A Department of Ecology Report

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Lakewood/Plaza Cleaners
July 15, 1998

Summary

This document is one in a series describing the results of ground water sampling at Lakewood/Plaza Cleaners. Ecology has conducted semi-annual ground water sampling at the site since 1991. The objective of this sampling is to collect ground water quality data for the Toxics Cleanup Program to evaluate the effectiveness of Lakewood supply wells H1 and H2 (Figure 1) to contain and remove contaminated ground water caused by Plaza Cleaners. Samples were collected on July 15, 1998 from one municipal well (H2) and five monitoring wells: MW-16A, MW-20A, MW-20B, MW-27 and MW-33. All samples were analyzed for volatile organics (VOAs). The quality assurance review and laboratory reporting sheets are presented in Appendix A.

Monitoring wells MW-20B and MW-16A, as well as municipal well H2 continue to have tetrachloroethene (PERC) concentrations that exceed the Model Toxic Control Act (MTCA) cleanup standard of 5.0 µg/L. PERC concentrations in these wells during the latest round of sampling were MW-20B (575 µg/L), MW-16A (30 µg/L), and H2 (10 µg/L). Trichloroethene (TCE) was detected in MW-20B at a concentration of 10 µg/L, which also exceeds the MTCA cleanup standard for TCE of 5.0 µg/L. Cis-1,2-dichloroethene (cis-1,2-DCE) was detected in wells MW-20B and MW-16A at concentrations of 23 µg/L and 1.5 µg/L, respectively. Overall, concentrations are similar to those reported in previous sample rounds.

by Pamela B. Marti
March 1999

Waterbody # WA-12-1115
(Segment No. 05-12-GW)

Ecology Report #99-312

Results

Field Observations

Table 1 lists field observations for each of the sampled wells, including well depth, static water level, pH, specific conductance, temperature, and purged volume.

Table 1. Summary of Field Parameters Results for July 1998

	MW-16A	MW-19A	MW-20A	MW-20B	MW-27	MW-31	MW-33	H2
Total Depth (feet)	109	97.5	97.3	50.4	96.4	91.5	99.3	110
Depth to Water (ft)	42.58	---	34.68	35.78	++	++	++	++
pH (standard units)	7.4	---	8.5	7.4	7.1	---	7.2	6.5
Spec. Conductance (umhos/cm)	255	---	255	460	201	---	228	180
Temperature (°C)	10.6	---	10.8	11.2	10.6	---	9.4	11.4
PurgeVolume (gal)	130	---	33	9	35	---	35	>1000

++ = Dedicated pump obstructs water-level measurement.

All field parameters were within expected ranges. The specific conductance in well MW-20B (460 umhos/cm), which is screened in a fine-grained till unit, was approximately two times greater than the other wells. Specific conductance readings are typically higher for water from fine-grained units. The other wells are screened in an advanced outwash unit.

Laboratory Results

All samples were analyzed for volatile organics (VOAs) using EPA SW846 method 8260 (modified). Table 2 summarizes laboratory results. The quality assurance review and laboratory reporting sheets are presented in Appendix A.

Table 2. Summary of Analytes Detected (µg/L) in Samples Collected July 15, 1998

	MW-20B	MW-16A	MW-20A	MW-27	MW-31	MW-33	MW-19A	H2
Tetrachloroethene	575	30	0.55 J	0.05 J	---	1 U	---	9.8
Trichloroethene	10	1 U	1 U	1 U	---	1 U	---	1 U
Cis-1,2-Dichloroethene	23	1.5	1 U	1 U	---	1 U	---	0.1 J
Trans-1,2-Dichloroethene	0.3 J	1 U	1 U	1 U	---	1 U	---	1 U
1,1,1-Trichloroethane	0.07 J	0.12 J	0.14 J	1 U	---	1 U	---	1 U
1,1-Dichloroethane	0.16 J	1 U	1 U	1 U	---	1 U	---	1 U
Carbon Tetrachloride	1 U	1 U	0.03 J	1 U	---	0.16 J	---	1 U
Chloroform	0.13 J	1 U	1 U	0.02 J	---	0.04 J	---	0.09 J

U = The analyte was not detected at or above the reported value.
J = The analyte was positively identified. The associated numerical result is an estimate.
-- = Not Tested

The highest concentrations of tetrachloroethene (PERC), trichloroethene (TCE), and cis-1,2-dichloroethene (cis-1,2-DCE) continue to occur in well MW-20B with 575 µg/L, 10 µg/L, and 23 µg/L, respectively. PERC and cis-1,2-DCE were also detected in MW-16A with concentrations of 30 µg/L and 1.5 µg/L, respectively. Municipal well H2 had a PERC concentration of 9.8 µg/L. PERC and cis-1,2-DCE were detected below the practical quantitation limit of 1 µg/L in the following wells: PERC in wells MW-20A and MW-27, and cis-1,2-DCE in well H2. Due to the low detection limit other volatile organics, which have not been detected in the past, were identified at estimated values below the practical quantitation limit of 1 µg/L. These are also listed in Table 2.

Table 3 shows PERC, TCE, and cis-1,2-DCE concentrations for sampling events from January 1991 through July 1998. PERC and cis-1,2-DCE concentrations continue to be elevated in well MW-20B and MW-16A. Municipal wells H1/H2, which were added to the monitoring program in 1995, also have elevated PERC concentrations. Figure 2 shows PERC concentrations for MW-20B and MW-16A between 1984 and 1998. Since 1984, PERC concentrations in both wells have varied substantially. PERC concentrations decreased initially in MW-20B from March 1985 (4800 ppb) to May 1985 (570 ppb). After May 1985, concentrations have ranged between 86 ppb and 1200 ppb. Over the monitoring period PERC concentrations in MW-16A have varied between 3 ppb and 110 ppb.

Methods

Ground Water Sampling

Samples were collected on July 15, 1998 from municipal well H2 and five monitoring wells: MW-16A, MW-20A, MW-20B, MW-27, and MW-33 (Figure 1). Prior to sample collection, static water level measurements were obtained using an electronic water level probe. The probe was rinsed with deionized water after each use. All monitoring wells were purged a minimum of three well volumes and until pH, temperature, and specific conductance readings stabilized. Purge water was discharged to storm drains or to the ground near each well. All monitoring wells were purged and sampled using dedicated bladder pumps, except for MW-20B. Well MW-20B was purged and sampled with a decontaminated teflon bailer. Municipal well H2, which pumps continuously, was sampled from a tap nearest the well. Samples collected for volatile organics were free of headspace and preserved with two drops of 1:1 hydrochloric acid.

The bailer was pre-cleaned with a Liquinox® wash and sequential rinses of hot tap water, 10% nitric acid, distilled/deionized water, and pesticide-grade acetone. After cleaning, the bailer was air-dried and wrapped in aluminum foil. Chain-of-custody procedures were followed in accordance with Manchester Laboratory protocol (Ecology, 1994).

Quality Assurance Samples

Quality control samples collected in the field for ground water monitoring consisted of a blind duplicate sample. A blind duplicate sample was collected from well MW-16A. Duplicate samples are two sets of samples collected from a well simultaneously and submitted to the laboratory with different identification. In addition to quality control samples collected in the

field, laboratory quality control samples consisted of matrix spikes, matrix spike duplicates and surrogate compound recoveries. Volatile organic samples were analyzed using EPA SW-846 Method 8260 (modified) (U.S. EPA, 1986).

The quality of the data is acceptable for use. Volatile organic analyses were performed by the Manchester Laboratory. Karin Feddersen of the Manchester Laboratory conducted the quality assurance review. Duplicate samples collected at MW-16A provide an estimate of combined sampling and laboratory precision. The numeric comparison of duplicate results is expressed as the relative percent difference or RPD. RPDs are the ratio of the difference and the mean of the duplicate results expressed as a percentage. The RPD for PERC and cis-1,2-DCE were 3% and 7%, respectively. All surrogate, matrix spike and spike duplicate recoveries are within acceptable limits for the samples.

