APPENDIX A
Investigation Reports by Others (Compact Disc)

Previous Investigation Reports

No.	Title	Prepared by	Date
1	*Phase II Environmental Site Assessment for the site located at: Olympia Dry Cleaners, 606 E. Union Ave., Olympia, Washington*	CONREX, Inc.	June 13, 1995
2	*Draft Remedial Investigations and Associated Interim Remedial/Corrective Actions Report, Former Olympia Dry Cleaners, 606 East Union Avenue, Olympia, Washington*	Stemen Environmental, Inc.	January 10, 2005
3	*Health Consultation, Evaluation of Follow-Up Indoor Air Sampling Results, (January-March 2007) at the Washington Traffic Safety Commission Offices, TMC CLEANERS (a/l/a Howard's Cleaners And Olympia Cleaners), Olympia, Thurston County, Washington, EPA Facility 10: WAH000017277*	United States Department of Health and Human Services	August 31, 2007
4	*Indoor Air Sampling Results, 1000 Cherry Street Southeast, Olympia, Washington*	Farallon Consulting, LLC	March 16, 2007

To be provided with final report

CONREX INC.

2403 Pacific Ave. SE
Olympia, WA 98501
(360) 754-1123
FAX (360) 754-1173

PHASE II

ENVIRONMENTAL SITE ASSESSMENT

For the site located at:

OLYMPIA DRY CLEANERS
606 E. Union Ave.
Olympia, Washington

Prepared for:

MR. GAYLOR BOLTON
Proprietor;
OLYMPIA DRY CLEANERS
Olympia, Washington

June 13, 1995

CONREX INC.

2403 Pacific Ave. SE
Olympia, WA 98501
(360) 754-1123
FAX (360) 754-1173

June 13, 1995

Mr. Gaylor Bolton
Proprietor
OLYMPIA DRY CLEANERS
P.O. Box 242
Olympia, Washington 98507

Re: Phase II ESA Report of Sampling Activities conducted on the OLYMPIA DRY CLEANERS property, Olympia, Washington

Dear Mr. Bolton:

CONREX INC. is pleased to present the results of our Phase II Environmental Site Assessment Report of Activities for the Olympia Dry Cleaners, located at 606 E. Union Avenue, Section 14, T18N, R1W, W.M., Olympia, Thurston County, Washington. This assessment was performed to identify potential contamination point sources and determine their nature.

This report consists of site observations, exploratory borehole excavation, laboratory analysis, information obtained from the Washington Department of Ecology (WDOE), Washington Department of Natural Resources (WDNR), as well as other applicable Federal, State, Local, and private agencies. The content of our Phase II ESA reports are based established procedures and principals. Also reference was the Washington State Department of Ecology publication "Guidance on Sampling Data and Analysis Methods."

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or we can assist you in any matter, please do not hesitate to contact this office at (360) 754-1123. FAX; (360) 754-1173.

Very Truly Yours,
CONREX INC.

Scott R. Clark, RSA, CEM
Environmental Project Manager

TABLE OF CONTENTS

1.0 INTRODUCTION

Based on our proposal dated May 23, 1995, **CONREX INC.** conducted Phase II Environmental Site Assessment (ESA) activities on the OLYMPIA DRY CLEANERS property, located at 606 Union Avenue S.E., Olympia, Washington, on May 26th, 1995. These activities were performed at the request of Mr. Gaylor Bolton (hereafter known as the Client) as per our recommendations. The purpose of our study was to determine the nature and concentration of potential contamination resulting from point and non-point sources identified in our previous sampling and laboratory analysis conducted on the site on May 19, 1995.

Based upon interviews with those persons familiar with the site operations, the Olympia Dry Cleaners has been operated as a dry cleaners for approximately twenty-five years. The current lessee, the Client, has operated on site for approximately thirteen (13) years. This report details only site activities, and no historical document (e.g.; the title history) or environmental database reviews were conducted.

The following is a description of our activities of May 19:

Originally, the purpose of our survey of May 19 was to establish baseline environmental conditions for any subsequent property owner/lessee. Visual examination of the rear portion of the subject building revealed staining on and around a raised concrete walkway. This staining is commonly indicative of chemical or petroleum product spillage.

Based upon the observed staining, two (2) boreholes were augered to a depth of one (1) foot; one (1) from this location and one (1) from a location approximately six (6) feet topographically down-gradient in the direction of suspected groundwater flow (refer to Site Map in Appendix B.) Water and soils were tested; soils from Borehole "A", and groundwater from Borehole "B". During the sampling process groundwater was encountered at approximately twelve (12) inches in depth. A viscous material with an oily sheen was observed on the surface of the borehole "B".

The soil/water samples were analyzed for Specific Halogenated Hydrocarbons (Chlorinated Solvents) and Benzene, Toulene, Ethybenzene, and Xylene (BTEX), in addition to a Hydrocarbon identification which tests for the presence of Gasoline, Diesel, or Heavy Oils. The results of our analyzes was revealed the presence of Heavy Oils in both the water and soil, and elevated levels of 1,2 Dichloroethene, Trichloroethene, Tetrachloroethene. Total Xylenes were elevated in the water sample, but not the soil. Based upon these analyzes, further sampling and analyses were deemed necessary to attempt to locate the point source(s) of the identified contaminants.

2.0 METHODOLOGY

The methodology for conducting this soils survey, and all sampling protocol is established in Chapter 173-360 WAC and the Washington State Department of Ecology publication "*Guidance on Sampling and Data Analysis Methods*" (1995).

All mechanical exploratory borehole sampling (by Strataprobe sampler) and independent laboratory analysis was provided by **Transglobal Environmental Geochemistry, Inc.** (TEG), 7110 38th Drive S.E., Lacey, Washington 98503. All laboratory reports and chain-of-custody documents are enclosed with this report.

To reasonably ensure the purity of CONREX's samples, the following actions were taken: (1) the Strataprobe unit, it's related equipment were steam cleaned prior to sampling, (2) latex rubber gloves were used in handling all sampling jars and sampling devices, (3) all samples when gathered were immediately placed in a storage cooler packed with ice and transported to the laboratory within four hours, and (4), the split-spoon and hand-held auger sampling devices were scrubbed with ADALOX detergent and double rinsed with distilled water prior to each sample extracted. After sampling activities were conducted, all sampling equipment was de-contaminated before demobilization from the site.

3.0 SOIL BORING / SAMPLING PROGRAM

Augering activities resumed on May 23, 1995. Before any exploratory subsurface sampling was performed, a utility locate was conducted by the appropriate public/private utility entities. Exploratory boreholes were augered adjacent to the northeast side of the structure in a pattern approximating suspected groundwater flow (refer to Site Map in Appendix B) and on the northwest corner of the property adjacent to Cherry Ave. Photos of site activities can be referenced in Appendix D.

Altogether, six (6) exploratory boreholes were drilled from depths of up to nine (9) feet at points following the suspected hydraulic gradient. Boreholes #1-5 were augered on the northeast side of the dry cleaner building, and Borehole #6 was augered on the northeast side of the structure. For the following lab analyzes, the values for soil are given in parts per million (ppm) and the groundwater values are listed in parts per billion (ppb).

One (1) sample of both water and soil were gathered from Borehole #1 at three (3) feet. This borehole was located approximately six (6) feet from the northeast corner of the structure. A slight amount of gasoline (29 ppm; read: solvents) was detected in this sample; no diesel or heavy oil hydrocarbons were detected. Trace amounts of 1,2

Dichloroethene (6 ppb), Trichloroethene (3 ppb), and Tetrachlorethene (4 ppb) were detected in the groundwater sample.

Borehole #2 was excavated approximately eight (8) feet from the northeast corner of the structure, and a soil sample extracted at five (5) feet in depth. The sampling device encountered what appeared to be a large wooden beam or tree at three (3) feet in depth. No groundwater was visible in the borehole. The sample was non-detect for gasoline, diesel, or heavy oil hydrocarbon constituents.

Borehole #3 was sampled for soil at three (3) feet and water at five (5) feet in depth. The sample was non-detect for gasoline, diesel and heavy oil hydrocarbon constituents. Slightly higher amounts of Trichloroethene (8 ppb), Tetrachloroethene (68 ppb) and 1,2 Dichloroethene (7 ppb) were detected in the groundwater sample. Gasoline and diesel tested non-detect, but heavy oil tested at 24,700 ppb, well above the acceptable MTCA level of 1000 ppb (see MTCA Cleanup Levels in Appendix C.)

Borehole #4 was sampled for soils at five (5) feet in depth approximately fifteen (15) feet from the northeast corner of the structure; no groundwater sample was extracted as again the sampling device encountered wood. The sample tested non-detect for gasoline, diesel, and heavy oil hydrocarbon constituents.

Borehole #5 was augered six (6) feet south and east from the northeast corner of the structure and sampled at six (6) feet in depth for both soil and groundwater. The soil tested non-detect for gasoline, diesel, and heavy oil hydrocarbon constituents. The groundwater tested negative for the above mentioned halogenated hydrocarbons.

Borehole #6 was augered approximately fifteen (15) feet northwest from the northwest corner of the structure and sampled at two (2) feet for soil and six (6) feet for groundwater. The soil tested non-detect gasoline, diesel, and heavy oil hydrocarbon constituents. The groundwater tested positive for Trichloroethene (3680 ppb), Tetrachloroethene (41300 ppb), and 1,2 Dichloroethene (4340 ppb), far exceeding the MTCA Method "A" groundwater cleanup level for these three chemicals which has been established at 5.0 ppb.

The types of halogenated hydrocarbon contaminants identified in our laboratory analyzes are prone to "settle" through bodies of water into sediment. Based upon site observations of the soil borings, there appears to be a fairly homogenous clay/silt layer at the borehole locations. This subsurface condition, upon initial examination, would tend to be favorable in regards to the further spread of contamination as the homogenous clay layer may act as a fairly competent impervious barrier.

4.0 QUANTITATIVE ANALYSIS

A. Specific Halogenated Hydrocarbons (by EPA Method 8010) in Soil; "nd" indicates Not Detected at the listed detection limit (MDL).

BOREHOLE / SAMPLE NUMBER	*MDL mg/kg*	Method Blank	BH #1 @ 3 ft.	BH #2 @ 5 ft.	BH #3 @ 3 ft.	BH #4 @ 5 ft.	BH #5 @ 6 ft.
DATE		5/30/95 mg/kg	5/30/95 mg/kg	5/30/95 mg/kg	5/30/95 mg/kg	5/30/95 mg/kg	5/30/95 mg/kg
1,1 Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
1,2 Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
Benzene	0.05	nd	nd	nd	nd	nd	nd
Trichloroethene	0.05	nd	nd	nd	nd	nd	nd
Toluene	0.05	nd	nd	nd	nd	nd	nd
Cis Dichloropropene	0.05	nd	nd	nd	nd	nd	nd
Trans Dichloropropene	0.05	nd	nd	nd	nd	nd	nd
Tetrachloroethene	0.05	nd	0.07	0.12	nd	nd	nd
Ethylbenzene	0.05	nd	nd	nd	nd	nd	nd
Total Xylenes	0.05	nd	nd	nd	nd	nd	nd
1,3 Dichlorobenzene	0.05	nd	nd	nd	nd	nd	nd
1,4 Dichlorobenzene	0.05	nd	nd	nd	nd	nd	nd
1,2 Dichlorobenzene	0.05	nd	nd	nd	nd	nd	nd
1,1 Dichloroethane	0.05	nd	nd	nd	nd	nd	nd
1,2 Dichloroethane	0.05	nd	nd	nd	nd	nd	nd
Chloroform	0.05	nd	nd	nd	nd	nd	nd
Carbon Tetrachloride	0.05	nd	nd	nd	nd	nd	nd
1,1,1 Trichloroethane	0.05	nd	nd	nd	nd	nd	nd
1,1,2 Trichloroethane	0.05	nd	nd	nd	nd	nd	nd
Tetrachloroethane	0.05	nd	nd	nd	nd	nd	nd
Spike Recovery (%)		103	101	103	93	103	102

B. Specific Halogenated Hydrocarbons (by EPA Method 8010) in Water; "nd" indicates Not Detected at the listed detection limit (MDL).

BOREHOLE / SAMPLE NUMBER	*MDL ug/l*	Method Blank	BH #1 @ 3 ft.	BH #3 @ 5 ft.	BH #5 @ 6 ft.	BH #6 @ 6 ft.	BH #6 Dup.
DATE ug/l = ppb		5/30/95 ug/l	5/30/95 ug/l	5/30/95 ug/l	5/30/95 ug/l	5/30/95 ug/l	5/30/95 ug/l
1,1 Dichloroethene	1.0	nd	nd	nd	nd	nd	nd
1,2 Dichloroethene	1.0	nd	6.0	7.0	nd	4340	4690
Benzene	1.0	nd	nd	nd	nd	nd	nd
Trichloroethene	1.0	nd	3.0	8.0	nd	3680	3930
Toluene	1.0	nd	nd	nd	nd	nd	nd
Cis Dichloropropene	1.0	nd	nd	nd	nd	nd	nd
Trans Dichloropropene	1.0	nd	nd	nd	nd	nd	nd
Tetrachloroethene	1.0	nd	4.0	0.12	nd	41300	44400
Ethylbenzene	1.0	nd	nd	nd	nd	nd	nd
Total Xylenes	1.0	nd	nd	nd	nd	nd	nd
1,3 Dichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
1,4 Dichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
1,2 Dichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
1,1 Dichloroethane	1.0	nd	nd	nd	nd	nd	--
1,2 Dichloroethane	1.0	nd	nd	nd	nd	nd	--
Chloroform	1.0	nd	nd	nd	nd	nd	--
Carbon Tetrachloride	1.0	nd	nd	nd	nd	nd	--
1,1,1 Trichloroethane	1.0	nd	nd	nd	nd	100	--
1,1,2 Trichloroethane	1.0	nd	nd	nd	nd	nd	--
Tetrachloroethane	1.0	nd	nd	nd	nd	14	--
Spike Recovery (%)		114	117	109	111	91	95

C. Gasoline, Diesel and Oil in Soil by WTPH-G and WTPH-D/D-Extended

Sample Number	*Date Analyzed*	*Recovery %*	*Gasoline mg/kg*	*Diesel mg/kg*	*Heavy Oil mg/kg*
Method Blk.	5/30/95	100	nd	nd	nd
BH #1 @ 3'	5/30/95	121	29	nd	nd
BH #2 @ 5'	5/30/95	100	nd	nd	nd
BH #3 @ 3'	5/30/95	93	nd	nd	nd
BH #4 @ 5'	5/30/95	99	nd	nd	nd
BH #5 @ 6'	5/30/95	111	nd	nd	nd
BH #6 @ 2'	5/30/95	124	nd	nd	nd
BH #6 @ 2' Duplicate	5/30/95	109	nd	nd	nd
MDL mg/kg			10	20	20

D. Gasoline, Diesel and Oil in Water by WTPH-G and WTPH-D/D-Extended

Sample Number	*Date Analyzed*	*Recovery %*	*Gasoline ug/l*	*Diesel ug/l*	*Heavy Oil ug/l*
Method Blk.	5/30/95	110	nd	nd	nd
BH #1 @ 3'	5/30/95	88	nd	nd	nd
BH #3 @ 5'	5/30/95	86	nd	nd	24700
BH #5 @ 6'	5/30/95	95	nd	nd	nd
BH #6 @ 6'	5/30/95	99	29000	nd	11100
BH #6 @ 6' Duplicate	5/30/95	115	28600	nd	13000
MDL ug/l			10	20	20

For the above tables, "nd" Indicates Not Detected at the listed detection limits.

E. Specific Halogenated Hydrocarbons (by EPA Method 8010) in Water; "nd" indicates Not Detected at the listed detection limit (MDL).

BOREHOLE / SAMPLE NUMBER	*MDL ug/l*	Method Blank	ARTESIAN
DATE ug/l = ppb		6/09/95 ug/l	6/09/95 ug/l
1,1 Dichloroethene	1.0	nd	nd
1,2 Dichloroethene	1.0	nd	nd
Benzene	1.0	nd	nd
Trichloroethene	1.0	nd	nd
Toluene	1.0	nd	nd
Cis Dichloropropene	1.0	nd	nd
Trans Dichloropropene	1.0	nd	nd
Tetrachloroethene	1.0	nd	nd
Ethylbenzene	1.0	nd	nd
Total Xylenes	1.0	nd	nd
1,3 Dichlorobenzene	1.0	nd	nd
1,4 Dichlorobenzene	1.0	nd	nd
1,2 Dichlorobenzene	1.0	nd	nd
1,1 Dichloroethane	1.0	nd	nd
1,2 Dichloroethane	1.0	nd	nd
Chloroform	1.0	nd	nd
Carbon Tetrachloride	1.0	nd	nd
1,1,1 Trichloroethane	1.0	nd	nd
1,1,2 Trichloroethane	1.0	nd	nd
Tetrachloroethane	1.0	nd	nd
Spike Recovery (%)		97	96

F. Diesel and Oil in Water by WTPH-D/D-Extended

Sample Number	*Date Analyzed*	*Recovery %*	*Diesel ug/l*	*Heavy Oil ug/l*
Method Blk.	6/09/95	85	nd	nd
ARTESIAN	6/09/95	90	nd	nd
MDL; ug/l			400	400

5.0 CONCLUSIONS

The Olympia Dry Cleaners has operated continuously on site for approximately twenty five (25) years. The owner of the property during this time span is Mr. Frank Burleson. Mr. Burleson built the structure in 1970 and operated the dry cleaning establishment for approximately eleven (11) years, and currently owns the land and improvements.

During onsite an interview conducted on June 9, Mr. Burleson stated that there are non-native soils on site. These soils are located in roughly the back half of the property and were used as backfill during the construction of the dry cleaners. Mr. Burleson stated that before the construction of the dry cleaners, the site had lain vacant.

Our Client, Mr. Gaylor Bolton, has leased the site improvements from Mr. Burleson for the previous fourteen years (approximately.)

During our soil/water sampling phase, a total of eight exploratory boreholes were augered utilizing hand auger and Strataprobe methodologies on the northern portion of the site. Six (6) groundwater samples were extracted. These samples were analyzed for Gasoline, Diesel, Heavy Oil, and Halogenated Hydrocarbons (Mod. EPA 8010 in water.) Elevated levels (41,300 ppb) of Tetrachloroethene (PCE) was found in the groundwater on the northwest (Borehole #6 @ 6') and northeast (Borehole #1 @ 1') corners of the property. Trichloroethene (3680 ppb) and 1,2 Dichloroethene (4340 ppb) were also present at these locations at levels far above MTCA Method A cleanup standards.

Heavy oil was detected in the groundwater on the northeast corner of the site at 2,700,000 ppb (Water #1. @ 18") Groundwater observed at this location appeared extremely oily and was slightly viscous. Heavy oil was also detected at Borehole #3 @ 5' (24700 ppb.)

The groundwater at Borehole #6 @ 6' tested positive for gasoline at 26000 parts per billion. No other soil or water sample location tested positive for this constituent. Borehole #6 is located adjacent to the portion of the City of Olympia storm sewer system which services the site and adjoining properties. Based upon limited background research, no service stations have ever been operated on site or the adjoining properties. Given this limited information, the gasoline contamination may be a result of a leak in the storm sewer system in the vicinity of the site.

An artesian well is located on site. According to Mr. Burleson, this well has been used for drinking water and other purposes. A hose bib connected to this well is located on the west side of the structure. After our initial analyzes identified contamination on site, water from this artesian well (located topographically above grade from the problem area) was tested for halogenated hydrocarbons on June 9 (Artesian on Site Map.) The results were non-detect for the above mentioned chemicals. The sample was also analyzed for heavy oil and diesel and was non-detect for these hydrocarbon constituents.

Based upon the groundwater analyzes, it appears the site topographically above gradient from the problem sample locations is not effected by the identified contaminants. It is not known whether the artesian aquifer beneath the site or down gradient is affected.

A total of seven (7) soil samples were gathered at the site. Soil #1 @ 1' gathered at the northeast corner of the structure on May 19 tested at 4.16 ppm tetrachloroethene, 0.24 ppm 1,2 Dichloroethene and 0.08 ppm trichloroethene. Heavy oil was also detected at 20000 ppm.

Of the samples gathered on May 23, Boreholes #1 & #2 were the only samples to test positive for tetrachloroethene @ 0.07 ppm and 0.12 ppm at three (3) and five (5) feet in depth, respectively.

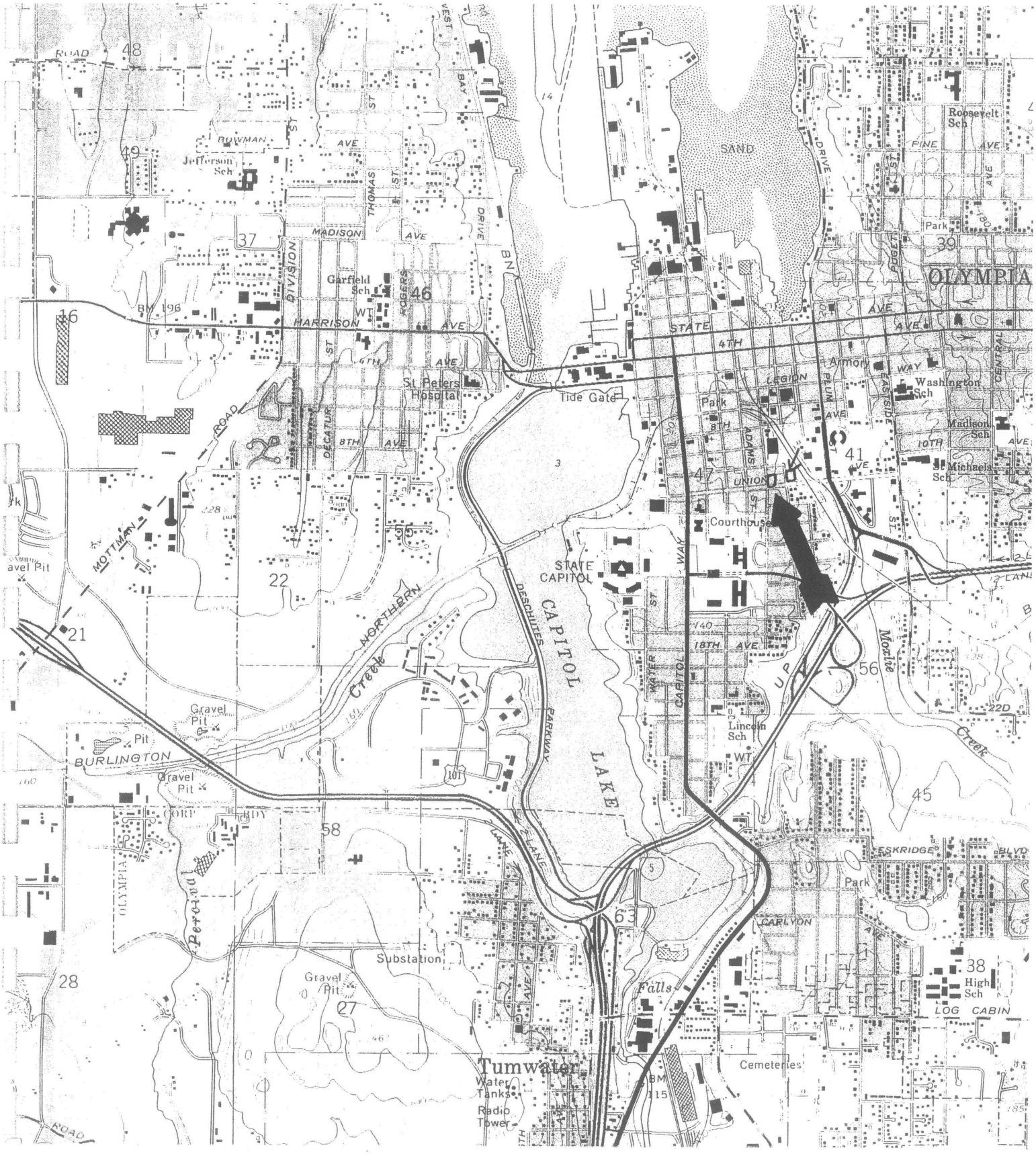
Based upon our initial sampling and research, the soils at the sampled locations does not appear to be heavily contaminated. Groundwater is effected.

CONREX recommends further sampling and analysis to determine the potential spread of the contamination plume and the identification of potential receptors down gradient from the site which could be adversely effected. Remedial action to be undertaken will be based upon this further study.

APPENDIX A

Area / Topographic Map

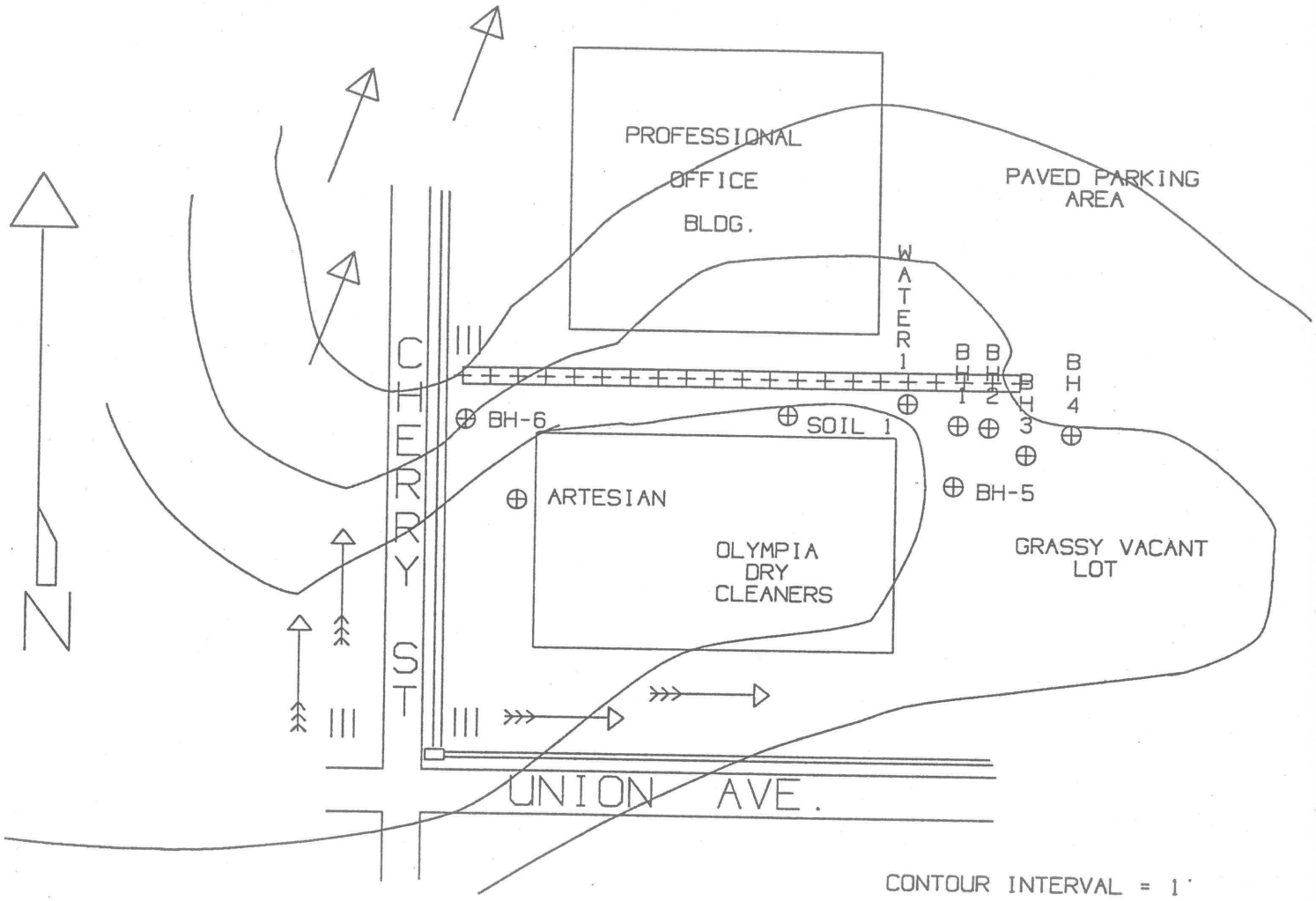
MR. GAYLOR BOLTON	APPENDIX A	Project No. 413
ESA Phase II	Area / Topo Map	**CONREX INC.**



APPENDIX B

Site / Sample Location Map

MR. GAYLOR BOLTON	APPENDIX B	Project No. 413
ESA Phase II	Site Map	**CONREX INC.**



CONTOUR INTERVAL = 1'

= APPOX. GROUNDWATER FLOW

= SEWER LINE

= SAMPLE LOCATIONS

= SURFACE WATER FLOW

= STORM DRAINS

= FRENCH DRAIN

APPENDIX C

Laboratory Analysis

Chain-of-Custody Documents

MTCA Method "A" Groundwater Cleanup Levels

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

May 22, 1995

Scott Clark
Conrex, Inc.
2403 Pacific Ave. SE
Olympia, WA 98501

Dear Mr. Clark:

Please find enclosed the data reports for analyses conducted off-site May 20, 1995, for soil and water samples from the Olympia Dry Cleaners Project in Olympia, Washington. The samples were analyzed for Specific Halogenated Hydrocarbons and BTEX by EPA Method 8010/8020, Hydrocarbon Identification by WTPH-HCID, and Heavy Petroleum Hydrocarbons by WTPH-D/D Extended.

The results of the analyses are summarized in the attached tables. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. An invoice for this analytical work is also enclosed.

TEG Northwest appreciates the opportunity to have provided analytical services to Conrex 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,

Michael A. Korosec

Michael A. Korosec
President

tl/conrex.ltr

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Conrex, Inc.

Hydrocarbon Identification by WTPH-HCID for Soils

Sample Number	Date	Recovery %	Gasoline mg/kg	Diesel mg/kg	Heavy Oil mg/kg
Meth. Blank	05/20/95	93	nd	nd	nd
Soil #1	05/20/95	int	nd	nd	D
Method Detection Limits			20	50	100

"nd" Indicates not detected at the listed detection limit.
"D" Indicates detected above the listed detection limit.

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Conrex, Inc.

Hydrocarbon Identification by WTPH-HCID for Waters

Sample Number	Date	Recovery %	Gasoline ug/l	Diesel ug/l	Heavy Oil ug/l
Meth. Blank	05/20/95	93	nd	nd	nd
Water #1	05/20/95	int	nd	nd	D
Method Detection Limits			100	100	200

"nd" Indicates not detected at the listed detection limit.
"D" Indicates detected above the listed detection limit.

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Conrex, Inc.

Heavy Petroleum Hydrocarbons by WTPH-D/D Extended for Soils

Sample Number	Date	Recovery %	Diesel mg/kg	Heavy Oil mg/kg
Meth. Blank	05/20/95	96	nd	nd
Soil #1	05/20/95	int	nd	20000
Method Detection Limits			10	20

"nd" Indicates not detected at the listed detection limit.
"int" Indicates that Interfering Peaks prevent determination.

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Conrex, Inc.

Heavy Petroleum Hydrocarbons by WTPH-D/D Extended for Waters

Sample Number	Date	Recovery %	Diesel ug/l	Heavy Oil ug/l
Meth. Blank	05/20/95	96	nd	nd
Water #1	05/20/95	int	nd	2700000
Method Detection Limits			100	200

"nd" Indicates not detected at the listed detection limit.
"int" Indicates that Interfering Peaks prevent determination.

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Conrex, Inc.

Specific Halogenated Hydrocarbons and BTEX (Mod. EPA 8010/8020) in Soil

Sample-Number	MDL	Method Blank	Soil #1
Date		05/20/95	05/20/95
	mg/kg	mg/kg	mg/kg
1,1 Dichloroethene	0.05	nd	nd
1,2 Dichloroethene	0.05	nd	0.24
Benzene	0.05	nd	nd
Trichloroethene	0.05	nd	0.08
Toluene	0.05	nd	nd
Cis Dichloropropene	0.05	nd	nd
Trans Dichlorpropene	0.05	nd	nd
Tetrachloroethene	0.05	nd	4.16
Chlorobenzene	0.05	nd	nd
Ethylbenzene	0.05	nd	nd
Total Xylenes	0.05	nd	nd
1,3 Dichlorobenzene	0.05	nd	nd
1,4 Dichlorobenzene	0.05	nd	nd
1,2 Dichlorobenzene	0.05	nd	nd
1,1 Dichloroethane	0.05	nd	nd
1,2 Dichloroethane	0.05	nd	nd
Chloroform	0.05	nd	nd
Carbon Tetrachloride	0.05	nd	nd
1,1,1 Trichloroethane	0.05	nd	nd
1,1,2 Trichloroethane	0.05	nd	nd
Tetrachloroethane	0.05	nd	nd
Spike Recovery (%)		96	92

"nd" Indicates Not Detected at the listed detection limit.
"int" Indicates that interference peaks prevent determination.

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Conrex, Inc.

Specific Halogenated Hydrocarbons and BTEX (Mod. EPA 8010/8020) in Waters

Sample-Number	MDL	Method Blank	Water #1
Date		05/20/95	05/20/95
	ug/l	ug/l	ug/l
1,1 Dichloroethene	1	nd	nd
1,2 Dichloroethene	1	nd	2680
Benzene	1	nd	nd
Trichloroethene	1	nd	1810
Toluene	1	nd	2.4
Cis Dichloropropene	1	nd	nd
Trans Dichlorpropene	1	nd	nd
Tetrachloroethene	1	nd	8370
Chlorobenzene	1	nd	nd
Ethylbenzene	1	nd	nd
Total Xylenes	1	nd	2.3
1,3 Dichlorobenzene	5	nd	nd
1,4 Dichlorobenzene	5	nd	nd
1,2 Dichlorobenzene	5	nd	nd
1,1 Dichloroethane	5	nd	nd
1,2 Dichloroethane	5	nd	nd
Chloroform	5	nd	nd
Carbon Tetrachloride	5	nd	nd
1,1,1 Trichloroethane	5	nd	nd
1,1,2 Trichloroethane	5	nd	nd
Tetrachloroethane	5	nd	nd
Spike Recovery (%)		96	93

"nd" Indicates Not Detected at the listed detection limit.
"int" Indicates that interference peaks prevent determination.

teg

TRANSGLOBAL ENVIRONMENTAL GEOCHEMISTRY,

CHAIN-OF-CUSTODY RECORD

P.O. #: _____

CLIENT: CONREX INC.
ADDRESS: 2403 PACIFIC AVE. S.E.
PHONE: 754-1123 FAX: 754-1173
CLIENT PROJECT #: _____ PROJECT MANAGER: SCOTT CLARK

DATE: 5-19-95 PAGE 1 OF 1
TEG PROJECT #: _____
LOCATION: OLYMPIA DRY CLEANERS
COLLECTOR: SCOTT CLARK DATE OF COLLECTION: 5-19

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: 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)	PNA 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	HCID				FIELD NOTES	Total Number Of Containers	Laboratory Note Number
SOIL #1	1'	1440	AUGER	4 oz. GLASS	X															X					1	
WATER #1	1½'	1455	GRAB	40ML GLASS VOA	X															X					1	

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[signature]	5-19-95 1510	Michelle Kroon	5/19/95
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	2
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	Y
NOTES:	

LABORATORY NOTES:

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

May 31, 1995

Scott Clark
Conrex, Inc.
2403 Pacific Ave. SE
Olympia, WA 98501

Dear Mr. Clark:

Please find enclosed an invoice for StrataProbe Services conducted on May 26, 1995, and analytical work conducted off-site May 30, 1995, for the Olympia Dry Cleaners Project in Olympia, Washington. Soil and water samples were analyzed for Specific Halogenated Hydrocarbons by Modified EPA Method 8010, Gasoline, Diesel and Oil by WTPH-G and WTPH-D/D Extended.

The results of these analyses are summarized in the attached tables. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included.

TEG Northwest appreciates the opportunity to have provided geosampling and analytical services to Conrex 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,

Michael A. Korosec

Michael A. Korosec
President

t1/conrex.ltr

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Conrex, Inc.
Project #: 413

Gasoline, Diesel and Oil in Soil by WTPH-G and WTPH-D/D-Extended

Sample Number	Date	Recovery %	Gasoline mg/kg	Diesel mg/kg	Heavy Oil mg/kg
Meth. Blank	05/30/95	100	nd	nd	nd
BH-1 @ 3'	05/30/95	121	29	nd	nd
BH-2 @ 5'	05/30/95	100	nd	nd	nd
BH-3 @ 3'	05/30/95	93	nd	nd	nd
BH-4 @ 5'	05/30/95	99	nd	nd	nd
BH-5 @ 6'	05/30/95	111	nd	nd	nd
BH-6 @ 2'	05/30/95	124	nd	nd	nd
BH-6 @ 2' Dup	05/30/95	109	nd	nd	nd
MDL			10	20	20

"nd" Indicates not detected at the listed detection limit.
"int" Indicates that interference peaks prevent determination.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Conrex, Inc.
Project #: 413

Specific Halogenated Hydrocarbons (Mod. EPA 8010) in Soil

Sample-Number	MDL	BH-6 @ 2'	BH-6 @ 2' Dup
Date		05/30/95	05/30/95
	mg/kg	mg/kg	mg/kg
1,1 Dichloroethene	0.05	nd	nd
1,2 Dichloroethene	0.05	nd	nd
Benzene	0.05	nd	nd
Trichloroethene	0.05	nd	nd
Toluene	0.05	nd	nd
Cis Dichloropropene	0.05	nd	nd
Trans Dichlorpropene	0.05	nd	nd
Tetrachloroethene	0.05	nd	nd
Ethylbenzene	0.05	nd	nd
Total Xylenes	0.05	nd	nd
1,3 Dichlorobenzene	0.05	nd	nd
1,4 Dichlorobenzene	0.05	nd	nd
1,2 Dichlorobenzene	0.05	nd	nd
1,1 Dichloroethane	0.05	nd	nd
1,2 Dichloroethane	0.05	nd	nd
Chloroform	0.05	nd	nd
Carbon Tetrachloride	0.05	nd	nd
1,1,1 Trichloroethane	0.05	nd	nd
1,1,2 Trichloroethane	0.05	nd	nd
Tetrachloroethane	0.05	nd	nd
Spike Recovery (%)		101	102

"nd" Indicates Not Detected at the listed detection limit.
"int" Indicates that interference peaks prevent determination.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Conrex, Inc.
Project #: 413

Gasoline, Diesel and Oil in Water by WTPH-G and WTPH-D/D-Extended

Sample Number	Date	Recovery %	Gasoline ug/l	Diesel ug/l	Heavy Oil ug/l
Meth. Blank	05/30/95	110	nd	nd	nd
BH-1 @ 3'	05/30/95	88	nd	nd	nd
BH-3 @ 5'	05/30/95	86	nd	nd	24700
BH-5 @ 6'	05/30/95	95	nd	nd	nd
BH-6 @ 6'	05/30/95	99	29000	nd	11100
BH-6 @ 6' Dup	05/30/95	115	28600	nd	13000
MDL			10	20	20

"nd" Indicates not detected at the listed detection limit.
"int" Indicates that interference peaks prevent determination.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Conrex, Inc.
Project #: 413

Specific Halogenated Hydrocarbons (Mod. EPA 8010) in Water

Sample-Number	MDL	Method Blank	BH-1 @ 3'	BH-3 @ 5'	BH-5 @ 6'	BH-6 @ 6'	BH-6 @ 6' Dup
Date		05/30/95	05/30/95	05/30/95	05/30/95	05/30/95	05/30/95
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
1,1 Dichloroethene	1	nd	nd	nd	nd	nd	nd
1,2 Dichloroethene	1	nd	6	7	nd	4340	4690
Benzene	1	nd	nd	nd	nd	nd	nd
Trichloroethene	1	nd	3	8	nd	3680	3930
Toluene	1	nd	nd	nd	nd	nd	nd
Cis Dichloropropene	1	nd	nd	nd	nd	nd	nd
Trans Dichlorpropene	1	nd	nd	nd	nd	nd	nd
Tetrachloroethene	1	nd	4	68	nd	41300	44400
Ethylbenzene	1	nd	nd	nd	nd	nd	nd
Total Xylenes	1	nd	nd	nd	nd	nd	nd
1,3 Dichlorobenzene	1	nd	nd	nd	nd	nd	nd
1,4 Dichlorobenzene	1	nd	nd	nd	nd	nd	nd
1,2 Dichlorobenzene	1	nd	nd	nd	nd	nd	nd
1,1 Dichloroethane	1	nd	nd	nd	nd	nd	--
1,2 Dichloroethane	1	nd	nd	nd	nd	nd	--
Chloroform	1	nd	nd	nd	nd	nd	--
Carbon Tetrachloride	1	nd	nd	nd	nd	nd	--
1,1,1 Trichloroethane	1	nd	nd	nd	nd	100	--
1,1,2 Trichloroethane	1	nd	nd	nd	nd	nd	--
Tetrachloroethane	1	nd	nd	nd	nd	14	--
Spike Recovery (%)		114	117	109	111	91	95

"nd" Indicates Not Detected at the listed detection limit.
"int" Indicates that interference peaks prevent determination.

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° 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.

TPH-Gasoline, TPH-Diesel
(Gasoline and/or Diesel, Modified EPA 8015, WTPH-G and WTPH-D)

A blank and a calibration standard are 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%. A duplicate sample is run at a rate of 1 per 10 samples (or a matrix spike sample is prepared and analyzed). At least 1 method blank is run per 10 samples analyzed.

Purgeable Volatile Halocarbons
(Chlorinated Hydrocarbons, EPA 601/8010,8021)

A blank and a calibration standard are 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 if more than 10 samples have been run. 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.

teg

TRANSGLOBAL ENVIRONMENTAL GEOCHEMISTRY

CHAIN-OF-CUSTODY RECORD

P.O. #: _____

CLIENT: CONREX INC

ADDRESS: 2403 PACIFIC AVE SE

PHONE: 360 754-1123 FAX: 360 754-1173

CLIENT PROJECT #: 413 PROJECT MANAGER: SCOTT CLARK

DATE: 5-26-95 PAGE 1 OF 1

TEG PROJECT #: _____

LOCATION: OLYMPIA DRY CLEANERS

COLLECTOR: SCOTT CLARK DATE OF COLLECTION: 5-26

Sample Number	Depth	Time	Sample Type	Container Type	VOA 601/8010	VOA 602/8020	VOA 624/8240	Cont. Hal-624/8260	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel) EX	TPH 8015 (g & d)	PNA 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	FIELD NOTES	Total Number Of Containers	Laboratory Note Number
BOREHOLE 1	3'	1230	SPOON	4 OZ GLASS	✓		✓			✓										SOILS - SLIGHT ODOR	1	
BOREHOLE 1	3'	1245	GRAB	40 MIL VOA	✓		✓			✓										WATER - OILY	2	
BOREHOLE 2	5'	1255	SPOON	4 OZ GLASS	✓		✓			✓										SOILS - ODOROUS	1	
BOREHOLE 3	3'	1311	SPOON	4 OZ GLASS	✓		✓			✓										SOILS - ODOROUS	1	
B.H. 3	5'	1325	GRAB	40 ML VOA	✓		✓			✓										WATER - ODOROUS OIL	2	
BH 4	5'	1350	SPOON	4 OZ GLASS	✓		✓			✓										SOILS - ODOROUS	1	
BH 4	9'	1415	SPOON	4 OZ GLASS	✓		✓			✓										SOILS	1	
BH 5	6'	1435	SPOON	4 OZ GLASS	✓		✓			✓										SOILS	1	
~~BH 6~~	~~2'~~	~~1550~~																				
BH 5	10'	1520	SPOON	4 OZ GLASS	✓		✓			✓										NO ODOR - SHEEN	1	
BH 6	2'	1550	SPOON	4 OZ GLASS	✓		✓			✓										NO ODOR - SHEEN	1	
BH 6	5'	1600	SPOON	4 OZ GLASS	✓		✓			✓										SOME SHEEN	1	

RELINQUISHED BY: (Signature) DATE/TIME 5/26/95 RECEIVED BY: (Signature) DATE/TIME 5/26/95 1:30

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	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST INC.

OLYMPIA DRYCLEANERS PROJECT
Olympia, Washington
Conrex, Inc.
Project #: 413

Specific Halogenated Hydrocarbons and BTEX (Mod. EPA 8010/8020) in Water

Sample-Number	MDL	Method Blank	ARTESIAN
Date			
	ug/l	ug/l	ug/l
1,1 Dichloroethene	1	nd	nd
1,2 Dichloroethene	1	nd	nd
Benzene	1	nd	nd
Trichloroethene	1	nd	nd
Toluene	1	nd	nd
Cis Dichloropropene	1	nd	nd
Trans Dichlorpropene	1	nd	nd
Tetrachloroethene	1	nd	nd
Ethylbenzene	1	nd	nd
Total Xylenes	1	nd	nd
1,3 Dichlorobenzene	1	nd	nd
1,4 Dichlorobenzene	1	nd	nd
1,2 Dichlorobenzene	1	nd	nd
1,1 Dichloroethane	1	nd	nd
1,2 Dichloroethane	1	nd	nd
Chloroform	1	nd	nd
Carbon Tetrachloride	1	nd	nd
1,1,1 Trichloroethane	1	nd	nd
1,1,2 Trichloroethane	1	nd	nd
Tetrachloroethane	1	nd	nd
Spike Recovery (%)		97	96

"nd" Indicates Not Detected at the listed detection limit.
"int" Indicates that interference peaks prevent determination.

OLYMPIA DRYCLEANERS PROJECT
Olympia, Washington
Conrex, Inc.
Project #: 413

Diesel and Oil in Water by WTPH-D/D-Extended

Sample Number	Date	Recovery %	Diesel ug/l	Heavy Oil ug/l
Meth. Blank	06/09/95	85	nd	nd
ARTESIAN	06/09/95	90	nd	nd
MDL			400	400

"nd" Indicates not detected at the listed detection limit.
"int" Indicates that interference peaks prevent determination.

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 2

To Scott Flack	From Sherry
Co. Conrex	Co. TEG NW
Dept.	Phone #
Fax # 754-1173	Fax #

teg TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES

CHAIN-OF-CUSTODY RECORD

CLIENT: CONREX INC.

ADDRESS: 2103 PACIFIC AVE.

PHONE 754-1123 FAX: 754-1173

CLIENT PROJECT #: 413 PROJECT MANAGER: SCOTT CLARK

DATE: 6-9-95 PAGE 1 OF 1

PROJECT NAME: OLYMPIA DRY CLEANERS

LOCATION:

COLLECTOR: SCOTT CLARK DATE OF COLLECTION 6-9

Sample Number	Depth	Time	Sample Type	Container Type	VOA 601/8010	VOA 602/8020	HSA 624/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH (8015 (diesel) EXT	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
ARTESIAN	N/A	1230	GRAB	40ML VOA		✓					✓									EXTD & PCE	2	

RELINQUISHED BY (Signature) DATE/TIME 1314 6-9-95 RECEIVED BY (Signature) DATE/TIME 13:15 6/9/95

RELINQUISHED BY (Signature) DATE/TIME RECEIVED BY (Signature) DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

TEG (AL C each Retur) Pick

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	2
CHAIN OF CUSTODY SEALS Y/N/NA	Y
SEALS INTACT? Y/N/NA	Y
RECEIVED GOOD COND./COLD	✓
NO	

LABORATORY NOTES:

Table 1

Method A Cleanup Levels - Ground Water[a]

Hazardous Substance	CAS Number	Cleanup Level
Arsenic	7440-38-2	5.0 ug/liter[b]
Benzene	71-43-2	5.0 ug/liter[c]
Cadmium	7440-43-9	5.0 ug/liter[d]
Chromium (Total)	7440-47-3	50.0 ug/liter[e]
DDT	50-29-3	0.1 ug/liter[f]
1,2 Dichloroethane	107-06-2	5.0 ug/liter[g]
Ethylbenzene	100-41-4	30.0 ug/liter[h]
Ethylene dibromide	106-93-4	0.01 ug/liter[i]
Gross Alpha Particle Activity		15.0 pCi/liter[j]
Gross Beta Particle Activity		4.0 mrem/yr[k]
Lead	7439-92-1	5.0 ug/liter[l]
Lindane	58-89-9	0.2 ug/liter[m]
Methylene chloride	75-09-2	5.0 ug/liter[n]
Mercury	7439-97-6	2.0 ug/liter[o]
PAHs (carcinogenic)		0.1 ug/liter[p]
PCB mixtures		0.1 ug/liter[q]
Radium 226 and 228		5.0 pCi/liter[r]
Radium 226		3.0 pCi/liter[s]
Tetrachloroethylene	127-18-4	5.0 ug/liter[t]
Toluene	108-88-3	40.0 ug/liter[u]
Total Petroleum Hydrocarbons		1000.0 ug/liter[v]
1,1,1 Trichloroethane	71-55-6	200.0 ug/liter[w]
Trichloroethylene	79-01-5	5.0 ug/liter[x]
Vinyl chloride	75-01-4	0.2 ug/liter[y]
Xylenes	1330-20-7	20.0 ug/liter[z]

[a] Caution on misusing method A tables. Method A tables have been developed for specific purposes. They are intended to provide conservative cleanup levels for sites undergoing routine cleanup actions or those sites with relatively few hazardous substances. The tables may not be appropriate for defining cleanup levels at other sites. For these reasons, the values in these tables should not automatically be used to define cleanup levels that must be met for financial, real estate, insurance coverage or placement, or similar transactions or purposes. Exceedances of the values in these tables do not necessarily trigger requirements for cleanup action under this chapter.

[b] Arsenic. Cleanup level based on background concentrations for state of Washington.

[c] Benzene. Cleanup level based on applicable state and federal law.

[d] Cadmium. Cleanup level based on applicable state and federal law and concentration derived using procedures in subsection (3)(a)(ii)(A) of this section and a hazard quotient of 0.2.

[e] Chromium (Total). Cleanup level based on applicable state and federal law.

[f] DDT. Cleanup levels based on concentration derived using procedures in subsection (3)(a)(ii)(B) of this section.

[g] 1,2 Dichloroethane. Cleanup level based on applicable state and federal law.

[h] Ethylbenzene. Cleanup level based on applicable state and federal law and prevention of adverse aesthetic characteristics.

[i] Ethylene dibromide. Cleanup level based on concentration derived using procedures in subsection (3)(a)(ii)(B) of this section and modified based on analytical considerations.

[j] Gross Alpha Particle Activity, excluding uranium. Cleanup level based on applicable state and federal law.

[k] Gross Beta Particle Activity, including gamma activity. Cleanup level based on applicable state and federal law.

[l] Lead. Cleanup level based on applicable state and federal law and prevention of unacceptable blood lead levels.

[m] Lindane. Cleanup level based on concentration derived using procedures in subsection (3)(a)(ii)(B) of this section.

[n] Methylene chloride. Cleanup level based on concentration derived using the procedures in subsection (3)(a)(ii)(B) of this section.

[o] Mercury. Cleanup level based on applicable state and federal law.

[p] PAHs (carcinogenic). Cleanup level based on concentration derived using procedures in subsection (3)(a)(ii)(B) of this section and modified based on analytical considerations.

[q] PCB mixtures. Cleanup level based on concentration derived using procedures in subsection (3)(a)(ii)(B) of this section and modified based on analytical considerations.

[r] Radium 226 and 228. Cleanup level based on applicable state and federal law.

[s] Radium 226. Cleanup level based on applicable state and federal law.

[t] Tetrachloroethylene. Cleanup level based on applicable state and federal law.

[u] Toluene. Cleanup level based on applicable state and federal law and prevention of adverse aesthetic characteristics.

[v] Total Petroleum Hydrocarbons. Cleanup level based on prevention of adverse aesthetic characteristics.

[w] 1,1,1 Trichloroethane. Cleanup level based on applicable state and federal law.

[x] Trichloroethylene. Cleanup level based on applicable state and federal law.

[y] Vinyl chloride. Cleanup level based on concentration derived using procedures in subsection (3)(a)(ii)(B) of this section and modified based on analytical considerations.

[z] Xylenes. Cleanup level based on applicable state and federal law and prevention of adverse aesthetic characteristics; and

APPENDIX D

Site Photographs

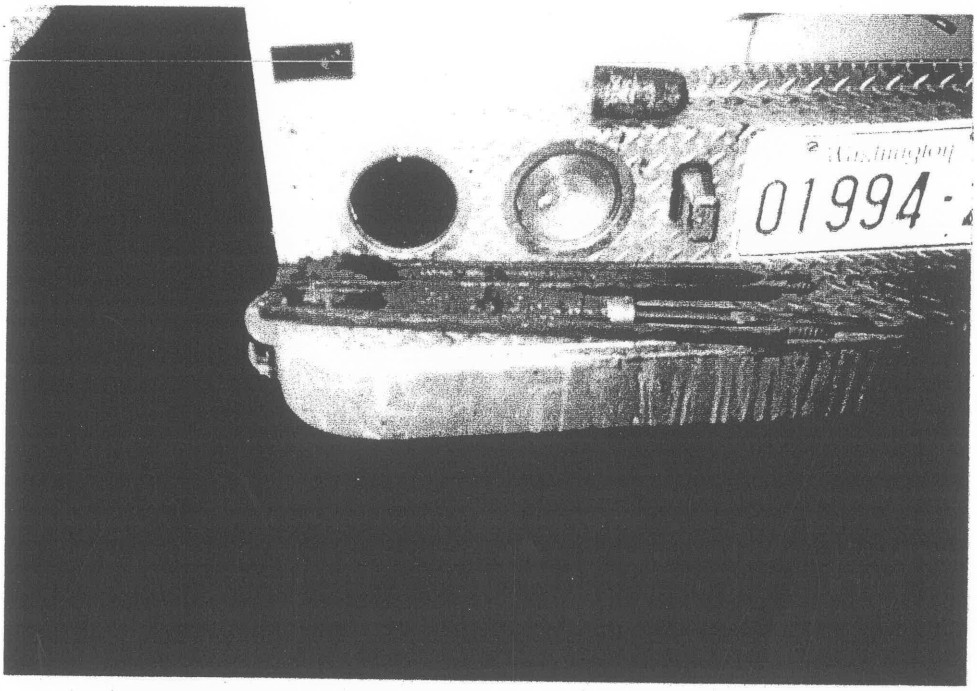


Photo #1 - View of Borehole #1 core sample; Borehole #2 was drilled approximately two (2) feet from #1.

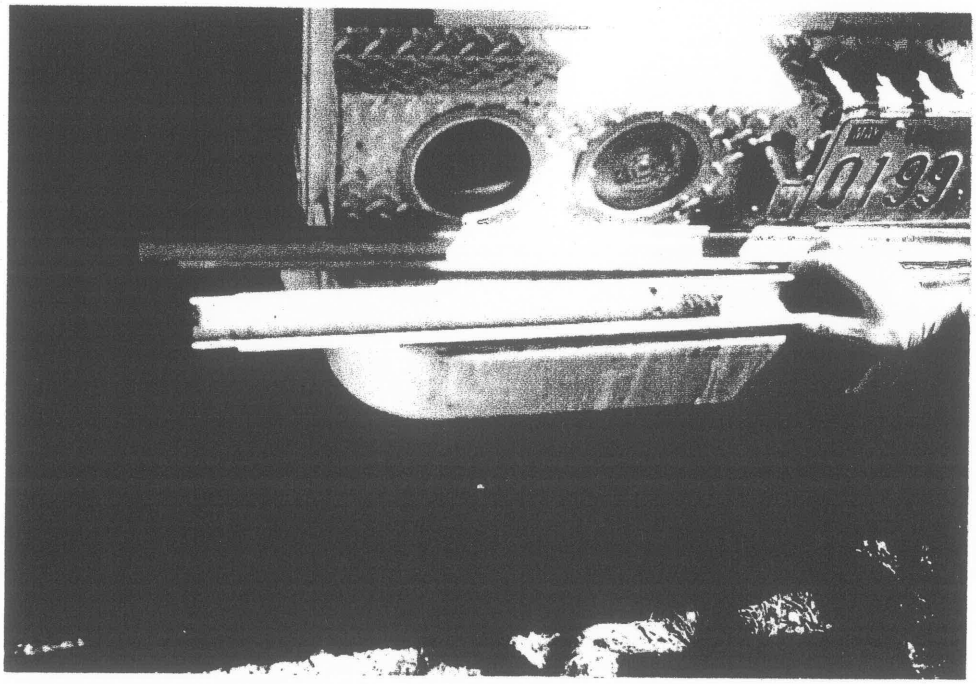


Photo #2 - View of Borehole #3 core sample. Blue silty clay, slightly plastic.

Photo #3 - Drilling Borehole #4; approximately fifteen (15) feet northeast of the structure.

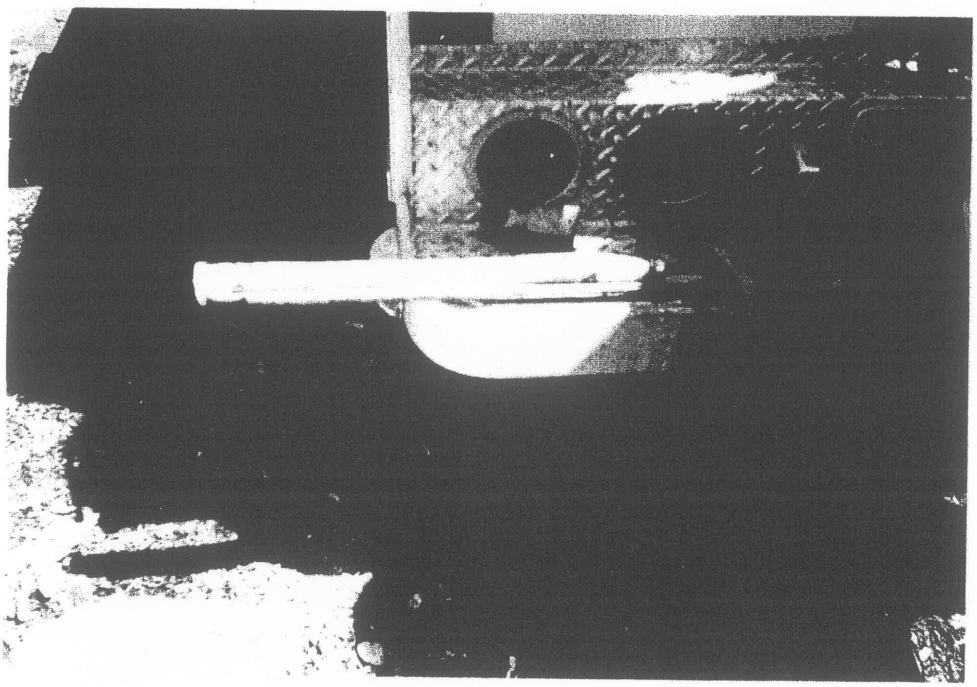


Photo #4 - View of Borehole #4 sample core. Blue silty clay.

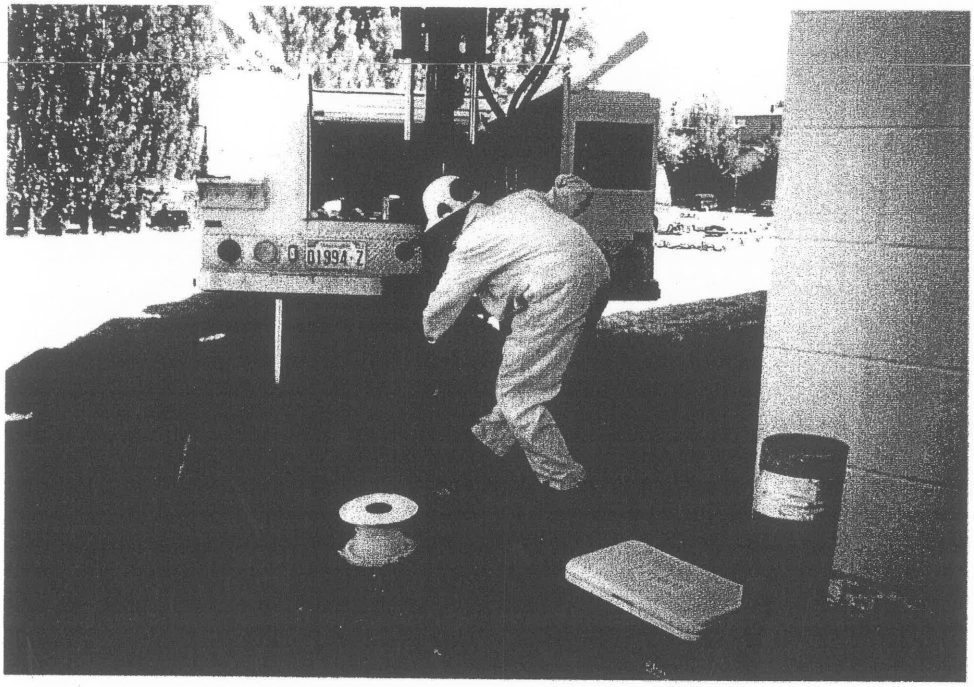


Photo #5 - Drilling Borehole #5; six (6) feet from the northeast corner of the structure

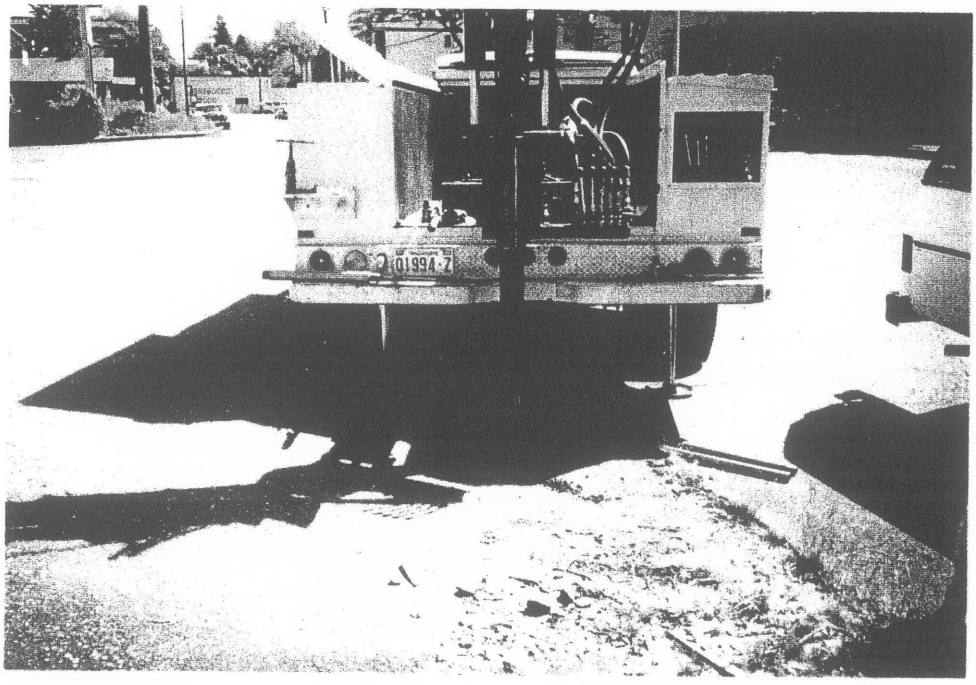


Photo #6 - View of Borehole #6; approximately fifteen (15) feet from the northwest corner of the structure. This is the point of highest contaminant concentration.

DRAFT REMEDIAL INVESTIGATIONS AND ASSOCIATED INTERIM REMEDIAL/CORRECTIVE ACTIONS REPORT

JANUARY 10, 2005

FORMER OLYMPIA DRY CLEANERS
606 EAST UNION AVENUE
OLYMPIA, WASHINGTON

Prepared By

Paul W. Stemen

Stemen Environmental, Inc.

TABLE OF CONTENTS

CONSULTANTS COMMENTS

STEMEN ENVIRONMENTAL, INC.

P.O. BOX 3644
LACEY, WASHINGTON 98509-3644
CONTR. LIC. #STEMEEI081J9

Telephone 360-438-9521 Fax 360-412-1225

January 10, 2005

Mr. Bob Warren
Ecology's Toxics Clean Up Program
P.O. Box 47775
Olympia, Washington 98504-7775

RE: DRAFT REMEDIAL INVESTIGATIONS AND ASSOCIATED INTERIM REMEDIAL/CORRECTIVE ACTIONS REPORT FOR FORMER OLYMPIA DRY CLEANERS SITE LOCATED AT 606 EAST UNION AVENUE, OLYMPIA, WASHINGTON.

1.0 INTRODUCTION

Stemen Environmental Inc., on behalf of Mr. Frank Burleson, has completed a remedial investigation of the Former Olympia Dry Cleaners Site under the Model Toxics Control Act (MTCA; Chapter 173-340 WAC) This Executive Summary presents a synopsis of the findings of the various phases of the remedial investigation activities, groundwater monitoring activities, and interim remedial/corrective actions performed on the subject property and/or on neighboring properties of interest. Details of information presented in this Executive Summary may be found in the following documents:

Interim Remedial Investigation Report

Additional Remedial Investigations and Associated Corrective Actions Report

Interim Remedial Activities and Groundwater Monitoring Report

Additional Groundwater Monitoring Report

The Former Olympia Dry Cleaners Site is a currently occupied by a full service cleaning business. A cleaning business, of some type, has been operated on this site for the past 34 years.

In 1995, a confirmed presence of hazardous substances in the subsurface soils and waters beneath this site was discovered, and reported to Ecology.

In November of 1999, laboratory analyses results for two (2) water samples, obtained from a down gradient groundwater interception ditch, confirmed the presence of Specific Halogenated Hydrocarbons (Vinyl Chloride) at levels that exceed Ecology's Method "A" Clean Up Levels.

On February 28, 2001, Agreed Order #DE00TCPHQ-1408 was issued by the Department of Ecology and signed by Mr. Burleson. This order required the creation of a Remedial

Investigation Work Plan and the submission of this plan to the Department of Ecology for their review and approval. It was agreed that Ecology would provide oversight for the proposed remedial investigation.

