112

Workorder # : 9403317
 Date Received : 03/21/94
 Project ID : A932789A
 Purchase Order: N/A

The following samples were received at Anametrix for analysis :

ANAMETRIX ID	CLIENT SAMPLE ID
9403317- 1	SG1-1.5
9403317- 2	SG2-1.5
9403317- 3	SG3-1.5
9403317- 4	SG4-2
9403317- 5	SG5-1.5
9403317- 6	SG8-1.5
9403317- 7	SG10-1.5
9403317- 8	SG11-2
9403317- 9	SG12-2

This report is organized in sections according to the specific Anametrix laboratory group which performed the analysis(es) and generated the data.

The results contained within this report relate to only the sample(s) tested. Additionally, these data should be considered in their entirety and Anametrix cannot be responsible for the detachment, separation, or otherwise partial use of this report.

Anametrix is certified by the California Department of Health Services (DHS) to perform environmental testing under Certificate Number 1234.

If you have any further questions or comments on this report, please call us as soon as possible. Thank you for using Anametrix.

Coinnerham for

 Doug Robbins
 Laboratory Director

04/04/94

 Date

This report consists of 10 pages.

ANAMETRIX REPORT DESCRIPTION GC

Organic Analysis Data Sheets (OADS)

OADS forms contain tabulated results for target compounds. The OADS are grouped by method and, within each method, organized sequentially in order of increasing Anamatrix ID number.

Surrogate Recovery Summary (SRS)

SRS forms contain quality assurance data. An SRS form will be printed for each method, if the method requires surrogate compounds. They will list surrogate percent recoveries for all samples and any method blanks. Any surrogate recovery outside the established limits will be flagged with an "***", and the total number of surrogates outside the limits will be listed in the column labelled "Total Out".

Matrix Spike Recovery Form (MSR)

MSR forms contain quality assurance data. They summarize percent recovery and relative percent difference information for matrix spikes and matrix spike duplicates. This information is a statement of both accuracy and precision. Any percent recovery or relative percent difference outside established limits will be flagged with an "***", and the total number outside the limits will be listed at the bottom of the page. Not all reports will contain an MSR form.

Qualifiers

Anamatrix uses several data qualifiers (Q) in its report forms. These qualifiers give additional information on the compounds reported. They should help a data reviewer to verify the integrity of the analytical results. The following is a list of qualifiers and their meanings:

- U - Indicates that the compound was analyzed for, but was not detected at or above the specified reporting limit.
- B - Indicates that the compound was detected in the associated method blank.
- J - Indicates that the compound was detected at an amount below the specified reporting limit. Consequently, the amount should be considered an approximate value. Tentatively identified compounds will always have a "J" qualifier because they are not included in the instrument calibration.
- E - Indicates that the reported amount exceeded the linear range of the instrument calibration.
- D - Indicates that the compound was detected in an analysis performed at a secondary dilution.

Absence of a qualifier indicates that the compound was detected at a concentration at or above the specified reporting limit.

REPORTING CONVENTIONS

- ♦ Due to a size limitation in our data processing step, only the first eight (8) characters of your project ID and sample ID will be printed on the report forms. However, the report cover letter and report summary pages display up to twenty (20) characters of your project and sample IDs.
- ♦ Amounts reported are gross values, i.e., not corrected for method blank contamination.

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

MR. BILL THEYSKENS
APPLIED GEOSCIENCES INC
1641 NORTH FIRST STREET SUITE 235
SAN JOSE, CA 95112

Workorder # : 9403317
Date Received : 03/21/94
Project ID : A932789A
Purchase Order: N/A
Department : GC
Sub-Department: VOA

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9403317- 1	SG1-1.5	SOIL	03/20/94	8010
9403317- 2	SG2-1.5	SOIL	03/20/94	8010
9403317- 3	SG3-1.5	SOIL	03/20/94	8010
9403317- 4	SG4-2	SOIL	03/20/94	8010
9403317- 5	SG5-1.5	SOIL	03/20/94	8010
9403317- 6	SG8-1.5	SOIL	03/20/94	8010
9403317- 7	SG10-1.5	SOIL	03/20/94	8010
9403317- 8	SG11-2	SOIL	03/20/94	8010
9403317- 9	SG12-2	SOIL	03/20/94	8010

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

MR. BILL THEYSKENS
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Workorder # : 9403317
Date Received : 03/21/94
Project ID : A932789A
Purchase Order: N/A
Department : GC
Sub-Department: VOA

QA/QC SUMMARY :

- The methylene chloride reported for the samples and the method blank is most likely due to laboratory contamination.
- Due to the heterogeneous nature of the matrix the recovery and the RPD for tetrachloroethene is outside of Anamatrix control limits in the matrix spike/ matrix spike duplicate of sample S61-1.5 for EPA Method 8010.