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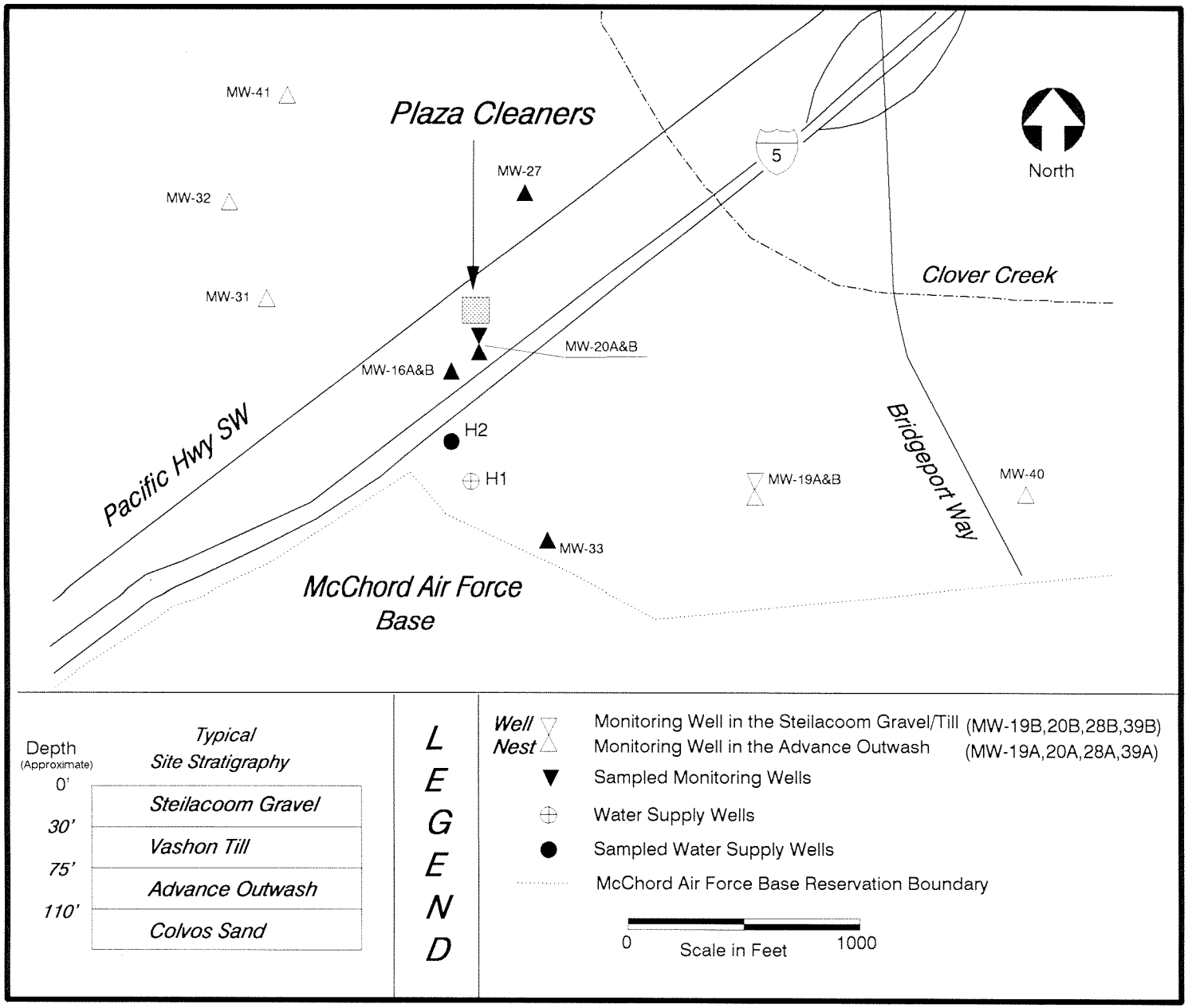


Figure 1: Well Location Map - Lakewood/Plaza Cleaners

Table 3: Summary of Sample Results (ug/L) from January 1991 to July 1998

Well	January 1991			May 1991			November 1991			May 1992			December 1992		
Number	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE
MW-16A	28	1 J	2.4 J	26	0.6 J	2	2.7 J	1 U	0.6 J	7	1 U	1	9 J	0.3 J	0.8 J
MW-20A	1 U	1 U	1 U	0.4 J	1 U	1 U	0.4 J	1 U	1 U	0.5 J	1 U	1 U	0.8 J	1 UJ	1 UJ
MW-20B	1100 D	18	33	752	16	30	120	2.6 J	6.7	940	13	32	340 J	14 J	20 J
MW-21	2.1 J	1 U	1 J	2	1 U	0.7 J	2.2 J	1 U	1.0 J	2	1 U	0.6 J	2	0.2 J	0.3 J
MW-27	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 UJ
MW-28A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-31	1 J	1 U	1.9 J	0.6 J	1 U	2	0.9 J	1 U	2.2 J	0.8 J	1 U	1	0.5 J	1 UJ	0.9 J
MW-32	1 J	1 U	1.1 J	1	1 U	2	0.6 J	1 U	0.6 J	0.7 J	1 U	1	0.7 J	1 UJ	0.5 J
MW-41	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 UJ
MW-19A	--	--	--	--	--	--	1 U	0.5 J	1 U	--	--	--	1 UJ	1 UJ	1 UJ
MW-33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-40	1 U	1 U	1 U	--	--	--	1 U	1 U	1 U	--	--	--	1 UJ	1 UJ	1 UJ
H1/H2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Well	May 1993			December 1993			April 1994			November 1994			July 1995		
Number	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE
MW-16A	44	10 U	2 J	13	0.3 J	0.7 J	33	0.6	1.4	9.7	0.3 J	0.5 J	27	0.5 J	0.8 J
MW-20A	10 U	10 U	10 U	0.3 J	1 U	1 U	0.4	0.2 U	0.2 U	0.3 J	1 U	1 U	0.4 J	1 U	1 U
MW-20B	700 D	12	21	187	50 U	8.2 J	472	8.6 J	12.6	86	50 U	3 J	340 D	8.4	17
MW-21	1 J	10 U	10 U	1.6	1 U	0.4 J	1.5	0.2 J	0.3	1.8	0.2 J	0.3 J	--	--	--
MW-27	10 U	10 U	10 U	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U	1 U
MW-28A	--	--	--	--	--	--	--	--	--	--	--	--	1 U	1 U	1 U
MW-31	10 U	10 U	10 U	0.8 J	1 U	1.2 J	0.7	0.2 U	1.0	0.8 J	1 U	1	0.6 J	1 U	0.5 J
MW-32	10 U	10 U	10 U	0.7 J	1 U	0.6 J	0.7	0.2 U	0.6	0.6 J	1 U	0.5 J	0.7 J	1 U	0.5 J
MW-41	10 U	10 U	10 U	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U	1 U
MW-19A	--	--	--	1 U	0.4	1 U	0.2 U	0.5	0.2 U	--	--	--	1 U	0.4 J	1 U
MW-33	--	--	--	--	--	--	--	--	--	--	--	--	1 U	1 U	1 U
MW-40	--	--	--	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	--	--	--	1 U	1 U	1 U
H1/H2	--	--	--	--	--	--	--	--	--	--	--	--	9	0.3 J	1 U

U = The analyte was not detected at or above the reported result.
J = The analyte was positively identified. The associated numerical result is an estimate.
UJ = The analyte was not detected at or above the reported estimated result.
D = Analysis performed at secondary dilution.
E = The concentration of the associated value exceeds the known calibration range.
-- = Not Tested
= The analyte was positively identified.

Table 3 continued: Summary of Sample Results (ug/L) from January 1991 to July 1998