The purpose of the remedial investigation is to determine the impacts of the past and/or current operation/use of subject property on the current environmental integrity of the subject property and/or neighboring/off-site properties.

The purpose of the remedial investigation was to obtain and analyze data, to properly characterize the nature and extent of any contaminants that pose potential risks to public safety, human health, and the environment, and to provide information to assist with the selection of appropriate remedial/corrective actions.

The remedial investigation began in April of 2001, and was substantially completed in October of 2004. The remedial investigation included the sampling of the soils and groundwaters beneath the subject property and the northerly neighboring property using a Direct Push Sampling System, the sampling of surface waters at selected locations on neighboring properties, the sampling of surface soils on remote properties, the sampling of stormwaters present at selected locations, the sampling of the on-site cooling system's discharge waters, the sampling of residual liquids in an on-site capped floor drain, the dying of selected drains on the subject property, the installation of groundwater monitoring wells, the monitoring of the groundwaters beneath the subject property and the northerly neighboring properties, and the review of reports on environmental investigations and health consultations performed on neighboring properties of interest.

The Remedial Investigation Report is comprised of the four (4) above listed detailed documents and this summary document. These documents report on the results of the above listed remedial investigative activities. Additionally, copies of the reports for the environmental investigations and health consultation performed on neighboring properties of interest are enclosed in the appendixes of this summary document.

2.0 SITE CHARACTERISTICS AND HISTORY

2.1 Physical Setting

The subject property, Tax Parcel #78204000800, consists of approximately .16 acres of developed commercial property. The subject property is located in the section 23, township 18 north, range 2 west, and is located within the boundaries of the City of Olympia, and Thurston County, Washington.

The subject property is bordered on the north by a commercial office building, on the west by Cherry Street S.E., an asphalt surfaced public roadway, and on the south by Union Avenue S.E., an asphalt surfaced public roadway. The subject property is bordered on the east by an asphalt surfaced parking lot, a former BNRR "right of way", and a current BNRR "right of way" and it's associated operational railroad tracks.

The subject property is located in an area occupied by commercial and government office buildings, commercial/retail businesses, a U.S. Post Office, railroad tracks, single family residential buildings, and multi-family residential buildings.

The property is currently occupied by an approximately 5,000 square foot commercial building that was built in 1970. The commercial building is surrounded by asphalt surfaced parking areas on the western, southeastern and southern portions of the property, a drain rock filled drainage ditch that runs along the northern perimeter of the building, and a grass covered area that is present on the northeastern portion of the property.

An active artesian well is located directly adjacent to the central portion of the western exterior wall of the on-site building. This well is not used to supply domestic water for the on-site activities. On-site domestic water needs are serviced by the City of Olympia. The well is not listed on Ecology's Well Log Data Base.

2.2 Topographic Setting

The area immediately surrounding the subject property is of moderate topography and slopes generally to the north-northeast. Topography along the western perimeter of the subject property slopes downward and away from the building in a westerly-northwesterly direction. Storm water from the subject property flows to the north via Cherry Street and to the east via the French Drain type drainage ditch located along the northern perimeter of the subject property. Storm water from the immediate area is eventually deposited in Budd Inlet.

The elevation of the subject property is approximately 115 feet above mean sea level.

2.3 Soils

Native subsurface soils, present on the subject property, at depths ranging from just below the surface to depths greater than 16 feet b.g.s., consist of various colored silty clay loams. The Thurston County Soil Survey describes the permeability of these soils as being very slow in the substratum.

Available information indicates that, an unknown quantity of, fill materials were imported onto the subject property. Indications are that the imported materials were primarily placed on the northwestern portion of the subject property.

2.4 Groundwater

In August of 2004, Ms. Sandra Matthews, a Licensed Hydrogeologist with Parametrix, visited the subject property and subsequently reviewed groundwater information provided by our company. This groundwater information was accumulated during a series of groundwater monitoring events I performed.

On August 23, 2004, Ms. Matthews issued a memo and a map characterizing the groundwaters beneath the subject property and the immediate area. (Appendix A)

Based on the provided information, Ms. Matthews related the following information:

The groundwater high appears to be groundwater mounding occurring in the northeast corner of the property and the groundwater flows radically away from this area.

The apparent groundwater flow directions are north, northwest, west, and southeast.

There is no significant seasonal change in the groundwater flow direction.

Groundwater level surrounding the site is higher in the spring. However there is no change in the water level in MW-2 and MW-5. In addition the groundwater level in well MW-7 is above ground surface.

Some additional, undetermined recharge source or stratigraphic constraint may be affecting the groundwater levels.

3.0 SITE HISTORY

Olympia Dry Cleaners, a full service dry cleaning business, began operating on the subject property in 1970. Mr. Frank Burleson, the current owner of the subject property, was an operator of the on-site dry cleaning facility from 1970 to 1981.

In 1981, Mr. Gaylord Bolton began leasing the subject property, and operated a full service dry cleaning business on the subject property from 1981 to 1995.

In 1996, Mr. Howard McCullough began leasing the subject property and operating Howard's Cleaners on the site. Howard's Cleaners operated a clothes washing and pressing service on the subject property. The site also served as a drop shop for an off-site dry cleaning operation owned and operated by Mr. McCullough.

Available information indicates the on-site dry cleaning equipment was never placed in-service and/or operated by Mr. McCullough.

In March of 2002, Mr. Tony Anderson began leasing the subject property and operating TMC Cleaners on the site. Mr. Anderson proceeded to re-activate the on-site dry cleaning equipment and began operating a full service dry cleaning business on the subject property. The older dry cleaning equipment was operated on a regular and continual basis until August of 2004.

In August of 2004, Mr. Anderson replaced the old conventional dry cleaning equipment that utilized Tetrachloroethene (PCE) in it's cleaning process, with new dry cleaning equipment that does not incorporate Tetrachloroethene (PCE) in it's cleaning process. The new dry cleaning equipment incorporates aliphatic hydrocarbon solvents in its cleaning process. It should be noted that stain removers containing TCE (Trichloroethene) are routinely used in conjunction with the new dry cleaning process.

The subject property is currently leased by Mr. Anderson and is operated as a full service dry cleaning business.

In May of 1995, a Phase II Environmental Site Assessment of the subject property, was performed by Mr. Scott Clark, of Conrex Inc. During a preliminary visit to the site, Mr. Clark observed staining on the concrete surface of the loading dock/raised sidewalk located along the northern exterior of the on-site commercial building. Based on these observations, Mr. Clark proceeded to obtain a total of seven (7) discreet soil samples and six (6) discreet groundwater samples from selected locations on the subject property. The samples were obtained on two (2) separate occasions.

Laboratory analyses results for the obtained groundwater samples confirmed the presence of gasoline range T.P.H., heavy oil range T.P.H., Tetrachloroethene (PCE), Trichloroethene (TCE) and 1,2 Dichloroethene at levels that exceed Ecology's Method "A" Clean Up Levels.

Laboratory analyses results for the obtained soil samples confirmed the presence of heavy oil range T.P.H., and Tetrachloroethene (PCE) at levels that exceed Ecology's Method "A" Clean Up Levels.

Mr. Clark stated that based upon the groundwater analyses, it appears the site topographically above gradient from the problem sample locations is not affected by the identified contaminants. It is not known whether the artesian aquifer beneath the site or down gradient is affected.

Additionally, Mr. Clark stated that based upon our initial sampling and research, the soils at the sampled locations do not appear to be heavily contaminated. Groundwater is affected.

Mr. Clark recommended further sampling and analyses to determine the potential spread of the contamination plume and the identification of potential receptors down gradient from the site that could be adversely affected. Remedial action to be undertaken will be based upon this further study. The results of Mr. Clark's investigations were reported to Ecology.

On November 23, 1999, the Thurston County Health Department obtained two (2) water samples, and submitted them for appropriate laboratory analyses. The water samples were obtained from a groundwater interception ditch located down surface gradient from the subject property and along the edge of the neighboring property to the north.

Laboratory analyses results for these two (2) water samples confirmed the presence of Vinyl Chloride at levels that exceed the Department of Ecology's Method "A" Clean Up Levels in the waters present at their two respective off-site sampling locations. These laboratory analyses results indicated that waters impacted by Specific Halogenated Hydrocarbons were migrating off-site from the up gradient Former Olympia Dry Cleaners Site.

Agreed order #DE00TCPHQ-1408 was issued by the Department of Ecology. Mr. Burleson signed the document on February 28, 2001. This order required that a Remedial Investigation Work Plan be submitted to the Department of Ecology and that the proposed Remedial Investigation of the subject property be performed with the Department of Ecology's oversight.

During my first few visits to the site, with various interested parties, I observed the presence of water in the earthen surfaced drainage/interceptor ditch located along the eastern perimeter of the northerly neighboring property. It was believed that waters that flowed through the subject properties French drain were eventually discharged into the northern end of this drainage/interceptor ditch. It appeared that the waters then entered an enclosed under underground drainage pipe and were transported to an earthen surfaced drainage swale which runs along western edge of the current railroad "right of way", which is located east of the subject property.

During site visits, after a regional earthquake occurred, it was noticed that no waters were present in the earthen surfaced drainage/interceptor ditch, which runs along the eastern edge of the northerly neighboring property. Also it should be noted that just after the earthquake,

flooding on portions of the northerly neighboring property necessitated the performance of emergency repairs on the underground stormwater pipes located directly down gradient from the drainage/interceptor ditch. As part of the emergency repairs project, an earthen surfaced channel was excavated/created through the bermed former railroad "right of way". Upon the completion of these emergency repairs the flooding on the neighboring property subsided.

During these various on-site visits I also noticed that the asphalt surface materials present in the areas directly outside the rear door of the on-site building and extending toward the northwest corner ot the property appeared to be aged/distressed/etched to a greater extent than the asphalt surfaces in surrounding areas of the property. The area of this impacted asphalt extended from the rear door to the area where Mr. Clark found the highest concentrations of Specific Halogenated Hydrocarbons, during his on-site investigations in 1995.

A Remedial Investigation Work Plan was submitted to the Department of Ecology. The work plan proposed the sampling of the subsurface soils and groundwaters at selected locations on the subject property and on the neighboring, reportedly down gradient, commercial property located just north of the subject property. The work plan also proposed the installation of a minimum of three (3) groundwater monitoring wells at selected locations on the subject property and one (1) groundwater monitoring well on the adjacent property to the north. As requested, by Mr. Patrick Soderberg of the Thurston County Health Department, a sampling of the surface soils near the northeast corner of the on-site building was included in the proposed work plan.

4.0 REMEDIAL INVESTIGATIONS

4.1 Initial Remedial Investigations

Initial remedial investigation activities included the sampling of subsurface soils and/or groundwaters beneath selected locations on the subject property and the neighboring property to the north. The majority of these sampling activities were focused on the northern portions of the subject property.

Investigative soil samples were obtained using a Direct Push Sampling System.

Selected ground water samples were obtained using the Direct Push Sampling System. Additional groundwater samples were obtained from the four (4) recently installed groundwater monitoring wells.

Laboratory analyses results for the investigative soil samples confirmed the detected presence of Specific Halogenated Hydrocarbons (VOC's) in the subsurface soils present at selected locations on the northwestern portion of the subject property and on the southwest portion of the northerly neighboring property. The subsurface soils present in the northwestern portion of the subject property are the only soils where a confirmed presence of Specific Halogenated Hydrocarbons at levels exceeding Ecology's Method "A" Clean Up Levels was found. These adversely impacted soils in the northwestern portion of the subject property were present at depths of 8 feet below ground surface (b.g.s.) or less.

Laboratory analyses results for investigative groundwater samples confirmed the presence of Specific Halogenated Hydrocarbons in the groundwaters beneath the northern portion of the subject property and the western portion of the northerly neighboring property.

The highest concentrations of these contaminants were present in the groundwaters present at very shallow depths beneath the northwest corner of the subject property.

Laboratory analyses results for investigative groundwater samples confirmed the presence of diesel fuel range T.P.H. in the groundwaters present at one (1) sampling location on the northwest portion of the subject property. This sampling location is also the location that exhibited the highest concentrations of Specific Halogenated Hydrocarbons

4.2 Groundwater Monitoring Wells

On April 19, 2001, three (3) groundwater monitoring wells (MW-1, MW-2, and MW-4) were installed at selected locations on the subject property and the commercial property located directly adjacent to and north of the subject property.

On April 27, 2001, one (1) groundwater monitoring well (MW-3) was installed on the interior of the on-site commercial building.

On June 13, 2002, three (3) additional ground water monitoring wells (MW-5, MW-6, and MW-7) were installed at selected locations on the subject property and the commercial property located directly adjacent to and north of the subject property.

Licensed Well Drillers and Licensed Geologists from Environmental Services Network Inc. of Lacey, Washington installed all of the groundwater monitoring wells using a Direct Push Sampling System.

Prior to the commencement of any monitoring well installation activities, the required start cards were properly filed with the Department of Ecology.

Southwest Surveying of Olympia, Washington determined the elevation of the top of the flush mounted monument on each monitoring wells.

4.3 GROUNDWATER MONITORING

On April 9, 2001, April 27, 2001, July 10, 2002, October 2, 2002, January 3, 2003,and March 20, 2004, the groundwaters beneath the subject property and the northerly neighboring were sampled via the groundwater monitoring wells that are present at selected locations on these properties.

Only four (4) groundwater monitoring wells were present for monitoring on the April 9, 2001, monitoring event.

Only groundwater monitoring well MW-3 was sampled on April 27, 2001.

Monitoring well MW-3 was not reasonably accessible for sampling purposes on the latter two (2) sampling events. The monument for this monitoring well will have to be replaced to provide proper access.

The laboratory analyses results for the water samples obtained during the various groundwater monitoring events confirmed the presence of Specific Halogenated Hydrocarbons (Volatile Organic Compounds/VOC's) at levels that exceed Ecology's Method "A" Clean Up

Levels in the groundwaters beneath selected locations on the subject property and the northerly neighboring property. Tetrachloroethene (PCE), Triochloroethene (TCE) cis-1,2-Dichloroethene, and Vinyl Chloride are the VOC's that are detected beneath selected portions of the subject property and/or the northerly neighboring property on a regular basis. Toluene has been detected in these groundwaters on a periodic basis. Tetrachloroethene (PCE) exhibits the strongest presence in these impacted groundwaters.

The VOC's detected in the groundwaters beneath the eastern portion of the northerly neighboring property are at much lower levels than the levels detected on the northern portions of the subject property.

Laboratory analyses results for the earlier groundwater monitoring events indicated that the highest concentrations of PCE (Tetrachloroethene) and other VOC's were present in the groundwaters beneath the northwest corner of the subject property.

In the most recent groundwater monitoring events, the concentrations of Tetrachloroetene, and other VOC's in the groundwaters beneath the northwest corner of the subject property (MW-2 and MW-5) have exhibited a downward trend, while the presence of Tetrachloroethene at levels exceeding Ecology's Method "A" Clean Up Levels were recently detected, for the first time, in the groundwaters beneath the northeast corner of the subject property (MW-7).

Laboratory analyses results for samples obtained, on the most recent sampling occasion, from the groundwaters beneath the northeastern portion of the subject property (MW-7) only contain Tetrachloroethene (PCE), while samples obtained from the groundwaters beneath the northwestern portion of the property have continually contained PCE, TCE, and the associated breakdown analytes Vinyl Chloride, and cis-1,2-Dichloroethene.

4.4 **Surface Waters/Stormwaters**

During the early stages of the remedial investigation, Mr. Gerald Tousley of The Thurston County Health Department obtained three (3) surface water samples from three (3) separate selected locations, along the earthen surfaced storm water drainage swale, located approximately 250 feet east of the subject property.

Laboratory analyses results for these surface water samples obtained from selected confirmed the presence of Specific Halogenated Hydrocarbons, at levels that exceed Ecology's Method "A" Clean Up Levels, in the surface waters in the northern and southern portions of the stormwater drainage swale/ditch. No contaminants were detected in the waters present in the central portion of the drainage swale/ditch.

During the early stages of the remedial investigation, a sample was obtained from the waters present in the central portion of the French Drain.

Laboratory analyses results for the water sample confirmed the presence of Specific Halogenated Hydrocarbons and heavy oil range T.P.H. at levels that exceed Ecology's Method "A" Clean Up Levels.

On one occasion, after a significant period of rainfall, a sample of the waters flowing down the eastern side of Cherry Street S.E., and into the storm drain was obtained for investigative purposes.

Laboratory analyses results for this storm water sample confirmed the presence of Specific Halogenated Hydrocarbons at levels that exceed Ecology's Method "A" Clean Up Levels, in the stormwaters entering the municipal storm drain located on the eastern side of the intersection of Cherry Street S.E. and 10th Avenue S.E. This sampling location is located approximately 175 feet north and 10 feet east and down surface gradient of the northwest corner of the subject property.

Two (2) discreet water samples were obtained from the surface waters present on the southwest corner of the northerly neighboring property and from the pooled seepage waters present along the eastern side of Cherry Street. Surface water sample WS-1 was obtained from surface waters that were pooled in the landscaped area near the southwest corner of the northerly neighboring commercial building, and surface water sample WS-2 was obtained from seeping surface waters present along the eastern side of Cherry Street.

Laboratory analyses results for surface water samples WS-1 and WS-2 confirm the presence of Specific Halogenated Hydrocarbons at levels exceeding Ecology's Method "A" Clean Up Levels in these sampled surface waters.

4.5 **Surface Soils**

One (1) discreet soil sample was obtained from the surface soils present at location near the northeast corner of the on-site building. This sampling location is located directly beneath two (2) of the building's ventilation exhaust pipes. The lawn/grass in this immediate area was brownish in color and appeared to be dying out.

Laboratory analyses results for investigative soil sample SS-1 indicated no detectable presence of gasoline range T.P.H., diesel fuel range T.P.H., heavy oil range T.P.H., and/or Specific Halogenated Hydrocarbons in these surface and near surface soils.

Three (3) investigative soil samples were obtained from the surface soils and very shallow subsurface soils present in the landscaped area located directly adjacent to the southwest corner of the commercial office building located on the northerly neighboring property. This is an area where small pools of surface waters are present and the soils in this area are typically saturated. These pools contain surface waters and/or storm waters that have migrated to this area from the northwest portion of the subject property.

Laboratory analyses results for two (2) of these investigative soil samples confirmed the presence of Tetrachloroethene, cis-1,2-Dichloroethene, and Toluene at levels that exceed Ecology's Method "A" Clean Up Levels, in these soils.

4.6Interior Floor Drains

An abandoned/capped floor drain is present in the northwestern portion of the on-site building's concrete floor. During an inspection of the interior of the on-site building, we uncapped the drain. It was discovered that the drain contained residual quantities of a liquid that

possessed a chemical/solvent type odor. A sample of these residual liquids was obtained and submitted for appropriate laboratory analyses.

Laboratory analyses results for the residual liquids present in a capped/ out of service floor drain, confirmed the presence of Specific Halogenated Hydrocarbons at levels that exceed Ecology's Method "A" Clean Up Levels.

On a separate occasion, red dye was placed in the floor drain that originates in the boiler room portion (northeast) of the on-site building. The results of this on-site experiment indicated that liquids placed in this drain, using a garden hose (slow rate), were eventually discharged into the public sewer system, which runs beneath Cherry Street S.W. The dye test was not performed on any of the other drains present inside the on-site commercial building.

5.0 REMOTE SAMPLING LOCATIONS

5.1 Soils

In one occasion, Mr. Gerald Tousley, of the Thurston County Environmental Health Department, sampled the soils present at selected locations along the base of the bermed Former Railroad "Right of Way". These samples were obtained at locations exposed during the "post earth quake" emergency excavation activities associated with the creation of the earthen surfaced channel, through the bermed soils. Laboratory analyses results for these post earthquake investigation samples indicated no presence of Specific Halogenated Hydrocarbons at levels exceeding the Department of Ecology's Method "A" in the soils sampled in this area.

On another occasion, I was contacted by Mr. Gerald Tousley and asked to accompany him, during an on-site visit to a location along the eastern side of the southern portion of the bermed Former Railroad "Right of Way". A concerned citizen had reported that the vegetation in this area was suddenly turning brown and dying. It should be noted that this area of concern was in the approximate location (area) where Mr. Tousley had previously obtained surface water sample DW-1, which contained above acceptable levels of Specific Halogenated Hydrocarbons.

During this on-site visit Mr. Tousley and I observed several areas, randomly distributed along the eastern side of these bermed soils, where the vegetation was dry, brown in color, and appeared to be dying out. No significant quantity of waters were present in the earthen surfaced drainage ditch, which runs directly through this area, on the day of this on-site visit.

Due to the fact, that these bermed soils were scheduled to be excavated, and transported to off-site locations in the near future, Mr. Tousley requested that I obtain soil samples from the areas directly surrounding and beneath the impacted vegetation.

I immediately notified the owners of this impacted property and was authorized to perform the requested soil sampling and laboratory analyses activities.

These soil samples were submitted for appropriate laboratory analyses and were screened for pesticides, herbicides, and Specific Halogenated Hydrocarbons.

Laboratory analyses results for these investigative soil samples indicated no presence of pesticides, herbicides, and/or Specific Halogenated Hydrocarbons in the soils along the northeastern edge of the soil berm.

5.2 Groundwaters

On June 14, 2002, I proceeded to obtain two (2) discreet water samples from the groundwaters present near previous investigative sampling location DW-1 using the Direct Push Sampling System. This sampling location is situated along the western side of the existing railroad "right of way" which is located approximately 300 feet east of the eastern perimeter of the subject property.

Water sample RRWS-1 was obtained from subsurface waters present at a depth of 4 feet b.g.s. and water sample RRWS-2 was obtained from subsurface waters present at a depth of 11 feet b.g.s.

These water samples were immediately submitted for appropriate laboratory analyses.

Laboratory analyses results for groundwater samples RRWS-1 and RRWS-2 indicated no detectable presence of Specific Halogenated and Aromatic Hydrocarbons in these sampled waters.

6.0 INTERIM ACTIONS

6.1 Leaking Water Pipe Repair

In an effort to determine the source(s) of the excess quantities of waters that were present on the northwest portion of the subject property, Mr. Gerald Tousley and myself performed a limited inspection of the on-site domestic water supply system.

The results of this limited inspection indicated that the on-site water system might be leaking.

A review of water usage records for the site indicated that water usage for the site had dramatically increased in recent months.

A leak test was performed on the site's water pipes. The results of this test confirmed the presence of a leak in the water supply line at a location near the northwest corner of the on-site building leaking water supply line.

An integrity test was also performed on the on-site sewer line. The results of this test indicated no leaks in the sewer line.

The amount of surface water present on the northwestern portion of the subject property, and/or the amount of surface water migrating off-site, in a northerly direction, has been substantially reduced by the repair of the water supply line.

6.2 Floor Drain – Residual Liquids Recovery

All residual liquids were removed from the floor drain located in the rear portion of the on-site building's concrete floor. Due to the presence of concrete patch materials being intermixed with the residual liquids, initial attempts to remove these liquids, using a pump were

not successful. These residual liquids and the concrete debris were eventually removed using a shop vacuum on two (2) separate occasions. The adversely impacted liquids/materials were placed in appropriate containers for temporary storage purposes.

After the completion of the residual liquid/materials removal activities, the drain was capped.

7.0 ADDITIONAL ENVIRONMENTAL INVESTIGATIONS OF INTEREST ON NEIGBORING PROPERTIES

7.1 Limited Phase II E.S.A. –Raad Property

Limited Phase II Environmental Site Assessment
Raad Commercial Property - Limited Phase II Environmental Site Assessment
520 Union Avenue
Olympia, Washington

The commercial property consists of approximately .52 acres of developed commercial property occupied by a 9,636 square foot commercial office building and it's associated asphalt surfaced parking areas.

On July 18, 2001, our company performed a Limited Phase II Environmental Site Assessment on this commercial property. The purpose of this limited investigation of the subsurface waters beneath the property was to determine if the adverse environmental conditions on the Former Olympia Dry Cleaners Site have had an adverse impact on the environmental integrity of this commercial property.

I proceeded to obtain three (3) discreet groundwater samples from the subsurface waters present at three (3) separate selected sampling locations on the northeast portion of the property.

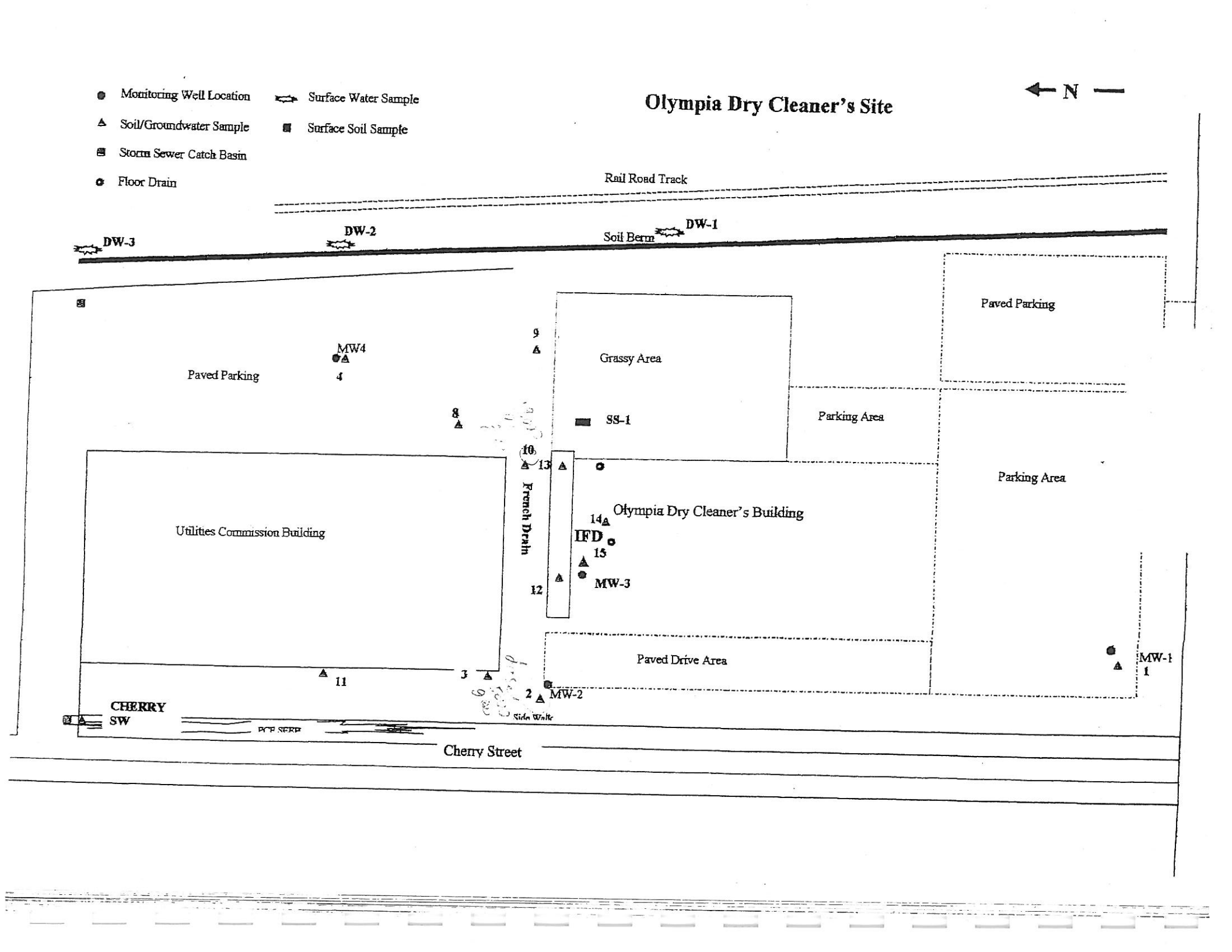
All water samples were obtained using a Direct Push Sampling System supplied and operated by technicians from Environmental Services Network Northwest Inc. of Lacey, Washington.

During these groundwater sampling activities it was observed that the recharge of groundwaters into the sampling tube, after the purging process, were equally as slow as recharge rates observed at selected locations on the Former Olympia Dry Cleaners Property.

Additionally, it should be noted that the waters in the borehole directly adjacent to the northeast corner of the property actually began to overflow out of the borehole. The same phenomena was observed on the northwest corner of the Former Olympia Dry Cleaners property in the vicinity of monitoring wells MW-2 and MW-5.

All of the water samples were properly packaged and transported to Environmental Service Network Northwest for appropriate laboratory analyses. All samples were screened for gasoline range T.P.H. using method NWTPH-Gx, diesel fuel and heavy oil range T.P.H. using method NWTPH-Dx, and Specific Halogenated Hydrocarbons using method 8021B.

Laboratory analyses results for S1-15, S2-15, and S3-15 indicated no detectable presence of gasoline range T.P.H., diesel fuel range T.P.H., heavy oil range T.P.H., and/or Specific


Monitoring Well Location
Soil/Groundwater Sample
Storm Sewer Catch Basin
Floor Drain
Surface Water Sample
Surface Soil Sample
Olympia Dry Cleaner's Site
N
Rail Road Track
DW-3
DW-2
Soil Berm
DW-1
Paved Parking
MW4
4
9
Grassy Area
Paved Parking
8
SS-1
Parking Area
10
13
Parking Area
Utilities Commission Building
French Drain
14
Olympia Dry Cleaner's Building
IFD
15
MW-3
12
Paved Drive Area
MW-1
1
11
3
2
MW-2
CHERRY
SW
Side Walk
Cherry Street

Halogenated Hydrocarbons in the subsurface water beneath the northeast portion of this commercial property.

The results of this Limited Phase II Environmental Site Assessment indicate that the environmental integrity of this commercial property have not been adversely impacted by the recognized environmental conditions associated with and present on the Former Olympia Dry Cleaners property.

7.2 Limited Phase II E.S.A. – Phillips Property

Limited Phase II environmental Site Assessment
Phillips Property
Abandoned Railroad Right of Way
BNRR REGRADE-MF
Olympia, Washington

The subject property consists of approximately .25 acres of abandoned railroad right of way. The property consists of a 485 feet in length by 60 feet in width soil berm of earthen materials. The elevation of the top of these bermed materials ranges between 22 feet above mean sea level on the northern end of the soil berm and 30 feet above MSL on the southern portion.

The Phillips family owns the subject property.

The abandoned railroad right of way is located directly east of the Former Olympia Dry Cleaners Site and directly adjacent to and directly west of the currently active railroad right of way and it's actively used railroad tracks.

During the initial stages of the Remedial Investigation for the Former Olympia Dry Cleaners, Mr. Gerald Tousley of the Thurston County Health Department obtained samples of the surface waters present in a shallow ditch located along the eastern edge of the abandoned railroad right of way. Mr. Tousley submitted these samples for appropriate laboratory analyses.

Laboratory analyses results confirmed the presence of Tetrachloroethene at levels that exceed Ecology's Method "A" Clean Up Levels in these remote surface waters.

The owners of the railroad right of way property, applied to the City of Olympia for a permit to excavate, remove, and transport off-site, a substantial portion of the bermed soils/materials. The City of Olympia required that the bermed materials be properly characterized as part of the permitting process.

The Phillips family contracted with Associated Environmental Group of Olympia, Washington to sample the bermed soils. The obtained soil samples were submitted for laboratory analyses and were screened for heavy metals. Laboratory analyses results indicated no presence of heavy metals, at levels that exceeded Ecology's Method "A" Clean Up Levels, in the sampled soils.

The City of Olympia then stated that the soils should be re-sampled and these soil samples should be screened for diesel fuel and heavy oil range T.P.H.

Mr. Richard Phillips, a member and authorized representative of the Phillips family, ask our company to sample the soils in the upper portions of the berm and to submit the soil samples for appropriate laboratory analyses. The proposed sampling locations, and the quantity of samples were approved by Mr. Phillips, Mr. Tousley, the City of Olympia, and Mr. Bob Warren of Ecology's Toxics Clean Up Program. Mr. Warren is Ecology's Project Manager of the Former Olympia Dry Cleaners Site.

The purpose of these environmental investigations of the soils/materials present in the upper portions of the soil berm is to determine if the environmental integrity of these soils/materials has been adversely impacted by the presence and/or operations associated with the previously removed railroad tracks.

On May 17 and 23, 2001, I obtained a total of one (1) discreet and eighteen (18) composite soil samples from the soils present at various depths and locations throughout the upper portions of the soil berm. The upper portion of the soil berm included soils present at elevations equal to and/or greater than 22 feet above Mean Sea Level. All soil samples were obtained using a mini-excavator and hand sampling tools.

All soil samples were submitted for appropriate laboratory analyses and were screened for diesel fuel and heavy oil range T.P.H. using method NWTPH-Dx/Dx Extended.

Laboratory analyses results indicated no detectable presence of diesel fuel and/or heavy oil range T.P.H. in the soils present in the upper portions of the soil berm.

On May 2, 2002, our company obtained an additional twelve (12) composite soil samplers from subsurface soils present at six (6) selected locations throughout the soil berm. These soil samples were obtained from soils present at lower elevations in the soil berm.

All of the soil samples were submitted for appropriate laboratory analyses and were screened for diesel fuel and heavy oil range T.P.H. using method NWTPH-Dx/Dx Extended.

Additionally, three (3) of the soils samples that were obtained from selected locations in southern portion of the soil berm were screened for Specific Halogenated Hydrocarbons using EPA method 8021B.

Laboratory analyses results for the twelve (12) soil samples indicated no detectable presence of diesel fuel and/or heavy oil range T.P.H. in the lower portions of the soil berm.

Laboratory analyses results for the three (3) selected soil samples indicated no detectable presence of Specific Halogenated Hydrocarbons in the soils present at selected locations in the lower portions of the soils berm.

The purpose of these additional environmental investigations of the soils present in the lower portions of the soil berm was to determine if these soils had been adversely impacted by the environmental conditions that are present on the up surface gradient Former Olympia Dry Cleaners Site.

7.3 Evaluation of Air Quality – Washington State Traffic Safety Commission Offices

Evaluation of Indoor Air Quality

Washington State Traffic Safety Commission Offices
1000 South Cherry Street
Olympia, Washington

The Washington State Health Department in conjunction with the Thurston County Environmental Health Department performed a Health Evaluation of the indoor air quality for the commercial building located at 1000 South Cherry Street.

The commercial building is located on the southwest portion of .45 acres of commercial property.

The commercial building is located directly north of the Former Olympia Dry Cleaners Property and is currently occupied by the Washington State Traffic Commission Offices.

The Health Evaluation included the sampling of air quality at four (4) selected indoor sampling locations. Three (3) of the sampling locations were selected because of their proximity to areas normally occupied by office staff members. The other sampling location located in the basement of the building was selected to help evaluate whether contaminants present in the groundwater could be the source of chemicals in indoor air and because of it's accessibility for sampling purposes.

Numerous volatile organic compounds (VOC's) were detected in the indoor air, but only three (3) of the detected VOC's (PCE, TCE, and methylene chloride) exceeded ambient background levels and/or health comparison levels, and were further evaluated. Although the precise source(s) of the detections of indoor air are unclear, possible sources include the groundwater plume, aboveground transport from the TMC Cleaners, localized office products, auto emissions, or a combination thereof.

The levels of VOC's detected in indoor air do not pose a non-cancer health hazard, although a low increased cancer risk was estimated for persons assumed to be exposed over a working lifetime, to the maximum level of the detected chemicals. Some of this risk can be attributed to exposure to background levels of these chemicals commonly present in urban ambient and indoor air.

The Health Consultation recommended additional characterization of the groundwater plume, additional air quality sampling of indoor air at the office building, and an evaluation of the indoor air quality present in the building currently occupied by TMC Cleaners (Former Olympia Dry Cleaners Site).

8.0 FACTS AND CONCLUSIONS

8.1 Facts

1. The results of the remedial investigations confirm the presence of Specific Halogenated Hydrocarbons at levels that exceed the Department of Ecology's Method "A" Clean Up Levels in the subsurface soils present at various sampling locations on the northwest corner of the subject property and the southwest corner of the neighboring property to the north. These adversely impacted soils are present at depths of 8 feet b.g.s. or less.

2. The results of this on-site investigation confirm the presence of Halogenated Hydrocarbons, at levels that exceed the Department of Ecology's Method "A" Clean Up Levels, in the groundwaters present at selected locations on the subject property and the neighboring property to the north. The highest concentrations of contaminants are present along the northern boundary of the subject property. The latest groundwater monitoring results indicated a downward trend in the levels of Specific Halogenated Hydrocarbons present in the groundwaters beneath the northwestern portion of the property, while indicating a presence Specific Halogenated Hydrocarbons in the groundwaters beneath the north eastern portion of the property (MW-7) that was not detected during previous groundwater monitoring events.

It should be noted that, recently, Tetrachloroethene was the only Specific Halogenated Hydrocarbon detected in the groundwaters present in monitoring well MW-7. No breakdown analytes were detected in these waters, while groundwaters present in the northwestern portion of the property (MW-2, MW-5) contained Tetrachloroethene, Trichloroethene and breakdown analytes such as Vinyl Chloride, and cis-1,2-Dichloroethene. The breakdown analytes have been present in the groundwaters on the northwestern portion of the subject property on a continual basis since the start of these on-site investigations.

It should also be noted that during the initial stages of this remedial investigation, investigative water sample S-9-W was obtained from a selected location on the northeastern portion of the subject property. This sampling location was located near the eastern end of the French Drain and in close proximity to the current location of groundwater monitoring well MW-7. Laboratory analyses results for water sample (S-9-W) indicated no detectable presence of Tetrachloroethene (PCE). These laboratory analyses results did confirm the presence of Trichloroethene (TCE), Vinyl Chloride, and cis 1,2 Dichloroethene at levels that exceed Ecology's Method "A" Clean Up Levels and the detectable presence of trans 1,1 Dichloroethene.

3. The results of this on-site investigation also confirmed the presence of Specific Halogenated Hydrocarbons in the surface waters present in the northern and southern portions of the earthen surfaced drainage ditch which runs along the eastern side of the elevated former railway "right of way". Laboratory analyses results indicated the waters present in the northern portion of the ditch contained much higher levels of Specific Halogenated Hydrocarbons than the waters present in the southern portion of the ditch.

Laboratory analyses results indicated no presence of Specific Halogenated Hydrocarbons in the sampled waters present in the central portion of the ditch.

Vegetation growing in these areas where impacted surface waters were present, were brownish in color.

4. The results of this on-site investigation confirmed that, on at least one occasion, liquids containing Specific Halogenated Hydrocarbons were discharged, released and/or flowed into the currently capped floor drain present in the rear (northern) portion of the on-site building. The eventual discharge location/destination of liquids placed in this drain was not determined during these on-site investigations. 5. It appears that one of the sources of the excess quantities of surface waters that have been present at selected locations on the subject property and the northerly neighboring property was a leaking underground water supply line. When the leaking water supply line was replaced, the quantities of surface waters present at selected locations on

the subject property and/or the amount of water migrating off-site and onto neighboring properties, and into off-site drainage ditches was dramatically reduced, if not eliminated in most locations.

Additionally, it should be noted that a downward trend in the levels of Specific Halogenated Hydrocarbons, present in the groundwaters beneath the northwestern portion of the subject property has occurred after the repair of this water supply line. This reduction did not take place immediately, but has taken place over a period of time.

The results of this investigation confirmed the presence of Methylene chloride, at levels that exceed Ecology's Method "A" Clean Up Levels in the waters discharged from the on-site cooling system to the surface areas located on the northwest portion of the subject property.

The rooftop cooling system was recently repaired.

The reduction of the off-site migration of surface waters from the subject property should reduce the off-site migration of waters that have been adversely impacted by Specific Halogenated Hydrocarbons.

8.2 Conclusions

1. The exact method of the release/discharge and/discharge point of the liquids containing Specific Halogenated Hydrocarbons to the subsurface soils and groundwaters beneath selected portions of the subject property has not been clearly defined at this time.

The presence of aged/distressed/etched asphalt surface materials in an area directly up flow/up surface gradient from the locations where the highest concentrations of Specific Halogenated Hydrocarbons currently exist in the subsurface soils and /or groundwaters, indicates the possibility that waste waters from the on-site dry cleaning activities were discharged/dumped on the sloped asphalt surface in this area and flowed to the earthen surfaced areas and then migrated downward into the shallow subsurface soils and groundwaters. It is also a possibility that powder coated filters, associated with the on-site dry cleaning equipment, was washed/rinsed off in this area and the wash/rinsing liquids followed the earlier described migratory/flow pathway.

The presence of liquids containing Specific Halogenated Hydrocarbons in the interior floor drain suggest the possibility that the floor drain could have been a release/discharge point for the impacted liquids into the subsurface soils and/or groundwaters. It is possible that this drain at one time utilized a subsurface drywell and/or that the drainage pipe leaked and discharged impacted liquids into the imported fill materials that are present at shallow depths on this portion of the subject property.

Additionally, the recently discovered presence of Tetrachloroethene, without any accompanying breakdown analytes, in the groundwaters beneath the northeastern portion of the subject property, could possibly be the result of a more recent release of Specific Halogenated Hydrocarbons to the subsurface soils, surface waters and/or groundwaters beneath selected portions of the subject property.

2. Based on the results of the past and current environmental investigations performed on the subject property and/or neighboring properties, it appears to me that the primary off-site

migration pathways for waters adversely impacted by Specific Halogenated Hydrocarbons were via the discharge of shallow groundwaters and/or surface waters into various municipally and privately developed stormwater management systems that service the subject property and it's neighboring properties.

It also appears to me that the earthquake that took place in recent years may have caused changes in the migratory pathways followed by these transient impacted waters.

Where is data?

Earlier investigations only noted the presence of Vinyl Chloride, a breakdown element, at excessive levels in off-site surface waters, while subsequent investigations confirmed the presence of a range of Specific Halogenated Hydrocarbons in the off-site surface waters. The presence of these pre-breakdown chemical analytes could be attributed to a more direct pathway for the migration of the impacted groundwaters, thus allowing less exposure time to the atmosphere for aeration/breakdown purposes.

It is not known what impact, if any, the removal of the bermed soils from the Former Railroad Right of Way will have on the migration pathways of the surface waters/stormwaters generated on the subject property and the neighboring properties.

It should also be noted that the seepage of impacted waters from beneath the Cherry Street sidewalk area was not observed during previous on-site investigations and could be a post earthquake condition. The repair of the on-site water supply line dramatically reduced the quantities of water seeping from beneath the sidewalk, but some level of seepage still occurs.

The results of independent environmental investigations performed on neighboring properties of interest indicated no presence of Specific Halogenated Hydrocarbons in the subsurface groundwaters at these investigated locations.

The results of this investigation indicate that the confirmed release(s) of Specific Halogenated Hydrocarbons have had the most significant impact on the groundwaters beneath the northern portions of the subject property.

All opinions, observations, and findings set forth in this report are based on current available information and current on-site conditions, and cannot predict or report on the impacts of future events and/or regulatory requirements on this site.

Sincerely,

Paul W. Stemen, Vice President

APPENDIX A
HYDROGELOGISTS INFORMATION

Parametrix ENGINEERING • PLANNING • ENVIRONMENTAL SCIENCES

411 108th AVENUE NE, SUITE 1800
BELLEVUE, WA 98004-5571
T. 425 • 458 • 6200 F. 425 • 458 • 6363
www.parametrix.com

MEMORANDUM

Date: **August 23, 2004**

To: **Paul Stemen**
P O Box 3644
Lacey, Washington 98501-8212

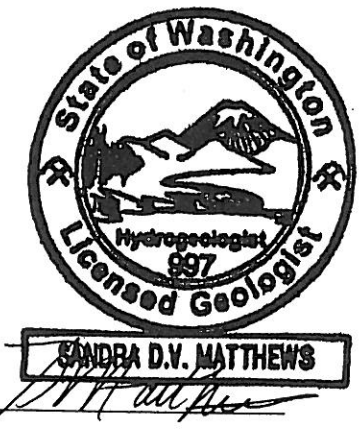
From: **Sandra Matthews**

Subject: **Groundwater flow direction at Howard's Dry Cleaners.**

cc: **Scott Elkind**

Project Number: **255-4996-001 (01/01)**

Project Name: **Howard's Dry Cleaners, Olympia, WA**

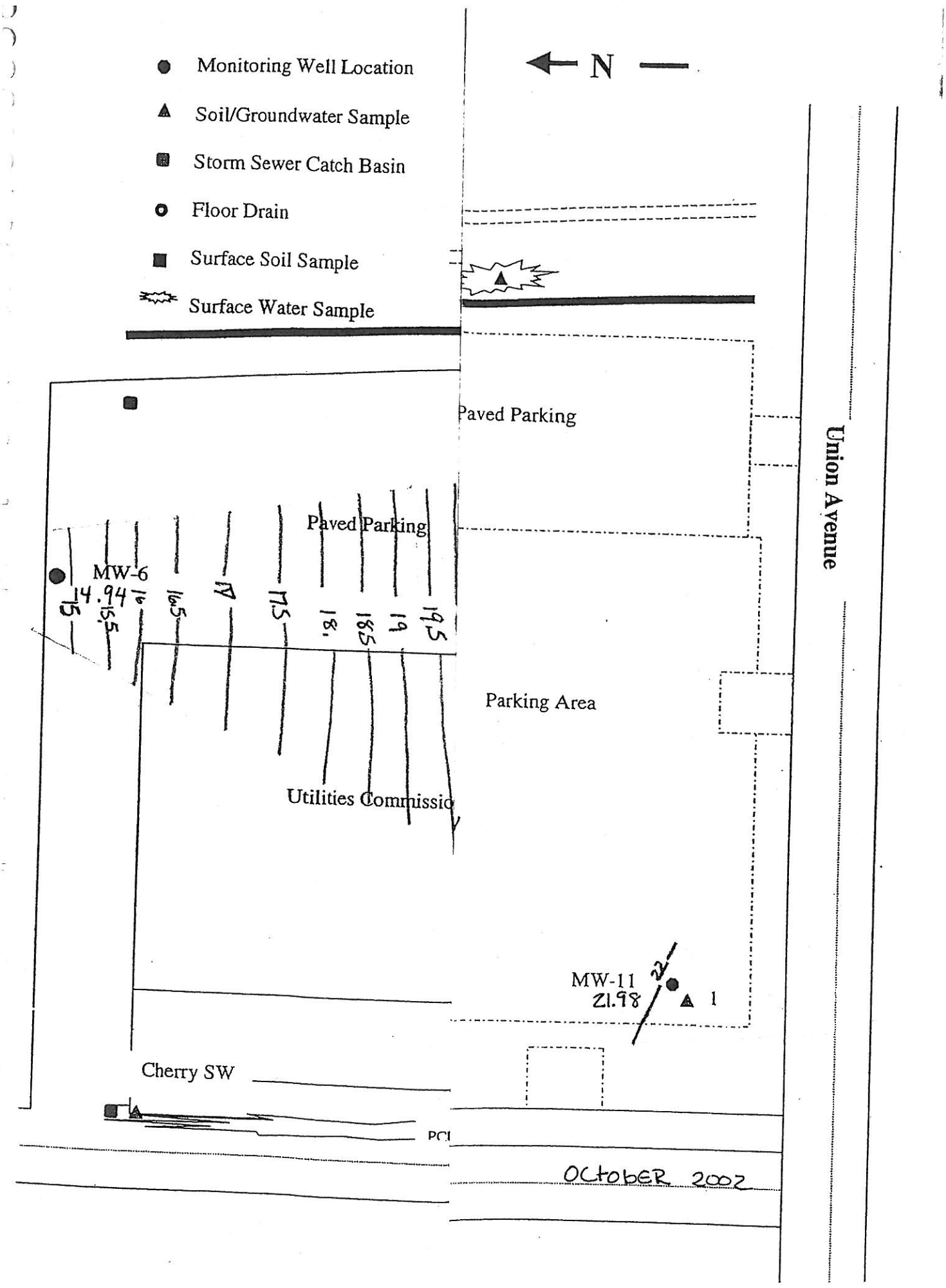


Paul Stemen requested that Parametrix Inc. determine the apparent groundwater flow direction beneath the Howard's Dry Cleaners site at 606 E. Union Avenue, Olympia Washington. To complete this task, Parametrix reviewed available groundwater elevation monitoring data supplied by Stemen Environmental, Inc. and visited the site.

The information provided included three quarters (October 2002, January 2003, and March 2004) of groundwater elevation measurements for the seven wells around the site. The March 2004 date is missing a measurement from MW-3, which could not be accessed. The geologic boring logs provided only had well construction information and no geologic information was available for review.

The dry cleaner building is located on the northeast corner of Cherry Street and Union Avenue. During the site visit the topography was observed to be sloping to the west and north, away from the building. A steady flow of water was being discharged from a pipe in the center of the west side of the building. This water was cooling water from the air conditioning system on the roof. Standing water was present adjacent to the sidewalk and in the landscaped area north of MW-2 and MW-5.

Using the information provided, the groundwater high appears to be groundwater mounding occurring in the northeast corner of the property and groundwater flows radially away from this area (Figure 1). Based on the data, the apparent groundwater flow directions are north, northwest, west and southwest. There is no significant seasonal change in the groundwater flow direction. Groundwater level surrounding the site is higher in the spring. However there is no change in the water level in MW-2 and MW-5. During the three monitoring events the water level in these two wells were the same. In addition, the groundwater level in well MW-07 is above ground surface. Some additional, undetermined recharge source or stratigraphic constraint may be affecting the groundwater levels in these wells.


Monitoring Well Location
Soil/Groundwater Sample
Storm Sewer Catch Basin
Floor Drain
Surface Soil Sample
Surface Water Sample
N
Paved Parking
Paved Parking
Union Avenue
MW-6
14.94
15
16
16.5
17
17.5
18
18.5
19
19.5
Parking Area
Utilities Commissio
MW-11
21.98
22
1
Cherry SW
PCI
October 2002

RESOURCE PROTECTION WELL REPORT Notice of Intent No. [illegible]

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission *("x" in circle)*
- ☒ Construction
- ○ Decommission *Original Construction Notice of Intent Number* ______

Type of Well *("x" in circle)*
- ☒ Resource Protection
- ○ Geotech Soil Boring

Property Owner: Frank Burleson

Unique Ecology Well ID Tag No.: AGG 835

Consulting Firm: Stemen Environmental

Driller or Trainee Name: Anisa Newman

Driller or Trainee Signature: Anisa Newman

Driller or Trainee License No.: 2508

If trainee, licensed driller's Signature and License no. ______

Site Address: 606 Union Ave.

City: Olympia County: Thurston

Location: NE 1/4-1/4 SW 1/4 Sec 26 Twn 18N R 2 EWM or WWM (circled)

Lat/Long (s, t, r still REQUIRED): Lat Deg ____ Lat Min/Sec ____ Long Deg ____ Long Min/Sec ____

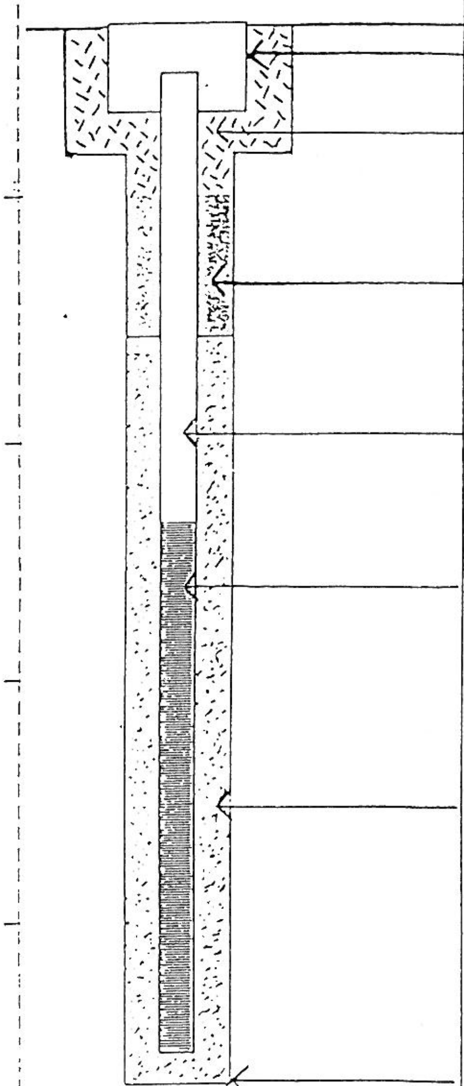
Tax Parcel No. ______

(Cased) or Uncased Diameter: 2" Static Level ______

(Work)/Decommission Start Date: 6/13/02

(Work)/Decommission Completed Date: 6/13/02

Construction/Design	Well Data	Formation Description



MONUMENT TYPE: flush mount

CONCRETE SURFACE SEAL: 0-1.0'

BACKFILL: 1.0'-9'
TYPE: bentonite chip

PVC BLANK: 0.5'-9'

PVC SCREEN: 10'-20'
SLOT SIZE: .010 slot
TYPE: 3/4" prepack screen

SAND PACK: 9'-20'
MATERIAL: 10/20 silica sand

WELL DEPTH: 20 feet

Scale 1"= ______

ECY 050-12 (Rev 2/01)

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission ("x" in circle)
⊗ Construction
○ Decommission *Original Construction Notice of Intent Number* _____

Type of Well ("x" in circle)
⊗ Resource Protection
○ Geotech Soil Boring

Property Owner Frank Burleson

Site Address 606 Union Ave.

Unique Ecology Well ID Tag No. AGG 836

City Olympia County: Thurston

Consulting Firm Stemen Environmental

Location NE 1/4 - 1/4 SW 1/4 Sec 26 Twn 18N R 2 E W M

Driller or Trainee Name Anisa Newman

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____

Driller or Trainee Signature Anisa Newman

Long Deg _____ Long Min/Sec _____

Driller or Trainee License No 2508

Tax Parcel No. _____

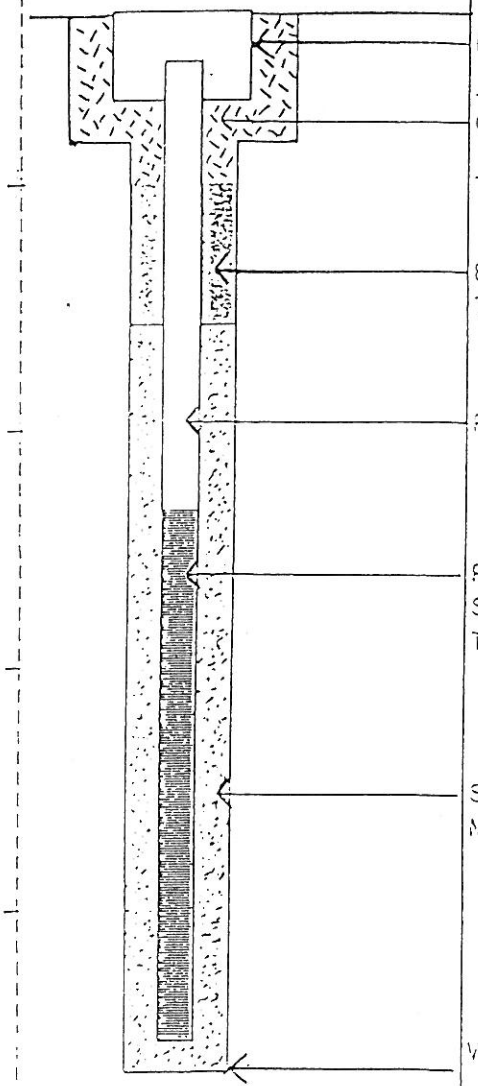
If trainee, licensed driller's Signature and License no. _____

Cased or Uncased Diameter 2" Static Level _____

Work/Decommission Start Date 6/13/02

Work/Decommission Completed Date 6/13/02

Construction/Design | Well Data | Formation Description



MONUMENT TYPE: flush mount

CONCRETE SURFACE SEAL: 0-1.0'

BACKFILL: 1.0' - 9'
TYPE: bentonite chip

PVC BLANK: 0.5-9'

PVC SCREEN: 10'-20'
SLOT SIZE: .010 slot
TYPE: 3/4" prepack screen

SAND PACK: 9'-20'
MATERIAL: 10/20 silica sand

WELL DEPTH: 20 feet

Scale 1"= _____

ECY 050-12 (Rev 2/01)

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission ("x" in circle)
⊗ Construction
○ Decommission *Original Construction Notice of Intent Number* _____

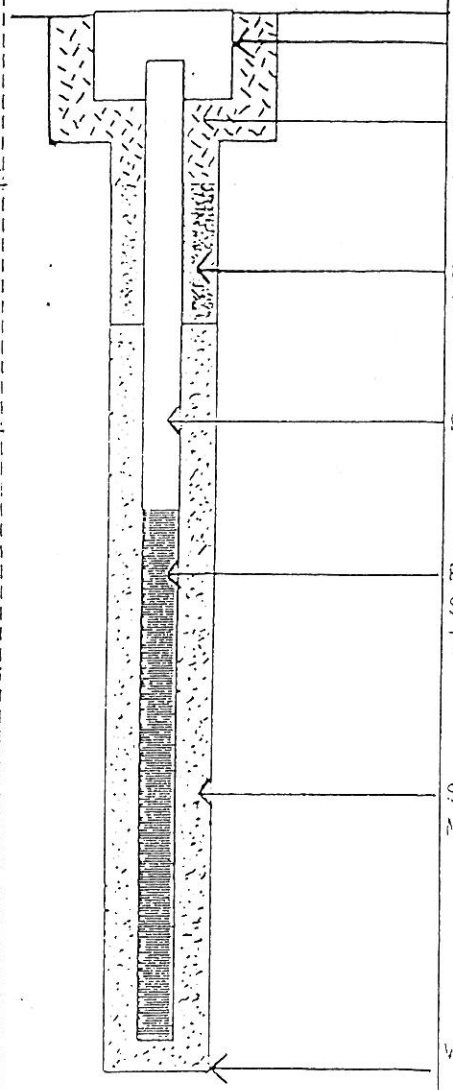
Type of Well ("x" in circle)
⊗ Resource Protection
○ Geotech Soil Boring

Property Owner: Frank Burleson
Unique Ecology Well ID Tag No.: AGG 837
Consulting Firm: Stemen Environmental
Driller or Trainee Name: Anisa Newman
Driller or Trainee Signature: Anisa Newman
Driller or Trainee License No: 2508

If trainee, licensed driller's Signature and License no. _____

Site Address: 606 Union Ave.
City: Olympia County: Thurston
Location NE 1/4 - 1/4 SW 1/4 Sec 26 Twn 18N R 2 EWM or WWM
Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____
Tax Parcel No. _____
Cased or Uncased Diameter 2" Static Level _____
Work/Decommission Start Date 6/13/02
Work/Decommission Completed Date 6/13/02

Construction/Design | Well Data | Formation Description



MONUMENT TYPE: flush mount
CONCRETE SURFACE SEAL: 0-1.0'
BACKFILL: 1.0'-9'
TYPE: bentonite chips
PVC BLANK: 0.5'-9'
PVC SCREEN: 10'-20'
SLOT SIZE: .010 slot
TYPE: 3/4" prepack screen
SAND PACK: 9'-20'
MATERIAL: 10/20 silica sand
WELL DEPTH: 20 feet

Scale 1"= _____

ECY 050-12 (Rev 2/01)

RESOURCE PROTECTION WELL REPORT

START CARD NO. RH6454 DECOMMISSION NO. _____

PROJECT NAME: Stemen Hoyards Dry Cleaner COUNTY: Thurston

WELL IDENTIFICATION NO. AFN 166 LOCATION: NE ¼ SW ¼ Sec 26 Twn 18N R 2W

DRILLING METHOD: Direct Push STREET ADDRESS OF WELL: 605 Union Alley SE

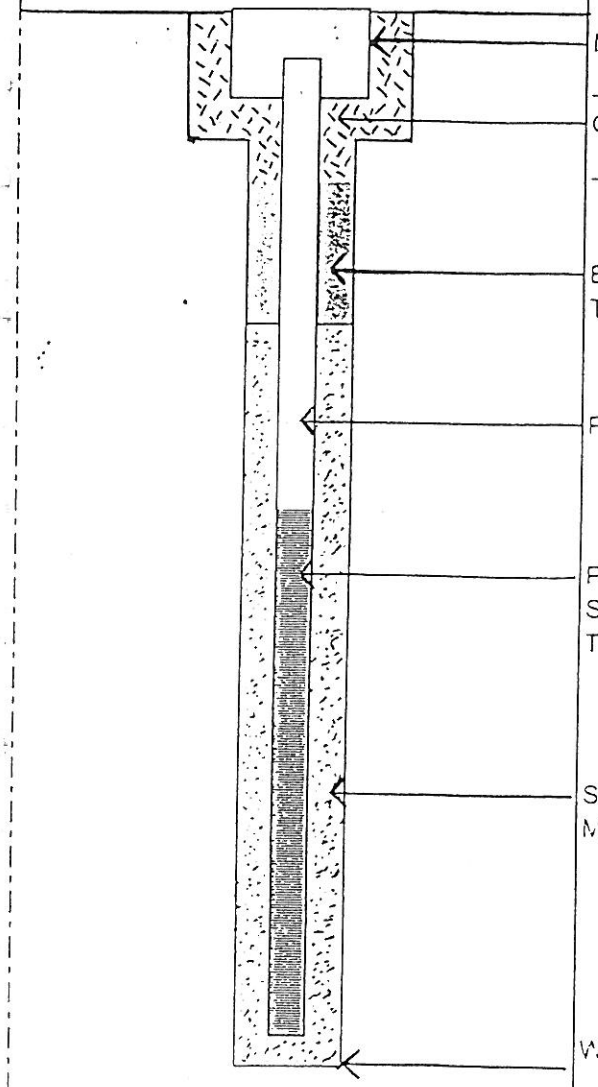
DRILLER: Kevin Vanderhoef Olympia WA 98501

FIRM: TEG Northwest, Inc. WATER LEVEL ELEVATION: 5'

SIGNATURE: [signature] GROUND SURFACE ELEVATION: Not Applicable

CONSULTING FIRM: Stemen Environ INSTALLED: 4/7/01

REPRESENTATIVE: Paul Stemen DEVELOPED: 4/9/01

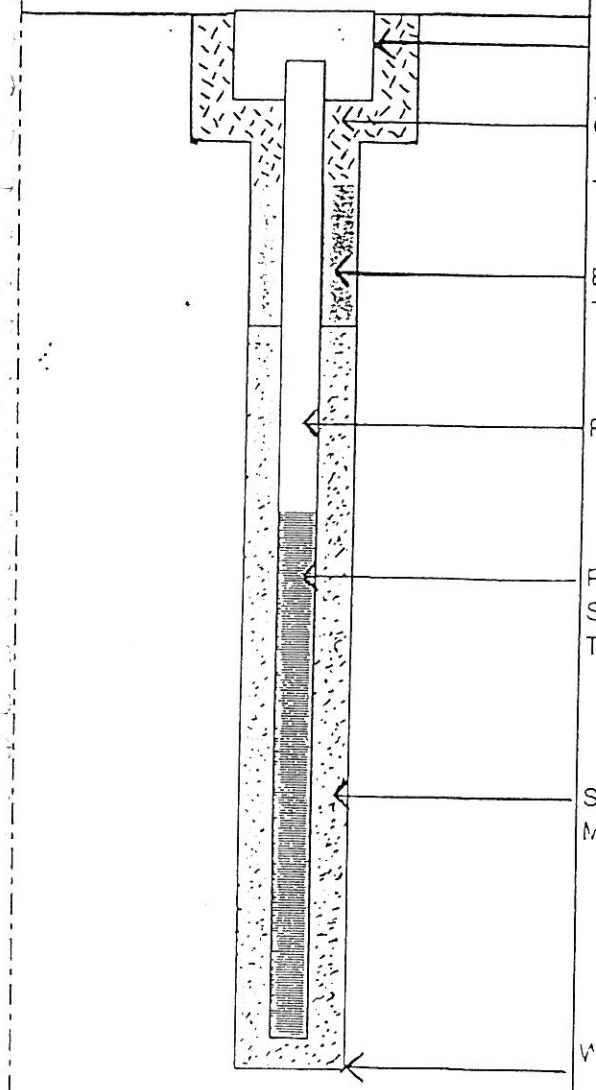
AS-BUILT	WELL DATA	FORMATION DESCRIPTION
	MONUMENT TYPE: Flush CONCRETE SURFACE SEAL: _____ BACKFILL: 4' TYPE: Bentonite Chip PVC BLANK: 5' x 3/4" PVC SCREEN: 3/4 x 15' SLOT SIZE: 10 TYPE: _____ SAND PACK: #2 Pack MATERIAL: 10/20 Silica WELL DEPTH: 15'	Silts + Fine Sand

RESOURCE PROTECTION WELL REPORT

START CARD NO. R46459 DECOMMISSION NO. _____

PROJECT NAME: Stellmen ~~Dry~~ Howards Dry Cleaner
WELL IDENTIFICATION NO. AFN 164
DRILLING METHOD: Direct Push
DRILLER: Kevin Vandehey
FIRM: TEG Northwest, Inc.
SIGNATURE: Kevin Vandehey
CONSULTING FIRM: Stellmen Environmental
REPRESENTATIVE: Paul Stellmen

COUNTY: Thurston
LOCATION: NE¼ SW¼ ¼ Sec 26 Twn 18N R 2W
STREET ADDRESS OF WELL: 606 Union Ave SE Olympia WA 98501
WATER LEVEL ELEVATION: 6.5'
GROUND SURFACE ELEVATION: Not Applicable
INSTALLED: 4/9/01
DEVELOPED: 4/9/01

AS-BUILT	WELL DATA	FORMATION DESCRIPTION
	MONUMENT TYPE: Flush CONCRETE SURFACE SEAL: _____ BACKFILL: 7' TYPE: Bentonite Chip PVC BLANK: ¾" x 8' PVC SCREEN: ¾" x 10' SLOT SIZE: 10# TYPE: _____ SAND PACK: #2 Lock MATERIAL: 12/20 Silica WELL DEPTH: 18'	Silts & Fine Sand

RESOURCE PROTECTION WELL REPORT

START CARD NO. RH6459 DECOMMISSION NO. _____

PROJECT NAME: Stroman Hardware Dry Cleaning COUNTY: Thurston

WELL IDENTIFICATION NO. AFW 167 LOCATION: NE ¼ SW ¼ Sec 26 Twn 18N R 2W

DRILLING METHOD: Direct Push STREET ADDRESS OF WELL: 606 Union Ave SE

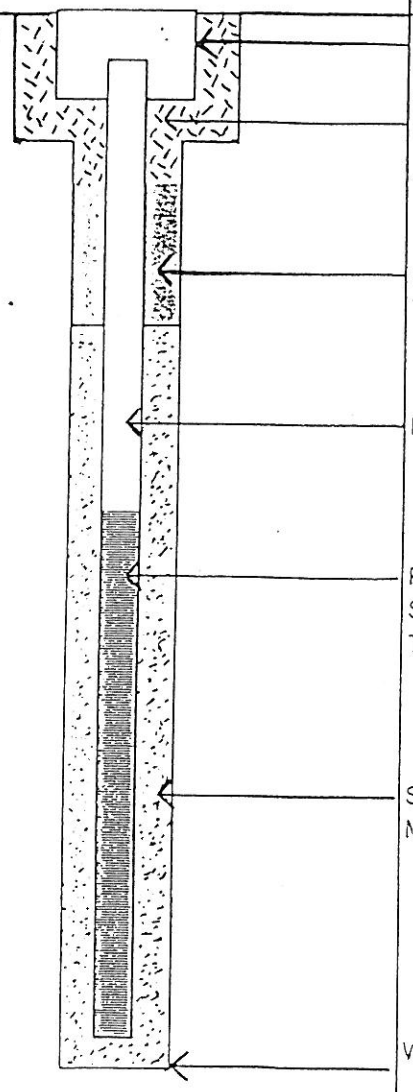
DRILLER: Kevin Underhay Olympia WA 98501

FIRM: TEG Northwest Inc. WATER LEVEL ELEVATION: 5'

SIGNATURE: _____ GROUND SURFACE ELEVATION: Not Applicable

CONSULTING FIRM: Stroman Envl INSTALLED: 4/9/01

REPRESENTATIVE: Paul Stroman DEVELOPED: 4/9/01

AS-BUILT	WELL DATA	FORMATION DESCRIPTION
	MONUMENT TYPE: Flush CONCRETE SURFACE SEAL: _____ BACKFILL: 3' TYPE: Bentonite Chip PVC BLANK: 4' x 3/4" PVC SCREEN: 3/4" x 5' SLOT SIZE: 10 TYPE: _____ SAND PACK: Pre-Pack MATERIAL: 10/20 Sand WELL DEPTH: 9'	Silts + Fine Sand

PAGE 2 OF 5

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT Notice of Intent No. R65173

Construction/Decommission *("x" in circle)*

⊗ Construction

○ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well *("x" in circle)*

⊗ Resource Protection

○ Geotech Soil Boring

Consulting Firm Stemen Environmental

Unique Ecology Well ID Tag No: ALA 246

Property Owner Frank Burleson

Site Address 606 Union Ave

City Olympia County: Thurston

Location NE 1/4 SW 1/4 Sec 26 Twn 18N R 2 EWM *circle one* or WWM

Lat/Long (s, t, r still REQUIRED) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

Tax Parcel No. _____

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee Name (Print) Kevin Vandehey

Driller/Engineer/Trainee Signature Anna Newman

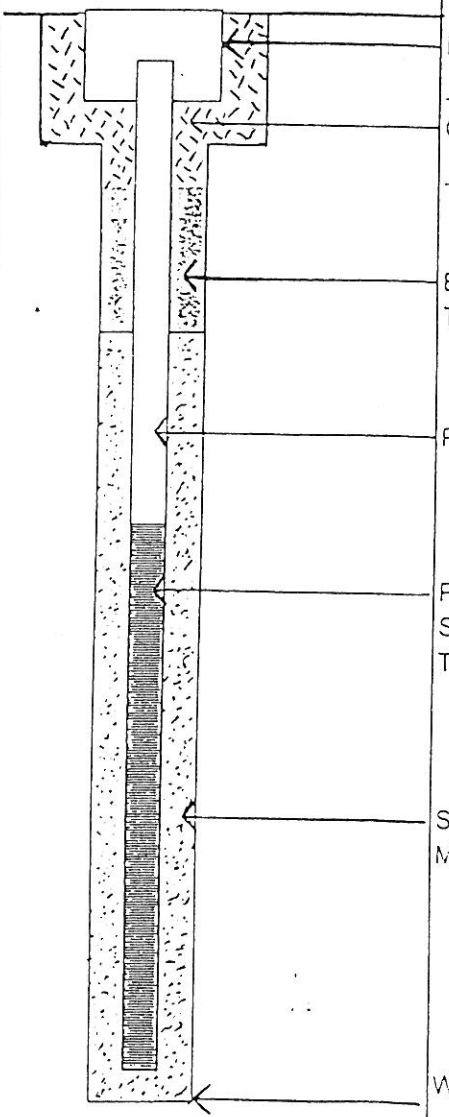
Driller or Trainee License No. 2338

Cased or Uncased Diameter 1" Static Level _____

Work/Decommission Start Date 2/30/01

Work/Decommission Completed Date 2/30/01

If trainee, licensed driller's Signature and License no. _____

Construction/Design	Well Data	Formation Description
	MONUMENT TYPE: 5" monument CONCRETE SURFACE SEAL: 0-1 BACKFILL: 1-2 TYPE: wyeben #8 PVC BLANK: 0.5-3 PVC SCREEN: 3-8' SLOT SIZE: .010 TYPE: 3/4" prepack screen SAND PACK: 2'-8' MATERIAL: 10/20 silica sand WELL DEPTH: 8	

Scale 1"= Page 1 of 1 ECY 050-12 (Rev 2/01)

NOTICE OF INTENT TO CONSTRUCT A MONITORING/RESOURCE PROTECTION WELL

Notification Number R 6517

WASHINGTON STATE DEPARTMENT OF ECOLOGY

This form and required fees MUST BE RECEIVED by the Department of Ecology 72 HOURS BEFORE you construct a well.

