13 December 1998

To: Mr. Andy Lakha
Lakha Investment *Co, LLC*
19119 North Creek Parkway
Suite 101
Bothell, WA 98011

RE: Overlake East Soil Vapor Survey
Portions of 15230 Northeast 24th Street
Redmond, WA
W-10-9669-3

Dear Mr. Lakha:

ADI Geoscience International (ADI) is pleased to submit our findings, interpretations and conclusions concerning recently conducted soil vapor survey work at the above referenced project. Our work was conducted on 6 December 1998 per our scope of services and cost estimate executed by you on 2 December 1998.

SUMMARY OF FINDINGS

Recent work conducted by ADI in November 1998 and others in July 1998 at the subject site indicates that:

Background

JULY 1998

- The presence of an on-site commercial dry cleaner was reported by others to be of significant environmental concern. Others have also reported, during due diligence reporting, in July 1998, that a possible release of PCE had occurred in the recent past (1986);

NOVEMBER 1998

- Evidence for the presence of PCE in soil was found at the subject site in November 1998. Detections of PCE (in soil) was reported by the laboratory in soil samples GP-5 (2'-4'), GP 5 (8'-10'), GP-6 (8'-10'), and HA-5 (0-3'). Soil sample HA-5 (0'-3') exceeds ECOLOGY MTCA Method A cleanup level for PCE.

DECEMBER 1998 (*This Study*)

- Evidence for the presence of PCE in soil was discovered at the subject site in December 1998. Detections of PCE in soil vapor and soil was reported by the laboratory in thirteen soil vapor samples and two soil samples. The soil sample PCE concentrations were quantified by the laboratory as exceeding MTCA Method A cleanup limits for PCE.

This report should be read in conjunction with our report documenting Limited Phase II findings dated November 1998.

DYNAMIC SOIL VAPOR SURVEY

Introduction

Soil vapor analysis can be an effective screening tool for detecting volatile organic compounds. Consideration should be given to soil survey assessment during the early phase of site investigation to assist delineation of possible DNAPL in the vadose zone, contaminant source areas and, thereby guide subsequent invasive filed work (Cohen and Mercer, 1993). The USEPA cites that soil vapor surveys are widely used when preliminary site information or characterization indicates that volatile contaminants are known or suspected (USEPA, 1993).

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Methodology: Dynamic Soil Vapor Survey Inside the Dry Cleaner and Outside the Rear of the Dry Cleaner in the Planter Area(s)

It is important to note that PCE site evaluation differs from standard hydrocarbon (fuel oils) site evaluation. PCE is denser than water (DNAPL) and hence particular care must be exercised by the site assessor. Our site evaluations for possible DNAPL are conducted per the recommendations of Mercer and Cohen, 1993 and the University of Waterloo (Canada) DNAPL research team. Hence, an inherent objective of our work, included assessment of possible DNAPL in the subsurface, assessment of DNAPL release source areas, and most importantly conducting the work in a manner which would not exacerbate any downward migration of DNAPL, if encountered. The risk of enlarging the zone of chemical contamination by use of invasive methods (eg. groundwater monitoring wells or borings installed through a DNAPL zone) is an important consideration that must be evaluated during all phases of work.

The dynamic (active) soil vapor survey was conducted by TEG Northwest on 6 December 1998. The survey inside the dry cleaner included collecting soil-gas grab samples from a moving stream of soil gas, which was pumped through a hollow probe that was driven (beneath the dry cleaner) into the soil. The probes were pneumatically driven.

Attachment A (Plates 1A through 3B) contains photographs of the field work conducted for this phase of the project.

Thirteen soil vapor samples and two soil samples were obtained by TEG Northwest on 6 December 1998. The soil vapor samples were analyzed inside TEG's (ECOLOGY Certified [Mobile Lab]) by an experienced TEG Chemist. The soil samples were analyzed by TEG's Bellevue office by EPA Method 8010.

FINDINGS

PCE Soil Vapor Survey Results

Evidence for PCE in soil vapor was found in all soil vapor samples collected and analyzed for this study. Soil vapor test results and associated chain-of-custody certificates are located in Attachment B. Table 1 summarizes all soil vapor test results to date.

Trend Analysis of Soil Vapor Survey

Figure 1 is a surface trend map of PCE soil vapor concentrations. The contour interval selected is 200 parts-per-million-by-volume (ppmv) units PCE. PCE soil vapor concentrations are highest in the subsurface area adjacent to the existing closed-loop-dry cleaning machine. Moderately high soil vapor results were obtained adjacent to the boiler and in the restroom of the dry cleaner.

PCE in Soil This Study

Quantification of PCE in Soil

Soil samples SVS-8 and SVS-9 were collected from the subsurface in order to quantify PCE in soil. The soil samples were collected in borings advanced adjacent to the respective soil vapor samples. Soil samples SVS-8 and SVS-9 were quantified to by TEG Northwest as containing 6,800 ug/Kg and 7,100 ug/Kg of PCE.

Soil samples SVS-8 and SVS-9 consisted of medium dense, dry, brown to orange, silty, fine-grained sand.

Trend Analysis of Soil Analyses Exceeding MTCA Method A Cleanup Limits for PCE
Figure 2 is a surface trend map of all soil samples whose PCE concentrations in soil exceed MTCA Method A Cleanup limits for PCE in soil. The contour interval selected for the trend analysis was 1000 ug/Kg PCE concentrations (the MTCA Method A clean up level for PCE in soil is 500 ug/Kg (0.5 mg/Kg).

Table 1 summarizes the soil analytical test result data. Attachment C summarizes the trend analysis methodology.

INTERPRETATIONS
Potential pathways of PCE into the subsurface soil at the subject site could include a combination of one or more of the following hypothetical pathways;

- seepage of long term de-minimus discharges through the concrete floor slab (Schwille, 1978) near the dry cleaner machine, storage areas and the boiler room;
- wastewater disposal of dry cleaner machine effluent which is assumed to be PCE-free but contains PCE;
- wastewater disposal directly to the ground surface;
- wastewater disposal through the sanitary sewer or storm drains or both; the discharges could enter the ground surface through leaks in the piping or leaks to the piping caused by PCE;
- condensate around exhaust vents which could enter the subsurface as rainwater through the downspout;

Possible source pathways contributing to the existence of DNAPL and/or PCE in the subsurface, could include one or more of the following source areas:

- the dry cleaning machine area (Plate 1B)
- the boiler room (Plate 2B)
- the restroom (sewer; Plate 2A)
- the roof down spout adjacent to the former dry cleaning machine vent stack (Plate 3B) and
- the planter area (Plate 3B)

Based on the data obtained from the explorations to date, the interpreted lateral extent of PCE detected in soil (above an MQL of 50 ug/Kg) extends from the interior of the dry cleaner (the northern one-half) to 18 feet north (GP-5) to 204 feet west (and downslope) at exploration GP-6. The dimensions correspond approximately to 36' length-by-204 foot width to 8-10 foot depth. Of course lateral discontinuity is more likely the case than lateral continuity in this interpretation.