M. Hasselmeier 4/1/94
Department Supervisor Date

[Signature] 4/1/94
Chemist Date

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

Project ID : A932789A
Sample ID : SG1-1.5
Matrix : SOIL
Date Sampled : 3/20/94
Date Analyzed : 4/ 1/94
Instrument ID : AD15

Anamatrix ID : 9403317-01
Analyst : *sh*
Supervisor : *sh*
Dilution Factor : 1.0
Conc. Units : ug/Kg

CAS No.	COMPOUND NAME	REPORTING LIMIT	AMOUNT DETECTED	Q
75-71-8	Dichlorodifluoromethane	1.0	ND	U
74-87-3	Chloromethane	1.0	ND	U
75-01-4	Vinyl chloride	1.0	ND	U
74-83-9	Bromomethane	1.0	ND	U
75-00-3	Chloroethane	1.0	ND	U
75-69-4	Trichlorofluoromethane	1.0	ND	U
76-13-1	Trichlorotrifluoroethane	1.0	ND	U
75-35-4	1,1-Dichloroethene	1.0	ND	U
75-09-2	Methylene chloride	1.0	7.6	B
156-60-5	trans-1,2-Dichloroethene	1.0	ND	U
75-34-3	1,1-Dichloroethane	1.0	ND	U
156-59-2	cis-1,2-Dichloroethene	1.0	ND	U
67-66-3	Chloroform	1.0	ND	U
71-55-6	1,1,1-Trichloroethane	1.0	ND	U
56-23-5	Carbon tetrachloride	1.0	ND	U
107-06-2	1,2-Dichloroethane	1.0	ND	U
79-01-6	Trichloroethene	1.0	ND	U
78-87-5	1,2-Dichloropropane	1.0	ND	U
75-27-4	Bromodichloromethane	1.0	ND	U
10061-01-5	cis-1,3-Dichloropropene	1.0	ND	U
10061-02-6	trans-1,3-Dichloropropene	1.0	ND	U
79-00-5	1,1,2-Trichloroethane	1.0	ND	U
127-18-4	Tetrachloroethene	1.0	14.	U
124-48-1	Dibromochloromethane	1.0	ND	U
108-90-7	Chlorobenzene	1.0	ND	U
75-25-2	Bromoform	1.0	ND	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	ND	U
541-73-1	1,3-Dichlorobenzene	1.0	ND	U
106-46-7	1,4-Dichlorobenzene	1.0	ND	U
95-50-1	1,2-Dichlorobenzene	1.0	ND	U

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

Project ID : A932789A
 Sample ID : SG2-1.5
 Matrix : SOIL
 Date Sampled : 3/20/94
 Date Analyzed : 4/ 1/94
 Instrument ID : AD15

Anamatrix ID : 9403317-02
 Analyst : *sh*
 Supervisor : *sh*
 Dilution Factor : 1.0
 Conc. Units : ug/Kg

CAS No.	COMPOUND NAME	REPORTING LIMIT	AMOUNT DETECTED	Q
75-71-8	Dichlorodifluoromethane	1.0	ND	U
74-87-3	Chloromethane	1.0	ND	U
75-01-4	Vinyl chloride	1.0	ND	U
74-83-9	Bromomethane	1.0	ND	U
75-00-3	Chloroethane	1.0	ND	U
75-69-4	Trichlorofluoromethane	1.0	ND	U
76-13-1	Trichlorotrifluoroethane	1.0	ND	U
75-35-4	1,1-Dichloroethene	1.0	ND	U
75-09-2	Methylene chloride	1.0	7.2	B
156-60-5	trans-1,2-Dichloroethene	1.0	ND	U
75-34-3	1,1-Dichloroethane	1.0	ND	U
156-59-2	cis-1,2-Dichloroethene	1.0	ND	U
67-66-3	Chloroform	1.0	ND	U
71-55-6	1,1,1-Trichloroethane	1.0	ND	U
56-23-5	Carbon tetrachloride	1.0	ND	U
107-06-2	1,2-Dichloroethane	1.0	ND	U
79-01-6	Trichloroethene	1.0	ND	U
78-87-5	1,2-Dichloropropane	1.0	ND	U
75-27-4	Bromodichloromethane	1.0	ND	U
10061-01-5	cis-1,3-Dichloropropene	1.0	ND	U
10061-02-6	trans-1,3-Dichloropropene	1.0	ND	U
79-00-5	1,1,2-Trichloroethane	1.0	ND	U
127-18-4	Tetrachloroethene	1.0	4.4	U
124-48-1	Dibromochloromethane	1.0	ND	U
108-90-7	Chlorobenzene	1.0	ND	U
75-25-2	Bromoform	1.0	ND	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	ND	U
541-73-1	1,3-Dichlorobenzene	1.0	ND	U
106-46-7	1,4-Dichlorobenzene	1.0	ND	U
95-50-1	1,2-Dichlorobenzene	1.0	ND	U