Submit one form and required fee (check or money order ONLY) for each job site. Instructions for filling out this form are printed on the back. **Mail this form to the Department of Ecology, P.O. Box 5128, Lacey, WA 98509-5128.**

NOTE: PLEASE PRINT ALL ANSWERS. PROCESSING YOUR NOTICE OF INTENT MAY BE DELAYED IF ALL FIELDS OUTLINED IN THE (BOXES) ARE NOT FILLED IN COMPLETELY.

1. Property Owner FRANK BURLESON Phone No. _____

Address (include city, state and zip) 1606 UNION AVE - OLYMPIA, WA

2. Consulting Firm (if different from #1) STEMEN Phone No. _____

Address (include city, state and zip) _____

01-Adams, 02-Asotin, 03-Benton, 04-Chelan, 05-Clallam, 06-Clark, 07-Columbia, 08-Cowlitz, 09-Douglas, 10-Ferry, 11-Franklin, 12-Garfield, 13-Grant, 14-Grays Harbor, 15-Island, 16-Jefferson, 17-King, 18-Kitsap, 19-Kittitas, 20-Klickitat, 21-Lewis, 22-Lincoln, 23-Mason, 24-Okanogan, 25-Pacific, 26-Pend Oreille, 27-Pierce, 28-San Juan, 29-Skagit, 30-Skamania, 31-Snohomish, 32-Spokane, 33-Stevens, 34-Thurston, 35-Wahkiakum, 36-Walla Walla, 37-Whatcom, 38-Whitman, 39-Yakima

3. Print CODE NUMBER and COUNTY NAME (e.g. 01-Adams) of well location from list above **(DO NOT ABBREVIATE)** 34 - THURSTON

4. Well Location: NE 1/4 of the SW 1/4 Section 26 Township 18N Range 2 EWM or (WWM) *(circle one)*

5. Approx construction start date 4/30/01

Latitude and Longitude (if available) NOTE: 1/4, 1/4, section, township and range are REQUIRED.

Lat Degrees _____ Lat Time _____ Horizontal collection method _____

Long Degrees _____ Long Time _____

6. Well Site Street Address 1606 UNION AVE.

7. Tax parcel number _____

8. Contractor L & I Registration No. ESNNW*17

9. Well Drilling Company Name ESN NW Phone No. (360) 459-4670

10. Well Driller Name KEVIN VANDEHEY License No. 2338

11. SEND THE ENTIRE FORM. The bottom portion of this notice will be validated in our office and sent back to the name and address contained on the address label. This is the proof of notification. Please fill out the portion below CAREFULLY.

NOTE: Please copy the Notification Number (located in the upper and lower right corner) and keep in a safe place. Please reference this number when communicating with the Department of Ecology.

Amt of payment: $40 per well

x 1 *Number of wells to be constructed on this job site*

$ 40.- *Total Due and Amt Enclosed*

This notification number must be provided to your well driller: R 65173

RETURN NAME AND MAILING ADDRESS

Name ESN Northwest

Address 677 Woodland Square Lp. SE, Suite D
Lacey, WA 98503-1045

City _____

Client Name STEMEN OIL

Agency Validation

CJ No. _____

Date _____

REV CODE 027-WEL1**-0287-000101

ECY 040-22 (Rev. 5/01)

Notification Number
R 050522

Notice of Intent to Construct a

MONITORING/RESOURCE PROTECTION WELL

This form *must* be received by the Department of Ecology with the required fees three days before your well is constructed. *Submit one form for each new well and submit one check or money order for each form, payable to the Department of Ecology, P.O. Box 5128, Lacey, WA 98509-5128. Do not send cash. Instructions for filling out this form are printed on the back.*

1. Property Owner Frank Burleson Phone No. _____
   Address (include city, state, zip) 606 Union Ave.
2. Agent (if different from #1): Stemen Environmental Phone No. _____
   Address (include city, state, zip) P.O. Box 3644; Lacey, WA 98509
3. Project Name Former Olympia Dry Cleaner
4. Well Location: NE 1/4 of the SW 1/4 Section 26 Township 18N Range 2 EWM or WWM *(circle one)*
   Address *(if known* 606 Union Ave.
5. Well Tag ID # AGG 835, 836, 837
6. Location of wells

☐ Adams County	01-ERO	☐ Grays Harbor County	14-SWR	☐ Pierce County	27-SWR
☐ Asotin County	02-ERO	☐ Island County	15-NWR	☐ San Juan County	28-NWR
☐ Benton County	03-CRO	☐ Jefferson County	16-SWR	☐ Skagit County	29-NWR
☐ Chelan County	04-CRO	☐ King County	17-NWR	☐ Skamania County	30-SWR
☐ Clallam County	05-SWR	☐ Kitsap County	18-NWR	☐ Snohomish County	31-NWR
☐ Clark County	06-SWR	☐ Kittitas County	19-CRO	☐ Spokane County	32-ERO
☐ Columbia County	07-ERO	☐ Klickitat County	20-CRO	☐ Stevens County	33-ERO
☐ Cowlitz County	08-SWR	☐ Lewis County	21-SWR	☒ Thurston County	34-SWR
☐ Douglas County	09-CRO	☐ Lincoln County	22-ERO	☐ Wahkiakum County	35-SWR
☐ Ferry County	10-ERO	☐ Mason County	23-SWR	☐ Walla Walla County	36-ERO
☐ Franklin County	11-ERO	☐ Okanogan County	24-CRO	☐ Whatcom County	37-NWR
☐ Garfield County	12-ERO	☐ Pacific County	25-SWR	☐ Whitman County	38-ERO
☐ Grant County	13-ERO	☐ Pend Oreille County	26-ERO	☐ Yakima County	39-CRO

7. Will the intended withdrawal from this well exceed 5000 gallons per day? (check one) ☐ Yes (Copy of Water Right Permit attached) ☒ No
8. Well Drilling Co: ESN-NW Phone: (360) 459-4670
9. Well Driller's Name Name: Anisa Newman Driller's License # 2508
10. Approx well construction date: 6-13-02 11. Contractor's :L & I Registration No #: N/A
12. Please fill out the portion below carefully. The return address label must contain the name and address of the person submitting the notification payment. This portion will be validated and returned to them as proof of payment. Send the entire form and check or money order payable to Dept. of Ecology, P.O. Box 5128, Lacey, WA 98509-5128

This notification number must be provided to your well driller:

Amount of payment: $40.00 per well

x 3 Number of wells to be constructed on this job site

$ 120.- Total Due and Amount Enclosed

Submitted By (return address)

Name ESN Northwest

Mailing Add 677 Woodland Square Lp. SE, Suite D

City Lacey, WA 98503-1045

AN R 050522 Stemen

Agency Validation

CJ# _____

Date: _____

ECY 040-22 (Rev. 2/99)

Notification Number R 46459

Notice of Intent to Construct a

MONITORING/RESOURCE PROTECTION WELL

This form must be received by the Department of Ecology with the required fees 72 hours before your well is constructed. Submit one form for each new well and submit one check or money order for each form, payable to the Department of Ecology, P.O. Box 5128, Lacey, WA 98509-5128. Do not send cash. Instructions for filling out this form are printed on the back.

1. Property Owner FRANK BURLESON Phone No. _____
   Address (include city, state, zip) 606 UNION AVE
2. Agent (if different from #1) STEMEN ENVIROMENTAL Phone No. _____
   Address (include city, state, zip) _____
3. Project Name HOWARD'S CLEANERS
4. Well location: NE 1/4 of the SW 1/4 Section 26 Township 18N Range 2W EWM or WWM *(circle one)*
   Address (if known) 606 UNION AVE
5. Well Tag ID # AFN-164, AFN-166, AFN167
6. Location of wells

☐ Adams County	01-ERO	☐ Grays Harbor County	14-SWR	☐ Pierce County	27-SWR
☐ Asotin County	02-ERO	☐ Island County	15-NWR	☐ San Juan County	28-NWR
☐ Benton County	03-CRO	☐ Jefferson County	16-SWR	☐ Skagit County	29-NWR
☐ Chelan County	04-CRO	☐ King County	17-NWR	☐ Skamania County	30-SWR
☐ Clallam County	05-SWR	☐ Kitsap County	18-NWR	☐ Snohomish County	31-NWR
☐ Clark County	06-SWR	☐ Kittitas County	19-CRO	☐ Spokane County	32-ERO
☐ Columbia County	07-ERO	☐ Klickitat County	20-CRO	☐ Stevens County	33-ERO
☐ Cowlitz County	08-SWR	☐ Lewis County	21-SWR	☒ Thurston County	34-SWR
☐ Douglas County	09-CRO	☐ Lincoln County	22-ERO	☐ Wahkiakum County	35-SWR
☐ Ferry County	10-ERO	☐ Mason County	23-SWR	☐ Walla Walla County	36-ERO
☐ Franklin County	11-ERO	☐ Okanogan County	24-CRO	☐ Whatcom County	37-NWR
☐ Garfield County	12-ERO	☐ Pacific County	25-SWR	☐ Whitman County	38-ERO
☐ Grant County	13-ERO	☐ Pend Oreille County	26-ERO	☐ Yakima County	39-CRO

7. Will the intended withdrawal from this well exceed 5000 gallons per day? (check one) ☐ Yes (Copy of Water Right Permit Attached) ☒ No
8. Well Drilling Co ESN Phone No 360-459-4670
9. Well Driller's Name STEVE SCHULTZ Driller's License No T-2574
10. Approx Well Construction Date 4-09-01 11. Contractor's L & I Registration No N/A
12. Please fill out the portion below carefully. The return address label must contain the name and address of the person submitting this notification. This portion will be validated and returned to them as proof of notification. Send the entire form to Department of Ecology, Cashiering Section, P.O. Box 5128, Lacey, WA 98509-5128.

This notification number must be provided to your well driller:

A - 53760
R 46459

Amount of payment: $40.00 per well:
x 3 Number of wells to be constructed on this job site
=$ 120 Total Due and Amount Enclosed (SS)
Submitted by (return address) STEMEN ENVII

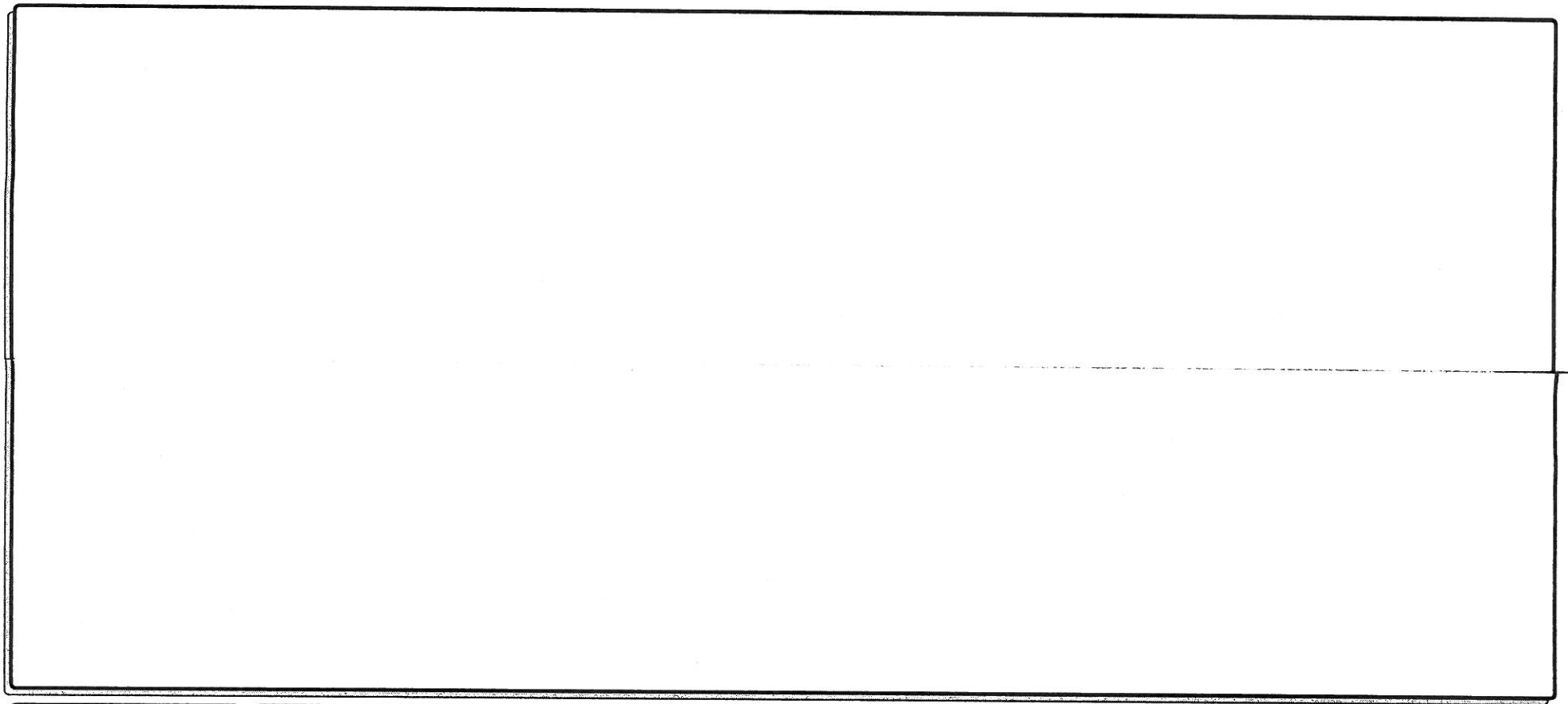
Name ESN Northwest, Inc.
Mailing Address 677 Woodland Square Lp. SE, Suite D
City Lacey, WA 98503-1045

Agency Validation
CJ#_____
Date_____

ECY 040-22 (1/98)
REV CODE WDLIC 027 02 87 000101

APPENDIX B
MAPS

Z:\Stemen Enviromental\041161 - Olympia Cleaners\041161- C01.0.dwg, 02/04/2005 11:06:15 AM, FINE/LINE Technical Services, inc. (360) 956-0885



Sheet: C1.0

CAD File: 041161

Date: 12-28-04

Designed:

Drawn: P.T.V.

Sheet Contents: SITE PLAN

Project Title: **OLYMPIA DRY CLEANER**
OLYMPIA, WASHINGTON

Prepared By:
FINE/LINE
TECHNICAL SERVICES, Inc.
614 East 4th Ave. Olympia, Washington 98501
360-956-0885 Business Fax 360-956-0221
E-Mail: fineline@finelinets.com
www.finelinets.com

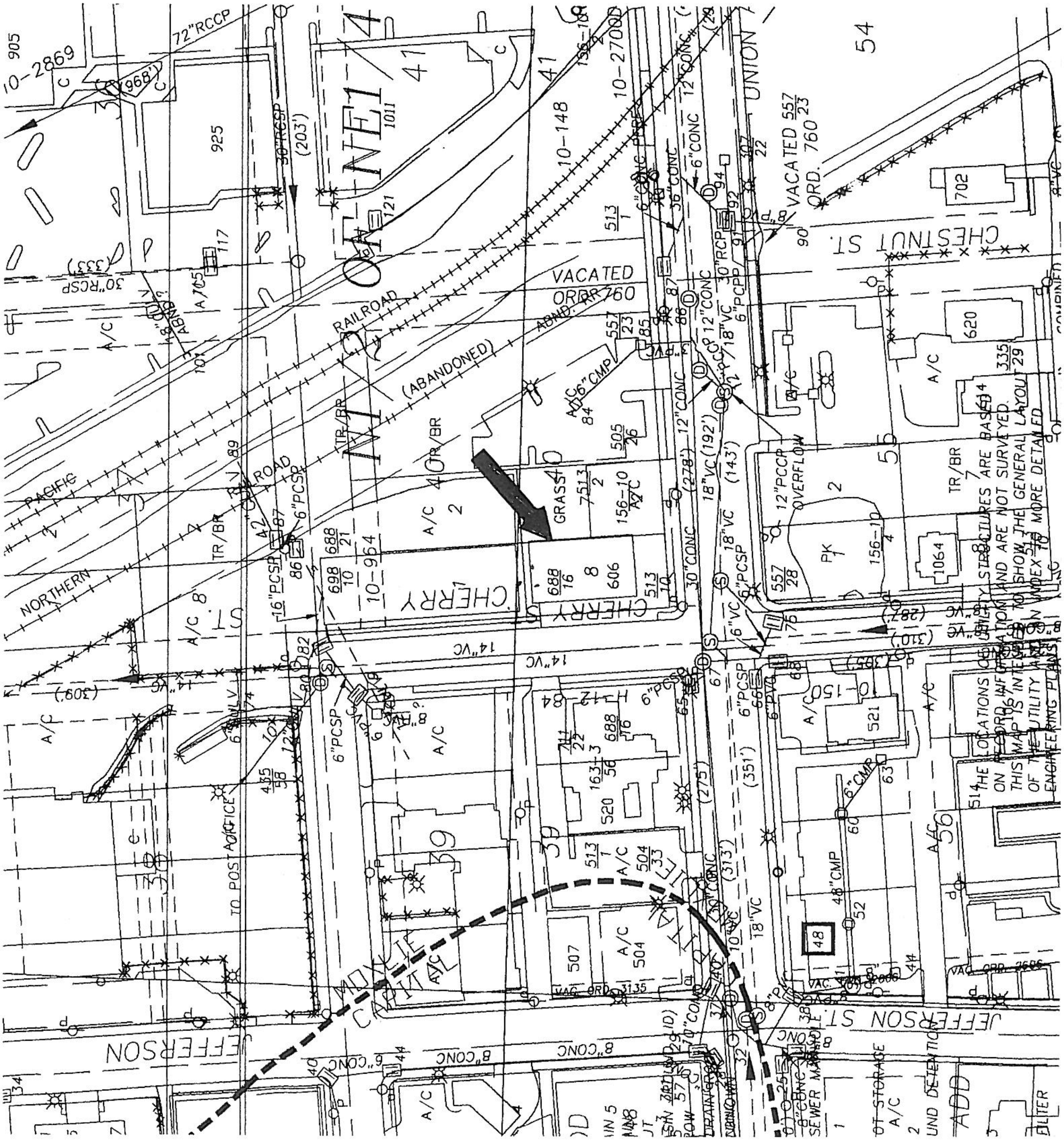
Client: **STEMEN ENVIROMENTAL**

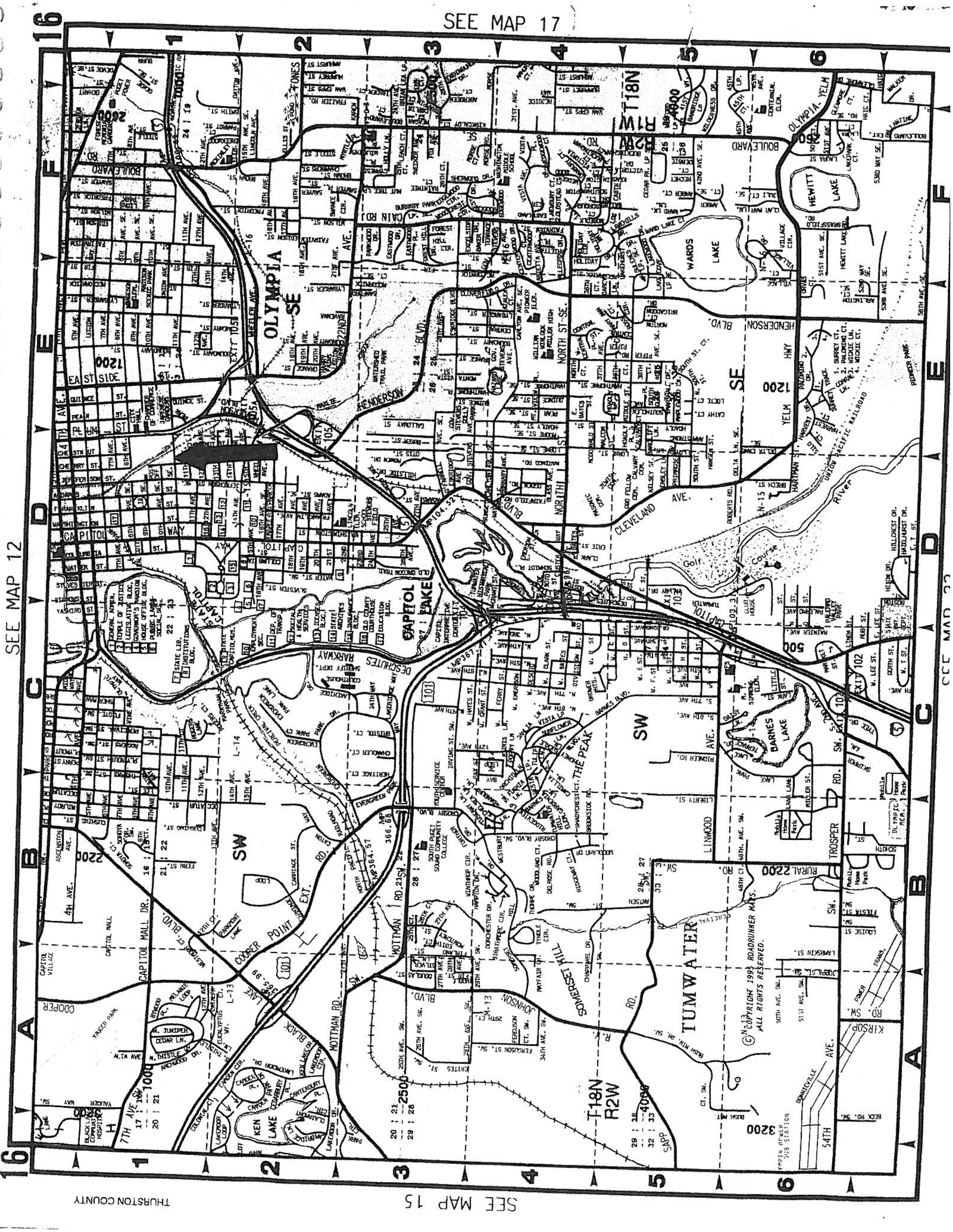
Revisions:

REFERENCE ONLY

The information shown is NOT INTENDED FOR ACCURACY and is provided for information and reference only. Interpretation of the information represented is reserved to the City Engineer or their authorized representative.

Otherwise, information accuracy will be determined by your engineer through field verification.




SEE MAP 17
SEE MAP 12
SEE MAP 15
SEE MAP 22
16
OLYMPIA
SE
SW
TUMWATER
CAPITOL LAKE
HENDERSON BLVD.
CAPITOL WAY
CLEVELAND AVE.
DESCHUTES PARKWAY
COOPER POINT RD.
CAPITOL MALL DR.
BLACK LAKE BLVD.
MOTTMAN RD.
SOMERSET HILL
THE PEAK
WARDS LAKE
HEWITT LAKE
BARNES LAKE
KEN LAKE
GOLF COURSE
UNION PACIFIC RAILROAD
T18N R2W
T18N R1W
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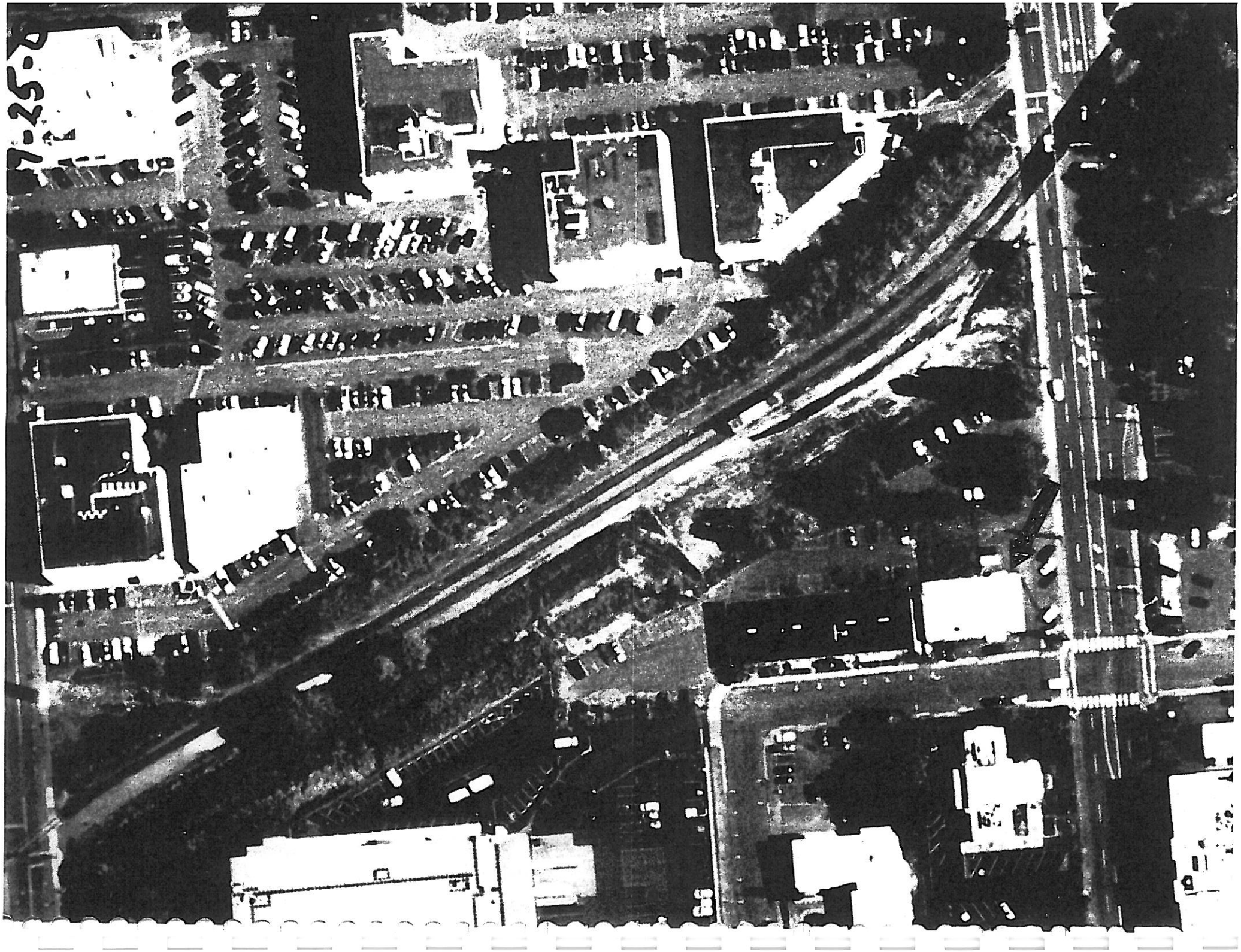
APPENDIX C
AERIAL & SITE PHOTOS


4-81
SP-81 5-29-3



Washington State Department of Transportation
Douglas B. MacDonald
Secretary of Transportation

Strategic Planning and Programming Division
Geographic Services Office
1655 So. 2nd Ave. SW, Tumwater, WA 98512-6951
PO Box 47384, Olympia, WA 98504-7384
360-709-5500 / Fax 360-709-5599
TTY: 1-800-833-6388
www.wsdot.wa.gov

Date February 8, 2005

To whom it may concern:

Paul Stemen is/are authorized to

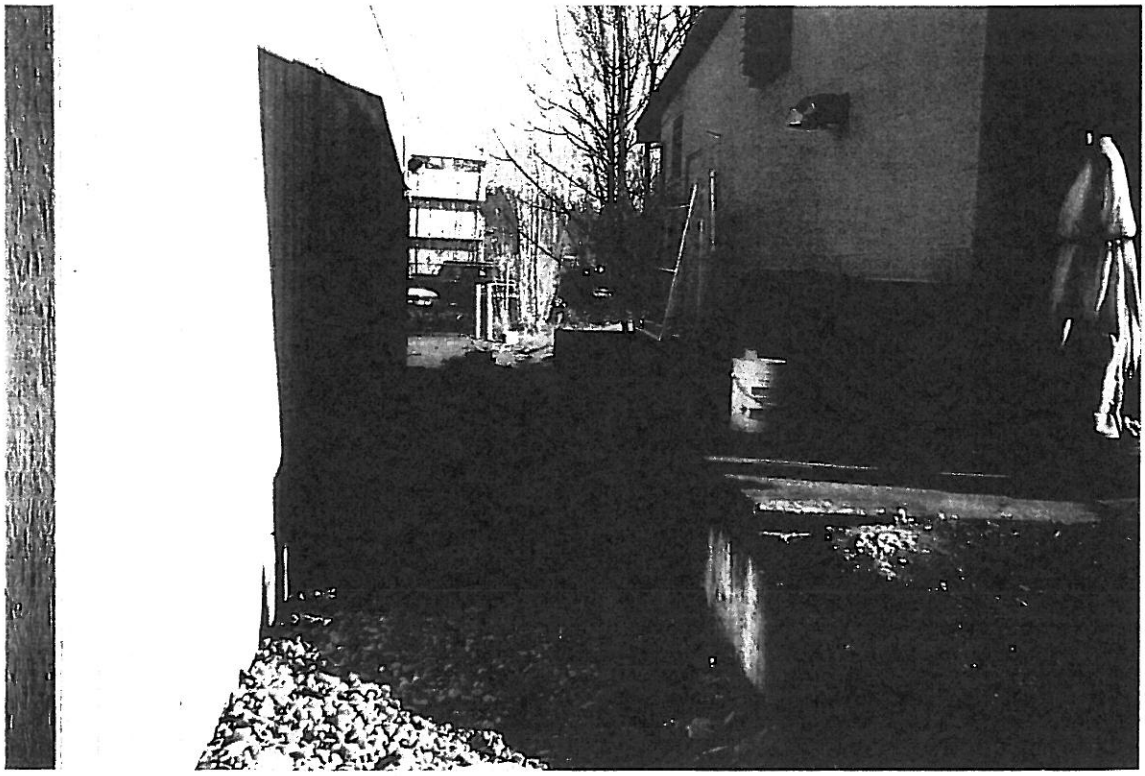
reproduce the WSDOT copyrighted images: 9-25-03 1:18,000 3401-0-19 2-8 (1"=100'); for *internal use and not for resale.*

Vern Potts 2/8/05

Vern Potts - Manager Aerial Photography Branch Date
Washington State Department of Transportation

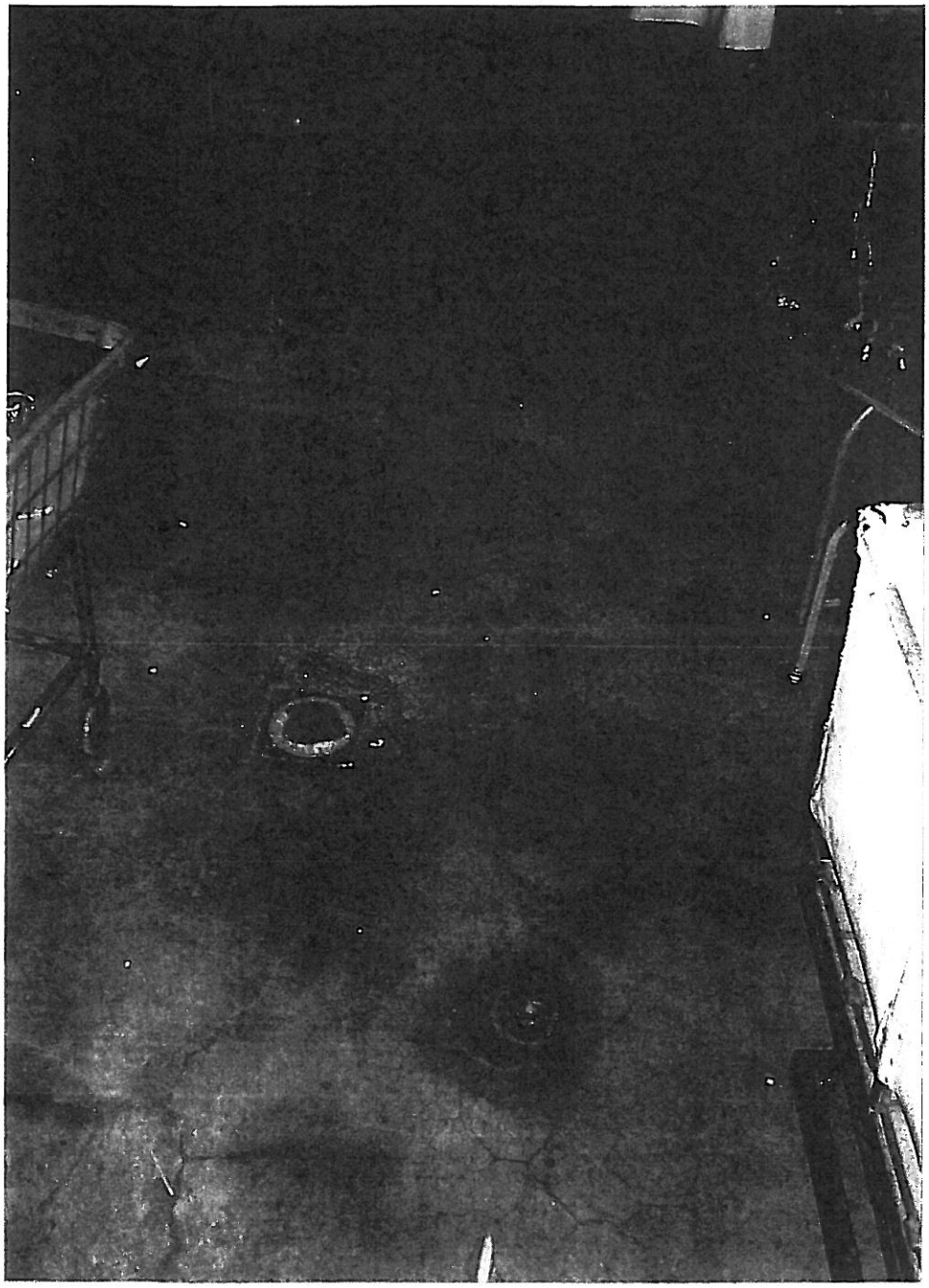
SITE PHOTOS

FORMER OLYMPIA DRY CLEANERS BUILDING



FRENCH DRAIN AREA

SITE PHOTOS



INTERIOR FLOOR DRAIN AND MONITORY WELL #3

SITE PHOTOS

LOCATION OF MONITORING WELL #7

MONITORING WELLS #2 AND #5 AND CHERRY STREET SEEP AREA

APPENDIX D
ADDITIONAL REPORTS

INTERIM REMEDIAL INVESTIGATION REPORT

FORMER OLYMPIA DRY CLEANERS SITE
606 EAST UNION AVENUE
OLYMPIA, WASHINGTON

Prepared By

Paul W. Stemen

Stemen Environmental, Inc.

STEMEN ENVIRONMENTAL, INC.

P.O. BOX 3644
LACEY, WASHINGTON 98509-3644
CONTR. LIC. #STEMEEI081J9

Telephone 360-438-9521 Fax 360-412-1225

August 5, 2001

Mr. Bob Warren
Ecology's Toxics Clean Up Program
P.O. Box 47775
Olympia, Washington 98504-7775

Dear Mr. Warren:

RE: INTERIM REMEDIAL INVESTIGATION REPORT FOR FORMER OLYMPIA DRY CLEANERS SITE LOCATED AT 606 EAST UNION AVENUE, OLYMPIA, WASHINGTON

SITE CHARACTERISTICS AND HISTORY

The subject property, Tax Parcel #78204000800, consists of approximately .16 acres of developed commercial property. The subject property is located in the section 23, township 18 north, range 2 west, and is located within the boundaries of the City of Olympia, and Thurston County, Washington.

The subject property is bordered on the north by a commercial office building, on the east by an asphalt surfaced parking lot, on the west by Cherry Street, an asphalt surfaced roadway, and on the south by Union Avenue S.E., an asphalt surfaced public roadway.

The property is currently occupied by an approximately 5,000 square foot commercial building which was built in 1970. The commercial building is surrounded by asphalt surfaced parking areas on the western and southern sides, a grass covered area is present on the eastern portion of the property, and a commercial office building is present on the neighboring property to the north. The asphalt surfaced area present along the western portion of the property slopes downward from the base of the building to the sidewalk. A French drain/drain rock filled shallow drainage ditch runs along the northern perimeter of the subject property and separates it from the northerly neighboring property.

Olympia Dry Cleaners, a full service dry cleaning business, was operated continuously for approximately twenty five (25) years on the site. Mr. Frank Burleson, the current owner of the property, operated the on-site dry cleaning facility for the first eleven years, and Mr. Gaylord Bolton leased the site from Mr. Burleson for the next approximately fourteen (14) years.

Approximately five (5) years ago the dry cleaning equipment on this site was placed "out of service". Currently and for the past five (5) years the site has been operated by Howard's Cleaners as a shirt washing, shirt pressing, and a drop off facility for an off-site dry cleaning operation.

In May of 1995, a Phase II Environmental Site Assessment was performed on this site by Mr. Scott Clark of Conrex Inc. During a preliminary on-site visit Mr. Clark observed staining on the raised concrete walkway located along the northern exterior wall of the on-site building. Based on these observations, Mr. Clark proceeded to obtain a total of six (6) discreet groundwater samples and seven (7) discreet soil samples from selected locations on the subject property. These soil and groundwater samples were obtained on two separate sampling occasions.

All samples were immediately submitted for appropriate laboratory analyses. All soil and groundwater samples were screened for gasoline, diesel fuel, and heavy oil range T.P.H. (total petroleum hydrocarbons) as well as Specific Halogenated Hydrocarbons.

Laboratory analyses results for the obtained groundwater samples confirmed the presence of gasoline and heavy oil range T.P.H., Tetrachloroethene (PCE), Trichloroethene, and 1,2 Dichloroethene at levels that exceeded the Department of Ecology's Method "A" Clean Up Levels in these sampled groundwaters.

Laboratory analyses results for the obtained soil samples confirmed the presence of heavy oil range T.P.H. and Tetrachloroethene at levels exceeding the Department of Ecology's Method "A" Clean Up Levels in the subsurface soils present at selected locations on the subject site.

Mr. Clark stated that based on the results of these initial sampling results it appears that the soils at selected locations did not appear to be heavily contaminated while the groundwaters had been effected. Mr. Clark also reported that the apparent direction of groundwater flow beneath this site was to the north/northeast.

On November 23, 1999, the Thurston County Health Department obtained and submitted for appropriate laboratory analyses, two (2) water samples. The water samples were obtained from a groundwater interception ditch located down gradient from and along the edge of the neighboring property to the north.

Laboratory analyses results for these two (2) water samples confirmed the presence of Vinyl Chloride at levels that exceed the Department of Ecology's Method "A" Clean Up Levels in the waters present at their two respective off-site sampling locations. These laboratory analyses results indicated that waters impacted by Specific Halogenated Hydrocarbons were migrating off-site from the up gradient Former Olympia Dry Cleaners Site.

Agreed order # DE00TCPHQ-1408 was issued by the Department of Ecology and agreed to by Mr. Burleson. This order required that a Remedial Investigation Work Plan be submitted to the Department of Ecology and that the proposed Remedial Investigation of the subject property be performed with the Department of Ecology's oversight.

During my first few visits to the site, with various interested parties, I observed the presence of water in the earthen surfaced drainage/interceptor ditch located along the eastern perimeter of the northerly neighboring property. It was believed that waters that flowed through the subject properties French drain were eventually discharged into the northern end of this drainage/interceptor ditch. It appeared that the waters then entered an enclosed underground drainage pipe and were transported to an earthen surfaced drainage swale which runs along western edge of the current railroad "right of way", which is located east of the subject property.

During site visits, after the recent earthquake, it was noticed that no waters were present in the earthen surfaced drainage/interceptor ditch which runs along the eastern edge of the northerly neighboring property. Also it should be noted that just after the earthquake, flooding on portions of the northerly neighboring property necessitated the performance of emergency repairs on the underground stormwater pipes located directly down gradient from the interceptor/drainage ditch. As part of the emergency repairs project, an earthen surfaced channel was excavated/created through the bermed former railroad "right of way" which runs along the western side of the current railroad "right of way". Upon the completion of these emergency repairs, the flooding on the neighboring property subsided.

During these various on-site visits, I also noticed that the asphalt surface materials present in the areas directly outside the rear door of the on-site building and extending toward the northwest corner of the property, appeared to be aged/distressed/etched to a greater extent than the asphalt surfaces in surrounding areas of the property. The area of this impacted asphalt extended from the rear door to the area where Mr. Clark found the highest concentrations of Specific Halogenated Hydrocarbons, during his on-site investigations in 1995.

A Remedial Investigation Work Plan was submitted to the Department of Ecology. The work plan proposed the sampling of the subsurface soils and groundwaters at selected locations on the subject property and on the neighboring, reportedly down gradient, commercial property located just north of the subject property. The work plan also proposed the installation of a minimum of three (3) groundwater monitoring wells at selected locations on the subject property and one (1) groundwater monitoring well on the adjacent property to the north. As requested, by Mr. Patrick Soderberg of the Thurston County Health Department, a sampling of the surface soils near the northeast corner of the on-site building was included in the work plan.

Soils present at the majority of the sampling locations on this site consisted of dark colored marine silts/clays which were present at depths ranging from just below the surface to depths greater than 16 feet b.g.s. A few discontinued sand lenses were present at depths ranging from 14 to 16 feet b.g.s. at selected sampling locations. Soils which appeared to be imported fill materials were found at selected locations on the neighboring property to the north.

In conversations with persons familiar with the sites history, it was indicated that they believed that imported fill materials were brought onto the subject property, prior to the construction of the on-site building.

Depth to groundwater beneath this site was approximately 1 to 6 feet b.g.s. on the date of these on-site investigative sampling activities.

Direction of groundwater flow beneath this site was not conclusively determined during these initial on-site investigations.

REMEDIAL INVESTIGATIVE SOIL AND GROUNDWATER SAMPLING

Prior to the commencement of any on-site soil boring activities, all underground utilities on the subject property and surrounding properties were located/identified/marked by a professional locating service company.

Additionally, I was granted permission by the owners of the northerly neighboring property to perform surface/subsurface sampling activities on their property.

On April 9, 2001, I proceeded to obtain fourteen (14) discreet soil samples, one (1) surface soil sample and five (5) discreet groundwater samples from ten (10) separate selected sampling locations on the subject property and/or neighboring properties. Additionally Mr. Gerald Tousley of The Thurston County Health Department obtained three (3) surface water samples from three (3) separate selected locations, along the earthen surfaced stormwater drainage swale, located approximately 250 feet east of the subject property.

On April 27, May 1, and May 2, 2001, I proceeded to obtain an additional four (4) soil, one (1) drainwater, one (1) stormwater, and five (5) groundwater samples from selected on-site/off-site locations. These additional soil and water samples will assist in the further characterization of the current conditions on the subject property and the surrounding properties.

SAMPLING LOCATION SS-1

Sampling location SS-1 was located approximately 5 feet south and 8 feet east of the northeast corner the commercial building present on the subject property. Investigative soil sample SS-1 was obtained from soil present at depths ranging from 0 to 3 inches b.g.s. This sampling location was located directly beneath a pair of exhaust pipes mounted on the adjacent buildings roof. The grass on the surface at this sampling location was brownish in color while the surrounding grasses were lush and green in color.

SAMPLING LOCATION #1

Sampling location #1 was located near the southwest corner of the subject property. A continuous soil boring was advanced to a depth of approximately 18 feet below ground surface at this sampling location. Sand lenses of varying thickness were observed in the soil corings obtained at depths ranging from approximately 14 to 16 feet b.g.s. at this location. Significant quantities of groundwater were not noticed until the boring was advanced to depths greater than 12 feet b.g.s.

Investigative soil sample S-1-14 was obtained from subsurface soils present at a depth of 14 feet b.g.s. at this sampling location and was submitted for appropriate laboratory analyses.

Groundwater monitoring well MW-1 was installed at this sampling location and was screened at depths ranging from 8 to 18 feet b.g.s

The monitoring well was properly purged and then groundwater sample MW-1 was obtained from waters that stabilized at a depth of approximately 6.5 feet b.g.s. at this sampling location.

SAMPLING LOCATION #2

Sampling location #2 was located approximately 10 feet south of northwest corner of the subject property. The asphalt surface materials surrounding this sampling location were etched/distressed/aged in appearance. A continuous soil boring was advanced to a depth of approximately 9 feet below ground surface at this sampling location. Groundwaters overflowed out of the top of the sampling tub when the boring was advanced to depths of approximately 3 feet b.g.s. or less. The soil boring was eventually advanced to a depth of 9 feet b.g.s.

Investigative soil sample S-2-0/3 was obtained from subsurface soils present at a depth of 3 feet b.g.s. while investigative soil sample S-2-6 was obtained from subsurface soils present at a depth of 6 feet b.g.s. at this sampling location .

Groundwater monitoring well MW-2 was installed at this sampling location and was screened at depths ranging from 4 to 9 feet b.g.s

The monitoring well was properly purged and then groundwater sample MW-2 was obtained from waters that stabilized at the top of the monitoring well tube.

It should be noted that the recharged rate of waters flowing back into the monitoring well at this location was very slow.

SAMPLING LOCATION #3

Soil sampling location #3 was located approximately 20 feet north and 5 feet east of sampling location S-1. This sampling location was situated in a planter box area present on the southwest corner of the northerly neighboring property. The soil boring was advanced to a depth of 8 feet b.g.s.

Investigative soil sample S-3 was obtain from subsurface soils present at a depths ranging from 4 to 8 feet b.g.s. at this sampling location.

SAMPLING LOCATION #4

Soil sampling location S-4 was located on the southeast portion of the northerly neighboring property. This sampling location was situated in the southeast portion of the asphalt surfaced parking lot. The soil boring at this location was advanced to a depth of 15 feet b.g.s.

Investigative soil sample S-4-4/8 was obtained from subsurface soils present at a depth of 8 feet b.g.s., soil sample S-4-8/13 was obtained from soils present a depth of 11 feet b.g.s., and soil sample S-4-15 was obtained from subsurface soils present at a depth of 15 feet b.g.s. at this sampling location and was submitted for appropriate laboratory analyses.

Groundwater monitoring well MW-4 was installed at this sampling location and was screened at depths ranging from 5 to 15 feet b.g.s.

The monitoring well was properly purged and then groundwater sample MW-4 was obtained from waters that stabilized at an approximate depth of 5 feet b.g.s at this sampling location.

SAMPLING LOCATION #8

Sampling location #8 was located approximately 40 feet southwest of sampling location. #4. Shallow subsurface soils present at this sampling location consisted of imported fill materials intermixed with small pieces of red bricks. The soil boring was advanced to an approximate depth of 12 feet b.g.s. at this sampling location.

Soil sample S-8-4/8 was obtained from imported fill materials present at depths ranging from 4 to 8 feet b.g.s., while soil sample S-8-8/12 was obtained from native dark colored silty materials present at a depth of 10 feet b.g.s.

SAMPLING LOCATION #9

Soil sampling location #9 was placed approximately 10 feet west of the eastern end of the on-site French drain. A counties soil coring was extended vertically to an approximate depth of 12 feet b.g.s. at this sampling location. Soil sample S-9-0/4 was obtained from peat materials

intermixed with small gravels and gray colored marine clays, while soil sample S-9-8/12 was obtained from gray colored marine clays.

Groundwater sample S-9-W was obtained from waters that stabilized at an approximate depth of 4 feet b.g.s. at this sampling location and was immediately submitted for appropriate laboratory analyses.

SAMPLING LOCATION #10

Sampling location #10 was located in the central portion of the on-site French drain. Soil sample S-10-0/6 was obtained from soils present at depths of less than 6 inches b.g.s. on the sloped northern sidewall of the drainage ditch while soil sample S-10-36 was obtained from soils present at an approximate depth of 36 inches b.g.s. at the same sampling location.

Groundwater sample S-10-W was obtained from the pooled waters present in the drainage ditch when the drain rock was pulled aside from the sampling area. The bottom of this drainage ditch was lined with visqueen, which appears to be weather deteriorated at some locations.

SAMPLING LOCATION S-11

Soil sampling location S-11 was located approximately 25 feet north of sampling location S-3. Investigative soil sample S-11-4/8 was obtained from subsurface soils present at a depth of 8 feet b.g.s. at this sampling location.

Groundwater sample S-11-W was obtained from waters present at an approximate depth of 4 feet b.g.s. at this sampling location.

SAMPLING LOCATION #12

Soil sampling location # 12 was located approximately 3 feet north and 5 feet east of the northwestern corner of the on-site building and on the western portion of the elevated concrete walkway. A continuos soil boring was extended to an approximate depth of 14 feet b.g.s. at this sampling location. Investigative soil sample S-12 was obtained from subsurface soils present at an approximate depth of 8 feet b.g.s.

Groundwater sample S-12-W was obtained from waters present a depth of approximately 9 feet below the concrete surface at this sampling location.

SAMPLING LOCATION #13

Sampling location #13 was located approximately 25 feet east of sampling location #12. . A continuos soil boring was extended to an approximate depth of 14 feet b.g.s. at this sampling location. Investigative soil sample S-13 was obtained from soils present at a depth of 6 feet b.g.s. at this sampling location.

intermixed with small gravels and gray colored marine clays, while soil sample S-9-8/12 was obtained from gray colored marine clays.

Groundwater sample S-9-W was obtained from waters that stabilized at an approximate depth of 4 feet b.g.s. at this sampling location and was immediately submitted for appropriate laboratory analyses.

SAMPLING LOCATION #10

Sampling location #10 was located in the central portion of the on-site French drain. Soil sample S-10-0/6 was obtained from soils present at depths of less than 6 inches b.g.s. on the sloped northern sidewall of the drainage ditch while soil sample S-10-36 was obtained from soils present at an approximate depth of 36 inches b.g.s. at the same sampling location.

Groundwater sample S-10-W was obtained from the pooled waters present in the drainage ditch when the drain rock was pulled aside from the sampling area. The bottom of this drainage ditch was lined with visqueen, which appears to be weather deteriorated at some locations.

SAMPLING LOCATION S-11

Soil sampling location S-11 was located approximately 25 feet north of sampling location S-3. Investigative soil sample S-11-4/8 was obtained from subsurface soils present at a depth of 8 feet b.g.s. at this sampling location.

Groundwater sample S-11-W was obtained from waters present at an approximate depth of 4 feet b.g.s. at this sampling location.

SAMPLING LOCATION #12

Soil sampling location # 12 was located approximately 3 feet north and 5 feet east of the northwestern corner of the on-site building and on the western portion of the elevated concrete walkway. A continuos soil boring was extended to an approximate depth of 14 feet b.g.s. at this sampling location. Investigative soil sample S-12 was obtained from subsurface soils present at an approximate depth of 8 feet b.g.s.

Groundwater sample S-12-W was obtained from waters present a depth of approximately 9 feet below the concrete surface at this sampling location.

SAMPLING LOCATION #13

Sampling location #13 was located approximately 25 feet east of sampling location #12. . A continuos soil boring was extended to an approximate depth of 14 feet b.g.s. at this sampling location. Investigative soil sample S-13 was obtained from soils present at a depth of 6 feet b.g.s. at this sampling location.

SAMPLING LOCATION CHERRY SW

This sampling location was situated near the up gradient side of the storm drain located on the eastern side of the Cherry Street and 10TH Avenue intersection. This storm drain is situated directly north and down surface gradient from sampling location #2.

During various on-site visits, I observed waters seeping out from underneath the southern portion of the concrete sidewalk which runs along the eastern side of Cherry Street. These seeping waters possessed a noticeable sheen. The water seepage was most noticeable at selected locations situated approximately 30 to 40 feet down surface gradient (north) of sampling location #2. These waters eventually entered the down gradient storm drain and were transported to and deposited into the previously noted earthen surfaced drainage swale.

On the evening of April 30, 2001, after a significant period of rainfall, we proceeded to obtain water sample # Cherry S.W. from the waters flowing down the eastern side of Cherry Street and into the storm drain. Laboratory analyses results for this water sample would assist us in determining if the migration of Specific Halogenated Hydrocarbons to off-site locations is through the stormwater drainage systems which service this immediate area.

SAMPLING LOCATIONS DW-1, DW-2, AND DW-3

These sampling locations are located east of the subject property at locations along the earthen surface drainage ditch present which runs along the eastern perimeter of the bermed former railroad right of way. Sampling location DW-1 was located in the northern portion of the ditch, sampling location DW-2 was located in the central portion of the ditch, and sampling location DW-3 was located in the southern portion of the ditch near the stormwater discharge pipe which services the stormwaters system which drains the subject property, the northerly neighboring property, and portions of Cherry Street. Surface water samples were obtained at these sampling locations by Mr. Gerald Tousley of the Thurston County Health Department.

SOIL/GROUNDWATER SAMPLING AND LABORATORY ANALYSES

All discreet soil samples were obtained using a "Strata Probe Sampling System" provided and operated by factory trained technicians from Environmental Services Network Northwest, Lacey, Washington. Continuous soil corings were extended to a depths ranging from approximately 1 to 18 feet below ground surface (b.g.s.). Continuous soil coring/samples (split spoon samplers) were laid out in order by depth on the surface to facilitate field screening and observation of the soils obtained from various depths.

All discreet groundwater samples were obtained using a parastaltic pump and the "Strata Probe Sampling System". The strataprope sampling tube was purged of all collected waters and then allowed to recharge prior to the collection of these water samples.

All surface water and stormwater samples were obtained using a PVC sampling cup.

All sampling tools/devices were properly cleaned between individual samples to prevent cross sample contamination.

All samples were then tightly packed in recommended storage containers with no head space, properly refrigerated and transported with proper chain of custody forms, to either the on-site mobile laboratory and/or the fixed base laboratory operated by Environmental Services Network Northwest Inc. of Lacey, Washington, for appropriate laboratory analyses.

Soil and/or groundwater samples were screened for gasoline range T.P.H. (total petroleum hydrocarbons) using method NWTPH-Gx, diesel fuel/heavy oil range T.P.H. using method NWTPH-Dx/Dx Extended, B.T.E.X.'s using EPA method 8021B, and Specific Halogenated Hydrocarbons using EPA method 8021B.

All laboratory analyses methods and quality controls meet or exceed current Department of Ecology recommendations for Site Checks and Site Assessments.

Groundwater elevations were measured using an electronic water level indicator. Depth to water was measured from the ground surface over the individual sampling location.

Laboratory analyses results for soil samples S-2-8, S-11-0/4, S-4-4, S-4-15, S-11-4/8, S-4-8/13, S-4-4/8, SS-1, S-1-10, S-1-14, S-8-4/8, S-8-8/12, S-9-0/4, S-9-8/12, S-10-36, S-10-0/6, S-14, S-12, S-13, and S-15 indicated no presence of gasoline range T.P.H., diesel fuel/heavy oil range T.P.H., B.T.E.X.'s, and/or Specific Halogenated Hydrocarbons at levels that exceeded the Department of Ecology's Method "A" Clean Up Levels in their respective sampled soils.

Laboratory analyses results for soil samples S-2-0/3, S-2-6, and S-3-4/8 confirmed the presence of Specific Halogenated Hydrocarbons at levels that exceeded the Department of Ecology's Method "A" Clean Up Levels in their respective sampled soils.

Laboratory analyses results for groundwater samples MW-1, MW-4, and surface water sample DW-2 indicated no presence of Specific Halogenated Hydrocarbons at levels that exceeded the Department of Ecology's Method "A" Clean Up Levels in these sampled waters.

Laboratory analyses results for surface water sample S-10- W confirmed the presence of heavy oil range T.P.H. at levels that exceeded the Department of Ecology's Method "A" Clean Up Levels in these sampled waters.

Laboratory analyses results for groundwater sample S-2- W confirmed the presence of diesel fuel range T.P.H. at levels that exceeded the Department of Ecology's Method "A" Clean Up Levels in these sampled waters.

Laboratory analyses results for groundwater samples S-2-W, MW-2, S-9-W, S-11-W, MW-3-W, S-12-W, S-13-W, and S-14-W confirmed the presence of Special Halogenated

Hydrocarbons at levels that exceeded the Department of Ecology's Method "A" Clean Up Levels in these sampled waters.

Laboratory analyses results for surface water samples DW-1, DW-3, CHERRY S.W., and S-10-W as well as drainwater sample IFD confirmed the presence of Special Halogenated Hydrocarbons at levels that exceeded the Department of Ecology's Method "A" Clean Up Levels in these sampled waters.

ADDITIONAL INFORMATION OF INTEREST:

1. Mr. Gerald Tousley sampled the soils present at selected locations along the base of the bermed Former Railroad "Right of Way". These samples were obtained at locations recently exposed during the emergency excavation activities associated with the creation of the earthen surfaced channel, through the bermed soils. Laboratory analyses results for these post earthquake investigation samples indicated no presence of Specific Halogenated Hydrocarbons at levels exceeding the Department of Ecology's Method "A" in the soils sampled in this area.

2. Recently, I performed a Limited Phase II Environmental Site Assessment on the property located directly west of the subject property. As part of this investigation I obtained samples of the groundwaters from beneath three (3) selected locations on the northeast portion of this westerly neighboring property. These sampling locations were situated directly west of sampling location #2 on the subject property. These groundwater samples were submitted for appropriate laboratory analyses.

Laboratory analyses results for these investigative groundwater samples indicated no detectable presence of Specific Halogenated Hydrocarbons and/or Total Petroleum Hydrocarbons.

Roughly measured groundwater elevations at these sampling locations coincided with the groundwater elevations observed/measured at sampling location #2 on the subject property.

During these groundwater sampling activities it was observed that the recharge of groundwaters into the sampling tube, after the purging process, were equally as slow as recharge rates observed at selected locations on the subject property.

3. Recently I was contacted by Mr. Gerald Tousley and asked to accompany him, during an on-site visit to a location along the eastern side of the southern portion of the bermed Former Railroad "Right of Way". A concerned citizen had reported that the vegetation in this area was suddenly turning brown and dying. It should be noted that this initial response location was in the approximate location (area) where Mr. Tousley had previously obtained surface water sample DW-1, which contained above acceptable levels of Specific Halogenated Hydrocarbons.

During this on-site visit Mr. Tousley and I observed several areas, randomly placed along the eastern side of these bermed soils, where the vegetation was dry, brown and appeared to be

dying out. No significant quantity of waters were present in the earthen sufaced drainage ditch, which runs directly through this area, on the day of this on-site visit.

Due to the fact that these bermed soils were scheduled to be excavated and transported to off-site locations in the near future, Mr. Tousley requested that I immediately obtained soil samples from the areas directly surrounding and beneath the impacted vegetation. These soil samples were submitted for appropriate laboratory analyses and were screened for pesticides, herbicides, and Specific Halogenated Hydrocarbons.

I immediately notified the owners of this impacted property and they authorized me to perform the requested soil sampling and laboratory analyses activities.

Laboratory analyses results for these investigative soil samples indicated no presence of pesticides, herbicides, and/or Specific Halogenated Hydrocarbons in these sampled soils.

4. Mr. Bob Warren and myself placed red dye in the floor drain that originates in their boiler room portion (northeast) of the Former Olympia Dry Cleaners building. The results of this on-site experiment indicated that the liquids placed in this drain, using a garden hose (slow rate), were eventually discharged into the public sewer system, which runs beneath Cherry Street.

FACTS:

1. The results of these preliminary on-site investigations confirm the presence of Specific Halogenated Hydrocarbons at levels that exceed the Department of Ecology's Method "A" Clean Up Levels in the subsurface soils present at various sampling locations on the subject property and the neighboring property to the north. The soils present near the northwest corner of the subject property contain the highest levels of these contaminants (sampling locations #2 and #3) while soils present in others areas contain these contaminants at much lower levels, but at levels that do exceed Ecology's Method "A" Clean Up Levels.