Based on the data obtained from the explorations to date, the interpreted dimensions of PCE contaminated soil exceeding MTCA cleanup levels are approximately 31' length-by-15 foot width by 2-4 foot depth. Of course lateral discontinuity is more likely the case than lateral continuity in this interpretation.

Groundwater
A shallow surficial aquifer was reported not to have been encountered within 9 feet of the land surface during geotechnical investigations performed by others in 1978 at the Park and Ride lot to the north of the subject site.

To date, groundwater has not been investigated as part of site characterization. To date, groundwater has not been encountered in any of our explorations for this study. The maximum depth explored (GP-7) was advanced to 14.5 feet BGS whereupon probe refusal occurred.

Topographically, exploration GP-7 lies approximately 25 to 30 feet below the surface elevation of the dry cleaner and approximately 320 lineal feet from the rear entrance of the dry cleaner. The exact depth to groundwater remains unknown.

Groundwater in the lower elevations of the site (viz: north western areas approximately 200 feet northwest of the dry cleaner) could occur between 20 and 30 feet below site grade.

Hence, based upon the explorations conducted to date for this project, groundwater could occur at depths greater than 25 feet beneath the dry cleaner.

CONCLUSIONS

No DNAPL was directly observed during the work. However, evidence for the presence of DNAPL and/or PCE vapor migration in the subsurface exists at the subject site.

If DNAPL is present, possible areas of DNAPL occurrence could include one or more of the areas beneath:

- the dry cleaning machine area (Plate 1B)
- the boiler room (Plate 2B)
- the restroom (sewer; Plate 2A)
- the roof down spout adjacent to the former dry cleaning machine vent stack (Plate 3B) and
- the planter area (Plate 3B)

Based on the data obtained to date, the interpreted lateral extent of PCE detected in soil (above an MQL of 50 ug/Kg) extends from the interior of the dry cleaner (the northern one-half) to 18 feet north (GP-5) to 204 feet west (and downslope) at exploration GP-6. The dimensions correspond approximately to 36' length-by-204 foot width and 8-10 foot depth. Of course lateral and vertical discontinuity is more likely the case than lateral/vertical continuity in this interpretation.

Based on the data obtained from the explorations to date, the interpreted dimensions of PCE contaminated soil exceeding ECOLOGY MTCA cleanup levels are approximately 31' length-by-15 foot width by 2-4 foot depth. Of course lateral and vertical discontinuity is more likely the case than lateral/vertical continuity in this interpretation.

Groundwater in the lower elevations of the site (viz: western boundaries approximate 200 feet northwest of the dry cleaner) could occur between 20 and 30 feet below site grade. Hence, based upon the explorations conducted to date for this project, groundwater could occur at depths greater than 25 feet beneath the dry cleaner.

It is our opinion that ECOLOGY reporting and dialogue is required in order for effective strategies and solutions to be implemented. Discussions and agreement with ECOLOGY would focus on:

- the data obtained to date
- proposed future invasive characterization strategies and associated sampling and analysis plans (e.g. deep soil borings inside and/or adjacent to the dry cleaner rear entrance and groundwater assessment, if any)
- remediation options (possibly a soil vapor extraction system) and
- an overall strategy incorporating solutions for no further action

STANDARD LIMITATIONS

Our scope of work and technical approach is targeted towards PCE from dry cleaner processes. This report and all associated work has been conducted and prepared in accordance with generally accepted environmental assessment practices for dense chlorinated solvents, ***for the exclusive use of Lakha Investment CO, LLC., and their agents*** for the specific application as set forth in our proposals for services. No other warranty, express or implied, is made. In the event that any changes occur at the site or on adjacent properties, this report must be reviewed by ADI and amended as necessary.

This report and all associated reports are neither endorsements nor condemnations of the subject property, subject site business(es) or subject site vicinity.

The findings interpretations and conclusions documented in this report have been prepared for specific application to this project and have been developed in a manner consistent with that level of care and skill normally exercised by environmental professionals currently practicing under similar conditions in the area, and in accordance with the terms and conditions set forth in our contract. No other warranty, expressed or implied, is made.

The scope of services for this work was defined by the requests of the client. The findings, observations, conclusions and recommendations expressed by ADI in this report are limited to the information obtained and should not be considered an opinion of the compliance or non-compliance of any past or current practice.

The findings presented in this report are based upon the condition of the site during three site visits by ADI personnel in November and December 1998. Although we sampled and submitted, for analysis, soil and soil vapor at approximately 32 data points beneath the subject property, a potential remains for the presence of unknown, unidentified, or unforeseen surface or subsurface contamination and DNAPL. Further evidence against such potential contamination and DNAPL would require appropriate delineation, and deeper exploration and testing, especially directly beneath and or directly adjacent to the target site.

If new information is developed in future work (which may include excavations, boreholes, soil vapor surveys, renovation of the dry cleaning facility; or other studies (viz: geophysics), ADI **must** be contacted in order to re-evaluate the conclusions of this report, and to provide amendments to the report as required by the new discovery(s).

ADI assumes no liability or claims whatsoever for utility damage, dust damage, carpet damage, tile damage, etc., loss of business or any other damage perceived or real caused by this work;

We appreciate the opportunity to offer our services to Lakha Investment, *Co., LLC.* Should you have any questions please phone or e-mail us at your earliest convenience.

Respectfully submitted,

ADI GEOSCIENCE INTERNATIONAL,

Dale A. Kramer, M.Sc., P.G.
Geologist

REFERENCES

Cohen, R.M. and Mercer, J.M. (1993). DNAPL Site Evaluation: Robert S. Kerr Environmental Research Laboratory, Office of Research and Development, USEPA, C.K. Smoley, eds. .