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

Project ID : A932789A
 Sample ID : SG3-1.5
 Matrix : SOIL
 Date Sampled : 3/20/94
 Date Analyzed : 4/ 1/94.
 Instrument ID : AD15

Anamatrix ID : 9403317-03
 Analyst : *g*
 Supervisor : *sk*
 Dilution Factor : 1.0
 Conc. Units : ug/Kg

CAS No.	COMPOUND NAME	REPORTING LIMIT	AMOUNT DETECTED	Q
75-71-8	Dichlorodifluoromethane	1.0	ND	U
74-87-3	Chloromethane	1.0	ND	U
75-01-4	Vinyl chloride	1.0	ND	U
74-83-9	Bromomethane	1.0	ND	U
75-00-3	Chloroethane	1.0	ND	U
75-69-4	Trichlorofluoromethane	1.0	ND	U
76-13-1	Trichlorotrifluoroethane	1.0	ND	U
75-35-4	1,1-Dichloroethene	1.0	ND	U
75-09-2	Methylene chloride	1.0	7.3	B
156-60-5	trans-1,2-Dichloroethene	1.0	ND	U
75-34-3	1,1-Dichloroethane	1.0	ND	U
156-59-2	cis-1,2-Dichloroethene	1.0	ND	U
67-66-3	Chloroform	1.0	ND	U
71-55-6	1,1,1-Trichloroethane	1.0	ND	U
56-23-5	Carbon tetrachloride	1.0	ND	U
107-06-2	1,2-Dichloroethane	1.0	ND	U
79-01-6	Trichloroethene	1.0	ND	U
78-87-5	1,2-Dichloropropane	1.0	ND	U
75-27-4	Bromodichloromethane	1.0	ND	U
10061-01-5	cis-1,3-Dichloropropene	1.0	ND	U
10061-02-6	trans-1,3-Dichloropropene	1.0	ND	U
79-00-5	1,1,2-Trichloroethane	1.0	ND	U
127-18-4	Tetrachloroethene	1.0	2.1	U
124-48-1	Dibromochloromethane	1.0	ND	U
108-90-7	Chlorobenzene	1.0	ND	U
75-25-2	Bromoform	1.0	ND	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	ND	U
541-73-1	1,3-Dichlorobenzene	1.0	ND	U
106-46-7	1,4-Dichlorobenzene	1.0	ND	U
95-50-1	1,2-Dichlorobenzene	1.0	ND	U

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

Project ID : A932789A
 Sample ID : SG4-2
 Matrix : SOIL
 Date Sampled : 3/20/94
 Date Analyzed : 4/ 1/94.
 Instrument ID : AD15

Anamatrix ID : 9403317-04
 Analyst : *AM*
 Supervisor : *SR*
 Dilution Factor : 1.0
 Conc. Units : ug/Kg