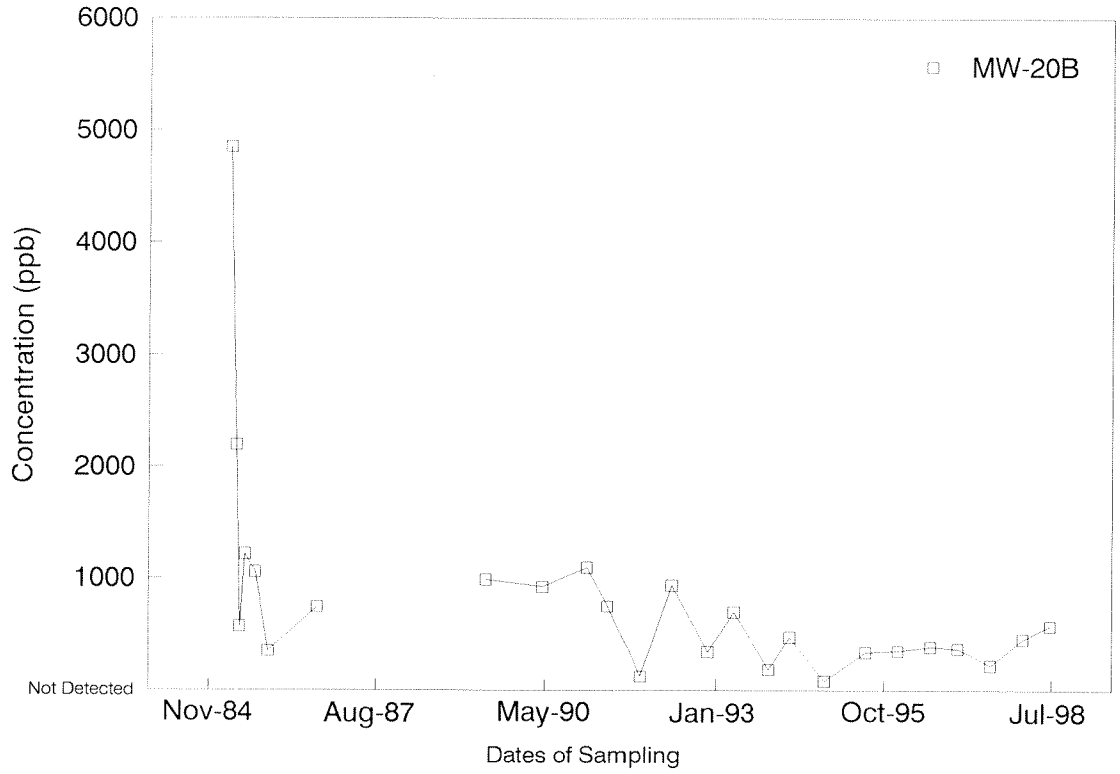
Well Number	January 1996			July 1996			January 1997			July 1997			February 1998		
	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE
MW-16A	**47 E**	**0.8 J**	**1.5**	**43**	**0.7 J**	**1.9**	**54**	**1.1**	**3.1**	**47**	**0.7 J**	**2.5**	**36**	**0.7 J**	**2 J**
MW-20A	**0.2 J**	1 U	1 U	**0.4 J**	1 U	1 U	**0.4 J**	1 U	1 U	**0.3 J**	1 U	2 U	**0.4 J**	1 U	1 U
MW-20B	**353**	**7.2**	**15**	**387**	**7.6**	**15**	**373**	100 U	**6.4 J**	**222**	**4**	**6.4**	**456**	**7 J**	**12**
MW-21	--	--	--	Well Decommissioned											
MW-27	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U	1 U
MW-28A	1 U	1 U	1 U	Well Decommissioned											
MW-31	**0.6 J**	1 U	**0.7 J**	--	--	--	--	--	--	**0.9 J**	1 U	**0.9 J**	--	--	--
MW-32	**0.8 J**	1 U	**0.6 J**	--	--	--	--	--	--	--	--	--	--	--	--
MW-41	1 U	1 U	1 U	--	--	--	--	--	--	--	--	--	--	--	--
MW-19A	--	--	--	--	--	--	--	--	--	1 U	**0.3 J**	2 U	--	--	--
MW-33	--	--	--	1 U	1 U	1 U	--	--	--	1 U	1 U	2 U	--	--	--
MW-40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
H1/H2	**8.4**	**0.2 J**	**0.2 J**	**0.14 J**	1 U	1 U	**18**	**0.4 J**	**0.4 J**	**8.8**	**0.3 J**	**0.6 J**	**11**	**0.4 J**	**0.3 J**

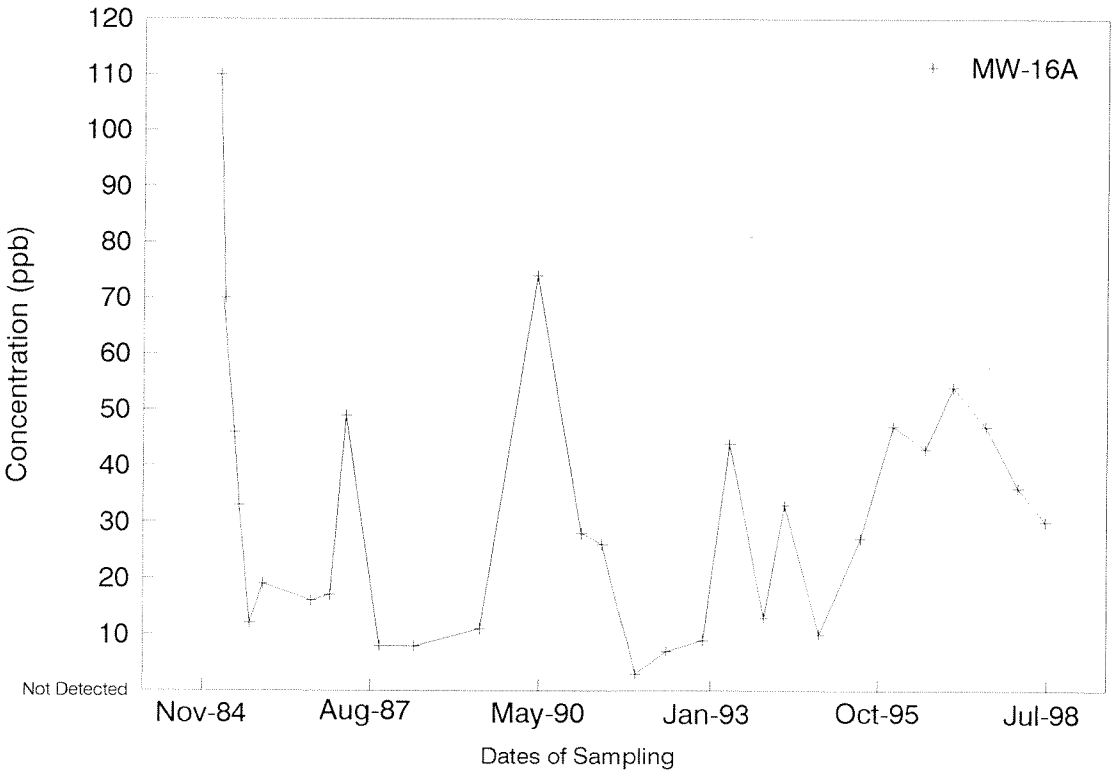
Well Number	July 1998		
	PERC	TCE	cis-1,2-DCE
MW-16A	**30**	1 U	**1.5 J**
MW-20A	**0.6 J**	1 U	1 U
MW-20B	**575 D**	**10**	**23**
MW-27	**0.05 J**	1 U	1 U
MW-31	--	--	--
MW-32	--	--	--
MW-41	--	--	--
MW-19A	--	--	--
MW-33	1 U	1 U	1 U
MW-40	--	--	--
H1/H2	**10**	1 U	**0.1 J**

U = The analyte was not detected at or above the reported result.
J = The analyte was positively identified. The associated numerical result is an estimate.
UJ = The analyte was not detected at or above the reported estimated result.
D = Analysis performed at secondary dilution.
E = The concentration of the associated value exceeds the known calibration range.
-- = Not Tested
= The analyte was positively identified.

Figure 2

PERC Concentrations for Wells MW-20B and MW-16A from 1984 to 1998





**(MTCA Method A Cleanup Standard for PERC in groundwater is 5 ug/L)*

APPENDIX A

Analytical Results
Lakewood/Plaza Cleaners
July 15, 1998

Manchester Environmental Laboratory

7411 Beach Dr E, Port Orchard Washington 98366

CASE NARRATIVE

August 17, 1998

Subject:	**Lakewood Plaza Cleaners**
Samples:	98298130 through 98298136
Project ID:	2191-98
Project Officer:	Pam Marti
By:	Karin Feddersen KF

VOLATILE ORGANIC ANALYSIS

SUMMARY:

Sample 98298036 contained a high concentration of Tetrachloroethene. Use the result from the dilution analysis of this sample for this analyte. Use the undiluted results for all other analytes.

The data is usable as reported.

ANALYTICAL METHODS:

Volatile organic compounds were analyzed using Manchester modification of the EPA Method 8260 purge-trap procedure with capillary GC/MS analysis. Typical QA/QC procedures were performed on the sample.

BLANKS:

Low levels of certain target compounds were detected in the laboratory blanks. These compounds are considered native to the sample if their concentration is at least five times greater than the amount detected in the associated blank.

SURROGATES:

Surrogate recoveries were within acceptable limits for the samples.

HOLDING TIMES:

The samples were analyzed within the recommended 14 day holding time.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE:

Matrix spikes recoveries were within acceptable limits for all analytes.

DATA QUALIFIER CODES:

U	-	The analyte was not detected at or above the reported value.
J	-	The analyte was positively identified. The associated numerical value is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result.
REJ	-	The data are unusable for all purposes.
NAF	-	Not analyzed for.
N	-	There is evidence the analyte is present in the sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
E	-	This qualifier is used when the concentration of the associated value exceeds the known calibration range.
bold	-	The analyte was present in the sample. (Visual Aid to locate detected compounds on report sheet.)