USEPA, May 1993. Subsurface Characterization and Monitoring Techniques. A Desk Reference Guide. Volume II : The Vadose Zone, Field screening and Analytical Methods, Appendices C & D; EPA/625/R-93/003b.

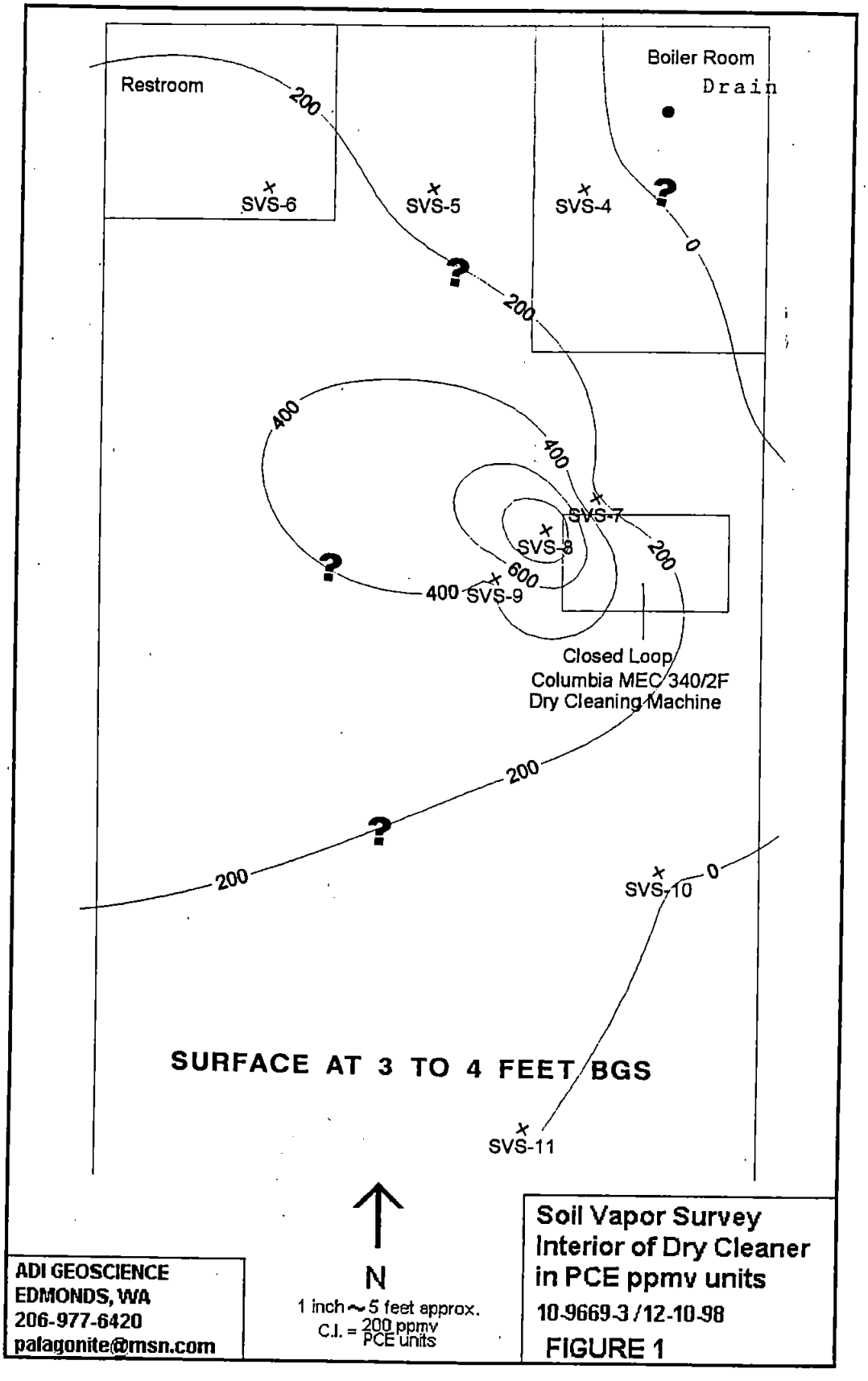
USEPA, September 1998. Monitored Natural Attenuation for Groundwater. EPA publication 625/K-98/001. Office of Research and Development, Washington D.C. .

US Health Department, 1990. Toxicological Profile for PCE. Reproduced by U.S. Department of Commerce, NTIS, Springfield, VA. 108 pp.

TABLE 1
Data Summary Table
Overlake East
W-10-9669-3

Sample ID	Date	OVM	PCE	Depth	Approx. Lineal Distance from Datum	Comments
Soil	Analyzed	ppm	ug/Kg	feet	feet	
GP-1	11-16-98	ND	ND	5-7& 8-10	62	Adjacent to catch basin
GP-2	11-16-98	ND	ND	2-4	268	centerline of dry cleaner
GP-3	11-16-98	ND	ND	8-10	260	adjacent to sewer and catch basin
GP-4	11-16-98	ND	ND	2-4	70	adjacent to catch basin
GP-5	11-16-98	ND	130 & 87	2-4 & 8-10	22	due north of rear entrance
GP-6	11-16-98	ND	53	8-10	204	west and downslope; adjacent to catch basin and sewer line
GP-7	11-16-98	ND	ND	8-10	320	northwest adjacent to catch basin; down slope of
HA-1	11-25-98	ND	ND	4	38	in planter
HA-2	11-25-98	ND	ND	3	36	in planter
HA-3	11-25-98	ND	ND	3	70	in planter
HA-4	11-25-98	ND	ND	3	40	in planter
HA-5	11-16-98	6	***3300***	3	9	adjacent to tree in planter;
SVS-8	12-7-98	>1000	***6800***	2-3	10	interior of dry cleaner
SVS-9	12-7-98	>1000	***7100***	2-3	12	interior of dry cleaner
Sample ID	Date	OVM	PCE	DEPTH	Approximate Distance from Datum	Comments
Soil Vapor	Analyzed	ppm	ppmv	feet	feet	
SVS-1	12-6-98	ND	1.7 & 3.8	3.5 & 7	35	exterior downslope of GP-5
SVS-2	12-6-98	ND & 24.7	1.2 & 6.3	3.5 & 7	22	exterior north of planter
SVS-3	12-6-98	ND	0.14 & 0.15	3.5 & 7	22	exterior north of planter
SVS-4	12-6-98	173	17.6	3.5	4	interior of dry cleaner in the boiler room west of drain
SVS-5	12-6-98	380	114	3	0 (DATUM)	interior of dry cleaner, hallway between boiler and restroom
SVS-6	12-6-98	>1000	319	3-4	6	restroom south of sewer line
SVS-7	12-6-98	400	120	3-4	14	adjacent to dry cleaner machine
SVS-8	12-6-98	>1000	1170	3-4	10	adjacent to dry cleaner machine
SVS-9	12-6-98	>1000	402	3-4	12	adjacent to dry cleaner machine
SVS-10	12-6-98	190	6.6	3-4	21	interior
SVS-11	12-6-98	53.6	5.2	3-4	29	interior southern most interior SVS sample
SVS-12	12-6-98	ND	38.4	3-4	20	exterior
SVS-13	12-6-98	ND	2.1 &1.0	3-4 & 6-7	18	exterior