CAS No.	COMPOUND NAME	REPORTING LIMIT	AMOUNT DETECTED	Q
75-71-8	Dichlorodifluoromethane	1.0	ND	U
74-87-3	Chloromethane	1.0	ND	U
75-01-4	Vinyl chloride	1.0	ND	U
74-83-9	Bromomethane	1.0	ND	U
75-00-3	Chloroethane	1.0	ND	U
75-69-4	Trichlorofluoromethane	1.0	ND	U
76-13-1	Trichlorotrifluoroethane	1.0	ND	U
75-35-4	1,1-Dichloroethene	1.0	ND	U
75-09-2	Methylene chloride	1.0	7.0	B
156-60-5	trans-1,2-Dichloroethene	1.0	ND	U
75-34-3	1,1-Dichloroethane	1.0	ND	U
156-59-2	cis-1,2-Dichloroethene	1.0	ND	U
67-66-3	Chloroform	1.0	ND	U
71-55-6	1,1,1-Trichloroethane	1.0	ND	U
56-23-5	Carbon tetrachloride	1.0	ND	U
107-06-2	1,2-Dichloroethane	1.0	ND	U
79-01-6	Trichloroethene	1.0	ND	U
78-87-5	1,2-Dichloropropane	1.0	ND	U
75-27-4	Bromodichloromethane	1.0	ND	U
10061-01-5	cis-1,3-Dichloropropene	1.0	ND	U
10061-02-6	trans-1,3-Dichloropropene	1.0	ND	U
79-00-5	1,1,2-Trichloroethane	1.0	ND	U
127-18-4	Tetrachloroethene	1.0	ND	U
124-48-1	Dibromochloromethane	1.0	ND	U
108-90-7	Chlorobenzene	1.0	ND	U
75-25-2	Bromoform	1.0	ND	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	ND	U
541-73-1	1,3-Dichlorobenzene	1.0	ND	U
106-46-7	1,4-Dichlorobenzene	1.0	ND	U
95-50-1	1,2-Dichlorobenzene	1.0	ND	U

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

Project ID : A932789A
 Sample ID : SG5-1.5
 Matrix : SOIL
 Date Sampled : 3/20/94
 Date Analyzed : 4/ 1/94
 Instrument ID : AD15

Anamatrix ID : 9403317-05
 Analyst : *U*
 Supervisor : *rk*
 Dilution Factor : 1.0
 Conc. Units : ug/Kg

CAS No.	COMPOUND NAME	REPORTING LIMIT	AMOUNT DETECTED	Q
75-71-8	Dichlorodifluoromethane	1.0	ND	U
74-87-3	Chloromethane	1.0	ND	U
75-01-4	Vinyl chloride	1.0	ND	U
74-83-9	Bromomethane	1.0	ND	U
75-00-3	Chloroethane	1.0	ND	U
75-69-4	Trichlorofluoromethane	1.0	ND	U
76-13-1	Trichlorotrifluoroethane	1.0	ND	U
75-35-4	1,1-Dichloroethene	1.0	ND	U
75-09-2	Methylene chloride	1.0	6.1	B
156-60-5	trans-1,2-Dichloroethene	1.0	ND	U
75-34-3	1,1-Dichloroethane	1.0	ND	U
156-59-2	cis-1,2-Dichloroethene	1.0	ND	U
67-66-3	Chloroform	1.0	ND	U
71-55-6	1,1,1-Trichloroethane	1.0	ND	U
56-23-5	Carbon tetrachloride	1.0	ND	U
107-06-2	1,2-Dichloroethane	1.0	ND	U
79-01-6	Trichloroethene	1.0	ND	U
78-87-5	1,2-Dichloropropane	1.0	ND	U
75-27-4	Bromodichloromethane	1.0	ND	U
10061-01-5	cis-1,3-Dichloropropene	1.0	ND	U
10061-02-6	trans-1,3-Dichloropropene	1.0	ND	U
79-00-5	1,1,2-Trichloroethane	1.0	ND	U
127-18-4	Tetrachloroethene	1.0	ND	U
124-48-1	Dibromochloromethane	1.0	ND	U
108-90-7	Chlorobenzene	1.0	ND	U
75-25-2	Bromoform	1.0	ND	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	ND	U
541-73-1	1,3-Dichlorobenzene	1.0	ND	U
106-46-7	1,4-Dichlorobenzene	1.0	ND	U
95-50-1	1,2-Dichlorobenzene	1.0	ND	U

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

Project ID : A932789A
 Sample ID : SG8-1.5
 Matrix : SOIL
 Date Sampled : 3/20/94
 Date Analyzed : 4/ 1/94
 Instrument ID : AD15

Anamatrix ID : 9403317-06
 Analyst : *ty*
 Supervisor : *sh*
 Dilution Factor : 1.0
 Conc. Units : ug/Kg