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Sample: 98298130 **Date Collected:** 07/15/98 **Method:** SW8260
Field ID: H2 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/23/98 **Units:** ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	1	UJ	Cis-1,3-Dichloropropene	1.1	U
Chloromethane	1	UJ	4-Methyl-2-Pentanone	2	U
Vinyl Chloride	1	U	1,1-Dichloropropanone	1	U
Bromomethane	1	U	Toluene	1	U
Chloroethane	1	U	Trans-1,3-Dichloropropene	.94	U
Trichlorofluoromethane	1	U	Ethylmethacrylate	1	U
Ethyl Ether	1	U	1,1,2-Trichloroethane	1	U
1,1,2 Trichlorotrifluoroethane	1	U	1,3-Dichloropropane	1	U
1,1-Dichloroethene	1	U	2-Hexanone	2	U
Acetone	4	U	**Tetrachloroethene**	**9.8**	
Methyl Iodide	1	U	Dibromochloromethane	1	U
Carbon Disulfide	2	U	1,2-Dibromoethane (EDB)	1	U
Allyl Chloride	1	U	Chlorobenzene	1	U
Methylene Chloride	2	U	1,1,1,2-Tetrachloroethane	1	U
Acrylonitrile	1	U	Ethylbenzene	1	U
2-Methyoxy-2-Methylpropane	1	U	m & p-Xylene	2	U
Trans-1,2-Dichloroethene	1	U	o-Xylene	1	U
1,1-Dichloroethane	1	U	Styrene	1	U
2-Butanone	2	U	Bromoform	1	U
Cis-1,2-Dichloroethene	**.096**	**J**	Isopropylbenzene (Cumene)	1	U
2,2-Dichloropropane	1	U	1,1,2,2-Tetrachloroethane	1	U
Methyl acrylate	1	U	Trans-1,4-Dichloro-2-butene	1	U
Methyacrylonitrile	1	U	1,2,3-Trichloropropane	1	U
Bromochloromethane	1	U	Bromobenzene	1	U
Chloroform	**.086**	**J**	n-Propylbenzene	1	U
Tetrahydrofuran	1	U	2-Chlorotoluene	1	U
1,1,1-Trichloroethane	1	U	1,3,5-Trimethylbenzene	1	U
1-Chlorobutane	1	U	4-Chlorotoluene	1	U
1,1-Dichloropropene	1	U	Tert-Butylbenzene	1	U
Carbon Tetrachloride	1	U	1,2,4-Trimethylbenzene	1	U
1,2-Dichloroethane	1	U	Pentachloroethane	1	U
Benzene	1	U	Sec-Butylbenzene	1	U
Trichloroethene	1	U	p-Isopropyltoluene	1	U
1,2-Dichloropropane	1	U	1,3-Dichlorobenzene	1	U
Methyl Methacrylate	1	U	1,4-Dichlorobenzene	1	U
Dibromomethane	1	U	n-Butylbenzene	1	U
Bromodichloromethane	1	U	1,2-Dichlorobenzene	1	U
2-Nitropropane	1	U	Hexachloroethane	1	U

Authorized By: _____ Release Date: 8/18/98

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Sample: 98298130 **Date Collected:** 07/15/98 **Method:** SW8260
Field ID: H2 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/23/98 **Units:** ug/L

Analyte	Result	Qualifier
1,2-Dibromo-3-Chloropropane	1	U
1,2,4-Trichlorobenzene	1	U
Hexachlorobutadiene	1	U
Naphthalene	1.2	U
1,2,3-Trichlorobenzene	1	U

Surrogate Recoveries

1,2-Dichloroethane-D4	**99**	**%**
1,4-Difluorobenzene	**100**	**%**
Toluene-D8	**102**	**%**
p-Bromofluorobenzene	**95**	**%**
1,2-Dichlorobenzene-D4	**103**	**%**

Authorized By: _____ Release Date: 8/18/98

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Sample: 98298131 **Date Collected:** 07/15/98 **Method:** SW8260
Field ID: MW-33 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/23/98 **Units:** ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	1	UJ	Cis-1,3-Dichloropropene	1.1	U
Chloromethane	1	UJ	4-Methyl-2-Pentanone	2	U
Vinyl Chloride	1	U	1,1-Dichloropropanone	1	U
Bromomethane	1	U	Toluene	1	U
Chloroethane	1	U	Trans-1,3-Dichloropropene	.94	U
Trichlorofluoromethane	1	U	Ethylmethacrylate	1	U
Ethyl Ether	1	U	1,1,2-Trichloroethane	1	U
1,1,2 Trichlorotrifluoroethane	1	U	1,3-Dichloropropane	1	U
1,1-Dichloroethene	1	U	2-Hexanone	2	U
Acetone	4	U	Tetrachloroethene	1	U
Methyl Iodide	1	U	Dibromochloromethane	1	U
Carbon Disulfide	2	U	1,2-Dibromoethane (EDB)	1	U
Allyl Chloride	1	U	Chlorobenzene	1	U
Methylene Chloride	2	U	1,1,1,2-Tetrachloroethane	1	U
Acrylonitrile	1	U	Ethylbenzene	1	U
2-Methyoxy-2-Methylpropane	1	U	m & p-Xylene	2	U
Trans-1,2-Dichloroethene	1	U	o-Xylene	1	U
1,1-Dichloroethane	1	U	Styrene	1	U
2-Butanone	2	U	Bromoform	1	U
Cis-1,2-Dichloroethene	1	U	Isopropylbenzene (Cumene)	1	U
2,2-Dichloropropane	1	U	1,1,2,2-Tetrachloroethane	1	U
Methyl acrylate	1	U	Trans-1,4-Dichloro-2-butene	1	U
Methyacrylonitrile	1	U	1,2,3-Trichloropropane	1	U
Bromochloromethane	1	U	Bromobenzene	1	U
Chloroform	**.043**	**J**	n-Propylbenzene	1	U
Tetrahydrofuran	1	U	2-Chlorotoluene	1	U
1,1,1-Trichloroethane	1	U	1,3,5-Trimethylbenzene	1	U
1-Chlorobutane	1	U	4-Chlorotoluene	1	U
1,1-Dichloropropene	1	U	Tert-Butylbenzene	1	U
Carbon Tetrachloride	**.16**	**J**	1,2,4-Trimethylbenzene	1	U
1,2-Dichloroethane	1	U	Pentachloroethane	1	U
Benzene	1	U	Sec-Butylbenzene	1	U
Trichloroethene	1	U	p-Isopropyltoluene	1	U
1,2-Dichloropropane	1	U	1,3-Dichlorobenzene	1	U
Methyl Methacrylate	1	U	1,4-Dichlorobenzene	1	U
Dibromomethane	1	U	n-Butylbenzene	1	U
Bromodichloromethane	1	U	1,2-Dichlorobenzene	1	U
2-Nitropropane	1	U	Hexachloroethane	1	U

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Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Sample: 98298131 **Date Collected:** 07/15/98 **Method:** SW8260
Field ID: MW-33 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/23/98 **Units:** ug/L

Analyte	Result	Qualifier
1,2-Dibromo-3-Chloropropane	1	U
1,2,4-Trichlorobenzene	1	U
Hexachlorobutadiene	1	U
Naphthalene	1	U
1,2,3-Trichlorobenzene	1	U

Surrogate Recoveries

1,2-Dichloroethane-D4	**100**	**%**
1,4-Difluorobenzene	**99**	**%**
Toluene-D8	**100**	**%**
p-Bromofluorobenzene	**95**	**%**
1,2-Dichlorobenzene-D4	**104**	**%**

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Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Sample: 98298132 **Date Collected:** 07/15/98 **Method:** SW8260
Field ID: MW-27 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/23/98 **Units:** ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	1	UJ	Cis-1,3-Dichloropropene	1.1	U
Chloromethane	1	UJ	4-Methyl-2-Pentanone	2	U
Vinyl Chloride	1	U	1,1-Dichloropropanone	1	U
Bromomethane	1	U	Toluene	1	U
Chloroethane	1	U	Trans-1,3-Dichloropropene	.94	U
Trichlorofluoromethane	1	U	Ethylmethacrylate	1	U
Ethyl Ether	1	U	1,1,2-Trichloroethane	1	U
1,1,2 Trichlorotrifluoroethane	1	U	1,3-Dichloropropane	1	U
1,1-Dichloroethene	1	U	2-Hexanone	2	U
Acetone	4	U	**Tetrachloroethene**	**.053**	**J**
Methyl Iodide	1	U	Dibromochloromethane	1	U
Carbon Disulfide	2	U	1,2-Dibromoethane (EDB)	1	U
Allyl Chloride	1	U	Chlorobenzene	1	U
Methylene Chloride	2	U	1,1,1,2-Tetrachloroethane	1	U
Acrylonitrile	1	U	Ethylbenzene	1	U
2-Methyoxy-2-Methylpropane	1	U	m & p-Xylene	2	U
Trans-1,2-Dichloroethene	1	U	o-Xylene	1	U
1,1-Dichloroethane	1	U	Styrene	1	U
2-Butanone	2	U	Bromoform	1	U
Cis-1,2-Dichloroethene	1	U	Isopropylbenzene (Cumene)	1	U
2,2-Dichloropropane	1	U	1,1,2,2-Tetrachloroethane	1	U
Methyl acrylate	1	U	Trans-1,4-Dichloro-2-butene	1	U
Methyacrylonitrile	1	U	1,2,3-Trichloropropane	1	U
Bromochloromethane	1	U	Bromobenzene	1	U
Chloroform	**.017**	**J**	n-Propylbenzene	1	U
Tetrahydrofuran	1	U	2-Chlorotoluene	1	U
1,1,1-Trichloroethane	1	U	1,3,5-Trimethylbenzene	1	U
1-Chlorobutane	1	U	4-Chlorotoluene	1	U
1,1-Dichloropropene	1	U	Tert-Butylbenzene	1	U
Carbon Tetrachloride	1	U	1,2,4-Trimethylbenzene	1	U
1,2-Dichloroethane	1	U	Pentachloroethane	1	U
Benzene	1	U	Sec-Butylbenzene	1	U
Trichloroethene	1	U	p-Isopropyltoluene	1	U
1,2-Dichloropropane	1	U	1,3-Dichlorobenzene	1	U
Methyl Methacrylate	1	U	1,4-Dichlorobenzene	1	U
Dibromomethane	1	U	n-Butylbenzene	1	U
Bromodichloromethane	1	U	1,2-Dichlorobenzene	1	U
2-Nitropropane	1	U	Hexachloroethane	1	U