2. The results of this on-site investigation confirm the presence of Specific Halogenated Hydrocarbons, at levels that exceed the Department of Ecology's Method "A" Clean Up Levels, in the subsurface groundwaters present at various sampling locations on the subject property and the neighboring property to the north. The highest concentrations are concentrated around sampling location #2. Elevated levels of Specific Halogenated Hydrocarbons also exist in the groundwaters present beneath the elevated concrete walkway located along the northern perimeter of the on-site building, portions of the on-site French drain, and in groundwaters present along the western perimeter of the northerly neighboring property.

3. The results of this on-site investigation also confirmed the presence of Specific Halogenated Hydrocarbons in the surface waters present in the northern and southern portions of the earthen surfaced drainage ditch which runs along the eastern side of the elevated former railway "right of way". Laboratory analyses results indicated the waters present in the northern

portion of the ditch contained much higher levels of Specific Halogenated Hydrocarbons than the waters present in the southern portion of the ditch.

Laboratory analyses results indicated no presence of Specific Halogenated Hydrocarbons in the sampled waters present in the central portion of the ditch.

Vegetation growing in these areas where impacted surface waters are present are currently brown in color an appear to be dying.

4. The results of this on-site investigation confirmed that, on at least one occasion, liquids containing Specific Halogenated Hydrocarbons were discharged, released and/or flowed into the currently capped floor drain present in the rear portion of the on-site building. The eventual discharge location for liquids placed in this drain was not determined during these on-site investigations.

5. The results of these initial on-site investigations did not conclusively determine the exact elevations of groundwaters and/or direction of groundwater flow beneath this site.

CONCLUSIONS AND OBSERVATIONS:

1. The exact method of release/discharge and/or the release/discharge point of the liquids containing Specific Halogenated Hydrocarbons to the subsurface soils and groundwaters present beneath the subject property has not been clearly defined at this time.

The presence of aged/distressed/etched asphalt surface materials in an area directly up flow/up surface gradient from the locations where the highest concentrations of Specific Halogenated Hydrocarbons currently exist in the subsurface soils and/or groundwaters, indicates the possibility that waste waters from the on-site dry clean activities were discharged /dumped on the sloped asphalt surface in this area and flowed to the earthen surfaced areas and then migrated downward into the subsurface soils and groundwaters. It is also a possibility that powder coated filters, associated with the on-site dry cleaning equipment, were washed/rinsed off in this area and the wash/rinsing liquids followed the earlier described migratory/flow pathway.

The presence of liquids containing Specific Halogenated Hydrocarbons in the interior floor drain suggest the possibility that the floor drain could have been the release/discharge point for the impacted liquids into the subsurface soils and/or groundwaters. It is possible that this drain at one time utilized a subsurface drywell.

2. Based on the results of the past and current environmental investigations performed on the subject property and/or neighboring properties, it appears to me that the primary off-site migration pathways for groundwaters impacted by Specific Halogenated Hydrocarbons are via the discharge of shallow groundwaters into various municipally and privately developed

stormwater management systems that service the subject property and it's neighboring properties.

It also appears to me that the recent earthquake may have caused changes in the migratory pathways followed by these transient impacted waters.

Earlier investigations only noted the presence of Vinyl Chloride, a breakdown element, at excessive levels in off-site surface waters, while recent investigations confirmed the presence of a range of Specific Halogenated Hydrocarbons in the off-site surface waters. The presence of these pre-breakdown chemical elements could be attributed to a more direct pathway for the migration of the impacted groundwaters, thus allowing less exposure time to the atmosphere for aeration/breakdown purposes.

The presence of impacted waters in the earthen surfaced drainage ditch at sampling location DW-1 could also be attributed to a new post earthquake migratory pathway for these impacted waters. It is possible that the waters that once flowed easterly through the French drain and eventually flowed northerly into the earthen surfaced drainage swale present along the eastern perimeter of the northerly neighboring property, could now be flowing easterly through a more permeable pathway and then discharging into the earthen surfaced drainage ditch at a point near sampling location DW-1.

It should also be noted that the seepage of impacted waters from beneath the Cherry Street Sidewalk Area was not observed during previous on-site investigations and could be a post earthquake condition.

None of the currently available information confirms the presence of Specific Halogenated Hydrocarbons in the subsurface groundwaters at these remote off-site locations, and/or in the deeper groundwaters on and/or off-site.

RECOMMENDATIONS:

1. I recommend the sampling of subsurface groundwaters present at greater depths beneath the subject property in the area of Sampling Location #2. A continuos soil coring should be extended to depths just above the confining layer associated with the shallow (upper) aquifer.

I recommend that a groundwater monitoring well be installed and screened to these greater depths at this sampling location.

2. I recommend the sampling of the subsurface groundwaters in the areas directly adjacent to and/or surrounding Sampling Location DW-1.

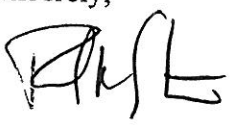
3. I recommend the placement of a bright colored dye and adequate amounts of water in the currently capped floor drain located in the rear (northern) portion of the on-site building. The placement of the dye and waters in this drain would assist in determining the eventual discharge point of liquids placed in this drain.

These recommended investigations will provide additional information, that is needed to propose an efficient treatment/remediation program for this site and the adjoining, off-site impacted properties.

All opinions, observations, and recommendations set forth in this report are based on current available information and on-site conditions, and cannot predict or report on the impacts of future operations and/or events on this site.

If you have any questions or need further information please feel free to contact us at the above phone number.

Sincerely,



Paul W. Stemen
Ecology-Registered Site Assessment Supervisor
ASTM Certified
IFCI #0874201-26

cc: Frank Burleson
Steve Marshall
File

WATER LABORATORY ANALYSES CHARTS

SAMPLE NUMBER	SAMPLE DATE	BTEX COMPOUNDS (PPB) BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	TOTAL PETROLEUM HYDROCARBONS (PPB) GASOLINE	DIESEL	OIL
MW-2	4-9-01						ND	ND
S-10-W	4-9-01						ND	19000
S-2-W	4-9-01	ND	ND	ND	ND	ND	5000	ND

SPECIFIC HALOGENATED HYDROCARBONS (PPB)

SAMPLE-NUMBER	MW-4	S-11-W	S-9-W	MW-2	MW-1	S-10-W	DW-1	DW-2	DW-3	S-2-W	MW-3-W
DATE	4-9-01	4-9-01	4-9-01	4-9-01	4-9-01	4-9-01	4-9-01	4-9-01	4-9-01	4-9-01	4-27-01
VINYL CHLORIDE		ND	640	1100	ND	374	ND	ND	ND	830	ND
BENZENE		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOLUENE		ND	ND	10.7	ND	ND	1.6	ND	ND	ND	ND
ETHYLBENZENE		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL-XYLENE		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1 DICHLORETHENE		ND	ND	ND	ND	4.4	ND	ND	ND	ND	ND
METHYLENE CHLORIDE		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRANS 1,1 DICHLOROETHENE		ND	2	196	ND	7.7	ND	ND	ND	104	ND
1,1 DICHLOROETHANE		ND	ND	ND	ND	ND	ND	ND	ND	6.6	ND
CIS-1,2 DICHLOROETHENE		2.6	1420	9700	ND	2890	ND	ND	30	4550	ND
CHLOROFORM		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1 TRICHLOROETHANE (TCA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CARBON TETRACHLORIDE		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2 DICHLOROETHANE		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROETHENE (TCE)		ND	2.7	6000	ND	280	ND	ND	1	1150	ND
1,1,2 TRICHLOROETHANE		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TETRACHLOROETHENE (PCE)		2.1	ND	52000E	ND	990	15.3	ND	3.9	10000E	ND
1,1,1,2 TRICHLOROETHANE		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2 TRICHLOROETHANE		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

WATER SPECIFIC HALOGENATED HYDROCARBONS

SAMPLE-NUMBER	S-14-W	S-13-W	S-12-W	IFD	CHERRY S.W.	MW-3-W
DATE	5-1-01	5-1-01	5-1-01	5-1-01	5-1-01	5-2-01
VINYL CHLORIDE	113	870	1700	ND	ND	ND
BENZENE	ND	ND	ND	ND	ND	ND
TOLUENE	0.9	1	1.2	7.3	ND	ND
ETHYLBENZENE	ND	ND	ND	ND	ND	ND
TOTAL-XYLENE	ND	ND	ND	ND	1.7	ND
1,1 DICHLORETHENE	ND	3.1	5.9	230	ND	ND
METHYLENE CHLORIDE	ND	ND	ND	ND	ND	ND
TRANS 1,1 DICHLOROETHENE	ND	1.7	1.7	79	ND	ND
1,1 DICHLOROETHANE	ND	ND	ND	ND	ND	ND
CIS-1,2 DICHLOROETHENE	1.4	188	157	61	6.6	ND
CHLOROFORM	ND	ND	ND	ND	ND	ND
,1,1 TRICHLOROETHANE (TCA)	ND	ND	ND	ND	ND	ND
CARBON TETRACHLORIDE	ND	ND	ND	ND	ND	ND
1,2 DICHLOROETHANE	ND	ND	ND	ND	ND	ND
TRICHLOROETHENE (TCE)	1.1	45	79	640	1.1	ND
1,1,2 TRICHLOROETHANE	ND	ND	ND	ND	ND	ND
TETRACHLOROETHENE (PCE)	16	72	105	280000	2.7	4.4
1,1,1,2 TRICHLOROETHANE	ND	ND	ND	ND	ND	ND
1,1,2,2 TRICHLOROETHANE	ND	ND	ND	ND	ND	ND

ppb

SOIL LABORATORY ANALYSES CHARTS

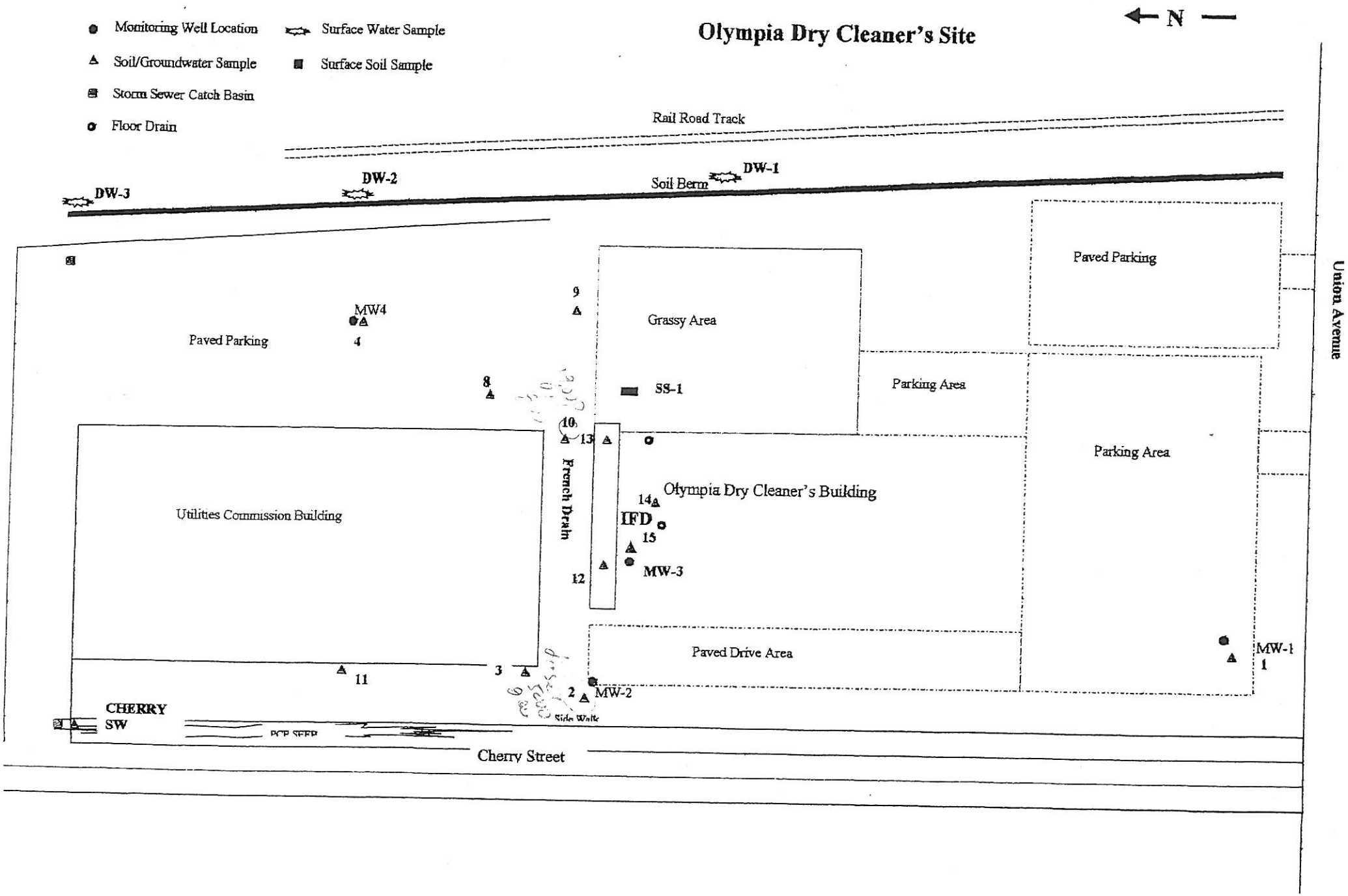
SAMPLE NUMBER	SAMPLE DATE	SAMPLE DEPTH	BTEX COMPOUNDS (PPM) BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	TOTAL PETROLEUM HYDROCARBONS (PPM) GASOLINE	DIESEL	OIL
S-11	4-8-01	4' - 8'					ND	ND	ND
SS-1	4-9-01	0"- 6"					ND	ND	ND
SS-1-10	4-9-01	10'					ND	ND	ND
S-1-14	4-9-01	14'					ND	ND	ND
S-3-4/8	4-9-01	4' - 8'					ND	ND	ND
S-2-0/3	4-9-01	0' - 3'					ND	ND	ND
S-2-6	4-9-01	6'					ND	ND	ND
S-8-4/8	4-9-01	4' - 8'					ND	ND	ND
S-8-8/12	4-9-01	8' - 12'					ND	ND	ND
S-9-0/4	4-9-01	0' - 4'					ND	ND	ND
S-9-8/12	4-9-01	8' -12'					ND	ND	ND
S-10-36"	4-9-01	36"					ND	ND	ND
S-10-0/6"	4-9-01	0" - 6"					ND	ND	ND
S-11-4-8	4-9-01	4' - 8						ND	ND

SPECIFIC HALOGENATED HYDROCARBONS SOILS

SAMPLE-NUMBER	S2-8	S-11-0/4	S-4-4	S-4-15	S-11-4/8	S-4-8/13	S-4-4/8	SS-1	S-1-10	S-1-14	S-3-4/8
DATE	4-8-01	4-8-01	4-8-01	4-8-01	4-8-01	4-8-01	4-8-01	4-9-01	4-9-01	4-9-01	4-9-01
DEPTHS	8'	0' - 4'	4'	15'	4' - 8'	8' - 13'	4' - 8'	0" - 6"	10'	14'	4' - 8
VINYL CHLORIDE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.31
BENZENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOLUENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL-XYLENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1 DICHLORETHENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
METHYLENE CHLORIDE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRANS 1,1 DICHLOROETHENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1
1,1 DICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CIS-1,2 DICHLOROETHENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.31
CHLOROFORM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1 TRICHLOROETHANE (TCA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CARBON TETRACHLORIDE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2 DICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROETHENE (TCE)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.1
1,1,2 TRICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TETRACHLOROETHENE (PCE)	ND	ND	ND	ND	ND	0.33	ND	ND	ND	ND	4.58
1,1,1,2 TRICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2 TRICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

SPECIFIC HALOGENATED HYDROCARBONS SOILS

SAMPLE-NUMBER	S-2-O/3	S-2-6	S-8-4/8	S-8-8/12	S-9-0/4	S-9-8/12	8-10-36	S-10-0/6	S-14	S-12	S-13	S-15
DATE	4-9-01	4-9-01	4-9-01	4-9-01	4-9-01	4-9-01	4-9-01	4-9-01	5-1-01	5-1-01	5-1-01	5-1-01
DEPTHS	0' - 3'	6'	4' - 8'	8' - 12'	0' - 4'	8' - 12'	36"	0" - 6"	6' TO 9'	6' TO 9'	6'	3'
VINYL CHLORIDE	2.44	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BENZENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOLUENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL-XYLENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1 DICHLORETHENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
METHYLENE CHLORIDE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRANS 1,1 DICHLOROETHENE	0.06	0.07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1 DICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CIS-1,2 DICHLOROETHENE	3.84	5.55	ND	ND	0.16	ND	0.09	0.28	ND	ND	ND	ND
CHLOROFORM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
I,1,1 TRICHLOROETHANE (TCA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CARBON TETRACHLORIDE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2 DICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROETHENE (TCE)	ND	3.16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2 TRICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TETRACHLOROETHENE (PCE)	ND	6.75	ND	ND	ND	ND	ND	0.12	ND	ND	ND	ND
1,1,1,2 TRICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2 TRICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND


Monitoring Well Location
Soil/Groundwater Sample
Storm Sewer Catch Basin
Floor Drain
Surface Water Sample
Surface Soil Sample
Olympia Dry Cleaner's Site
N
Rail Road Track
DW-3
DW-2
DW-1
Soil Berm
Paved Parking
MW4
4
9
Grassy Area
Paved Parking
8
SS-1
Parking Area
10
13
French Drain
Olympia Dry Cleaner's Building
Parking Area
Utilities Commission Building
14
IFD
15
MW-3
12
Paved Drive Area
MW-1
1
11
3
2
MW-2
CHERRY
SW
Side Walk
Cherry Street
Union Avenue

ESN NORTHWEST
Environmental
Services Network

April 16, 2001

Paul Stemen
Stemen Environmental
5724 Puget Beach Road NE
Olympia, WA 98516

Dear Mr. Stemen:

Please find enclosed the analytical data report for the Olympia Dry Cleaners Project in Olympia, Washington. Direct Push and Mobile Laboratory services were conducted on April 9, 2001. Soil and water samples were analyzed on and off site for Specific Halogenated Hydrocarbons and BTEX by Method 8021B, Diesel and Oil by NWTPH-Dx/Dx Extended, and Gasoline by NWTPH-Gx.

The results of these analyses are summarized in the attached table. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. An invoice for this analytical work is also enclosed.

ESN Northwest appreciates the opportunity to have provided analytical services to Stemen Environmental 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,

Michael A. Korosec

Michael A. Korosec
President

677 Woodland Square Lp. SE, Suite D ■ Lacey, Washington 98503 ■ 360.459.4670 ■ FAX 360.459.3432
Web Site: *www.ESN-USA.com*
E-Mail: *tegnw@aol.com*

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.

TPH-Gasoline, TPH-Diesel
(Gasoline and/or Diesel, Modified EPA 8015, NWTPH-Gx and NWTPH-Dx)

A check standard is run at the beginning of the day. 1) A close standard is run at the end of the day. 2) Both open and close standards must be within 15% of the continuing calibration curve value. All samples are prepared with a surrogate spike, and the recovery must be between 65% and 135% unless high sample concentrations interfere with the determination of the recovery percentage. A duplicate sample is run at a rate of 1 per 10 samples. At least 1 method blank is run per 20 samples analyzed.

Purgeable Volatile Aromatics
(BTEX, EPA 8021B)

A check standard is run at the beginning of the day. The check standard is run at the end of the day. Both open and close standards must be within 15% of the continuing calibration curve value. All samples are prepared with a surrogate spike, and the recovery must be between 65% and 135% unless high sample concentrations interfere with the determination of the recovery percentage. At least 1 method blank is run per day.

PCBs, Polychlorinated Biphenyls
(EPA 8082)

A method blank and a calibration standard are run at the beginning of the day. The standard must be within 15% of the continuing calibration curve value. The check standard may be run at the end of the day. All samples are prepared with a surrogate spike, and the recovery must be between 65% and 135%. Samples which measure above the linear range of the calibration curve must be diluted to fall into the upper half of the linear range. A duplicate sample is run at a rate of 1 per 10 samples. At least 1 method blank is run per 20 samples analyzed.

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST, INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Stemen Environmental, Inc.

Specific Halogenated and Aromatic Hydrocarbons (EPA 8021B) in Soil

Sample Description		Method Blank	SS-1	SS-1 Dup.	S-1-10	S-1-14	S-3-4/8
Date Sampled		4/9/01	4/9/01	4/9/01	4/9/01	4/9/01	4/9/01
Date Analyzed		4/9/01	4/9/01	4/9/01	4/9/01	4/9/01	4/9/01
	MDL (mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Vinyl chloride	0.25	nd	nd	nd	nd	nd	3.31
Benzene	0.05	nd	nd	nd	nd	nd	nd
Toluene	0.05	nd	nd	nd	nd	nd	nd
Ethylbenzene	0.05	nd	nd	nd	nd	nd	nd
Total Xylenes	0.05	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
Methylene chloride	0.05	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	0.05	nd	nd	nd	nd	nd	0.10
1,1-Dichloroethane	0.05	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	0.05	nd	nd	nd	nd	nd	2.31
Chloroform	0.05	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.05	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	0.05	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane	0.05	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.05	nd	nd	nd	nd	nd	2.10
1,1,2-Trichloroethane	0.05	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.05	nd	nd	nd	nd	nd	4.58
1,1,1,2-Tetrachloroethane	0.05	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd	nd	nd	nd	nd	nd
Surrogate Recovery (%)		83	101	96	91	114	79

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Chlorobenzene): 65%- 135%

ANALYSES PERFORMED BY: Tim McCall
DATA REVIEWED BY: Sherry Chilcutt

ENVIRONMENTAL SERVICES NETWORK NORTHWEST, INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Stemen Environmental, inc.

Specific Halogenated and Aromatic Hydrocarbons (EPA 8021B) in Soil

Sample Description		Method Blank	S2-8	S2-8 Dup.	S4-4/8	S4-15	S11-0/4
Date Sampled		4/9/01	4/9/01	4/9/01	4/9/01	4/9/01	4/9/01
Date Analyzed		4/10/01	4/10/01	4/10/01	4/10/01	4/10/01	4/10/01
	MDL (mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Vinyl chloride	0.25	nd	nd	nd	nd	nd	nd
Benzene	0.05	nd	nd	nd	nd	nd	nd
Toluene	0.05	nd	nd	nd	nd	nd	nd
Ethylbenzene	0.05	nd	nd	nd	nd	nd	nd
Total Xylenes	0.05	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
Methylene chloride	0.05	nd	nd	nd	nd	nd	nd
trans -1,2-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.05	nd	nd	nd	nd	nd	nd
cis -1,2-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
Chloroform	0.05	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.05	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	0.05	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane	0.05	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.05	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	0.05	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.05	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd	nd	nd	nd	nd	nd
Surrogate Recovery (%)		114	74	71	118	102	102

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Chlorobenzene): 65%- 135%

ANALYSES PERFORMED BY: Tim McCall

ENVIRONMENTAL SERVICES NETWORK NORTHWEST, INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Stemen Environmental, inc.

QA/QC Data - EPA 8021B Analyses

Sample Description: S2-8							
	Matrix Spike			Matrix Spike Duplicate			RPD
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	(%)
Benzene	1.00	1.14	114	1.00	1.12	112	1.77
Toluene	1.00	1.07	107	1.00	1.08	108	0.93
1,1-Dichloroethene	1.00	0.91	91	1.00	0.94	94	3.24
Trichloroethene (TCE)	1.00	1.11	111	1.00	1.12	112	0.90
Surrogate Spike			97			94	

	Laboratory Control Sample		
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)
Benzene	1.00	1.04	104
Toluene	1.00	1.08	108
1,1-Dichloroethene	1.00	0.87	87
Trichloroethene (TCE)	1.00	1.05	105
Surrogate Spike			111

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 80%-120%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Tim McCall
DATA REVIEWED BY: Sherry Chilcutt

ENVIRONMENTAL SERVICES NETWORK NORTHWEST, INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Stemen Environmental, inc.

Specific Halogenated and Aromatic Hydrocarbons (EPA 8021B) in Soil

Sample Description		S11-4/8
Date Sampled		4/9/01
Date Analyzed		4/10/01
	MDL (mg/kg)	(mg/kg)
Vinyl chloride	0.25	nd
Benzene	0.05	nd
Toluene	0.05	nd
Ethylbenzene	0.05	nd
Total Xylenes	0.05	nd
1,1-Dichloroethene	0.05	nd
Methylene chloride	0.05	nd
trans -1,2-Dichloroethene	0.05	nd
1,1-Dichloroethane	0.05	nd
cis -1,2-Dichloroethene	0.05	nd
Chloroform	0.05	nd
1,1,1-Trichloroethane (TCA)	0.05	nd
Carbon tetrachloride	0.05	nd
1,2-Dichloroethane	0.05	nd
Trichloroethene (TCE)	0.05	nd
1,1,2-Trichloroethane	0.05	nd
Tetrachloroethene (PCE)	0.05	nd
1,1,1,2-Tetrachloroethane	0.05	nd
1,1,2,2-Tetrachloroethane	0.05	nd
Surrogate Recovery (%)		110

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Chlorobenzene): 65%- 135%

ANALYSES PERFORMED BY: Tim McCall

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST, INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Stemen Environmental, Inc.

Specific Halogenated and Aromatic Hydrocarbons (EPA 8021B) in Soil

Sample Description		S-2-0/3	S-2-6	S-8-4/8	S-8-8/12	S-9-0-4	S-9-8/12
Date Sampled		4/9/01	4/9/01	4/9/01	4/9/01	4/9/01	4/9/01
Date Analyzed		4/9/01	4/9/01	4/9/01	4/9/01	4/9/01	4/9/01
	MDL (mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Vinyl chloride	0.25	2.44	nd	nd	nd	nd	nd
Benzene	0.05	nd	nd	nd	nd	nd	nd
Toluene	0.05	nd	nd	nd	nd	nd	nd
Ethylbenzene	0.05	nd	nd	nd	nd	nd	nd
Total Xylenes	0.05	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
Methylene chloride	0.05	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	0.05	0.06	0.07	nd	nd	nd	nd
1,1-Dichloroethane	0.05	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	0.05	3.84	5.55	nd	nd	0.16	nd
Chloroform	0.05	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.05	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	0.05	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane	0.05	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.05	nd	3.16	nd	nd	nd	nd
1,1,2-Trichloroethane	0.05	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.05	nd	6.75	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd	nd	nd	nd	nd	nd
Surrogate Recovery (%)		71	104	77	126	124	115

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Chlorobenzene): 65%- 135%

ANALYSES PERFORMED BY: Tim McCall
DATA REVIEWED BY: Sherry Chilcutt

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST, INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Stemen Environmental, Inc.

Specific Halogenated and Aromatic Hydrocarbons (EPA 8021B) in Soil

Sample Description		S-9-8/12 Dup.	S-10-36	S-10-0/6"
Date Sampled		4/9/01	4/9/01	4/9/01
Date Analyzed		4/9/01	4/9/01	4/9/01
	MDL (mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Vinyl chloride	0.25	nd	nd	nd
Benzene	0.05	nd	nd	nd
Toluene	0.05	nd	nd	nd
Ethylbenzene	0.05	nd	nd	nd
Total Xylenes	0.05	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd
Methylene chloride	0.05	nd	nd	nd
trans-1,2-Dichloroethene	0.05	nd	nd	nd
1,1-Dichloroethane	0.05	nd	nd	nd
cis-1,2-Dichloroethene	0.05	nd	0.09	0.28
Chloroform	0.05	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.05	nd	nd	nd
Carbon tetrachloride	0.05	nd	nd	nd
1,2-Dichloroethane	0.05	nd	nd	nd
Trichloroethene (TCE)	0.05	nd	nd	nd
1,1,2-Trichloroethane	0.05	nd	nd	nd
Tetrachloroethene (PCE)	0.05	nd	nd	0.12
1,1,1,2-Tetrachloroethane	0.05	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd	nd	nd
Surrogate Recovery (%)		107	105	115

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Chlorobenzene): 65%- 135%

ANALYSES PERFORMED BY: Tim McCall
DATA REVIEWED BY: Sherry Chilcutt

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST, INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Stemen Environmental, Inc.

QA/QC Data - EPA 8021B Analyses

Sample Description:	Matrix Spike			Matrix Spike Duplicate			RPD
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	(%)
Benzene	1.00	0.85	85	1.00	0.89	89	4.6
Toluene	1.00	0.86	86	1.00	0.87	87	1.2
1,1-Dichloroethene	1.00	0.86	86	1.00	0.96	96	11.0
Trichloroethene (TCE)	1.00	0.85	85	1.00	0.87	87	2.3
Surrogate Spike			92			86	

	Laboratory Control Sample		
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)
Benzene	1.00	0.97	97
Toluene	1.00	1.01	101
1,1-Dichloroethene	1.00	1.00	100
Trichloroethene (TCE)	1.00	0.99	99
Surrogate Spike			109

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 80%-120%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Tim McCall
DATA REVIEWED BY: Sherry Chilcutt

ENVIRONMENTAL SERVICES NETWORK NORTHWEST, INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Stemen Environmental. Inc.

Specific Halogenated and Aromatic Hydrocarbons (EPA 8021B) in Soil

Sample Description		Method Blank	S-4-4	S-4 8/13
Date Sampled			4/9/01	4/9/01
Date Analyzed		4/11/01	4/11/01	4/11/01
	MDL (mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Vinyl chloride	0.25	nd	nd	nd
Benzene	0.05	nd	nd	nd
Toluene	0.05	nd	nd	nd
Ethylbenzene	0.05	nd	nd	nd
Total Xylenes	0.05	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd
Methylene chloride	0.05	nd	nd	nd
trans -1,2-Dichloroethene	0.05	nd	nd	nd
1,1-Dichloroethane	0.05	nd	nd	nd
cis -1,2-Dichloroethene	0.05	nd	nd	nd
Chloroform	0.05	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.05	nd	nd	nd
Carbon tetrachloride	0.05	nd	nd	nd
1,2-Dichloroethane	0.05	nd	nd	nd
Trichloroethene (TCE)	0.05	nd	nd	nd
1,1,2-Trichloroethane	0.05	nd	nd	nd
Tetrachloroethene (PCE)	0.05	nd	nd	0.33
1,1,1,2-Tetrachloroethane	0.05	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd	nd	nd
Surrogate Recovery (%)		120	110	90

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Chlorobenzene): 65%- 135%

ANALYSES PERFORMED BY: Marilyn Farmer

ENVIRONMENTAL SERVICES NETWORK NORTHWEST, INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Stemen Environmental. Inc.

QA/QC Data - EPA 8021B Analyses

	Sample Description: Matrix Spike		
	Spiked Conc. (ug/l)	Measured Conc. (ug/l)	Spike Recovery (%)
Benzene	5.0	4.8	96
Toluene	5.0	4.3	86
1,1-Dichloroethene	5.0	4.1	82
Trichloroethene (TCE)	5.0	4.8	96

	Laboratory Control Sample		
	Spiked Conc. (ug/l)	Measured Conc. (ug/l)	Spike Recovery (%)
Benzene	5.0	5.9	118
Toluene	5.0	5.6	112
1,1-Dichloroethene	5.0	5.1	102
Trichloroethene (TCE)	5.0	4.5	90
Surrogate Spike			83

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 80%-120%

ANALYSES PERFORMED BY: Marilyn Farmer
DATA REVIEWED BY: Sherry Chilcutt

ENVIRONMENTAL SERVICES NETWORK NORTHWEST, INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Stemen Environmental. Inc.

Analyses of Diesel & Oil (NWTPH-Dx/Dx Extended) in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (mg/kg)	Oil (mg/kg)
Method Blank	4/10/01	122	nd	nd
S-11 4-8	4/10/01	89	nd	nd
Method Detection Limits			20	40

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: Marilyn Farmer

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST, INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Stemen Environmental, Inc.

Analyses of Gas (NWTPH-Gx), Diesel & Oil (NWTPH-Dx/Dx Extended) in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (mg/kg)	Diesel (mg/kg)	Heavy Oil (mg/kg)
Method Blank	4/9/01	91	nd	nd	nd
SS-1	4/9/01	108	nd	nd	nd
SS-1 Dup.	4/9/01	108	nd	nd	nd
S-1-10	4/9/01	81	nd	nd	nd
S-1-14	4/9/01	112	nd	nd	nd
S-3-4/8	4/9/01	101	nd	nd	nd
S-2-0/3	4/9/01	72	nd	nd	nd
S-2-6	4/9/01	104	nd	nd	nd
S-8-4/8	4/9/01	106	nd	nd	nd
S-8-8/12	4/9/01	99	nd	nd	nd
S-9-0/4	4/9/01	122	nd	nd	nd
S-9-8/12	4/9/01	91	nd	nd	nd
S-9-8/12 Dup.	4/9/01	71	nd	nd	nd
S-10-36"	4/9/01	89	nd	nd	nd
S-10-0/6"	4/9/01	81	nd	nd	nd
Method Detection Limits			10	20	40

"nd" Indicates not detected at listed detection limits.
"D" Indicates detected above the listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: Tim McCall
DATA REVIEWED BY: Sherry Chilcutt

ENVIRONMENTAL SERVICES NETWORK NORTHWEST, INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Stemen Environmental. Inc.

Specific Halogenated and Aromatic Hydrocarbons (EPA 8021B) in Water

Sample Description		Method Blank	S-11-W	S-9-W	MW-2	MW-1	S-10-W
Date Sampled			4/9/01	4/9/01	4/9/01	4/9/01	4/9/01
Date Analyzed		4/10/01	4/10/01	4/10/01	4/10/01	4/10/01	4/10/01
	MDL (ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Vinyl chloride	5.0	nd	nd	640	1100	nd	374
Benzene	1.0	nd	nd	nd	nd	nd	nd
Toluene	1.0	nd	nd	nd	10.7	nd	nd
Ethylbenzene	1.0	nd	nd	nd	nd	nd	nd
Total Xylenes	1.0	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	1.0	nd	nd	nd	nd	nd	4.4
Methylene chloride	1.0	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	1.0	nd	nd	2.0	196	nd	7.7
1,1-Dichloroethane	1.0	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	1.0	nd	2.6	1420	9700	nd	2890
Chloroform	1.0	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	1.0	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	1.0	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane	1.0	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	1.0	nd	nd	2.7	6000	nd	280
1,1,2-Trichloroethane	1.0	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	1.0	nd	2.1	nd	52000E	nd	990
1,1,1,2-Tetrachloroethane	1.0	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	1.0	nd	nd	nd	nd	nd	nd
Surrogate Recovery (%)		125	94	114	int	97	int

"E" Indicates estimated concentration, above linear range.
"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Chlorobenzene): 65%- 135%

ANALYSES PERFORMED BY: Marilyn Farmer

ENVIRONMENTAL SERVICES NETWORK NORTHWEST, INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Stemen Environmental, Inc.

Specific Halogenated and Aromatic Hydrocarbons (EPA 8021B) in Water

Sample Description		Method Blank	DW-1	DW-2	DW-3	S-2-W
Date Sampled			4/9/01	4/9/01	4/9/01	4/9/01
Date Analyzed		4/10/01	4/10/01	4/10/01	4/10/01	4/10/01
	MDL (ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Vinyl chloride	5.0	nd	nd.	nd	nd	830
Benzene	1.0	nd	nd	nd	nd	nd
Toluene	1.0	nd	1.6	nd	nd	nd
Ethylbenzene	1.0	nd	nd	nd	nd	nd
Total Xylenes	1.0	nd	nd	nd	nd	nd
1,1-Dichloroethene	1.0	nd	nd	nd	nd	nd
Methylene chloride	1.0	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	1.0	nd	nd	nd	nd	nd
1,1-Dichloroethane	1.0	nd	nd	nd	nd	104
cis-1,2-Dichloroethene	1.0	nd	nd	nd	nd	6.6
Chloroform	1.0	nd	nd	nd	30.0	4550
1,1,1-Trichloroethane (TCA)	1.0	nd	nd	nd	nd	nd
Carbon tetrachloride	1.0	nd	nd	nd	nd	nd
1,2-Dichloroethane	1.0	nd	nd	nd	nd	nd
Trichloroethene (TCE)	1.0	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	1.0	nd	nd	nd	1.0	1150
Tetrachloroethene (PCE)	1.0	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	1.0	nd	15.3	nd	3.9	10000E
1,1,2,2-Tetrachloroethane	1.0	nd	nd	nd	nd	nd
			nd	nd	nd	nd
Surrogate Recovery (%)		125	95	94	108	int

"E" Indicates estimated concentration, above linear range.
"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Chlorobenzene): 65%- 135%

ANALYSES PERFORMED BY: Marilyn Farmer

ENVIRONMENTAL SERVICES NETWORK NORTHWEST, INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Stemen Environmental, Inc.

QA/QC Data - EPA 8021B Analyses

	Sample Description: Matrix Spike		
	Spiked Conc. (ug/l)	Measured Conc. (ug/l)	Spike Recovery (%)
Benzene	5.0	4.8	96
Toluene	5.0	4.3	86
1,1-Dichloroethene	5.0	4.1	82
Trichloroethene (TCE)	5.0	4.8	96

	Laboratory Control Sample		
	Spiked Conc. (ug/l)	Measured Conc. (ug/l)	Spike Recovery (%)
Benzene	5.0	5.9	118
Toluene	5.0	5.6	112
1,1-Dichloroethene	5.0	5.1	102
Trichloroethene (TCE)	5.0	4.5	90
Surrogate Spike			83

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 80%-120%

ANALYSES PERFORMED BY: Marilyn Farmer

ENVIRONMENTAL SERVICES NETWORK NORTHWEST, INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Stemen Environmental. Inc.

Analyses of Diesel & Oil (NWTPH-Dx/Dx Extended) in Water

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (ug/l)	Oil (ug/l)
Method Blank	4/10/01	122	nd	nd
MW-2	4/10/01	88	nd	nd
S-10-W	4/10/01	98	nd	19000
Method Detection Limits			200	400

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: Marilyn Farmer

ENVIRONMENTAL SERVICES NETWORK NORTHWEST, INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Stemen Environmental, Inc.

Analyses of Diesel & Oil (NWTPH-Dx/Dx Extended) in Water

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (ug/l)	Oil (ug/l)
Method Blank	4/10/01	102	nd	nd
S-2-W	4/10/01	99	5000	nd
Method Detection Limits			200	400

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: Marilyn Farmer

ENVIRONMENTAL SERVICES NETWORK NORTHWEST, INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Stemen Environmental, Inc.

Analyses of Gasoline (NWTPH-Gx) & BTEX (EPA Method 8021B) in Water

Sample Number	Date Analyzed	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylenes (ug/l)	Gasoline (ug/l)	Surrogate Recovery (%)
Method Blank	4/10/01	nd	nd	nd	nd	nd	85
S-2-W	4/10/01	nd	nd	nd	nd	nd	114
Method Detection Limits		1	1	1	1	100	

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Chlorobenzene): 65% TO 135%

ANALYSES PERFORMED BY: Marilyn Farmer

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES

CHAIN-OF-CUSTODY RECORD

CLIENT: STEMER ENVIRONMENTAL INC

ADDRESS: 5324 - PULLEY BLVD NE Olympia, WA

PHONE: 360-438-5121 FAX:

CLIENT PROJECT #: Olympia Dry Cleaners PROJECT MANAGER: Paul Stemer

DATE: 4/9/2001 PAGE 1 OF 1

PROJECT NAME: Olympia Dry Cleaners

LOCATION: Olympia, WA.

COLLECTOR: Paul Stemer DATE OF COLLECTION 4/5/2001

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8010/8021B	VOA 8021B BTEX	VOA 8260	SEMI VOL 8270	TPH - HCID	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (d & o)	PAH 8100	PCBs 8082	Pesticides 8081	TOTAL LEAD	pH	NOTES	Total Number of Containers	Laboratory Note Number
1. S-2-8	8FT		Soil	Tube	X															
2. S-11-4	4FT		"	"	X															
3. S-4-4	4		"	"	X															
4. S-4-15	11'		"	"	X															
5. S-11-4/8	4 to 8'		"	"	X					X										
6. S-4 8/13	8/13		"		X															
7. S-4 4/8	4/8		"		X															
8.																				
9.																				
10. MW-4		510P	H2O	4 mL	X															
11. S-11-W		520P	"	"	X															
12. S-9-W		1230P	"	"	X															
13. MW-2		505P	"	"	X	X			X	X										
14. MW-1		11 AM	"	"	X															
15. S-10-W		320P	"	"	X	X			X	X										
16.																				
17.																				
18.																				

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	4/9/2001	[signature]	4/9/01
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	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

Turn Around Time:

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES (teg)

CHAIN-OF-CUSTODY RECORD

CLIENT: Stenz Environmental [illegible]
ADDRESS: 5734 Puget Beach Road NE Olympia, WA
PHONE: 360-438-9521 FAX:
CLIENT PROJECT #: Olympia Dry Cleaners PROJECT MANAGER: Paul Stenz

DATE: 4/9/01 PAGE 1 OF 1
PROJECT NAME: Olympia Dry Cleaners.
LOCATION: 606 Union
COLLECTOR: G. Tousley DATE OF COLLECTION 4/9/01

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8010/8021B	VOA 8021B BTEX	VOA 8260	SEMI VOL 8270	TPH - HCID	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (d & o)	PAH 8100	PCBs 8082	Pesticides 8081	TOTAL LEAD	pH	NOTES	Total Number of Containers	Laboratory Note Number
1. DW-1	–	1220	W	40 ml	X													Not preserved	2	
2. DW-2	–	1228	W	40ml	X													↓	2	
3. DW-3	–	1232	W	40ml	X														2	
4. S-2-W	–	1130	W	40mL	X	X				X	X								3	
5.																				
6.																				
7.																				
8.																				
9.																				
10.																				
11.																				
12.																				
13.																				
14.																				
15.																				
16.																				
17.																				
18.																				

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	4/9/01	Gerald L. Tousley	4/9/01 1250
Gerald L. Tousley	4/9/01 ~~1204~~ 1301	[signature]	4/9/01 1259

SAMPLE DISPOSAL INSTRUCTIONS

☐ TEG DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

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

LABORATORY NOTES:

Turn Around Time:

teg TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES

CHAIN-OF-CUSTODY RECORD

CLIENT: Stemm

ADDRESS:

PHONE: FAX:

CLIENT PROJECT #: PROJECT MANAGER: Paul Stemm

DATE: 4/9/01 PAGE 1 OF

PROJECT NAME: Olympia Dry Cleaners

LOCATION: Olympia WA

COLLECTOR: Paul Stemm DATE OF COLLECTION 4/9/01

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: VOA 8010/8021B	VOA 8021B BTEX	VOA 8260	SEMI VOL 8270	TPH - HCID	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (d & o)	PAH 8100	PCBs 8082	Pesticides 8081	TOTAL LEAD	pH	NOTES	Total Number of Containers	Laboratory Note Number
1. SS-1					X					X		X								
2. S-1-10					X					X		X								
3. S-1-14					X					X		X								
4. S-3-4/8					X					X		X								
5. S 2 0-3					X					X		X								
6. S2-6					X					X		X								
7. S8-4/8				5	X					X		X								
8. S8-8/12					X					X		X								
9. S9-0/4					X					X		X								
10. S9-8/12					X					X		X								
11. ~~S10~~ S10 (R) 36					X					X		X								
12. S10-0/6"					X					X		X								
13.																				
14.																				
15.																				
16.																				
17.																				
18.																				

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
	4/9/2001	Jim McNall	800 4/9/01
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	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

Turn Around Time:

ESN NORTHWEST
Environmental
Services Network

May 1, 2001

Paul Stemen
Stemen Environmental
5724 Puget Beach Road NE
Olympia, WA 98516

Dear Mr. Stemen:

Please find enclosed the analytical data report for the Olympia Dry Cleaners Project in Olympia, Washington. One water sample was analyzed for Specific Halogenated Hydrocarbons and BTEX by Method 8021B on April 27, 2001.

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.

ESN Northwest appreciates the opportunity to have provided analytical services to Stemen Environmental 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,

Michael A. Korosec
President

677 Woodland Square Lp. SE, Suite D ■ Lacey, Washington 98503 ■ 360.459.4670 ■ FAX 360.459.3432
Web Site: *www.ESN-USA.com* E-Mail: *esnnw@aol.com*

ESN NORTHWEST CHEMISTRY LABORATORY

OLYMPIA DRYCLEANERS PROJECT
Olympia, Washington
Stemen Environmental, Inc.

Specific Halogenated and Aromatic Hydrocarbons (EPA 8021B) in Water

Sample Description		Method Blank	MW-3-W
Date Sampled		4/27/01	4/27/01
Date Analyzed		4/27/01	4/27/01
	MDL (ug/l)	(ug/l)	(ug/l)
Vinyl chloride	5.0	nd	nd
Benzene	1.0	nd	nd
Toluene	1.0	nd	nd
Ethylbenzene	1.0	nd	nd
Total Xylenes	1.0	nd	nd
1,1-Dichloroethene	1.0	nd	nd
Methylene chloride	1.0	nd	nd
trans -1,2-Dichloroethene	1.0	nd	nd
1,1-Dichloroethane	1.0	nd	nd
cis -1,2-Dichloroethene	1.0	nd	nd
Chloroform	1.0	nd	nd
1,1,1-Trichloroethane (TCA)	1.0	nd	nd
Carbon tetrachloride	1.0	nd	nd
1,2-Dichloroethane	1.0	nd	nd
Trichloroethene (TCE)	1.0	nd	nd
1,1,2-Trichloroethane	1.0	nd	nd
Tetrachloroethene (PCE)	1.0	nd	nd
1,1,1,2-Tetrachloroethane	1.0	nd	nd
1,1,2,2-Tetrachloroethane	1.0	nd	nd
Surrogate Recovery (%)		94	65

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Chlorobenzene): 65%- 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

ESN NORTHWEST CHEMISTRY LABORATORY

OLYMPIA DRYCLEANERS PROJECT
Olympia, Washington
Stemen Environmental, Inc.

QA/QC Data - EPA 8021B Analyses

Sample Description: DW-1

Matrix Spike

	Spiked Conc. (ug/l)	Measured Conc. (ug/l)	Spike Recovery (%)
Benzene	1.5	1.7	113
Toluene	1.5	1.6	107
1,1-Dichloroethene	1.5	2.0	133
Trichloroethene (TCE)	1.5	1.5	100
Surrogate Spike			77

Laboratory Control Sample

	Spiked Conc. (ug/l)	Measured Conc. (ug/l)	Spike Recovery (%)
Benzene	1.5	1.6	105
Toluene	1.5	1.6	107
1,1-Dichloroethene	1.5	1.2	79
Trichloroethene (TCE)	1.5	1.0	67
Surrogate Spike			77

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES

CHAIN-OF-CUSTODY RECORD

CLIENT: Stemen Environmental Inc

ADDRESS: 5734 - Puget Beach Road N.E. Olympia

PHONE: 360-438 9521 FAX:

CLIENT PROJECT #: Oly Dry Cleaners PROJECT MANAGER: Paul Stemen

DATE: 4/27/2001 PAGE 1 OF 1

PROJECT NAME: Olympia, Dry Cleaners

LOCATION: Olympia, WA

COLLECTOR: Paul Stemen DATE OF COLLECTION 4/27

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8010/8021B	VOA 8021B BTEX	VOA 8260	SEMI VOL 8270	TPH - HCID	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (d & o)	PAH 8100	PCBs 8082	Pesticides 8081	TOTAL LEAD	pH	NOTES	Total Number of Containers	Laboratory Note Number
1. MW-3-W	32.5		H2O	[illegible]	X		X													
2.																				
3.																				
4.																				
5.																				
6.																				
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RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	4/23/2001	Julie Wielke	4/27/01
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	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

Turn Around Time:

ESN NORTHWEST
Environmental
Services Network

May 4, 2001

Paul Stemen
Stemen Environmental
5724 Puget Beach Road NE
Olympia, WA 98516

Dear Mr. Stemen:

Please find enclosed the analytical data report for the Olympia Dry Cleaners Project in Olympia, Washington. Direct Push Services were conducted on April 27, 2001. Soil and water samples were analyzed for Specific Halogenated Hydrocarbons and BTEX by Method 8021B on May 1 – 3, 2001.

The results of these analyses are summarized in the attached table. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. An invoice for this analytical work is also enclosed.

ESN Northwest appreciates the opportunity to have provided analytical services to Stemen Environmental 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,

Michael A. Korosec
President

677 Woodland Square Lp. SE, Suite D ■ Lacey, Washington 98503 ■ 360.459.4670 ■ FAX 360.459.3432
Web Site: *www.ESN-USA.com* E-Mail: *esnnw@aol.com*

ESN NORTHWEST CHEMISTRY LABORATORY

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Stemen Environmental

Specific Halogenated and Aromatic Hydrocarbons (EPA 8021B) in Soil

Sample Description		Method Blank	S-14	S-12	S-13	S-15
Date Sampled			5/1/01	5/1/01	5/1/01	5/1/01
Date Analyzed		5/2/01	5/2/01	5/2/01	5/2/01	5/2/01
	MDL (mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Vinyl chloride	0.25	nd	nd	nd	nd	nd
Benzene	0.05	nd	nd	nd	nd	nd
Toluene	0.05	nd	nd	nd	nd	nd
Ethylbenzene	0.05	nd	nd	nd	nd	nd
Total Xylenes	0.05	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd	nd
Methylene chloride	0.05	nd	nd	nd	nd	nd
trans -1,2-Dichloroethene	0.05	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.05	nd	nd	nd	nd	nd
cis -1,2-Dichloroethene	0.05	nd	nd	nd	nd	nd
Chloroform	0.05	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.05	nd	nd	nd	nd	nd
Carbon tetrachloride	0.05	nd	nd	nd	nd	nd
1,2-Dichloroethane	0.05	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.05	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	0.05	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.05	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd	nd	nd	nd	nd
Surrogate Recovery (%)		125	75	125	75	125

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Chlorobenzene): 65%- 135%

ANALYSES PERFORMED BY: Marilyn Farmer

ESN NORTHWEST CHEMISTRY LABORATORY

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Stemen Environmental

QA/QC Data - EPA 8021B Analyses

	Sample Description: S-15					
	Matrix Spike			Matrix Spike Duplicate		
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)
Benzene	0.50	0.54	108	0.50	0.63	126
Toluene	0.50	0.55	110	0.50	0.60	120
1,1-Dichloroethene	0.50	0.42	84	0.50	0.54	108
Trichloroethene (TCE)	0.50	0.46	92	0.50	0.58	116
Surrogate Spike			100			103

	Laboratory Control Sample		
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)
Benzene	1.00	0.91	91
Toluene	1.00	0.71	71
1,1-Dichloroethene	1.00	0.88	88
Trichloroethene (TCE)	1.00	0.82	82
Surrogate Spike			69

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%

ANALYSES PERFORMED BY: Marilyn Farmer

ESN NORTHWEST CHEMISTRY LABORATORY

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Stemen Environmental

Specific Halogenated and Aromatic Hydrocarbons (EPA 8021B) in Water

Sample Description		Method Blank	S-14-W	S-13-W	S-12-W	IFD	CHERRY S.W.	MW-3	MW-3 Dup.
Date Sampled			5/1/01	5/1/01	5/1/01	5/1/01	5/1/01	5/1/01	5/1/01
Date Analyzed		5/1/01	5/1/01	5/1/01	5/1/01	5/1/01	5/1/01	5/3/01	5/3/01
	MDL (ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Vinyl chloride	5.0	nd	113	870	1700	nd	nd	nd	nd
Benzene	1.0	nd	nd	nd	nd	nd	nd	nd	nd
Toluene	1.0	nd	0.9	1.0	1.2	7.3	nd	nd	nd
Ethylbenzene	1.0	nd	nd	nd	nd	nd	nd	nd	nd
Total Xylenes	1.0	nd	nd	nd	nd	nd	1.7	nd	nd
1,1-Dichloroethene	1.0	nd	nd	3.1	5.9	230	nd	nd	nd
Methylene chloride	1.0	nd	nd	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	1.0	nd	nd	1.7	1.7	79	nd	nd	nd
1,1-Dichloroethane	1.0	nd	nd	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	1.0	nd	1.4	188	157	61	6.6	nd	nd
Chloroform	1.0	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	1.0	nd	nd	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	1.0	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane	1.0	nd	nd	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	1.0	nd	1.1	45	79	640	1.1	nd	nd
1,1,2-Trichloroethane	1.0	nd	nd	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	1.0	nd	16.0	72	105	280000	2.7	4.4	4.6
1,1,1,2-Tetrachloroethane	1.0	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	1.0	nd	nd	nd	nd	nd	nd	nd	nd
Surrogate Recovery (%)		105	104	102	98	int.	104	94	109

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Chlorobenzene): 65%- 135%

ANALYSES PERFORMED BY: Marilyn Farmer

ESN NORTHWEST CHEMISTRY LABORATORY

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Stemen Environmental

QA/QC Data - EPA 8021B Analyses

Sample Description: S.W. Cherry

Matrix Spike

	Spiked Conc. (ug/l)	Measured Conc. (ug/l)	Spike Recovery (%)
Benzene	5.0	4.1	82
Toluene	5.0	4.3	86
1,1-Dichloroethene	5.0	4.1	82
Trichloroethene (TCE)	5.0	5.5	110
Surrogate Spike			72

Laboratory Control Sample

	Spiked Conc. (ug/l)	Measured Conc. (ug/l)	Spike Recovery (%)
Benzene	5.0	4.8	96
Toluene	5.0	5.9	118
1,1-Dichloroethene	5.0	6.7	134
Trichloroethene (TCE)	5.0	6.1	122
Surrogate Spike			117

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%

ANALYSES PERFORMED BY: Marilyn Farmer

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES

CHAIN-OF-CUSTODY RECORD

CLIENT: Stenen Environmental Inc.

ADDRESS: 5724 - Pilot Beach Road N.E Olympia, WA

PHONE: 360-438-9521 FAX:

CLIENT PROJECT #: Olympia Dry Cleaners PROJECT MANAGER: Paul Stenen

DATE: 5/1/2001 PAGE 1 OF 1

PROJECT NAME: Olympia Dry Cleaners

LOCATION: Olympia, WA

COLLECTOR: Paul Stenen DATE OF COLLECTION 4/30

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8010/8021B	VOA 8021B BTEX	VOA 8260	SEMI VOL 8270	TPH - HCID	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (d & o)	PAH 8100	PCBs 8082	Pesticides 8081	TOTAL LEAD	pH	NOTES	Total Number of Containers	Laboratory Note Number
1. S-14-W		[illegible]	[illegible]	VIAL	X															
2. S-13-W			"	"	X															
3. S-12-W			"	"	X															
4. IFD			"	"	X															
5. CHERRY S.W.			"	"	X															
6.																				
7. S-14	6/9		Soil	JAR	X															
8. S-12	6/9		"	"	X															
9. S-13	6 FT				X															
10. S-15	3 FT		"	"	X															
11.																				
12.																				
13.																				
14.																				
15.																				
16.																				
17.																				
18.																				

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	5/1/2001 1015A	Hilary Lewis	5/1/01 1025A
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

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

LABORATORY NOTES:

Turn Around Time:

SAMPLE DISPOSAL INSTRUCTIONS

☐ TEG DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES

CHAIN-OF-CUSTODY RECORD

CLIENT: STEMEN ENVIRONMENTAL INC

ADDRESS: 5324 - PACIFIC BEACH ROAD NE OLYMPIA, WA

PHONE: 360-438-9521 FAX:

CLIENT PROJECT #: OLYMPIA DRY CLEANERS PROJECT MANAGER: PAUL STEMEN

DATE: 5/2/2001 PAGE 1 OF 1

PROJECT NAME: OLYMPIA DRY CLEANERS

LOCATION: OLYMPIA WA

COLLECTOR: PAUL STEMEN DATE OF COLLECTION 5/2/2001

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: VOA 8010/8021B	VOA 8021B BTEX	VOA 8260	SEMI VOL 8270	TPH - HCID	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (d & o)	PAH 8100	PCBs 8082	Pesticides 8081	TOTAL LEAD	pH	NOTES	Total Number of Containers	Laboratory Note Number
1. MW-FW3			H2O	TRAL	P													H2O level 2.87'		
2.																				
3.																				
4.																				
5.																				
6.																				
7.																				
8.																				
9.																				
10.																				
11.																				
12.																				
13.																				
14.																				
15.																				
16.																				
17.																				
18.																				

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	5/2/001	[signature]	5/2/01
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	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

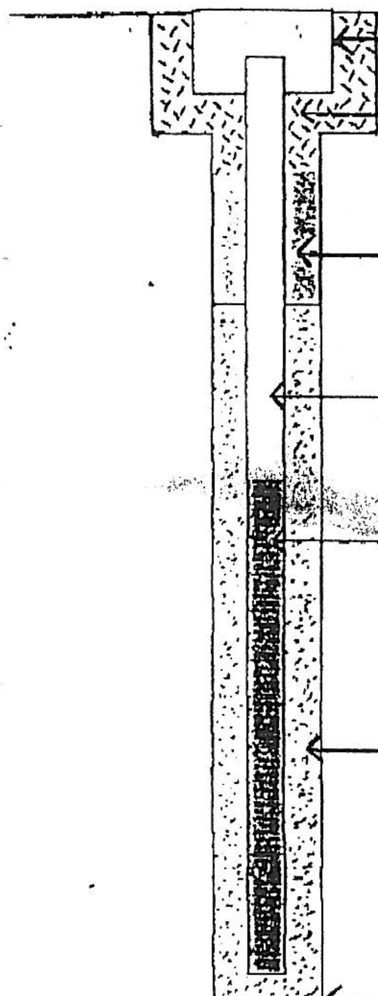
LABORATORY NOTES:

Turn Around Time:

RESOURCE PROTECTION WELL REPORT

START CARD NO. R46459 DECOMMISSION NO. ________

PROJECT NAME: Stemen Howards Dry Cleaner	COUNTY: Thurston
WELL IDENTIFICATION NO. AEN 164	LOCATION: NE ¼ SW ¼ Sec 26 Twn 18N R 2W
DRILLING METHOD: Direct Push	STREET ADDRESS OF WELL: 606 Union AVE SE Olympia WA 98501
DRILLER: Kevin Vandeburg	
FIRM: TEG Northwest, Inc.	WATER LEVEL ELEVATION: 6.5'
SIGNATURE: Kevin Vandeburg	GROUND SURFACE ELEVATION: Not Applicable
CONSULTING FIRM: Stemen Environmental	INSTALLED: 4/9/01
REPRESENTATIVE: Paul Stemen	DEVELOPED: 4/9/01

AS-BUILT	WELL DATA	FORMATION DESCRIPTION
	MONUMENT TYPE: Flush CONCRETE SURFACE SEAL: BACKFILL: 7' TYPE: Bentonite Chip PVC BLANK: 3/4" x 8' PVC SCREEN: 3/4" x 10' SLOT SIZE: 10# TYPE: SAND PACK: Pre Pack MATERIAL: 10/20 Silica WELL DEPTH: 18'	Silts + Fine Sand

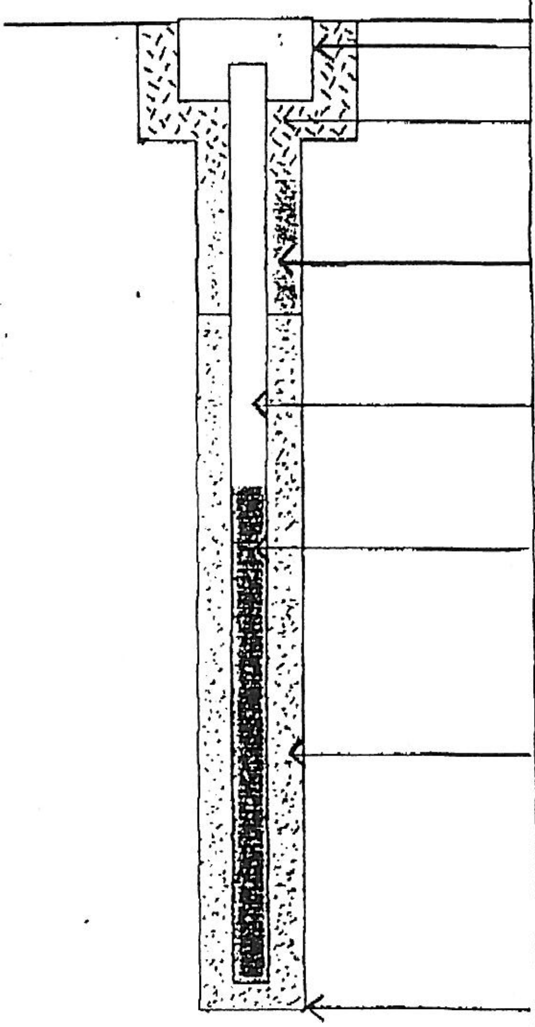
PAGE 1 OF 5

RESOURCE PROTECTION WELL REPORT

START CARD NO. R46459 DECOMMISSION NO. ______

PROJECT NAME: Stemen Haywards Dry Cleaner
WELL IDENTIFICATION NO. AFN 166
DRILLING METHOD: Direct Push
DRILLER: Kevin Vanderhey
FIRM: TEG Northwest, Inc.
SIGNATURE: [signature]
CONSULTING FIRM: Stemen Environ
REPRESENTATIVE: Paul Stemen

COUNTY: Thurston
LOCATION: NE ¼ SW ¼ Sec 26 Twn 18N R 2W
STREET ADDRESS OF WELL: 605 Union Ave SE
Olympia WA 98501
WATER LEVEL ELEVATION: 5'
GROUND SURFACE ELEVATION: Not Applicable
INSTALLED: 4/9/01
DEVELOPED: 4/9/01

AS-BUILT	WELL DATA	FORMATION DESCRIPTION
	MONUMENT TYPE: Flush CONCRETE SURFACE SEAL: ______ BACKFILL: 4' TYPE: Bentonite Chip PVC BLANK: 5' x 3/4" PVC SCREEN: 3/4 x 10' SLOT SIZE: .010 TYPE: ______ SAND PACK: Pre Pack MATERIAL: 10/20 Silica WELL DEPTH: 15'	Silts + Fine Sand

RESOURCE PROTECTION WELL REPORT

START CARD NO. P46959 DECOMMISSION NO. _____

PROJECT NAME: Stevens Howard's Drycleaners
WELL IDENTIFICATION NO.: AED 167
DRILLING METHOD: Direct Push
DRILLER: Kevin Underhay
FIRM: TEG Northwest Inc.
SIGNATURE: [signature]
CONSULTING FIRM: Stevens Env.
REPRESENTATIVE: Paul Stevens

COUNTY: Thurston
LOCATION: NE ¼ SW ¼ Sec 26 Twn 16N R 2W
STREET ADDRESS OF WELL: 605 Cleveland Ave SE Olympia WA 98501
WATER LEVEL ELEVATION: 5'
GROUND SURFACE ELEVATION: Not Applicable
INSTALLED: 4/9/01
DEVELOPED: 4/9/01

AS-BUILT	WELL DATA	FORMATION DESCRIPTION
	MONUMENT TYPE: Flush	Silts + Fine Sand
	CONCRETE SURFACE SEAL:	
	BACKFILL: 3' TYPE: Bentonite chip	
	PVC BLANK: 4' X ¾"	
	PVC SCREEN: ¾" X 5' SLOT SIZE: 10 TYPE:	
	SAND PACK: Pre-Pack MATERIAL: 10/20 Sand	
	WELL DEPTH: 9'	

INTERIM REMEDIAL ACTIVITIES AND GROUNDWATER MONITORING REPORT

FORMER OLYMPIA DRY CLEANERS
606 E. UNION AVENUE
OLYMPIA, WASHINGTON

Prepared By

Paul W. Stemen

Stemen Environmental, Inc.

STEMEN ENVIRONMENTAL, INC.

P.O. BOX 3644
LACEY, WASHINGTON 98501-8212
CONTR. LIC. #STEMEEI081J9

Telephone 360-438-9521 Fax 360-412-1225

January 10, 2003

Mr. Bob Warren
Ecology's Toxics Clean Up Program
P.O. Box 47775
Olympia, Washington 98504-7775

Dear Mr. Warren:

RE: ADDITIONAL REMEDIAL INVESTIGATIONS FOR FORMER OLYMPIA DRY CLEANERS (HOWARD'S DRY CLEANERS) SITE LOCATED AT 606 E. UNION AVENUE, OLYMPIA, WASHINGTON.

This Interim Report documents the recent investigative activities that have been performed on and/or in association with the Former Olympia Dry Cleaners Site in recent months.

ON-SITE OBSERVATIONS

Prior to the commencement of any on-site activities associated with sampling of the subsurface soils at selected locations on the directly northerly neighboring property, I observed that the seepage of waters from beneath the public sidewalk along Cherry Street and directly north of the on-site groundwater monitoring wells #MW-2 and MW-5 had resumed.

I also observed that the although there was no pooled and/or standing waters present in the landscaped area located directly west of the northerly neighboring commercial building, the soils in this area were once again saturated.

I also observed that when the air conditioning unit located on the roof of the Dry Cleaner's Building was shut off, a significant quantity of water was discharged, via a roof drainage pipe, to the asphalt surfaced areas located near the central portion of the western side of the subject property. These discharged waters then flowed down surface gradient to the previously discussed landscaped area which is located on the western portion of the northerly neighboring property.

GROUNDWATER SAMPLING VIA ON-SITE MONITORING WELLS - OCTOBER 1, 2002

On October 1, 2002, I proceeded to obtain groundwater water samples from the seven (7) of the groundwater monitoring wells present on the subject property and the neighboring property located directly north of the subject property using a parastaltic pump.