CAS No.	COMPOUND NAME	REPORTING LIMIT	AMOUNT DETECTED	Q
75-71-8	Dichlorodifluoromethane	1.0	ND	U
74-87-3	Chloromethane	1.0	ND	U
75-01-4	Vinyl chloride	1.0	ND	U
74-83-9	Bromomethane	1.0	ND	U
75-00-3	Chloroethane	1.0	ND	U
75-69-4	Trichlorofluoromethane	1.0	ND	U
76-13-1	Trichlorotrifluoroethane	1.0	ND	U
75-35-4	1,1-Dichloroethene	1.0	ND	U
75-09-2	Methylene chloride	1.0	6.1	B
156-60-5	trans-1,2-Dichloroethene	1.0	ND	U
75-34-3	1,1-Dichloroethane	1.0	ND	U
156-59-2	cis-1,2-Dichloroethene	1.0	ND	U
67-66-3	Chloroform	1.0	ND	U
71-55-6	1,1,1-Trichloroethane	1.0	ND	U
56-23-5	Carbon tetrachloride	1.0	ND	U
107-06-2	1,2-Dichloroethane	1.0	ND	U
79-01-6	Trichloroethene	1.0	ND	U
78-87-5	1,2-Dichloropropane	1.0	ND	U
75-27-4	Bromodichloromethane	1.0	ND	U
10061-01-5	cis-1,3-Dichloropropene	1.0	ND	U
10061-02-6	trans-1,3-Dichloropropene	1.0	ND	U
79-00-5	1,1,2-Trichloroethane	1.0	ND	U
127-18-4	Tetrachloroethene	1.0	ND	U
124-48-1	Dibromochloromethane	1.0	ND	U
108-90-7	Chlorobenzene	1.0	ND	U
75-25-2	Bromoform	1.0	ND	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	ND	U
541-73-1	1,3-Dichlorobenzene	1.0	ND	U
106-46-7	1,4-Dichlorobenzene	1.0	ND	U
95-50-1	1,2-Dichlorobenzene	1.0	ND	U

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

Project ID : A932789A
 Sample ID : SG10-1.5
 Matrix : SOIL
 Date Sampled : 3/20/94
 Date Analyzed : 4/ 1/94
 Instrument ID : AD15

Anamatrix ID : 9403317-07
 Analyst : *BY*
 Supervisor : *rl*
 Dilution Factor : 1.0
 Conc. Units : ug/Kg

CAS No.	COMPOUND NAME	REPORTING LIMIT	AMOUNT DETECTED	Q
75-71-8	Dichlorodifluoromethane	1.0	ND	U
74-87-3	Chloromethane	1.0	ND	U
75-01-4	Vinyl chloride	1.0	ND	U
74-83-9	Bromomethane	1.0	ND	U
75-00-3	Chloroethane	1.0	ND	U
75-69-4	Trichlorofluoromethane	1.0	ND	U
76-13-1	Trichlorotrifluoroethane	1.0	ND	U
75-35-4	1,1-Dichloroethene	1.0	ND	U
75-09-2	Methylene chloride	1.0	6.9	B
156-60-5	trans-1,2-Dichloroethene	1.0	ND	U
75-34-3	1,1-Dichloroethane	1.0	ND	U
156-59-2	cis-1,2-Dichloroethene	1.0	ND	U
67-66-3	Chloroform	1.0	ND	U
71-55-6	1,1,1-Trichloroethane	1.0	ND	U
56-23-5	Carbon tetrachloride	1.0	ND	U
107-06-2	1,2-Dichloroethane	1.0	ND	U
79-01-6	Trichloroethene	1.0	ND	U
78-87-5	1,2-Dichloropropane	1.0	ND	U
75-27-4	Bromodichloromethane	1.0	ND	U
10061-01-5	cis-1,3-Dichloropropene	1.0	ND	U
10061-02-6	trans-1,3-Dichloropropene	1.0	ND	U
79-00-5	1,1,2-Trichloroethane	1.0	ND	U
127-18-4	Tetrachloroethene	1.0	ND	U
124-48-1	Dibromochloromethane	1.0	ND	U
108-90-7	Chlorobenzene	1.0	ND	U
75-25-2	Bromoform	1.0	ND	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	ND	U
541-73-1	1,3-Dichlorobenzene	1.0	ND	U
106-46-7	1,4-Dichlorobenzene	1.0	ND	U
95-50-1	1,2-Dichlorobenzene	1.0	ND	U

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

Project ID : A932789A
 Sample ID : SG11-2
 Matrix : SOIL
 Date Sampled : 3/20/94
 Date Analyzed : 4/ 1/94.
 Instrument ID : AD15

Anamatrix ID : 9403317-08
 Analyst : *tl*
 Supervisor : *sh*
 Dilution Factor : 1.0
 Conc. Units : ug/Kg