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Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Sample: 98298132 **Date Collected:** 07/15/98 **Method:** SW8260
Field ID: MW-27 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/23/98 **Units:** ug/L

Analyte	Result	Qualifier
1,2-Dibromo-3-Chloropropane	1	U
1,2,4-Trichlorobenzene	1	U
Hexachlorobutadiene	1	U
Naphthalene	1	U
1,2,3-Trichlorobenzene	1	U

Surrogate Recoveries

1,2-Dichloroethane-D4	**103**	**%**
1,4-Difluorobenzene	**103**	**%**
Toluene-D8	**100**	**%**
p-Bromofluorobenzene	**96**	**%**
1,2-Dichlorobenzene-D4	**106**	**%**

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Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Sample: 98298133 **Date Collected:** 07/15/98 **Method:** SW8260
Field ID: MW-16A **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/23/98 **Units:** ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	1	UJ	Cis-1,3-Dichloropropene	1.1	U
Chloromethane	1	UJ	4-Methyl-2-Pentanone	2	U
Vinyl Chloride	1	U	1,1-Dichloropropanone	1	U
Bromomethane	1	U	Toluene	1	U
Chloroethane	1	U	Trans-1,3-Dichloropropene	.94	U
Trichlorofluoromethane	1	U	Ethylmethacrylate	1	U
Ethyl Ether	1	U	1,1,2-Trichloroethane	1	U
1,1,2 Trichlorotrifluoroethane	1	U	1,3-Dichloropropane	1	U
1,1-Dichloroethene	1	U	2-Hexanone	2	U
Acetone	4	U	**Tetrachloroethene**	**30**	
Methyl Iodide	1	U	Dibromochloromethane	1	U
Carbon Disulfide	2	U	1,2-Dibromoethane (EDB)	1	U
Allyl Chloride	1	U	Chlorobenzene	1	U
Methylene Chloride	2	U	1,1,1,2-Tetrachloroethane	1	U
Acrylonitrile	1	U	Ethylbenzene	1	U
2-Methyoxy-2-Methylpropane	1	U	m & p-Xylene	2	U
Trans-1,2-Dichloroethene	1	U	o-Xylene	1	U
1,1-Dichloroethane	1	U	Styrene	1	U
2-Butanone	2	U	Bromoform	1	U
Cis-1,2-Dichloroethene	**1.5**		Isopropylbenzene (Cumene)	1	U
2,2-Dichloropropane	1	U	1,1,2,2-Tetrachloroethane	1	U
Methyl acrylate	1	U	Trans-1,4-Dichloro-2-butene	1	U
Methyacrylonitrile	1	U	1,2,3-Trichloropropane	1	U
Bromochloromethane	1	U	Bromobenzene	1	U
Chloroform	1	U	n-Propylbenzene	1	U
Tetrahydrofuran	1	U	2-Chlorotoluene	1	U
1,1,1-Trichloroethane	**.12**	**J**	1,3,5-Trimethylbenzene	1	U
1-Chlorobutane	1	U	4-Chlorotoluene	1	U
1,1-Dichloropropene	1	U	Tert-Butylbenzene	1	U
Carbon Tetrachloride	1	U	1,2,4-Trimethylbenzene	1	U
1,2-Dichloroethane	1	U	Pentachloroethane	1	U
Benzene	1	U	Sec-Butylbenzene	1	U
Trichloroethene	1	U	p-Isopropyltoluene	1	U
1,2-Dichloropropane	1	U	1,3-Dichlorobenzene	1	U
Methyl Methacrylate	1	U	1,4-Dichlorobenzene	1	U
Dibromomethane	1	U	n-Butylbenzene	1	U
Bromodichloromethane	1	U	1,2-Dichlorobenzene	1	U
2-Nitropropane	1	U	Hexachloroethane	1	U

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Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Sample: 98298133 **Date Collected:** 07/15/98 **Method:** SW8260
Field ID: MW-16A **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/23/98 **Units:** ug/L

Analyte	Result	Qualifier
1,2-Dibromo-3-Chloropropane	1	U
1,2,4-Trichlorobenzene	1	U
Hexachlorobutadiene	1	U
Naphthalene	1	U
1,2,3-Trichlorobenzene	1	U

Surrogate Recoveries

1,2-Dichloroethane-D4	**104**	**%**
1,4-Difluorobenzene	**101**	**%**
Toluene-D8	**102**	**%**
p-Bromofluorobenzene	**93**	**%**
1,2-Dichlorobenzene-D4	**104**	**%**

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Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Sample: 98298134 **Date Collected:** 07/15/98 **Method:** SW8260
Field ID: MW-16B **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/23/98 **Units:** ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	1	UJ	Cis-1,3-Dichloropropene	1.1	U
Chloromethane	1	UJ	4-Methyl-2-Pentanone	2	U
Vinyl Chloride	1	U	1,1-Dichloropropanone	1	U
Bromomethane	1	U	Toluene	1	U
Chloroethane	1	U	Trans-1,3-Dichloropropene	.94	U
Trichlorofluoromethane	1	U	Ethylmethacrylate	1	U
Ethyl Ether	1	U	1,1,2-Trichloroethane	1	U
1,1,2 Trichlorotrifluoroethane	1	U	1,3-Dichloropropane	1	U
1,1-Dichloroethene	1	U	2-Hexanone	2	U
Acetone	4	U	**Tetrachloroethene**	**29**	
Methyl Iodide	1	U	Dibromochloromethane	1	U
Carbon Disulfide	2	U	1,2-Dibromoethane (EDB)	1	U
Allyl Chloride	1	U	Chlorobenzene	1	U
Methylene Chloride	2	U	1,1,1,2-Tetrachloroethane	1	U
Acrylonitrile	1	U	Ethylbenzene	1	U
2-Methyoxy-2-Methylpropane	1	U	**m & p-Xylene**	**.18**	**J**
Trans-1,2-Dichloroethene	1	U	o-Xylene	1	U
1,1-Dichloroethane	1	U	Styrene	1	U
2-Butanone	2	U	Bromoform	1	U
Cis-1,2-Dichloroethene	**1.4**		Isopropylbenzene (Cumene)	1	U
2,2-Dichloropropane	1	U	1,1,2,2-Tetrachloroethane	1	U
Methyl acrylate	1	U	Trans-1,4-Dichloro-2-butene	1	U
Methyacrylonitrile	1	U	1,2,3-Trichloropropane	1	U
Bromochloromethane	1	U	Bromobenzene	1	U
Chloroform	1	U	n-Propylbenzene	1	U
Tetrahydrofuran	1	U	2-Chlorotoluene	1	U
1,1,1-Trichloroethane	**.12**	**J**	1,3,5-Trimethylbenzene	1	U
1-Chlorobutane	1	U	4-Chlorotoluene	1	U
1,1-Dichloropropene	1	U	Tert-Butylbenzene	1	U
Carbon Tetrachloride	1	U	1,2,4-Trimethylbenzene	1	U
1,2-Dichloroethane	1	U	Pentachloroethane	1	U
Benzene	1	U	Sec-Butylbenzene	1	U
Trichloroethene	1	U	p-Isopropyltoluene	1	U
1,2-Dichloropropane	1	U	1,3-Dichlorobenzene	1	U
Methyl Methacrylate	1	U	1,4-Dichlorobenzene	1	U
Dibromomethane	1	U	n-Butylbenzene	1	U
Bromodichloromethane	1	U	1,2-Dichlorobenzene	1	U
2-Nitropropane	1	U	Hexachloroethane	1	U

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Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Sample: 98298134 **Date Collected:** 07/15/98 **Method:** SW8260
Field ID: MW-16B **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/23/98 **Units:** ug/L

Analyte	Result	Qualifier
1,2-Dibromo-3-Chloropropane	1	U
1,2,4-Trichlorobenzene	1	U
Hexachlorobutadiene	1	U
Naphthalene	1	U
1,2,3-Trichlorobenzene	1	U