Prior to the sampling of the waters present in each of the monitoring wells, the monitoring wells were properly purged using a parastaltic pump. The proper purging of these monitoring wells required the removal of a minimum of three (3) volumes of water from each of the monitoring wells. All purged liquids were properly placed in an on-site storage drum for temporary storage purposes.

All groundwater samples were placed in recommended containers with no head space, properly refrigerated and transported with proper chain of custody forms to Environmental Services Network of Lacey, Washington for appropriate laboratory analyses.

All investigative groundwater samples were screened for Specific Halogenated and Aromatic Hydrocarbons using E.P.A. method 8021B.

Laboratory analyses results for groundwater samples MW-6, and MW-7 indicated no detectable presence of Specific Halogenated and Aromatic Hydrocarbons in the groundwaters present in their respective monitoring wells.

Laboratory analyses results for groundwater samples MW-5 indicated presence of Specific Halogenated and Aromatic Hydrocarbons at levels that exceed Ecology's Method "A" Clean Up Levels in the groundwaters obtained from this monitoring well.

Laboratory analyses results for groundwater samples MW-1 (5.7 PPB/parts per billion), and MW-3 (31 PPB/parts per billion) confirmed the presence of Tetrachloroethene at levels that exceed Ecology's Method "A" Clean Up Levels.

Laboratory analyses results for groundwater samples MW-4 confirmed the presence of Trichloroethene (26 PPB/parts per billion) at levels that exceed Ecology's Method "A" Clean Up Levels.

Laboratory analyses results confirmed the presence of Vinyl chloride (1300 PPB), cis 1,2-Dichloroethene (3900 PPB), Trans-1,2 Dichloethene (100 PPB), Trichloroethene (4500 PPB), and Tetrachroethene (50,000 PPB) at levels that exceed Ecology's Method "A" Clean Up Levels in groundwater sample MW-2. It should be noted that the levels of Specific Halogenated present in the recently obtained groundwater samples are substantially higher than the levels that were present in the groundwater sample obtained from this monitoring well during the previous monitoring event performed in July of 2002, but are comparable to the levels of Specific and Halogenated Hydrocarbons that were found to be present in the groundwaters at this sampling location during earlier groundwater sampling events.

Olympia Dry Cleaner's Site

N

Monitoring Well Location
Soil/Groundwater Sample
Storm Sewer Catch Basin
Floor Drain
Surface Soil Sample
Surface Water Sample

Rail Road Track
Soil Berm
Union Avenue
Paved Parking
MW-7
9
MW-4
4
Paved Parking
Grassy Area
MW-6
8
SS-1
Parking Area
10
13
French Drain
Parking Area
Utilities Commission Building
14
Olympia Dry Cleaner's Building
FD
MW-3
Paved Drive Area
MW-11
1
S-3
11
3
S-1
MW-5
MW-2
S-2
2
Cherry SW
2.7
Side Walk
PCE SEEP
Cherry Street

INVESTIGATIVE SOIL SAMPLING ACTIVITIES

On December 7, 2002, I proceeded to obtain a total of three (3) discreet soil samples from the shallow subsurface soils present at selected locations on the landscaped area located on the western portion of the northerly neighboring property.

Investigative soil sample S-1 was obtained from subsurface soils present at an approximate depth of 24 inches b.g.s. at a location near the southeast corner of the landscaped area, investigative soil sample S-2 was obtained from subsurface soils present at an approximate depth of 24 inches b.g.s. at a location approximately 5 feet north of the southwest corner of the landscaped area, and investigative soil sample S-3 was obtained from subsurface soils present at an approximate depth of 24 inches b.g.s at a location approximately 65 feet north and 4 feet west of the southeastern corner of the landscaped area.

All of the above listed investigative soil samples were obtained from subsurface soil present just above the existing water level in this landscaped area.

All investigative soil samples were obtained using a stainless steel bucket auger which was properly cleaned between individual soil samples to prevent cross sample contamination.

All investigative soil samples were placed in recommended containers with no head space, properly refrigerated and transported with proper chain of custody forms to Environmental Services Network of Lacey, Washington for appropriate laboratory analyses.

All investigative soil samples were screened for Specific Halogenated and Aromatic Hydrocarbons using E.P.A. method 8021B.

Laboratory analyses results for investigative soil samples S-1, S-2, and S-3 indicated no presence of Specific Halogenated and Aromatic Hydrocarbons at levels that exceed Ecology's Method "A" Clean Up Levels. in the subsurface soils present at selected locations on the landscaped area located directly west of the northerly neighboring building.

GROUNDWATER SAMPLING VIA ON-SITE MONITORING WELLS - JANUARY 3, 2003

On January 3, 2003, I proceeded to obtain groundwater water samples from the seven (7) of the groundwater monitoring wells present on the subject property and the neighboring property located directly north of the subject property using a parastaltic pump.

Prior to the sampling of the waters present in each of the monitoring wells, the monitoring wells were properly purged using a parastaltic pump. The proper purging of these monitoring wells required the removal of a minimum of three (3) volumes of water from each of the monitoring wells. All purged liquids were properly placed in an on-site storage drum for temporary storage purposes.

All tubing used in association with the parastaltic pump sampling system was properly removed and replaced prior to each individual sampling event to prevent cross sample contamination.

All used tubing was placed in an appropriate container for disposal purposes.

All groundwater samples were placed in recommended containers with no head space, properly refrigerated and transported with proper chain of custody forms to Environmental Services Network of Lacey, Washington for appropriate laboratory analyses.

All investigative groundwater samples were screened for Specific Halogenated and Aromatic Hydrocarbons using E.P.A. method 8021B.

Laboratory analyses results for groundwater samples MW-1, MW-4, MW-5, MW-6, and MW-7 indicated no detectable presence of Specific Halogenated and Aromatic Hydrocarbons in the groundwaters present in their respective monitoring wells.

Laboratory analyses results for groundwater sample MW-3 (12 PPB/parts per billion) confirmed the presence of Tetrachloroethene at levels that exceed Ecology's Method "A" Clean Up Levels.

Laboratory analyses results confirmed the presence of Vinyl chloride (170 PPB), cis 1,2-Dichloroethene (810 PPB), Trichloroethene (34 PPB), and Tetrachroethene (65PPB) at levels that exceed Ecology's Method "A" Clean Up Levels in groundwater sample MW-2. It should be noted that the levels of Specific Halogenated present in the recently obtained groundwater samples are substantially lower than the levels that were present in the groundwater sample obtained from this monitoring well during the previous monitoring event performed in October of 2002.

MONITORING WELL MONUMENT ELEVATIONS

The elevations of each of the groundwater monitoring well's monuments were recently determined by Southwest Surveying of Olympia, Washington and these elevations are listed on the attached Summary of Groundwater Depth and Elevation Data table.

DIRECTION OF GROUNDWATER FLOW

All of the information obtained during these on-site investigations will be supplied to a Licensed Hydrogeologist for his/her review . The Licensed Hydrogeologist will be ask to determine the inferred direction of groundwater flow beneath this site.

The Licensed Hydrogeologist may wish to obtain his/her own groundwater elevation measurements for these calculations.

FINAL COMMENTS:

After receiving the direction of groundwater flow information and any additional comments on the currently available information on this site by the Licensed Hydrogeologist, I believe we can set forth a Remedial Action Plan for the site.

If you have any questions or need any further information regarding the above, please feel free to contact me.

Sincerely,

Paul W. Stemen
Ecology-Registered Site Assessor
IFCI #0874201-26
ASTM Certified

cc: Steven C. Marshall
Gerald Tousley- Thurston County Health Department

Olympia Dry Cleaner's Site

N

- Monitoring Well Location
- Soil/Groundwater Sample
- Storm Sewer Catch Basin
- Floor Drain
- Surface Soil Sample
- Surface Water Sample

Rail Road Track

Soil Berm

Paved Parking

Union Avenue

MW-7
9
24.7

MW-4
21.25

Grassy Area

Paved Parking

MW-6
14.94

SS-1

Parking Area

Parking Area

French Drain

Utilities Commission Building

Olympia Dry Cleaner's Building

IFD

MW-3
24.14

Paved Drive Area

MW-11
21.98

MW-5
23.18

MW-2
23.54

Cherry SW

Side Walk

PCE SEEP

Cherry Street

OCTOBER 2002

SUMMARY OF GROUNDWATER DEPTH AND ELEVATION DATA

WELL NUMBER	TOP OF MONUMENT ELEVATION	DEPTH TO GROUNDWATER	GROUNDWATER ELEVATION
		October 02, 2002	
MW-1	27.58	5.6	21.98
MW-2	23.87	0.33	23.54
MW-3	26.68	2.54	24.14
MW-4	22.9	1.65	21.25
MW-5	23.9	0.72	23.18
MW-6	16.94	2	14.94
MW-7	26.3	1.6	24.7
		January 03, 2003	
MW-1	27.58	5.75	21.83
MW-2	23.87	0.33	23.54
MW-3	26.68	2.71	23.97
MW-4	22.9	1.2	21.7
MW-5	23.9	0.72	23.18
MW-6	16.94	2.7	14.94
MW-7	26.3	0.9	25.4

WELL NUMBER	GROUND LEVEL ELEVATION
MW-7	23.54

ALL MEASUREMENTS ARE IN FEET

SPECIFIC HALOGENATED HYDROCARBONS WATERS (PPB)

SAMPLE-NUMBER	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
DATE	10-01-02	10-01-02	10-01-02	10-01-02	10-01-02	10-01-02	10-01-02
DEPTHS	5.6	0.33	2.54	1.65	0.72	2	1.6
CHLOROMETHANE	ND	ND	ND	ND	ND	ND	ND
VINYL CHLORIDE	ND	1300	ND	ND	ND	ND	ND
BROMOMETHANE	ND	ND	ND	ND	ND	ND	ND
CHLOROETHANE	ND	ND	ND	ND	ND	ND	ND
METHYLENE CHLORIDE	ND	ND	ND	ND	ND	ND	ND
1,1 DICHLOROETHENE	ND	ND	ND	ND	ND	ND	ND
CIS-1,-2 DICHLOROETHENE	ND	3900	ND	ND	ND	ND	ND
TRANS-1,2-DICHLOROETHENE	ND	100	ND	ND	ND	ND	ND
1,1 DICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND
CHLOROFORM	ND	ND	ND	ND	ND	ND	ND
1,1,1- TRICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND
1,2 DICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND
CARBON TETRACHLORIDE	ND	ND	ND	ND	ND	ND	ND
BENZENE	ND	ND	ND	ND	ND	ND	ND
TRICHLOROETHENE TCE	ND	4500	3.6	26	ND	ND	ND
1,2-DICHLOROPROPANE	ND	ND	ND	ND	ND	ND	ND
DIBROMOMETHANE	ND	ND	ND	ND	ND	ND	ND
BROMODICHLOROMETHANE	ND	ND	ND	ND	ND	ND	ND
CIS-1,3-DICHLOROPROPENE	ND	ND	ND	ND	ND	ND	ND
TOLUENE	ND	ND	ND	ND	ND	ND	ND
TRANS-1,3-DICHLOROPROPENE	ND	ND	ND	ND	ND	ND	ND
1,1,2,-TRICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND
DIBROMOCHLOROMETHANE	ND	ND	ND	ND	ND	ND	ND
TETRACHLOROETHENE PCE	5.7	50000	31	4.8	2.9	ND	ND
CHLOROBENZENE	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-TETRACHLOROETHANE	ND	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	ND	ND	ND	ND	ND	ND	ND
XYLENES	ND	ND	ND	ND	ND	ND	ND
BROMOFORM	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	ND	ND	ND	ND	ND	ND	ND
1,2,3-TRICHLOROPROPANE	ND	ND	ND	ND	ND	ND	ND
BROMOBENZENE	ND	ND	ND	ND	ND	ND	ND
m-DICHLOROBENZENE	ND	ND	ND	ND	ND	ND	ND
p-DICHLOROBENZENE	ND	ND	ND	ND	ND	ND	ND
o-DICHLOROBENZENE	ND	ND	ND	ND	ND	ND	ND

SPECIFIC HALOGENATED HYDROCARBONS WATERS (PPB)

SAMPLE-NUMBER	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
DATE	01-03-03	01-03-03	01-03-03	01-03-03	01-03-03	01-03-03	01-03-03
DEPTHS	5.75	0.33	2.71	1.2	0.72	2.7	0.9
CHLOROMETHANE	ND	ND	ND	ND	ND	ND	ND
VINYL CHLORIDE	ND	170	ND	ND	ND	ND	ND
BROMOMETHANE	ND	ND	ND	ND	ND	ND	ND
CHLOROETHANE	ND	ND	ND	ND	ND	ND	ND
METHYLENE CHLORIDE	ND	ND	ND	ND	ND	ND	ND
1,1 DICHLOROETHENE	ND	ND	ND	ND	ND	ND	ND
CIS-1,-2 DICHLOROETHENE	ND	810	ND	ND	ND	ND	ND
TRANS-1,2-DICHLOROETHENE	ND	ND	ND	ND	ND	ND	ND
1,1 DICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND
CHLOROFORM	ND	ND	ND	ND	ND	ND	ND
1,1,1- TRICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND
1,2 DICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND
CARBON TETRACHLORIDE	ND	ND	ND	ND	ND	ND	ND
BENZENE	ND	ND	ND	ND	ND	ND	ND
TRICHLOROETHENE	ND	34	ND	ND	ND	ND	ND
1,2-DICHLOROPROPANE	ND	ND	ND	ND	ND	ND	ND
DIBROMOMETHANE	ND	ND	ND	ND	ND	ND	ND
BROMODICHLOROMETHANE	ND	ND	ND	ND	ND	ND	ND
CIS-1,3-DICHLOROPROPENE	ND	ND	ND	ND	ND	ND	ND
TOLUENE	ND	ND	ND	ND	ND	ND	ND
TRANS-1,3-DICHLOROPROPENE	ND	ND	ND	ND	ND	ND	ND
1,1,2,-TRICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND
DIBROMOCHLOROMETHANE	ND	ND	ND	ND	ND	ND	ND
TETRACHLOROETHENE	ND	65	12	ND	ND	ND	ND
CHLOROBENZENE	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-TETRACHLOROETHANE	ND	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	ND	ND	ND	ND	ND	ND	ND
XYLENES	ND	ND	ND	ND	ND	ND	ND
BROMOFORM	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	ND	ND	ND	ND	ND	ND	ND
1,2,3-TRICHLOROPROPANE	ND	ND	ND	ND	ND	ND	ND
BROMOBENZENE	ND	ND	ND	ND	ND	ND	ND
m-DICHLOROBENZENE	ND	ND	ND	ND	ND	ND	ND
p-DICHLOROBENZENE	ND	ND	ND	ND	ND	ND	ND
o-DICHLOROBENZENE	ND	ND	ND	ND	ND	ND	ND

SPECIFIC HALOGENATED HYDROCARBONS SOILS (PPB)

SAMPLE-NUMBER	S-1	S-2	S-3
DATE	12-07-02	12-07-02	12-07-02
DEPTHS	24"	24"	24"
CHLOROMETHANE	ND	ND	ND
VINYL CHLORIDE	ND	ND	ND
BROMOMETHANE	ND	ND	ND
CHLOROETHANE	ND	ND	ND
METHYLENE CHLORIDE	ND	ND	ND
1,1 DICHLOROETHENE	ND	ND	ND
CIS-1,-2 DICHLOROETHENE	ND	160	ND
TRANS-1,2-DICHLOROETHENE	ND	ND	ND
1,1 DICHLOROETHANE	ND	ND	ND
CHLOROFORM	ND	ND	ND
1,1,1- TRICHLOROETHANE	ND	ND	ND
1,2 DICHLOROETHANE	ND	ND	ND
CARBON TETRACHLORIDE	ND	ND	ND
BENZENE	ND	ND	ND
TRICHLOROETHENE	ND	ND	ND
1,2-DICHLOROPROPANE	ND	ND	ND
DIBROMOMETHANE	ND	ND	ND
BROMODICHLOROMETHANE	ND	ND	ND
CIS-1,3-DICHLOROPROPENE	ND	ND	ND
TOLUENE	ND	55	53
TRANS-1,3-DICHLOROPROPENE	ND	ND	ND
1,1,2,-TRICHLOROETHANE	ND	ND	ND
DIBROMOCHLOROMETHANE	ND	ND	ND
TETRACHLOROETHENE	ND	99	160
CHLOROBENZENE	ND	ND	ND
1,1,1,2-TETRACHLOROETHANE	ND	ND	ND
ETHYLBENZENE	ND	ND	ND
XYLENES	ND	ND	ND
BROMOFORM	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	ND	ND	ND
1,2,3-TRICHLOROPROPANE	ND	ND	ND
BROMOBENZENE	ND	ND	ND
m-DICHLOROBENZENE	ND	ND	ND
p-DICHLOROBENZENE	ND	ND	ND
o-DICHLOROBENZENE	ND	ND	ND

ESN NORTHWEST
Environmental
Services Network

January 16, 2003

Paul Stemen
Stemen Environmental
P.O. Box 3644
Lacey, WA 98509

Dear Mr. Stemen:

Please find enclosed the analytical data report for the Former Olympia Dry Cleaners Project site in Olympia, Washington. Water samples were analyzed for Specific Halogenated Hydrocarbons and BTEX by Method 8021B on January 7, 2003.

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

ESN Northwest appreciates the opportunity to have provided analytical services to Stemen Environmental 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,

Julie Mielke

Julie Mielke
Office Manager

677 Woodland Square Lp. SE, Suite D ■ Lacey, Washington 98503 ■ 360.459.4670 ■ FAX 360.459.3432
Web Site: *www.ESN-USA.com* E-Mail: *esnnw@aol.com*

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

ESN Job Number: S30107-4
Client: STEMEN ENVIRONMENTAL
Client Job Name: FORMER OLYMPIA DRY CLEANERS
Client Job Number: NA

Analytical Results

8021B, µg/l		MTH BLK	LCS	MW-1	MW-2	MW-3	MW-4
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	01/07/03	01/07/03	01/07/03	01/07/03	01/07/03	01/07/03
Date analyzed	Limits	01/07/03	01/07/03	01/07/03	01/07/03	01/07/03	01/07/03
Chloromethane	5.0	nd		nd	nd	nd	nd
Bromomethane	5.0	nd		nd	nd	nd	nd
Vinyl chloride	5.0	nd		nd	170	nd	nd
Chloroethane	5.0	nd		nd	nd	nd	nd
cis-1,2-Dichloroethene	5.0	nd		nd	810	nd	nd
1,1-Dichloroethene	5.0	nd		nd	nd	nd	nd
Methylene Chloride	5.0	nd		nd	nd	nd	nd
trans-1,2-Dichloroethene	5.0	nd		nd	nd	nd	nd
1,1-Dichloroethane	5.0	nd		nd	nd	nd	nd
Chloroform	1.0	nd		nd	nd	nd	nd
1,1,1-Trichloroethane	1.0	nd		nd	nd	nd	nd
Carbontetrachloride	1.0	nd		nd	nd	nd	nd
1,2-Dichloroethane	5.0	nd		nd	nd	nd	nd
Trichloroethene	1.0	nd	128%	nd	34	nd	nd
1,2-Dichloropropane	5.0	nd		nd	nd	nd	nd
Bromodichloromethane	5.0	nd		nd	nd	nd	nd
cis-1,3-Dichloropropene	5.0	nd		nd	nd	nd	nd
trans-1,3-Dichloropropene	5.0	nd		nd	nd	nd	nd
Chlorobenzene	5.0	nd	94%	nd	nd	nd	nd
1,1,2-Trichloroethane	1.0	nd		nd	nd	nd	nd
Tetrachloroethene	1.0	nd		nd	65	12	nd
Dibromochloromethane	5.0	nd		nd	nd	nd	nd
Bromoform	5.0	nd		nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	5.0	nd		nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	5.0	nd		nd	nd	nd	nd
Bromobenzene	5.0	nd		nd	nd	nd	nd
1,2,3-Trichloropropane	5.0	nd		nd	nd	nd	nd
Dibromomethane(*)	0.01	nd		nd	nd	nd	nd
m-Dichlorobenzene	1.0	nd		nd	nd	nd	nd
p-Dichlorobenzene	1.0	nd		nd	nd	nd	nd
o-Dichlorobenzene	1.0	nd		nd	nd	nd	nd
Benzene	1.0	nd	132%	nd	nd	nd	nd
Toluene	1.0	nd	98%	nd	nd	nd	nd
Ethylbenzene	1.0	nd		nd	nd	nd	nd
Xylenes	1.0	nd		nd	nd	nd	nd
*-instrument detection limit							
Surrogate recoveries:							
SURR1		134%	133%	101%	98%	103%	100%
SURR2		75%	75%	101%	101%	99%	98%
SURR3		94%	94%	99%	100%	96%	93%

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
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

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

ESN Job Number:	S30107-4
Client:	STEMEN ENVIRONMENTAL
Client Job Name:	FORMER OLYMPIA DRY CLEANERS
Client Job Number:	NA

Analytical Results

8021B, µg/l		MW-5	MW-6	MW-7
Matrix	Water	Water	Water	Water
Date extracted	Reporting	01/07/03	01/07/03	01/07/03
Date analyzed	Limits	01/07/03	01/07/03	01/07/03
Chloromethane	5.0	nd	nd	nd
Bromomethane	5.0	nd	nd	nd
Vinyl chloride	5.0	nd	nd	nd
Chloroethane	5.0	nd	nd	nd
cis-1,2-Dichloroethene	5.0	nd	nd	nd
1,1-Dichloroethene	5.0	nd	nd	nd
Methylene Chloride	5.0	nd	nd	nd
trans-1,2-Dichloroethene	5.0	nd	nd	nd
1,1-Dichloroethane	5.0	nd	nd	nd
Chloroform	1.0	nd	nd	nd
1,1,1-Trichloroethane	1.0	nd	nd	nd
Carbontetrachloride	1.0	nd	nd	nd
1,2-Dichloroethane	5.0	nd	nd	nd
Trichloroethene	1.0	nd	nd	nd
1,2-Dichloropropane	5.0	nd	nd	nd
Bromodichloromethane	5.0	nd	nd	nd
cis-1,3-Dichloropropene	5.0	nd	nd	nd
trans-1,3-Dichloropropene	5.0	nd	nd	nd
Chlorobenzene	5.0	nd	nd	nd
1,1,2-Trichloroethane	1.0	nd	nd	nd
Tetrachloroethene	1.0	nd	nd	nd
Dibromochloromethane	5.0	nd	nd	nd
Bromoform	5.0	nd	nd	nd
1,1,2,2-Tetrachloroethane	5.0	nd	nd	nd
1,1,1,2-Tetrachloroethane	5.0	nd	nd	nd
Bromobenzene	5.0	nd	nd	nd
1,2,3-Trichloropropane	5.0	nd	nd	nd
Dibromomethane(*)	0.01	nd	nd	nd
m-Dichlorobenzene	1.0	nd	nd	nd
p-Dichlorobenzene	1.0	nd	nd	nd
o-Dichlorobenzene	1.0	nd	nd	nd
Benzene	1.0	nd	nd	nd
Toluene	1.0	nd	nd	nd
Ethylbenzene	1.0	nd	nd	nd
Xylenes	1.0	nd	nd	nd
*-instrument detection limit				
Surrogate recoveries:				
SURR1		100%	100%	100%
SURR2		100%	102%	100%
SURR3		103%	105%	100%

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
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN NORTHWEST | Environmental Services Network

S30107-4

CHAIN-OF-CUSTODY RECORD

CLIENT: STEMEN ENVIRONMENTAL INC.

ADDRESS:

PHONE: 360-438-9521 FAX:

CLIENT PROJECT #: FORMER OLYMPIA DRY CLEANERS PROJECT MANAGER: PAUL STEMEN

DATE: 1/3/03 PAGE 1 OF 1

PROJECT NAME: FORMER OLYMPIA DRY CLEANERS

LOCATION: OLYMPIA, WA.

COLLECTOR: PAUL STEMEN DATE OF COLLECTION 1/3

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	TPH - HCID	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (d & o)	PAH 8100	PAH 8270	PCBs 8082	Pesticides 8081	EPH	VPH	Methamphetamine	Pb	Hex Chrome			NOTES	Total Number of Containers	Laboratory Note Number
1. MW-1			H2O	TAR	X																					
2. MW-2			"	"	X																					
3. MW-3			"	"	X																			MONITORING WELL SAMPLES.		
4. MW-4			"	"	X																					
5. MW-5			"	"	X																					
6. MW-6			"	"	X																					
7. MW-7			"	"	X																					
8.																										
9.																										
10.																										
11.																										
12.																										
13.																										
14.																										
15.																										
16.																										
17.																										
18.																										

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	1/3/03	[signature]	1-3-03
[signature]	1/7/03 2:30	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ ESN DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

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

LABORATORY NOTES:

Turn Around Time: 24 HR 48 HR 5 DAY

ESN NORTHWEST
Environmental
Services Network

October 14, 2002

Paul Stemen
Stemen Environmental
PO Box 3644
Lacey, WA 98509

Dear Mr. Stemen:

Please find enclosed the analytical data report for the Former Olympia Dry Cleaners Project site in Olympia, Washington. Water samples were analyzed for Specific Halogenated Hydrocarbons and BTEX by Method 8021B on October 2, 2002.

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

ESN Northwest appreciates the opportunity to have provided analytical services to Stemen Environmental 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,

Michael A. Korosec

Michael A. Korosec
President

677 Woodland Square Lp. SE, Suite D ■ Lacey, Washington 98503 ■ 360.459.4670 ■ FAX 360.459.3432
Web Site: *www.ESN-USA.com* E-Mail: *esnnw@aol.com*

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

ESN Job Number: S21002-11
Client: STEMEN ENVIRONMENTAL
Client Job Name: FORMER OLYMPIA DRYCLEANERS
Client Job Number: FORMER OLYMPIA DRYCLEANERS

Analytical Results

8021B, µg/l		MTH BLK	LCS	MW1	MS	MSD	RPD
Matrix	water	water	water	water	MW1 water	MW1 water	MW1 water
Date extracted	Reporting	10/02/02	10/02/02	10/02/02	10/02/02	10/02/02	10/02/02
Date analyzed	Limits	10/02/02	10/02/02	10/02/02	10/02/02	10/02/02	10/02/02
Chloromethane	5.0	nd		nd			
Bromomethane	5.0	nd		nd			
Vinyl chloride	5.0	nd		nd			
Chloroethane	5.0	nd		nd			
cis-1,2-Dichloroethene	5.0	nd		nd			
1,1-Dichloroethene	5.0	nd		nd			
Methylene Chloride	0.4	nd		nd			
trans-1,2-Dichloroethene	5.0	nd		nd			
1,1-Dichloroethane	5.0	nd		nd			
Chloroform	1.0	nd		nd			
1,1,1-Trichloroethane	1.0	nd		nd			
Carbontetrachloride	1.0	nd		nd			
1,2-Dichloroethane	5.0	nd		nd			
Trichloroethene	0.4	nd	117%	nd	120%	123%	2%
1,2-Dichloropropane	5.0	nd		nd			
Bromodichloromethane	5.0	nd		nd			
cis-1,3-Dichloropropene	5.0	nd		nd			
trans-1,3-Dichloropropene	5.0	nd		nd			
Chlorobenzene	5.0	nd	123%	nd	130%	130%	0%
1,1,2-Trichloroethane	1.0	nd		nd			
Tetrachloroethene	0.4	nd		5.7			
Dibromochloromethane	5.0	nd		nd			
Bromoform	5.0	nd		nd			
1,1,2,2-Tetrachloroethane	5.0	nd		nd			
1,1,1,2-Tetrachloroethane	5.0	nd		nd			
Bromobenzene	5.0	nd		nd			
1,2,3-Trichloropropane	5.0	nd		nd			
Dibromomethane(*)	0.2	nd		nd			
m-Dichlorobenzene	1.0	nd		nd			
p-Dichlorobenzene	1.0	nd		nd			
o-Dichlorobenzene	1.0	nd		nd			
Benzene	0.4	nd	65%	nd	66%	67%	2%
Toluene	1.0	nd	84%	nd	86%	87%	1%
Ethylbenzene	1.0	nd		nd			
Xylenes	1.0	nd		nd			
*-instrument detection limit							
Surrogate recoveries:							
Bromochloromethane		103%	102%	72%	102%	101%	
1,4-Dichlorobutane		106%	104%	87%	105%	102%	
Bromochloropropane		104%	103%	89%	103%	98%	
Trifluorotoluene		99%	91%	91%	91%	87%	
Bromofluorobenzene		106%	104%	106%	104%	103%	

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%

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

ESN Job Number:	S21002-11
Client:	STEMEN ENVIRONMENTAL
Client Job Name:	FORMER OLYMPIA DRYCLEANERS
Client Job Number:	FORMER OLYMPIA DRYCLEANERS

Analytical Results

8021B, µg/l		MW2	MW3	MW4	MW5	MW6	MW7
Matrix	water	water	water	water	water	water	water
Date extracted	Reporting	10/02/02	10/02/02	10/02/02	10/02/02	10/02/02	10/02/02
Date analyzed	Limits	10/02/02	10/02/02	10/02/02	10/02/02	10/02/02	10/02/02
Chloromethane	5.0	nd	nd	nd	nd	nd	nd
Bromomethane	5.0	nd	nd	nd	nd	nd	nd
Vinyl chloride	5.0	1,300	nd	nd	nd	nd	nd
Chloroethane	5.0	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	5.0	3,900	nd	nd	nd	nd	nd
1,1-Dichloroethene	5.0	nd	nd	nd	nd	nd	nd
Methylene Chloride	0.4	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	5.0	100	nd	nd	nd	nd	nd
1,1-Dichloroethane	5.0	nd	nd	nd	nd	nd	nd
Chloroform	1.0	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane	1.0	nd	nd	nd	nd	nd	nd
Carbontetrachloride	1.0	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane	5.0	nd	nd	nd	nd	nd	nd
Trichloroethene	0.4	4,500	3.6	26	nd	nd	nd
1,2-Dichloropropane	5.0	nd	nd	nd	nd	nd	nd
Bromodichloromethane	5.0	nd	nd	nd	nd	nd	nd
cis-1,3-Dichloropropene	5.0	nd	nd	nd	nd	nd	nd
trans-1,3-Dichloropropene	5.0	nd	nd	nd	nd	nd	nd
Chlorobenzene	5.0	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	1.0	nd	nd	nd	nd	nd	nd
Tetrachloroethene	0.4	50,000	31	4.8	2.9	nd	nd
Dibromochloromethane	5.0	nd	nd	nd	nd	nd	nd
Bromoform	5.0	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	5.0	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	5.0	nd	nd	nd	nd	nd	nd
Bromobenzene	5.0	nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	5.0	nd	nd	nd	nd	nd	nd
Dibromomethane(*)	0.2	nd	nd	nd	nd	nd	nd
m-Dichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
p-Dichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
o-Dichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
Benzene	0.4	nd	nd	nd	nd	nd	nd
Toluene	1.0	nd	nd	nd	nd	nd	nd
Ethylbenzene	1.0	nd	nd	nd	nd	nd	nd
Xylenes	1.0	nd	nd	nd	nd	nd	nd
*-instrument detection limit							
Surrogate recoveries:							
Bromochloromethane		C	72%	70%	72%	72%	72%
1,4-Dichlorobutane		93%	89%	93%	88%	88%	89%
Bromochloropropane		105%	105%	101%	102%	101%	103%
Trifluorotoluene		90%	88%	91%	83%	83%	79%
Bromofluorobenzene		114%	107%	111%	106%	109%	104%

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%

ESN NORTHWEST | Environmental Services Network

S21002-11

CHAIN-OF-CUSTODY RECORD

CLIENT: STEMEN ENVIRONMENTAL INC

ADDRESS:

PHONE: 360-438-9521 FAX:

CLIENT PROJECT #: Former Olympia Dry Cleaners PROJECT MANAGER: PAUL STEMEN

DATE: 10/2/02 PAGE 1 OF 1

PROJECT NAME: Former Olympia Dry Cleaners

LOCATION:

COLLECTOR: PAUL STEMEN DATE OF COLLECTION 10/1

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	TPH - HCID	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (d & o)	PAH 8100	PAH 8270	PCBs 8082	Pesticides 8081	EPH	VPH	Methamphetamine	Pb	Hex Chrome	NOTES	Total Number of Containers	Laboratory Note Number
1. MW1			H2O	VIAL	X						X													
2. MW2			"	"	X						X													
3. MW3			"	"	X						X													
4. MW4			"	"	X						X													
5. MW5			"	"	X						X													
6. MW6			"	"	X						X													
7. MW7			"	"	X						X													
8.																								
9.																								
10.																								
11.																								
12.																								
13.																								
14.																								
15.																								
16.																								
17.																								
18.																								

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
	10/1/02		10-1-02
	10-2-02		10/02/02

SAMPLE DISPOSAL INSTRUCTIONS

☐ ESN DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

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

LABORATORY NOTES:

ASAP

Turn Around Time: 24 HR 48 HR 5 DAY

ESN NORTHWEST | Environmental Services Network

December 17, 2002

Paul Stemen
Stemen Environmental
P.O. Box 3644
Lacey, WA 98509

Dear Mr. Stemen:

Please find enclosed the analytical data report for the Former Olympia Dry Cleaners Project site in Olympia, Washington. Soil samples were analyzed for Specific Halogenated Hydrocarbons and BTEX by Method 8021B on December 11, 2002.

The results of these analyses are summarized in the attached tables. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. An invoice for this analytical work is also enclosed.

ESN Northwest appreciates the opportunity to have provided analytical services to Stemen Environmental 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,

Michael A Korosec

Michael A. Korosec
President

677 Woodland Square Lp. SE, Suite D ■ Lacey, Washington 98503 ■ 360.459.4670 ■ FAX 360.459.3432
Web Site: *www.ESN-USA.com* E-Mail: *esnnw@aol.com*

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

ESN Job Number: S21211-5
Client: STEMEN ENVIRONMENTAL
Client Job Name: FORMER OLYMPIA DRY CLEANERS
Client Job Number: FORMER OLYMPIA DRY CLEANERS

Analytical Results

8021B, µg/kg		MTH BLK	LCS	S-1	S-2	S-3
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	12/11/02	12/11/02	12/11/02	12/11/02	12/11/02
Date analyzed	Limits	12/11/02	12/11/02	12/11/02	12/11/02	12/11/02
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	160	nd
1,1-Dichloroethene	250	nd		nd	nd	nd
Methylene Chloride	20	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	20	nd	94%	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	116%	nd	nd	nd
1,1,2-Trichloroethane	50	nd		nd	nd	nd
Tetrachloroethene	20	nd		nd	99	160
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(*)	5.0	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
Benzene	20	nd	98%	nd	nd	nd
Toluene	50	nd	116%	nd	55	53
Ethylbenzene	50	nd		nd	nd	nd
Xylenes	50	nd		nd	nd	nd
*-instrument detection limit						
Surrogate recoveries:						
Bromochloromethane		82%	87%	78%	91%	89%
1,4-Dichlorobutane		92%	102%	88%	97%	97%
Bromochloropropane		73%	95%	93%	96%	95%
Trifluorotoluene		103%	109%	95%	101%	104%
Bromofluorobenzene		106%	122%	102%	113%	120%

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%

ESN NORTHWEST | Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: Stellar Environmental Log

ADDRESS:

PHONE: 360 438 9521 FAX:

CLIENT PROJECT # Former Olympia Cleaners PROJECT MANAGER: Paul Strand

DATE: 8/7/02 PAGE 1 OF 1

PROJECT NAME: Former Olympia City Cleaners

LOCATION: Olympia, WA

COLLECTOR: Paul Strand DATE OF COLLECTION: 8/5/02

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	TPH - HCID	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (d & o)	PAH 8100	PAH 8270	PCBs 8082	Pesticides 8081	EPH	VPH	Methamphetamine	Pb	Hex Chrome	NOTES	Total Number of Containers	Laboratory Note Number
1. S-1	24"		Soil	Jar	X																			
2. S-2	24"		"	"	X																			
3. S-3	24"		"	"	X																			
4.																						WATER AT		
5.																						24" B.G.S.		
6.																								
7.																								
8.																								
9.																								
10.																								
11.																								
12.																								
13.																								
14.																								
15.																								
16.																								
17.																								
18.																								

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
			12/9/02 9:15 AM
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ ESN DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

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

LABORATORY NOTES:

Turn Around Time: 24 HR 48 HR 5 DAY

ADDITIONAL REMEDIAL INVESTIGATIONS REPORT

FRORMER OLYMPIA DRY CLEANERS
606 EAST UNION AVENUE
OLYMPIA, WASHINGTON

Prepared By

Paul W. Stemen

Stemen Environmental, Inc.

STEMEN ENVIRONMENTAL, INC.

P.O. BOX 3644
LACEY, WASHINGTON 98501-8212
CONTR. LIC. #STEMEEI081J9

Telephone 360-438-9521 Fax 360-412-1225

May 20, 2003

Mr. Bob Warren
Ecology's Toxics Clean Up Program
P.O. Box 47775
Olympia, Washington 98504-7775

Dear Mr. Warren:

RE: ADDITIONAL REMEDIAL INVESTIGATIONS FOR FORMER OLYMPIA DRY CLEANERS (HOWARD'S DRY CLEANERS) SITE LOCATED AT 606 E. UNION AVENUE, OLYMPIA, WASHINGTON.

This Interim Report documents the recent investigative activities that have been performed on and/or in association with the Former Olympia Dry Cleaners Site in recent months.

GROUNDWATER SAMPLING VIA ON-SITE MONITORING WELLS - MAY 2, 2003

On May 2, 2003, I proceeded to obtain groundwater water samples from the seven (7) of the groundwater monitoring wells present on the subject property and the neighboring property located directly north of the subject property using a parastaltic pump.

Prior to the sampling of the waters present in each of the monitoring wells, the monitoring wells were properly purged using a parastaltic pump. The proper purging of these monitoring wells required the removal of a minimum of three (3) volumes of water from each of the monitoring wells. All purged liquids were properly placed in an on-site storage drum for temporary storage purposes.

All groundwater samples were placed in recommended containers with no head space, properly refrigerated and transported with proper chain of custody forms to Environmental Services Network of Lacey, Washington for appropriate laboratory analyses.

All investigative groundwater samples were screened for Volatile Organic Compounds using E.P.A. method 8260.

Laboratory analyses results for groundwater samples MW-1, MW-3, MW-4, MW-5, MW-6, and MW-7 indicated no detectable presence of Volatile Organic Compounds in the groundwaters present in their respective monitoring wells.

Laboratory analyses results confirmed the presence of Vinyl chloride (790PPB), cis 1,2-Dichloroethene (2800 PPB), Trichloroethene (2200 PPB), and Tetrachroethene (15,000 PPB) at levels that exceed Ecology's Method "A" Clean Up Levels in groundwater sample MW-2.

ADDITIONAL WATER SAMPLING - JANUARY 3, 2003

On May 2, 2003, I proceeded to obtain water sample CW from the waters released from the operational cooling unit mounted on the western central portion of the on-site building's roof.

These released waters were drained directly into the laboratory supplied containers
with no head space, properly refrigerated and transported with proper chain of custody forms to Environmental Services Network of Lacey, Washington for appropriate laboratory analyses.

The water sample was screened for Volatile Organic Compounds using E.P.A. method 8260.

Laboratory analyses results for water sample CW confirmed the presence of Methlylene Chloride, at levels exceeding Ecology's Method "A" Clean Up Levels, in the waters released from the roof mounted cooling unit.

MONITORING WELL MONUMENT ELEVATIONS

The elevations of each of the groundwater monitoring well's monuments were recently determined by Southwest Surveying of Olympia, Washington and these elevations are listed on the attached Summary of Groundwater Depth and Elevation Data table.

If you have any questions or need any further information regarding the above, please feel free to contact me.

Sincerely,

Paul W. Stemen
Ecology-Registered Site Assessor
IFCI #0874201-26
ASTM Certified

cc: Steven C. Marshall
Gerald Tousley- Thurston County Health Department

SUMMARY OF GROUNDWATER DEPTH AND ELEVATION DATA

WELL NUMBER	TOP OF MONUMENT ELEVATION	DEPTH TO GROUNDWATER	GROUNDWATER ELEVATION
		May 02, 2003	
MW-1	27.58	6.2	21.38
MW-2	23.87	0.33	23.54
MW-3	26.68	2.74	23.94
MW-4	22.9	1.43	21.47
MW-5	23.9	0.72	23.18
MW-6	16.94	1.28	15.66
MW-7	26.3	1.39	25.01

MW-7	GROUND LEVEL ELEVATION
	23.54

ALL MEASUREMENTS ARE IN FEET

SPECIFIC HALOGENATED HYDROCARBONS WATERS (PPB)								
SAMPLE-NUMBER	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	CS
DATE	5-2-03	5-2-03	5-2-03	5-2-03	5-2-03	5-2-03	5-2-03	5-2-03
DEPTHS IN FEET	6.2	0.33	2.74	1.43	0.72	1.28	1.39	
DICHLORODIFLUOROMETHANE	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROMETHANE	ND	ND	ND	ND	ND	ND	ND	ND
VINYL CHLORIDE	ND	**790**	ND	ND	ND	ND	ND	ND
BROMOMETHANE	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROFLUOROMETHANE	ND	ND	ND	ND	ND	ND	ND	ND
1,1 DICHLOROETHENE	ND	ND	ND	ND	ND	ND	ND	ND
METHYLENE CHLORIDE	ND	ND	ND	ND	ND	ND	ND	**28**
TRANS-1,2-DICHLOROETHENE	ND	ND	ND	ND	ND	ND	ND	ND
1,1 DICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND
CIS-1,-2 DICHLOROETHENE	ND	**2800**	ND	ND	ND	ND	ND	ND
2,2-DICHLOROPROPANE	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROFORM	ND	ND	ND	ND	ND	ND	ND	ND
BROMODICHLOROMETHANE	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1- TRICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND
1,2 DICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DICHLOROPROPENE	ND	ND	ND	ND	ND	ND	ND	ND
CARBON TETRACHLORIDE	ND	ND	ND	ND	ND	ND	ND	ND
BENZENE	ND	ND	ND	ND	ND	ND	ND	ND
TRICHLOROETHENE	ND	**2200**	ND	ND	ND	ND	ND	ND
1,2-DICHLOROPROPANE	ND	ND	ND	ND	ND	ND	ND	ND
DIBROMOMETHANE	ND	ND	ND	ND	ND	ND	ND	ND
BROMODICHLOROMETHANE	ND	ND	ND	ND	ND	ND	ND	ND
CIS-1,3-DICHLOROPROPENE	ND	ND	ND	ND	ND	ND	ND	ND
TOLUENE	ND	ND	ND	ND	ND	ND	ND	ND
TRANS-1,3-DICHLOROPROPENE	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,-TRICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND
DIBROMOCHLOROMETHANE	ND	ND	ND	ND	ND	ND	ND	ND
TETRACHLOROETHENE	ND	**15000**	ND	ND	ND	ND	ND	ND
1,2-DIBROMOETHANE	ND	ND	ND	ND	ND	ND	ND	ND
CHLOROBENZENE	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-TETRACHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	ND	ND	ND	ND	ND	ND	ND	ND
XYLENES	ND	ND	ND	ND	ND	ND	ND	ND
STYRENE	ND	ND	ND	ND	ND	ND	ND	ND
BROMOFORM	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	ND	ND	ND	ND	ND	ND	ND	ND
ISOPROPYLBENZENE	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-TRICHLOROPROPANE	ND	ND	ND	ND	ND	ND	ND	ND
BROMOBENZENE	ND	ND	ND	ND	ND	ND	ND	ND
N-PROPYLBENZENE	ND	ND	ND	ND	ND	ND	ND	ND
2-CHLOROTOULENE	ND	ND	ND	ND	ND	ND	ND	ND
4-CHLOROTOLUENE	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-TRIMETHYLBENZENE	ND	ND	ND	ND	ND	ND	ND	ND
TERT-BUTYLBENZENE	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-TRIMETHYLBENZENE	ND	ND	ND	ND	ND	ND	ND	ND
SEC-BUTYLBENZENE	ND	ND	ND	ND	ND	ND	ND	ND
1,3-DICHLOROBENZENE	ND	ND	ND	ND	ND	ND	ND	ND
1,4-DICHLOROBENZENE	ND	ND	ND	ND	ND	ND	ND	ND
ISOPROPYLTOLUENE	ND	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROBENZENE	ND	ND	ND	ND	ND	ND	ND	ND
N-BUTYLBENZENE	ND	ND	ND	ND	ND	ND	ND	ND

SPECIFIC HALOGENATED HYDROCARBONS WATERS (PPB)								
SAMPLE-NUMBER	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	CS
DATE	5-2-03	5-2-03	5-2-03	5-2-03	5-2-03	5-2-03	5-2-03	5-2-03
DEPTHS IN FEET	6.2	0.33	2.74	1.43	0.72	1.28	1.39	
1,2-DIBROMO-3-CHLOROPROPANE	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-TRICHLOROBENZENE	ND	ND	ND	ND	ND	ND	ND	ND
NAPHTHALENE	ND	ND	ND	ND	ND	ND	ND	ND
HEXACHLORO-1,3-BUTADIENE	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-TRICHLOROBENZENE	ND	ND	ND	ND	ND	ND	ND	ND

ESN NORTHWEST | Environmental Services Network

May 12, 2003

Paul Stemen
Stemen Environmental
P.O. Box 3644
Lacey, WA 98509

Dear Mr. Stemen:

Please find enclosed the analytical data report for the Former Olympia Dry Cleaners Project site in Olympia, Washington. Water samples were analyzed for VOC's by Method 8260 on May 7, 2003.

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

ESN Northwest appreciates the opportunity to have provided analytical services to Stemen Environmental 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,

Michael A Korosec

Michael A. Korosec
President

677 Woodland Square Lp. SE, Suite D ▪ Lacey, Washington 98503 ▪ 360.459.4670 ▪ FAX 360.459.3432
Web Site: *www.ESN-USA.com* E-Mail: *esnnw@aol.com*

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

ESN Job Number: S30506-2
Client: STEMEN ENVIRONMENTAL, INC.
Client Job Name: FORMER OLYMPIA DRY CLEANERS
Client Job Number:

Analytical Results

8260, µg/L		MTH BLK	LCS	MW-1	MW-2	MW-3	MW-4
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	05/07/03	05/07/03	05/07/03	05/07/03	05/08/03	05/07/03
Date analyzed	Limits	05/07/03	05/07/03	05/07/03	05/07/03	05/08/03	05/07/03
Dichlorodifluoromethane	1.0	nd		nd	nd	nd	nd
Chloromethane	1.0	nd		nd	nd	nd	nd
Vinyl chloride	0.2	nd		nd	**790**	nd	nd
Bromomethane	1.0	nd		nd	nd	nd	nd
Chloroethane	1.0	nd		nd	nd	nd	nd
Trichlorofluoromethane	1.0	nd		nd	nd	nd	nd
1,1-Dichloroethene	1.0	nd		nd	nd	nd	nd
Methylene chloride	1.0	nd		nd	nd	nd	nd
trans-1,2-Dichloroethene	1.0	nd		nd	nd	nd	nd
1,1-Dichloroethane	1.0	nd		nd	nd	nd	nd
cis-1,2-Dichloroethene	1.0	nd		nd	**2,800**	nd	nd
2,2-Dichloropropane	1.0	nd		nd	nd	nd	nd
Chloroform	1.0	nd		nd	nd	nd	nd
Bromochloromethane	1.0	nd		nd	nd	nd	nd
1,1,1-Trichloroethane	1.0	nd		nd	nd	nd	nd
1,2-Dichloroethane	1.0	nd		nd	nd	nd	nd
1,1-Dichloropropene	1.0	nd		nd	nd	nd	nd
Carbon tetrachloride	1.0	nd		nd	nd	nd	nd
Benzene	1.0	nd	99%	nd	nd	nd	nd
Trichloroethene	1.0	nd		nd	**2,200**	nd	nd
1,2-Dichloropropane	1.0	nd		nd	nd	nd	nd
Dibromomethane	1.0	nd		nd	nd	nd	nd
Bromodichloromethane	1.0	nd		nd	nd	nd	nd
cis-1,3-Dichloropropene	1.0	nd		nd	nd	nd	nd
Toluene	1.0	nd	105%	nd	nd	nd	nd
trans-1,3-Dichloropropene	1.0	nd		nd	nd	nd	nd
1,1,2-Trichloroethane	1.0	nd		nd	nd	nd	nd
1,3-Dichloropropane	1.0	nd		nd	nd	nd	nd
Dibromochloromethane	1.0	nd		nd	nd	nd	nd
Tetrachloroethene	1.0	nd		nd	**15,000**	nd	nd
1,2-Dibromoethane (EDB)(*)	0.01	nd		nd	nd	nd	nd
Chlorobenzene	1.0	nd		nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	1.0	nd		nd	nd	nd	nd
Ethylbenzene	1.0	nd		nd	nd	nd	nd
Xylenes	1.0	nd		nd	nd	nd	nd
Styrene	1.0	nd		nd	nd	nd	nd
Bromoform	1.0	nd		nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	1.0	nd		nd	nd	nd	nd
Isopropylbenzene	1.0	nd		nd	nd	nd	nd
1,2,3-Trichloropropane	1.0	nd		nd	nd	nd	nd
Bromobenzene	1.0	nd		nd	nd	nd	nd
n-Propylbenzene	1.0	nd		nd	nd	nd	nd
2-Chlorotoluene	1.0	nd		nd	nd	nd	nd
4-Chlorotoluene	1.0	nd		nd	nd	nd	nd
1,3,5-Trimethylbenzene	1.0	nd		nd	nd	nd	nd
tert-Butylbenzene	1.0	nd		nd	nd	nd	nd
1,2,4-Trimethylbenzene	1.0	nd		nd	nd	nd	nd
sec-Butylbenzene	1.0	nd		nd	nd	nd	nd
1,3-Dichlorobenzene	1.0	nd		nd	nd	nd	nd
1,4-Dichlorobenzene	1.0	nd		nd	nd	nd	nd
Isopropyltoluene	1.0	nd		nd	nd	nd	nd
1,2-Dichlorobenzene	1.0	nd		nd	nd	nd	nd
n-Butylbenzene	1.0	nd		nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	1.0	nd		nd	nd	nd	nd
1,2,4-Trichlorobenzene	1.0	nd		nd	nd	nd	nd
Naphthalene	1.0	nd		nd	nd	nd	nd
Hexachloro-1,3-butadiene	1.0	nd		nd	nd	nd	nd
1,2,3-Trichlorobenzene	1.0	nd		nd	nd	nd	nd

*-instrument detection limits

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

ESN Job Number: S30506-2
Client: STEMEN ENVIRONMENTAL, INC.
Client Job Name: FORMER OLYMPIA DRY CLEANERS
Client Job Number:

Analytical Results

8260, µg/L		MTH BLK	LCS	MW-1	MW-2	MW-3	MW-4
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	05/07/03	05/07/03	05/07/03	05/07/03	05/08/03	05/07/03
Date analyzed	Limits	05/07/03	05/07/03	05/07/03	05/07/03	05/08/03	05/07/03
Surrogate recoveries							
Dibromofluoromethane		96%	94%	96%	94%	99%	94%
Toluene-d8		101%	100%	102%	102%	99%	101%
4-Bromofluorobenzene		97%	99%	98%	98%	95%	106%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

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

ESN Job Number: S30506-2
Client: STEMEN ENVIRONMENTAL, INC.
Client Job Name: FORMER OLYMPIA DRY CLEANER
Client Job Number:

Analytical Results

8260, µg/L		MW-5	MW-6	MW-7	CW	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	05/07/03	05/07/03	05/07/03	05/07/03	05/07/03	05/07/03	
Date analyzed	Limits	05/07/03	05/07/03	05/07/03	05/07/03	05/07/03	05/07/03	
Dichlorodifluoromethane	1.0	nd	nd	nd	nd			
Chloromethane	1.0	nd	nd	nd	nd			
Vinyl chloride	0.2	nd	nd	nd	nd			
Bromomethane	1.0	nd	nd	nd	nd			
Chloroethane	1.0	nd	nd	nd	nd			
Trichlorofluoromethane	1.0	nd	nd	nd	nd			
1,1-Dichloroethene	1.0	nd	nd	nd	nd			
Methylene chloride	1.0	nd	nd	nd	nd			
trans-1,2-Dichloroethene	1.0	nd	nd	nd	**28**			
1,1-Dichloroethane	1.0	nd	nd	nd	nd			
cis-1,2-Dichloroethene	1.0	nd	nd	nd	nd			
2,2-Dichloropropane	1.0	nd	nd	nd	nd			
Chloroform	1.0	nd	nd	nd	nd			
Bromochloromethane	1.0	nd	nd	nd	nd			
1,1,1-Trichloroethane	1.0	nd	nd	nd	nd			
1,2-Dichloroethane	1.0	nd	nd	nd	nd			
1,1-Dichloropropene	1.0	nd	nd	nd	nd			
Carbon tetrachloride	1.0	nd	nd	nd	nd			
Benzene	1.0	nd	nd	nd	nd			
Trichloroethene	1.0	nd	nd	nd	nd	87%	87%	0%
1,2-Dichloropropane	1.0	nd	nd	nd	nd			
Dibromomethane	1.0	nd	nd	nd	nd			
Bromodichloromethane	1.0	nd	nd	nd	nd			
cis-1,3-Dichloropropene	1.0	nd	nd	nd	nd			
Toluene	1.0	nd	nd	nd	nd			
trans-1,3-Dichloropropene	1.0	nd	nd	nd	nd	89%	91%	2%
1,1,2-Trichloroethane	1.0	nd	nd	nd	nd			
1,3-Dichloropropane	1.0	nd	nd	nd	nd			
Dibromochloromethane	1.0	nd	nd	nd	nd			
Tetrachloroethene	1.0	nd	nd	nd	nd			
1,2-Dibromoethane (EDB)(*)	1.0	nd	nd	nd	nd			
Chlorobenzene	0.01	nd	nd	nd	nd			
1,1,1,2-Tetrachloroethane	1.0	nd	nd	nd	nd			
Ethylbenzene	1.0	nd	nd	nd	nd			
Xylenes	1.0	nd	nd	nd	nd			
Styrene	1.0	nd	nd	nd	nd			
Bromoform	1.0	nd	nd	nd	nd			
1,1,2,2-Tetrachloroethane	1.0	nd	nd	nd	nd			
Isopropylbenzene	1.0	nd	nd	nd	nd			
1,2,3-Trichloropropane	1.0	nd	nd	nd	nd			
Bromobenzene	1.0	nd	nd	nd	nd			
n-Propylbenzene	1.0	nd	nd	nd	nd			
2-Chlorotoluene	1.0	nd	nd	nd	nd			
4-Chlorotoluene	1.0	nd	nd	nd	nd			
1,3,5-Trimethylbenzene	1.0	nd	nd	nd	nd			
tert-Butylbenzene	1.0	nd	nd	nd	nd			
1,2,4-Trimethylbenzene	1.0	nd	nd	nd	nd			
sec-Butylbenzene	1.0	nd	nd	nd	nd			
1,3-Dichlorobenzene	1.0	nd	nd	nd	nd			
1,4-Dichlorobenzene	1.0	nd	nd	nd	nd			
Isopropyltoluene	1.0	nd	nd	nd	nd			
1,2-Dichlorobenzene	1.0	nd	nd	nd	nd			
n-Butylbenzene	1.0	nd	nd	nd	nd			
1,2-Dibromo-3-Chloropropane	1.0	nd	nd	nd	nd			
1,2,4-Trichlorobenzene	1.0	nd	nd	nd	nd			
Naphthalene	1.0	nd	nd	nd	nd			
Hexachloro-1,3-butadiene	1.0	nd	nd	nd	nd			
1,2,3-Trichlorobenzene	1.0	nd	nd	nd	nd			

*-instrument detection limits

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

ESN Job Number: S30506-2
Client: STEMEN ENVIRONMENTAL, INC.
Client Job Name: FORMER OLYMPIA DRY CLEANER
Client Job Number:

Analytical Results

8260, µg/L		MW-5	MW-6	MW-7	CW	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	05/07/03	05/07/03	05/07/03	05/07/03	05/07/03	05/07/03	
Date analyzed	Limits	05/07/03	05/07/03	05/07/03	05/07/03	05/07/03	05/07/03	
Surrogate recoveries								
Dibromofluoromethane		97%	95%	98%	96%	93%	92%	
Toluene-d8		101%	101%	100%	103%	101%	101%	
4-Bromofluorobenzene		96%	106%	97%	98%	99%	99%	

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN NORTHWEST | Environmental Services Network

S30506-2

CHAIN-OF-CUSTODY RECORD

CLIENT: STEMEN ENVIRONMENTAL INC.
ADDRESS:
PHONE: 360-438 9521 FAX:
CLIENT PROJECT #: Former Chevron Dry Cleaners PROJECT MANAGER: PAUL STEMEN

DATE: 5/2/03 PAGE 1 OF 1
PROJECT NAME: Former Chevron Dry Cleaners
LOCATION: Olympia, WA
COLLECTOR: Paul Stemen DATE OF COLLECTION 5/2/03

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	TPH - HCID	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (d & o)	PAH 8100	PAH 8270	PCBs 8082	Pesticides 8081	EPH	VPH	Methamphetamine	Pb	Hex Chrome	NOTES	Total Number of Containers	Laboratory Note Number
1. MW-1			H2O	VIAL	X																			
2. MW-2			"	"	X																	6.		
3. MW-3			"	"	X																			
4. MW-4			"	"	X																			
5. MW-5			"	"	X																			
6. MW-6			"	"	X																			
7. MW-7			"	"	X																			
8. CW			"	"	X																			
9.																								
10.																								
11.																								
12.																								
13.																								
14.																								
15.																								
16.																								
17.																								
18.																								

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
	5/2/03		5-2-03 1135
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ ESN DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

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

LABORATORY NOTES:

Turn Around Time: 24 HR 48 HR 5 DAY

May-12-03 09:28A

425 957-9904

P.01

ADDITIONAL GROUND WATER MONITORING REPORT

FRORMER OLYMPIA DRY CLEANERS
606 EAST UNION AVENUE
OLYMPIA, WASHINGTON

Prepared By

Paul W. Stemen

Stemen Environmental, Inc.

P.O. BOX 3644
LACEY, WASHINGTON 98501-8212
CONTR. LIC. #STEMEEI081J9

STEMEN ENVIRONMENTAL, INC.

Telephone 360-438-9521 Fax 360-412-1225

March 27, 2004

Mr. Bob Warren
Ecology's Toxics Clean Up Program
P.O. Box 47775
Olympia, Washington 98504-7775

Dear Mr. Warren:

RE: ADDITIONAL GROUNDWATER MONITORING FOR THE FORMER OLYMPIA DRY CLEANERS (HOWARD'S DRY CLEANERS) SITE LOCATED AT 606 E. UNION AVENUE, OLYMPIA, WASHINGTON.

GROUNDWATER SAMPLING VIA ON-SITE MONITORING WELLS - MARCH 20, 2004

On March 20, 2004, I proceeded to obtain groundwater water samples from six (6) of the seven (7) groundwater monitoring wells present on the subject property and the neighboring property located directly north of the subject property using a peristaltic pump. Due to an irremovable monument lid, I was unable to obtain samples of the groundwaters present in monitoring well MW-3 on the date of these sampling activities.

Prior to the sampling of the waters present in each of the monitoring wells, the monitoring wells were properly purged using a peristaltic pump. The proper purging of these monitoring wells required the removal of a minimum of three (3) volumes of water from each of the monitoring wells. All purged liquids were properly placed in an on-site storage drum for temporary storage purposes. The water were then allowed ample time to return to their original levels.

All groundwater samples were placed in recommended containers with no head space, properly refrigerated and transported with proper chain of custody forms to Environmental Services Network of Lacey, Washington for appropriate laboratory analyses.

All investigative groundwater samples were screened for Specific Halogenated Hydrocarbons using E.P.A. method 8021B.

Laboratory analyses results for groundwater samples MW-1, MW-4, MW-5, and MW-6 indicated no detectable presence of Specific Halogenated Hydrocarbons in the groundwaters present in their respective monitoring wells.

Laboratory analyses results confirmed the presence of Vinyl chloride (380 PPB), trans-1,2-Dichloroethene (13 PPB), cis-1,2-Dichloroethene (990 PPB), Trichloroethene (12 PPB), and Tetrachloroethene (120 PPB) at levels that exceed Ecology's Method "A" Clean Up Levels in groundwater sample MW-2.

Laboratory analyses results confirmed the presence of Tetrachroethene (4,700 PPB) at levels that exceed Ecology's Method "A" Clean Up Levels in groundwater sample MW-7.

MONITORING WELL MONUMENT ELEVATIONS

The elevations of each of the groundwater monitoring well's monuments were recently determined by Southwest Surveying of Olympia, Washington and these elevations are listed on the attached Summary of Groundwater Depth and Elevation Data table.

If you have any questions or need any further information regarding the above, please feel free to contact me.

Sincerely,

Paul W. Stemen
Ecology-Registered Site Assessor
IFCI #0874201-26
ASTM Certified

cc: Steven C. Marshall
Gerald Tousley- Thurston County Health Department

SUMMARY OF
GROUNDWATER
DEPTH AND
ELEVATION DATA
3/21/04

WELL NUMBER	TOP OF MONUMENT ELEVATION	DEPTH TO GROUNDWATER	GROUNDWATER ELEVATION
MW-1	27.58	6.23	21.35
MW-2	23.87	.33	23.54
MW-3	26.68	N/A	N/A
MW-4	22.90	2.5	20.40
MW-5	23.90	.72	23.18
MW-6	16.94	1.34	15.60
MW-7	26.30	1.64	24.66

GROUND LEVEL
ELEVATION 23.54

MW-7

ALL MEASUREMENTS
ARE IN FEET

Olympia Dry Cleaner's Site

N

Monitoring Well Location
Soil/Groundwater Sample
Storm Sewer Catch Basin
Floor Drain
Surface Soil Sample
Surface Water Sample

Rail Road Track
Soil Berm
Paved Parking
Union Avenue
MW-7
9
MW-4
Grassy Area
Paved Parking
4
MW-6
8
SS-1
Parking Area
10
13
Parking Area
French Drain
14
Olympia Dry Cleaner's Building
IFD
Utilities Commission Building
14
MW-3
MW-11
1
Paved Drive Area
11
3
MW-5
MW-2
2
Cherry SW
Side Walk
PCE SEEP
Cherry Street

SPECIFIC HALOGENATED HYDROCARBONS WATERS (PPB)							
SAMPLE-NUMBER	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
DATE	3-23-04	3-23-04	3-23-04	3-23-04	3-23-04	3-23-04	3-23-04
DEPTHS	6.23	0.33	NA	2.5	0.72	1.34	1.64
VINYL CHLORIDE	ND	ND		ND	**380**	ND	ND
BENZENE	ND	ND		ND	ND	ND	ND
TOLUENE	ND	ND		ND	ND	ND	**2**
ETHYLBENZENE	ND	ND		ND	ND	ND	ND
TOTALM XYLENES	ND	ND		ND	ND	ND	ND
1,1 DICHLOROETHENE	ND	ND		ND	ND	ND	ND
METHYLENE CHLORIDE	ND	ND		ND	ND	ND	ND
TRANS-1,2-DICHLOROETHENE	ND	ND		ND	**13**	ND	ND
1,1 DICHLOROETHANE	ND	ND		ND	ND	ND	ND
CIS-1,-2 DICHLOROETHENE	ND	ND		ND	**990**	ND	ND
CHLOROFORM	ND	ND		ND	ND	ND	ND
1,1,1- TRICHLOROETHANE	ND	ND		ND	ND	ND	ND
CARBON TETRACHLORIDE	ND	ND		ND	ND	ND	ND
1,2 DICHLOROETHANE	ND	ND		ND	ND	ND	ND
TRICHLOROETHENE	ND	ND		ND	**12**	ND	ND
1,1,2,-TRICHLOROETHANE	ND	ND		ND	ND	ND	ND
TETRACHLOROETHENE	ND	ND		ND	**120**	ND	**4700**
1,1,1,2-TETRACHLOROETHANE	ND	ND		ND	ND	ND	ND
1,1,2,2-TETRACHLOROETHANE	ND	ND		ND	ND	ND	ND

ESN NORTHWEST
Environmental
Services Network

March 29, 2004

Paul Stemen
Stemen Environmental
P.O. Box 3644
Lacey, WA 98509

Dear Mr. Stemen:

Please find enclosed the analytical data report for the Former Olympia Dry Cleaners Project site in Olympia, Washington. Water samples were analyzed for Specific Halogenated Hydrocarbons and BTEX by Method 8021B on March 25, 2004.

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

ESN Northwest appreciates the opportunity to have provided analytical services to Stemen Environmental 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,

Michael A Korosec

Michael A. Korosec
President

677 Woodland Square Lp. SE, Suite D ▪ Lacey, Washington 98503 ▪ 360.459.4670 ▪ FAX 360.459.3432
Web Site: *www.ESN-USA.com* E-Mail: *esnnw@aol.com*

ESN NORTHWEST CHEMISTRY LABORATORY

FORMER OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Stemen Environmental, Inc.