CAS No.	COMPOUND NAME	REPORTING LIMIT	AMOUNT DETECTED	Q
75-71-8	Dichlorodifluoromethane	1.0	ND	U
74-87-3	Chloromethane	1.0	ND	U
75-01-4	Vinyl chloride	1.0	ND	U
74-83-9	Bromomethane	1.0	ND	U
75-00-3	Chloroethane	1.0	ND	U
75-69-4	Trichlorofluoromethane	1.0	ND	U
76-13-1	Trichlorotrifluoroethane	1.0	ND	U
75-35-4	1,1-Dichloroethene	1.0	ND	U
75-09-2	Methylene chloride	1.0	7.1	B
156-60-5	trans-1,2-Dichloroethene	1.0	ND	U
75-34-3	1,1-Dichloroethane	1.0	ND	U
156-59-2	cis-1,2-Dichloroethene	1.0	ND	U
67-66-3	Chloroform	1.0	ND	U
71-55-6	1,1,1-Trichloroethane	1.0	ND	U
56-23-5	Carbon tetrachloride	1.0	ND	U
107-06-2	1,2-Dichloroethane	1.0	ND	U
79-01-6	Trichloroethene	1.0	ND	U
78-87-5	1,2-Dichloropropane	1.0	ND	U
75-27-4	Bromodichloromethane	1.0	ND	U
10061-01-5	cis-1,3-Dichloropropene	1.0	ND	U
10061-02-6	trans-1,3-Dichloropropene	1.0	ND	U
79-00-5	1,1,2-Trichloroethane	1.0	ND	U
127-18-4	Tetrachloroethene	1.0	ND	U
124-48-1	Dibromochloromethane	1.0	ND	U
108-90-7	Chlorobenzene	1.0	ND	U
75-25-2	Bromoform	1.0	ND	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	ND	U
541-73-1	1,3-Dichlorobenzene	1.0	ND	U
106-46-7	1,4-Dichlorobenzene	1.0	ND	U
95-50-1	1,2-Dichlorobenzene	1.0	ND	U

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

Project ID : A932789A
 Sample ID : SG12-2
 Matrix : SOIL
 Date Sampled : 3/20/94
 Date Analyzed : 4/1/94
 Instrument ID : AD15

Anamatrix ID : 9403317-09
 Analyst : *[Signature]*
 Supervisor : *[Signature]*
 Dilution Factor : 1.0
 Conc. Units : ug/Kg

CAS No.	COMPOUND NAME	REPORTING LIMIT	AMOUNT DETECTED	Q
75-71-8	Dichlorodifluoromethane	1.0	ND	U
74-87-3	Chloromethane	1.0	ND	U
75-01-4	Vinyl chloride	1.0	ND	U
74-83-9	Bromomethane	1.0	ND	U
75-00-3	Chloroethane	1.0	ND	U
75-69-4	Trichlorofluoromethane	1.0	ND	U
76-13-1	Trichlorotrifluoroethane	1.0	ND	U
75-35-4	1,1-Dichloroethene	1.0	ND	U
75-09-2	Methylene chloride	1.0	6.7	B
156-60-5	trans-1,2-Dichloroethene	1.0	ND	U
75-34-3	1,1-Dichloroethane	1.0	ND	U
156-59-2	cis-1,2-Dichloroethene	1.0	ND	U
67-66-3	Chloroform	1.0	ND	U
71-55-6	1,1,1-Trichloroethane	1.0	ND	U
56-23-5	Carbon tetrachloride	1.0	ND	U
107-06-2	1,2-Dichloroethane	1.0	ND	U
79-01-6	Trichloroethene	1.0	ND	U
78-87-5	1,2-Dichloropropane	1.0	ND	U
75-27-4	Bromodichloromethane	1.0	ND	U
10061-01-5	cis-1,3-Dichloropropene	1.0	ND	U
10061-02-6	trans-1,3-Dichloropropene	1.0	ND	U
79-00-5	1,1,2-Trichloroethane	1.0	ND	U
127-18-4	Tetrachloroethene	1.0	ND	U
124-48-1	Dibromochloromethane	1.0	ND	U
108-90-7	Chlorobenzene	1.0	ND	U
75-25-2	Bromoform	1.0	ND	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	ND	U
541-73-1	1,3-Dichlorobenzene	1.0	ND	U
106-46-7	1,4-Dichlorobenzene	1.0	ND	U
95-50-1	1,2-Dichlorobenzene	1.0	ND	U

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

Project ID : A93278
 Sample ID : VBLKA1
 Matrix : SOIL
 Date Sampled : 0/ 0/ 0
 Date Analyzed : 3/31/94
 Instrument ID : AD15