1. Datum: The location of SVS-5 (c.f. Figure 1 is the arbitrary datum)
2.ND: not detected at the specified detection limit by the lab
3. down slope: refers to topographic slope
4. 3300 an italicized-bold value indicates that the laboratory quantification of
PCE in soil exceeded ECOLOGY MTCA Method A Cleanup limit for PCE in soil (500 ug/Kg)



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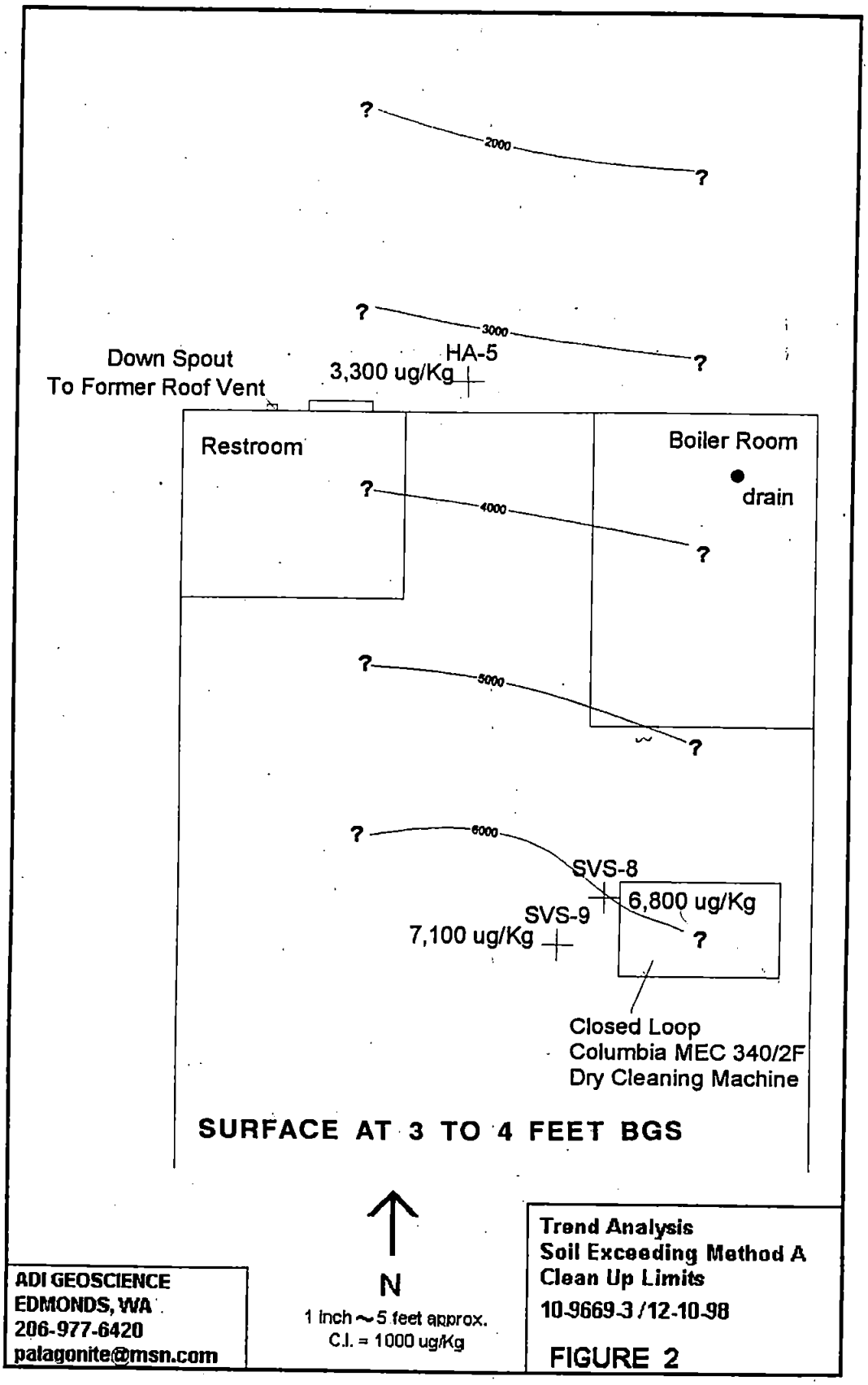

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ATTACHMENT A
Photographs of Project Effort - Plates 1A through 3B