Specific Halogenated and Aromatic Hydrocarbons (EPA 8021B) in Water

Sample Description		Method Blank	MW-1	MW-2	MW-2 Dup.	MW-4	MW-5	MW-6	MW-7
Date Sampled			3/22/04	3/22/04	3/22/04	3/22/04	3/22/04	3/22/04	3/22/04
Date Analyzed		3/25/04	3/25/04	3/25/04	3/25/04	3/25/04	3/25/04	3/25/04	3/25/04
	MDL (ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Vinyl chloride	5.0	nd	nd	nd	nd	nd	380	nd	nd
Benzene	1.0	nd	nd	nd	nd	nd	nd	nd	nd
Toluene	1.0	nd	nd	nd	nd	nd	nd	nd	2.0
Ethylbenzene	1.0	nd	nd	nd	nd	nd	nd	nd	nd
Total Xylenes	1.0	nd	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	1.0	nd	nd	nd	nd	nd	nd	nd	nd
Methylene chloride	1.0	nd	nd	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	1.0	nd	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	1.0	nd	nd	nd	nd	nd	13	nd	nd
cis-1,2-Dichloroethene	1.0	nd	nd	nd	nd	nd	nd	nd	nd
Chloroform	1.0	nd	nd	nd	nd	nd	990	nd	nd
1,1,1-Trichloroethane (TCA)	1.0	nd	nd	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	1.0	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane	1.0	nd	nd	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	1.0	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	1.0	nd	nd	nd	nd	nd	12	nd	nd
Tetrachloroethene (PCE)	1.0	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	1.0	nd	nd	nd	nd	nd	120	nd	4700
1,1,2,2-Tetrachloroethane	1.0	nd	nd	nd	nd	nd	nd	nd	nd
Surrogate Recovery (%)		115	117	106	97	94	100	75	81

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Chlorobenzene): 65%- 135%

ANALYSES PERFORMED BY: Marilyn Farmer

ESN NORTHWEST CHEMISTRY LABORATORY

FORMER OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Stemen Environmental, Inc.

QA/QC Data - EPA 8021B Analyses

	Sample Description: MW-1						
	Matrix Spike			Matrix Spike Duplicate			RPD
	Spiked Conc. (ug/l)	Measured Conc. (ug/l)	Spike Recovery (%)	Spiked Conc. (ug/l)	Measured Conc. (ug/l)	Spike Recovery (%)	(%)
Benzene	5.00	3.89	78	5.00	4.36	87	11.39
Toluene	5.00	5.84	117	5.00	5.63	113	3.66
1,1-Dichloroethene	5.00	5.51	110	5.00	5.06	101	8.51
Trichloroethene (TCE)	5.00	5.84	117	5.00	4.94	99	16.70
Surrogate Spike			79			66	17.93

	Laboratory Control Sample		
	Spiked Conc. (ug/l)	Measured Conc. (ug/l)	Spike Recovery (%)
Benzene	5.00	5.28	106
Toluene	5.00	5.28	106
1,1-Dichloroethene	5.00	3.52	70
Trichloroethene (TCE)	5.00	5.15	103
Surrogate Spike			103

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Marilyn Farmer

ESN NORTHWEST | Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: STEMEN ENVIRONMENTAL INC.

ADDRESS:

PHONE: 360 438 9521 FAX:

CLIENT PROJECT #: FORMER OLY DRY CLEANERS PROJECT MANAGER: PAUL STEMEN

DATE: 3/23/04 PAGE 1 OF 1

PROJECT NAME: FORMER OLYMPIA DRY CLEANERS

LOCATION: OLYMPIA, WA

COLLECTOR: PAUL STEMEN DATE OF COLLECTION 3/23

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	TPH - HCID	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (G & D)	PAH 8100	PAH 8270	PCBs 8082	Pesticides 8081	EPH	VPH	Methamphetamine	Pb	Hex Chrome	NOTES	Total Number of Containers	Laboratory Note Number
1. MW-1			H2O	VIAL	X																			
2. MW-2					X																			
3. ~~MW-3~~					X																			
4. MW-4					X																			
5. MW-5					X																			
6. MW-6					X																			
7. MW-7					X																			
8.																								
9.																								
10.																								
11.																								
12.																								
13.																								
14.																								
15.																								
16.																								
17.																								
18.																								

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
	3/23/04		3/23/04 10:10
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ ESN DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

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

LABORATORY NOTES:

Turn Around Time: 24 HR 48 HR 5 DAY

PHASE II ENVIRONMENTAL SITE ASSESSMENT REPORT

COMMERCIAL PROPERTY
520 UNION AVENUE
OLYMPIA, WASHINGTON

Prepared By

Paul W. Stemen

Stemen Environmental, Inc.

STEMEN ENVIRONMENTAL, INC.

P.O. BOX 3644
LACEY, WASHINGTON 98509-3644
CONTR. LIC. #STEMEEI081J9

Telephone 360-438-9521 Fax 360-412-1225

July 23, 2001

Mr. Ali Raad
Olympia, Washington

Dear Mr. Raad:

RE: LIMITED PHASE II ENVIRONMENTAL SITE ASSESSMENT FOR COMMERCIAL PROPERTY LOCATED AT 520 UNION AVENUE, OLYMPIA, WASHINGTON.

SITE CHARACTERISTICS AND HISTORY

The subject property, Tax Parcel #78203900500, consists of approximately .52 acres commercially developed property. The subject property is located in the northern portion of section 23, township 18 north, range 2 west, and is located within the boundaries of the City of Olympia, and Thurston County, Washington.

The subject property is bordered on the north by a multi family residential building/property, on the west by a commercial property, on the south by East Union Avenue, an asphalt surfaced roadway, and on the east by Cherry Street an asphalt surfaced public roadway, as well as the Former Olympia Dry Cleaners Site.

The property is currently occupied by an approximately 9,654 square foot commercial office building. The commercial building is serviced by an asphalt surfaced parking lot which is present on the northern and western portions of the property.

Available information confirms the presence of Total Petroleum Hydrocarbons and Specific Halogenated Hydrocarbons, at levels that exceed Ecology's Method "A" Clean Up Levels in the subsurface soils and/or groundwaters beneath the Former Olympia Dry Cleaners Site located at 606 East Union Avenue. This impacted property is located approximately 50 east

of the subject property. The highest concentrations of contaminants appear to be located beneath the northwest portion of this impacted site.

Native soils present on subject property consisted of fine to medium grained sands and marine type clays from just below the surface to an approximate depth of 15 feet b.g.s. (below ground surface).

Depth to groundwater beneath this site was approximately 2 feet b.g.s. on the date of these on-site investigative sampling activities.

INVESTIGATIVE SOIL AND GROUNDWATER SAMPLING

The purpose of this on-site investigation of the groundwaters beneath this site was to assess the impacts of Former Olympia Dry Cleaners Site on the current environmental integrity of the subject property.

On July 18, 2001, I proceeded to obtain three (3) discreet groundwater samples from three (3) separate selected sampling locations on the subject property. The three sampling locations were located on the northeast portion of the subject property.

SAMPLING LOCATION S1

Soil sampling location S1 was located approximately 10 feet west and 8 feet south of the northeast corner of the subject property.

The groundwater sampling tube was advanced to an approximate depth of 15 feet b.g.s. The column of groundwater that entered the sampling tube was allowed time to stabilize. The groundwaters in the sampling tube finally stabilized at a level of approximately 18 inches b.g.s.

All groundwaters were then purged from the sampling tube.

When the waters began to re-enter the sampling tube, groundwater sample S1-15 was obtained from the waters present in the sampling tube at an approximate depth of 15 feet b.g.s. at this sampling location. Groundwater sample S1-15 was submitted for appropriate laboratory analyses.

SAMPLING LOCATION S2

Soil sampling location S-2 was located approximately 10 feet west and 40 feet south of the northeast corner of the subject property.

The groundwater sampling tube was advanced to an approximately depth of 15 feet b.g.s. The column of groundwater that entered the sampling tube was allowed time to stabilize. The groundwaters in the sampling tube finally stabilized at a level of approximately 18 inches b.g.s.

ESN NORTHWEST
Environmental
Services Network

July 20, 2001

Paul Stemen
Stemen Environmental
5724 Puget Beach Road NE
Olympia, WA 98516

Dear Mr. Stemen:

Please find enclosed the analytical data report for the 520 East Union Project in Olympia, Washington. Water samples were analyzed for Diesel and Oil by NWTPH-Dx/Dx Extended and Specific Halogenated Hydrocarbons and BTEX by Method 8021B on July 19, 2001.

The results of these analyses are summarized in the attached table. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. An invoice for this analytical work is also enclosed.

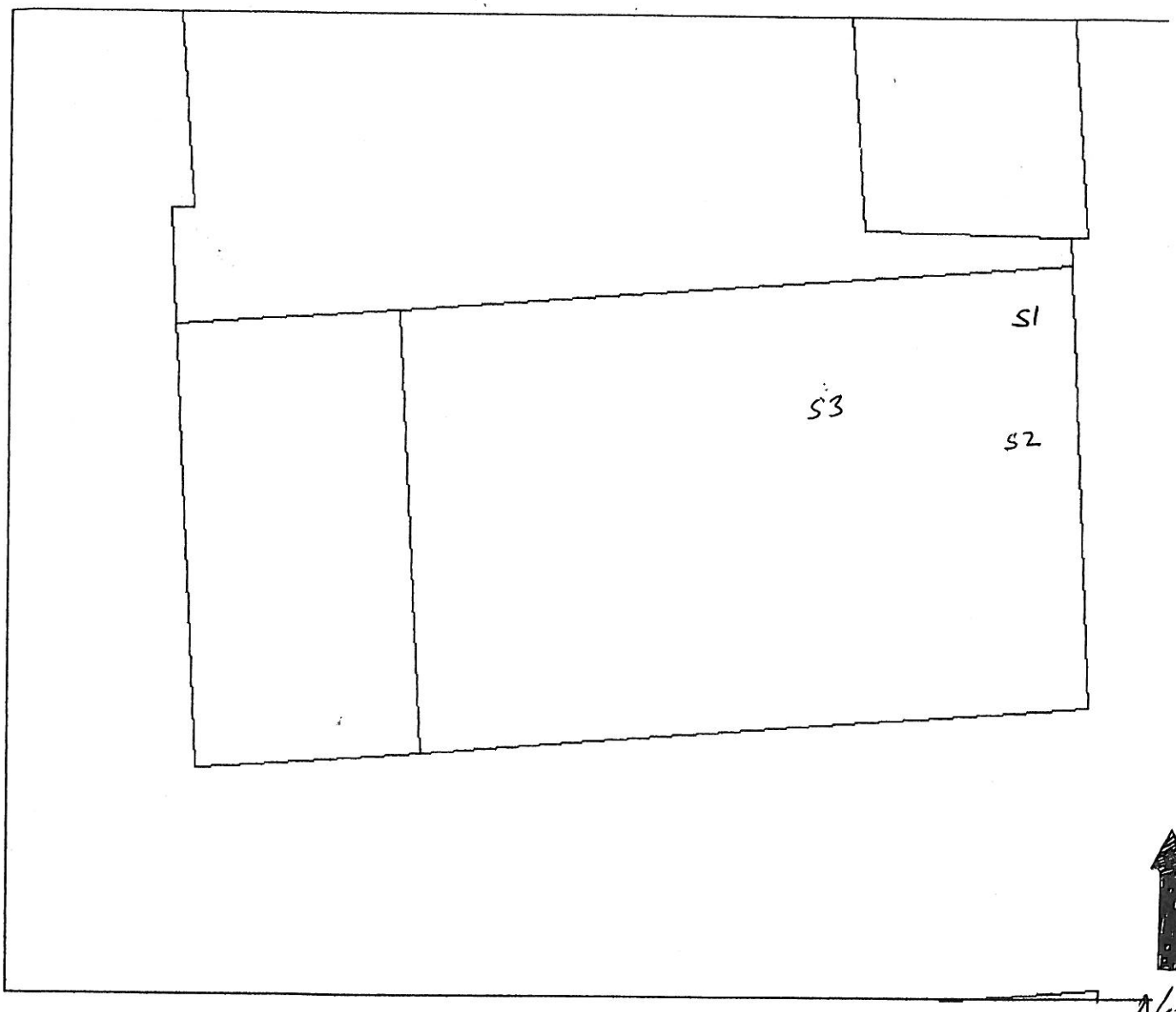
ESN Northwest appreciates the opportunity to have provided analytical services to Stemen Environmental for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity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

Sincerely,

Michael A. Korosec
President

677 Woodland Square Lp. SE, Suite D ■ Lacey, Washington 98503 ■ 360.459.4670 ■ FAX 360.459.3432
Web Site: *www.ESN-USA.com* E-Mail: *esnnw@aol.com*

Map Produced By: Thurston GEODATA Center's Internet Map Server



Scale: Approx. 1 Inch = 43 Feet

7/26/01 9:57:36 AM

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

ESN Job Number: S10719-8
Client: STEMEN ENVIRONMENTAL
Client Job Name: 520 EAST UNION
Client Job Number:

Analytical Results

8021B, µg/l		MTH BLK	LCS	S1-15	S2-15	S3-15
Matrix	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	07/19/01	07/19/01	07/19/01	07/19/01	07/19/01
Date analyzed	Limits	07/19/01	07/19/01	07/19/01	07/19/01	07/19/01
Chloromethane	5.0	nd		nd	nd	nd
Bromomethane	5.0	nd		nd	nd	nd
Vinyl chloride	5.0	nd		nd	nd	nd
Chloroethane	5.0	nd		nd	nd	nd
cis-1,2-Dichloroethene	5.0	nd		nd	nd	nd
1,1-Dichloroethene	5.0	nd		nd	nd	nd
Methylene Chloride	5.0	nd		nd	nd	nd
trans-1,2-Dichloroethene	5.0	nd		nd	nd	nd
1,1-Dichloroethane	5.0	nd		nd	nd	nd
Chloroform	1.0	nd		nd	nd	nd
1,1,1-Trichloroethane	1.0	nd		nd	nd	nd
Carbontetrachloride	1.0	nd		nd	nd	nd
1,2-Dichloroethane	5.0	nd		nd	nd	nd
Trichloroethene	1.0	nd	79%	nd	nd	nd
1,2-Dichloropropane	5.0	nd		nd	nd	nd
Bromodichloromethane	5.0	nd		nd	nd	nd
cis-1,3-Dichloropropene	5.0	nd		nd	nd	nd
trans-1,3-Dichloropropene	5.0	nd		nd	nd	nd
Chlorobenzene	5.0	nd	89%	nd	nd	nd
1,1,2-Trichloroethane	1.0	nd		nd	nd	nd
Tetrachloroethene	1.0	nd		nd	nd	nd
Dibromochloromethane	5.0	nd		nd	nd	nd
Bromoform	5.0	nd		nd	nd	nd
1,1,2,2-Tetrachloroethane	5.0	nd		nd	nd	nd
1,1,1,2-Tetrachloroethane	5.0	nd		nd	nd	nd
Bromobenzene	5.0	nd		nd	nd	nd
1,2,3-Trichloropropane	5.0	nd		nd	nd	nd
Dibromomethane	5.0	nd		nd	nd	nd
m-Dichlorobenzene	1.0	nd		nd	nd	nd
p-Dichlorobenzene	1.0	nd		nd	nd	nd
o-Dichlorobenzene	1.0	nd		nd	nd	nd
Benzene	1.0	nd	129%	nd	nd	nd
Toluene	1.0	nd	134%	nd	nd	nd
Ethylbenzene	1.0	nd		nd	nd	nd
Xylenes	1.0	nd		nd	nd	nd
Surrogate recoveries:						
Bromochloromethane		100%	76%	80%	84%	84%
1,4-Dichlorobutane		100%	71%	95%	98%	99%
Bromochloropropane		100%	98%	97%	104%	108%
Trifluorotoluene		100%	97%	98%	100%	95%
Bromofluorobenzene		100%	124%	127%	130%	122%

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
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

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

ESN Job Number:	S10719-8
Client:	STEMEN ENVIRONMENTAL
Client Job Name:	520 EAST UNION
Client Job Number:	

Analytical Results

NWTPH-Dx, mg/l		MTH BLK	S1-15	S2-15	S3-15
Matrix	Water	Water	Water	Water	Water
Date extracted	Reporting	07/19/01	07/19/01	07/19/01	07/19/01
Date analyzed	Limits	07/19/01	07/19/01	07/19/01	07/19/01
Kerosene/Jet fuel	0.20	nd	nd	nd	nd
Diesel/Fuel oil	0.20	nd	nd	nd	nd
Heavy oil	0.50	nd	nd	nd	nd
Surrogate recoveries:					
Fluorobiphenyl		97%	108%	83%	123%
o-Terphenyl		83%	94%	73%	110%

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
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ENVIRONMENTAL INVESTIGATIONS REPORT

ABANDONED RAILROAD RIGHT OF WAY PROPERTY (BNRR REGRADE-MF 00-2487) OLYMPIA, WASHINGTON

Prepared By

Paul W. Stemen

Stemen Environmental, Inc.

STEMEN ENVIRONMENTAL, INC.

P.O. BOX 3644
LACEY, WASHINGTON 98509-3644
CONTR. LIC. #STEMEEI081J9

Telephone 206-438-9521 Fax 360-412-1225

June 14, 2001

Mr.Richard G. Phillips
Owens Davies Mackie, P.S.
926 24th Way S.W.
Olympia, Washington 98502

Dear Mr.Phillips:

RE: SAMPLING OF SOILS PRESENT ON THE ABANDONED RAILROAD RIGHT OF WAY PROPERTY LOCATED IN OLYMPIA, WASHINGTON. (BNRR REGRADE-MF 00-2487)

SITE CHARACTERISTICS

The subject site consists of approximately .25 acres of abandoned railroad right of way property located in Sections 14 and 23, Township 18 North, Range 2 West, and within the boundaries of the city of Olympia, Washington.

The subject site primary consists of an approximately 485 feet in length by 60 feet in width berm of earthen materials. The elevation of the top of this berm ranges between approximately 22 feet above mean sea level (MSL) on the northern end of the berm to approximately 30 feet above MSL on the southern portion. The bermed materials consist of typical bank run sands and gravels.

A thin layer of darker, loamy soils was present along the top of the eastern perimeter of the northern portion of berm.

SOIL SAMPLING AND LABORATORY ANALYSES

On May17 and 23, 2001, I obtained a total one discreet and eighteen (18) composite soil samples from subsurface soils present at selected locations throughout the bermed soils. Soil samples were composited from soils present in the same strata levels (approximate depths) at various locations in the bermed materials.

All soil sampling quantities, sampling techniques, sampling locations, and laboratory analyses methods were discussed with Gerald Tousley of the Thurston County Health Department, and Bob Warren of the Department of Ecology's Toxics Clean Up Program.

Initially, a series of seventeen excavation pits were randomly created throughout the earthen berm. Soil samples were then composited from soils present at various depths in the excavations using hand sampling tools.

Additionally one discreet soil sample (S-4) was obtained from the darker soils present along the top of the eastern perimeter of the northern portion of the berm.

All sampling tools were properly cleaned between samples to prevent cross sample contamination. The samples were then tightly packed in recommended sample jars, with no head space, properly refrigerated and transported with proper chain of custody forms, to Environmental Services Network Northwest, Inc. of Lacey, Washington, for laboratory analyses.

All soil samples were submitted for appropriate laboratory analyses and screened for Diesel Fuel and Heavy Oil Range T.P.H.(total petroleum hydrocarbons) using method NWTPH-Dx/Dx Extended. All laboratory analyses and quality control methods meet or exceed current Department of Ecology requirements.

Laboratory analyses results for all of the eighteen (18) composite and one (1) discreet investigative soil samples were Non-Detect (ND) for Diesel Fuel and Heavy Oil Range T.P.H. which is well below the Department of Ecology's Method "A" Clean Up Levels.

The results of this on-site investigation indicates that there is no detectable presence of diesel fuel and/or heavy oil range total petroleum hydrocarbons in the soils present at the selected sampling areas throughout the subject property at elevations of approximately 22 feet above mean sea level.

If you have any questions or need further information please feel free to contact us at the above phone number.

Sincerely,

Paul W. Stemen,
Ecology-Registered Site Assessor
IFCI #0874201-26
ASTM Certified

cc: Craig Steepy
Bob Warren-Ecology
Gerald Tousley- Thurston County Health Department
File

LABORATORY ANALYSES TABLE

TOTAL PETROLEUM

HYDROCARBONS (PPM)

SAMPLE NUMBER	SAMPLE LOCATION	SAMPLE DATE	SAMPLE DEPTH	DIESEL	HEAVY OIL
CS-1	A,B, & C	5-17-01	1'-4'	ND	ND
CS-2	A,B, & C	5-17-01	4-7'	ND	ND
CS-3	D & E	5-17-01	1'-4'	ND	ND
CS-4	S-1, S-2, & S-3	5-17-01	2'-4'	ND	ND
CS-5	S-4, S-5, & S-6	5-17-01	1'-4'	ND	ND
CS-6	S-7, S-8, & S-9	5-17-01	1'-4'	ND	ND
CS-7	S-10, S-11, & S-12	5-17-01	1'-4'	ND	ND
CS-8	S-13 & S-14	5-17-01	1'-4'	ND	ND
CS-9	S-1, S-2, & S-3	5-17-01	0'-1'	ND	ND
CS-10	S-1, S-2, & S-3	5-17-01	4'-8'	ND	ND
CS-11	S-4, S-5, & S-6	5-17-01	4'-8'	ND	ND
CS-12	S-7, S-8, & S-9	5-17-01	4'-8'	ND	ND
CS-13	S-10, S-11, & S-12	5-17-01	4'-8'	ND	ND
CS-14	S-13 & S-14	5-17-01	4'-8'	ND	ND
CS-15	S-15 & S-16	5-23-01	0'-4'	ND	ND
CS-16	S-15 & S-16	5-23-01	4'-8'	ND	ND
CS-17	S-17 & S-18	5-23-01	0'-4'	ND	ND
CS-18	S-17 & S-18	5-23-01	4'-8'	ND	ND
S-4	S-1	5-23-01	0'-1'	ND	ND

ESN NORTHWEST | Environmental Services Network

May 21, 2001

Paul Stemen
Stemen Environmental
5724 Puget Beach Road NE
Olympia, WA 98516

Dear Mr. Stemen:

Please find enclosed the analytical data report for the Phillips/Railroad Right of Way Project in Olympia, Washington. Soil samples were analyzed for Diesel and Oil by NWTPH-Dx/Dx Extended on May 18 & 21, 2001.

The results of these analyses are summarized in the attached table. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. An invoice for this analytical work is also enclosed.

ESN Northwest appreciates the opportunity to have provided analytical services to Stemen Environmental 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,

Michael A. Korosec
President

677 Woodland Square Lp. SE, Suite D ■ Lacey, Washington 98503 ■ 360.459.4670 ■ FAX 360.459.3432
Web Site: *www.ESN-USA.com* E-Mail: *esnnw@aol.com*

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.

TPH-Gasoline, TPH-Diesel
(Gasoline and/or Diesel, Modified EPA 8015, NWTPH-Gx and NWTPH-Dx)

A check standard is run at the beginning of the day. 1) A close standard is run at the end of the day. 2) Both open and close standards must be within 15% of the continuing calibration curve value. All samples are prepared with a surrogate spike, and the recovery must be between 65% and 135% unless high sample concentrations interfere with the determination of the recovery percentage. A duplicate sample is run at a rate of 1 per 10 samples. At least 1 method blank is run per 20 samples analyzed.

ESN NORTHWEST CHEMISTRY LABORATORY

PHILLIPS/RAILROAD RIGHT OF WAY PROJECT
Olympia, Washington
Stemen Environmental Incorporated
Client Project #PHILLIPS

Analyses of Diesel & Oil (NWTPH-Dx/Dx Extended) in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (mg/kg)	Oil (mg/kg)
Method Blank	5/18/01	96	nd	nd
Method Blank	5/21/01	107	nd	nd
CS-1	5/18/01	96	nd	nd
CS-1 Dup	5/18/01	88	nd	nd
CS-2	5/18/01	97	nd	nd
CS-3	5/21/01	88	nd	nd
CS-4	5/21/01	119	nd	nd
CS-5	5/21/01	113	nd	nd
CS-6	5/21/01	125	nd	nd
CS-7	5/21/01	118	nd	nd
CS-8	5/18/01	76	nd	nd
CS-9	5/18/01	95	nd	nd
CS-10	5/18/01	112	nd	nd
CS-11	5/18/01	96	nd	nd
CS-12	5/18/01	124	nd	nd
CS-13	5/18/01	104	nd	nd
CS-14	5/18/01	102	nd	nd
Method Detection Limits			20	40

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: Dean Phillips & Sherry Chilcutt

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES

CHAIN-OF-CUSTODY RECORD

CLIENT: Stemen Environmental Inc

ADDRESS: 5724-Puget Beach Road NE Olympia, WA

PHONE: 360 4389521 FAX:

CLIENT PROJECT #: Phillips PROJECT MANAGER: Paul Stemen

DATE: 5/17/2001 PAGE 1 OF 1

PROJECT NAME: Phillips/Railroad Right of way

LOCATION: Olympia, WA

COLLECTOR: Paul Stemen DATE OF COLLECTION 5/17

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8010/8021B	VOA 8021B BTEX	VOA 8260	SEMI VOL 8270	TPH - HCID	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (d & o)	PAH 8100	PCBs 8082	Pesticides 8081	TOTAL LEAD	pH	NOTES	Total Number of Containers	Laboratory Note Number
1. CS-1			Soil	Jar							X									
2. CS-2											X									
3. CS-3											X									
4. CS-4											X									
5. CS-5											X									
6. CS-6											X									
7. CS-7											X									
8. CS-8											X									
9. CS-9											X									
10. CS-10											X									
11. CS-11											X									
12. CS-12											X									
13. CS-13											X									
14. CS-14											X									
15.																				
16.																				
17.																				
18.																				

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	5/17/2001	Jim McCall	5/17/01 1245
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	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

Turn Around Time:

ESN NORTHWEST
Environmental Services Network

May 30, 2001

Paul Stemen
Stemen Environmental
5724 Puget Beach Road NE
Olympia, WA 98516

Dear Mr. Stemen:

Please find enclosed the analytical data report for the Phillips Right of Way Project in Olympia, Washington. Five soil samples were analyzed for Diesel and Oil by NWTPH-Dx/Dx Extended on May 24, 2001.

The results of these analyses are summarized in the attached table. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. An invoice for this analytical work is also enclosed.

ESN Northwest appreciates the opportunity to have provided analytical services to Stemen Environmental 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,

Michael A. Korosec
President

677 Woodland Square Lp. SE, Suite D ■ Lacey, Washington 98503 ■ 360.459.4670 ■ FAX 360.459.3432
Web Site: *www.ESN-USA.com* E-Mail: *esnnw@aol.com*

ESN NORTHWEST CHEMISTRY LABORATORY

PHILLIPS RIGHT OF WAY PROJECT
Olympia, Washington
Stemen Environmental, Inc.

Analyses of Diesel & Oil (NWTPH-Dx/Dx Extended) in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (mg/kg)	Oil (mg/kg)
Method Blank	5/24/01	123	nd	nd
Method Blank	5/25/01	99	nd	nd
CS-15	5/24/01	85	nd	nd
CS-16	5/24/01	100	nd	nd
CS-17	5/24/01	90	nd	nd
CS-18	5/24/01	99	nd	nd
S-4	5/24/01	110	nd	nd
S-4 Dup.	5/25/01	96	nd	nd
Method Detection Limits			20	40

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES

CHAIN-OF-CUSTODY RECORD

CLIENT: Steman Environmental Inc.

ADDRESS: 5724 - Pullet Beach

PHONE: 360-438954 FAX:

CLIENT PROJECT #: Phillips

PROJECT MANAGER: Paul Steman

DATE: 5/23/2001 PAGE 1 OF 1

PROJECT NAME: Phillips Right of Way

LOCATION: Olympia, WA

COLLECTOR: Paul Steman

DATE OF COLLECTION 5/23

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8010/8021B	VOA 8021B BTEX	VOA 8260	SEMI VOL 8270	TPH - HCID	TPH 8015 (gasoline)	TPH 8015 (diesel) EXT	TPH 8015 (d & o)	PAH 8100	PCBs 8082	Pesticides 8081	TOTAL LEAD	pH	NOTES	Total Number of Containers	Laboratory Note Number
1. CS-15			Soil	JAR							X									
2. CS-16			"	|							X									
3. CS-17			"	|							X									
4. CS-18			"	|							X									
5. S-4			"	|							X									
6.																				
7.																				
8.																				
9.																				
10.																				
11.																				
12.																				
13.																				
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RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	5/23/2001	M Ottumer	5-23-01
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	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

Turn Around Time:

CONREX INC.

2403 Pacific Ave. SE
Olympia, WA 98501
(360) 754-1123
FAX (360) 754-1173

PHASE II

ENVIRONMENTAL SITE ASSESSMENT

For the site located at:

OLYMPIA DRY CLEANERS
606 E. Union Ave.
Olympia, Washington

Prepared for:

MR. GAYLOR BOLTON
Proprietor;
OLYMPIA DRY CLEANERS
Olympia, Washington

June 13, 1995

CONREX INC.

2403 Pacific Ave. SE
Olympia, WA 98501
(360) 754-1123
FAX (360) 754-1173

June 13, 1995

Mr. Gaylor Bolton
Proprietor
OLYMPIA DRY CLEANERS
P.O. Box 242
Olympia, Washington 98507

Re: Phase II ESA Report of Sampling Activities conducted on the OLYMPIA DRY CLEANERS property, Olympia, Washington

Dear Mr. Bolton:

CONREX INC. is pleased to present the results of our Phase II Environmental Site Assessment Report of Activities for the Olympia Dry Cleaners, located at 606 E. Union Avenue, Section 14, T18N, R1W, W.M., Olympia, Thurston County, Washington. This assessment was performed to identify potential contamination point sources and determine their nature.

This report consists of site observations, exploratory borehole excavation, laboratory analysis, information obtained from the Washington Department of Ecology (WDOE), Washington Department of Natural Resources (WDNR), as well as other applicable Federal, State, Local, and private agencies. The content of our Phase II ESA reports are based established procedures and principals. Also reference was the Washington State Department of Ecology publication "Guidance on Sampling Data and Analysis Methods."

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or we can assist you in any matter, please do not hesitate to contact this office at (360) 754-1123. FAX; (360) 754-1173.

Very Truly Yours,
CONREX INC.

Scott R. Clark, RSA, CEM
Environmental Project Manager

TABLE OF CONTENTS

1.0 INTRODUCTION

Based on our proposal dated May 23, 1995, **CONREX INC.** conducted Phase II Environmental Site Assessment (ESA) activities on the OLYMPIA DRY CLEANERS property, located at 606 Union Avenue S.E., Olympia, Washington, on May 26th, 1995. These activities were performed at the request of Mr. Gaylor Bolton (hereafter known as the Client) as per our recommendations. The purpose of our study was to determine the nature and concentration of potential contamination resulting from point and non-point sources identified in our previous sampling and laboratory analysis conducted on the site on May 19, 1995.

Based upon interviews with those persons familiar with the site operations, the Olympia Dry Cleaners has been operated as a dry cleaners for approximately twenty-five years. The current lessee, the Client, has operated on site for approximately thirteen (13) years. This report details only site activities, and no historical document (e.g.; the title history) or environmental database reviews were conducted.

The following is a description of our activities of May 19:

Originally, the purpose of our survey of May 19 was to establish baseline environmental conditions for any subsequent property owner/lessee. Visual examination of the rear portion of the subject building revealed staining on and around a raised concrete walkway. This staining is commonly indicative of chemical or petroleum product spillage.

Based upon the observed staining, two (2) boreholes were augered to a depth of one (1) foot; one (1) from this location and one (1) from a location approximately six (6) feet topographically down-gradient in the direction of suspected groundwater flow (refer to Site Map in Appendix B.) Water and soils were tested; soils from Borehole "A", and groundwater from Borehole "B". During the sampling process groundwater was encountered at approximately twelve (12) inches in depth. A viscous material with an oily sheen was observed on the surface of the borehole "B".

The soil/water samples were analyzed for Specific Halogenated Hydrocarbons (Chlorinated Solvents) and Benzene, Toulene, Ethybenzene, and Xylene (BTEX), in addition to a Hydrocarbon identification which tests for the presence of Gasoline, Diesel, or Heavy Oils. The results of our analyzes was revealed the presence of Heavy Oils in both the water and soil, and elevated levels of 1,2 Dichloroethene, Trichloroethene, Tetrachloroethene. Total Xylenes were elevated in the water sample, but not the soil. Based upon these analyzes, further sampling and analyses were deemed necessary to attempt to locate the point source(s) of the identified contaminants.

2.0 METHODOLOGY

The methodology for conducting this soils survey, and all sampling protocol is established in Chapter 173-360 WAC and the Washington State Department of Ecology publication "*Guidance on Sampling and Data Analysis Methods*" (1995).

All mechanical exploratory borehole sampling (by Strataprobe sampler) and independent laboratory analysis was provided by **Transglobal Environmental Geochemistry, Inc.** (TEG), 7110 38th Drive S.E., Lacey, Washington 98503. All laboratory reports and chain-of-custody documents are enclosed with this report.

To reasonably ensure the purity of CONREX's samples, the following actions were taken: (1) the Strataprobe unit, it's related equipment were steam cleaned prior to sampling, (2) latex rubber gloves were used in handling all sampling jars and sampling devices, (3) all samples when gathered were immediately placed in a storage cooler packed with ice and transported to the laboratory within four hours, and (4), the split-spoon and hand-held auger sampling devices were scrubbed with ADALOX detergent and double rinsed with distilled water prior to each sample extracted. After sampling activities were conducted, all sampling equipment was de-contaminated before demobilization from the site.

3.0 SOIL BORING / SAMPLING PROGRAM

Augering activities resumed on May 23, 1995. Before any exploratory subsurface sampling was performed, a utility locate was conducted by the appropriate public/private utility entities. Exploratory boreholes were augered adjacent to the northeast side of the structure in a pattern approximating suspected groundwater flow (refer to Site Map in Appendix B) and on the northwest corner of the property adjacent to Cherry Ave. Photos of site activities can be referenced in Appendix D.

Altogether, six (6) exploratory boreholes were drilled from depths of up to nine (9) feet at points following the suspected hydraulic gradient. Boreholes #1-5 were augered on the northeast side of the dry cleaner building, and Borehole #6 was augered on the northeast side of the structure. For the following lab analyzes, the values for soil are given in parts per million (ppm) and the groundwater values are listed in parts per billion (ppb).

One (1) sample of both water and soil were gathered from Borehole #1 at three (3) feet. This borehole was located approximately six (6) feet from the northeast corner of the structure. A slight amount of gasoline (29 ppm; read: solvents) was detected in this sample; no diesel or heavy oil hydrocarbons were detected. Trace amounts of 1,2

Dichloroethene (6 ppb), Trichloroethene (3 ppb), and Tetrachlorethene (4 ppb) were detected in the groundwater sample.

Borehole #2 was excavated approximately eight (8) feet from the northeast corner of the structure, and a soil sample extracted at five (5) feet in depth. The sampling device encountered what appeared to be a large wooden beam or tree at three (3) feet in depth. No groundwater was visible in the borehole. The sample was non-detect for gasoline, diesel, or heavy oil hydrocarbon constituents.

Borehole #3 was sampled for soil at three (3) feet and water at five (5) feet in depth. The sample was non-detect for gasoline, diesel and heavy oil hydrocarbon constituents. Slightly higher amounts of Trichloroethene (8 ppb), Tetrachloroethene (68 ppb) and 1,2 Dichloroethene (7 ppb) were detected in the groundwater sample. Gasoline and diesel tested non-detect, but heavy oil tested at 24,700 ppb, well above the acceptable MTCA level of 1000 ppb (see MTCA Cleanup Levels in Appendix C.)

Borehole #4 was sampled for soils at five (5) feet in depth approximately fifteen (15) feet from the northeast corner of the structure; no groundwater sample was extracted as again the sampling device encountered wood. The sample tested non-detect for gasoline, diesel, and heavy oil hydrocarbon constituents.

Borehole #5 was augered six (6) feet south and east from the northeast corner of the structure and sampled at six (6) feet in depth for both soil and groundwater. The soil tested non-detect for gasoline, diesel, and heavy oil hydrocarbon constituents. The groundwater tested negative for the above mentioned halogenated hydrocarbons.

Borehole #6 was augered approximately fifteen (15) feet northwest from the northwest corner of the structure and sampled at two (2) feet for soil and six (6) feet for groundwater. The soil tested non-detect gasoline, diesel, and heavy oil hydrocarbon constituents. The groundwater tested positive for Trichloroethene (3680 ppb), Tetrachloroethene (41300 ppb), and 1,2 Dichloroethene (4340 ppb), far exceeding the MTCA Method "A" groundwater cleanup level for these three chemicals which has been established at 5.0 ppb.

STOP

The types of halogenated hydrocarbon contaminants identified in our laboratory analyzes are prone to "settle" through bodies of water into sediment. Based upon site observations of the soil borings, there appears to be a fairly homogenous clay/silt layer at the borehole locations. This subsurface condition, upon initial examination, would tend to be favorable in regards to the further spread of contamination as the homogenous clay layer may act as a fairly competent impervious barrier.

4.0 QUANTITATIVE ANALYSIS

A. Specific Halogenated Hydrocarbons (by EPA Method 8010) in Soil; "nd" indicates Not Detected at the listed detection limit (MDL).

BOREHOLE / SAMPLE NUMBER	*MDL mg/kg*	Method Blank	BH #1 @ 3 ft.	BH #2 @ 5 ft.	BH #3 @ 3 ft.	BH #4 @ 5 ft.	BH #5 @ 6 ft.
DATE		5/30/95 mg/kg	5/30/95 mg/kg	5/30/95 mg/kg	5/30/95 mg/kg	5/30/95 mg/kg	5/30/95 mg/kg
1,1 Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
1,2 Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
Benzene	0.05	nd	nd	nd	nd	nd	nd
Trichloroethene	0.05	nd	nd	nd	nd	nd	nd
Toluene	0.05	nd	nd	nd	nd	nd	nd
Cis Dichloropropene	0.05	nd	nd	nd	nd	nd	nd
Trans Dichloropropene	0.05	nd	nd	nd	nd	nd	nd
Tetrachloroethene PCE	0.05	nd	0.07	0.12	nd	nd	nd
Ethylbenzene	0.05	nd	nd	nd	nd	nd	nd
Total Xylenes	0.05	nd	nd	nd	nd	nd	nd
1,3 Dichlorobenzene	0.05	nd	nd	nd	nd	nd	nd
1,4 Dichlorobenzene	0.05	nd	nd	nd	nd	nd	nd
1,2 Dichlorobenzene	0.05	nd	nd	nd	nd	nd	nd
1,1 Dichloroethane	0.05	nd	nd	nd	nd	nd	nd
1,2 Dichloroethane	0.05	nd	nd	nd	nd	nd	nd
Chloroform	0.05	nd	nd	nd	nd	nd	nd
Carbon Tetrachloride	0.05	nd	nd	nd	nd	nd	nd
1,1,1 Trichloroethane TCA	0.05	nd	nd	nd	nd	nd	nd
1,1,2 Trichloroethane	0.05	nd	nd	nd	nd	nd	nd
Tetrachloroethane	0.05	nd	nd	nd	nd	nd	nd
Spike Recovery (%)		103	101	103	93	103	102

N.E. side

B. Specific Halogenated Hydrocarbons (by EPA Method 8010) in Water; "nd" indicates Not Detected at the listed detection limit (MDL).

BOREHOLE / SAMPLE NUMBER	*MDL ug/l*	Method Blank	BH #1 @ 3 ft.	BH #3 @ 5 ft.	BH #5 @ 6 ft.	BH #6 @ 6 ft.	BH #6 Dup.
DATE ug/l = ppb		5/30/95 ug/l	5/30/95 ug/l	5/30/95 ug/l	5/30/95 ug/l	5/30/95 ug/l	5/30/95 ug/l
1,1 Dichloroethene	1.0	nd	nd	nd	nd	nd	nd
1,2 Dichloroethene	1.0	nd	6.0	7.0	nd	4340	4690
Benzene	1.0	nd	nd	nd	nd	nd	nd
Trichloroethene	1.0	nd	3.0	8.0	nd	3680	3930
Toluene	1.0	nd	nd	nd	nd	nd	nd
Cis Dichloropropene	1.0	nd	nd	nd	nd	nd	nd
Trans Dichloropropene	1.0	nd	nd	nd	nd	nd	nd
Tetrachloroethene PCE	1.0	nd	4.0	0.12	nd	41300	44400
Ethylbenzene	1.0	nd	nd	nd	nd	nd	nd
Total Xylenes	1.0	nd	nd	nd	nd	nd	nd
1,3 Dichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
1,4 Dichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
1,2 Dichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
1,1 Dichloroethane	1.0	nd	nd	nd	nd	nd	–
1,2 Dichloroethane	1.0	nd	nd	nd	nd	nd	–
Chloroform	1.0	nd	nd	nd	nd	nd	–
Carbon Tetrachloride	1.0	nd	nd	nd	nd	nd	–
1,1,1 Trichloroethane	1.0	nd	nd	nd	nd	100	–
1,1,2 Trichloroethane TCA	1.0	nd	nd	nd	nd	nd	–
Tetrachloroethane	1.0	nd	nd	nd	nd	14	–
Spike Recovery (%)		114	117	109	111	91	95

C. Gasoline, Diesel and Oil in Soil by WTPH-G and WTPH-D/D-Extended

Sample Number	*Date Analyzed*	*Recovery %*	*Gasoline mg/kg*	*Diesel mg/kg*	*Heavy Oil mg/kg*
Method Blk.	5/30/95	100	nd	nd	nd
BH #1 @ 3'	5/30/95	121	29	nd	nd
BH #2 @ 5'	5/30/95	100	nd	nd	nd
BH #3 @ 3'	5/30/95	93	nd	nd	nd
BH #4 @ 5'	5/30/95	99	nd	nd	nd
BH #5 @ 6'	5/30/95	111	nd	nd	nd
BH #6 @ 2'	5/30/95	124	nd	nd	nd
BH #6 @ 2' Duplicate	5/30/95	109	nd	nd	nd
MDL mg/kg			10	20	20

D. Gasoline, Diesel and Oil in Water by WTPH-G and WTPH-D/D-Extended

Sample Number	*Date Analyzed*	*Recovery %*	*Gasoline ug/l*	*Diesel ug/l*	*Heavy Oil ug/l*
Method Blk.	5/30/95	110	nd	nd	nd
BH #1 @ 3'	5/30/95	88	nd	nd	nd
BH #3 @ 5'	5/30/95	86	nd	nd	24700
BH #5 @ 6'	5/30/95	95	nd	nd	nd
BH #6 @ 6'	5/30/95	99	29000	nd	11100
BH #6 @ 6' Duplicate	5/30/95	115	28600	nd	13000
MDL ug/l			10	20	20

For the above tables, "nd" Indicates Not Detected at the listed detection limits.

E. Specific Halogenated Hydrocarbons (by EPA Method 8010) in Water; "nd" indicates Not Detected at the listed detection limit (MDL).

BOREHOLE / SAMPLE NUMBER	*MDL ug/l*	Method Blank	ARTESIAN
DATE ug/l = ppb	-	6/09/95 ug/l	6/09/95 ug/l
1,1 Dichloroethene	1.0	nd	nd
1,2 Dichloroethene	1.0	nd	nd
Benzene	1.0	nd	nd
Trichloroethene	1.0	nd	nd
Toluene	1.0	nd	nd
Cis Dichloropropene	1.0	nd	nd
Trans Dichloropropene	1.0	nd	nd
Tetrachloroethene	1.0	nd	nd
Ethylbenzene	1.0	nd	nd
Total Xylenes	1.0	nd	nd
1,3 Dichlorobenzene	1.0	nd	nd
1,4 Dichlorobenzene	1.0	nd	nd
1,2 Dichlorobenzene	1.0	nd	nd
1,1 Dichloroethane	1.0	nd	nd
1,2 Dichloroethane	1.0	nd	nd
Chloroform	1.0	nd	nd
Carbon Tetrachloride	1.0	nd	nd
1,1,1 Trichloroethane	1.0	nd	nd
1,1,2 Trichloroethane	1.0	nd	nd
Tetrachloroethane	1.0	nd	nd
Spike Recovery (%)		97	96

F. Diesel and Oil in Water by WTPH-D/D-Extended

Sample Number	*Date Analyzed*	*Recovery %*	*Diesel ug/l*	*Heavy Oil ug/l*
Method Blk.	6/09/95	85	nd	nd
ARTESIAN	6/09/95	90	nd	nd
MDL; ug/l			400	400

5.0 CONCLUSIONS

The Olympia Dry Cleaners has operated continuously on site for approximately twenty five (25) years. The owner of the property during this time span is Mr. Frank Burleson. Mr. Burleson built the structure in 1970 and operated the dry cleaning establishment for approximately eleven (11) years, and currently owns the land and improvements.

During onsite an interview conducted on June 9, Mr. Burleson stated that there are non-native soils on site. These soils are located in roughly the back half of the property and were used as backfill during the construction of the dry cleaners. Mr. Burleson stated that before the construction of the dry cleaners, the site had lain vacant.

Our Client, Mr. Gaylor Bolton, has leased the site improvements from Mr. Burleson for the previous fourteen years (approximately.)

During our soil/water sampling phase, a total of eight exploratory boreholes were augered utilizing hand auger and Strataprobe methodologies on the northern portion of the site. Six (6) groundwater samples were extracted. These samples were analyzed for Gasoline, Diesel, Heavy Oil, and Halogenated Hydrocarbons (Mod. EPA 8010 in water.) Elevated levels (41,300 ppb) of Tetrachloroethene (PCE) was found in the groundwater on the northwest (Borehole #6 @ 6') and northeast (Borehole #1 @ 1') corners of the property. Trichloroethene (3680 ppb) and 1,2 Dichloroethene (4340 ppb) were also present at these locations at levels far above MTCA Method A cleanup standards.

Heavy oil was detected in the groundwater on the northeast corner of the site at 2,700,000 ppb (Water #1. @ 18") Groundwater observed at this location appeared extremely oily and was slightly viscous. Heavy oil was also detected at Borehole #3 @ 5' (24700 ppb.)

The groundwater at Borehole #6 @ 6' tested positive for gasoline at 26000 parts per billion. No other soil or water sample location tested positive for this constituent. Borehole #6 is located adjacent to the portion of the City of Olympia storm sewer system which services the site and adjoining properties. Based upon limited background research, no service stations have ever been operated on site or the adjoining properties. Given this limited information, the gasoline contamination may be a result of a leak in the storm sewer system in the vicinity of the site.

An artesian well is located on site. According to Mr. Burleson, this well has been used for drinking water and other purposes. A hose bib connected to this well is located on the west side of the structure. After our initial analyzes identified contamination on site, water from this artesian well (located topographically above grade from the problem area) was tested for halogenated hydrocarbons on June 9 (Artesian on Site Map.) The results were non-detect for the above mentioned chemicals. The sample was also analyzed for heavy oil and diesel and was non-detect for these hydrocarbon constituents.

Based upon the groundwater analyzes, it appears the site topographically above gradient from the problem sample locations is not effected by the identified contaminants. It is not known whether the artesian aquifer beneath the site or down gradient is affected.

A total of seven (7) soil samples were gathered at the site. Soil #1 @ 1' gathered at the northeast corner of the structure on May 19 tested at 4.16 ppm tetrachloroethene, 0.24 ppm 1,2 Dichloroethene and 0.08 ppm trichloroethene. Heavy oil was also detected at 20000 ppm.

Of the samples gathered on May 23, Boreholes #1 & #2 were the only samples to test positive for tetrachloroethene @ 0.07 ppm and 0.12 ppm at three (3) and five (5) feet in depth, respectively.

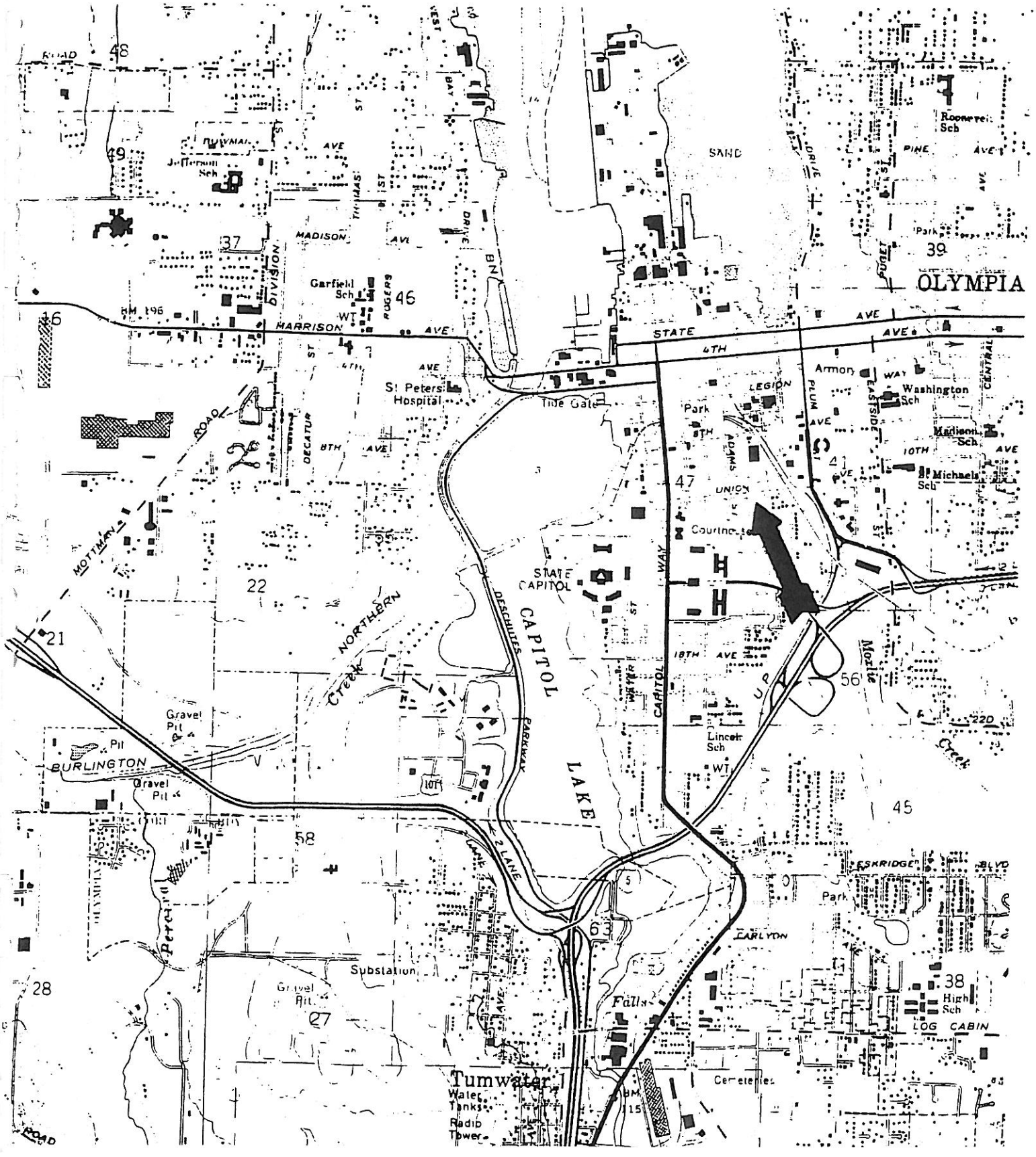
Based upon our initial sampling and research, the soils at the sampled locations does not appear to be heavily contaminated. Groundwater is effected.

CONREX recommends further sampling and analysis to determine the potential spread of the contamination plume and the identification of potential receptors down gradient from the site which could be adversely effected. Remedial action to be undertaken will be based upon this further study.

APPENDIX A

Area / Topographic Map

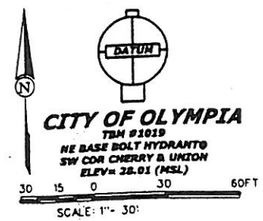
MR. GAYLOR BOLTON	APPENDIX A	Project No. 413
ESA Phase II	Area / Topo Map	CONREX INC.

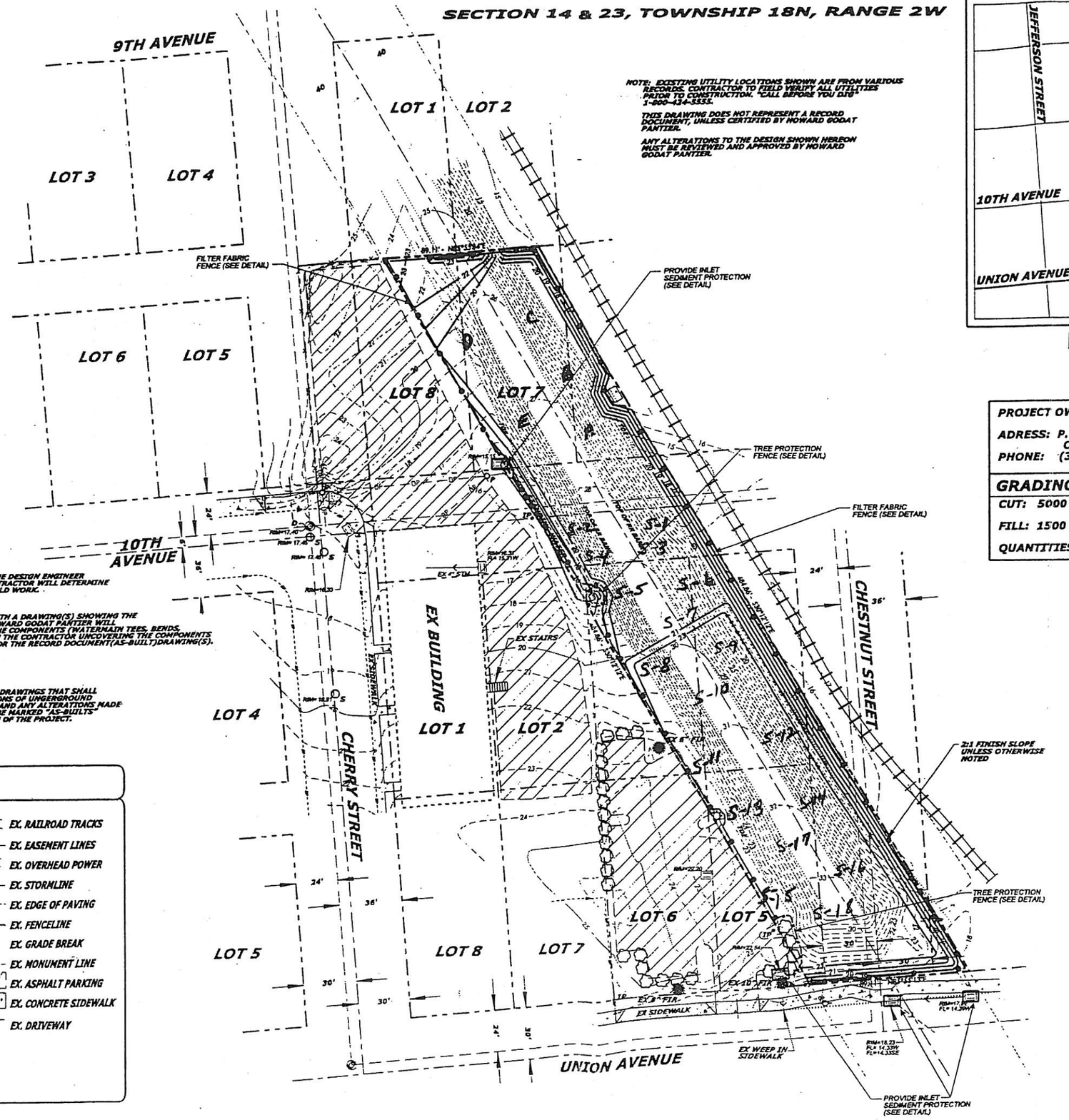


APPENDIX B

Site / Sample Location Map

SECTION 14 & 23, TOWNSHIP 18N, RANGE 2W





NOTE: EXISTING UTILITY LOCATIONS SHOWN ARE FROM VARIOUS RECORDS. CONTRACTOR TO FIELD VERIFY ALL UTILITIES PRIOR TO CONSTRUCTION. "CALL BEFORE YOU DIG" 1-800-424-5555.

THIS DRAWING DOES NOT REPRESENT A RECORD DOCUMENT, UNLESS CERTIFIED BY HOWARD GODAT PANTIER.

ANY ALTERATIONS TO THE DESIGN SHOWN HEREON MUST BE REVIEWED AND APPROVED BY HOWARD GODAT PANTIER.

CONSTRUCTION STAKING:

THIS PROJECT MUST BE STAKED PRIOR TO CONSTRUCTION BY THE DESIGN ENGINEER OR A LICENSED LAND SURVEYOR. THE DEVELOPER AND THE CONTRACTOR WILL DETERMINE WHO IS RESPONSIBLE FOR SECURING AND SCHEDULING THE FIELD WORK.

RECORD DOCUMENTS:

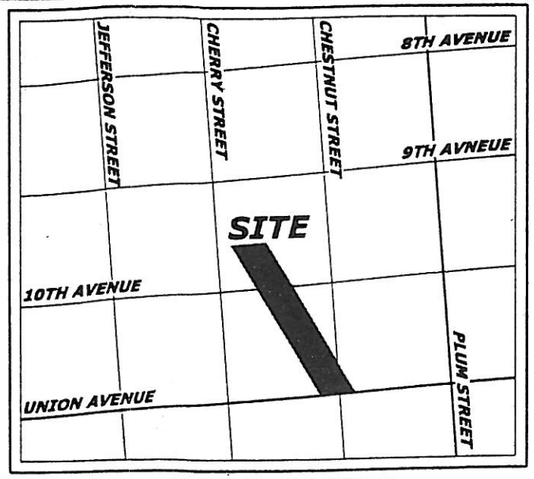
THE CONTRACTOR SHALL FURNISH HOWARD GODAT PANTIER WITH A DRAWING(S) SHOWING THE CHANGES HE/SHE HAS MADE TO THE DESIGN DRAWING(S) & HOWARD GODAT PANTIER WILL VERIFY ALL SYSTEM COMPONENTS PRIOR TO BACKFILLING OF THE COMPONENTS (WATERMAIN TEES, BENDS, SEWER LATERALS AND ETC.). FAILURE TO DO SO MAY RESULT IN THE CONTRACTOR UNCOVERING THE COMPONENTS SO THAT THE HORIZ. AND VERT. LOCATION CAN BE RECORDED FOR THE RECORD DOCUMENT(AS-BUILT)DRAWING(S).

AS-BUILT NOTES:

THE CONTRACTOR SHALL MAINTAIN ONE SET OF THE CONTRACT DRAWINGS THAT SHALL INCLUDE, CLEARLY AND LEGIBLY ANY ALTERATIONS OR LOCATIONS OF UNDERGROUND UTILITIES ENCOUNTERED DURING PROGRESS OF THIS PROJECT AND ANY ALTERATIONS MADE TO THE FACILITIES BEING INSTALLED. SAID DRAWINGS SHALL BE MARKED "AS-BUILTS" AND SUBMITTED TO THE PROJECT ENGINEER UPON COMPLETION OF THE PROJECT.

LEGEND

- EX. MONUMENT
- EX. IRON PIPE MON
- EX. POWER POLE
- EX. GUY WIRE
- EX. POWER VAULT
- EX. STREET LIGHT
- EX. SEWER MANHOLE
- EX. STORM MANHOLE
- EX. CATCH BASIN
- EX. CONIFEROUS TREE
- EX. DECIDUOUS TREELINE
- 20 FINISH CONTOUR
- x TREE PROTECTION FENCE
- FILTER FABRIC FENCE
- EX. RAILROAD TRACKS
- EX. EASEMENT LINES
- EX. OVERHEAD POWER
- EX. STORMLINE
- EX. EDGE OF PAVING
- EX. FENCELINE
- EX. GRADE BREAK
- EX. MONUMENT LINE
- EX. ASPHALT PARKING
- EX. CONCRETE SIDEWALK
- EX. DRIVEWAY



VICINITY MAP
NOT TO SCALE

PROJECT OWNER: MICK PHILLIPS

ADRESS: P.O. BOX 187
OLYMPIA, WA 98507
PHONE: (360) 943-8320

GRADING REQUIREMENTS

CUT: 5000 CUBIC YARDS

FILL: 1500 CUBIC YARDS

QUANTITIES FOR PERMIT PURPOSES ONLY

RECEIVED
JAN 10 2001
CITY OF OLYMPIA PLANNING & DEVELOPMENT DEPT.

APPROVED FOR CONSTRUCTION

BY: _____ DATE: _____
DIRECTOR OF COMMUNITY PLANNING AND DEVELOPMENT

APPROVAL EXPIRES: _____

TP# 7820370040O

DESIGNED BY: DB
DRAWN BY: EM
CHECKED BY: SDH
DATE: AUGUST 2000
SCALE: H 1"=30'
V N/A

STEVEN D. HATTON — STATE OF WASHINGTON — 24183 — REGISTERED PROFESSIONAL ENGINEER
EXPIRES 11-27-01

HATTON GODAT PANTIER
ENGINEERS AND SURVEYORS
2708 WESTMOOR COURT
OLYMPIA, WA. 98502
(360) 943-1599
FAX: (360) 357-8289
8326 MARTIN WAY SUITE 'G'
LACEY, WA. 98506
(360) 491-9744
FAX: (360)491-9786

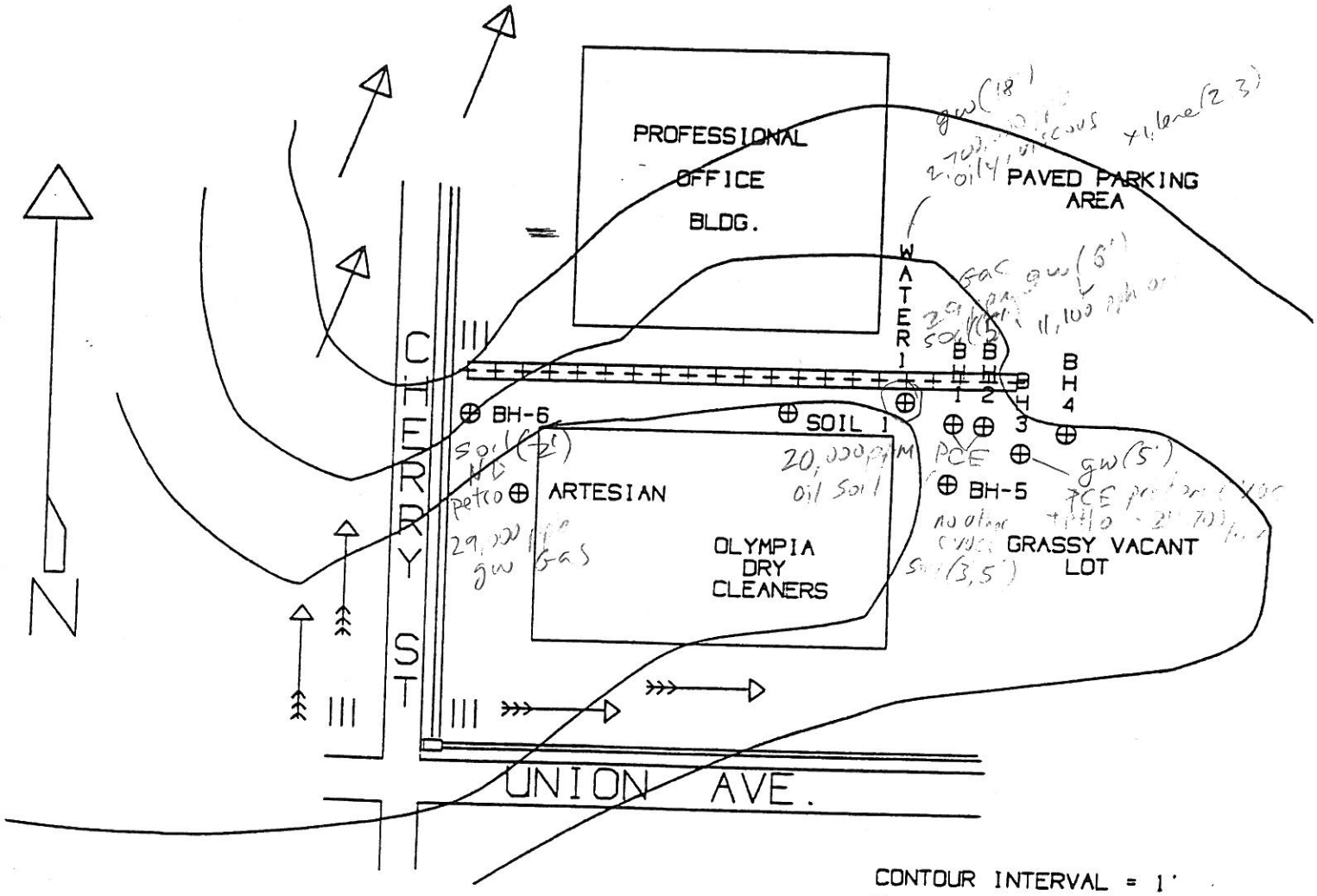
REVISIONS: DATE:

RAILROAD RIGHT OF WAY GRADING
UNION AVENUE OLYMPIA, WA 98502

GRADING PLAN

AGENCY NO.
SHEET: 1 OF 2
INDEX: (98-000) 98-140-1.dgn
JOB: 98-140

MR. GAYLOR BOLTON	APPENDIX B	Project No. 413
ESA Phase II	Site Map	CONREX INC.



CONTOUR INTERVAL = 1'

= APPOX. GROUNDWATER FLOW

= SEWER LINE

⊕ = SAMPLE LOCATIONS

= SURFACE WATER FLOW

||| = STORM DRAINS

= FRENCH DRAIN

APPENDIX C

Laboratory Analysis

Chain-of-Custody Documents

MTCA Method "A" Groundwater Cleanup Levels

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

May 22, 1995

Scott Clark
Conrex, Inc.
2403 Pacific Ave. SE
Olympia, WA 98501

Dear Mr. Clark:

Please find enclosed the data reports for analyses conducted off-site May 20, 1995, for soil and water samples from the Olympia Dry Cleaners Project in Olympia, Washington. The samples were analyzed for Specific Halogenated Hydrocarbons and BTEX by EPA Method 8010/8020, Hydrocarbon Identification by WTPH-HCID, and Heavy Petroleum Hydrocarbons by WTPH-D/D Extended.