Surrogate Recoveries

1,2-Dichloroethane-D4	**101**	**%**
1,4-Difluorobenzene	**101**	**%**
Toluene-D8	**104**	**%**
p-Bromofluorobenzene	**95**	**%**
1,2-Dichlorobenzene-D4	**107**	**%**

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Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Sample: 98298135 **Date Collected:** 07/15/98 **Method:** SW8260
Field ID: MW-20A **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/23/98 **Units:** ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	1	UJ	Cis-1,3-Dichloropropene	1.1	U
Chloromethane	1	UJ	4-Methyl-2-Pentanone	2	U
Vinyl Chloride	1	U	1,1-Dichloropropanone	1	U
Bromomethane	1	U	Toluene	1	U
Chloroethane	1	U	Trans-1,3-Dichloropropene	.94	U
Trichlorofluoromethane	1	U	Ethylmethacrylate	1	U
Ethyl Ether	1	U	1,1,2-Trichloroethane	1	U
1,1,2 Trichlorotrifluoroethane	1	U	1,3-Dichloropropane	1	U
1,1-Dichloroethene	1	U	2-Hexanone	2	U
Acetone	4	U	**Tetrachloroethene**	**.55**	**J**
Methyl Iodide	1	U	Dibromochloromethane	1	U
Carbon Disulfide	2	U	1,2-Dibromoethane (EDB)	1	U
Allyl Chloride	1	U	Chlorobenzene	1	U
Methylene Chloride	2	U	1,1,1,2-Tetrachloroethane	1	U
Acrylonitrile	1	U	Ethylbenzene	1	U
2-Methyoxy-2-Methylpropane	1	U	m & p-Xylene	2	U
Trans-1,2-Dichloroethene	1	U	o-Xylene	1	U
1,1-Dichloroethane	1	U	Styrene	1	U
2-Butanone	2	U	Bromoform	1	U
Cis-1,2-Dichloroethene	1	U	Isopropylbenzene (Cumene)	1	U
2,2-Dichloropropane	1	U	1,1,2,2-Tetrachloroethane	1	U
Methyl acrylate	1	U	Trans-1,4-Dichloro-2-butene	1	U
Methyacrylonitrile	1	U	1,2,3-Trichloropropane	1	U
Bromochloromethane	1	U	Bromobenzene	1	U
Chloroform	1	U	n-Propylbenzene	1	U
Tetrahydrofuran	1	U	2-Chlorotoluene	1	U
1,1,1-Trichloroethane	**.14**	**J**	1,3,5-Trimethylbenzene	1	U
1-Chlorobutane	1	U	4-Chlorotoluene	1	U
1,1-Dichloropropene	1	U	Tert-Butylbenzene	1	U
Carbon Tetrachloride	**.031**	**J**	1,2,4-Trimethylbenzene	1	U
1,2-Dichloroethane	1	U	Pentachloroethane	1	U
Benzene	1	U	Sec-Butylbenzene	1	U
Trichloroethene	1	U	p-Isopropyltoluene	1	U
1,2-Dichloropropane	1	U	1,3-Dichlorobenzene	1	U
Methyl Methacrylate	1	U	1,4-Dichlorobenzene	1	U
Dibromomethane	1	U	n-Butylbenzene	1	U
Bromodichloromethane	1	U	1,2-Dichlorobenzene	1	U
2-Nitropropane	1	U	Hexachloroethane	1	U

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Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Sample: 98298135 **Date Collected:** 07/15/98 **Method:** SW8260
Field ID: MW-20A **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/23/98 **Units:** ug/L

Analyte	Result	Qualifier
1,2-Dibromo-3-Chloropropane	1	U
1,2,4-Trichlorobenzene	1	U
Hexachlorobutadiene	1	U
Naphthalene	1	U
1,2,3-Trichlorobenzene	1	U

Surrogate Recoveries

1,2-Dichloroethane-D4	**105**	**%**
1,4-Difluorobenzene	**101**	**%**
Toluene-D8	**103**	**%**
p-Bromofluorobenzene	**97**	**%**
1,2-Dichlorobenzene-D4	**106**	**%**

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Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Sample: 98298135 (Matrix Spike - LMX1) **Date Collected:** 07/15/98 **Method:** SW8260
Field ID: MW-20A **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/23/98 **Units:** % Recovery

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	111		Cis-1,3-Dichloropropene	114	
Chloromethane	105		4-Methyl-2-Pentanone	111	
Vinyl Chloride	112		1,1-Dichloropropanone	107	
Bromomethane	108		Toluene	108	
Chloroethane	117		Trans-1,3-Dichloropropene	101	
Trichlorofluoromethane	128		Ethylmethacrylate	114	
Ethyl Ether	108		1,1,2-Trichloroethane	106	
1,1,2 Trichlorotrifluoroethane	144		1,3-Dichloropropane	105	
1,1-Dichloroethene	127		2-Hexanone	109	
Acetone	77		Tetrachloroethene	99	
Methyl Iodide	120		Dibromochloromethane	112	
Carbon Disulfide	122		1,2-Dibromoethane (EDB)	106	
Allyl Chloride	106		Chlorobenzene	106	
Methylene Chloride	111		1,1,1,2-Tetrachloroethane	109	
Acrylonitrile	93		Ethylbenzene	117	
2-Methyoxy-2-Methylpropane	109		m & p-Xylene	116	
Trans-1,2-Dichloroethene	122		o-Xylene	111	
1,1-Dichloroethane	113		Styrene	115	
2-Butanone	97		Bromoform	98	
Cis-1,2-Dichloroethene	111		Isopropylbenzene (Cumene)	113	
2,2-Dichloropropane	94		1,1,2,2-Tetrachloroethane	109	
Methyl acrylate	106		Trans-1,4-Dichloro-2-butene	98	
Methyacrylonitrile	108		1,2,3-Trichloropropane	105	
Bromochloromethane	104		Bromobenzene	104	
Chloroform	107		n-Propylbenzene	114	
Tetrahydrofuran	100		2-Chlorotoluene	108	
1,1,1-Trichloroethane	111		1,3,5-Trimethylbenzene	114	
1-Chlorobutane	107		4-Chlorotoluene	109	
1,1-Dichloropropene	120		Tert-Butylbenzene	116	
Carbon Tetrachloride	118		1,2,4-Trimethylbenzene	113	
1,2-Dichloroethane	107		Pentachloroethane	149	
Benzene	119		Sec-Butylbenzene	118	
Trichloroethene	126		p-Isopropyltoluene	116	
1,2-Dichloropropane	106		1,3-Dichlorobenzene	105	
Methyl Methacrylate	99		1,4-Dichlorobenzene	104	
Dibromomethane	105		n-Butylbenzene	120	
Bromodichloromethane	111		1,2-Dichlorobenzene	103	
2-Nitropropane	105		Hexachloroethane	112	

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Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Sample: 98298135 (Matrix Spike - LMX1) **Date Collected:** 07/15/98 **Method:** SW8260
Field ID: MW-20A **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/23/98 **Units:** % Recovery

Analyte	Result	Qualifier
1,2-Dibromo-3-Chloropropane	96	
1,2,4-Trichlorobenzene	105	
Hexachlorobutadiene	124	
Naphthalene	96	
1,2,3-Trichlorobenzene	101	

Surrogate Recoveries

1,2-Dichloroethane-D4	102	%
1,4-Difluorobenzene	100	%
Toluene-D8	100	%
p-Bromofluorobenzene	103	%
1,2-Dichlorobenzene-D4	99	%

Authorized By: _____ Release Date: 8/18/98

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Sample: 98298135 (Matrix Spike - LMX2) **Date Collected:** 07/15/98 **Method:** SW8260
Field ID: MW-20A **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/23/98 **Units:** % Recovery