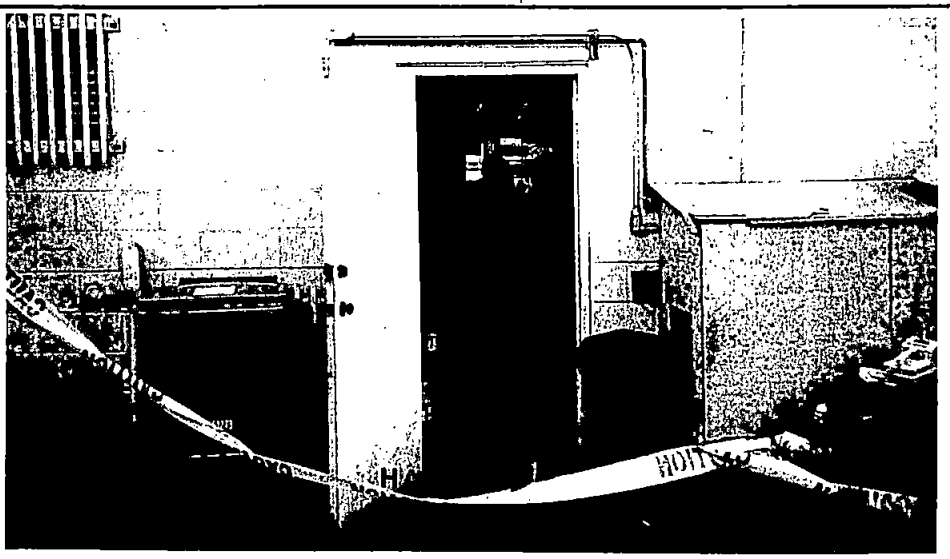

PLATE 1A Rear Entrance to Dry Cleaner TEG Northwest Advancing SVS-5

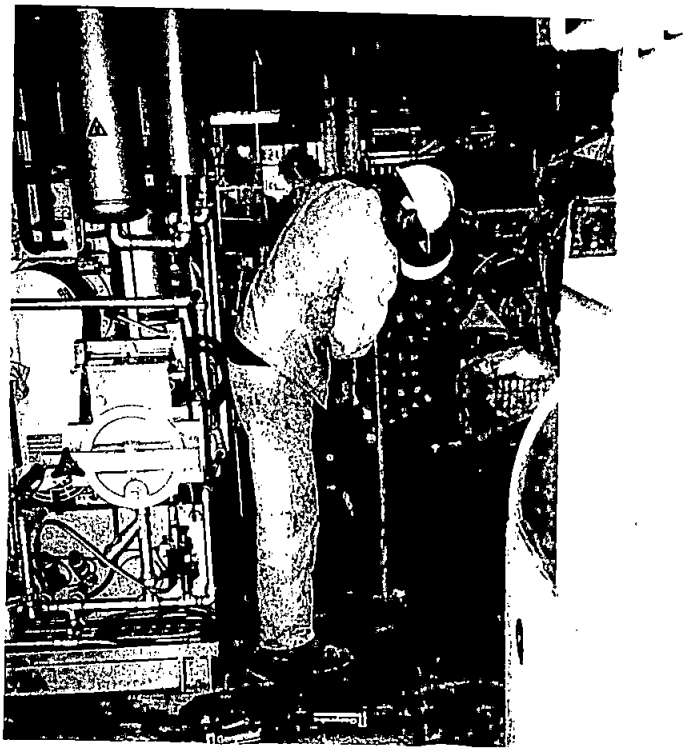

PLATE 1B TEG Northwest Advancing SVS-8

Site Photographs: Soil Vapor Survey
6 December 1998
10-9669.env - Lakha Investment, LLC
Design: DAK

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palagonite@msn.com

PLATE 2A SVS-6 in the Restroom

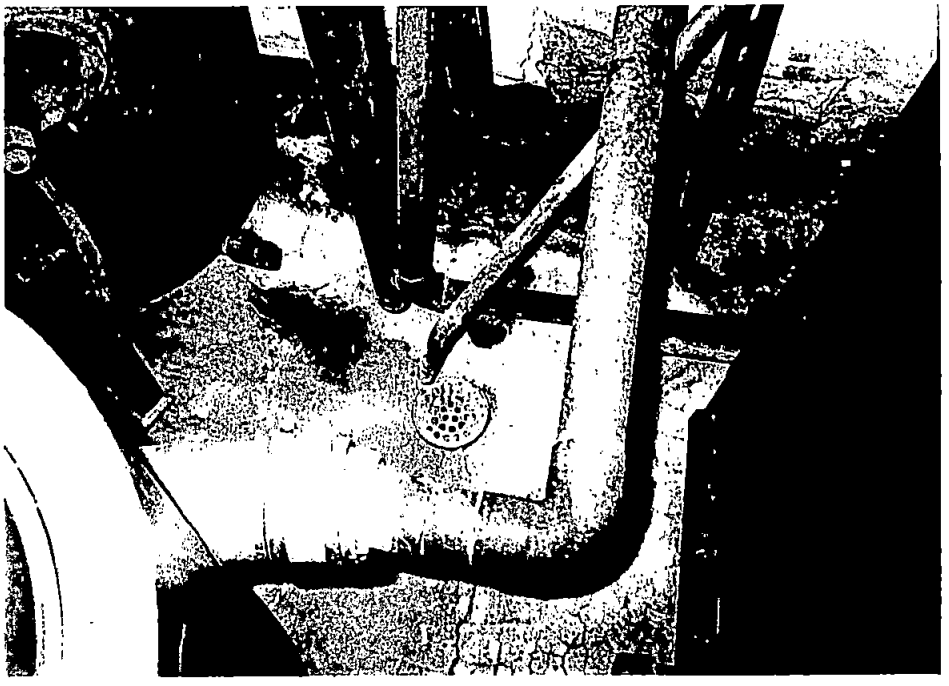

PLATE 2B Boiler Room Drain

Site Photographs: Soil Vapor Survey
6 December 1998
10-9669.env - Lakha Investment, LLC
Design: DAK

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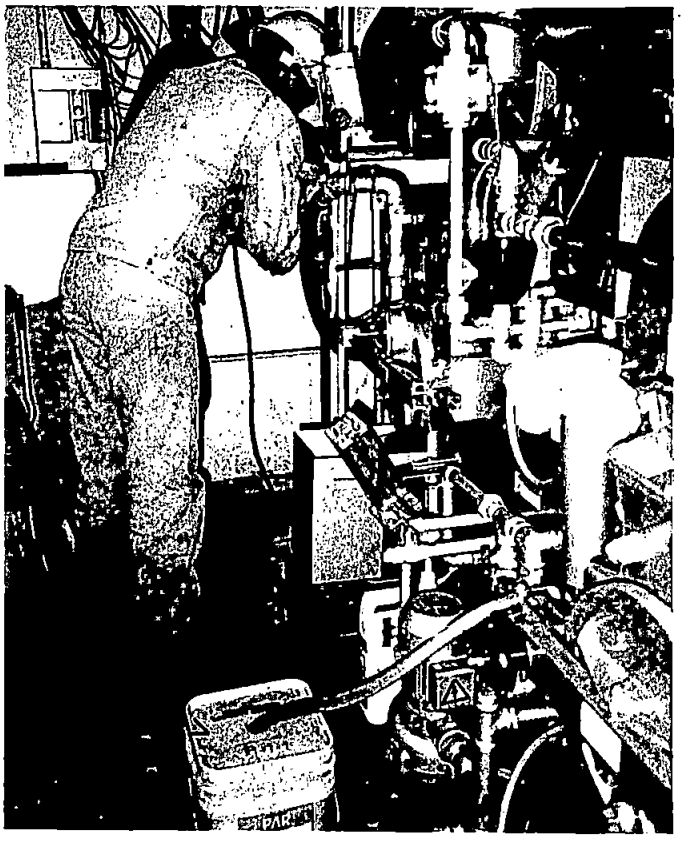