The results of the analyses are summarized in the attached tables. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. An invoice for this analytical work is also enclosed.

TEG Northwest appreciates the opportunity to have provided analytical services to Conrex 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,

Michael A. Korosec

Michael A. Korosec
President

tl/conrex.ltr

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Conrex, Inc.

Hydrocarbon Identification by ~~NW~~TPH-HCID for Soils

Sample Number	Date	Recovery %	Gasoline mg/kg	Diesel mg/kg	Heavy Oil mg/kg
Meth. Blank	05/20/95	93	nd	nd	nd
Soil #1	05/20/95	int	nd	nd	D
Method Detection Limits			20	50	100

"nd" Indicates not detected at the listed detection limit.
"D" Indicates detected above the listed detection limit.

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Conrex, Inc.

Heavy Petroleum Hydrocarbons by WTPH-D/D Extended for Soils

Sample Number	Date	Recovery %	Diesel mg/kg	Heavy Oil mg/kg
Meth. Blank	05/20/95	96	nd	nd
Soil #1	05/20/95	int	nd	20000
Method Detection Limits			10	20

"nd" Indicates not detected at the listed detection limit.
"int" Indicates that Interfering Peaks prevent determination.

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Conrex, Inc.

Hydrocarbon Identification by WTPH-HCID for Waters

Sample Number	Date	Recovery %	Gasoline ug/l	Diesel ug/l	Heavy Oil ug/l
Meth. Blank	05/20/95	93	nd	nd	nd
Water #1	05/20/95	int	nd	nd	D
Method Detection Limits			100	100	200

"nd" Indicates not detected at the listed detection limit.
"D" Indicates detected above the listed detection limit.

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Conrex, Inc.

Heavy Petroleum Hydrocarbons by WTPH-D/D Extended for Waters

Sample Number	Date	Recovery %	Diesel ug/l	Heavy Oil ug/l
Meth. Blank	05/20/95	96	nd	nd
Water #1	05/20/95	int	nd	2700000
Method Detection Limits			100	200

"nd" Indicates not detected at the listed detection limit.
"int" Indicates that Interfering Peaks prevent determination.

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Conrex, Inc.

Specific Halogenated Hydrocarbons and BTEX (Mod. EPA 8010/8020) in Soil

Sample-Number	MDL	Method Blank	Soil #1
Date		05/20/95	05/20/95
	mg/kg	mg/kg	mg/kg
1,1 Dichloroethene	0.05	nd	nd
1,2 Dichloroethene	0.05	nd	0.24
Benzene	0.05	nd	nd
Trichloroethene	0.05	nd	0.08
Toluene	0.05	nd	nd
Cis Dichloropropene	0.05	nd	nd
Trans Dichlorpropene	0.05	nd	nd
Tetrachloroethene	0.05	nd	4.16
Chlorobenzene	0.05	nd	nd
Ethylbenzene	0.05	nd	nd
Total Xylenes	0.05	nd	nd
1,3 Dichlorobenzene	0.05	nd	nd
1,4 Dichlorobenzene	0.05	nd	nd
1,2 Dichlorobenzene	0.05	nd	nd
1,1 Dichloroethane	0.05	nd	nd
1,2 Dichloroethane	0.05	nd	nd
Chloroform	0.05	nd	nd
Carbon Tetrachloride	0.05	nd	nd
1,1,1 Trichloroethane	0.05	nd	nd
1,1,2 Trichloroethane	0.05	nd	nd
Tetrachloroethane	0.05	nd	nd
Spike Recovery (%)		96	92

"nd" Indicates Not Detected at the listed detection limit.
"int" Indicates that interference peaks prevent determination.

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Conrex, Inc.

Specific Halogenated Hydrocarbons and BTEX (Mod. EPA 8010/8020) in Waters

Sample-Number	MDL	Method Blank	Water #1
Date	ug/l	05/20/95 ug/l	05/20/95 ug/l
1,1 Dichloroethene	1	nd	nd
1,2 Dichloroethene	1	nd	2680
Benzene	1	nd	nd
Trichloroethene	1	nd	1810
Toluene	1	nd	2.4
Cis Dichloropropene	1	nd	nd
Trans Dichlorpropene	1	nd	nd
Tetrachloroethene	1	nd	8370
Chlorobenzene	1	nd	nd
Ethylbenzene	1	nd	nd
Total Xylenes	1	nd	2.3
1,3 Dichlorobenzene	5	nd	nd
1,4 Dichlorobenzene	5	nd	nd
1,2 Dichlorobenzene	5	nd	nd
1,1 Dichloroethane	5	nd	nd
1,2 Dichloroethane	5	nd	nd
Chloroform	5	nd	nd
Carbon Tetrachloride	5	nd	nd
1,1,1 Trichloroethane	5	nd	nd
1,1,2 Trichloroethane	5	nd	nd
Tetrachloroethane	5	nd	nd
Spike Recovery (%)		96	93

"nd" Indicates Not Detected at the listed detection limit.
"int" Indicates that interference peaks prevent determination.

TRANSGLOBAL ENVIRONMENTAL GEOCHEMISTRY

CHAIN-OF-CUSTODY RECORD

P.O. #: _____

CLIENT: CONREX INC.
ADDRESS: 2403 PACIFIC AVE. S.E.
PHONE: 754-1123 FAX: 754-1173
CLIENT PROJECT #: _____ PROJECT MANAGER: SCOTT CLARK

DATE: 5-19-95 PAGE 1 OF 1
TEG PROJECT #: _____
LOCATION: OLYMPIA DRY CLEANERS
COLLECTOR: SCOTT CLARK DATE OF COLLECTION: 5-19

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)	PNA 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	FIELD NOTES	Total Number Of Containers	Laboratory Note Number
SOIL #1	1'	1440	AUGER	4 oz. GLASS	X														X	1	
WATER #1	1½'	1455	GRAB	40ML GLASS VOA	X														X	1	

RELINQUISHED BY: (Signature) _____ DATE/TIME 5-19-95 1510 RECEIVED BY: (Signature) _____ DATE/TIME _____
RELINQUISHED BY: (Signature) _____ DATE/TIME _____ RECEIVED BY: (Signature) _____ DATE/TIME 5/19/95

SAMPLE DISPOSAL INSTRUCTIONS

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	2
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	4

LABORATORY NOTES:

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

May 31, 1995

Scott Clark
Conrex, Inc.
2403 Pacific Ave. SE
Olympia, WA 98501

Dear Mr. Clark:

Please find enclosed an invoice for StrataProbe Services conducted on May 26, 1995, and analytical work conducted off-site May 30, 1995, for the Olympia Dry Cleaners Project in Olympia, Washington. Soil and water samples were analyzed for Specific Halogenated Hydrocarbons by Modified EPA Method 8010, Gasoline, Diesel and Oil by WTPH-G and WTPH-D/D Extended.

The results of these analyses are summarized in the attached tables. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included.

TEG Northwest appreciates the opportunity to have provided geosampling and analytical services to Conrex 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,

Michael A. Korosec
President

tl/conrex.ltr

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST INC.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Conrex, Inc.
Project #: 413

Gasoline, Diesel and Oil in Soil by WTPH-G and WTPH-D/D-Extended

Sample Number	Date	Recovery %	Gasoline mg/kg	Diesel mg/kg	Heavy Oil mg/kg
Meth. Blank	05/30/95	100	nd	nd	nd
BH-1 @ 3'	05/30/95	121	29	nd	nd
BH-2 @ 5'	05/30/95	100	nd	nd	nd
BH-3 @ 3'	05/30/95	93	nd	nd	nd
BH-4 @ 5'	05/30/95	99	nd	nd	nd
BH-5 @ 6'	05/30/95	111	nd	nd	nd
BH-6 @ 2'	05/30/95	124	nd	nd	nd
BH-6 @ 2' Dup	05/30/95	109	nd	nd	nd
MDL			10	20	20

"nd" Indicates not detected at the listed detection limit.
"int" Indicates that interference peaks prevent determination.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Conrex, Inc.
Project #: 413

Specific Halogenated Hydrocarbons (Mod. EPA 8010) in Soil

Sample-Number	MDL	BH-6 @ 2'	BH-6 @ 2' Dup
Date		05/30/95	05/30/95
	mg/kg	mg/kg	mg/kg
1,1 Dichloroethene	0.05	nd	nd
1,2 Dichloroethene	0.05	nd	nd
Benzene	0.05	nd	nd
Trichloroethene	0.05	nd	nd
Toluene	0.05	nd	nd
Cis Dichloropropene	0.05	nd	nd
Trans Dichlorpropene	0.05	nd	nd
Tetrachloroethene	0.05	nd	nd
Ethylbenzene	0.05	nd	nd
Total Xylenes	0.05	nd	nd
1,3 Dichlorobenzene	0.05	nd	nd
1,4 Dichlorobenzene	0.05	nd	nd
1,2 Dichlorobenzene	0.05	nd	nd
1,1 Dichloroethane	0.05	nd	nd
1,2 Dichloroethane	0.05	nd	nd
Chloroform	0.05	nd	nd
Carbon Tetrachloride	0.05	nd	nd
1,1,1 Trichloroethane	0.05	nd	nd
1,1,2 Trichloroethane	0.05	nd	nd
Tetrachloroethane	0.05	nd	nd
Spike Recovery (%)		101	102

"nd" Indicates Not Detected at the listed detection limi
"int" Indicates that interference peaks prevent determination.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Conrex, Inc.
Project #: 413

Gasoline, Diesel and Oil in Water by WTPH-G and WTPH-D/D-Extended

Sample Number	Date	Recovery %	Gasoline ug/l	Diesel ug/l	Heavy Oil ug/l
Meth. Blank	05/30/95	110	nd	nd	nd
BH-1 @ 3'	05/30/95	88	nd	nd	nd
BH-3 @ 5'	05/30/95	86	nd	nd	24700
BH-5 @ 6'	05/30/95	95	nd	nd	nd
BH-6 @ 6'	05/30/95	99	29000	nd	11100
BH-6 @ 6' Dup	05/30/95	115	28600	nd	13000
MDL			10	20	20

"nd" Indicates not detected at the listed detection limit.
"int" Indicates that interference peaks prevent determination.

OLYMPIA DRY CLEANERS PROJECT
Olympia, Washington
Conrex, Inc.
Project #: 413

Specific Halogenated Hydrocarbons (Mod. EPA 8010) in Water

Sample-Number	MDL	Method Blank	BH-1 @ 3'	BH-3 @ 5'	BH-5 @ 6'	BH-6 @ 6'	BH-6 @ 6' Dup
Date	ug/l	05/30/95 ug/l	05/30/95 ug/l	05/30/95 ug/l	05/30/95 ug/l	05/30/95 ug/l	05/30/95 ug/l
1,1 Dichloroethene	1	nd	nd	nd	nd	nd	nd
1,2 Dichloroethene	1	nd	6	7	nd	4340	4690
Benzene	1	nd	nd	nd	nd	nd	nd
Trichloroethene	1	nd	3	8	nd	3680	3930
Toluene	1	nd	nd	nd	nd	nd	nd
Cis Dichloropropene	1	nd	nd	nd	nd	nd	nd
Trans Dichlorpropene	1	nd	nd	nd	nd	nd	nd
Tetrachloroethene	1	nd	4	68	nd	41300	44400
Ethylbenzene	1	nd	nd	nd	nd	nd	nd
Total Xylenes	1	nd	nd	nd	nd	nd	nd
1,3 Dichlorobenzene	1	nd	nd	nd	nd	nd	nd
1,4 Dichlorobenzene	1	nd	nd	nd	nd	nd	nd
1,2 Dichlorobenzene	1	nd	nd	nd	nd	nd	nd
1,1 Dichloroethane	1	nd	nd	nd	nd	nd	–
1,2 Dichloroethane	1	nd	nd	nd	nd	nd	–
Chloroform	1	nd	nd	nd	nd	nd	–
Carbon Tetrachloride	1	nd	nd	nd	nd	nd	–
1,1,1 Trichloroethane	1	nd	nd	nd	nd	100	–
1,1,2 Trichloroethane	1	nd	nd	nd	nd	nd	–
Tetrachloroethane	1	nd	nd	nd	nd	14	–
Spike Recovery (%)		114	117	109	111	91	95

"nd" Indicates Not Detected at the listed detection limit.
"int" Indicates that interference peaks prevent determination.

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° 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.

TPH-Gasoline, TPH-Diesel
(Gasoline and/or Diesel, Modified EPA 8015, WTPH-G and WTPH-D)

A blank and a calibration standard are 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%. A duplicate sample is run at a rate of 1 per 10 samples (or a matrix spike sample is prepared and analyzed). At least 1 method blank is run per 10 samples analyzed.

teg ENVIRONMENTAL GEOCHEMISTRY

CHAIN-OF-CUSTODY RECORD

P.O. #: _____

CLIENT: CONREX INC.
ADDRESS: 2403 PACIFIC AVE SE
PHONE: 360 754-1123 FAX: 360 754-1173
CLIENT PROJECT #: 413 PROJECT MANAGER: SCOTT CLARK

DATE: 5-26-95 PAGE 1 OF 1
TEG PROJECT #: _____
LOCATION: OLYMPIA DRY CLEANERS
COLLECTOR: SCOTT CLARK DATE OF COLLECTION: 5-26

Sample Number	Depth	Time	Sample Type	Container Type	VOA 601/8010	VOA 602/8020	VOA 624/8240	~~Semi-VOC~~	TPH 418.1	TPH 8015 gasoline	TPH 8015 diesel	TPH 8015 ig & o	PNA 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	FIELD NOTES	Total Number Of Containers	Laboratory Number
BOREHOLE 1	3'	1230	SPOON	4 OZ GLASS	✓		✓			✓												
BOREHOLE 1	3'	1245	GRAB	40 MIL VOA	✓		✓			✓										SOILS - SLIGHT ODOR	1	
BOREHOLE 2	5'	1253	SPOON	4 OZ GLASS	✓		✓			✓										WATER - OILY	2	
BOREHOLE 3	3'	1311	SPOON	4 OZ GLASS	✓		✓			✓										SOILS - ODOROUS	1	
BH 3	5'	1325	GRAB	40 ML VOA	✓		✓			✓										SOILS - ODOROUS	1	
BH ~~3~~ 4	5'	1350	SPOON	4 OZ GLASS	✓		✓			✓										WATER - ODOROUS OIL	2	
BH 4	9'	1415	SPOON	4 OZ GLASS	✓		✓			✓										SOILS - ODOROUS	1	
BH 5	6'	1435	SPOON	4 OZ GLASS	✓		✓			✓										SOILS	1	
~~BH 6~~	~~2'~~	~~1550~~																		SOILS	1	
BH 5	10'	1520	SPOON	4 OZ GLASS	✓		✓			✓												
BH 6	2'	1560	SPOON	4 OZ GLASS	✓		✓			✓										NO ODOR - SHEEN	1	
BH 6	5'	1600	SPOON	4 OZ GLASS	✓		✓			✓										NO ODOR - SHEEN	1	
																				SOME SHEEN	1	

RELINQUISHED BY: (Signature) DATE/TIME 1600 5-26-95 RECEIVED BY: (Signature) DATE/TIME 1630

RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature) DATE/TIME 5/26/95

SAMPLE DISPOSAL INSTRUCTIONS

☐ TEG DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT

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

LABORATORY NOTES:

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES NORTHWEST INC.

OLYMPIA DRYCLEANERS PROJECT
Olympia, Washington
Conrex, Inc.
Project #: 413

Specific Halogenated Hydrocarbons and BTEX (Mod. EPA 8010/8020) in Water

Sample-Number	MDL	Method Blank	ARTESIAN
Date			
	ug/l	ug/l	ug/l
1,1 Dichloroethene	1	nd	nd
1,2 Dichloroethene	1	nd	nd
Benzene	1	nd	nd
Trichloroethene	1	nd	nd
Toluene	1	nd	nd
Cis Dichloropropene	1	nd	nd
Trans Dichlorpropene	1	nd	nd
Tetrachloroethene	1	nd	nd
Ethylbenzene	1	nd	nd
Total Xylenes	1	nd	nd
1,3 Dichlorobenzene	1	nd	nd
1,4 Dichlorobenzene	1	nd	nd
1,2 Dichlorobenzene	1	nd	nd
1,1 Dichloroethane	1	nd	nd
1,2 Dichloroethane	1	nd	nd
Chloroform	1	nd	nd
Carbon Tetrachloride	1	nd	nd
1,1,1 Trichloroethane	1	nd	nd
1,1,2 Trichloroethane	1	nd	nd
Tetrachloroethane	1	nd	nd
Spike Recovery (%)		97	96

"nd" Indicates Not Detected at the listed detection limit.
"int" Indicates that interference peaks prevent determination.

OLYMPIA DRYCLEANERS PROJECT
Olympia, Washington
Conrex, Inc.
Project #: 413

Diesel and Oil in Water by WTPH-D/D-Extended

Sample Number	Date	Recovery %	Diesel ug/l	Heavy Oil ug/l
Meth. Blank	06/09/95	85	nd	nd
ARTESIAN	06/09/95	90	nd	nd
MDL			400	400

"nd" Indicates not detected at the listed detection limit.
"int" Indicates that interference peaks prevent determination.

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To Scott Black	From Sherry
Co. Conrex	Co. TEG NW
Dept.	Phone #
Fax # 754-1173	Fax #

TRANSGLOBAL ENVIRONMENTAL GEOSCIENCES

CHAIN-OF-CUSTODY RECORI

CLIENT: CONREX INC.

ADDRESS: 2123 PACIFIC AVE.

PHONE 754-1123 FAX: 754-1173

CLIENT PROJECT #: 413 PROJECT MANAGER: SCOTT CLARK

DATE: 6-9-95 PAGE 1 OF 1

PROJECT NAME: OLYMPIA DRY CLEANERS

LOCATION:

COLLECTOR: SCOTT CLARK DATE OF COLLECTION 6-9

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: 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
MAESIAN	N/A	1230	GRAB	40ML VOA	✓						✓									EXTD PE	2	

RELINQUISHED BY (Signature) DATE/TIME 1314 6-9-95

RECEIVED BY (Signature) DATE/TIME 13:15 6/9/95

RELINQUISHED BY (Signature) DATE/TIME

RECEIVED BY (Signature) DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	2
CHAIN OF CUSTODY SEALS Y/N/NA	Y
SEALS INTACT? Y/N/NA	Y
RECEIVED GOOD COND./COLD	✓

LABORATORY NOTES:

Table 1

Method A Cleanup Levels - Ground Water[a]

Hazardous Substance	CAS Number	Cleanup Level
Arsenic	7440-38-2	5.0 ug/liter[b]
Benzene	71-43-2	5.0 ug/liter[c]
Cadmium	7440-43-9	5.0 ug/liter[d]
Chromium (Total)	7440-47-3	50.0 ug/liter[e]
DDT	50-29-3	0.1 ug/liter[f]
1,2 Dichloroethane	107-06-2	5.0 ug/liter[g]
Ethylbenzene	100-41-4	30.0 ug/liter[h]
Ethylene dibromide	106-93-4	0.01 ug/liter[i]
Gross Alpha Particle Activity		15.0 pCi/liter[j]
Gross Beta Particle Activity		4.0 mrem/yr[k]
Lead	7439-92-1	5.0 ug/liter[l]
Lindane	58-89-9	0.2 ug/liter[m]
Methylene chloride	75-09-2	5.0 ug/liter[n]
Mercury	7439-97-6	2.0 ug/liter[o]
PAHs (carcinogenic)		0.1 ug/liter[p]
PCB mixtures		0.1 ug/liter[q]
Radium 226 and 228		5.0 pCi/liter[r]
Radium 226		3.0 pCi/liter[s]
Tetrachloroethylene	127-18-4	5.0 ug/liter[t]
Toluene	108-88-3	40.0 ug/liter[u]
Total Petroleum Hydrocarbons		1000.0 ug/liter[v]
1,1,1 Trichloroethane	71-55-6	200.0 ug/liter[w]
Trichloroethylene	79-01-5	5.0 ug/liter[x]
Vinyl chloride	75-01-4	0.2 ug/liter[y]
Xylenes	1330-20-7	20.0 ug/liter[z]

Caution on misusing method A tables. Method A tables have been developed for specific purposes. They are intended to provide conservative cleanup levels for sites undergoing routine cleanup actions or those sites with relatively few hazardous substances. The tables may not be appropriate for defining cleanup levels at other sites. For these reasons, the values in these tables should not automatically be used to define cleanup levels that must be met for financial, real estate, insurance coverage or placement, or similar transactions or purposes. Exceedances of the values in these tables do not necessarily trigger requirements for cleanup action under this chapter.

Arsenic. Cleanup level based on background concentrations for state of Washington.

Benzene. Cleanup level based on applicable state and federal law.

Cadmium. Cleanup level based on applicable state and federal law and concentration derived using procedures in subsection (3)(a)(ii)(A) of this section and a hazard quotient of 0.2.

Chromium (Total). Cleanup level based on applicable state and federal law.

[f] DDT. Cleanup levels based on concentration derived using procedures in subsection (3)(a)(ii)(B) of this section.

[g] 1,2 Dichloroethane. Cleanup level based on applicable state and federal law.

[h] Ethylbenzene. Cleanup level based on applicable state and federal law and prevention of adverse aesthetic characteristics.

[i] Ethylene dibromide. Cleanup level based on concentration derived using procedures in subsection (3)(a)(ii)(B) of this section and modified based on analytical considerations.

[j] Gross Alpha Particle Activity, excluding uranium. Cleanup level based on applicable state and federal law.

[k] Gross Beta Particle Activity, including gamma activity. Cleanup level based on applicable state and federal law.

Lead. Cleanup level based on applicable state and federal law and prevention of unacceptable blood lead levels.

[m] Lindane. Cleanup level based on concentration derived using procedures in subsection (3)(a)(ii)(B) of this section.

Methylene chloride. Cleanup level based on concentration derived using the procedures in subsection (3)(a)(ii)(B) of this section.

Mercury. Cleanup level based on applicable state and federal law.

[p] PAHs (carcinogenic). Cleanup level based on concentration derived using procedures in subsection (3)(a)(ii)(B) of this section and modified based on analytical considerations.

PCB mixtures. Cleanup level based on concentration derived using procedures in subsection (3)(a)(ii)(B) of this section and modified based on analytical considerations.

Radium 226 and 228. Cleanup level based on applicable state and federal law.

Radium 226. Cleanup level based on applicable state and federal law.

Tetrachloroethylene. Cleanup level based on applicable state and federal law.

Toluene. Cleanup level based on applicable state and federal law and prevention of adverse aesthetic characteristics.

Total Petroleum Hydrocarbons. Cleanup level based on prevention of adverse aesthetic characteristics.

1,1,1 Trichloroethane. Cleanup level based on applicable state and federal law.

Trichloroethylene. Cleanup level based on applicable state and federal law.

[v] Vinyl chloride. Cleanup level based on concentration derived using procedures in subsection (3)(a)(ii)(B) of this section and modified based on analytical considerations.

Xylenes. Cleanup level based on applicable state and federal law and prevention of adverse aesthetic characteristics; and

APPENDIX D

Site Photographs

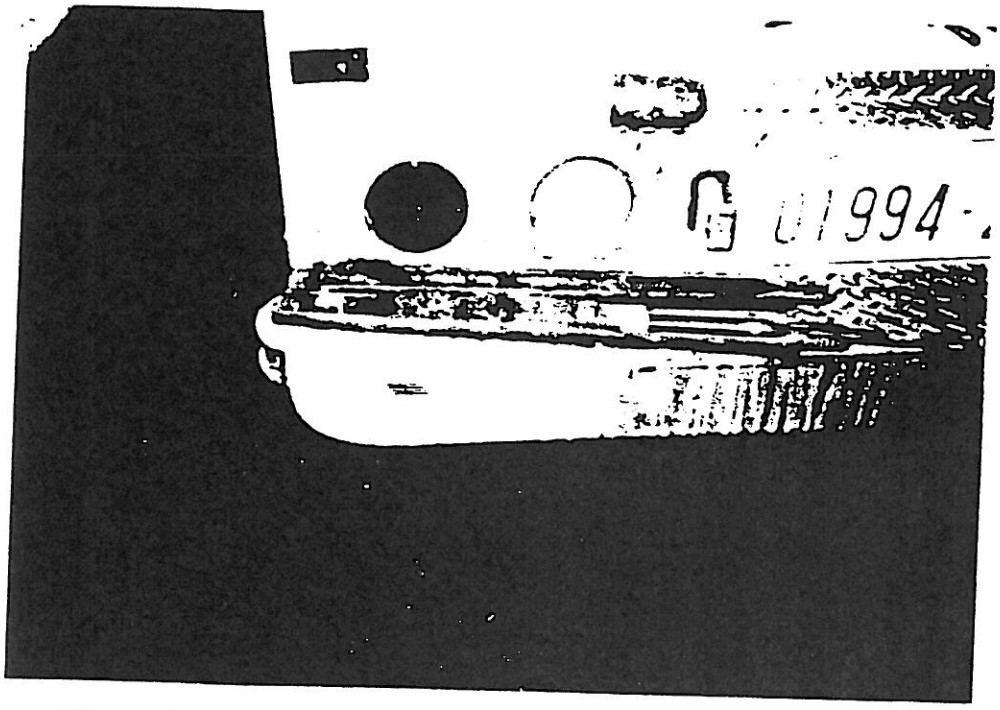

Photo #1 - View of Borehole #1 core sample; Borehole #2 was drilled approximately two (2) feet from #1.

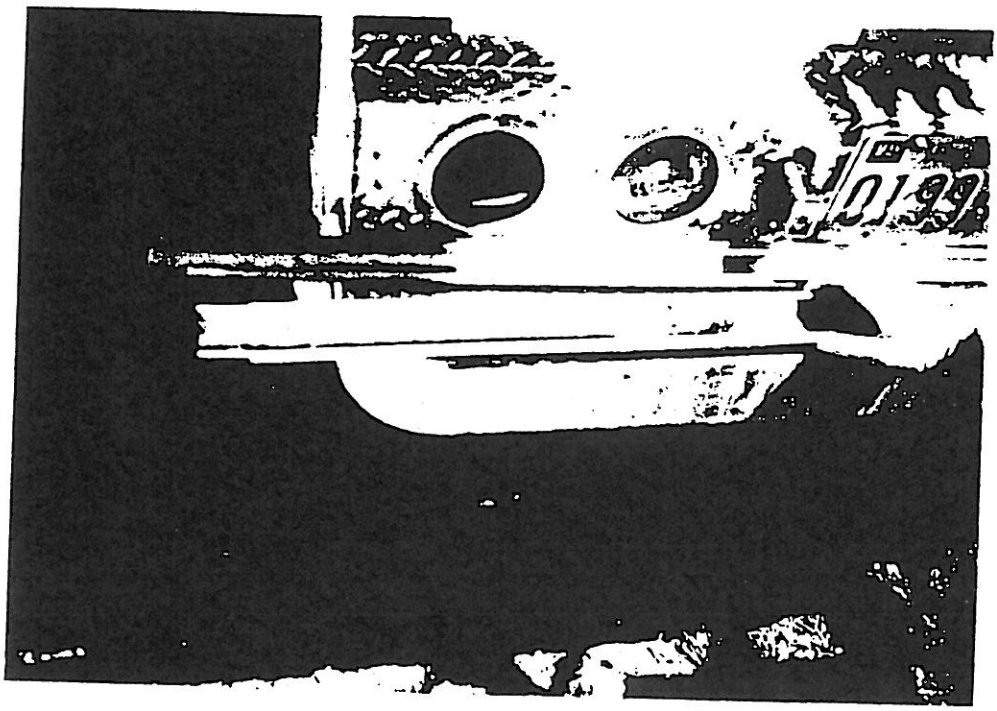

Photo #2 - View of Borehole #3 core sample. Blue silty clay, slightly plastic.

OLYMPIA DRY CLEANERS	APPENDIX D	Project No. 413
MR. GAYLOR BOLTON	SITE PHOTOGRAPHS	CONREX INC.

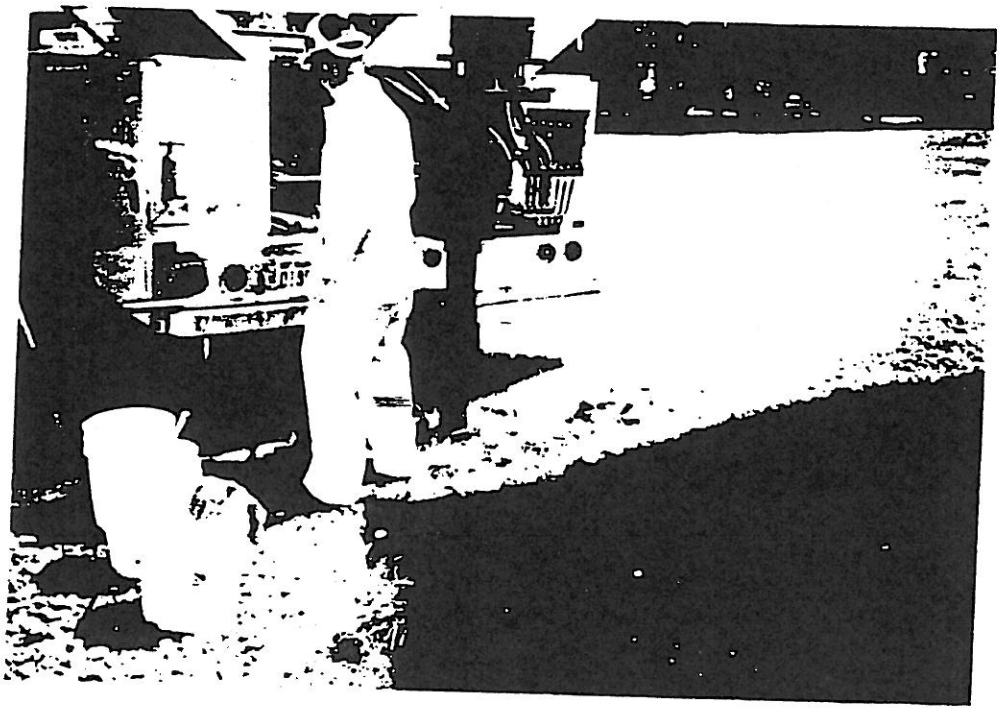

Photo #3 - Drilling Borehole #4; approximately fifteen (15) feet northeast of the structure.

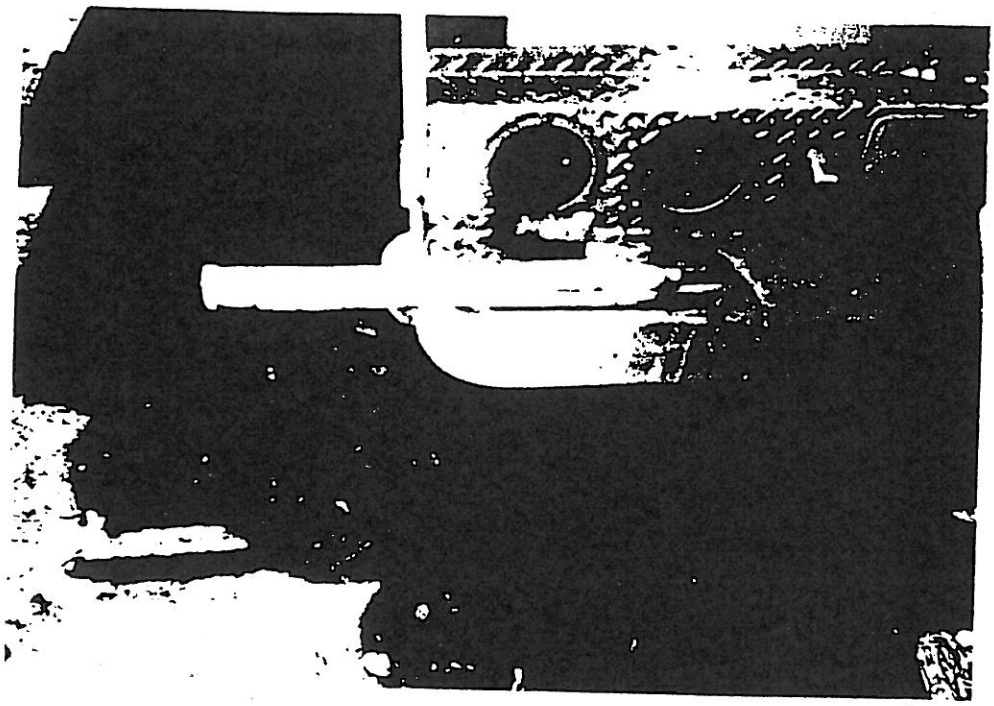

Photo #4 - View of Borehole #4 sample core. Blue silty clay.

Health Consultation

Evaluation of Indoor Air Sampling Results (July 16-17, 2002) at the Washington Traffic Safety Commission Offices

Howard's Drycleaners (a.k.a. Olympia Drycleaners site) Olympia, Thurston County, Washington

September 18, 2003

Prepared by

The Washington State Department of Health
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

Washington State Department of Health

HEALTH CONSULTATION

Evaluation of Indoor Air Sampling Results (July 16-17, 2002)
at the Washington Traffic Safety Commission Offices

HOWARD'S DRYCLEANERS
(a/k/a OLYMPIA DRY CLEANERS)

OLYMPIA, THURSTON COUNTY, WASHINGTON

EPA FACILITY ID: WAH000017277

Prepared by:

Washington State Department of Health
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

Foreword

The Washington State Department of Health (DOH) has prepared this health consultation in cooperation with the Agency for Toxic Substances and Disease Registry (ATSDR). ATSDR is part of the U.S. Department of Health and Human Services and is the principal federal public health agency responsible for health issues related to hazardous waste. This health consultation was prepared in accordance with methodologies and guidelines developed by ATSDR.

The purpose of this health consultation is to identify and prevent harmful human health effects resulting from exposure to hazardous substances in the environment. Health consultations focus on specific health issues so that DOH can respond to requests from concerned residents or agencies for health information on hazardous substances. DOH evaluates sampling data collected from a hazardous waste site, determines whether exposures have occurred or could occur, reports any potential harmful effects, and recommends actions to protect public health. The findings in this report are relevant to conditions at the site during the time of this health consultation, and should not necessarily be relied upon if site conditions or land use changes in the future.

For additional information or questions regarding DOH or the contents of this health consultation, please call the health advisor who prepared this document:

Paul Marchant
Washington State Department of Health
Office of Environmental Health Assessments
P.O. Box 47846
Olympia, WA 98504-7846
(360) 236-3375
FAX (360) 236-3383
1-877-485-7316
Web site: www.doh.wa.gov/ehp/oehas/sashome.htm

For more information about ATSDR, contact the ATSDR Information Center at 1-888-422-8737 or visit the agency's Web site: www.atsdr.cdc.gov/.

Glossary

Acute	Occurring over a short time [compare with **chronic**].
Agency for Toxic Substances and Disease Registry (ATSDR)	The principal federal public health agency involved with hazardous waste issues, responsible for preventing or reducing the harmful effects of exposure to hazardous substances on human health and quality of life. ATSDR is part of the U.S. Department of Health and Human Services.
Aquifer	An underground formation composed of materials such as sand, soil, or gravel that can store and/or supply groundwater to wells and springs.
Cancer Risk Evaluation Guide (CREG)	The concentration of a chemical in air, soil or water that is expected to cause no more than one excess cancer in a million persons exposed over a lifetime. The CREG is a *comparison value* used to select contaminants of potential health concern and is based on the *cancer slope factor* (CSF).
Cancer Slope Factor	A number assigned to a cancer causing chemical that is used to estimate its ability to cause cancer in humans.
Carcinogen	Any substance that causes cancer.
Chronic	Occurring over a long time (more than 1 year) [compare with **acute**].
Comparison value	**Comparison value (CV)** Calculated concentration of a substance in air, water, food, or soil that is unlikely to cause harmful (adverse) health effects in exposed people. The CV is used as a screening level during the public health assessment process. Substances found in amounts greater than their CVs might be selected for further evaluation in the public health assessment process.

Contaminant	A substance that is either present in an environment where it does not belong or is present at levels that might cause harmful (adverse) health effects.
Dose	A dose is the amount of a substance that gets into the body through ingestion, skin absorption of inhalation. It is calculated per kilogram of body weight per day.
Environmental Media Evaluation Guide (EMEG)	A concentration in air, soil, or water below which adverse noncancer health effects are not expected to occur. The EMEG is a *comparison value* used to select contaminants of potential health concern and is based on ATSDR's *minimal risk level* (MRL).
Epidemiology	The study of the occurrence and causes of health effects in human populations. An epidemiological study often compares two groups of people who are alike except for one factor, such as exposure to a chemical or the presence of a health effect. The investigators try to determine if any factor (i.e., age, sex, occupation, economic status) is associated with the health effect.
Exposure	Contact with a substance by swallowing, breathing, or touching the skin or eyes. Exposure may be short-term [**acute exposure**], of intermediate duration, or long-term [**chronic exposure**].
Groundwater	Water beneath the earth's surface in the spaces between soil particles and between rock surfaces [compare with **surface water**].

Hazardous substance	Any material that poses a threat to public health and/or the environment. Typical hazardous substances are materials that are toxic, corrosive, ignitable, explosive, or chemically reactive.
Indeterminate public health hazard	The category used in ATSDR's public health assessment documents when a professional judgment about the level of health hazard cannot be made because information critical to such a decision is lacking.
Lowest Observed Adverse Effect Level (LOAEL)	The lowest tested dose of a substance that has been reported to cause harmful (adverse) health effects in people or animals.
Media	Soil, water, air, plants, animals, or any other part of the environment that can contain contaminants.
Minimal Risk Level (MRL)	An ATSDR estimate of daily human exposure to a hazardous substance at or below which that substance is unlikely to pose a measurable risk of harmful (adverse), noncancerous effects. MRLs are calculated for a route of exposure (inhalation or oral) over a specified time period (acute, intermediate, or chronic). MRLs should not be used as predictors of harmful (adverse) health effects [see **reference dose**].
Model Toxics Control Act (MTCA)	The hazardous waste cleanup law for Washington State.
Monitoring wells	Special wells drilled at locations on or off a hazardous waste site so water can be sampled at selected depths and studied to determine the movement of groundwater and the amount, distribution, and type of contaminant.

No apparent public health hazard	A category used in ATSDR's public health assessments for sites where human exposure to contaminated media might be occurring, might have occurred in the past, or might occur in the future, but where the exposure is not expected to cause any harmful health effects.
No Observed Adverse Effect Level (NOAEL)	The highest tested dose of a substance that has been reported to have no harmful (adverse) health effects on people or animals.
Oral Reference Dose (RfD)	An amount of chemical ingested into the body (i.e., dose) below which health effects are not expected. RfDs are published by EPA.
Organic	Compounds composed of carbon, including materials such as solvents, oils, and pesticides that are not easily dissolved in water.
Parts per billion (ppb)/Parts per million (ppm)	Units commonly used to express low concentrations of contaminants. For example, 1 ounce of trichloroethylene (TCE) in 1 million ounces of water is 1 ppm. 1 ounce of TCE in 1 billion ounces of water is 1 ppb. If one drop of TCE is mixed in a competition size swimming pool, the water will contain about 1 ppb of TCE.
Plume	A volume of a substance that moves from its source to places farther away from the source. Plumes can be described by the volume of air or water they occupy and the direction they move. For example, a plume can be a column of smoke from a chimney or a substance moving with groundwater.
Reference Dose Media Evaluation Guide (RMEG)	A concentration in air, soil, or water below which adverse non-cancer health effects are not expected to occur. The EMEG is a *comparison value* used to select contaminants of potential health concern and is based on EPA's oral reference dose (RfD).

Background and Statement of Issues

The Washington State Department of Health (DOH), in cooperation with the Thurston County Public Health and Social Services Department (TCHD) conducted an exposure investigation to evaluate whether contaminants present in area soil and groundwater have moved, as a gas, up through the ground and into the indoor air of a building currently occupied by the Washington Traffic Safety Commission (WTSC). Some WTSC staff have expressed health concerns relating to indoor air quality. The building occupied by the WTSC is located at 1000 South Cherry Street in Olympia, Washington. DOH prepares health consultations under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR).

Environmental testing since 1995 has revealed the presence of numerous contaminants in area soil and groundwater in the vicinity of the Howard's Drycleaners (Howard's) site, and the WTSC. Howard's was formerly known as Olympia Drycleaners. Chemicals detected in groundwater include gasoline, heavy oil, tetrachloroethylene (PCE), trichloroethylene (TCE), 1,2-dichloroethylene (1,2-DCE), 1,1,1-trichloroethane (1,1,1-TCA), vinyl chloride, toluene, and xylenes, while chemicals detected in the soil have included gasoline, heavy oil, PCE, TCE, DCE, and toluene (Table A1).[1,2] The suspected source of the PCE is Howard's Drycleaners, an adjacent, active dry cleaning business. The presence of TCE is consistent with its use as a dry cleaning agent at the site. Some of the other chemicals detected are degradation products of PCE. The Howard's site is the focus of an investigation and cleanup effort supervised by the Washington State Department of Ecology (Ecology). This health consultation evaluates the results of indoor air samples collected at several locations in the WTSC building. DOH prepared a previous health consultation that evaluated contaminants present in soil, as well as the potential impact of site contaminants on artesian wells in the downtown Olympia area.[3]

Site history

The Howard's Drycleaners site is located at 606 E. Union Avenue, at the intersection of Cherry Street, in a residential and commercial area of downtown Olympia (Figure 1). Howard's and previous dry cleaning businesses have operated at the site for the past 30 years. An initial investigation of the dry cleaning facility in early May 1995 revealed the chemicals noted above in soil and groundwater.

In late May 1995, additional soil and groundwater samples were collected at depths ranging from two to six feet and analyzed for volatile organic compounds (VOCs) and petroleum products (TPH). An artesian well located west of the facility, reportedly used for drinking by employees, was also tested for VOCs and TPH in June 1995.[1] As noted above, site soil and groundwater contaminants from the 1995 testing were evaluated in a previous health consultation prepared by DOH in June 1999.

More recent soil and groundwater testing conducted in late 2002 and early 2003 revealed similar concentrations of these chemicals.[2] Appendix A, Table A1 lists the maximum levels of contaminants measured in soil and groundwater at the site since testing began in 1995. The 1999

Upon initial evaluation of the data, DOH informed the Director of the WTSC that no immediate health hazard existed, and that DOH would conduct a more thorough evaluation to determine whether any additional actions are necessary to ensure that the health of WTSC staff is protected.[5]

Discussion

Environmental sampling data were screened using ATSDR, U.S. Environmental Protection Agency (EPA), and Washington State Department of Ecology (Ecology) health-based criteria (comparison values). Contaminant concentrations below comparison values are unlikely to pose a health threat, and were not further evaluated. Contaminant concentrations exceeding comparison values do not necessarily pose a health threat, but were further evaluated to determine whether they are at levels which could result in adverse human health effects.

Soil and groundwater at the site is contaminated with PCE, PCE degradation products, and petroleum hydrocarbons.[1, 2] As noted previously, indoor air samples collected from the adjacent building occupied by the WTSC revealed the presence of several VOCs at levels exceeding health comparison values in one or more locations tested.[4] The potential public hazard posed by these chemicals is evaluated below.

Tetrachloroethylene (PCE)

PCE is a manufactured compound widely used for dry cleaning fabrics and as a metal degreaser. It is also used as an intermediate in the manufacturing of other products. It evaporates easily into the air, and has a sharp, sweet odor at high concentrations.[6]

The highest concentration of tetrachloroethylene (31 $\mu g/m^3$) was detected in an office at the south end of the WTSC building. Lower levels (at or near 5 $\mu g/m^3$ indoor air median background levels) were detected in the other three locations tested (Table A2).

EPA Reference Concentration (RfC) and ATSDR Chronic Minimal Risk Level (MRL)

Inhalation reference concentrations (RfCs) and chronic minimal risk levels (MRLs) are concentrations in air below which noncancer health effects are not expected. RfCs and MRLs are based upon 24-hour exposures.

Noncancer effects

To evaluate possible noncancer effects from exposure to the chemicals of concern detected in indoor air, the levels were compared to their respective noncancer comparison value [EPA inhalation reference concentration (RfC) or ATSDR chronic minimal risk level (MRL)].

The MRL for PCE is based upon neurological effects observed during a 10-year occupational study.[6]

All PCE detections were below the MRL, and are not expected to result in adverse noncancer health effects for exposed persons.

Cancer effects

Recent and extensive review of available data has led EPA to characterize TCE as "highly likely to produce cancer in humans." These findings are consistent with those of the International Agency on Research of Cancer (IARC, 1995) and the National Toxicology Program (NTP, 2000). This classification is based on sufficient evidence in animals and limited evidence in humans. The strongest evidence that TCE can cause cancer in humans comes from occupational studies that have found increases in lung, liver and kidney cancers in workers exposed over several years.[9]

Although the data obtained from high-dose animal or worker exposure studies is not directly applicable to exposures at the WTSC business, theoretical cancer risk estimates can be made based on this data. In order to estimate the increased lifetime cancer risk for persons assumed to be chronically exposed to the detected level of TCE in indoor air, the current recommended EPA inhalation slope factor was used. Using this slope factor, the estimated increased cancer risk from TCE exposure is estimated to be low; approximately one additional cancer in a population of 10,000 persons exposed (10^{-4} risk).

Methylene chloride

Methylene chloride is a colorless liquid that has a mild sweet odor, and evaporates easily. It is widely used as an industrial solvent and as a paint stripper. The chemical is commonly found in spray paints, automotive cleaners, and other household products including cleaning supplies, office equipment, nail polish, paint, and gasoline among others.[11] The highest concentrations of methylene chloride were measured at the reception desk (82 $\mu g/m^3$) and in the basement (40 $\mu g/m^3$). Lower levels, at or near the 2.7 $\mu g/m^3$ background level for methylene chloride, were detected in the other two locations tested.

All methylene chloride detections were below its noncancer comparison value, and exposure to methylene chloride at the detected concentrations is not expected to result in adverse noncancer health effects.

Cancer effects

Methylene chloride is considered a B2 (probable human) carcinogen. The classification is based on inadequate human data and sufficient animal data.[8] In rodent studies, methylene chloride resulted in an increased incidence of hepatocellular neoplasms, alveolar/bronchiolar neoplasms, and an increased incidence of benign mammary tumors.[8, 11]

The estimated increased cancer risk, assuming chronic exposure to the highest concentration of methylene chloride measured, is very low; approximately three additional cancers in a population of one million persons exposed over a working lifetime.

levels, and were further evaluated. Although the precise source(s) of the detections in indoor air are unclear, possible sources include the groundwater plume, aboveground transport from Howard's Drycleaners, localized office products, auto emissions, or a combination thereof.

3. The levels of chemicals detected in indoor air do not pose a noncancer health hazard, although a low increased cancer risk was estimated for persons assumed to be exposed over a working lifetime, to the maximum level of the detected chemicals. Some of this risk can be attributed to exposure to background levels of these chemicals commonly present in urban ambient and indoor air.

4. Estimated exposures and risks are based on the results of a single air sampling event, and therefore may not represent conditions during other times of the year. The health risks associated with levels of most of the chemicals detected in indoor air are low and similar to background. However, PCE, TCE, and methylene chloride levels were elevated in one or more locations tested, and should be further investigated. A single sampling event may not be representative of typical site conditions. As a result, this site is categorized as an indeterminate public health hazard pending follow up indoor air sampling.

Recommendations/Action Plan

1. Because of the elevated (albeit isolated) VOC detections in indoor air and high levels of VOCs and petroleum products in area groundwater, follow-up indoor air sampling should be conducted to assure that VOC levels are not higher during a different season (i.e., winter). Air sampling should also be repeated in the WTSC building following any subsequent site remediation to reevaluate indoor air VOC levels.

   DOH also recommends that the Washington State Department of Labor and Industries (L&I) inspect Howard's Drycleaners to assure PCE levels are not above levels of concern for employees there.

   - DOH will follow up with TCHD, L&I, and the current property owner(s) on this issue. If subsequent sampling is conducted, the results should be provided to DOH for evaluation.

2. Localized groundwater should be more thoroughly characterized to determine groundwater gradient and to evaluate whether it could be an ongoing source of PCE and TCE detected in indoor air.

   - The environmental consultant hired to investigate the site (Stemen Environmental, Inc.) has recommended that a licensed hydrogeologist evaluate current site information to determine the direction of groundwater flow.

Preparer of Report

Paul Marchant
Washington State Department of Health
Office of Environmental Health Assessments
Site Assessment Section

Designated Reviewer

Robert Duff, Manager
Site Assessment Section
Office of Environmental Health Assessments
Washington State Department of Health

ATSDR Technical Project Officer

Debra Gable
Division of Health Assessment and Consultation
Agency for Toxic Substances and Disease Registry

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2. Stemen Environmental, Inc. Interim Remedial Activities and Groundwater Monitoring Report: Former Olympia Drycleaners, 606 E. Union Avenue, Olympia, Washington. January 10, 2003.

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5. Washington State Department of Health. Letter to John Moffat, Director of the Washington Traffic Safety Commission. August 12, 2002.

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7. United States Environmental Protection Agency. Superfund Technical Support Center. National Center for Environmental Assessment. Risk Assessment Issue Paper for: Carcinogenicity Information for Tetrachloroethylene. October 25, 2001.

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11. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Methylene Chloride (Update). Atlanta, Georgia: US Department of Health and Human Services; September 2000.

12. Agency for Toxic Substances and Disease Registry. Interim guidance on including child health issues in Division of Health Assessment and Consultation Documents. Atlanta: US Department of Health and Human Services, Public Health Service, July 1998.

Appendix A
Concentrations and risk levels in indoor air at and near the Howard's Drycleaners site, Olympia, Washington

Table A1. *Howard's Drycleaners/Washington State Traffic Safety Commission site. Maximum levels of contaminants detected in soil and groundwater (1995 - 2003)*

Contaminant	Soil	Groundwater
	Concentration (ppb)	Concentration (ug/l)
Tetrachloroethylene (PCE)	4,160	50,000
Trichloroethylene (TCE)	80	4,500
1,2-Dichloroethylene (1,2-DCE)	240	4,515 [a]
Vinyl chloride	ND	1,300
1,1,1-TCA	ND	100
Toluene	55	2.4
Xylenes	ND	2.3
TPH - Gasoline	29,000	28,800 [a]
TPH - Heavy Oil	20,000,000 (2%)	2,700,000

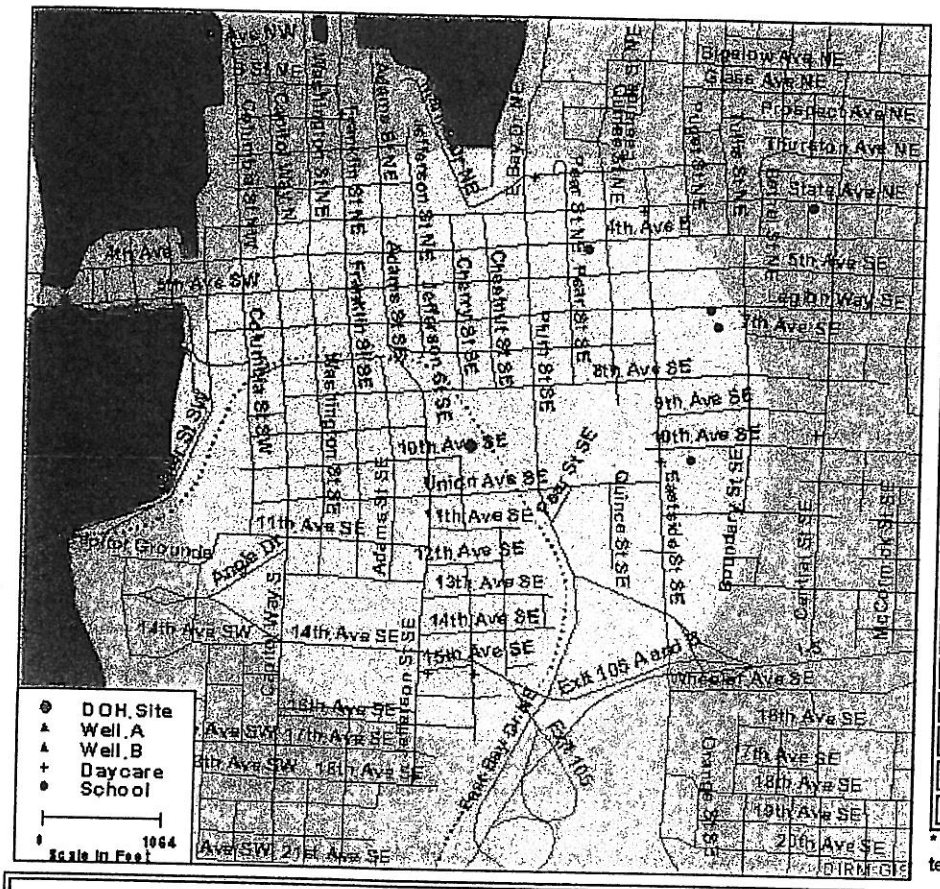
a = Value represents the average of two duplicate sample analyses.
ND = Not detected Ppb = parts per billion kg = kilogram l = liter

Table A4. *Washington State Traffic Safety Commission. Chemical comparison values and background indoor air values (units are in micrograms per cubic meter)*

Chemical	Background Indoor Air Literature Values	Reference Number
methylene chloride	2.7 (outdoor median)	13
benzene	10 (indoor median)	13
tetrachloroethylene	5 (indoor median)	13, 14
trichloroethylene	0.7 (indoor median)	13, 14

Appendix B: Figures

Figure B1 - Site Map



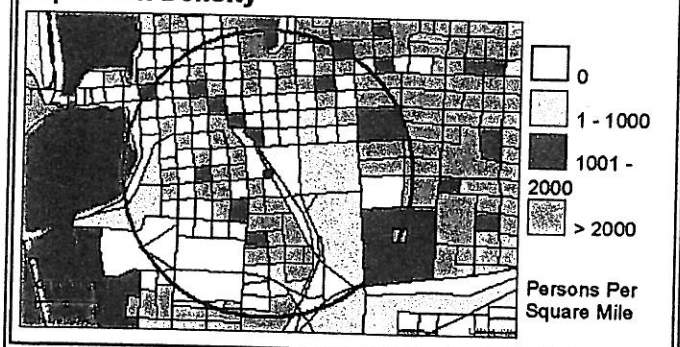
Thurston County

Demographic Statistics Within a Half Mile of the Site*

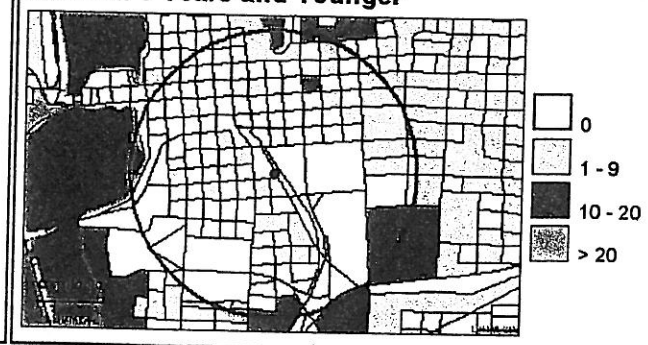
Total Population	1956
White	1659
Black	65
American Indian, Eskimo, Aleut	42
Asian or Pacific Islander	79
Other Race	29
Hispanic Origin	96
Children Aged 6 and Younger	79
Adults Aged 65 and Older	126
Females Aged 15 - 44	576
Total Aged over 18	1786
Total Aged under 18	170
Total Housing Units	1278

* Calculated using the area proportion technique. Source: 2000 U.S. CENSUS

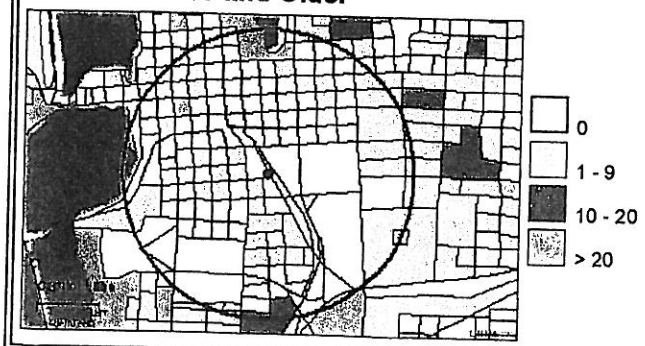
Population Density



Children 6 Years and Younger



Adults 65 Years and Older



Females Aged 15 - 44

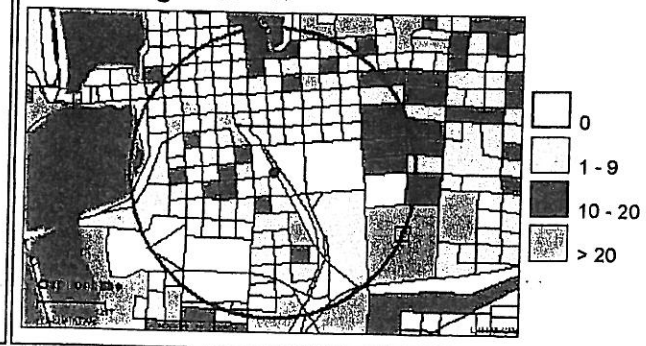


Figure B4: Summa canister inside the WTSC south office

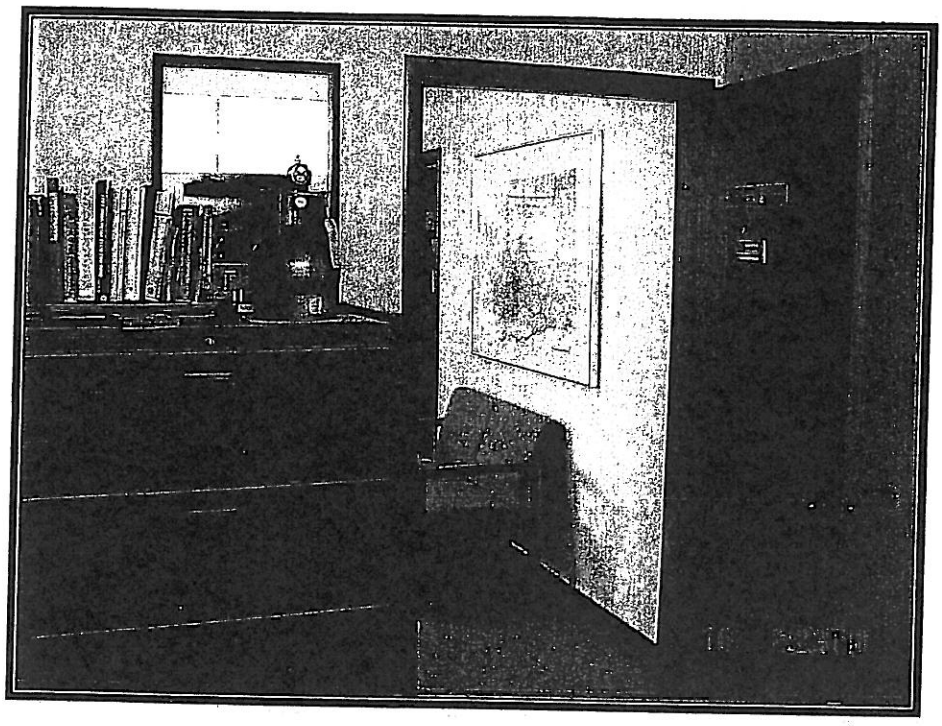


Figure B5: Summa canister in conference room at north end of WTSC building

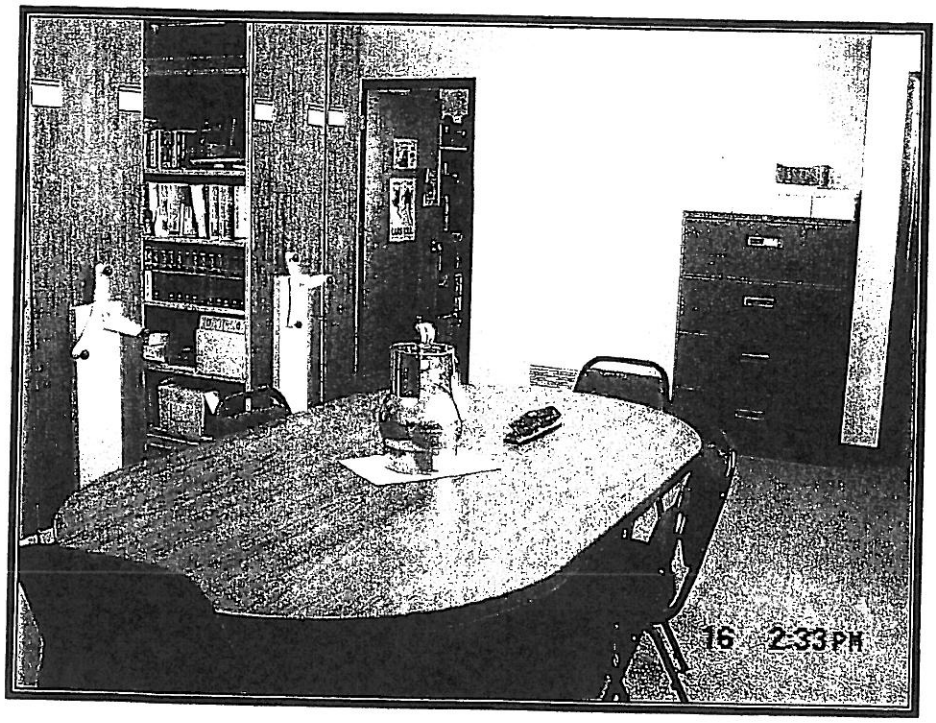


Figure B6: Summa canister in WTSC basement

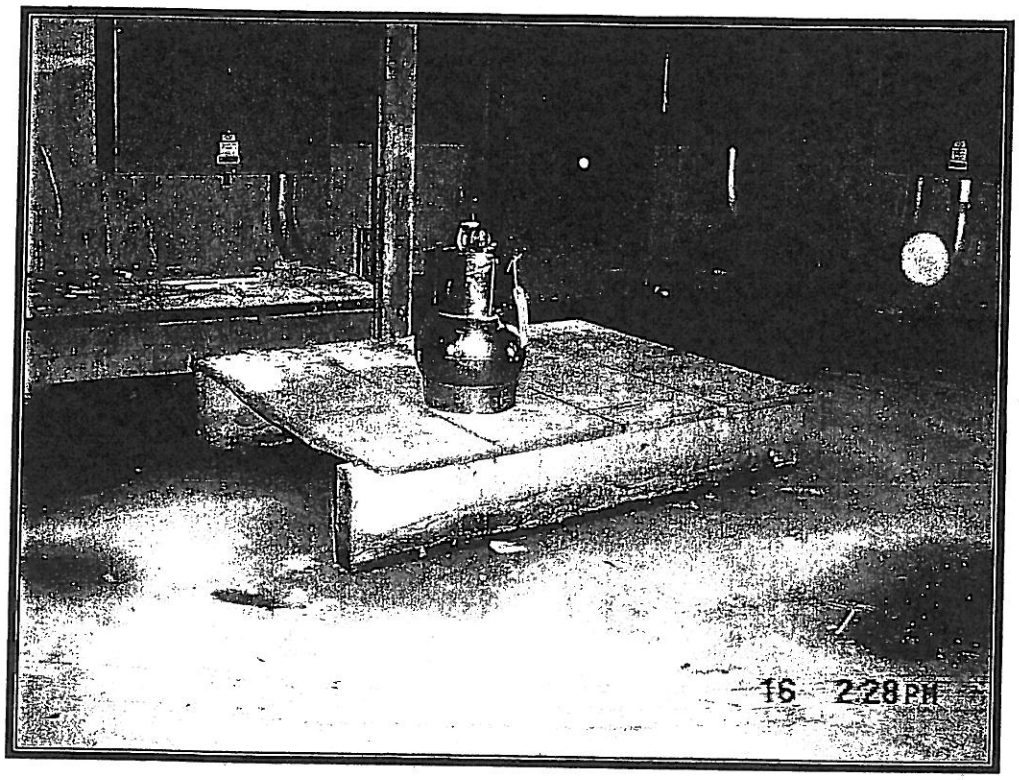
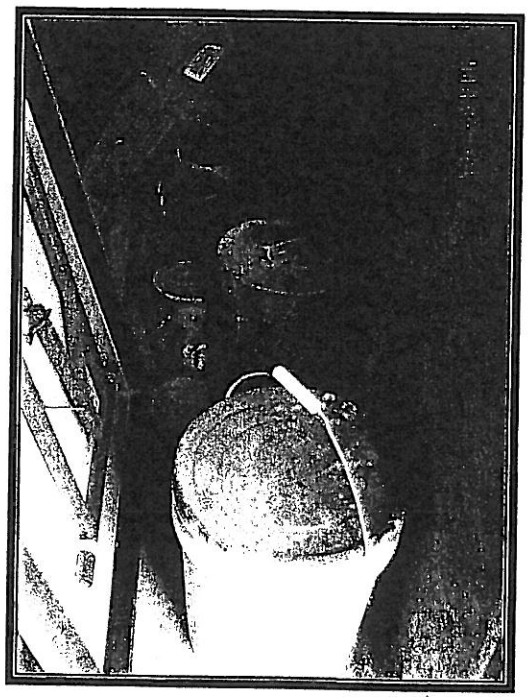


Figure B7: Paint and solvent containers in WTSC basement



Appendix C

Health Risk Formulas and Exposure Assumptions

The formulas and parameters provided below were used to conservatively estimate cancer risks. It is important to note that EPA IUR values assume continuous exposure.

Cancer risk using unit risk factors

Cancer risk = C_a x IUR x CF

C_a = indoor air concentration (ug/m^3)
IUR = inhalation unit risk (per ug/m^3)
CF = correction factor of 0.08 (8/24 x 5/7 x 50/52 x 25/75) to account for the less than continuous (i.e., 8 hours/day, 5 days/week, 50 weeks/year, 25 years) exposure scenario assumed for a worker.