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	102		Cis-1,3-Dichloropropene	112	
Chloromethane	108		4-Methyl-2-Pentanone	111	
Vinyl Chloride	108		1,1-Dichloropropanone	102	
Bromomethane	104		Toluene	104	
Chloroethane	117		Trans-1,3-Dichloropropene	102	
Trichlorofluoromethane	126		Ethylmethacrylate	112	
Ethyl Ether	108		1,1,2-Trichloroethane	104	
1,1,2 Trichlorotrifluoroethane	133		1,3-Dichloropropane	105	
1,1-Dichloroethene	118		2-Hexanone	107	
Acetone	99		Tetrachloroethene	93	
Methyl Iodide	115		Dibromochloromethane	111	
Carbon Disulfide	114		1,2-Dibromoethane (EDB)	107	
Allyl Chloride	103		Chlorobenzene	103	
Methylene Chloride	106		1,1,1,2-Tetrachloroethane	107	
Acrylonitrile	107		Ethylbenzene	109	
2-Methyoxy-2-Methylpropane	102		m & p-Xylene	109	
Trans-1,2-Dichloroethene	116		o-Xylene	107	
1,1-Dichloroethane	104		Styrene	111	
2-Butanone	104		Bromoform	98	
Cis-1,2-Dichloroethene	109		Isopropylbenzene (Cumene)	105	
2,2-Dichloropropane	89		1,1,2,2-Tetrachloroethane	105	
Methyl acrylate	104		Trans-1,4-Dichloro-2-butene	104	
Methyacrylonitrile	108		1,2,3-Trichloropropane	99	
Bromochloromethane	105		Bromobenzene	102	
Chloroform	104		n-Propylbenzene	109	
Tetrahydrofuran	106		2-Chlorotoluene	102	
1,1,1-Trichloroethane	108		1,3,5-Trimethylbenzene	108	
1-Chlorobutane	103		4-Chlorotoluene	106	
1,1-Dichloropropene	116		Tert-Butylbenzene	109	
Carbon Tetrachloride	114		1,2,4-Trimethylbenzene	107	
1,2-Dichloroethane	101		Pentachloroethane	146	
Benzene	116		Sec-Butylbenzene	111	
Trichloroethene	123		p-Isopropyltoluene	110	
1,2-Dichloropropane	102		1,3-Dichlorobenzene	101	
Methyl Methacrylate	102		1,4-Dichlorobenzene	100	
Dibromomethane	104		n-Butylbenzene	109	
Bromodichloromethane	109		1,2-Dichlorobenzene	99	
2-Nitropropane	101		Hexachloroethane	105	

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Sample: 98298135 (Matrix Spike - LMX2) **Date Collected:** 07/15/98 **Method:** SW8260
Field ID: MW-20A **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/23/98 **Units:** % Recovery

Analyte	Result	Qualifier
1,2-Dibromo-3-Chloropropane	94	
1,2,4-Trichlorobenzene	99	
Hexachlorobutadiene	118	
Naphthalene	95	
1,2,3-Trichlorobenzene	100	

Surrogate Recoveries

1,2-Dichloroethane-D4	101	%
1,4-Difluorobenzene	99	%
Toluene-D8	100	%
p-Bromofluorobenzene	103	%
1,2-Dichlorobenzene-D4	98	%

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Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Sample: 98298136 **Date Collected:** 07/15/98 **Method:** SW8260
Field ID: MW-20B **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/23/98 **Units:** ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	1	UJ	Cis-1,3-Dichloropropene	1.1	U
Chloromethane	1	UJ	4-Methyl-2-Pentanone	2	U
Vinyl Chloride	1	U	1,1-Dichloropropanone	1	U
Bromomethane	1	U	Toluene	1	U
Chloroethane	1	U	Trans-1,3-Dichloropropene	.94	U
Trichlorofluoromethane	1	U	Ethylmethacrylate	1	U
Ethyl Ether	1	U	1,1,2-Trichloroethane	1	U
1,1,2 Trichlorotrifluoroethane	1	U	1,3-Dichloropropane	1	U
1,1-Dichloroethene	1	UJ	2-Hexanone	2	U
Acetone	4	U	**Tetrachloroethene**	**547**	**E**
Methyl Iodide	1	U	Dibromochloromethane	1	U
Carbon Disulfide	2	U	1,2-Dibromoethane (EDB)	1	U
Allyl Chloride	1	U	Chlorobenzene	1	U
Methylene Chloride	2	U	1,1,1,2-Tetrachloroethane	1	U
Acrylonitrile	1	U	Ethylbenzene	1	U
2-Methyoxy-2-Methylpropane	1	U	m & p-Xylene	2	U
Trans-1,2-Dichloroethene	**.3**	**J**	o-Xylene	1	U
1,1-Dichloroethane	**.16**	**J**	Styrene	1	U
2-Butanone	2	U	Bromoform	1	U
Cis-1,2-Dichloroethene	**23**		Isopropylbenzene (Cumene)	1	U
2,2-Dichloropropane	1	U	1,1,2,2-Tetrachloroethane	1	U
Methyl acrylate	1	U	Trans-1,4-Dichloro-2-butene	1	U
Methyacrylonitrile	1	U	1,2,3-Trichloropropane	1	U
Bromochloromethane	1	U	Bromobenzene	1	U
Chloroform	**.13**	**J**	n-Propylbenzene	1	U
Tetrahydrofuran	1	U	2-Chlorotoluene	1	U
1,1,1-Trichloroethane	**.073**	**J**	1,3,5-Trimethylbenzene	1	U
1-Chlorobutane	1	U	4-Chlorotoluene	1	U
1,1-Dichloropropene	1	U	Tert-Butylbenzene	1	U
Carbon Tetrachloride	1	U	1,2,4-Trimethylbenzene	1	U
1,2-Dichloroethane	1	U	Pentachloroethane	1	U
Benzene	1	U	Sec-Butylbenzene	1	U
Trichloroethene	**10**		p-Isopropyltoluene	1	U
1,2-Dichloropropane	1	U	1,3-Dichlorobenzene	1	U
Methyl Methacrylate	1	U	1,4-Dichlorobenzene	1	U
Dibromomethane	1	U	n-Butylbenzene	1	U
Bromodichloromethane	1	U	1,2-Dichlorobenzene	1	U
2-Nitropropane	1	U	Hexachloroethane	1	U

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Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Sample: 98298136 **Date Collected:** 07/15/98 **Method:** SW8260
Field ID: MW-20B **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/23/98 **Units:** ug/L

Analyte	Result	Qualifier
1,2-Dibromo-3-Chloropropane	1	U
1,2,4-Trichlorobenzene	1	U
Hexachlorobutadiene	1	U
Naphthalene	1	U
1,2,3-Trichlorobenzene	1	U

Surrogate Recoveries

1,2-Dichloroethane-D4	**105**	**%**
1,4-Difluorobenzene	**103**	**%**
Toluene-D8	**106**	**%**
p-Bromofluorobenzene	**96**	**%**
1,2-Dichlorobenzene-D4	**107**	**%**

Authorized By: _____ Release Date: 8/18/98

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Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Sample: 98298136 (Dilution - DIL1) **Date Collected:** 07/15/98 **Method:** SW8260
Field ID: MW-20B **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/28/98 **Units:** ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	50	UJ	Cis-1,3-Dichloropropene	53	U
Chloromethane	50	UJ	4-Methyl-2-Pentanone	100	U
Vinyl Chloride	50	U	1,1-Dichloropropanone	50	U
Bromomethane	50	U	Toluene	50	U
Chloroethane	50	U	Trans-1,3-Dichloropropene	47	U
Trichlorofluoromethane	50	U	Ethylmethacrylate	50	U
Ethyl Ether	50	U	1,1,2-Trichloroethane	50	U
1,1,2 Trichlorotrifluoroethane	50	U	1,3-Dichloropropane	50	U
1,1-Dichloroethene	50	U	2-Hexanone	100	U
Acetone	200	U	**Tetrachloroethene**	**575**	
Methyl Iodide	50	U	Dibromochloromethane	50	U
Carbon Disulfide	100	U	1,2-Dibromoethane (EDB)	50	U
Allyl Chloride	50	U	Chlorobenzene	50	U
Methylene Chloride	265	U	1,1,1,2-Tetrachloroethane	50	U
Acrylonitrile	50	U	Ethylbenzene	50	U
2-Methyoxy-2-Methylpropane	50	U	m & p-Xylene	100	U
Trans-1,2-Dichloroethene	50	U	o-Xylene	50	U
1,1-Dichloroethane	50	U	Styrene	50	U
2-Butanone	100	U	Bromoform	50	U
Cis-1,2-Dichloroethene	**16**	**J**	Isopropylbenzene (Cumene)	50	U
2,2-Dichloropropane	50	U	1,1,2,2-Tetrachloroethane	50	U
Methyl acrylate	50	U	Trans-1,4-Dichloro-2-butene	50	U
Methyacrylonitrile	50	U	1,2,3-Trichloropropane	50	U
Bromochloromethane	50	U	Bromobenzene	50	U
Chloroform	50	U	n-Propylbenzene	50	U
Tetrahydrofuran	50	U	2-Chlorotoluene	50	U
1,1,1-Trichloroethane	50	U	1,3,5-Trimethylbenzene	50	U
1-Chlorobutane	50	U	4-Chlorotoluene	50	U
1,1-Dichloropropene	50	U	Tert-Butylbenzene	50	U
Carbon Tetrachloride	50	U	1,2,4-Trimethylbenzene	50	U
1,2-Dichloroethane	50	U	Pentachloroethane	50	U
Benzene	50	U	Sec-Butylbenzene	50	U
Trichloroethene	50	U	p-Isopropyltoluene	50	U
1,2-Dichloropropane	50	U	1,3-Dichlorobenzene	50	U
Methyl Methacrylate	50	U	1,4-Dichlorobenzene	50	U
Dibromomethane	50	U	n-Butylbenzene	50	U
Bromodichloromethane	50	U	1,2-Dichlorobenzene	50	U
2-Nitropropane	50	U	Hexachloroethane	50	U