PLATE 3A Dry Cleaning Machine Effluent in Yellow Bucket

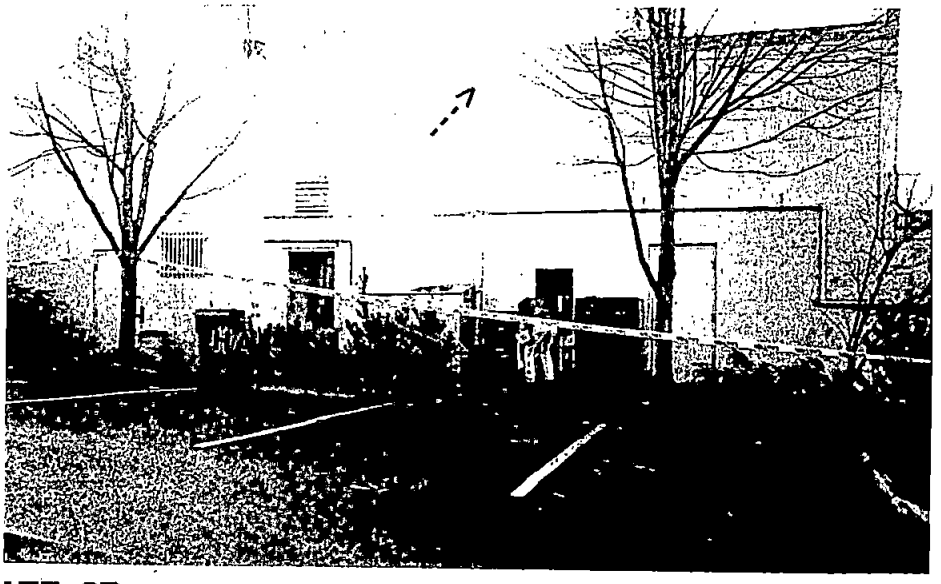

PLATE 3B Tight Lined Roof Downspout

Site Photographs: Soil Vapor Survey 6 December 1998 10-9669.env - Lakha Investment, LLC Design: DAK		ADI GEOSCIENCE EDMONDS, WA 206-977-6420 palagonite@msn.com

ATTACHMENT B
Analytical Test Certificates and Chain of Custody Forms

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST, INC.

7110 38th Drive SE
Lacey, Washington 98503

Mobile Environmental Laboratories
Environmental Sampling Services

Telephone: **360-459-4670**
Fax: **360-459-3432**

December 7, 1998

Dale Kramer
ADI Geoscience
P.O. Box 6128
Edmonds, WA 98026-0128

Dear Mr. Kramer:

Please find enclosed the analytical data report for the Overlake Dry Cleaner Project in Redmond, Washington. StrataProbe and Mobile Laboratory services were conducted on December 6, 1998. Soil Vapor samples were analyzed for Volatile Halogenated and Aromatic Hydrocarbons by Modified Method 8021B.

The results of these analyses are summarized in the attached table. Applicable detection limits and QA/QC data are included. An invoice for this analytical work is also enclosed for your records.

TEG Northwest appreciates the opportunity to have provided analytical services to ADI Geosciences for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Sherry L. Chilcutt
Senior Chemist

QA/QC FOR ANALYTICAL METHODS

GENERAL

The TEG Northwest Laboratory quality assurance and quality control (QA/QC) procedures are conducted following the guidelines and objectives which meet or exceed certification/-accreditation requirements of California DOHS, Washington DOE, and Oregon DEQ. The Quality Control Program is a consistent set of procedures which assures data quality through the use of appropriate blanks, replicate analyses, surrogate spikes, and matrix spikes, and with the use of reference standards that meet or exceed EPA standards.

When analyses are taking place on-site with the mobile lab, the need for Field Blanks or Travel/Trip Blanks is eliminated. If there is going to be a delay before sample preparation for analysis, the sample is stored at 4^{o} C.

ANALYTICAL METHODS

TEG Northwest Labs use analytical methodologies which are in conformity with U. S. Environmental Protection Agency (EPA), Washington DOE, and Oregon DEQ methodologies. When necessary and appropriate due to the nature or composition of the sample, TEG may use variations of the methods which are consistent with recognized standards or variations used by the industry and government laboratories.

Purgeable Volatile Halocarbons
(Chlorinated Hydrocarbons, EPA 601/8021B)

A calibration standard is run at the beginning of the day. The standard must be within 15% of the continuing calibration curve value. The standard is rerun at the end of the day. All samples are prepared with a surrogate spike, and the recovery must be between 65% and 135%. At least 1 method blank is run per day.

ADI GEOSCIENCES INTERNATIONAL
LAKHA10-9669

Redmond, Washington

TEG Project #981206

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (Modified EPA Method 8021B) SOIL VAPOR ANALYSES IN PPMV

Sample ID	mql	Equipment Blank	SVS-1 @3.5'	SVS-1 @7'	SVS-2 @3.5'	SVS-2 @7'	SVS-3 @3.5'	SVS-3 @3.5' DUP	SVS-3 @7'	SVS-4 @3.5'
Collection Date		12/6/98	12/6/98	12/6/98	12/6/98	12/6/98	12/6/98	12/6/98	12/6/98	12/6/98
Analysis Date		12/6/98	12/6/98	12/6/98	12/6/98	12/6/98	12/6/98	12/6/98	12/6/98	12/6/98
CIS-1,2-DICHLORO ETHENE	0.20	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	0.20	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	0.20	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	0.20	nd	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLOROETHENE	0.20	nd	1.7	3.8	1.2	6.3	0.17 J	0.14 J	0.15 J	17.6
VINYL CHLORIDE	0.20	nd	nd	nd	nd	nd	nd	nd	nd	nd