Cancer risk using slope factors

Cancer risk = ((C_a /1000) x IR x EF x ED/(BW x AT)) x CSF

C_a = indoor air concentration in micrograms/m^3
IR = inhalation rate (adult worker - 10.4 m^3/day)
EF = exposure frequency (250 days/year)
ED = exposure duration (25 years)
BW = body weight (72 kg)
AT = averaging time (27,375 days)
CSF = chemical-specific cancer slope factor

Certification

This Health Consultation was prepared by the Washington State Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was begun.

Debra Gable
Technical Project Officer,
SPS, SSAB, DHAC
ATSDR

The Division of Health Assessment and Consultation, ATSDR, has reviewed this public health consultation and concurs with the findings.

for Roberta Erlwein
Section Chief,
SPS, SSAB, DHAC
ATSDR

Olympia Dry Cleaner's Site

N

- Monitoring Well Location
- Soil/Groundwater Sample
- Storm Sewer Catch Basin
- Floor Drain
- Surface Soil Sample
- Surface Water Sample

Rail Road Track

Soil Berm

Paved Parking

Union Avenue

MW-7
9
24.7

MW-4
21.25

Grassy Area

Paved Parking

MW-6
9.94

SS-1

Parking Area

Parking Area

Utilities Commission Building

French Drain

Olympia Dry Cleaner's Building

IFD

MW-3
24.14

Paved Drive Area

MW-11
21.98

MW-5
23.18

MW-2
23.54

Cherry SW

Side Walk

POR SEEP

Cherry Street

OCTOBER 2002

Health Consultation

Evaluation of Follow-Up Indoor Air Sampling Results
(January – March 2007) at the
Washington Traffic Safety Commission Offices

TMC CLEANERS
(a/k/a HOWARD'S CLEANERS and OLYMPIA CLEANERS)
OLYMPIA, THURSTON COUNTY, WASHINGTON

EPA FACILITY ID: WAH000017277

AUGUST 31, 2007

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

You May Contact ATSDR TOLL FREE at
1-800-CDC-INFO
or
Visit our Home Page at: http://www.atsdr.cdc.gov

HEALTH CONSULTATION

Evaluation of Follow-Up Indoor Air Sampling Results
(January – March 2007) at the
Washington Traffic Safety Commission Offices

TMC CLEANERS
(a/k/a HOWARD'S CLEANERS and OLYMPIA CLEANERS)
OLYMPIA, THURSTON COUNTY, WASHINGTON

EPA FACILITY ID: WAH000017277

Prepared By:

The Washington State Department of Health
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

Foreword

The Washington State Department of Health (DOH) has prepared this health consultation in cooperation with the Agency for Toxic Substances and Disease Registry (ATSDR). ATSDR is part of the U.S. Department of Health and Human Services and is the principal federal public health agency responsible for health issues related to hazardous waste. This health consultation was prepared in accordance with methodologies and guidelines developed by ATSDR.

The purpose of this health consultation is to identify and prevent harmful human health effects resulting from exposure to hazardous substances in the environment. Health consultations focus on specific health issues so that DOH can respond to requests from concerned residents or agencies for health information on hazardous substances. DOH evaluates sampling data collected from a hazardous waste site, determines whether exposures have occurred or could occur, reports any potential harmful effects, and recommends actions to protect public health. The findings in this report are relevant to conditions at the site during the time of this health consultation, and should not necessarily be relied upon if site conditions or land use changes in the future.

For additional information or questions regarding DOH or the contents of this health consultation, please call the health advisor who prepared this document:

Gary Palcisko
Washington State Department of Health
Office of Environmental Health Assessments
P.O. Box 47846
Olympia, WA 98504-7846
(360) 236-3377
FAX (360) 236-3383
1-877-485-7316
Web site: www.doh.wa.gov/ehp/oehas/sashome.htm

For persons with disabilities this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (voice) or 1-800-833-6388 (TTY/TDD).

For more information about ATSDR, contact the ATSDR Information Center at 1-888-422-8737 or visit the agency's Web site: www.atsdr.cdc.gov/.

Glossary

Acute	Occurring over a short time [compare with **chronic**].
Agency for Toxic Substances and Disease Registry (ATSDR)	The principal federal public health agency involved with hazardous waste issues, responsible for preventing or reducing the harmful effects of exposure to hazardous substances on human health and quality of life. ATSDR is part of the U.S. Department of Health and Human Services.
Aquifer	An underground formation composed of materials such as sand, soil, or gravel that can store and/or supply groundwater to wells and springs.
Cancer Risk Evaluation Guide (CREG)	The concentration of a chemical in air, soil or water that is expected to cause no more than one excess cancer in a million persons exposed over a lifetime. The CREG is a *comparison value* used to select contaminants of potential health concern and is based on the *cancer slope factor* (CSF).
Cancer Slope Factor	A number assigned to a cancer causing chemical that is used to estimate its ability to cause cancer in humans.
Carcinogen	Any substance that causes cancer.
Chronic	Occurring over a long time (more than 1 year) [compare with **acute**].
Comparison value	Calculated concentration of a substance in air, water, food, or soil that is unlikely to cause harmful (adverse) health effects in exposed people. The CV is used as a screening level during the public health assessment process. Substances found in amounts greater than their CVs might be selected for further evaluation in the public health assessment process.
Contaminant	A substance that is either present in an environment where it does not belong or is present at levels that might cause harmful (adverse) health effects.
Dose (for chemicals that are not radioactive)	The amount of a substance to which a person is exposed over some time period. Dose is a measurement of exposure. Dose is often expressed as milligram (amount) per kilogram (a measure of body weight) per day (a measure of time) when people eat or drink contaminated water, food, or soil. In general, the greater the dose, the greater the likelihood of an effect. An "exposure dose" is how much of a substance is encountered in the environment. An "absorbed dose" is the amount of a substance that actually got into the body through the eyes, skin, stomach, intestines, or lungs.
Environmental Protection Agency (EPA)	United States Environmental Protection Agency.

Epidemiology	The study of the occurrence and causes of health effects in human populations. An epidemiological study often compares two groups of people who are alike except for one factor, such as exposure to a chemical or the presence of a health effect. The investigators try to determine if any factor (i.e., age, sex, occupation, economic status) is associated with the health effect.
Exposure	Contact with a substance by swallowing, breathing, or touching the skin or eyes. Exposure may be short-term [**acute exposure**], of intermediate duration, or long-term [**chronic exposure**].
Groundwater	Water beneath the earth's surface in the spaces between soil particles and between rock surfaces [compare with surface water].
Hazardous substance	Any material that poses a threat to public health and/or the environment. Typical hazardous substances are materials that are toxic, corrosive, ignitable, explosive, or chemically reactive.
Inhalation	The act of breathing. A hazardous substance can enter the body this way [see **route of exposure**].
Lowest Observed Adverse Effect Level (LOAEL)	The lowest tested dose of a substance that has been reported to cause harmful (adverse) health effects in people or animals.
Media	Soil, water, air, plants, animals, or any other part of the environment that can contain contaminants.
Minimal Risk Level (MRL)	An ATSDR estimate of daily human exposure to a hazardous substance at or below which that substance is unlikely to pose a measurable risk of harmful (adverse), noncancerous effects. MRLs are calculated for a route of exposure (inhalation or oral) over a specified time period (acute, intermediate, or chronic). MRLs should not be used as predictors of harmful (adverse) health effects [see **reference dose**].
Model Toxics Control Act (MTCA)	The hazardous waste cleanup law for Washington State.
Monitoring wells	Special wells drilled at locations on or off a hazardous waste site so water can be sampled at selected depths and studied to determine the movement of groundwater and the amount, distribution, and type of contaminant.
No Observed Adverse Effect Level (NOAEL)	The highest tested dose of a substance that has been reported to have no harmful (adverse) health effects on people or animals.

Organic	Compounds composed of carbon, including materials such as solvents, oils, and pesticides that are not easily dissolved in water.
Parts per billion (ppb)/Parts per million (ppm)	Units commonly used to express low concentrations of contaminants. For example, 1 ounce of trichloroethylene (TCE) in 1 million ounces of water is 1 ppm. 1 ounce of TCE in 1 billion ounces of water is 1 ppb. If one drop of TCE is mixed in a competition size swimming pool, the water will contain about 1 ppb of TCE.
Route of exposure	The way people come into contact with a hazardous substance. Three routes of exposure are breathing [inhalation], eating or drinking [ingestion], or contact with the skin [dermal contact].
Volatile organic compound (VOC)	Organic compounds that evaporate readily into the air. VOCs include substances such as benzene, toluene, methylene chloride, and methyl chloroform.

Purpose

The purpose of this health consultation is to evaluate health risks to workers at the Washington Traffic Safety Commission (WTSC) from exposure to volatile organic compounds (VOCs) associated with contamination at TMC Cleaners. The Washington State Department of Health prepared this health consultation in response to indoor air quality concerns raised by the some staff at WTSC regarding potential exposure to tetrachloroethylene (PCE) in indoor air. This health consultation is a follow-up to a previous indoor air-sampling event that revealed slightly elevated levels of PCE in indoor air. Renewed health concerns were raised in December 2006 when an employee of WTSC became ill concurrent with remedial activities at TMC Cleaners. DOH prepares health consultations under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR).

Background and Statement of Issues

TMC Cleaners (TMC), formerly known as Howard's Cleaners and Olympia Drycleaners, is located at 606 E. Union Avenue, Olympia, Washington in a mixed residential and commercial area of downtown. It has operated at this location for over 30 years.

Investigations of the dry-cleaning facility in 1995 and 2002-03 found gasoline, heavy oil, xylene, toluene, PCE, trichloroethylene (TCE), and degradation products of PCE [1,2-dichloroethylene (1,2 DCE), 1,1,1-trichlorethane, vinyl chloride] in groundwater and soil in the vicinity of TMC.[1, 2] Exposure to the contaminants in soil and groundwater was evaluated by DOH in a health consultation dated June 1999.[3] This evaluation concluded that VOCs in soil were not a threat to human health, but employees at WTSC, located nearby at 1000 S. Cherry Street (Figure 2), raised concerns about indoor air quality related to the migration of VOCs from groundwater to indoor air. The WTSC building is located directly adjacent to TMC cleaners (Figure 2).

In July 2002, indoor air samples were taken at WTSC to determine if VOCs migrated from groundwater and impacted workers there.[4] Levels of PCE were above levels typically found in indoor air, but not at levels of concern to public health. These samples, however, were taken in the summer, the season of the year that VOCs are least likely to migrate from groundwater to indoor air. A recommendation to conduct a follow-up sampling in the winter was made in a health consultation dated September 8, 2003.[5]

Follow-up air sampling was conducted in January 2004. Four samples were collected from four areas within WTSC: the reception desk, conference room, south office, and the basement. Samples were analyzed for VOCs using EPA method TO-15. Again, levels of PCE at the reception desk and south office were higher than typically found in indoor air, but not at levels of concern to public health.[6]

In December 2006, renewed concerns at WTSC were raised when soil excavation began at the TMC site. Excavation was conducted on the TMC property adjacent to the south end of the WTSC building. During that time, an employee at WTSC complained of feeling sick. Later reports from her doctors at the University of Washington said she was exposed to PCE (personal communication with Lowell Porter, Director of the Washington Traffic Safety Commission). In

light of that report, WTSC building occupants expressed concern about the safety of their workplace and requested a follow-up indoor air evaluation. Initially, Thurston County Health Department (TCHD) used a portable photoionization detector (PID) to determine if VOCs were present at levels greater than one part per million (ppm). No VOCs were detected at or above that level.

DOH and TCHD placed three Summa canisters at the WTSC on March 19, 2007 to determine if VOCs were present in indoor air at levels below 1 ppm, but at levels of concern. One canister was placed in the south office (closest to TMC and the office of employee who became ill), the reception desk, and office at the north end of the building. These samples were analyzed for VOCs using EPA method TO-15.

In addition to samples collected by DOH, a consultant hired by the WTSC property owner collected six samples in January 2007.[7] The results of the samples were shared with DOH in April 2007 and are reported along with other sampling results.

Discussion

Air sampling data were screened using ATSDR, U.S. Environmental Protection Agency (EPA), and Washington State Department of Ecology (Ecology) health-based criteria, or comparison values (Appendix A). Contaminant concentrations below comparison values are unlikely to pose a health threat, and were not further evaluated. Appendix A, Table A1 shows chemicals that were detected in WTSC air samples in relation to their respective comparisons values. Contaminant concentrations exceeding comparison values do not necessarily pose a health threat, but are further evaluated to determine whether they are at levels that could result in adverse human health effects or increased health risk.

No contaminants exceed noncancer comparison values indicating that exposure to levels measured at WTSC are not likely to result in adverse noncancer health effects. PCE, TCE, carbon tetrachloride, and benzene levels in indoor air at WTSC exceeded respective cancer based health comparison values and were evaluated for cancer health effects.

Measured concentrations of chemicals that exceed comparison values from the 2007 sampling event are presented in Table 1 in relation to 2002 and 2004 results. PCE levels were lower in the most recent sampling rounds compared to the 2002 and 2004 results. Benzene results show little change from 2002 to most recent sampling events. It cannot be determined if the recent removal of soil adjacent to WTSC has caused the decreased PCE levels in indoor air there, or if the levels have permanently decreased without additional study.

Table 1. Results of air samples ($\mu g/m^3$) taken 2002, 2004, and 2007 from Washington State Traffic Commission near the TMC Drycleaner site Olympia, Washington[8]

Date	Location	Benzene	Carbon Tetrachloride	PCE	TCE
July 2002	Reception	2.1	NR	8.7	<2.5
	South Office	1.7	NR	31	3.6
	Conference Room (North Office)	1.5	NR	7.1	<1.8
	Basement	1.5	NR	3.3	<1.8
January 2004	Reception	1.8	NR	20	0.98
	South Office	1.8	NR	39	1.3
	Conference Room (North Office)	1.6	NR	3.4	0.22
	Basement	1.5	NR	3.7	0.23
January 2007	Multiple Locations [b]	2.2-2.4	NR	0.56-0.95	0.10-0.20
March 2007	Reception	1.3	<0.44	<0.61	<0.43
	South Office	1.2	~0.51	~0.64	<0.43
	Conference Room (North Office)	1.2	~0.53	<0.61	<0.43
	Basement	NA	NA	NA	NA
	Median indoor levels in U.S.	10	2.6 [a]	5	0.7

a- Mean value instead of median
b- Six samples were taken on January 29, 2007. Five samples were taken on the main level, and one was taken in the basement.
NA – Not analyzed
NR – Not reported
~ indicates the reported contaminant level is an estimate
< indicates the contaminant was not detected at the reported detection limit

Background Levels

The wide use of natural and synthetic chemicals is a part of modern life, and as a result, ambient and indoor air always contains low levels of these chemicals. Therefore, background levels of PCE, carbon tetrachloride, and benzene must be examined in order to determine whether or not levels found at WTSC are typical of urban indoor air. Table 1 shows that PCE, TCE, carbon tetrachloride and benzene levels are within typical ambient levels at all locations in the building.

Evaluating Cancer Risk

Some chemicals have the ability to cause cancer. Cancer risk is estimated by calculating a dose that a person would receive assuming they breathed PCE and TCE at levels measured in each of the businesses, and multiplying it by a cancer potency factor, also known as the cancer slope factor. Some cancer slope factors are derived from human population data. Others are derived from laboratory animal studies involving doses much higher than are encountered in the environment. Use of animal data requires extrapolation of the cancer potency obtained from these high dose studies down to real-world exposures. This process involves much uncertainty.

Current regulatory practice assumes that there is no "safe dose" of a carcinogen and that a very small dose of a carcinogen will give a very small cancer risk. Cancer risk estimates are not yes/no answers but measures of chance (probability). Such measures, however uncertain, are useful in estimating the magnitude of a cancer threat. The validity of the "no safe dose" assumption for all cancer-causing chemicals is not clear. Some evidence suggests that certain chemicals considered to be carcinogenic must exceed threshold of tolerance before initiating cancer. For such chemicals, risk estimates are not appropriate. More recent guidelines on cancer risk from EPA reflect the potential that thresholds for some carcinogenesis exist. However, EPA still assumes no threshold unless sufficient data indicate otherwise.[9]

This document describes cancer risk that is attributable to site-related contaminants in qualitative terms like low, very low, slight and no significant increase in cancer risk. These terms can be better understood by considering the population size required for such an estimate to result in a single cancer case. For example, a low increase in cancer risk indicates an estimate in the range of one cancer case per ten thousand persons exposed over a lifetime. A very low estimate might result in one cancer case per several tens of thousands exposed over a lifetime and a slight estimate would require an exposed population of several hundreds of thousands to result in a single case. DOH considers cancer risk to be not significant when the estimate results in less than one cancer per one million exposed over a lifetime. The reader should note that these estimates are for excess cancers that might result in addition to those normally expected in an unexposed population. Cancer risks quantified in this document are an upper-bound theoretical estimate. Actual risks are likely to be much lower.

Cancer is a common illness and its occurrence in a population increases with age. Depending on the type of cancer, a population with no known environmental exposure could be expected to have a substantial number of cancer cases. There are many different forms of cancer that result from a variety of causes; not all are fatal. Approximately 25% to 33% of people living in the United States will develop cancer at some point in their lives.[10]

A range of cancer risks was calculated for exposures occurring at WTSC reflecting low and high estimates of cancer slope factors for PCE, and benzene in addition to risk from carbon tetrachloride exposure (see Table B2). Cancer risk ranges from a low-end estimate of eight excess cancers per 10,000,000 people exposed (8×10^{-7}) to a high-end estimate of three excess cancers per 1,000,000 people exposed (3×10^{-6}). These cancer risks are not considered significant and are either below or within the range of risks considered acceptable by EPA (1×10^{-6} to 1×10^{-4}).

Child Health Considerations

ATSDR recognizes that the unique vulnerabilities of infants and children deserve special emphasis with regard to exposures to environmental contaminants. Infants, young children, and the unborn may be at greater risk than adults from exposure to particular contaminants. Exposure during key periods of growth and development may lead to malformation of organs (teratogenesis), disruption of function, and even premature death. In certain instances, maternal exposure, via the placenta, could adversely affect the unborn child.

After birth, children may receive greater exposures to environmental contaminants than adults. Children are often more likely to be exposed to contaminants from playing outdoors, ingesting food that has come into contact with hazardous substances, or breathing soil and dust. Pound for pound of body weight, children drink more water, eat more food, and breathe more air than adults. For example, in the United States, children in the first six months of life drink seven times more water per pound as the average adult. The implication for environmental health is that, by virtue of children's lower body weight, given the same exposures, they can receive significantly higher relative contaminant doses than adults.

Since exposures to infants and young children at WTSC are expected to be infrequent (i.e., much less than the 8-hours/day, 5 days/week assumptions used for this health consultation), the health risks to children are minimal.

Conclusions

1. No apparent public health hazard exists for workers at WTSC exposed to VOCs in indoor air.
    - PCE levels detected in indoor air at WTSC were lower than previous sampling events. Levels found were not likely to cause adverse noncancer health effects in workers there.
    - High-end estimates of cancer risk associated with exposure to PCE, TCE, carbon tetrachloride, and benzene at WTSC are not significant.

Recommendations

1. Follow-up air sampling should be planned to ensure that the remedy chosen by the Department of Ecology eliminates future exposure to workers within WTSC building. This sampling should be conducted as part of the remediation work plan.

Public Health Action Plan

Actions taken

1. DOH has evaluated soil, groundwater, and indoor air data in three prior health consultations.

2. DOH has sampled indoor air at WTSC on three separate occasions to determine the levels of dry-cleaning solvents in indoor air.

Actions Planned

1. DOH will provide copies of this health consultation to workers at WTSC, the Washington State Department of Ecology, and the Thurston County Public Health and Social Services Department.

2. DOH will follow-up with the Washington State Department of Ecology to discuss incorporating the recommendations of this health consult into future work plans.

Preparer of Report

Gary Palcisko
Washington State Department of Health
Office of Environmental Health Assessments
Site Assessment Section

Designated Reviewer

Wayne Clifford, Manager
Site Assessment Section
Office of Environmental Health Assessments
Washington State Department of Health

ATSDR Technical Project Officer

Robert B. Knowles
Division of Health Assessment and Consultation
Agency for Toxic Substances and Disease Registry

Appendix A: Contaminant Screening

Levels of chemicals detected in indoor air at WTSC were compared to health-based comparison values. If a contaminant was found at levels below a comparison value, then it was not evaluated further.

Table A1. Contaminants detected WTSC compared to health-based screening values.

Chemical	CV (noncancer)	CV (cancer)	South Office	North Office	Reception	Max January 2007 results
1,2,4 - Trimethylbenzene	6.2 [a]	NA	1.1J	0.71J	0.64J	NR
2-Butanone (MEK)	5000 [c]	NA	4.9	0.99J	<0.59	NR
4-Ethyltoluene	NA	NA	0.47J	0.47J	<0.34	NR
Acetone	3,300 [a]	NA	18	12	7.7	NR
Benzene	30 [c]	0.1 [d]	1.2	1.2	1.3	2.4
Carbon Disulfide	700 [c]	NA	8.8	0.52J	<0.44	NR
Carbon Tetrachloride	190 [b]	0.07[d]	0.51J	0.53J	<0.44	NR
Chloromethane	90 [c]	NA	1.4	1.1	1.1	NR
Cis-1,2 dichloroethene	NA	NA	<0.28	<0.28	<0.28	0.24
Dichlorodifluoromethane	209 [a]	NA	2.6	2.4	2.2	NR
Ethylbenzene	1,000 [c]	NA	0.74J	0.58J	0.48J	1.2
Methylene Chloride	1,040 [b]	3 [d]	0.31J	0.28J	<0.24	NR
Styrene	250 [b]	NA	0.28J	<0.26	<0.26	NR
Tetrachloroethene	270 [b]	0.32 [a]	0.64J	<0.61	<0.61	0.95
Toluene	300 [b]	NA	4.5	4.4	3.5	5.5
Trichlorethylene	40 [e]	0.02 [a]	<0.43	<0.43	<0.43	0.2
Trichlorofluoromethane	730 [a]	NA	1.3J	1.3J	1.2J	NR
Xylenes (total)	100 [c]	NA	3.1	2.6	2.1J	5.0

NA – Not available
NR – Not reported
a – Environmental Protection Agency Region 9 Preliminary Remediation Goal
b – ATSDR Minimal Risk Level
c – EPA Reference Concentration
d – ATSDR Cancer Reference Evaluation Guide
e– EPA Reference Concentration (TCE health assessment document)[12]
J indicates that the contaminant was detected below the reporting level and the preceding value is an estimate
< indicates that the contaminant was not detected at the numerical level shown

Appendix B: Exposure dose calculations and assumptions

Cancer risk is evaluated by first calculating an average daily dose over a person's lifetime, and then multiplying the dose by a cancer slope factor to produce the probability, or risk of cancer. These equations and exposure assumptions are shown below and in Table B1:

$$Dose_{(cancer\ (mg/kg\text{-}day)} = \frac{C \times CF_1 \times IR \times EF \times ED}{BW \times AT_{cancer}}$$

$$Risk = Dose_{(cancer\ (mg/kg\text{-}day)} \times CSF$$

Table B1. Exposure Assumptions

Parameter	Value	Unit	Comments
Concentration (C)	Variable	ug/kg	Maximum detected value.
Conversion Factor$_1$ (CF_1)	0.001	mg/ug	Converts contaminant concentration from micrograms (ug) to milligrams (mg)
Inhalation Rate (IR)	5	m^3	Volume of air inhaled during 8 hour workday.[a]
Exposure Frequency (EF)	250	days/year	Assumes weekends off and two weeks vacation per year
Exposure Duration (ED)	25	years	Number of years working at one place of employment.
Body Weight (BW) - adult	70	kg	Adult mean body weight
Averaging Time$_{cancer}$ (AT)	25550	days	70 years
Cancer Slope Factor (CSF)	Contaminant-specific	mg/kg-day^{-1}	Source: EPA

a- Inhalation rate adapted from long-term adult male inhalation rate of 15 m^3/day as presented in EPA's Exposure Factors Handbook.[11] Inhalation rate was divided by a factor of 3 to account for and 8-hour work day as opposed to a 24 hour breathing rate.

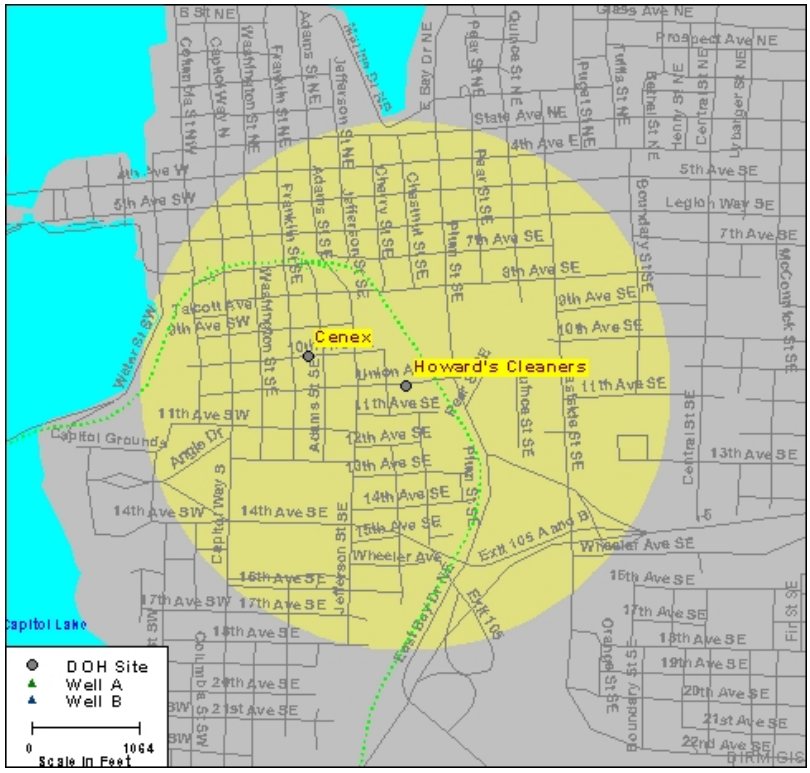
Table B2. Cancer risk associated with exposure to PCE, carbon tetrachloride, and benzene at Washington State Traffic Commission near TMC Cleaners site, Olympia, Washington

Location	**Chemical**	**Concentration** ($\mu g/m^3$)	**Average Daily Dose** (cancer) (mg/kg/day)	**Low-end Cancer Slope Factor** (kg-day/mg) a	**High-end Cancer Slope Factor** (kg-day/mg) a	**Low-end Cancer Risk**	**High-end Cancer Risk**
WSTC	PCE	0.64	1.0e-5	0.002	0.02	2.1e-8	2.1e-7
	TCE	0.2	3.2e-6	0.02	0.4	6.5e-8	1.3e-6
	Carbon Tetrachloride	0.53	8.6e-6	0.06	0.06	5.2e-7	5.2e-7
	Benzene	1.3	2.1e-5	0.008	0.03	1.7e-7	6.4e-7
					Total Cancer Risk	**7.8e-7**	**2.7e-6**

a PCE cancer slope factor ranges from 0.002 (provided by Superfund Technical Support center) to 0.02 as used by Cal EPA and Washington State Department of Ecology. Benzene slope factors adjusted from air unit risk that ranges from 2.2×10^{-6} to 7.8×10^{-6} risk per $\mu g/m^3$

Figure 1. TMC Cleaners (formerly Howard's) site location and demographics. Olympia, Thurston County, Washington

HOWARD'S CLEANERS



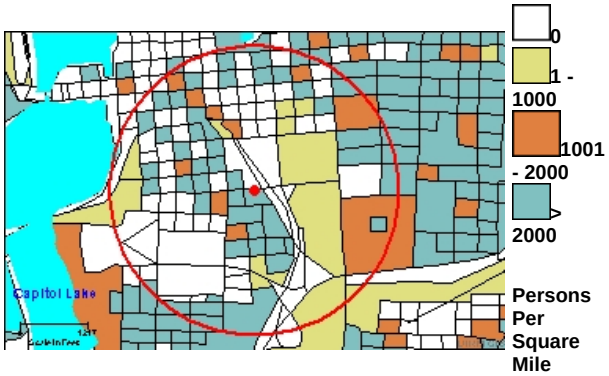
Thurston County

Demographic Statistics Within a Half Mile of the Site*

Total Population	2076
White	1760
Black	66
American Indian, Eskimo, Aleut	48
Asian or Pacific Islander	83
Other Race	28
Hispanic Origin	99
Children Aged 6 and Younger	97
Adults Aged 65 and Older	143
Females Aged 15 - 44	606
Total Aged over 18	1864
Total Aged under 18	211
Total Housing Units	1314

* Calculated using the area proportion technique.
Source: 2000 U.S. CENSUS

Population Density



Children 6 Years and Younger

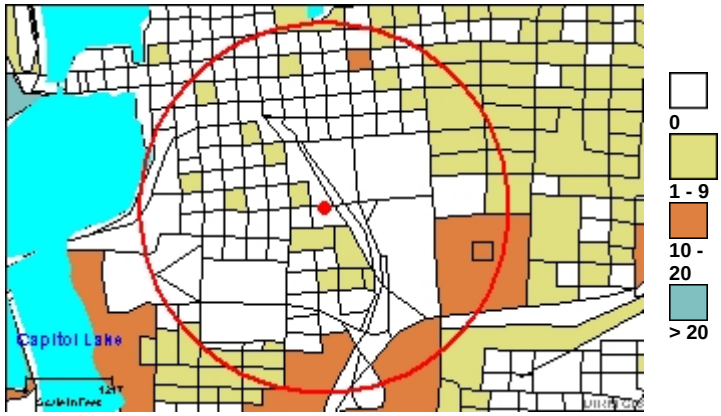


Figure 2. Location of WTSC in relation to TMC Cleaners site. Olympia, Washington.

Certification

This Evaluation of follow-up Indoor Air Sampling Results (March 2007) at the Washington Traffic Safety Commission Offices TMC Cleaners(a/k/a Howard's Cleaners and Olympia Cleaners) Olympia,Washington Public Health Consultation was prepared by the Washington State Department of Health under a cooperative agreement with the federal Agency for Toxic Substances and Disease Registry (ATSDR). It was completed in accordance with approved methodology and procedures existing at the time the health consultation were initiated. Editorial review was completed by the Cooperative Agreement partner.

Robert B. Knowles, M.S., REHS
Technical Project Officer, CAPEB, DHAC
Agency for Toxic Substances & Disease Registry

The Division of Health Assessment and Consultation, ATSDR, has reviewed this public health consultation and concurs with the findings.

Alan W. Yarbrough, M.S.
Team Leader, CAPEB, DHAC
Agency for Toxic Substances & Disease Registry

References

[1] Conrex, Inc. Phase II ESA Report of Sampling Activities conducted on the Olympia Drycleaners property, Olympia Washington. June 13, 1995.

[2] Stemen Environmental, Inc. Interim Remedial Activities and Groundwater Monitoring Report: Former Olympia Drycleaners, 606 E. Union Avenue, Olympia, Washington. January 10, 2003.

[3] Washington State Department of Health. Health Consultation: Olympia Drycleaners, Olympia, Thurston County, Washington. June 15, 1999.

[4] Atmospheric Analysis & Consulting, Inc. Laboratory Analysis Report for indoor air samples collected by Gerald Tousley, Thurston County Environmental Health Division. July 31, 2002.

[5] Washington State Department of Health. Health Consultation: Evaluation of Indoor Air Sampling Results (July 16-17, 2002) at the Washington Traffic Safety Commission Offices, Howard's Drycleaners (a/k/a Olympia Drycleaners), Olympia, Thurston County, Washington. September 18, 2003.

[6] Washington State Department of Health. Health Consultation: Evaluation of follow-up Indoor Air Sampling Results at the Washington Traffic Safety Commission Offices, TMC Cleaners (a/k/a Howard's Cleaners and Olympia Drycleaners), Olympia, Thurston County, Washington. March 11, 2005.

[7] Farallon Consulting. Letter report dated March 16, 2007. Indoor Air Sampling Results 1000 Cherry Street Southeast. Olympia, Washington. Farallon PN: 555-001.

[8] Severn Trent Laboratories, Inc. Washington State Indoor Sampling Analytical Report. March 1, 2004.

[9] US Environmental Protection Agency. Guidelines for Carcinogen Risk Assessment (Review Draft). NCEA-F-0644 July 19991999 Jul. Web address: Available at http://www.epa.gov/NCEA/raf/cancer.htm.

[10] Agency for Toxic Substances and Disease Registry. ATSDR Fact Sheet: Cancer. Updated August 30, 2002. Atlanta: US Department of Health and Human Services. Available at internet: http://www.atsdr.cdc.gov/COM/cancer-fs.html.

[11] United States Environmental Protection Agency, Office of Research and Development. Exposure Factors Handbook Volume I: General Factors. EPA/600/P-95/002Fa. August 1997.

NORTHWEST INDUSTRIAL HYGIENE, INC.
P.O. BOX 19511 ** SEATTLE, WA 98109
4241 21st Avenue West ** Suite 116
Telephone (206) 545-8089 ** Fax (206) 545-8339

March 13, 2007

Ms. Carla Brock
Farallon Consulting, LLC
975 5th Avenue NW
Issaquah, WA 98027-0806

RE: Indoor Air Quality
Cherry/Q-Tip Trust Building
Data Review

Dear Ms. Brock:

I have reviewed the analytical results from the air samples obtained in the subject facility as you requested. Currently there are no regulations pertaining to chemical exposures in office environments. The generally accepted approach is to use the Occupational Safety and Health (OSHA) Permissible Exposure Limits (PEL) with an additional safety margin of 10 to 100 times less as a starting point with the goal of maintaining concentrations as low as practicable. All of the measured parameters were considerably lower then the OSHA PEL's by several orders of magnitude.

The concentrations of Benzene, TCE and PCE while above the EPA Preliminary Remediation Goals for Ambient Air, are still orders of magnitude below applicable OSHA PEL standards. It should be kept in mind that the EPA guidelines are based on 24 hour exposures, which are considerably less than the eight hour Time Weighted Average (TWA) exposures of the workplace. Based on the measured concentrations, there are no known health effects associated with exposure to these contaminates at the levels found in the samples.

Please call if you have any questions or need additional information. Thank you for the

opportunity to be of service.

Sincerely,

David A Newman

David A. Newman, M.Sc., CIH
President
Northwest Industrial Hygiene, Inc.

FARALLON consulting

975 5th Avenue Northwest, Issaquah, Washington 98027
Tel: (425) 295-0800 Fax: (425) 295-0850
www.farallonconsulting.com

March 16, 2007

Cherry/Q-TIP Trust
c/o Mr. Michael W. Mayberry
Owens Davies, PS
1115 West Bay Drive, Suite 302
Olympia, Washington 98502

RE: INDOOR AIR SAMPLING RESULTS
1000 CHERRY STREET SOUTHEAST
OLYMPIA, WASHINGTON
FARALLON PN: 555-001

Dear Mr. Mayberry:

Farallon Consulting, L.L.C. (Farallon) has prepared this letter report to document the results of the indoor air sampling conducted at the office building located at 1000 Cherry Street Southeast in Olympia, Washington (herein referred to as the Site). The indoor air sampling was conducted at the request of the property owner, Cherry/Q-TIP Trust, to evaluate if concentrations of the dry cleaning solvent tetrachloroethene (PCE) and total petroleum hydrocarbons (TPH) exceed levels that present a risk to human health. Releases of PCE and TPH have occurred at the adjacent Olympia Dry Cleaners that have migrated in vapor phase to indoor air at the Site. This letter report presents a brief description of the Site background, a summary of the historical environmental activities at the Olympia Dry Cleaners, a description of the indoor air sampling activities, and a summary of the analytical results of indoor air samples collected in the building as evaluated against applicable screening levels.

BACKGROUND

The Site consists of 0.76 acre of land developed with a two-story office building that is approximately 8,000 square feet in area. The building is currently occupied by the Washington Traffic Safety Commission. The Washington State Department of Health (DOH) has conducted two previous indoor air sampling events in the building. The results of the DOH sampling are summarized in the *Evaluation of Indoor Air Sampling Results (July 16-17, 2002) at the Washington Traffic Safety Commission Offices, Howard's Drycleaners (a.k.a. Olympia Dry cleaners site) Olympia, Thurston County, Washington* dated September 18, 2003, and the *TMC Cleaners (a/k/a Howard's Cleaners and Olympia Cleaners) Evaluation of follow-up Indoor Air Sampling Results at the Washington Traffic Safety Commission Offices, Olympia, Thurston County, Washington* dated March 11, 2005, both prepared by DOH. Table 1 includes a summary of the air analytical results collected by DOH. The analytical results of the indoor air sampling detected concentrations of benzene, PCE, and the PCE breakdown product trichloroethene (TCE) above the laboratory detection limits. DOH concluded that the concentrations did not pose a public health hazard for workers in the Site building.

OLYMPIA DRY CLEANERS HISTORY

A review of the regulatory file for the Olympia Dry Cleaners project at the Washington State Department of Ecology (Ecology) Southwest Regional Office indicates that releases of PCE and TPH have impacted soil and groundwater. The following information pertaining to the Olympia Dry Cleaners was summarized in the January 10, 2005 *Draft Remedial Investigations and Associated Interim Remedial/Corrective Actions Report, Former Olympia Dry Cleaners* prepared by Stemen Environmental, Inc. Dry cleaning operations have been conducted at the Olympia Dry Cleaners property since 1970.

A Phase II Environmental Site Assessment conducted in 1995 by Conrex, Inc., as documented by Stemen (2005), detected concentrations of TPH as gasoline-range organics (GRO) and as oil-range organics (ORO), PCE, TCE, and 1,2-dichloroethene (DCE) in groundwater, and ORO and PCE in soil exceeding the Ecology Model Toxics Control Act Cleanup Regulation (MTCA) Method A cleanup levels.

The property owner of the Olympia Dry Cleaners entered into an Agreed Order #DE 000TCPH1-1408 with Ecology in February 2001. The Agreed Order requires completion of a Remedial Investigation (RI) and Feasibility Study. The RI activities were conducted by Stemen Environmental and included installation and sampling of seven groundwater monitoring wells, collection and laboratory analysis of stormwater discharge from a french drain and catch basins, collection and laboratory analysis of surface water, surface soil and subsurface soil samples, and collection and laboratory analysis of liquid collected from an interior floor drain.

Groundwater was measured in the seven monitoring wells in October 2002 at depths ranging from 0.33 feet to 5.6 feet below the top of the monitoring well casing. The laboratory analytical results detected concentrations of PCE in groundwater, soil, and surface water exceeding the MTCA cleanup levels on the Olympia Dry Cleaners property, on the Site, and on the east-adjacent property. The highest concentration of PCE in groundwater, 52,000 micrograms per liter (µg/l), was detected in a groundwater monitoring well located at the northwest corner of the Olympia Dry Cleaners property, immediately up-gradient of the Site. The MTCA Method A cleanup level for PCE in groundwater is 5 µg/l.

The laboratory analytical results detected PCE in the water sample collected from the floor drain within the building on the Olympic Dry Cleaners property at a concentration of 280,000 µg/l. A dye test indicated that the floor drain discharged to the public sewer system. The floor drain was capped after the residual liquids were removed.

According to the Ecology project manager for the Olympia Dry Cleaners site, Mr. Steve Teel, an Interim Remedial Action was conducted in August and September 2006 (personal communication with Carla Brock, 2007) by Stemen Environmental with oversight from Aspect Consulting. The Interim Remedial Action included excavation of a soil "hot-spot" with concentrations of PCE exceeding the MTCA Method A cleanup level. The "hot-spot" excavation was conducted along the north and northwest property boundary of the Olympia Dry Cleaners property, and included excavation of soil on the southwest corner of the Site. The soil generated by the "hot-spot" excavation is currently stockpiled on the Site in anticipation of

segregation, on-Site treatment, waste profiling, and disposal. The Interim Remedial Action is documented in the *Interim Action Report* prepared by Sound Environmental Strategies of Seattle, Washington dated January 26, 2007.

INDOOR AIR SAMPLING

Farallon collected indoor air samples on February 5, 2007 from the building located on the Site. Air Toxics, Ltd. of Folsom, California provided six Summa canisters to meet the quality assurance/quality control standards for collection of air samples. The Summa canisters were outfitted with flow regulators to collect air over an 8-hour time-weighted period. Five of the canisters were deployed at various locations throughout the offices in the Site building and one location in the basement beneath the northern end of the Site building. The Summa canisters were collected at the end of the 8-hour sampling interval and shipped to Air Toxics, Ltd. for laboratory analysis.

APPLICABLE SCREENING LEVELS

The potentially applicable screening levels for halogenated volatile organic compounds (HVOCs) in indoor air are described below and expressed on Table 1.

The U.S. Environmental Protection Agency (EPA) has established a Preliminary Remediation Goal (PRG) for ambient air. The PRG screening levels are applicable to both indoor and outdoor air and are based on a residential exposure scenario using standard exposure factors. The ambient air PRG is meant to be used as a health-protective indoor air screening level for evaluating exposure pathways from concentrations of HVOCs in soil, soil gas, and groundwater.

The National Institute for Occupational Safety and Health (NIOSH) has established recommended exposure limits (REL) for compounds, considering a 10-hour workday during a 40-hour work week. NIOSH does not provide RELs for known carcinogens, with the exception of TCE, but bases exposure limits on risk evaluations and potential exposures and recommends minimization of workplace exposure.

The Occupational Safety and Health Administration (OSHA) has established permissible exposure limits (PELs), which are time-weighted averages that must not be exceeded during any 8-hour work shift of a 40-hour work week.

The Agency for Toxics Substances and Disease Registry (ATSDR) has developed Minimal Risk Levels (MRL), which are estimates of daily human exposure to a chemical that are unlikely to be associated with any appreciable risk of deleterious noncancer effects over a specified duration of exposure.

MTCA expresses standard formula values for ambient air, which includes both ambient outdoor air and air within structures.

In addition to the screening levels, the DOH has established concentrations of PCE, TCE, and benzene that are typically encountered in urban indoor air, which are also considered in the evaluation of indoor air quality at the Site.

RESULTS

The laboratory analytical results of the air samples collected from the building detected concentrations of PCE, breakdown products TCE and cis-1,2-dichloroethene, and benzene, toluene, ethylbenzene and xylenes (Table 1).

The detected concentrations of PCE in indoor air ranged from 0.56 to 0.95 micrograms per cubic meter ($\mu g/m^3$), which is below the OSHA PEL for PCE, the ATSDR MRL, and the DOH expressed background concentration of 5 $\mu g/m^3$ (Table 1). The detected concentrations of PCE exceed the EPA PRGs for ambient air (Table 1). There are no established NIOSH or MTCA screening levels for PCE.

The laboratory analytical results detected concentrations of TCE in indoor air ranging from 0.098 to 0.20 $\mu g/m^3$. The concentrations of TCE in indoor air exceed the EPA PRG for ambient air but are below the OSHA PEL, the NIOSH REL, the MTCA formula value, the ATSDR MRL, and the DOH expressed background concentration for TCE in indoor air (Table 1).

The detected concentrations of benzene in indoor air exceed the EPA PRG for ambient air and the MTCA formula value, but are below the OSHA PEL, the NIOSH REL, the ATSDR MRL, and the DOH expressed background concentration for indoor air (Table 1).

The detected concentrations of cis-1,2-DCE, toluene, ethylbenzene, and xylenes are below all of the applicable screening levels.

The concentrations of PCE and TCE detected by the Farallon indoor air sampling are lower than those detected by the DOH indoor air sampling events in 2002 and 2004. This may indicate that the concentrations of HVOCs in indoor air have decreased over time.

CLOSING

Farallon assumes that this report provides sufficient data to meet your needs. Please feel free to contact either of the undersigned at (425) 295-0800 if you have any questions or require additional information.

Sincerely,

Farallon Consulting, L.L.C.

Carla E. Brock, L.G.
Associate Geologist

Peter Jewett, L.G., L.E.G.
Principal Engineering Geologist

Attachments: Table 1, *Summary of Indoor Air Sampling Results*
Attachment 1, Laboratory Analytical Report

CB/PJ:bw

Table 1
Summary of Indoor Air Sampling Results
Cherry/Q-TIP Trust Building
1000 Cherry Street Southeast
Olympia, Washington
Farallon PN: 555-001

Sample Location	Sample Identification	Date Collected	Analytical Results (micrograms per cubic meter)									
			PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride	Benzene	Toluene	Ethylbenzene	Total Xylenes
DOH Results - 2002												
Reception Desk		7/17/2002	8.7	<2.5	NR	NR	NR	NR	2.1	NR	NR	NR
South office		7/17/2002	31	3.6	NR	NR	NR	NR	1.7	NR	NR	NR
Room at N. end of building		7/17/2002	7.1	<1.8	NR	NR	NR	NR	1.5	NR	NR	NR
Basement		7/17/2002	3.3	<1.8	NR	NR	NR	NR	1.5	NR	NR	NR
DOH Results - 2004												
Reception Desk		1/1/2004	20	0.98	NR	NR	NR	NR	1.8	NR	NR	NR
South office		1/1/2004	39	1.3	NR	NR	NR	NR	1.8	NR	NR	NR
Room at N. end of building (Conference Room)		1/1/2004	3.4	0.22	NR	NR	NR	NR	1.6	NR	NR	NR
Basement		1/1/2004	3.7	0.23	NR	NR	NR	NR	1.5	NR	NR	NR
Farallon Results - 2007												
A1	Air1-012907	1/29/2007	0.90	0.20	0.24	<0.64	<0.064	<0.041	2.4	5.1	0.97	3.9
A2	Air2-012907	1/29/2007	0.95	0.19	0.21	<0.64	<0.064	<0.041	2.4	5.2	1.1	4.2
A3	Air3-012907	1/29/2007	0.69	0.15	0.16	<0.65	<0.065	<0.042	2.4	5.3	0.94	3.7
A4	Air4-012907	1/29/2007	0.56	0.098	<0.13	<0.65	<0.065	<0.042	2.3	5.2	0.92	3.8
A5	Air5-012907	1/29/2007	0.66	0.098	<0.12	<0.63	<0.063	<0.040	2.2	5.5	1.2	5.0
A6	Air6-012907	1/29/2007	0.60	0.12	<0.16	<0.80	<0.08	<0.051	2.3	5.5	0.89	3.5
EPA Preliminary Remediation Goals for Ambient Air[1]			0.32	0.017	37	73	210	0.11	0.25	400	1,100	110
NIOSH Recommended Exposure Limit[2]			NA[3]	134,250[4]	794,000		NA[3]	NA[3]	319	377,000	434,000	434,000
OSHA TWA Permissible Exposure Limits[5]			678,000	537,000	794,000		NE	2,560	3,190	754,000	434,000	434,000
MTCA Standard Method B Formula Values for Air[6]			NE	0.515	NE	NE	0.05	0.284	0.321	183	4,570	320
ATSDR Minimal Risk Levels[7]			271.2	537	NE	794	NE	76.8	9.57	301.6	4,340	217
Washington DOH Background Concentration[8]			5	0.7	NE	NE	NE	NE	10	NE	NE	NE

< Indicates compound not detected above the stated laboratory practical quantitation limit.

[1]U.S. Environmental Protection Agency (EPA) Preliminary Remediation Goals for Ambient Air.

[2]National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit (REL) are a time-weighted average for a 10-hour workday during a 40-hour workweek.

[3]No numerical value established. The compound is a known carcinogen. NIOSH has a carcinogen policy which bases exposure limits for carcinogens on risk evaluations and potential exposures. NIOSH recommends minimization of workplace exposure concentration.

[4]NIOSH considers TCE to be a potential occupational carcinogen and recommends an REL of 25 ppm (as a 10-hour TWA)

[5]OSHA permissible exposure limits (PEL) are time-weighted averages which must not be exceeded during any 8-hour workshift of a 40-hour workweek.

[6]Washington State Department of Ecology Model Toxics Control Act Cleanup Regulation (MTCA) Standard Method B Formula Values for ambient air, including both ambient outdoor air and air within structures.

[7]Agency for Toxic Substances and Disease Registry (ASTDR) Minimal Risk Levels for Hazardous Substances.

[8]Washington State Department of Health (DOH) expressed indoor median background concentration.

DCE = dichloroethene
DOH = Washington State Department of Health
NA = Not Applicable
NE = Not Established
NR = Not Reported
PCE = tetrachloroethene
TCE = trichloroethene

Air Toxics LTD.

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Air Toxics Ltd. Introduces the Electronic Report

Thank you for choosing Air Toxics Ltd. To better serve our customers, we are providing your report by e-mail. This document is provided in Portable Document Format which can be viewed with Acrobat Reader by Adobe.

This electronic report includes the following:

- Work order Summary;
- Laboratory Narrative;
- Results; and
- Chain of Custody (copy).

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 .FAX (916) 985-1020
Hours 8:00 A.M to 6:00 P.M. Pacific

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WORK ORDER #: 0702026

Work Order Summary

CLIENT:	Ms. Carla Brock Farallon Consulting, LLC 975 5th Avenue NW Issaquah, WA 98027-3333	**BILL TO:**	Accounts Payable Farallon Consulting, LLC 975 5th Avenue NW Issaquah, WA 98027-3333
PHONE:	425-427-0061	**P.O. #**	PO-AIRTOX-01
FAX:	425-427-0067	**PROJECT #**	555-001 Cherry Q-TIP Trust
DATE RECEIVED:	02/01/2007	**CONTACT:**	Sarah Nguyen
DATE COMPLETED:	02/14/2007		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	Air1-012907	Modified TO-15 SIM	5.0 "Hg
01AA	Air1-012907 Duplicate	Modified TO-15 SIM	5.0 "Hg
02A	Air2-012907	Modified TO-15 SIM	5.0 "Hg
03A	Air3-012907	Modified TO-15 SIM	5.5 "Hg
04A	Air4-012907	Modified TO-15 SIM	5.5 "Hg
05A	Air5-012907	Modified TO-15 SIM	4.5 "Hg
06A	Air6-012907	Modified TO-15 SIM	10.0 "Hg
07A	Lab Blank	Modified TO-15 SIM	NA
08A	CCV	Modified TO-15 SIM	NA
09A	LCS	Modified TO-15 SIM	NA

CERTIFIED BY: Linda A. Frumarx DATE: 02/14/07

Laboratory Director

Certfication numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/06, Expiration date: 06/30/07
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Modified TO-15 SIM
Farallon Consulting, LLC
Workorder# 0702026

Six 6 Liter Summa Special (SIM Certified) samples were received on February 01, 2007. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the SIM acquisition mode. The method involves concentrating up to 0.5 liters of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

Method modifications taken to run these samples are summarized in the below table. Specific project requirements may over-ride the ATL modifications.

Requirement	*TO-15*	*ATL Modifications*
ICAL %RSD acceptance criteria	</=30% RSD with 2 compounds allowed out to < 40% RSD	Project specific; default criteria is </=30% RSD with 10% of compounds allowed out to < 40% RSD
Daily Calibration	+- 30% Difference	Project specific; default criteria is </= 30% Difference with 10% of compounds allowed out up to </=40%.; flag and narrate outliers
Blank and standards	Zero air	Nitrogen
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the reporting limit.
UJ- Non-detected compound associated with low bias in the CCV
N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM

Client Sample ID: Air1-012907

Lab ID#: 0702026-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
cis-1,2-Dichloroethene	0.032	0.060	0.13	0.24
Benzene	0.080	0.75	0.26	2.4
Trichloroethene	0.0048	0.036	0.026	0.20
Toluene	0.032	1.4	0.12	5.1
Tetrachloroethene	0.032	0.13	0.22	0.90
Ethyl Benzene	0.032	0.22	0.14	0.97
m,p-Xylene	0.064	0.64	0.28	2.8
o-Xylene	0.032	0.25	0.14	1.1

Client Sample ID: Air1-012907 Duplicate

Lab ID#: 0702026-01AA

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
cis-1,2-Dichloroethene	0.032	0.063	0.13	0.25
Benzene	0.080	0.74	0.26	2.4
Trichloroethene	0.0048	0.038	0.026	0.20
Toluene	0.032	1.4	0.12	5.1
Tetrachloroethene	0.032	0.13	0.22	0.90
Ethyl Benzene	0.032	0.22	0.14	0.97
m,p-Xylene	0.064	0.65	0.28	2.8
o-Xylene	0.032	0.25	0.14	1.1

Client Sample ID: Air2-012907

Lab ID#: 0702026-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
cis-1,2-Dichloroethene	0.032	0.053	0.13	0.21
Benzene	0.080	0.75	0.26	2.4
Trichloroethene	0.0048	0.036	0.026	0.19
Toluene	0.032	1.4	0.12	5.2
Tetrachloroethene	0.032	0.14	0.22	0.95
Ethyl Benzene	0.032	0.25	0.14	1.1
m,p-Xylene	0.064	0.70	0.28	3.0
o-Xylene	0.032	0.27	0.14	1.2

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM

Client Sample ID: Air3-012907

Lab ID#: 0702026-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
cis-1,2-Dichloroethene	0.033	0.040	0.13	0.16
Benzene	0.082	0.75	0.26	2.4
Trichloroethene	0.0049	0.028	0.026	0.15
Toluene	0.033	1.4	0.12	5.3
Tetrachloroethene	0.033	0.10	0.22	0.69
Ethyl Benzene	0.033	0.22	0.14	0.94
m,p-Xylene	0.066	0.62	0.28	2.7
o-Xylene	0.033	0.23	0.14	1.0

Client Sample ID: Air4-012907

Lab ID#: 0702026-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	0.082	0.71	0.26	2.3
Trichloroethene	0.0049	0.018	0.026	0.098
Toluene	0.033	1.4	0.12	5.2
Tetrachloroethene	0.033	0.083	0.22	0.56
Ethyl Benzene	0.033	0.21	0.14	0.92
m,p-Xylene	0.066	0.62	0.28	2.7
o-Xylene	0.033	0.24	0.14	1.1

Client Sample ID: Air5-012907

Lab ID#: 0702026-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	0.079	0.69	0.25	2.2
Trichloroethene	0.0047	0.018	0.025	0.098
Toluene	0.032	1.4	0.12	5.5
Tetrachloroethene	0.032	0.098	0.21	0.66
Ethyl Benzene	0.032	0.28	0.14	1.2
m,p-Xylene	0.063	0.82	0.27	3.6
o-Xylene	0.032	0.33	0.14	1.4

Client Sample ID: Air6-012907

Lab ID#: 0702026-06A

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM

Client Sample ID: Air6-012907

Lab ID#: 0702026-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	0.10	0.71	0.32	2.3
Trichloroethene	0.0060	0.021	0.032	0.12
Toluene	0.040	1.5	0.15	5.5
Tetrachloroethene	0.040	0.089	0.27	0.60
Ethyl Benzene	0.040	0.20	0.17	0.89
m,p-Xylene	0.080	0.57	0.35	2.5
o-Xylene	0.040	0.22	0.17	0.97

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: Air1-012907

Lab ID#: 0702026-01A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name: 6020906 Date of Collection: 1/29/07
Dil. Factor: 1.61 Date of Analysis: 2/9/07 10:37 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.064	Not Detected
1,1-Dichloroethane	0.032	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.032	0.060	0.13	0.24
1,1,1-Trichloroethane	0.032	Not Detected	0.18	Not Detected
Benzene	0.080	0.75	0.26	2.4
1,2-Dichloroethane	0.032	Not Detected	0.13	Not Detected
Trichloroethene	0.0048	0.036	0.026	0.20
Toluene	0.032	1.4	0.12	5.1
1,1,2-Trichloroethane	0.032	Not Detected	0.18	Not Detected
Tetrachloroethene	0.032	0.13	0.22	0.90
Ethyl Benzene	0.032	0.22	0.14	0.97
m,p-Xylene	0.064	0.64	0.28	2.8
o-Xylene	0.032	0.25	0.14	1.1
1,1,2,2-Tetrachloroethane	0.032	Not Detected	0.22	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.64	Not Detected
Methyl tert-butyl ether	0.16	Not Detected	0.58	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	100	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: Air1-012907 Duplicate

Lab ID#: 0702026-01AA

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	6020907	Date of Collection: 1/29/07
Dil. Factor:	1.61	Date of Analysis: 2/9/07 11:15 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.064	Not Detected
1,1-Dichloroethane	0.032	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.032	0.063	0.13	0.25
1,1,1-Trichloroethane	0.032	Not Detected	0.18	Not Detected
Benzene	0.080	0.74	0.26	2.4
1,2-Dichloroethane	0.032	Not Detected	0.13	Not Detected
Trichloroethene	0.0048	0.038	0.026	0.20
Toluene	0.032	1.4	0.12	5.1
1,1,2-Trichloroethane	0.032	Not Detected	0.18	Not Detected
Tetrachloroethene	0.032	0.13	0.22	0.90
Ethyl Benzene	0.032	0.22	0.14	0.97
m,p-Xylene	0.064	0.65	0.28	2.8
o-Xylene	0.032	0.25	0.14	1.1
1,1,2,2-Tetrachloroethane	0.032	Not Detected	0.22	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.64	Not Detected
Methyl tert-butyl ether	0.16	Not Detected	0.58	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	103	70-130

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AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: Air2-012907

Lab ID#: 0702026-02A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	6020908	Date of Collection: 1/29/07
Dil. Factor:	1.61	Date of Analysis: 2/9/07 11:52 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.064	Not Detected
1,1-Dichloroethane	0.032	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.032	0.053	0.13	0.21
1,1,1-Trichloroethane	0.032	Not Detected	0.18	Not Detected
Benzene	0.080	0.75	0.26	2.4
1,2-Dichloroethane	0.032	Not Detected	0.13	Not Detected
Trichloroethene	0.0048	0.036	0.026	0.19
Toluene	0.032	1.4	0.12	5.2
1,1,2-Trichloroethane	0.032	Not Detected	0.18	Not Detected
Tetrachloroethene	0.032	0.14	0.22	0.95
Ethyl Benzene	0.032	0.25	0.14	1.1
m,p-Xylene	0.064	0.70	0.28	3.0
o-Xylene	0.032	0.27	0.14	1.2
1,1,2,2-Tetrachloroethane	0.032	Not Detected	0.22	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.64	Not Detected
Methyl tert-butyl ether	0.16	Not Detected	0.58	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	104	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: Air3-012907

Lab ID#: 0702026-03A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	6020909	Date of Collection:	1/29/07
Dil. Factor:	1.64	Date of Analysis:	2/9/07 02:01 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.016	Not Detected	0.042	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.065	Not Detected
1,1-Dichloroethane	0.033	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.033	0.040	0.13	0.16
1,1,1-Trichloroethane	0.033	Not Detected	0.18	Not Detected
Benzene	0.082	0.75	0.26	2.4
1,2-Dichloroethane	0.033	Not Detected	0.13	Not Detected
Trichloroethene	0.0049	0.028	0.026	0.15
Toluene	0.033	1.4	0.12	5.3
1,1,2-Trichloroethane	0.033	Not Detected	0.18	Not Detected
Tetrachloroethene	0.033	0.10	0.22	0.69
Ethyl Benzene	0.033	0.22	0.14	0.94
m,p-Xylene	0.066	0.62	0.28	2.7
o-Xylene	0.033	0.23	0.14	1.0
1,1,2,2-Tetrachloroethane	0.033	Not Detected	0.22	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.65	Not Detected
Methyl tert-butyl ether	0.16	Not Detected	0.59	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	108	70-130

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Client Sample ID: Air4-012907

Lab ID#: 0702026-04A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	6020910r	Date of Collection: 1/29/07
Dil. Factor:	1.64	Date of Analysis: 2/9/07 02:42 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.016	Not Detected	0.042	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.065	Not Detected
1,1-Dichloroethane	0.033	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.033	Not Detected	0.13	Not Detected
1,1,1-Trichloroethane	0.033	Not Detected	0.18	Not Detected
Benzene	0.082	0.71	0.26	2.3
1,2-Dichloroethane	0.033	Not Detected	0.13	Not Detected
Trichloroethene	0.0049	0.018	0.026	0.098
Toluene	0.033	1.4	0.12	5.2
1,1,2-Trichloroethane	0.033	Not Detected	0.18	Not Detected
Tetrachloroethene	0.033	0.083	0.22	0.56
Ethyl Benzene	0.033	0.21	0.14	0.92
m,p-Xylene	0.066	0.62	0.28	2.7
o-Xylene	0.033	0.24	0.14	1.1
1,1,2,2-Tetrachloroethane	0.033	Not Detected	0.22	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.65	Not Detected
Methyl tert-butyl ether	0.16	Not Detected	0.59	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	106	70-130

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: Air5-012907

Lab ID#: 0702026-05A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	60209r12	Date of Collection: 1/29/07
Dil. Factor:	1.58	Date of Analysis: 2/9/07 04:00 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.063	Not Detected
1,1-Dichloroethane	0.032	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.12	Not Detected
1,1,1-Trichloroethane	0.032	Not Detected	0.17	Not Detected
Benzene	0.079	0.69	0.25	2.2
1,2-Dichloroethane	0.032	Not Detected	0.13	Not Detected
Trichloroethene	0.0047	0.018	0.025	0.098
Toluene	0.032	1.4	0.12	5.5
1,1,2-Trichloroethane	0.032	Not Detected	0.17	Not Detected
Tetrachloroethene	0.032	0.098	0.21	0.66
Ethyl Benzene	0.032	0.28	0.14	1.2
m,p-Xylene	0.063	0.82	0.27	3.6
o-Xylene	0.032	0.33	0.14	1.4
1,1,2,2-Tetrachloroethane	0.032	Not Detected	0.22	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.63	Not Detected
Methyl tert-butyl ether	0.16	Not Detected	0.57	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	103	70-130

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: Air6-012907

Lab ID#: 0702026-06A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	5020913	Date of Collection: 1/29/07
Dil. Factor:	2.01	Date of Analysis: 2/9/07 04:41 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.020	Not Detected	0.051	Not Detected
1,1-Dichloroethene	0.020	Not Detected	0.080	Not Detected
1,1-Dichloroethane	0.040	Not Detected	0.16	Not Detected
cis-1,2-Dichloroethene	0.040	Not Detected	0.16	Not Detected
1,1,1-Trichloroethane	0.040	Not Detected	0.22	Not Detected
Benzene	0.10	0.71	0.32	2.3
1,2-Dichloroethane	0.040	Not Detected	0.16	Not Detected
Trichloroethene	0.0060	0.021	0.032	0.12
Toluene	0.040	1.5	0.15	5.5
1,1,2-Trichloroethane	0.040	Not Detected	0.22	Not Detected
Tetrachloroethene	0.040	0.089	0.27	0.60
Ethyl Benzene	0.040	0.20	0.17	0.89
m,p-Xylene	0.080	0.57	0.35	2.5
o-Xylene	0.040	0.22	0.17	0.97
1,1,2,2-Tetrachloroethane	0.040	Not Detected	0.28	Not Detected
trans-1,2-Dichloroethene	0.20	Not Detected	0.80	Not Detected
Methyl tert-butyl ether	0.20	Not Detected	0.72	Not Detected

Container Type: 6 Liter Summa Special (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	94	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: Lab Blank

Lab ID#: 0702026-07A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name: 6020905 Date of Collection: NA
Dil. Factor: 1.00 Date of Analysis: 2/9/07 09:45 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
1,1-Dichloroethene	0.010	Not Detected	0.040	Not Detected
1,1-Dichloroethane	0.020	Not Detected	0.081	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
1,1,1-Trichloroethane	0.020	Not Detected	0.11	Not Detected
Benzene	0.050	Not Detected	0.16	Not Detected
1,2-Dichloroethane	0.020	Not Detected	0.081	Not Detected
Trichloroethene	0.0030	Not Detected	0.016	Not Detected
Toluene	0.020	Not Detected	0.075	Not Detected
1,1,2-Trichloroethane	0.020	Not Detected	0.11	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected
Ethyl Benzene	0.020	Not Detected	0.087	Not Detected
m,p-Xylene	0.040	Not Detected	0.17	Not Detected
o-Xylene	0.020	Not Detected	0.087	Not Detected
1,1,2,2-Tetrachloroethane	0.020	Not Detected	0.14	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Methyl tert-butyl ether	0.10	Not Detected	0.36	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	87	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	98	70-130

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: CCV

Lab ID#: 0702026-08A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name: 6020802 Date of Collection: NA

Dil. Factor: 1.00 Date of Analysis: 2/9/07 07:49 AM

Compound	%Recovery
Vinyl Chloride	86
1,1-Dichloroethene	98
1,1-Dichloroethane	92
cis-1,2-Dichloroethene	96
1,1,1-Trichloroethane	86
Benzene	84
1,2-Dichloroethane	86
Trichloroethene	96
Toluene	95
1,1,2-Trichloroethane	94
Tetrachloroethene	91
Ethyl Benzene	92
m,p-Xylene	90
o-Xylene	89
1,1,2,2-Tetrachloroethane	79
trans-1,2-Dichloroethene	93
Methyl tert-butyl ether	90

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	86	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	92	70-130

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: LCS

Lab ID#: 0702026-09A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	6020903	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 2/9/07 08:26 AM	

Compound	%Recovery
Vinyl Chloride	76
1,1-Dichloroethene	92
1,1-Dichloroethane	89
cis-1,2-Dichloroethene	84
1,1,1-Trichloroethane	80
Benzene	80
1,2-Dichloroethane	80
Trichloroethene	88
Toluene	90
1,1,2-Trichloroethane	86
Tetrachloroethene	87
Ethyl Benzene	88
m,p-Xylene	93
o-Xylene	88
1,1,2,2-Tetrachloroethane	82
trans-1,2-Dichloroethene	90
Methyl tert-butyl ether	81

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	84	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	95	70-130