Anamatrix ID : BM3103I1
 Analyst : *ee*
 Supervisor : *sh*
 Dilution Factor : 1.0
 Conc. Units : ug/Kg

CAS No.	COMPOUND NAME	REPORTING LIMIT	AMOUNT DETECTED	Q
75-71-8	Dichlorodifluoromethane	1.0	ND	U
74-87-3	Chloromethane	1.0	ND	U
75-01-4	Vinyl chloride	1.0	ND	U
74-83-9	Bromomethane	1.0	ND	U
75-00-3	Chloroethane	1.0	ND	U
75-69-4	Trichlorofluoromethane	1.0	ND	U
76-13-1	Trichlorotrifluoroethane	1.0	ND	U
75-35-4	1,1-Dichloroethene	1.0	ND	U
75-09-2	Methylene chloride	1.0	6.1	U
156-60-5	trans-1,2-Dichloroethene	1.0	ND	U
75-34-3	1,1-Dichloroethane	1.0	ND	U
156-59-2	cis-1,2-Dichloroethene	1.0	ND	U
67-66-3	Chloroform	1.0	ND	U
71-55-6	1,1,1-Trichloroethane	1.0	ND	U
56-23-5	Carbon tetrachloride	1.0	ND	U
107-06-2	1,2-Dichloroethane	1.0	ND	U
79-01-6	Trichloroethene	1.0	ND	U
78-87-5	1,2-Dichloropropane	1.0	ND	U
75-27-4	Bromodichloromethane	1.0	ND	U
10061-01-5	cis-1,3-Dichloropropene	1.0	ND	U
10061-02-6	trans-1,3-Dichloropropene	1.0	ND	U
79-00-5	1,1,2-Trichloroethane	1.0	ND	U
127-18-4	Tetrachloroethene	1.0	ND	U
124-48-1	Dibromochloromethane	1.0	ND	U
108-90-7	Chlorobenzene	1.0	ND	U
75-25-2	Bromoform	1.0	ND	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	ND	U
541-73-1	1,3-Dichlorobenzene	1.0	ND	U
106-46-7	1,4-Dichlorobenzene	1.0	ND	U
95-50-1	1,2-Dichlorobenzene	1.0	ND	U

SURROGATE RECOVERY SUMMARY -- EPA METHOD 8010
 ANAMETRIX, INC. (408)432-8192

Project ID : A932789A
 Matrix : SOLID

Anamatrix ID : 9403317
 Analyst : *dy*
 Supervisor : *rd*

	SAMPLE ID	SU1	SU2	SU3
1	VELKA1	71	94	89
2	SG1-1.5	66	73	45
3	S61-1MS	72	89	51
4	S61-1MSD	73	90	60
5	SG2-1.5	66	86	65
6	SG3-1.5	67	90	75
7	SG4-2	65	82	73
8	SG5-1.5	70	86	80
9	SG8-1.5	66	85	66
10	SG10-1.5	66	90	78
11	SG11-2	72	89	80
12	SG12-2	68	91	84
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

QC LIMITS

SU1 = Bromochloromethane (41-110)
 SU2 = 1-Chloro-2-fluorobenze (33-121)
 SU3 = 2-Bromochlorobenzene (30-125)

* Values outside of Anamatrix QC limits

MATRIX SPIKE RECOVERY FORM -- EPA METHOD 8010
 ANAMETRIX, INC. (408)432-8192

Project ID : A932789A
 Sample ID : SG1-1.5
 Matrix : SOIL
 Date Sampled : 3/20/94
 Date Analyzed : 4/ 1/94
 Instrument ID : AD15

Anamatrix ID : 9403317-01
 Analyst : *AB*
 Supervisor : *SL*

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC	%REC LIMITS
Trichlorotrifluoroethan	10.0	.0	10.5	105	43-127
1,1-Dichloroethene	10.0	.0	11.0	110	51-123
trans-1,2-Dichloroethen	10.0	.0	9.9	99	60-121
1,1-Dichloroethane	10.0	.0	10.3	103	70-125
cis-1,2-Dichloroethene	10.0	.0	9.2	92	65-119
1,1,1-Trichloroethane	10.0	.0	9.6	96	61-117
Trichloroethene	10.0	.0	8.8	88	66-114
Tetrachloroethene	10.0	14.1	22.0	79	58-111
Chlorobenzene	10.0	.0	6.9	69	61-114
1,3-Dichlorobenzene	10.0	.0	4.9	49	48-103
1,4-Dichlorobenzene	10.0	.0	5.1	51	48- 98
1,2-Dichlorobenzene	10.0	.0	4.8	48	47- 99