ND INDICATES NOT DETECTED AT THE LISTED MQL

ANALYSES PERFORMED BY: Sherry Chilcutt
DATA REVIEWED BY:

ADI GEOSCIENCES INTERNATIONAL
LAKHA10-9669

Redmond, Washington

TEG Project #981206

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (Modified EPA Method 8021B) SOIL VAPOR ANALYSES IN PPMV

								DUP		
Sample ID		SVS-5 @3.5'	SVS-6 @4'	SVS-7 @3.5'	SVS-8 @3.5'	SVS-9 @3.5'	SVS-10 @3.5'	SVS-10 @3.5'	SVS-11 @3.5'	SVS-12 @3.5'
Collection Date		12/6/98	12/6/98	12/6/98	12/6/98	12/6/98	12/6/98	12/6/98	12/6/98	12/6/98
Analysis Date		12/6/98	12/6/98	12/6/98	12/6/98	12/6/98	12/6/98	12/6/98	12/6/98	12/6/98
	mql									
CIS-1,2-DICHLORO ETHENE	0.20	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	0.20	nd	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	0.20	nd	nd	nd	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	0.20	nd	nd	nd	nd	nd	nd	nd	nd	nd
TETRACHLOROETHENE	0.20	114	319	120	1170	402	6.6	5.2	38.4	1.3
VINYL CHLORIDE	0.20	nd	nd	nd	nd	nd	nd	nd	nd	nd

ND INDICATES NOT DETECTED AT THE LISTED MQL

ANALYSES PERFORMED BY: Sherry Chilcutt
DATA REVIEWED BY:

ADI GEOSCIENCES INTERNATIONAL
LAKHA10-9669

Redmond, Washington

TEG Project #981206

VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (Modified EPA Method 8021B) SOIL VAPOR ANALYSES IN PPMV

Sample ID		SVS-12 @7'	SVS-13 @3.5'	SVS-13 @7'
Collection Date		12/6/98	12/6/98	12/6/98
Analysis Date		12/6/98	12/6/98	12/6/98
	mql			
CIS-1,2-DICHLORO ETHENE	0.20	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	0.20	nd	nd	nd
1,1,1-TRICHLORO ETHANE	0.20	nd	nd	nd
TRICHLORO ETHENE	0.20	nd	nd	nd
TETRACHLOROETHENE	0.20	0.8	2.1	1.0
VINYL CHLORIDE	0.20	nd	nd	nd

ND INDICATES NOT DETECTED AT THE LISTED MQL

ANALYSES PERFORMED BY: Sherry Chilcutt
DATA REVIEWED BY:

teg TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES

CHAIN-OF-CUSTODY RECORD

CLIENT: ADE Geoscience International

ADDRESS: PO Box 6128 Edmonds, Washington 98026

PHONE 206-362-9484 FAX: 206 362 9486

CLIENT PROJECT #: PROJECT MANAGER: Dale Kramer

DATE: 12-6-98 PAGE 1 OF 2

PROJECT NAME: LAKHA 10-9669

LOCATION: Redmond, Washington

COLLECTOR: Dale Kramer ENBV DATE OF COLLECTION 12-6-98

Sample Number	Depth	Time	Sample Type	Container Type	VOA 601/8010	VOA 602/8020	VOA 624/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (g & d)	PAH 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	FIELD NOTES	Total Number of Containers	Laboratory Note Number
Equip. Blk	—	0843	Solvent	22cc Vial	X																1	
SVS-1 @3.5'	3.5'	0904	"	"	X																1	
SVS1 @ 7'	7'	0917	"	"	X																1	
SVS-2 @3.5'	3.5'	0938	"	"	X																1	
SVS-2 @ 7'	7'	0950	"	"	X																1	
SVS-3 @3.5'	3.5'	1000	"	"	X																2	
SVS 3 @ 7'	7'	1010	"	"	X																1	
SVS-4 @3.5	3.5'	1135	"	"	X																1	
SVS-5 @3.5'	3.5'	1100	"	"	X																1	
SVS-6 @4'	4'	1130	"	"	X																1	
SVS 7 @3.5	3.5'	1148	"	"	X																1	
SVS-8 @3.5	3.5'	1202	"	"	X																1	
SVS 9 @3.5	3.5'	1305	"	"	X																1	
SVS-10 @3.5	3.5	1349	"	"	X																1	
SVS-11 @3.5	3.5	1407	"	"	X																1	
SVS-8 (2.5')	2.5'	1423	Soil	4oz jar	X																1	
SVS-9 (2.0)	2.0'	1334	Soil	"	Y																1	
SVS-12 @3.5	3.5'	1440	SV	22cc Vial	X																1	

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
Dale A. Kramer	12-6-98/1600	[illegible]	12-6-98/1601
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ TEG DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	19
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	Y
NOTES:	

LABORATORY NOTES:

teg TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES

CHAIN-OF-CUSTODY RECORD

CLIENT: ADI

ADDRESS: PO Box 6128 Edmonds, WA 98026

PHONE 206-362-9484 FAX: 206-362-9486

CLIENT PROJECT #: PROJECT MANAGER: Dale Kramer

DATE: 12-6-98 PAGE 2 OF 2

PROJECT NAME: LAKHA 10-9669

LOCATION: Redmond, Washington

COLLECTOR: Dale Kramer, LHNBV DATE OF COLLECTION 12-6-98

Sample Number	Depth	Time	Sample Type	Container Type	VOA 601/8010	VOA 602/8020	VOA 624/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH (8015 (diesel)	TPH 8015 (g & d)	PAH 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	FIELD NOTES	Total Number of Containers	Laboratory Note Number
SVS-12@7'	7'	1500	Vapor	2.2 cc Vial	X																1	
SVS-13@3.5	3.5	1510	"	"	X																1	
SVS-13@7'	7'	1515	"	"	X																1	

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
Dale R. Kramer	12-6-98/1600	[illegible]	12-6-98 1601
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ TEG DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	3
CHAIN OF CUSTODY SEALS Y/N/(NA)	
SEALS INTACT? Y/N/(NA)	
RECEIVED GOOD COND./COLD	Y
NOTES:	

LABORATORY NOTES:

TEG NW SEATTLE CHEMISTRY LABORATORY
(425) 957-9872, fax (425) 957-9904

TEG Job Number:	S81207-3
Client:	ADI
Client Job Name:	Lakha-Redmond
Client Job Number:	10-9689
Printed:	12/8/98 12:59