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Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Sample: 98298136 (Dilution - DIL1) **Date Collected:** 07/15/98 **Method:** SW8260
Field ID: MW-20B **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/28/98 **Units:** ug/L

Analyte	Result	Qualifier
1,2-Dibromo-3-Chloropropane	50	U
1,2,4-Trichlorobenzene	50	U
Hexachlorobutadiene	50	U
Naphthalene	50	U
1,2,3-Trichlorobenzene	50	U

Surrogate Recoveries

1,2-Dichloroethane-D4	**105**	**%**
1,4-Difluorobenzene	**101**	**%**
Toluene-D8	**105**	**%**
p-Bromofluorobenzene	**95**	**%**
1,2-Dichlorobenzene-D4	**107**	**%**

Authorized By: _____ Release Date: 8/18/98

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Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Lab ID: ODBW8204A **Method:** SW8260
QC Type: Laboratory Method Blank **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/23/98 **Units:** ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	1	U	Cis-1,3-Dichloropropene	1.1	U
Chloromethane	1	U	**4-Methyl-2-Pentanone**	**.19**	**J**
Vinyl Chloride	1	U	1,1-Dichloropropanone	1	U
Bromomethane	1	U	**Toluene**	**.098**	**J**
Chloroethane	1	U	Trans-1,3-Dichloropropene	.94	U
Trichlorofluoromethane	1	U	Ethylmethacrylate	1	U
Ethyl Ether	1	U	1,1,2-Trichloroethane	1	U
1,1,2 Trichlorotrifluoroethane	1	U	1,3-Dichloropropane	1	U
1,1-Dichloroethene	1	U	**2-Hexanone**	**.21**	**J**
Acetone	2	U	**Tetrachloroethene**	**.16**	**J**
Methyl Iodide	1	U	Dibromochloromethane	1	U
Carbon Disulfide	2	U	1,2-Dibromoethane (EDB)	1	U
Allyl Chloride	1	U	Chlorobenzene	1	U
Methylene Chloride	**.79**	**J**	1,1,1,2-Tetrachloroethane	1	U
Acrylonitrile	1	U	**Ethylbenzene**	**.056**	**J**
2-Methyoxy-2-Methylpropane	1	U	**m & p-Xylene**	**.12**	**J**
Trans-1,2-Dichloroethene	1	U	**o-Xylene**	**.034**	**J**
1,1-Dichloroethane	1	U	**Styrene**	**.051**	**J**
2-Butanone	**.48**	**J**	Bromoform	1	U
Cis-1,2-Dichloroethene	1	U	**Isopropylbenzene (Cumene)**	**.095**	**J**
2,2-Dichloropropane	1	U	**1,1,2,2-Tetrachloroethane**	**.027**	**J**
Methyl acrylate	1	U	Trans-1,4-Dichloro-2-butene	1	U
Methyacrylonitrile	1	U	1,2,3-Trichloropropane	1	U
Bromochloromethane	1	U	**Bromobenzene**	**.032**	**J**
Chloroform	1	U	**n-Propylbenzene**	**.078**	**J**
Tetrahydrofuran	1	U	**2-Chlorotoluene**	**.062**	**J**
1,1,1-Trichloroethane	1	U	**1,3,5-Trimethylbenzene**	**.099**	**J**
1-Chlorobutane	1	U	**4-Chlorotoluene**	**.056**	**J**
1,1-Dichloropropene	**.038**	**J**	**Tert-Butylbenzene**	**.14**	**J**
Carbon Tetrachloride	1	U	**1,2,4-Trimethylbenzene**	**.096**	**J**
1,2-Dichloroethane	1	U	Pentachloroethane	1	U
Benzene	1	U	**Sec-Butylbenzene**	**.16**	**J**
Trichloroethene	1	U	**p-Isopropyltoluene**	**.16**	**J**
1,2-Dichloropropane	1	U	**1,3-Dichlorobenzene**	**.13**	**J**
Methyl Methacrylate	1	U	**1,4-Dichlorobenzene**	**.14**	**J**
Dibromomethane	1	U	**n-Butylbenzene**	**.25**	**J**
Bromodichloromethane	1	U	**1,2-Dichlorobenzene**	**.17**	**J**
2-Nitropropane	1	U	**Hexachloroethane**	**.79**	**J**

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Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Lab ID: ODBW8204A **Method:** SW8260
QC Type: Laboratory Method Blank **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/23/98 **Units:** ug/L

Analyte	Result	Qualifier
1,2-Dibromo-3-Chloropropane	1	U
1,2,4-Trichlorobenzene	**.75**	**J**
Hexachlorobutadiene	**.88**	**J**
Naphthalene	**1.7**	
1,2,3-Trichlorobenzene	**1.1**	

Surrogate Recoveries

1,2-Dichloroethane-D4	**94**	**%**
1,4-Difluorobenzene	**102**	**%**
Toluene-D8	**104**	**%**
p-Bromofluorobenzene	**95**	**%**
1,2-Dichlorobenzene-D4	**101**	**%**

Authorized By: _____ Release Date: 8/18/98

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Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Lab ID: ODBW8209 **Method:** SW8260
QC Type: Laboratory Method Blank **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/30/98 **Units:** ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	1	U	Cis-1,3-Dichloropropene	1.1	U
Chloromethane	1	U	4-Methyl-2-Pentanone	2	U
Vinyl Chloride	1	U	1,1-Dichloropropanone	1	U
Bromomethane	1	U	**Toluene**	**.078**	**J**
Chloroethane	1	U	Trans-1,3-Dichloropropene	.94	U
Trichlorofluoromethane	1	U	Ethylmethacrylate	1	U
Ethyl Ether	1	U	1,1,2-Trichloroethane	1	U
1,1,2 Trichlorotrifluoroethane	1	U	1,3-Dichloropropane	1	U
1,1-Dichloroethene	1	U	2-Hexanone	2	U
Acetone	2	U	**Tetrachloroethene**	**.068**	**J**
Methyl Iodide	1	U	Dibromochloromethane	1	U
Carbon Disulfide	2	U	1,2-Dibromoethane (EDB)	1	U
Allyl Chloride	1	U	Chlorobenzene	1	U
Methylene Chloride	**1**	**J**	1,1,1,2-Tetrachloroethane	1	U
Acrylonitrile	1	U	Ethylbenzene	1	U
2-Methyoxy-2-Methylpropane	1	U	m & p-Xylene	2	U
Trans-1,2-Dichloroethene	1	U	o-Xylene	1	U
1,1-Dichloroethane	1	U	Styrene	1	U
2-Butanone	**.19**	**J**	Bromoform	1	U
Cis-1,2-Dichloroethene	1	U	Isopropylbenzene (Cumene)	1	U
2,2-Dichloropropane	1	U	1,1,2,2-Tetrachloroethane	1	U
Methyl acrylate	1	U	Trans-1,4-Dichloro-2-butene	1	U
Methyacrylonitrile	1	U	1,2,3-Trichloropropane	1	U
Bromochloromethane	1	U	Bromobenzene	1	U
Chloroform	1	U	n-Propylbenzene	1	U
Tetrahydrofuran	1	U	2-Chlorotoluene	1	U
1,1,1-Trichloroethane	1	U	1,3,5-Trimethylbenzene	1	U
1-Chlorobutane	1	U	4-Chlorotoluene	1	U
1,1-Dichloropropene	1	U	Tert-Butylbenzene	1	U
Carbon Tetrachloride	1	U	**1,2,4-Trimethylbenzene**	**.019**	**J**
1,2-Dichloroethane	1	U	Pentachloroethane	1	U
Benzene	**3.4**		Sec-Butylbenzene	1	U
Trichloroethene	1	U	p-Isopropyltoluene	1	U
1,2-Dichloropropane	1	U	**1,3-Dichlorobenzene**	**.018**	**J**
Methyl Methacrylate	1	U	**1,4-Dichlorobenzene**	**.038**	**J**
Dibromomethane	1	U	**n-Butylbenzene**	**.053**	**J**
Bromodichloromethane	1	U	**1,2-Dichlorobenzene**	**.046**	**J**
2-Nitropropane	1	U	Hexachloroethane	1	U

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Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood / Plaza Cleaners **LIMS Project ID:** 2191-98

Lab ID: ODBW8209 **Method:** SW8260
QC Type: Laboratory Method Blank **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 07/30/98 **Units:** ug/L

Analyte	Result	Qualifier
1,2-Dibromo-3-Chloropropane	1	U
1,2,4-Trichlorobenzene	**.33**	**J**
Hexachlorobutadiene	1	U
Naphthalene	**1.2**	
1,2,3-Trichlorobenzene	**.59**	**J**

Surrogate Recoveries

1,2-Dichloroethane-D4	**101**	**%**
1,4-Difluorobenzene	**99**	**%**
Toluene-D8	**103**	**%**
p-Bromofluorobenzene	**94**	**%**
1,2-Dichlorobenzene-D4	**104**	**%**

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