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC	% RPD	RPD LIMITS	%REC LIMITS
Trichlorotrifluoroethan	10.0	10.7	107	2	25	43-127
1,1-Dichloroethene	10.0	10.8	108	2	25	51-123
trans-1,2-Dichloroethen	10.0	10.1	101	2	25	60-121
1,1-Dichloroethane	10.0	10.7	107	4	25	70-125
cis-1,2-Dichloroethene	10.0	9.2	92	0	25	65-119
1,1,1-Trichloroethane	10.0	9.5	95	1	25	61-117
Trichloroethene	10.0	8.8	88	0	25	66-114
Tetrachloroethene	10.0	19.4	53 *	40 *	25	58-111
Chlorobenzene	10.0	7.3	73	6	25	61-114
1,3-Dichlorobenzene	10.0	5.7	57	15	25	48-103
1,4-Dichlorobenzene	10.0	5.6	56	9	25	48- 98
1,2-Dichlorobenzene	10.0	5.6	56	15	25	47- 99

* Value is outside of Anamatrix QC limits

RPD: 1 out of 12 outside limits
 Spike Recovery: 1 out of 24 outside limits

LABORATORY CONTROL SAMPLE
 EPA METHOD 601/8010
 ANAMETRIX, INC. (408)432-8192

Sample I.D. : LABORATORY CONTROL SAMPLE
 Matrix : SOIL
 SDG/Batch : 03317
 Date analyzed : 03/31/94

Anamatrix I.D. : MM3101I1
 Analyst : *ES*
 Supervisor : *Sh*
 Instrument I.D. : AD15

COMPOUND	SPIKE AMOUNT (ug/Kg)	AMOUNT RECOVERED (ug/Kg)	PERCENT RECOVERY	%RECOVERY LIMITS
Trichlorotrifluoroethane	10	10.5	105%	57 - 123
1,1-Dichloroethene	10	11.3	113%	56 - 118
trans-1,2-Dichloroethene	10	11.2	112%	60 - 116
1,1-Dichloroethane	10	11.6	116%	69 - 119
cis-1,2-Dichloroethene	10	10.0	100%	68 - 108
1,1,1-Trichloroethane	10	10.5	105%	65 - 111
Trichloroethene	10	9.8	98%	67 - 112
Tetrachloroethene	10	9.4	94%	55 - 124
Chlorobenzene	10	8.4	84%	67 - 124
1,3-Dichlorobenzene	10	7.9	79%	63 - 120
1,4-Dichlorobenzene	10	7.6	76%	65 - 120
1,2-Dichlorobenzene	10	8.2	82%	70 - 114

* Limits based on data generated by Anamatrix, Inc., December, 1993.

1717

APPLIED GEOSCIENCES INC.

9403317

16

CHAIN-OF-CUSTODY RECORD

21:05
ms

Project Number A932789A		Project Name Hudson Bay			No. of Cntnrs	Type of Cntnrs	Preser vative	Type of Analysis										Condition of Samples	Initial
Send Report Attention of: Bill THE SKENS		Analytical Laboratory:						EPA 8010											
Sample Number	Date	Time	Matrix	Location															
① S61-1-1.5	3/20		soil	S61	1	2x6" SS bag													
② S62-1-1.5				S62	1														
③ S63-1-1.5				S63	1														
④ S64-1-2.0				S64	1														
⑤ S65-1-1.5				S65	1														
⑥ S68-1-1.5				S68	1														
⑦ S610-1-1.5				S610	1														
⑧ S611-1-2.0				S611	1														
⑨ S612-1-2.0				S612	1														

Relinquished by: <i>[Signature]</i>	Date/Time: 3/21/94 1300	Received by: <i>[Signature]</i>	Date/Time: 3-21-94 1300	Remarks: 5 Day RUSH.
Relinquished by: <i>[Signature]</i>	Date/Time: 3-21-94 1530	Received by: _____	Date/Time: _____	
Relinquished by: _____	Date/Time: _____	Received by: <i>[Signature]</i>	Date/Time: 3/21/94 15:30	

Company: Applied Geosciences Inc.
Address: 1641 N. First St., #235, San Jose, CA 95112
Phone: (408) 452-0262 Fax: (408) 452-0265