To	Dale Kramer	From	Brian Van Ysseldyk
Co./Dept.	ADI	Co.	TEG
Phone #		Phone #	
Fax #	206-312-9486	Fax #	

Analytical Results

8010, ug/kg		MTH BLK	LCS	SVS8 (2.5)	Dupl SVS8 (2.5)	RPD SVS8 (2.5)	SVS9 (2.0)
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	12/07/98	12/07/98	12/07/98	12/07/98	12/07/98	12/07/98
Date analyzed	Limits	12/07/98	12/07/98	12/07/98	12/07/98	12/07/98	12/07/98
Moisture, %				14%	14%		12%
Chloromethane	250	nd		nd	nd		nd
Bromomethane	250	nd		nd	nd		nd
Vinyl chloride	250	nd		nd	nd		nd
Chloroethane	250	nd		nd	nd		nd
cis-1,2-Dichloroethene	250	nd		nd	nd		nd
1,1-Dichloroethene	250	nd	76%	nd	nd		nd
Methylene Chloride	250	nd		nd	nd		nd
trans-1,2-Dichloroethene	250	nd		nd	nd		nd
1,1-Dichloroethane	250	nd		nd	nd		nd
Chloroform	50	nd		nd	nd		nd
1,1,1-Trichloroethane	50	nd		nd	nd		nd
Carbontetrachloride	50	nd		nd	nd		nd
1,2-Dichloroethane	250	nd		nd	nd		nd
Trichloroethene	50	nd	86%	nd	nd		nd
1,2-Dichloropropane	250	nd		nd	nd		nd
Bromodichloromethane	250	nd		nd	nd		nd
cis-1,3-Dichloropropene	250	nd		nd	nd		nd
trans-1,3-Dichloropropene	250	nd		nd	nd		nd
Chlorobenzene	250	nd	93%	nd	nd		nd
1,1,2-Trichloroethane	50	nd		nd	nd		nd
Tetrachloroethene	50	nd		8,800	5,900	14%	7,100
Dibromochloromethane	250	nd		nd	nd		nd
Bromoform	250	nd		nd	nd		nd
1,1,2,2-Tetrachloroethane	250	nd		nd	nd		nd
1,1,1,2-Tetrachloroethane	250	nd		nd	nd		nd
Bromobenzene	250	nd		nd	nd		nd
1,2,3-Trichloropropane	250	nd		nd	nd		nd
Dibromomethane	250	nd		nd	nd		nd
m-Dichlorobenzene	50	nd		nd	nd		nd
p-Dichlorobenzene	50	nd		nd	nd		nd
o-Dichlorobenzene	50	nd		nd	nd		nd
Surrogate recoveries:							
Bromochloromethane		107%	101%	110%	110%		111%
1,4-Dichlorobutane		99%	94%	100%	100%		101%
Bromochloropropane		94%	92%	97%	98%		98%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
na - not analyzed
C - coelution with sample peaks
M - matrix interference
J - estimated value
Results reported on dry-weight basis
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ATTACHMENT C
Trend Analysis Methodology

The data set obtained for this study was analyzed and interpreted through the use of trend analysis software. The data sets for Figures 1 and 2 were gridded and contoured using a geostatistical method known as kriging.

Kriging is a geostatistical gridding method that has proven useful and popular in many fields. Kriging attempts to express trends that are suggested in your data, so that, for example, high points might be connected along a ridge, rather than isolated by bull's-eye type contours.

Kriging is a very flexible gridding method. Kriging fits the data set by specifying an appropriate variogram model. Kriging is an interpolation method. Hence the question marks on Figures 1 and 2 reflect this fact. Kriging incorporates anisotropy and underlying trends of the data in an efficient and natural manner. Anisotropy was assumed in order to reflect the physical properties of PCE as a chemical migrating through the subsurface.

APPENDIX D
STANDARD FIELD OPERATING PROCEDURES

Site Health and Safety

As part of our field investigation, we follow site-specific safety procedures prepared in accordance with Washington State and Federal Laws under the requirements of Chapter 296-62 WAC and OSHA CFR 1910.120, respectively.

Utility Locates

Prior to the drilling completed for this project, we located proposed explorations and then notified One-Call Underground Utility Alert of the intent of our work. One-Call notified appropriate agencies for underground locating of the specific agency utility. Due to the voluminous amount of subsurface utilities we also notified a private utility locate company to locate water, electric power, gas and other utilities in the vicinity of the proposed explorations. One-Call Underground Utility Alert does not locate on private property.

Soil Geoprobe Exploration

The field exploration program conducted for this study (on 10 and 16 November 1998) consisted of advancing seven Geoprobe explorations. The Geoprobe explorations were chosen in large part based upon the local topography and location of sewer and catch basins adjacent to the dry cleaner as well as leading from the dry cleaner to their termini.

Soil samples were obtained using the Geoprobe Unit. Sampling consisted of advancing a standard 2-inch outside diameter sampler distance of 24 inches into the soil.

Soil samples were obtained at approximately 2 1/2- to 5-foot-depth intervals using the Geoprobe Unit. All (seven) of the Geoprobe borings were observed and logged by a Geologist from ADI Geoscience International.

Soil samples retrieved from the Geoprobe sampler were logged and classified in the field and a representative portion placed in laboratory prepared air tight glass containers for analytical testing by EPA Method 8010.

Soil OVM Screening
Explorations during the Geoprobe and soil vapor survey were screened for the presence of volatile organic compounds with a OVM 580-B organic vapor meter (OVM). We also employed the OVM 580-B as a down-hole soil gas monitoring instrument in all of the explorations conducted for this study.

Groundwater Development, Physical Parameter Testing and Sampling Procedures
Groundwater was neither investigated nor encountered during the work.

Sample Jars, Sample Handling, and Chain of Custody
Soil samples were submitted to TEG Analytical Services' onsite Mobile Lab in appropriate laboratory-prepared glass containers with Teflon lid inserts. Sample jars were obtained specifically for use on this project. All samples were collected, labeled, and placed immediately in a chilled cooler for transport to the analytical laboratory. Chain-of-custody records were maintained recording sample number, project and location, depth, client and handler and release identification.

Equipment Decontamination
All sampling equipment was thoroughly cleaned between use using laboratory grade soap, tap water and a stiff-bristle brush, a final rinse was made with distilled water.